

PREVALENCE/CONTRIBUTION OF RECTUS ABDOMINIS IN LOWER BACK PAIN

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Abstract—

Background and Purpose: To evaluate the prevalence/contribution of rectus abdominis in low back pain.

Study Duration: The duration of the study was 3 months.

Methods: The study was conducted among 124 patients (both male and female) with age between 20 to 40 years who have backache since 3 months. Before starting the data collection, a consent form was given to the participants. After signing the form, a questionnaire was given to participants, through which researcher was able to assess the criteria of patient's pain. Patients were assessed on the basis of ODI i.e.; "osmerty disability index", which help to measure the degree of disability.

Results: Research shows prevalence or contribution of rectus abdominis in lower back pain with the impact of Trigger points. The outcomes didn't show any significant association between low back pain 0.41 ± 1.78 and Trigger points of rectus abdominis.

Conclusions: Study concluded that there is no significant relationship between trigger point of rectus abdominis in low back ache, and we didn't locate any trigger point in rectus abdominis.

Key words: Low Back Pain, Rectus Abdominis

1. INTRODUCTION

Unrelieved stumpy back pain is the kind of condition which sustains for more than twelve weeks More than 50% of general population is affected by low back pain 80% of population has gone through it at least once in their lifespan. Among which, 15% have chronic low back pain. In South America, prevalence is higher in young. (1) In US more than 50% of population is affected. (2) Risk factors selected on the evidence of age, mean weight before physiological condition and weight gain throughout physiological condition, birth weight of baby, mode of delivery, benign hypermobility syndrome, work & level of the muscles of abdomen and girdle floor, exercise coaching and general exercise coaching twelve months post-partum (3).

The rectus abdominis is antagonist to the multifidus muscle and may either get included with LBP because of reciprocal inhibition or it might be a origin of LBP itself. It is fascinating to take note of that trigger points in the lower rectus may likewise cause the diarrhea and side effects mirroring diverticulosis or gynecological sickness. We have frequently discovered that treating trigger focuses in the rectus includes the completing touch in some patients. Often it can likewise be the motivation behind why the lower back trigger point don't stay discharged. (4)

In spite of the fact that muscle enactment contributes all through the entire scope of development, the help is vital around the midrange where latent structures contribute insignificantly to spinal firmness (5)

Pain develop in the muscles, debilitating and decay will happen, the tendons, ligaments and joints will turn out to be firm, which de-

creases activity. In this manner, it is imperative to keep up mechanical arrangement of the trunk muscles to prevent LBP. (6).

The determined pain and decrease activity end result in neglect muscle and changes in the structure of the lumbar spine and its encompassing tissues due to diminishes in the cross-sectional region of spinal muscle fibers. The subsequent crumbling in the quality of the trunk and abs additionally more painful and restricted mobility. (7)

It is the common clinical problem which is managed by analgesic, physical and exercise therapies (Watanabe Masahiro 2013). Among orthopedic diseases in EUROPE and US, it is the commonly seen symptom (2). Among the abdominal wall muscles, rectus abdominis is the major flexor and it provides minimal support in spine stability (8). Classification of low back pain depends on the period as: acute (< 6 weeks); sub-acute (b/w 6 weeks & 3 months); and chronic (> 3 months). Over 90% of low back pain occurs due to unknown causes (9). Women are more prone to affected by low back pain due to psychological and physiological factors, as well as they are more prone to report risk factors and different pain sensitivity (10).

One vital hazard cause for lower back pain is weakness of shallow trunk and abdominal muscles, and strength of these muscles is regularly connected with huge improvement of intense Lower Back Pain, and in addition with decrease functional inability. Low back pain is the 2nd most basic cause behind non-appearance from work, and the most widely recognized purposes behind therapeutic consultation. (11)

Altered pattern of neuromuscular control of spine can develop

chronic pain in lower back (12). Chief cause is abdominal & deep trunk muscles weakening (2). LBP happens when a poor way of life debilitates the muscle strength of the waist and unreasonable loads on and strains of the muscles make pain. Intervening muscle debilitating to stable the trunk is a critical aspect in the recuperation of body work in patients with LBP. (13)

Usually Lower Back Pain is seen start during self-originated, quick movements of the lumbar spine at home, sports & work (14). Referral of rectus abdominal muscle trigger pain is common at the region of lower back and felt as horizontal band line. (15), frequently result from or are perpetuated by overuse of the muscle, direct strain, visceral disease, or emotional and their pain that leads to the back of the trunk. (16)It has two types' pain patterns: one at the level of the xiphoid process, and the other at the level between the umbilicus and the inguinal ligament, spreading pain into lower back. (17).

D'hooge R, Hodges P & Tsao H, et al; in 2013, worked on changed trunk muscle dexterity throughout speedy trunk forward bending in individuals arrested of continual stumpy back pain (LBP), their conclusion showed alteration in dunamic trunk muscle management throughout LBP remission, & doable to extend spinal load & lead to earlier muscle fatigue attributable to intense muscle usage.(5)A study conducted in 2013 result concluded that SSmuscle action while lifting objects of unexpected weight. They all over that once participants raise an object a lot of heavier than expected, their trunk muscles might not be ready to operate properly. (19)

2. METHODOLOGY:

The design of this study was Cross-sectional study .Non probability sampling (convenient sampling technique) was used.This study conducted in different hospital like Zia Uddin Hospital patients (North and Clifton both campus) and Al-khidmat hospital.We included both male and female with the age of 20 to 40 years.Patients with backache for longer than three months.Self-administrated questionnaire including VAS scale & Oswerty disability index.The study was conducted among 124 patients (both male and female) with age between 20 to 40 years who have backache since 3 months. Before starting the data collection, a consent form will be given to the participants. After signing the form, a questionnaire will be given to participants, through which researcher will be able to assess the criteria of patient's pain. Patients will be assessed on the basis of ODI i.e.; "osmerty disability index". It will also help to measure the degree of disability and helps in estimating quality of life with pain with the help of its score between 0-100. The activity of the rectus abdominis will be assessed. First the patient is guided about the movement which they have to be perform while checking the exact muscular activity of rectus abdominis and hyper irritable, which do not origin unprompted ache, other than ache may be provoked with physical force or with needling of the hyper irritable area. In the clinical setting, palpation is the key method accomplished of identifying myofascial pain.A composed consent will be taken from the members. All close to personal data of the member will be kept confidential. Members can leave the examination whenever as they want. Ethical consideration from the Ethical Review Committee will be engaged.

3. RESULTS

This research shows prevalence or contribution of rectus ab-

dominals in lower back pain with the impact of Trigger points. The outcomes didn't show any significant association between low back pain 0.41 ± 1.78 and Trigger points of rectus abdominis. As rectus abdominis associated with low back pain however, we didn't trace any trigger point during our examination.

According to the results the frequency of duration of pain for patients suffering from 6 months is 36.6%, 35.0% of patients suffering from 3 months, 14.6% of patients were suffering from 2 months and 13.8% of patients were suffering from 1 month.

This result shows 37.4% of patients were suffering from intense pain, 43.1% of patients were suffering from distressing pain, 17.9% of patients were suffering from uncomfortable pain and 1.6% of patients were suffering from mild, annoying pain.

According to the results 51.2% of patients are more prone to sitting in their daily activities, 23.6% of patients are more prone to standing, 20.3% of patients are more prone to walking and 4.9% of patients are more prone to stairclimbing.

TABLE 1: DURATION OF PAIN

Duration	Frequency	Percent	Valid Percent	Cumulative Percent
1 month	17	13.8	13.8	13.8
2 months	18	14.6	14.6	28.5
3 months	43	35.0	35.0	63.4
6 months	45	36.6	36.6	100.0
Total	123	100.0	100.0	

q1

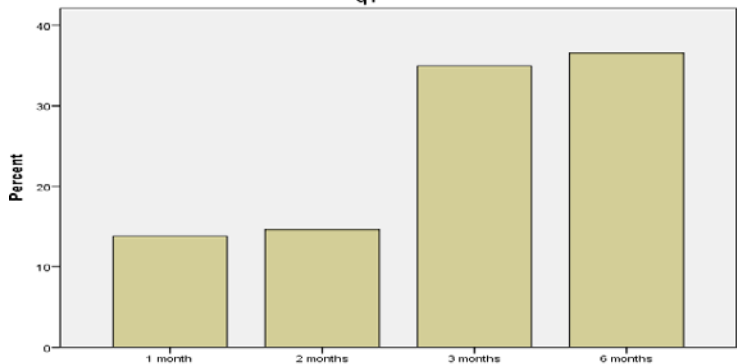


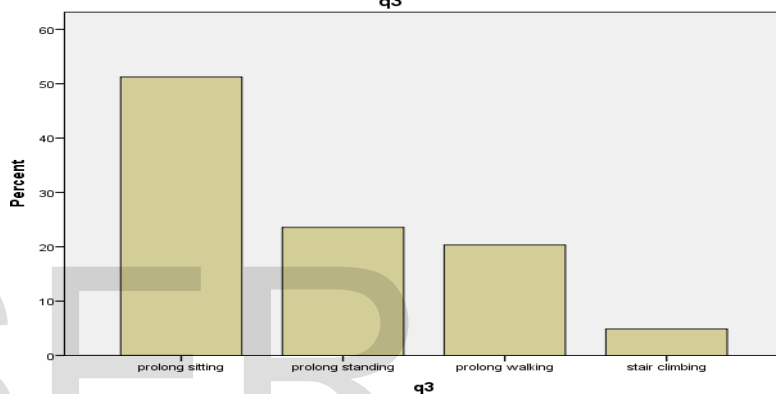
TABLE 2: INTENSITY OF PAIN

Table 3: Position of pain

Position of pain	Fre- quency	Per- cent	Valid Percent	Cumulative Percent
Prolong sitting	63	51.2	51.2	51.2
Prolong stand ing	29	23.6	23.6	74.8
Prolong walking	25	20.3	20.3	95.1
Stair climbing	6	4.9	4.9	100.0
Total	123	100.0	100.0	0

Intensity of pain	Fre- quency	Percent	Valid Percent	Cumulative Percent
Mild, annoying pain (1-3)	2	1.6	1.6	1.6
Nagging, un-comfortable(4-5)	22	17.9	19.5	19.5
Distressing, miserable (6-7)	53	43.1	62.6	62.6
Intense, horri-ble (8-9)	46	37.4	100.0	100.0
Total	123	100.0	100.0	100.0

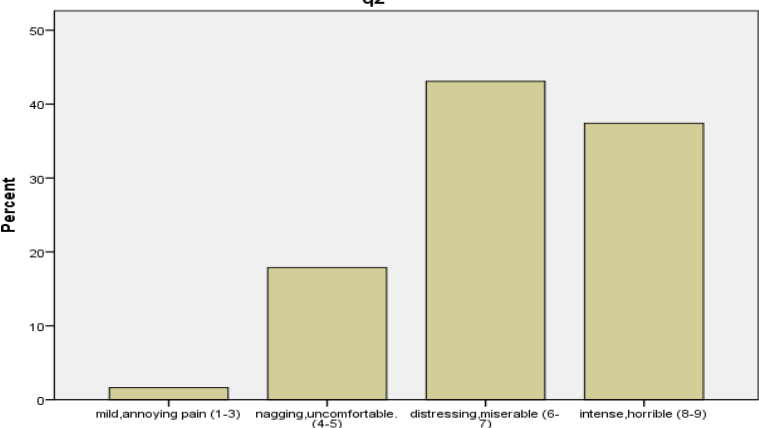
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5. DISSCUSSION:

Certain research states that Low back pain is most common cause seen in hospital OPDs, which is the main source of movement restriction and work deficiencies in various region of the world. Initially thought to be an issue in developed countries while researches have presently showed an increasing prevalence in developing nations. Being a clinical problem that influences all age gatherings, Low Back Pain and its hazards have been assessed by different observers globally. In any case, information related to the risk factors for Low Back Pain in Pakistan subjects is rare. This examination, which includes 123 adults age between 20-40 years, is special as it not just inspected LBP presence in adults in Karachi Pakistan, yet in addition, also investigates its potential risk factors. Recommendations are available to reduce expected low back pain. According to our study we got 13.8% of patients who were suffering from low back pain from 1 month, 14.6% were suffering from 2 months, 35.0% were suffering from 3 months and 36.6% of patients were suffering from 6 months or more. Patients who were suffering from 6 or more than 6 months were lie under chronic low back pain. During our study we observed 51.2% patients, who are more prone to sitting in their daily activities, 23.6% were more prone to standing, 20.3% were more prone to walking and 4.9% were more prone to

q2



q2

stair climbing in their daily activities. 13.8% patients were suffering from low back pain due to accidents, 1.6% due to vertebral fracture, 19.5% due to fall, and 65.0% were due to other reasons in which most females were post natal who complained about low back pain. Jeong-II Kang et al., performed a study in Korea in 2016 on chronic low back pain and concluded the prevalence 60% to 90% while in our study we observed 36.6% prevalence of chronic low back pain.⁹Min KyunSohn et al. performed a study on postural control in 2013, Korea, they concluded that over 90% of low back pain cases are due to unknown causes while in our study we concluded that over 70% of cases are due to prolonged sitting other causes were accidents, age related and post natal etc.²⁴Da-Eun Jung performed study in Korea in 2014, they concluded that women are more prone to low back pain due to physical and psychological issues while we performed our study in Karachi, Pakistan we also concluded that women are more prone to low back pain. Main cause in female population of low back pain observed was the post natal.¹⁸Watanabe Masahiro et al., performed a study which shows that lower back pain is the common clinical problem which is managed by analgesic, physical and exercise therapies. According to our study patients were having massage, analgesic medications, and manual therapy treatment which relieved their pain. Jan Lingen et al. performed a study which shows trigger point are the reason behind the all painful disorders, particularly that caused by myofascial trigger points, along with pain, these trigger points in the muscle frequently result into increase sensitivity, prompt onset of muscle exhaustion and delayed relaxation. We have found some patients who are suffering from low back pain due to rectus abdominal trigger point, especially cause by myofascial tightness. Although patients were having muscle exhaustion.⁷ Lehman, G.J. et al. performed a study which shows that aerobic activities have been a key part of low back recovery programs. Our study is observational but the patients were in hospital setups having aerobic exercises (e.g: treadmill and cycling).¹⁵ In our study there were 22.0% patients who were having trigger points in rectus abdominis while 78.0% patients who were not having trigger points in rectus abdominis.

6. CONCLUSION

This research shows prevalence or contribution of rectus abdominals in lower back pain with the impact of Trigger points. The outcomes didn't show any significant association between low back pain 0.41 ± 1.78 and Trigger points of rectus abdominis. As rectus abdominis is associated with low back pain however we didn't locate any trigger point during our examination.

REFERENCES

- [1] Chang, W.D., Lin, H.Y. and Lai, P.T., 2015. Core strength training for patients with chronic low back pain. *Journal of physical therapy science*, 27(3), pp.619-622.
- [2] Conte, S.A., Thompson, M.M., Marks, M.A. and Dines, J.S., 2012. Abdominal muscle strains in professional baseball: 1991-2010. *The American journal of sports medicine*, 40(3), pp.650-656.
- [3] Davies, C. and Davies, A., 2013. *The trigger point therapy workbook: Your self-treatment guide for pain relief*. New Harbinger Publications
- [4] Davies, P., Grace, F.M., Lewis, M.P. and Sculthorpe, N., 2016. Observation of age-related decline in the performance of the transverse abdominis muscle. *PM&R*, 8(1), pp.45-50.
- [5] D'hooge, R., Hodges, P., Tsao, H., Hall, L., MacDonald, D. and Danneels, L., 2013. Altered trunk muscle coordination during rapid trunk flexion in people in remission of recurrent low back pain. *Journal of Electromyography and Kinesiology*, 23(1), pp.173-181.
- [6] França, F.R., Burke, T.N., Hanada, E.S. and Marques, A.P., 2010. Segmental stabilization and muscular strengthening in chronic low back pain: a comparative study. *Clinics*, 65(10), pp.1013-1017.
- [7] Jan Linge, 2016. Painotopia [online] Available at: <www.muscle-joint-pain.com/trigger-points/trigger-point-self-treatment/rectus-abdominis/>
- [8] Jonathan Kuttner, 2017. Niel Asher. [online] Available at: <<https://www.nielasher.com/blogs/video-blog/lower-back-pain-an-overview-of-the-key-muscles>> [Aug 14, 2017].
- [9] Kang, J.I., Jeong, D.K. and Choi, H., 2016. Effect of exhalation exercise on trunk muscle activity and Oswestry disability index of patients with chronic low back pain. *Journal of physical therapy science*, 28(6), pp.1738-1742.
- [10] Kang, T., Lee, J., Seo, J. and Han, D., 2017. The effect of bridge exercise method on the strength of rectus abdominis muscle and the muscle activity of paraspinal muscles while doing treadmill walking with high heels. *Journal of physical therapy science*, 29(4), pp.707-712.
- [11] Kim, K. and Lee, T., 2016. Comparison of muscular activities in the abdomen and lower limbs while performing sit-up and leg-raise. *Journal of physical therapy science*, 28(2), pp.491-494.
- [12] Kong, Y.S., Lee, W.J., Park, S. and Jang, G.U., 2015. The effects of prone bridge exercise on trunk muscle thickness in chronic low back pain patients. *Journal of physical therapy science*, 27(7), pp.2073-2076.
- [13] Laura Perry, 2006-2011. Pain whisperer.com. [online] Available at: <<http://www.painwhisperer.com/ptpath/ptpath/ptpath/lowbackpain.html>>
- [14] Lee, A.Y., Kim, E.H., Cho, Y.W., Kwon, S.O., Son, S.M. and Ahn, S.H., 2013. Effects of abdominal hollowing during stair climbing on the activations of local trunk stabilizing muscles: a cross-sectional study. *Annals of rehabilitation medicine*, 37(6), pp.804-813.

- [15] Lehman, G.J. and McGill, S.M., 2001. Quantification of the differences in electromyographic activity magnitude between the upper and lower portions of the rectus abdominis muscle during selected trunk exercises. *Physical Therapy*, 81(5), pp.1096-1101.
- [16] Muscolino, J.E., 2008. *The Muscle and Bone Palpation Manual with Trigger Points, Referral Patterns and Stretching*. Elsevier Health Sciences.
- [17] Nagar, V.R., Hooper, T.L., Dedrick, G.S., Brismée, J.M., McGalliard, M.K. and Sizer, P.S., 2017. The Effect of Current Low Back Pain on Volitional Preemptive Abdominal Activation During a Loaded Forward Reach Activity. *PM&R*, 9(2), pp.127-135.
- [18] Parfrey, K., Gibbons, S.G., Drinkwater, E.J. and Behm, D.G., 2014. Effect of head and limb orientation on trunk muscle activation during abdominal hollowing in chronic low back pain. *BMC musculoskeletal disorders*, 15(1), p.52.

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