

PREVALENCE OF RHOMBOID MUSCLE SPASMS AMONG THE ADULT POPULATION OF KARACHI

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Article Info



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Abstract

Background

Most of the muscles work in collectively two or more groups of muscles together a muscle called rhomboid is formed by the rhomboid major and rhomboid minor muscles. This rhomboid muscle plays a very major role in the movements of the upper limb and it also provides the stability of the scapula and girdle of the shoulder.

Objective

To determine the prevalence of rhomboid muscle spasms among the adult population of Karachi.

Methodology

The cross-sectional study was conducted from Sep 2024 to Feb 2025, the adult population from seven districts of Karachi was selected through the non-probability convenient sampling technique was used. The sample size was 385, The validated questionnaire was used to determine the prevalence of rhomboid muscle, and VAS (visual analog scale) was used to assess the severity of pain. The data was analyzed through SPSS version 23.0.

Result

There were 385 adult people recruited from seven districts of Karachi. The spasm of the rhomboid muscle was reported in about 267(69.35%) of the subjects and around 204(52.98%) participants reported that this spasm can affect their quality of daily life. According to VAS(visual analogue scale): 193(50.12%) had moderate pain due to the spasm of the rhomboid muscle.

Conclusion

Our study concluded the prevalence of rhomboid muscle spasms was found in the majority of the adult population as well and it affected the quality of life of the research participants.

Keywords:

Muscle Spasm, Incidence, Soft tissue injury, Exercise, Quality of life, and pain, etc.

Introduction

Most of the muscles work in collectively two or more groups of muscles together a muscle called rhomboid is formed by the rhomboid major and rhomboid minor muscles.[1] The major and minor muscles are found deep in the trapezius muscle. The shape of the minor muscle is cylindrical and it arises from the nuchae ligament and cervical seven and thoracic one vertebra it is inserted in the medial border of the scapula which goes nearer to the base of the spine of the scapular region.[2] On the same side, the rhomboid major muscle shape looks like a quadrangular muscle which is located inferior to the minor rhomboid muscle. This muscle arises from the spinous process of the thoracic two to five vertebra and goes to the medial border of the scapula, which is just inferior to the minor muscle of the rhomboid.[3] This rhomboid muscle plays a very major role in the movements of the upper limb and it also provides the stability of the scapula and girdle of the shoulder. The rhomboid muscles receive the supply from the posterior scapular artery and nerve.[4] These muscles play a very important role in upper limb movement and also give stability to the shoulder joint its functions are to retract, elevate, and provide rotation to the scapula. It also provides the protraction to the medial border of the scapula.[5] Any type of injury, or weakness, decreases the function of the nerve which causes the winging of the scapula from the medial side of the border. These rhomboid muscles play a role in pulling and throwing movements of the overhead activities.[6]

The spasm of the rhomboid muscle is a common problem that causes pain and spasms to the middle portion of the upper back, the posterior side of the shoulders, between the spine and the shoulder blade.[7] The common causes of the spasm of the rhomboid muscle are poor posture, overstretching, sitting for a prolonged time, and sleeping on the same side for longer periods can lead to muscle spasms and pain in the shoulders and arms.[8] Some other activities that are performed by the person also cause spasms like lifting heavy weights and holding the arms over the head for a long period, performing repeated activities, and sports activities like playing tennis and golf cause muscle spasms and pain.[9] The symptoms feel like sharp pain over the shoulder blades, muscle spasms, and tenderness, swelling around the muscle, facing problems while taking a breath, and weakness in the performing movements of the shoulder and neck. Rhomboid muscle injury can be better in a few days. But when it injured the severely it can take weeks or months to recover completely.[10]

There are many options to treat the muscle spasm of the rhomboids including as use of muscle relaxants, topical creams, and painkillers to reduce the spasm and pain. Most of the patients like to go for the physical therapist to take the sessions of physical therapy. Physical therapists apply heating and cold packs as per the patient's condition and also guide them in the stretching exercises, they also guide the proper posture.[11] The study aims to evaluate the prevalence of rhomboid muscle spasms in the adult population of Karachi.

METHODOLOGY

The cross-sectional study was done among the adult population of Karachi. The data was gathered from seven districts (south, north, east, west, malir, central, korangi) from Sep 2024 to Feb 2025. The sample size of 385 was calculated from Raosoft.com software. To select the research participants for the study non-probability convenient sampling was used. The inclusion criteria of the study were both male and female genders, age group 18 to >51 years. The exclusion criteria consist of adults who were diagnosed as cardiovascular patients, cerebrovascular accidents, cervical disc herniation, rheumatoid arthritis, adults who were performing vigorous exercise regularly, women who were pregnant, and those who were not willing to participate in the study. The validated questionnaire was adopted from the previous study done in 2023 [12] in which demographic information of research participants with questions related to the rhomboid spasm among the adult population as well as VAS(visual analog scale) was used to assess the

severity of pain among the research participants. The analysis of data was done by SPSS version 23.0 software.

RESULT

A total number of 385 adult population were recruited from the seven districts of Karachi in which 225(58.44%) males and 160(41.55%) females were included in this study and the demographics of the participants and details like their age, qualification, and their nature of the job are shown in Table No.1:

Table No.1: Demographics of the Participants

VARIABLES	FREQUENCY	PERCENTAGE(%)
Gender		
Male	225	58.44%
Female	160	41.55%
Age		
18-28	121	31.42%
29-39	113	29.35%
40-50	94	24.41%
≥51	57	14.80%
Education		
Matric	93	24.15%
Intermediate	89	23.11%
Graduate	138	35.84%
Post Graduate	65	16.88%
Type of Job		
Student	163	42.33%
Office worker	117	30.38%
Unemployed	105	27.27%

The spasm of the rhomboid muscle was reported in about 267(69.35%) of the adult population of Karachi. Around 204(52.98%) participants reported that this spasm can affect their quality of daily life and they are unable to do their work properly. Some participants were involved with cervical disc prolapse around 116(30.12%), and some presented with shoulder, scapular, and upper back injuries about 137(35.58%). Very few participants were presented with surgical histories of the scapular region, and upper back around 7(1.81%) as shown in Table No.2:

Table No.2: Variables related to the Rhomboid Muscle

VARIABLES	FREQUENCY	PERCENTAGE(%)
Rhomboid muscle spasm		
Yes	267	69.35%
No	118	30.64%

Impact on QOL		
Yes	204	52.98%
No	181	47.01%
Cervical Disc prolapse		
Yes	116	30.12%
No	269	69.87%
Shoulder, Scapula, or Upper Back Injuries		
Yes	137	35.58%
No	248	64.41%
Scapula, or Upper Back Surgery		
Yes	7	1.81%
No	378	98.18%

The level of pain of the participants can be measured by VAS (Visual Analog scale). Most of the participants reported around 193(50.12%) that they had moderate pain as shown in Figure No.1:

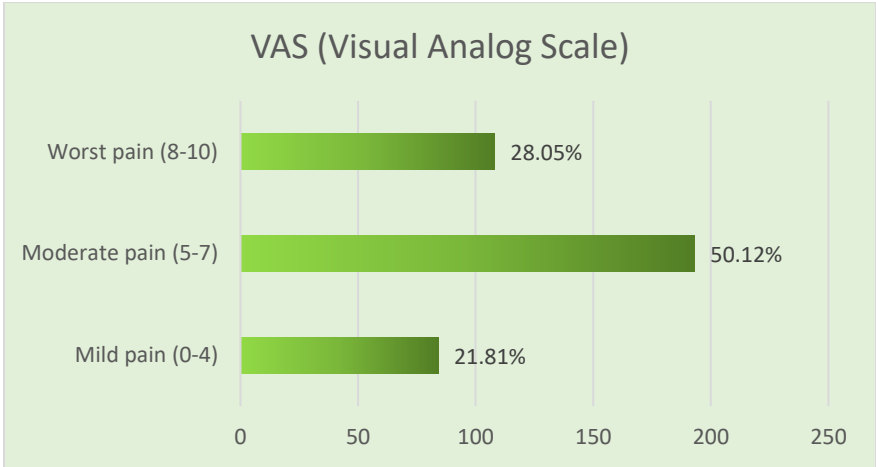


Figure No.1: Visual Analog Scale

Some major factors that can contribute to muscle spasms like injuries, sports activities, muscular overuse, lifting heavy weights, and poor posture described in Figure No.2:

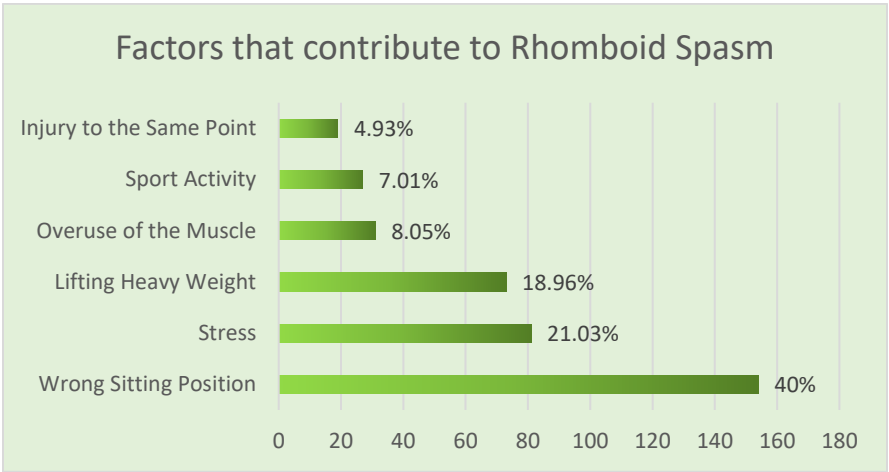


Figure No.2: Factors cause Muscle Spasm

The management of the rhomboid muscle spasm can be done in various ways 137(34.80%) participants used muscle relaxants, and 120(31.16%) participants used physical therapy sessions to reduce the muscle spasm as shown in Figure No.3:

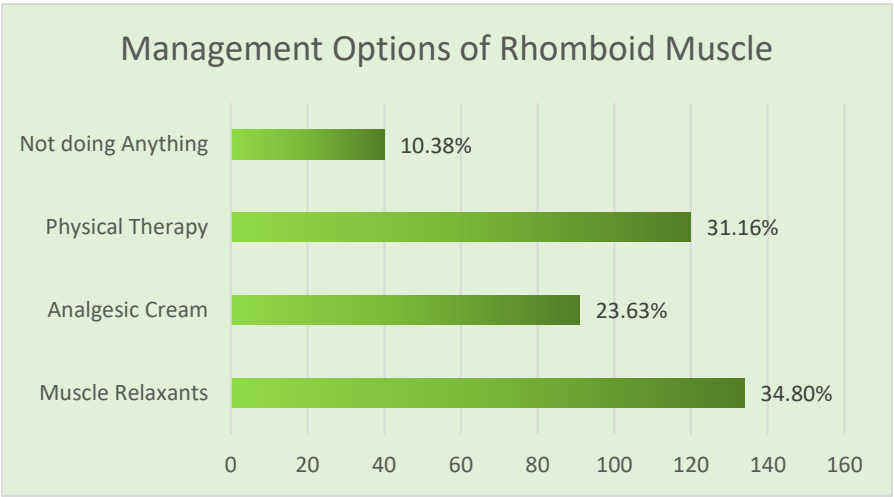


Figure No.3: Treatment for Muscle Spasm

DISCUSSION

Rhomboid muscle spasm means tearing or stretching of the rhomboid muscle. It causes a sudden tightness of the rhomboid muscle which can affect the sitting, standing, and lifting pattern of an individual.[13] The injury to the rhomboid muscle initially does not feel like a main problem but gradually it may become a long-term problem that can affect the quality of life of a person.[14] In this study, we determine the prevalence of rhomboid muscle spasms among the adult population of Karachi. From the present study, it has been observed that the majority of research participants were males about: 58.44% and females about: 41.55% whereas the definite difference between the prevalence of rhomboid muscle spasm was not shown in research but some studies showed the higher prevalence rate was found in females as compared to males.[15]

In the present study, The adult population ranging from 18 to more than 51 was divided into four age categories: 31.42% of research participants belonged to 18-28 years, 29.35% belonged to 29-39 years,

24.41% belonged to 40-50 years and 14.80% belonged to ≥ 51 years of age. A study reported rhomboid muscle spasm was higher in older population this may be due to the decrease in strength and flexibility of muscles which is more common in older age. However, it can occur at any age because of the causal factors that may increase the susceptibility to rhomboid muscle injury such as poor posture, repetitive trauma, sports events, etc.[16] As the research suggested, Rhomboid muscle injury including all types of tears and strains is rare and uncommon but it can cause a big problem in the functional activity of the thoracic region and shoulder. [17] but the data of our research showed the rhomboid muscle spasm was found in 69.35% of our research participants and absent in 30.64%.

A study reported rhomboid muscle spasms can have a significant effect on the quality of life of an affected person because the long-term pain in this region leads to the reduction immobility of the shoulder which can cause hindrance in activities of daily living and further causes disability. [18] Our study data showed the quality of life of research participants was disturbed in 52.98%. The pain in the rhomboid muscle can cause pain and pressure in the upper level of the back between the spine and shoulders which can be worse due to the movement and some activities. [19] Regarding the severity of pain, the data of our research participants showed: that 50.12% fall in the moderate pain category according to the visual analogue scale.

As reported in the study, the main causes of rhomboid muscle injuries are bad posture, repetitive movement, and jerks in the upper back region, shoulders, and hands.[20] but data found from the present study showed the major reason for the rhomboid muscle spasm was a wrong sitting position which was found in 40% of research participants. According to the study, there are a variety of treatment options for the management of rhomboid muscle spasms such as the RICE method in which rest, ice, compression, and elevation are provided in the affected area, pain relievers, muscle relaxants, gentle stretchings can also in relieving pain in the rhomboid region in some cases injections and surgery may be needed.[21] but the data of our study revealed that 34.80% of research participants chose muscle relaxants for their relief of pain and tenderness due to rhomboid muscle spasms.

CONCLUSION

From the present study, it is concluded that the prevalence of rhomboid muscle spasm was found in more than half of our research participants who were extracted from the adult population of Karachi but their level of pain and disturbance in the quality of life vary according to their age difference and type of factors which affect them which may reduce by applying preventive measures in daily life and also vary in their choice of treatment which may get better by increasing education related to posture and and other preventive measures.

REFERENCES

1. Moshayedi AJ, Yu Y, Savoji K, Andani ME. Comfort Shoulder (Rhomboid Major) Muscles Chair Identifier System. In2024 6th International Conference on Communications, Information System and Computer Engineering (CISCE) 2024 May 10 (pp. 1505-1509). IEEE.
2. Smith J, Padgett DJ, Kaufman KR, Harrington SP, An KN, Irby SE. Rhomboid muscle electromyography activity during 3 different manual muscle tests. Archives of physical medicine and rehabilitation. 2004 Jun 1;85(6):987-92.
3. Matz OC, Gustafson HC, Hartwell LE, Rudberg-Post LJ, Woolley AL. Supine counterstrain technique for rhomboid tender point. Journal of Osteopathic Medicine. 2024 Jan 4;124(1):35-8.
4. Hung CY, Wang B, Chang HC, Wu WT, Liu PT, Chang KV, Su DC, Mezian K, Ricci V, Özçakar L. Pictorial essay on ultrasound and magnetic resonance imaging of paraspinal muscles for myofascial pain syndrome. Life. 2024 Apr 12;14(4):499.
5. Kawabuchi K, Yamane K, Maniwa S, Inoue K, Nakamura M. Epimuscular myofascial force transmission between the levator scapulae muscle and the upper fiber of the serratus anterior or rhomboid minor muscles. Clinical Biomechanics. 2024 Feb 1;112:106194.
6. Chu EC, Sabourdy E. Sporadic desmoid tumor mimicking myofascial pain syndrome in a chiropractic clinic. Cureus. 2023 Sep 4;15(9).
7. Yoo WG. Changes in pressure pain threshold of the upper trapezius, levator scapular and rhomboid muscles during continuous computer work. Journal of physical therapy science. 2013;25(8):1021-2.
8. Haleema B, Riaz H. Effects of thoracic spine manipulation on pressure pain sensitivity of rhomboid muscle active trigger points: A randomized controlled trial. JPMA. 2020;71(1720).
9. Yamada T, Yajima H, Takayama M, Imanishi K, Takakura N. Corrugator Muscle Activity Associated with Pressure Pain in Adults with Neck/Shoulder Pain. Medicina. 2024 Jan 28;60(2):223.
10. Ulkir M, Sargon MF. A case of individual variation of the rhomboid muscles. Folia Morphologica. 2021;80(1):222-4.
11. Gradev A, Malinova L, Kasaboğlu J, Jeleu L. Rhomboid muscle variations: notes on their naming and classification principles. Anatomy. 2020;14(1):68-71.
12. Albaker AB, Mohammed D, Alharbi AA, Almisfer SK, Alobaysi YM, Alghuyaythat WK, Marwan S. Rhomboid muscle spasms among the population of Saudi Arabia. Med. Sci.. 2023;27(136):1-8.
13. Yi KH, Lee HJ, Choi YJ, Lee JH, Hu KS, Kim HJ. Intramuscular neural distribution of rhomboid muscles: evaluation for botulinum toxin injection using modified Sihler's method. Toxins. 2020 May 3;12(5):289.
14. De Los Reyes AM, Bacle G, Chaves C, Tranier M, Jacquot A, Corcia P, Laulan J, Roulet S. Scapular winging due to rhomboid muscle paralysis: clinical assessment of 4 cases and anatomic study of the dorsal scapular nerve. Journal of Shoulder and Elbow Surgery. 2022 Dec 1;31(12):2595-601.
15. Öz M, Soyulu G, Aslıyüce YÖ. DEVELOPING AWARENESS OF SPINE HEALTH IN CHILDHOOD INDIVIDUALS: THE CASE OF ALTINDAG MUNICIPALITY. Journal of Hacettepe University Physical Therapy and Rehabilitation Faculty.;2(3):95-102.
16. Al SA, Bahadli P, Al-Tamimi AF. The effect of a rehabilitation program for rhomboid muscles (shoulder) and fibrous strain on young and advanced wrestlers (Free and Roman).
17. Furuhashi R, Yamaguchi S, Tanji A. Surgical repair for rhomboid major tear: A case report. Clinical Medicine Insights: Arthritis and Musculoskeletal Disorders. 2023 Dec;16:11795441231219009.
18. Taskiran OO, Albayrak H, Topaloglu M, Manici M, Ketenci A, Gurkan Y. Effect of ultrasound-guided rhomboid interfascial plane block on pain severity, disability, and quality of life in

myofascial pain syndrome—a case series with one-year follow-up. *Pain Physician*. 2023;26(7):E815.

19. Fahmy EM, Ibrahim AR, Elabd AM. Ischemic pressure vs postisometric relaxation for treatment of rhomboid latent myofascial trigger points: a randomized, blinded clinical trial. *Journal of Manipulative and Physiological Therapeutics*. 2021 Feb 1;44(2):103-12.

20. Graham RD, Acosta J, Tang P. Chronic rhomboid origin tear with seroma: an unusual cause of winging scapula: a case report. *JBJS Case Connector*. 2021 Jul 1;11(3):e21.

21. Kang AS, Kang KS. Rhomboid flap: Indications, applications, techniques and results. A comprehensive review. *Annals of Medicine and Surgery*. 2021 Aug 1;68.