A Scale Development for Assessing the Drive for Muscularity among Pakistani Bodybuilders

Umaiza Bashir[1] ,Sadia Rehman[2]

Abstract

Objective: The study was devised to develop the indigenous scale of drive for muscularity among Pakistani bodybuilders

Method: To explore the manifestation of drive for muscularity phenomenological approach was used, in which open ended question was asked from the 35 gym user men from different gyms. A list of the 28 most frequently reported items after initial screening was generated. For empirical validation four expert coaches of the gym were approached and then pilot study was administered. In main study 211 bodybuilders were included for test the psychometric properties of indigenous scale.

Results: Based on Eigen value > 1, the 26 items were extracted. Exploratory factor analysis revealed 2 factors of developed scale. The descriptive label was assigned to each factor based on commonality of items termed as "muscle enhancing behaviors" and "thoughts and desires" related muscular body. A significant positive correlation was found between Drive for Muscularity Inventory and Drive for Muscularity Scale. Drive for Muscularity Inventory was also found to be a valid and reliable scale (test-retest reliability =0.82 and split half reliability = 0.87) with acceptable psychometric properties.

Conclusion: Indigenous developed Drive for muscularity scale found to have high internal consistency, construct validity, split-half reliability, and test–retest reliability.

Keywords*:* Drive for muscularity, Bodybuilders, Reliability, Validity

IRB: Approved by institutional review Board of university of managemnet and technology, School of Professional Psychology. Ref # ICPY/20/173. dated: 24th July 2017.

Citation: Bashir U, Rehman S. A Scale Development for Assessing the Drive for Muscularity among Pakistani Bodybuilders [Online]. Annals ASH & KMDC 2023;28

(ASH & KMDC 28(2):67;2023

Introduction

In the 21st century, men are also having dialogue like women with themselves of 'Mirror, mirror on the wall tell me: Is my physique prefect? Woman's ideal physique is proportional to have a wish of zero figures, whereas men consider the "V" shaped and muscular body: alike a well-developed broad chest, muscular arms, a narrow-shaped waist and wide shoulders as an ideal physique. This is reflecting to men's drive for muscularity. The term drive for muscularity' described as an individual's wish or desire to become more muscular[1] by adapting the different behaviors such as weightlifting, consuming muscle enhancing drugs and dietary restrictions[1]. These behavioral acts are the result of changing in their thoughts and attitudes towards their appearance, this inseminated by society, especially the media[2].

These trends of drive for muscularity are heightening with media's demands and representation of males on screens, which is giving rise to a str-ong desire of looking like a model who strut the ramp by displaying their six packs. Media epitom-

[1-2] Department of Clinical Psychology,
University of Management and Technology (UMT)

Correspondence: Umaiza Bashir
Department of Clinical Psychology,
University of Management and Technology (UMT)
Email: umaiza.bashir@umt.edu.pk

Date of Submission: 23rd August 2021
Date of Acceptance: 29th may 2023

es to establish an ideal muscular body is intimately not possible for most men to achieve realistically and in healthily manner. In result, media's inimical effect on body dissatisfaction is leading the men in the dark hours of sadness[3] and making the men a victim of the psychological for meeting the social-cultural standards of the ideal physique[4].

The study conducted in America revealed that the percentage of men have been tripled from the previous 25 years of being not satisfied with their overall appearance and the percentage of those men same as the women who are not happy about their looks[5]. In the desire of having a muscular body, some individuals are involved in different maladaptive behavioral acts of weightlifting, dietary restrictions and consuming muscle enhancing drugs. The increment in the frequency and intensity of those behavioral acts and attitude towards their body is reversely proportional to the symptomatic characteristics of a psychological disorder, and those with muscle dysmorphia disorder[6]. Muscle dysmorphia disorder is a newly added subtype of the body dysmorphia disorder in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V). It's described as an obsessive preoccupation with leanness and leanness due to fear of too small, and this fear led to the behaviors of compulsive weightlifting and dietary restraint[7]. Reported by American Psychiatric Association (APA) this newly recognized type of bodily dysmorphic disorder is the most severe form of body image disturbance and exclusively seen in men population, also known as "Reverse anorexia" or "Bigorexia. Reported by British Broadcasting Corporation (**BBC) Newsbeat that one in 10 men in the gyms of the UK suffer with bigorexia and this** condition can lead them to steroid use, depression, and even suicidal attempts[8]. The prevalence of dissatisfaction with the body image is get-ting highly increase with the passage of time in men[9].

Thence, the drive for muscularity has been considered as a risk factor for the development of muscular dysmorphia (10). To understand the risk of muscle dysmorphia, it's important to study the drive for muscularity in the body builders. The drive for muscularity has been keyed as a precursor or a risk factor for the development of muscle dysmorphia[11]. The level of severity of drive for muscularity could give us the clear understanding between the normality and abnormality in respect to know the muscle dysmorphia[12] and play an essential role in predicting the sign of muscle dysmorphia in individuals[13].

In this regard, a number of extensive researches has been conducted throughout the world. The systematic review of 52 studies was also carried between 2000 and 2012 on the drive for muscularity but among those only four studies assessed the drive for muscularity in the weight training population[14]. For this purpose, the Drive for Muscularity Scale (DMS), 15 items based scale with well-developed psychometric properties use to measure people's drive to be muscular in western culture[1].

Unfortunately, there has not been any single literature present to understand the drive for muscularity in the Pakistani cultural context. Despite knowing the fact, that the Pakistani bodybuilders are not behind the other men of the world who have been tangled in the cages of the gym. As the news about the death of four bodybuilders due to the consumption of the steroids[15], is probably signalizing to the existence of a stronger drive for muscularity. Such news about the use of steroids by Pakistani men is giving evidence about the presence of drive for muscularity in Pakistani men. For this reason, the aim of the study devised was to conduct a culturally valid and psychometrically developed tool to deem an important cultural meaning of the psychological concept and construct of the drive for muscularity.

The aim of present study to develop an indigenous scale to understand the phenomenon of drive for muscularity in Pakistani gym users. Obje-ctives of the current study are to explore the phenomenology to know the manifestation and expression of drive for muscularity, to understand the experiences of different behaviors, attitudes and feelings related to drive for muscularity, to develop a culturally appropriate self-report measure for male population, to

establish the psychometric properties of the indigenously developed scale.

Subjects and Methods

The scale was developed in five phase. In this research qualitative researches phenomenological approach was used, which is one of the strategies to rule out the experiences, thoughts, and beliefs about the drive of muscularity for that purse in-depth interviews are done to understand the phenomena[16].

In the first phase of scale development the exploration of the phenomenology about the drive for muscularity was carried out by asking the open-ended question from the male gym users. For exploring the phenomenology, the 35 gym user men were recruited over a period of 1 month from the different gyms and fitness centers of the Lahore. Purposively sampling technique was used in which the gym user men who have been going gyms from last 6 month were included. Male less than age 18 years were excluded.

A list of 71 verbatim was prepared from the 35 participants. All those items that were ambiguous, overlapping, dubious, vague, and undecipherable were commingled by keeping close to their original connotations and intensions. The items that were noted idiosyncratic or slang were also excluded. Eventually, the final list of 28 items was collated which was named as Drive for Muscularity Inventory (DMI).

After the generalization of 28 items, the final list of 28 items of DMI was converted into the rating scale with the help of 4 expert gym coaches by taking their empirical validation. The purpose of the study was to be well informed to 4 expert gym coaches. All coaches had a minimum of more than 3 years of experience in giving the training to the bodybuilders in the gym. Later, they were asked to rate each of the 28 items on a 4- point rating scale ranging from 0 = “not at all” to 4 = “very much” for their frequency of occurrence in males with having the drive for muscularity. At the end of this phase, the league table was prepared with the purpose of empirical validation. For this purpose, all the items were listed in descending order of frequency of occurrence which rated by the experts. It was decided the items getting less 20 % average score were omitted from the final list. There was no single item scored less than 20 % from the final list of 28 items. A final list of 28 items were retained and used for further psychometric properties in phase IV.

This retained 28 items-based rating scale was piloted on 35 bodybuilders for readability, and to test the layout of the scale. The wordings of 28 items were much clearer and concise to the participants. Hence, there was no single item excluded from the scale. Finally, the 28 items were retained to administer on 211 bodybuilders for the further psychometric properties.

In this phase, the factorial structure, reliability, and validity of the 28 finalized statements which are named DMI was established. The non-random purposive sampling strategy was used to select the sample. The 211 male body builders were recruited around the different gyms of Lahore under the exclusion criteria of not showing any involvement in the bodybuilding competition (Table 1). The participants were selected by keeping the feasibility factor into account in the study. The mean age of the sample was 26.25 (*SD* = 5.946).

The culturally developed indigenous scale DMI was used to measure the drive for muscularity. The DMI is a self-report measure based on the four pointing rating such as ‘Never’, ‘Rarely’, ‘To Some Extent’ and ‘Often’.

The Drive for Muscularity Scale is a six-point Likert-type rating scale from 1 (Always) to 6 (Never), which consists of 15-items and based on the reverse-direction scoring procedure (15). It’s only a single scale to measure people’s drive to be muscular with well-developed psychometric properties. For establishing the concurrent validity of DM-S, Urdu translated version DMS was used

The study was carried out after getting the approval from the Institutional Graduated Committee (IGC) and on granting the authors’ permission for using the psychometric scale. Later, permission was taken from the owners of different gyms after briefly explaining the aim of the research. During

recruitment, the participants were informed about the purpose of the research to examine men's drive for muscularity to avoid possible confounds in the future. Beside this the ethical considerations of the research were discourse to participants by talking about the confidentiality of participating and right to withdraw from the research without any conseqquences. Later, the final testing protocol comprising of DMS and DMI was provided to participants who were willing to participate in the study. The tests were administered through face-to-face interview, which was easy to administer.

Results

Analysis of this study was done on the SPSS 21 version. To explore the factor structure of DMI the Scree Plot and the Principal Component Analysis with Varimax Rotation was used to understand that what the scale is measuring. It was also helpful in measuring the inter-item correlation. Varimax Rotation of the responses of 211 participants on the items of indigenous scale was carried out to assess the factorial validity of the scale. Further, the factors were extracted based on Eigen value > 1. Eigen values were also examined on Screen plot to identify the structure of factors and to determine the number of factors in the DMI. The factor loadings were assessed on the basis of factor analysis. Items with loading of.3 or below were eliminated. Thence, the 26 items were distributed across 2 factors. The descriptive label was assigned to each factor based on commonality of items in the factors and the state of being cohesiveness of the themes which issued after the in depth understanding and study of the items of the scale. Table 1 indicates the factorial structure of 26 items of DMI with Varimax Rotation. Likewise, the scree plot revealed two factor solutions of DMI. Table 3 shows the Eigen values and Variance explained by 2 factors of DMI. The first factor of the scale was based on 14 items known as "muscle enhancing behaviors' and the second factor labeled as "thoughts and desires related muscular body" based on 12 items.

Table 1. The Factorial Structure of 26 items of DM with Varimax Rotation

Item No.	Factor1	Factor 2
10	.82	.06
21	.77	.22
7	.77	.23
24	.77	.04
27	.64	.27
9	.61	.43
15	.59	.44
3	.58	.27
12	.56	.44
19	.54	.43
28	.69	.28
4	.37	.34
25	.44	.41
16	.33	.31
13	.18	.83
5	.38	.63
6	.40	.62
11	.35	.61
1	.25	.83
23	.41	.66
8	.39	.66
17	.31	.64
20	.22	.63
18	.21	.62
22	.52	.59
2	.06	.33

Note. Factor loading > .30 have been boldfaced.

Table 2. Eigen Values and Variance Explained by 2 factors of DMI

Factors	Eigen Values	% of Variance	% of Total Variance
1	7.92	28.28	28.28
2	6.78	24.22	52.51

The Cronabach Alpha was calculated to establish the internal consistency of the DMI.

Table 3. Cronbach Alpha of 2 Factors and Total items of DMI

Factors	No of items	Cronbach Alpha
F1	14	.91
F2	12	.82
Total DMI Scores	26	.93

Note. F1= Muscle Enhancing Behaviors, F2= Thoughts and Desires Related Muscular Body

Table 3 showed that Cronbach's alpha coefficient of all items of DMI was 0.93, indicating strong internal consistency. Similarly, the internal consistency of factors 1 and 2 was 0.91 and 0.82 respectively.

To see the relationship between two factors and the total items of the DMI, the inter-factor correlation was calculated.

Table 4. Interco relation, Mean and Standard Deviation of Scale's Factors

Factors	F1	F2	TF: DMI
F1: Muscle Enhancing Behaviors	-	.82**	.96**
F2: Thoughts and Desires Related Muscular Body	-	-	.94**
TF: DMI	-	-	-
M	29.1	28.8	58.0
(SD)	(8.38)	(6.659)	(14.38)

Note. M=Mean, *SD*= Standard deviation, df=211, *p<0.05, **p<0.01, ***p<0.001, F1= Muscle Enhancing Behaviors, F2= Thoughts and Desires Related Muscular Body, TF: DMI=Total Factors of DMI

Concurrent validity of DMI was confirmed with DMS**.** A significant positive correlation was found between DMI and DMS (r = 0.49, p < 0.01). One week test-retest reliability on 20% (n = 50) sample was r =0.82, p < 0.01, which noted to be highly acceptable.

Even and odd method was used to find the split half reliability of DMI. The scale was divided into two halves, one comprising of all odd 13 items (Form A) and of all even 13 items (Form B). The results showed that the reliability value of the first half was 0.85 and the value of the other half was 0.89. Likewise, the total split half reliability was noted to be 0.87 (p< .001) which highly correlates with each other.

The four categories of the DMI such as normal, mild, moderate and severe were constructed by considering the mean and standard deviation of the total scores. Total scores range from 0 to 86, with higher scores indicating greater drive for muscularity. To less than 29 are likely to be having a normal drive for muscularity and range of 29 to 42 showing to have a mild drive for muscularity. While the range of 43.7 to 72.3, 72.3, also known as a cutoff point of DMI is consider as moderate drive for muscularity. A severe drive for muscularity is represented in the range 73 to 86.

Discussion

As a substantial percentage of men are having a strong desire for muscular physique and they are struggling to increase their body muscles[17]. Therefore, a greater number of research has been done to examine men's drive for muscularity throughout the world[13]. But there is not any single research has been conducted to study the men's drive for muscularity in Pakistani culture. Therefore, this study was carried out to address the gap in the literature by understanding the experience, manifestation, and expression of the drive for muscularity in Pakistani builders. In this regard, indigenous 26 items based DMI was developed in five different phases such as explore the phenomenology, generating the items, empirical validation through experts, pilot study and developed the psychometric properties of scale.

This 26-items-based scale has two factors such as "Muscle Enhancing Behaviors" and "Thoughts and Desires Related Muscular Body. The factor "muscle enhancing behaviors" was found to be similar to the earliest existing DMS. Likewise, the second factor, "thoughts and desires related muscular body" was also found to be pertinent with the first factor "muscularity-related attitudes" of DMS[18].

Factor 1 of DMI consisted of 14 items related to "muscle enhancing behaviors" such as the use of supplements, medicines, steroids, protein shakes, involve in different weightlifting acts, strictly follow the daily routine chart, exercise over the daily activities, to follow the current trends of fashion, to spend excessive money on bodybuilding etc. These are the consistent results with previous research in which same factor was explored[19]. While the factor 2 of DMI consisted of 12 items which based on different thoughts and desires such as a wish or desire to have muscles of different body parts and having thoughts related to gain attention of others and self-confidence, look attractive, feel superior to the others, to feel stronger, to look sexually attractive, feel disappointed at leaving the day of exercise etc. Most of the items of the scale clearly indicated the Pakistani bodybuilders are also involved in different behavioral acts of muscle enhancing behaviors. These behavioral acts are the result of specific thoughts related to meeting the standards of the ideal figure. The reason behind achieving such an ideal standard is to gain

the attention, admiration and approval of others and adjust in society by feeling more superior and stronger than the others as shown on the items of the DMI. The internal consistency of 26 items of DMI was found to be 0.93 for the whole scale. This scale also gratified the criteria of content and face validity.

The items of DMI more resembled with the items of DMS, which evidently showing the phenomenology of drive for muscularity in Pakistani bodybuilders is correlated with the phenomenology of drive for muscularity in the western culture to great extent. It was noted through the item analysis of both scales that the Pakistani bodybuilders have the desire for muscularity with the purpose to gain the attention, admiration, and approval of others to feel more superior, stronger and adjust in society by meeting the standards of ideal physique. While the Western scale hasn't mentioned such items. This makes the indigenous scale (DMI) different from the western scale (DMS) due to difference in culture specific expression of the drive for muscularity. The significant positive correlation was found between total scores of DMI and DMS (r = 0.49, p < 0.01). Overall, the psychometric properties of the indigenous developed scale (DMI) are noted to be highly satisfactory.

The current study has contributed significantly by exploring the culture specific experience and expression of the drive for muscularity with acceptable psychometric properties. This scale is also helpful in studying the prevalence of drive for muscularity in Pakistani bodybuilders. It could also be helpful for the health care, gym trainers and coaches to understand the continuum between the healthy and unhealthy thoughts and behavior towards the body. It is also helpful in assessing the severity level of drive for muscularity and helps in timely identification of any psychological problem.

Conclusion

The present study has given the attention to the unexplored subject of mental health in Pakistani bodybuilders. Results showed that bodybuilders engaged in different behavioral acts as the result of their thoughts with the purpose to have a muscular body. Mostly thoughts and behaviors related to enhance the muscles of the body found in Western measure are also present in Pakistani culture. While the bodybuilders of Pakistani culture are holding the different thought patterns to gain the muscular body as compared to the Western's bodybuilders, which giving an indigenous meaning to culturally developed scale (DMI). This indigenous scale could also be helpful in understanding the tendencies of muscle dysmorphia in relationship with other variables in a cultural context.

References

1. McCreary DR, & Sasse DK. An exploration of the drive for muscularity in adolescent boys and girls. J Am Coll Health 2000;48(6):297-30. [DOI:10.1080/07448480009596271]. Available from: https://www.tandfonline.com/doi/abs/10.1080/07448480009596271. Accessed on 18th May 2023.
2. Daniel S, & Bridges SK. The drive for masculinity in men: Media influences and objectification theory. Body Image 2010;7(1): 32-38. [DOI:10.1016/j.bodyim.2009.08.003]. Available from: https://www.sciencedirect.com/science/article/abs/pii/S1740144509000928?via%3Dihub. Accessed on 18th May 2023.
3. Kuennen M R, & Waldron JJ. Relationships between specific personality traits, fat free mass indices, and the Muscle Dysmorphia Inven tory. *Journal of Sport Behavior2007; 30*(4):453-470. Available from: https://www.researchgate.net/publication/284849210_Relationships_between_specific_personality_traits_fat_free_mass_indices_and_the_muscle_dysmorphia_inventory. Accessed on 18th May 2023.
4. McCreary DR, Saucier DM, Courtenay WH. The drive for muscularity and masculinity: Testing the associations among gender-role traits, behaviors, attitudes and conflicts. Psychology of Men Masculinity2005;6(2):83-94. [DOI:10.1037/1524-922 0.6.2.83]. Available from: https://psycnet.apa.org/record/2005-03190-001. Accessed on 18th May 2023.
5. Pope H G, Phillips K A, Olivardia R. The Adonis complex: The secret crisis of male body obsession. New York: Free Press. 2000. Available from: https://www.semanticscholar.org/paper/The-Adonis-Complex%3A-The-Secret-Crisis-of-Male-Body-Pope-Phillips/5ff479c54e0a48858ee96e9b04dec843f5368014. Accessed on 18th May 2023.
6. Nieuwoudt JE, Zhou S, Coutts RA, Booker R. Muscle Dysmorphia: Current research and potential classification as a disorder. Psychology of Sport and Exercise 2012;13:569-77. DOI: 10.1016/j.psychsport.2012.03.006]. Available from: https://www.researchgate.net/publication/257591970_Mus cle_dysmorphia_Current_rese arch_and_potential_classification_as_a_disorder. Accessed on 18th May 2023.
7. American Psychological Association. Diagnostic and statistical manual of mental disorder. (5thed.). American Psychological Association. Washington, DC. 2013. Available from: https://www.psychiatry.org/psychiatrists/practice/dsm. Accessed on 18th May 2023.

8. Ahmad A, Rotherham N, Talwar D. Muscle dysmorphia: one in 10 men in gyms believed to have 'bigorexia' BBC Newsbeat. 2016. Available from: http://www.bbc.co.uk/newsbeat/article/343 07 044/muscle-dys-morphia-one-in-10-men-in-gyms-believed-to-have-bigorexia. Accessed on 18th May 2023.

9. Whitbourne SK, & Skultety KM. Body image development: adulthood and aging. In T. F. Cash & T. Pruzingsky (Eds.), Body image: a handbook of theory, research, and clinical. New York: The Gulliford Press 2004;83-90.

10. Olivardia R, Pope H, Hudson J. Muscle dysmorphia in male weightlifters: A case-control study. The American Journal of Psychiatry 2000;157:1291-96.[DOI: 10.1176/appi.ajp. 157.8. 1291]. Available from: https://ajp.psychiatryo nline .org/doi/10.1176/appi.ajp.157.8.1291?url_ve r=Z39.88-2003&rfrid=ori:rid:crossref.org&rf r_dat=cr_pub%20%200pubmed. Accessed on 18th May 2023.

11. Lin L, DeCusati F. Muscle dysmorphia and the perception of men's peer muscularity preferences. American Journal of Men's Health 2015;10(6):NP78-NP88.[DOI:10.1177/15579883 1559836]. Available from: https://journals.sagep ub.com/doi/10.1177/1557988315598367. Access ed on 18th May 2023.

12. Grieve R, & Helmick A. The influence of men's self-objectification on the drive for muscularity: Self-esteem, body satisfaction and muscle dysmorphia. International Journal of Men's Health 2008;7: 288-98. [DOI:10.3149/jmh.0703.28]. Available from: https://www.researchgate.net/publication/239325603The_Influence_of_Men's_Self-Objectification_on_the_Drive_for_Muscularity_Self-Esteem_Body_Satisfaction_and_Muscle_Dysmorphia. Accessed on 18th May 2023.

13. McCreary DR, & Saucier DM. Drive for muscularity, body comparison, and social physique anxiety in men and women. Body Image 2009;6(1):24-30. [DOI:10.1016/j.bodyim.2008.09.002]. Available from: https://www.sciencedirect.com/science/article/abs/pii/S1740144508001204?via%3Dihub. Accessed on 18th May 2023.

14. Edwards C, Tod D, Molnar G. A systematic review of the drive for muscularity research area. International Review of Sport and Exercise Psychology 2014;7(1):18-41.[DOI:10.1080/1750984X .2013.847113].Available from: https://www.rese archgate.net/publication/ 258447528_A_systematic_r eview_of_the _drive_ for_muscularity_research_area. Accessed on 18th May 2023.

15. Chaudhry MB. Fifth bodybuilder dies in 4 months. The Nation. Available from http://nation.com.pk/ sports/15-Jul-2016/fifth-bodybuilder-dies-in-4-months. 2016. Accessed on 18th May 2023.

16. Groenewald T. A phenomenological research design illustrated. International Journal of Qualitative Methods2004;3(1):1-27.[DOI: 10.1177/16094 0690 400300104].Available from:https://www.re search gate.net/publication/237233474_A_Phen omen ological_Research_ Design_Illustrated. Accessed on 18th May 2023.

17. Ricciardelli L A. & McCabe M P. A longitudinal analysis of the role of biopsychosocial factors in predicting body change strategies among adolescent boys. Sex Roles 2003;48:349-59. [doi: 10.1023/A:1022942614727]. Available from: https://link.springer.com/article/10.1023/A:1022942614727#citeas. Accessed on 18th May 2023.

18. McCreary D R. (2007). The Drive for Muscularity Scale: Description, psychometrics, and research findings. In J.K. Thompson & G. Cafri (Eds.), The muscular ideal: Psychological, social, and medical perspectives (pp. 87-106). Washington, DC: American Psychological Association 2007;87-106.

19. McCreary DR. Muscularity and body image. In T. F. Cash (Ed.), Encyclopedia of body image and human appearance. San Diego, CA: Academic Press 2012;2:561-67.