Genital Image, Sexual Anxiety, and Erectile Dysfunction Among Young Male Military Personnel

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DOI: 10.1111/jsm.12880

ABSTRACT

Introduction. More than a third of young military personnel report experiencing some level of erectile dysfunction (ED). Preoccupation with body image, particularly genitals, is a distraction that can influence sexual anxiety (SA) and sexual functioning problems (SFPs), particularly ED.

Aims. This study assessed the relationships between male genital self-image (MGSI), SA, and ED in a sample of male military personnel age 40 or younger.

Methods. Data were from a larger study on SFPs in military populations. This sample consisted of 367 male military personnel age 40 or younger. Hierarchical regression analyses and process modeling using mediation analysis were performed to examine the effects of MGSI on ED with SA as an intermediate variable. We predicted that SA would mediate the relationship between MGSI and ED.

Main Outcome Measures. ED severity was assessed with the International Index of Erectile Function. MGSI was assessed using the MGSI Scale. SA was assessed with the SA subscale of the Sexual Needs Scale.

Results. As hypothesized, greater satisfaction with MGSI was predictive of significantly lower SA (F[8, 352] = 4.07, P = 0.001) and lower ED (F[8, 352] = 13.20, P = 0.001). Lower levels of SA were predictive of lower levels of ED (F[8, 354] = 21.35, P < 0.001). Additionally, results also revealed a significant indirect effect of MGSI on ED through SA (b = −0.07, standard error = 0.03, confidence interval = [−0.14,−0.02], P < 0.05), indicating mediation of MGSI on ED via SA.

Conclusions. This study underscores the complex etiologic basis of SFPs, particularly ED, and highlights the importance of considering psychologic contributors to ED, such as SA and MGSI. Strategies aimed at reducing SA may be useful in improving ED in young military populations and are worth considering as complements to strategies that improve SFPs. Wilcox SL, Redmond S, and Davis TL. Genital image, sexual anxiety, and erectile dysfunction among young male military personnel. J Sex Med **;**:**–**.

Key Words. Erectile Dysfunction; Genital Self-Image; Military Personnel; Sexual Anxiety; Sexual Dysfunction
ED is a complex problem that can have both physical and psychologic etiologies. Although the physical factors that lead to ED have promising treatments [5], the psychologic factors associated with ED are multifaceted and require more research. Military populations are particularly vulnerable to ED and other SFPs because of various potential risk factors, including exposure to trauma, immersion in a masculine culture, and high daily performance demands [6–11]. The military is also a competitive, male-dominated environment that emphasizes physical fitness and appearance. These factors have the potential to affect body and genital image perceptions and satisfaction.

**Perceptions of the Self, Sexual Anxiety (SA), and SFPs**

Recent research has suggested that negative body image perceptions and SA can increase the risk of various SFPs [12–15]. Body image is a multifaceted phenomenon that involves self-evaluation of one’s body and the relative importance of one’s appearance [16,17]. In recent years, the importance of physical appearance has become more comparable for both genders [18]. Although the majority of research on body image has focused on women, recent research has documented that men are also vulnerable to experiencing dissatisfaction with their body and physical appearance [19–22].

Men and women focus on their unique gender-relevant physical characteristics that affect overall body image satisfaction [17,23]. For men, evaluation of body image often incorporates various parts of the body, including genitals, which is a focus area for self-consciousness [23]. In fact, many men place great importance on their genitals as part of their overall body image satisfaction [12,13]. Although research has indicated that the majority of men report dissatisfaction with their penis size [13], genital image satisfaction goes beyond penis size and few studies have taken into account other aspects of genital self-image [12]. Specifically, genital self-image should also incorporate appearance of genitals, genital functioning, and comfort level when genitals are seen by health-care providers and sexual partners [24].

Perceptions of body image and genital self-image can negatively affect the ability to be physically intimate. Perceptions of the genitals are closely connected to comfort with body image and are related to SFPs [15,17,22]. For example, Cash and colleagues [23] found that more anxious or avoidant body image is associated with less positive sexual functioning. Early research has indicated that individuals with a more positive perception of their genitals, particularly penis size, are more likely to report experiencing more sexual activity enjoyment and more favorable sexual functioning [25]. Similar research with college students found that participants with positive genital self-image and positive perceptions of their partners’ genitals engaged in more frequent and enjoyable sexual activities [26]. Moreover, recent research has focused on the impact of overall body image on sexual functioning and found that body image satisfaction can influence quality of sexual life [15,17,22]. However, it is still important to specifically consider the relationship between genital self-image and sexual quality of life.

Genital self-image is associated with SA. Specifically, individuals with low genital self-image experience greater SA and subsequently greater sexual dysfunction [27]. Not surprisingly, general body satisfaction is negatively associated with anxiety about exposing parts of the body during sexual activity [27]. Early research has suggested the importance of SA as a predisposing factor for sexual dysfunction in men [28].

Overall, research has suggested important effects of genital self-image and SA on sexual functioning. Despite the prevalence of SFPs in military populations, most of the research in this area has focused on college populations. This is the first known study to assess genital self-image, SA, and ED in a young military population. This study focused on the psychologic factors that predict ED in military personnel, specifically genital image and SA. This study focused on young military personnel because of this group’s high rate of reported SFPs and exposure to risk factors [2].

**Aims**

The primary aim of this study was to examine the relationship of SA with male genital self-image (MGSI) and ED in a sample of military personnel and to explore the potential mediating effect of SA. To this end, we specifically tested the following hypotheses:

**Hypothesis 1.** Greater satisfaction with MGSI will be predictive of lower levels of (i) SA and (ii) ED.

**Hypothesis 2.** Lower levels of SA will be predictive of lower levels of ED.

**Hypothesis 3.** SA will mediate the effect of MGSI on ED.
Methods

Data Source
This exploratory study used data from a larger, nationwide study on SFPs in military populations age 40 or younger, the Sexual Functioning Survey [2]. Individuals were eligible to participate in the study if they were a military service member or veteran age 40 or younger. Data were collected online between October 2013 and November 2013. Information regarding the study, which included an embedded hyperlink to the online survey, was available from the study website and social media campaign. The survey was confidential and took an average of 30 minutes to complete. Informed consent was collected online at the beginning of each survey. Respondents received a $25 gift card as compensation. Additional study details can be found elsewhere [2]. The current study was approved by the University of Southern California Institutional Review Board.

Participants
This sample consisted of 367 male military personnel aged 21–40 years, representing all branches of service: 3.5% (n = 13) Air Force, 68.9% (n = 253) Army, 8.2% (n = 30) Marine Corps, 3.8% (n = 14) Navy, 0.8% (n = 3) Coast Guard, and 14.7% (n = 54) National Guard. The sample’s demographic characteristics were similar to active duty members, although participants were slightly more educated [29]. Most participants (80.0%, n = 296) completed at least one deployment lasting 30 days or longer. The average age of the sample was 31.43 years (standard deviation [SD] = 3.91, range = 21–40). The majority of the sample was married (73.7%, n = 269), had completed a college degree or higher (73.8%, n = 271), and was White (66%, n = 241). Nearly all participants (98.6%, n = 362) were heterosexual and 93.2% (n = 342) reported on sexual relationships involving intercourse.

Main Outcome Measures
The following items were measured using single items: age, marital status, education, race, sexual orientation, number of deployments, and type of sexual activity (sexual activity involving intercourse or sexual activity not involving intercourse).

ED severity was assessed with the International Index of Erectile Function (IIEF-5) [30]. Items assessed the participant’s confidence to get and maintain an erection, frequency that an erection was hard enough for penetration, frequency that an erection was maintained after penetration, difficulty maintaining an erection to completion of intercourse, and satisfaction with sexual intercourse. Lower scores indicate more severe ED. The IIEF-5 had high internal consistency (α = 0.88) in previous research [30] and this sample (α = 0.86) [2].

MGSI was assessed using the MGSI Scale (MGSIS) [24]. The MGSIS consists of seven items referring to features of male genitals rated on a 4-point scale where 1 = strongly disagree and 4 = strongly agree. Items include overall satisfaction with genitals, satisfaction with appearance of genitals, comfort letting sexual partner look at genitals, satisfaction with size of genitals, perceptions of genital functioning, comfort letting a health-care provider examine genitals, and embarrassment about genitals [24]. Higher scores indicate more positive genital self-image. The MGSIS had high internal consistency (α = 0.70–.89) in previous research [24] and in this sample (α = 0.83).

SA was assessed with the SA subscale of the Sexual Needs Scale (SNS) [14]. The SNS has been previously validated in adult samples of men and women [14]. The SA subscale of the SNS consists of eight items rated on a 5-point scale, with higher scores indicating more severe SA. Items assessed worrying about performance, inhibition about sex, comfort with sexuality, confidence in sexual attractiveness, and anxiety during sexual activities. The SA subscale of the SNS had high internal consistency in previous research (α = 0.81) [14] and adequate consistency in this study (α = 0.68).

Because sexual activity does not necessarily involve intercourse, but may involve other intimate, non-penetrative activities, participants selected whether or not they were referring to relationships involving or not involving intercourse. Additionally, participants who were not currently sexually active reported on their previous sexual relationships and activities.

Statistic Analyses
Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 22 (SPSS, Inc., Chicago, IL, USA). Descriptive and correlation analyses were preformed to evaluate relationships among variables and to obtain sample characteristics. Hierarchical linear regression models were computed to investigate how well MGSI predicted SA and ED (Hypothesis 1) and to investigate how well SA predicted ED (Hypothesis 2). Finally, process modeling using mediation

J Sex Med **,**,**. **–**
analysis was performed to examine the effects of MGSI on ED with SA as an intermediate variable and each of the specific variable relationships [31]. We predicted that SA would mediate the relationship between MGSI and ED. All analyses controlled for demographics (i.e., age, marital status, education, and race), sexual orientation, number of deployments, and type of sexual activity (sexual activity involving or not involving intercourse).

Results

Means, SDs, and correlations of primary study variables are presented in Table 1. Correlation analyses indicated that SA had a moderate positive correlation with ED ($r = 0.36$, $P < 0.001$) and a modest, but significant negative correlation with MGSI ($r = -0.18$, $P < 0.001$). Correlation analyses also indicated a modest, but significant negative correlation between MGSI and ED ($r = -0.18$, $P < 0.001$).

MGSI and SA, ED (Hypothesis 1)

Hierarchical linear regression was conducted to investigate how well MGSI predicted SA. The results were statistically significant for the entire group of variables, $F(8, 352) = 4.07$, $P = 0.001$. The adjusted $R^2$ value was 0.06, indicating 6% of the variance in MGSI was explained by SA, a small effect [32]. Overall, more positive MGSI predicted lower levels of SA, supporting Hypothesis 1a. Hierarchical linear regression was also conducted to investigate how well MGSI predicted ED. The results were statistically significant for the entire group of variables, $F(8, 354) = 13.20$, $P = 0.001$. The adjusted $R^2$ value was 0.23, indicating 23% of the variance in MGSI was explained by ED, a small to medium effect [32]. Overall, participants with more positive MGSI reported significantly lower ED, supporting Hypothesis 1b.

SA and ED (Hypothesis 2)

Hypothesis 2 was evaluated using hierarchical linear regression to investigate how well SA pre-

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*P < 0.05, **P < 0.01.
value was 0.31, indicating 31% of the variance in SA was explained by ED, a medium effect [32]. Overall, SA significantly predicted ED, supporting Hypothesis 2.

MGSI, SA, and ED (Hypothesis 3) Participants were categorized into two groups according to ED symptomatology (no ED symptoms or ED symptoms); 122 (33.2%) reported a history of ED symptomatology and 245 (66.8%) reported no history of ED symptomatology. To test the mediating effects of SA, we used the PROCESS Mediation Model 4 [31]. Specifically, a bootstrapping procedure with 1000 bootstrap samples was conducted with MGSI as the independent variable, SA as the mediating variable, and ED as the dependent variable. Results revealed significant direct effects of MGSI on ED (b = −0.11, standard error [SE] = 0.05, confidence interval [CI] = [−0.20, −0.02], P < 0.05) and SA (b = −0.22, SE = 0.06, CI = [−0.34, −0.11], P < 0.001) and a significant direct effect of SA on ED (b = 0.30, SE = 0.05, CI = [0.21, 0.40], P < 0.001). Results also revealed a significant indirect effect of MGSI on ED through SA (b = −0.07, SE = 0.03, CI = [−0.14, −0.02], P < 0.05) and a significant total effect of MGSI on ED (b = −0.13, SE = 0.04, CI = [−0.22, −0.05], P < 0.05). These results support Hypothesis 3. Figure 1 features the regression results of the mediation model.

Discussion In this study, we sought to investigate SA as a mediator of MGSI and ED among young military personnel. The present study was among the first known to evaluate the mediating relationships of SA on MGSI and ED in young military personnel. Overall, results supported all three hypotheses. First, more positive MGSI was associated with lower SA and lower ED, which is consistent with prior research conducted in this area [12,13,23]. These significant relationships suggest that self-image, particularly genital self-image, affects sexual functioning. This provides context for potential factors that can contribute to ED and suggests that even young male military personnel are at risk of low self-perceptions and ED.

Results also supported our hypothesis that SA predicts ED in young military personnel. This finding supports the perspective that anxiety, particularly SA, can affect sexual functioning [27]. The combined findings from Hypotheses 1 and 2 provided encouraging support to investigate Hypothesis 3 and evaluate SA as a mediator.

Hypothesis 3 was also supported, suggesting that experiencing lower levels of genital self-image can trigger involuntary effects on ED through SA. These findings are similar to research on cognitive distraction and sexual functioning. Specifically, dissatisfaction with genital image appears to contribute to SFPs (e.g., ED) through SA. Research has proposed that fewer psychologic resources are available to focus on sexual functioning when mental energy is depleted by monitoring one’s body [18,33]. Men who are dissatisfied with their genitals may experience greater distraction during sex, increasing SA, and thus reducing functioning, which is consistent with previous findings [34,35].
Other research has also indicated that worries that result from bodily appearance, such as SA, can reduce sexual performance [35–37].

This study raises awareness of the complexities associated with erectile functioning. Although there are known factors that directly contribute to erectile functioning, there are many other indirect factors that can trigger ED. Moreover, this study underscores the complex etiologic basis for SFPs and highlights the importance of considering psychologic contributors to SFPs, such as SA and MGSI. Individuals with ED may benefit from psychologic interventions to address MGSI and SA. Thus, although genital self-image and SA both play a role in SFPs, there is much occurring at the individual level that determines how a particular case of ED is influenced by MGSI, SA, or both.

From a clinical perspective, these results suggest that treatments and interventions for ED related to negative satisfaction with one’s genitals should facilitate reducing SA. Moreover, although genital image dissatisfaction may directly interfere with sexual performance by serving as a distracter, it is important to acknowledge that each sexual experience does not exist in isolation in the individual’s mind. Individuals create sexual self-schemas, which are described as general thoughts about the sexual parts of the self based on previous experiences that affect present experiences [38]. These schema have an effect on how pertinent social information of a sexual nature is processed and serve as a guide for sexual actions [23]. Based on this concept, it’s likely that sexual experiences during which someone is distracted or worried about their body can set a trajectory of chronic SFPs, because these experiences may become internalized and interfere with future sexual functioning. With sexual self-schema in mind, individuals may engage in “spectatoring” [39], which occurs during sex when an individual is preoccupied with their personal performance and appearance, thus limiting erotic stimuli and sexual pleasure [40]. Spectatoring arises as a result of discrepancies between sexual desires and performance, which leads individuals to become anxious and worry about their perceived SFP [40]. Thus, individuals dissatisfied with their genitals and having trouble paying attention to arousal cues during sex might incorporate these experiences into their sexual self-schema and develop SA that leads to engagement in spectatoring during future sexual performance. However, research has noted that spectatoring can influence both sexual functioning and enjoyment, leading to SA, low genital image satisfaction, embarrassment, and frustration [40], thus establishing a vicious cycle with preoccupation with sexual performance leading to SFPs that exacerbate concerns about sexual performance.

An important caveat is that feelings of anxiety alone do not necessarily produce SFPs. Instead, it appears that SA contributes to SFPs when individuals have negative perceptions of their body, particularly their genitals. One ED model has suggested that how anxiety and thoughts interact determines whether erectile issues or proper erection occurs [41,42]. When sexual performance demands are made, individuals who feel competent in their ability to perform will pay attention to erotic cues and become more aroused [43]. However, those who fear they cannot sexually perform competently will pay more attention to this concern as opposed to erotic cues, which will lead to poor performance [42]. This highlights the need to carefully consider multiple factors in conjunction with one another and what they mean to the specific individual to understand their implications for SFPs.

An important clinical and policy-related consideration is insurance coverage of ED. Despite the high prevalence of ED in military populations, there is a lack of widely available treatment for ED within both military and civilian health-care systems, particularly for ED occurring as a result of psychologic factors [44]. Service members covered under the military TRICARE health-care program may be eligible to receive specific medication (up to six tablets per month) for ED of organic, mixed organic and psychogenic, or medication-induced origin, but not for ED of only psychogenic origin [45]. Civilian health-care coverage typically exhibits similar limitations and restrictions. Thus, this barrier to care can limit availability of treatment options for both military and civilian populations experiencing ED. Future research and policy initiatives should further investigate ways to expand coverage and remove barriers to ED treatment for military personnel. It is possible that to indirectly treat ED of psychogenic origin and maintain insurance coverage eligibility, clinicians should consider treating the contributing factors, such as MGSI or SA, among others.

This study is not without limitations. These data were self-reported and cross-sectional. Self-reports of SFPs are subject to underreporting biases related to stigmatization. Additionally, this
sample consisted of young military personnel. Although this is a problem that exists in younger samples, it may also be relevant to older groups of military personnel, who present higher risks of ED because of the severity of ED increasing with age [2]. Another limitation and area for future research is that other factors are likely playing a role and fertility, relationship distress, and other variables should be included in future models. For instance, the military places stress on military families marital relationships, which can impact ED and sexual functioning [2,6,8,11]. It is also important to note that SFPs, genital self-image, and SA are not necessarily concerns that are unique to male military personnel. While women were not excluded from the overall study, few female service members or veterans elected to participate. Future research should consider evaluating this model in female military populations. Finally, this sample was a military sample, and results may be less generalizable to civilian populations. Although the military is a select subset of the overall population, its members have increased exposure to risk factors, which places them at risk of various health-related outcomes. However, the concepts presented in this article are generalizable to civilian populations and further research in this area should be conducted in both military and civilian populations. It is also important to note that this study presents one theoretic model and there are likely other factors involved that further explain ED, particular ED of psychogenic origin.

Conclusions

This study underscores the complex etiologic basis for SFPs, specifically ED, and highlights the importance of considering psychologic contributors to ED, such as SA and MGSI. Individuals with ED may benefit from psychologic interventions to address MGSI and SA. Furthermore, interventions addressing MGSI and SA may also be preventive. Strategies aimed at reducing SA may be useful in improving ED in young military populations and are worth considering as complements to strategies that improve sexual functioning. Psychotherapy may be an important tool for young men who are dissatisfied with their genitals. Negative thought counteraction and confidence building may be aided by cognitive behavioral therapies for individuals with a small penis or perceptions that they have a small penis [46]. By targeting cognitions related to genital image and SA, more invasive and expensive treatments for ED (e.g., penile augmentation) may be avoided. In one sample, despite being able to receive surgery for penile augmentation free of charge, only 3.6% decided to undergo surgical intervention whereas 96.4% indicated that concerns pertaining to the size of their penis went away after undergoing a “structured management and counseling protocol” [47]. Not only is psychologic intervention less costly and invasive, but psychologic interventions may actually have better outcomes when it is the individual’s thoughts that are producing negative genital self-image and SA as opposed to an abnormality of the penis. Research has noted that a surgery achieving the greatest success may still result in a dissatisfied patient if the psychologic factors prompting the surgery drive dissatisfaction with surgical results [43].

Our study demonstrates the need for clinicians interacting with young military personnel presenting with erectile functioning problems to be thorough in their assessment. After considering organic etiology, clinicians should consider psychogenic factors. Health-care providers should also consider genital image concerns and SA to determine whether psychologic intervention may be a better course of treatment, if an organic cause is not found. More generally, we hope our findings call attention to the fact that genital image concern and SA are issues that affect young men and can lead to ED and other SFPs. We hope the research community recognizes the need for more research on the relationship between body image and SA as it relates to ED in young men, as it has become clear that body image is not only an issue for women. As a better understanding of the psychologic nature of SFPs in young men is acquired, the dialog on treating ED and other SFPs will hopefully be improved.

Acknowledgment

This work was supported by a grant from the Iraq Afghanistan Deployment Impact Fund through the California Community Foundation.

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Conflict of Interest: The author(s) report no conflicts of interest.

J Sex Med **,**,**,** **
Statement of Authorship

Category 1

(a) Conception and Design
Sherrie L. Wilcox; Sarah Redmond; Teanie L. Davis

(b) Acquisition of Data
Sherrie L. Wilcox

(c) Analysis and Interpretation of Data
Sherrie L. Wilcox; Sarah Redmond; Teanie L. Davis

Category 2

(a) Drafting the Article
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(b) Revising It for Intellectual Content
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Category 3

(a) Final Approval of the Completed Article
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References