

Muscle Dysmorphia: An Investigation of Nursing Students' Awareness & Recognition of an Emerging Disorder

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Abstract The purpose of this pilot study was to investigate the effectiveness of an educational intervention to improve nursing students' basic knowledge of Muscle Dysmorphia. Muscle Dysmorphia (MD) is a disorder found largely in the male population and is characterized by the obsession to gain large amounts of muscle mass while still perceiving oneself as too small. An interventional study was conducted through an electronically disseminated survey to a selected population of baccalaureate nursing students. The 88 participants were surveyed before and after an educational intervention to assess improved awareness of MD as a disorder. Investigators found that students had improved awareness of MD after educational intervention, but did not demonstrate improvement in identification of clinical symptoms. This topic serves as an important area of research as it links education for nursing students and clinicians with awareness and identification of this emerging disorder.

Keywords Muscle Dysmorphia, Emerging Disorder, Nursing Students

1. Background

Muscle Dysmorphia (MD) is a disorder characterized by the obsession to gain large amounts of muscle mass while still perceiving oneself as too small (Kanayama & Pope, 2011). Individuals with MD have a skewed bodily perception and thus work toward unrealistic goals. MD mostly affects males who appear to maintain a healthy outward appearance thereby resulting in the disorder being largely under-diagnosed and under-treated (Gadalla, 2009; Kanayama & Pope, 2011; Leone, Sedory, & Gray, 2005; O'Dea & Abraham, 2002). MD is associated with anabolic steroid use and disrupted psychosocial processes in order to obtain established ideals. These behaviors often have serious health implications including renal failure, cardiac risks, and damaged self-esteem (Grieve, 2007; Jones & Morgan, 2010; Kanayama & Pope, 2011; Leit, Gray, & Pope, 2002; Leone,

Sedory, & Gray, 2005). Although literature exists to examine MD and its classification, contributing factors, and potential treatment options, there is a gap in the literature that fails to examine whether the disorder can be accurately recognized.

The goal of this pilot study was to determine whether future nursing clinicians were aware of MD as an emerging disorder and if they could identify its symptoms. In this study, the students' ability to identify symptoms of MD were assessed via a survey instrument before and after an educational intervention. This quantitative pretest/posttest interventional study was used to gauge the effectiveness of an educational instrument provided to the participants.

This study aimed to answer the question: What is the effectiveness of an educational intervention on Muscle Dysmorphia to improve nursing students' basic knowledge? As the sample of nursing students will soon be entering the clinical arena, they are likely to encounter individuals at risk for MD.

2. Problem Statement & Research Question

Current literature fails to examine whether the symptoms of Muscle Dysmorphia can be accurately recognized as a prerequisite for effective treatment of this disorder. This study attempts to fill in the research gap by exploring the question: What is the effectiveness of an educational intervention on Muscle Dysmorphia to improve nursing students' basic knowledge?

3. Theoretical Framework

The term Muscle Dysmorphia was first used in scientific literature in 1997, although references to the disorder began as early as 1993 when H.G.Pope Jr. discerned a pattern of behavior among men that was opposite the pattern demonstrated by individuals with Anorexia Nervosa (AN) (Kanayama & Pope, 2011). Pope noted that men with this condition perceived themselves as physically small, despite

actually being large and muscular, whereas individuals with AN often perceived themselves as too fat when they were in fact thin (Kanayama & Pope, 2011).

Most research on Muscle Dysmorphia has looked at the disorder itself including how it should be classified, diagnosis, contributing factors, consequences, recommended treatment, and social influence (Grieve, 2007; Jones & Morgan, 2010; Kanayama & Pope, 2011; Knoesen, Thai Vo, & Castle, 2009; Leit, Gray, & Pope, 2002; Leone, Sedory, & Gray, 2005; Murray, Reiger, Touyz, & De la Garza García, 2010).

Individuals with MD tend to be under-diagnosed and untreated largely because they appear healthy, exercise often, and follow a fairly rigid diet. (Gadalla, 2009; Kanayama & Pope, 2011; Leone, Sedory, & Gray, 2005; O’Dea & Abraham, 2002). The danger of the disorder results from the extremes individuals may be exposed to as well as disrupted mental processes. Individuals with Muscle Dysmorphia report spending hours engaged in exercise and weight lifting, anabolic steroid use (with potential cardiac and renal complications), and avoidance of social situations that require exposure of their musculature (Grieve, 2007; Jones & Morgan, 2010; Kanayama & Pope, 2011; Leit, Gray, & Pope, 2002; Leone, Sedory, & Gray, 2005).

The self-schema model provides a theoretical framework that posits that individuals who lack positive self-cognitions in the presence of many negative self-cognitions are more vulnerable to cultural messages about body weight and image which leads to disordered attitudes and behaviors (Stein & Corte, 2003). Cultural pressures are credited with interfering with the development of satisfactory self-identities. In this case, the development of MD may be associated with societal influences that have stressed a more muscular physique through action figures, media figures, and a shift in magazine advertisement techniques (Grieve, 2007; Kanayama & Pope, 2011; Knoesen, Thai Vo, & Castle, 2009; Leit, Gray, & Pope, 2002; Leone, Sedory, & Gray, 2005). It has also been hypothesized that MD has increased as the female role in society has increased. As gender roles have become blurred, the loss of the male role is threatened and an attempt to maintain control and power is achieved through physical means, a biological advantage of males (Jones & Morgan, 2010).

Eating disorder theorists have suggested that the failure of a child to form a stable self-identity is due to a view of self that is disorganized and labile. These individuals thus attempt to establish control over their self-identity, often through extreme behaviors (Stein & Corte, 2003). This suggests that the eating disorders of anorexia nervosa and bulimia exhibit similar disordered behaviors to MD and are closely linked in their attempts to establish control.

MD is not included in the DSM-V as an individual disorder, but the specifier “with muscle dysmorphia” has been listed with Body Dysmorphic Disorder (BDD) as a revision from the previous DSM-IV (Grohol, 2013). There is continued discussion of its inclusion as a BDD (as a subset of Obsessive-Compulsive Disorder) versus an Eating

Disorder-Not Otherwise Specified (ED-NOS) (Jones & Morgan, 2010; Kanayama & Pope, 2011; Leone, Sedory, & Gray, 2005; Murray, Reiger, Touyz, & De la Garza García, 2010). Recommended treatment options include nutritional rehab to relearn normalized eating patterns, antidepressants to disrupt binge-purge behavior, and individual or group therapy to address issues of poor self-esteem, negative self-image, and perfectionism (Jones & Morgan, 2010; Leone, Sedory, & Gray, 2005).

4. Method

In this interventional pilot study a sample of undergraduate baccalaureate nursing students (n=88) responded to a survey that examined accurate understanding and identification of manifestations of MD. The sample participants were given an initial survey followed by a brief educational component and a post examination to determine participants’ understanding of the clinical manifestations of the disorder. The educational intervention consisted of a description of current research on MD including history of the disorder, patterns of behavior related to MD, population affected, and health concerns associated with MD. The responses provided information on students’ existing knowledge base and whether they are currently prepared to recognize and refer individuals with and at risk for MD.

Prior to implementing this study investigators received Institutional Review Board approval from the cooperating university. All subjects were provided informed consent to participate in the study, which had received approval from the Office of Human Research Ethics. Inclusion criteria included current enrollment in the university undergraduate baccalaureate program, age over 18 years, entry into the nursing profession in the next three years or less, and experience or anticipated experience in the clinical setting.

5. Data Collection

A survey was electronically disseminated to students via email from a large southeastern university’s list serve of undergraduates enrolled in the baccalaureate nursing program. An interventional study design was used to examine responses from this sample population. The data from this project was stored on a secure, password protected network.

A statement explaining informed consent was provided in English in both the initial email to participants as well as on the first page of the survey. Informed consent was obtained prior to data collection and participants were given the option to withdraw from the survey at any time. Participants were notified that responses were voluntary and that participation would not affect class standing or university grades. There were no inducements, monetary or non-monetary, to participate in this study.

Participants were provided with a description of the research (including purpose, rationale, inclusion criteria,

benefits, risks, and information on implied consent). A link was provided in the email should subjects opt to participate in the survey. Submission of the completed survey served as implied consent to participate. Participants were emailed on three separate occasions spanning the time period of one month informing them of their invitation to participate in the study; this included a second reminder email sent two weeks after the initial email and a final reminder email sent one week after the second reminder email.

The first part of the survey consisted of eight quantitative questions that provided multiple item selections where participants were asked to either choose one or all that applied. Questions 1 through 4 served to establish demographic data. Questions 5 -8, stated below, assessed general background knowledge of MD and participant ability to recognize symptoms of MD.

-Are you familiar with Muscle Dysmorphia?

-Based on your current knowledge of MD, do you know who is at highest risk for this disorder?

-Based on your current knowledge of MD, how would you classify the disorder?

-Based on your current knowledge of MD, what risk factors do you believe individuals with MD face?

After answering these questions, participants reviewed an educational intervention that included a brief 300 word document discussing Muscle Dysmorphia as a psychological disorder, its symptoms and clinical presentation, psychosocial consequences, classification, and societal influence.

The last portion of the survey was provided after participants reviewed the educational intervention and included four questions as a reassessment of participant knowledge of DM. The questions, included below, sought to assess participants' general knowledge of MD and their ability to recognize symptoms after an educational intervention. These quantitative questions were presented as multiple item selections where participants were asked to either choose one or all that applied.

-Do you feel that you understand the concept of MD?

-Based on what you have learned about DM, who do you believe to be the highest risk for this disorder?

-Based on what you have just learned about DM, how would you classify the disorder?

-Please select clinical signs and symptoms that would alert you as a clinician that an individual may be at risk for MD?

Survey results were collected over a month period through a secure online website. Data was analyzed using SPSS Version 17.0 computer software. Descriptive statistics in the form of frequency tables were used to analyze all categorical quantitative questions. Responses to questions before and

after the education intervention were categorized into two values (e.g. understood or not) and compared using McNemar's test ($\alpha < 0.05$) to assess significance (statistical significance $p < 0.05$) of changes in those responses over time.

6. Findings

Of the 376 students enrolled in the undergraduate baccalaureate nursing program, 88 students responded to the survey in part or whole for a partial response rate of 23.4%. 82 students responded to all 12 quantitative questions for a completed survey response rate of 21.8%.

Of those who participated in the study, approximately half were receiving their first degree (53.4%) and the other half had already earned a degree (46.6%). Most of the students who completed the survey had been enrolled in the baccalaureate program for three to five semesters ($M = 3.87$) and had completed three or more clinical rotations ($M = 3.65$). Approximately two-thirds of participants (63.6%) had previously completed the program's psychiatric nursing course, which includes a clinical component.

Before the educational intervention, a 300 word description of Muscle Dysmorphia, only 27.9% of participants claimed to be familiar with the term 'Muscle Dysmorphia'. 48.8% of participants were not familiar with the term, and 23.3% were unsure. After the brief educational intervention, 91.5% of participants stated they understood the term 'Muscle Dysmorphia'. Only 1.2% reported they did not understand, and 7.3% of participants were unsure. The difference in self-reported awareness of MD improved by over 63% post-intervention. The impact of the educational intervention is statistically significant for a difference in the number of subjects who answered that they understood the concept of MD, with $p < 0.001$ as determined by McNemar's test ($\alpha < 0.05$), statistical significance $p < 0.05$).

Before the educational intervention 65.1% of participants correctly identified the population at highest risk for Muscle Dysmorphia (males). After the educational intervention, 97.6% of participants correctly identified males as the highest risk population. The difference in identification of the at-risk population is statistically significant with $p < 0.001$.

No significant change ($p = 0.405$) occurred in identification of classification of the disorder before and after the intervention. Table 6.1 provides survey results of participant identification of clinical symptoms of MD before and after the educational intervention.

Table 6.1. Participant identification of symptoms before and after educational intervention

Clinical Symptoms	Correct Identification; Pre-Intervention*	Correct Identification; Post-Intervention*	p-values**
Steroid use	52.3	88.4	<.001
Cardiac complications	55.7	61.6	.607
Renal Complications	37.5	62.8	.001
Low self esteem	80.7	84.9	.839
Disrupted psychosocial pattern	71.6	excess hours at gym = 93.0	<.001
		focus toward fitness= 82.6	.152
		social avoidance= 61.6	.134
Disrupted body image	93.2	excess muscle mass = 72.1	<.001
		discomfort disrobing= 75.5	<.001
*% participants			
** Note: determined by McNemar's Test; statistical significance noted as $p < .05$			

7. Discussion

Less than one-third of study participants expressed familiarity with MD before educational intervention, indicating a low awareness of this disorder. Educational intervention is promising, however, based on how a brief 300 word intervention showed a significant improvement in self-reported understanding of MD. Identification of the population at highest risk also improved significantly with educational intervention.

No significant change occurred in identification of classification of the disorder before and after the intervention. Additionally, research data illustrated that association of Muscle Dysmorphia with disrupted body image (initially identified by most participants as a risk factor) decreased after educational intervention. This suggests that confusion related to the classification of this disorder may exist.

The survey sought to determine how the educational intervention would affect subjects' ability to identify clinical symptoms of Muscle Dysmorphia. In this sample there was inconsistent improvement in identification of clinical symptoms following an educational intervention.

8. Limitations and Areas for Future Research

This research study's sample size was limited to one group of undergraduate nursing students at a large southeastern university. Although the results are promising as far as increased awareness of the disorder, replicating this pilot study at additional schools of nursing would serve to increase the study's external validity and generalizability of the results. The results collected from this group of students suggest that reproducing the study could provide needed direction on this area of study. A control group could be used in future studies to investigate internal validity of the study.

This study sampled a group of baccalaureate nursing students because the population is one that will soon enter the clinical arena and may encounter individuals with MD. Additional research could investigate other sample

populations that currently encounter or may encounter individuals with MD, such as nurses, physicians, and medical students; a multi-disciplinary awareness of this disorder will improve recognition and the potential for appropriate treatment.

An additional limitation to this project was that the educational component relied heavily on short term responses and lacked follow up to determine the long term effectiveness of the educational intervention. Retesting knowledge after longer intervals (i.e. one week, one month, and one year) could determine if the intervention had a lasting impact or whether reinforcement of the educational material is needed.

In this study no significant change occurred before and after intervention with respect to identification of disorder classification, suggesting that confusion may exist related to disorder classification. This suggests an area of additional research as MD is not currently included in the DSM-IV and discussion of it as a BDD versus ED exists.

In this sample there was inconsistent improvement in identification of clinical symptoms following an educational intervention. This inconsistency could be due to a number of factors including weaknesses in the study instrument and study design. Additional research may identify causes for the inconsistency and may provide insight into the perception of this disorders' clinical presentation.

9. Significance and Relevance to Health

This topic serves as an important area of research in that clinicians may not recognize the disorder because many men with MD often maintain a healthy outward appearance and are largely under-diagnosed and under-treated. Recognition of this disorder is important due to the serious health implications, both physical and psychosocial, associated with the behaviors that are characteristic of this disorder. It is important that research continues to examine not only those affected with Muscle Dysmorphia, but also the clinicians who are held responsible for their care. Clinicians need to be able to appropriately recognize and diagnose this disorder so

that individuals can receive the referrals and resources they need. This study suggests that education can positively impact awareness of MD. Nursing and health care professions may benefit from a curriculum that includes education on emerging disorders such as MD. A larger study involving a more in-depth educational component for clinicians with direct interaction with individuals at risk for Muscle Dysmorphia may be a promising next step in bridging the gap between disorder identification and appropriate intervention.

The findings from this study may benefit nursing students and clinicians in the future by identifying the potential for increased awareness and education about this emerging disorder. Appropriate clinician and student awareness and education may potentially improve recognition, referral, and treatment of Muscle Dysmorphia, therefore benefiting individuals who are at risk for or who need appropriate intervention for this disorder.

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