

Review Article

Frequency of Hamstring Muscle Pain in Males and Females

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Abstract

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Hamstring muscle is posterior thigh muscle between the hip and the knee and chances of injuries in this muscle are very high. The hamstring strain are divided into three types depending upon the nature and severity of pain. These classes named as Grade I tear, Grade II tear, Grade III tear. The career of many athletes have been destroyed due to hamstring injuries. **Objective:** The study was conducted to determine the prevalence of hamstring strains regarding to gender, age. Furthermore, the association of hamstring problems with pain in different postures was also found in this study. **Methodology:** A cross-sectional study was conducted to find the prevalence of pain and its association with postures. The data was collected of almost 150 patients with hamstring injuries. The analysis was done to determine the effects of different variables in injuries of hamstring muscles. **Results:** The results showed that the prevalence of injures of hamstring muscles is higher in male as compare to female. 80 males out of 150 patients were dealing with this disease and rates of disease was much higher in urban areas as compared to rural areas. Mostly, patients feel pain all the time due to injures as 61 out of 150 claimed that they feel pain due to injury. **Conclusion:** Hamstring injuries are most common cause of pain in young people and occur due to many reasons. People dealing with this disease feel pain all the time and the pain due to this injury is unbearable. The patients feel pain during all activities such walking, jumping and running.

Keywords: Hamstring Muscle, Hamstring injuries, Biceps Femories, Nervous System

Hamstring Muscles Pain

Introduction

Human anatomy showed that hamstring is one of three posterior thigh muscle that is present between the knee and hip. Those muscles include semimembranosus muscles, biceps femoris or semitendinosus. There are more chances of injury of hamstrings because it is most suitable of injury. According to human anatomy, it is a single large tendon that is present behind knee or other comparable area (Opar *et al.*, 2012).

The hamstring muscles are also known as biarticular muscles due to their location, as they are present between two joints, the knee and the hip. Semimembranosus and semitendinosus spread the hips when trunk of body fixed. These muscles also flex knee and swap the lower leg when knee tends to bend. The larger head of biceps femoris spread hips when a person begin walking, both long as well as short heads flex the knee and also rotate the lower leg (Dean and Kuo, 2009). The hamstring play

important role in regular activities such as running, walking, jumping, and controlling all the function and movement of gluteus. At the time of walking, they act as an antagonist of guadriceps for deceleration of knee extension (Pandy and Andriacchi, 2010).

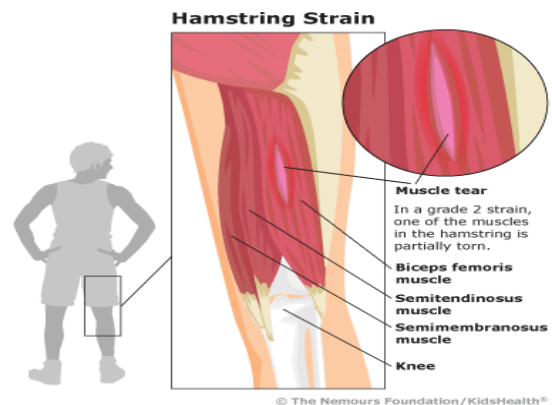


Figure 1: Hamstrings strain

The hamstring is an essential part of body but hamstring strains are most common disease of thigh muscles in figure 1. It is very common pain in both genders in both developed and developing countries. These strains are painful and mostly occurs in all types of athletes such as runners, soccer, footballer, basketball players and skaters. As it is group of three muscles thus during hamstring strain, one of three muscles

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become overloaded. In start, these strains are bearable but when remained untreated leads to unbearable pain. There are many cause of hamstrings strain such as not doing warmup before starting exercise and weakness of glutes. Hamstring and glutes work together and when glutes become weak due to some reasons, than hamstrings become overloaded and strained. The pain due to mild hamstring strains is not too much but when it becomes severe, patient feel pain during all regular activities even with walking. Injuries that occur in groups of muscles of hamstrings ranges from a minor strain to a more severe rupture. These strains are graded according to pain such as are divided as grade I tear, grade II tear and grade III tear. Grade I tear is minor rupture, grade 2 is partial rupture while grade III is complete rupture. According to functions of thigh muscles, it is clear that grade III injuries are mostly happened in athletes. The torn of muscle leads to impairment of function. Grade I injurie are mild rupture because these ruptures can be heal fully with minor aggravation of injuries. While in case of power athletes, Grade III injuries are common and can be very severe and debilitating (Liu *et al.*, 2012).

The career of many successful and promising athletes has been ended due to hamstring injuries. These injuries are also very common is general public and occur due to pick up of heavy loads. Some common exercises such as tennis, elliptical machine walking and jumping rope can also become cause of hamstring strains (Dicharry, 2012).

Objective

The study was conducted to determine the prevalence of hamstring strains regarding to gender, age. Furthermore, the association of

hamstring problems with pain in different postures was also found in this study.

Literature review

Priyanka et al. conducted a study to discuss the occurrence of Hamstring injuries in people of rural and urban areas. This injury affects the nervous and vascular system of the body. In this study 20 people are selected from rural areas and 20 are selected from urban areas. The age of selected people is in between 18-25 years. The comparison shows that Hamstring injuries are higher in urban areas as compare to rural areas. Main reasons of higher occurrence of Hamstring injuries in urban areas are more traffic on road as compare to rural areas and other reason is malnutrition whereas in rural areas food and nutrition is pure that's why there is less chances of hamstring injuries (Sulakhe). Astrid et al. conducted a study to discuss that pain in lower back pain is associated with Hamstring injuries and body mass index. This is a cross sectional type study to ensure the relation of pain of lower back with BMI as well as hamstring injuries. This study is conducted in almost all adult boys. Data is collected by questionnaire and then analyzed the results. The result of this study indicates that hamstring injuries also induce lower back pain in adults and lower back is less affected by BMI. BMI of adults are measured by measuring height and weight of the individuals (Sjolie, 2004).

D. Fife et al conducted a study to discuss the rate of hamstring injury with respect to age, race and gender of the people. In this study injury rates were taken of two to three years of Ohio countries. According to this study Hamstring injury are mostly occurred in males as compare to females and this injury is mostly occurred due to traffic accidents. The occurrence of this injury in males is

majorly due to use of bikes and they face traffic in roads on daily basis as compare to females. The result of this study shows that hamstring injury is mostly occurred in males (Fife *et al.*, 1984).

T.K conducted a study to show the main causes of hamstring injuries during sports. Main objective of this study is to determine the major factors that cause hamstring injury during sports. The method used in conducting this study is systematic review and also collected the data from athletes to gain information regarding they ever faced hamstring injury during their sport match or not. The results of this study show that no injury is occurred due to hamstring injury during sports (Foreman *et al.*, 2006).

Worrell conducted a study on influence of strength, war5m-up and flexibility on hamstring injury. In this study it is described that hamstring injury is a mJOR problem faced by athletes. The objective of this study is to have a review on function of hamstring muscle, review literature related to the study, describe a treatment plan for the hamstring injury and discuss the factors that can prevent occurrence of hamstring injury. It is concluded that during treatment and rehabilitation of hamstring injury physician should prescribe some therapy so that injury is recovered as early as possible (Worrell and Perrin, 1992).

METHODOLOGY

STUDY DESIGN:

Cross-sectional study.

SAMPLING TECHNIQUE:

Convenient Sampling technique.

SAMPLE SIZE:

150

INCLUSION CRITERIA

- Women and men of ages ranges from 20 to 50

- Women and men of both rural and urban areas
- Patients having thigh pain from last few month
- Athletes having severe pain during regular activities such as walking, running and jumping

EXCLUSION CRITERIA:

- Women and men of old age
- People having pain due to any other disease
- Patients of diabetes mellitus and associated disease

Statistical Tool

SPSS version 19

Chi-square test

ETHICAL CONSIDERATION

- The consent form was taken from patients in written form
- The data collected from patients and their relatives will be kept in security and will not be given to any person
- All the participants of study will kept anonymous during the study
- The data collected from patients will be secured in laptops and as hard copies in locker for safety
- The patients have been informed that there is no any disadvantages as well as risk of study
- The subjects of study were informed that they are free and can leave the study at any time when they want

DATA COLLECTION

- All the data was composed by usage of data collection sheets.
- The data was collected according to the variable of gender, modes of pain, age and nature of pain according to posture

- The demographic data was also collected from all the participants.
- The data was collected from patients of both rural and urban areas.

DATA ANALYSIS

Appropriate statistical data analysis technique was used with the help of SPSS version

Chi-Square test was applied in statistical P-value<0.05 is analyzed.

Results

Table 1: Frequency of Area

		Area		Total	
		Rural	Urban		
Gender	Female	Count	8	62	70
		% of Total	.1	.4	.5
	MALE	Count	11	69	80
		% of Total	.1	.5	.5
Total	Count	19	131	150	
	% of Total	.1	.9	1.0	

The table 1 & figure 2 shows the frequency

of the area for the cases of injuries. The size of sample was 150 from which the frequency of patients was higher urban areas as compared to rural areas. The results showed that 131 out of 150 patients were dealing with hamstring pain were from urban areas while only 19 patients belong to rural areas. The statistical value of chi-chart is 0.182, which is greater than 0.05, which shows that data is insignificant.

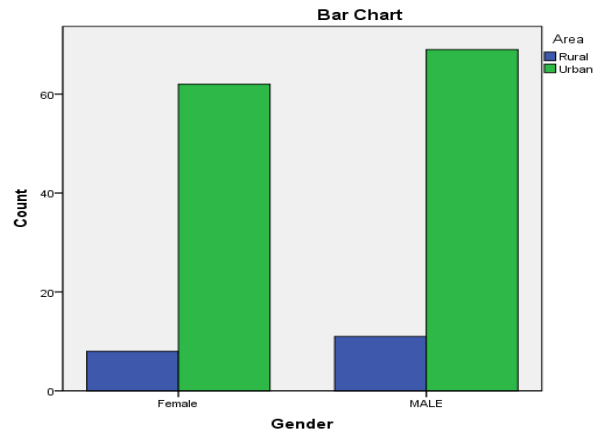


Figure2: Frequency of Area

Table2: Frequency of Pain

		Crosstab			Total	
		How often do you feel pain while sitting.				
		NO	ALL THE TIME	SOMETIME		
Gender	Female	Count	28	25	17	70
		% of Total	.2	.2	.1	.5
	MALE	Count	29	36	15	80
		% of Total	.2	.2	.1	.5
Total		Count	57	61	32	150
		% of Total	.4	.4	.2	1.0

The table 2 & figure 3 showed the frequency of pain in patients at time of sitting. The results determined that 57 out of 150 patients do not feel any pain while sitting but 61 patients feel pain all the time during sitting. Only 32 patients feel pain sometimes but not all the time. The statistical value of chi-chart is 0.480, which is greater than 0.05, which shows that data is insignificant.

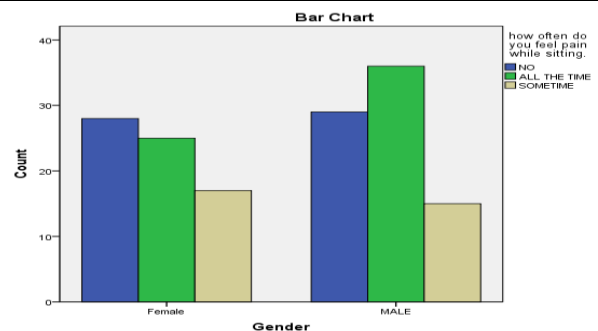


Figure 3: Frequency of Pain

Table 3: Stretch in Posterior things

		Crosstab			Total
		do you feel stretch in posterior thing			
		NO	SOMETIME	ALL THE	

		TIME				
Gender	Female	Count	40	21	9	70
		% of Total	.3	.1	.1	.5
	MALE	Count	44	22	14	80
		% of Total	.3	.1	.1	.5
Total		Count	84	43	23	150
		% of Total	.6	.3	.2	1.0

The table 3 & figure 4 determined the frequency of pain due to stretch in posterior thing in patients. The participants of the research were 150. From total 150 patients, 84 do not feel any stretch in posterior muscles while 43 feel stretch some times. Only 23 patients out of 150 feel regular stretch in their posterior muscles. The statistical value of chi-chart is 0.727, which is greater than 0.05, which shows that data is insignificant.

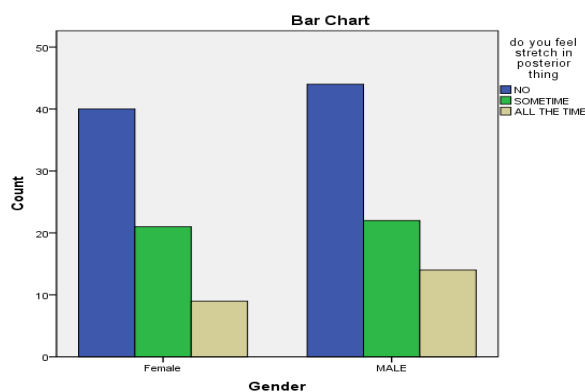


Figure 4: Stretch in Posterior things

Table 4: Frequency of Leg Injury

		Crosstab				
		did you have any leg injury.			Total	
		NO	YES	NOT REMEMBER		
Gender	Female	Count	35	14	21	70
		% of Total	.2	.1	.1	.5
	MALE	Count	42	25	13	80
		% of Total	.3	.2	.1	.5
Total		Count	77	39	34	150
		% of Total	.5	.3	.2	1.0

The results table 4 & figure 5 shows the frequency of leg injury in patients regarding with hamstring pain. The number of total participants was 150 from which 77 patients claimed that they did not have any leg injury throughout their life. Only 39 out of 150 patients dealt with leg injury due to which their pain start while 34 patients claimed that they did not remember whether they had any leg injury or not. The statistical value of chi-chart is 0.083, which is greater than 0.05, which shows that data is insignificant.

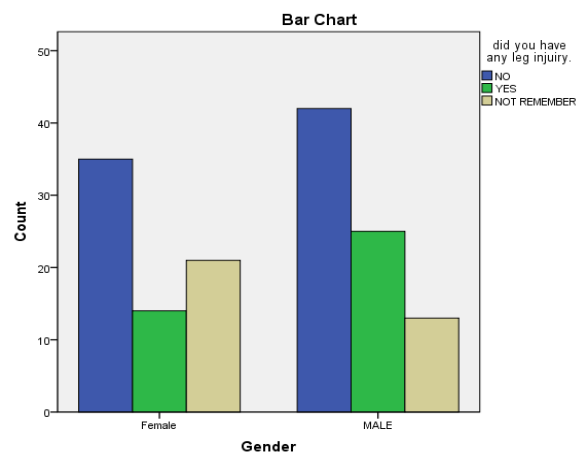


Figure 5: Frequency of Leg Injury

Table 5: Frequency of Leg Operation

		Crosstab				
		has you leg ever been operated on.			Total	
		NOT AT ALL	FEW MONTHS AGO.	ONE YEAR BEFORE		
Gender	Female	Count	37	17	16	70

		% of Total	.2	.1	.1	.5
	MALE	Count	41	21	18	80
		% of Total	.3	.1	.1	.5
Total		Count	78	38	34	150
		% of Total	.5	.3	.2	1.0

The table 5 & figure 6 showed the frequency of prior leg operation and its relation with pain. Most of them as 78 out of 150 patients said that they had not been operated while 38 patients said that they had been operated few months ago. Only 34 out of 150 patients showed that they had been operated before one year of pain. The statistical value of chi-chart is 0.078, which is greater than 0.05, which shows that data is insignificant.

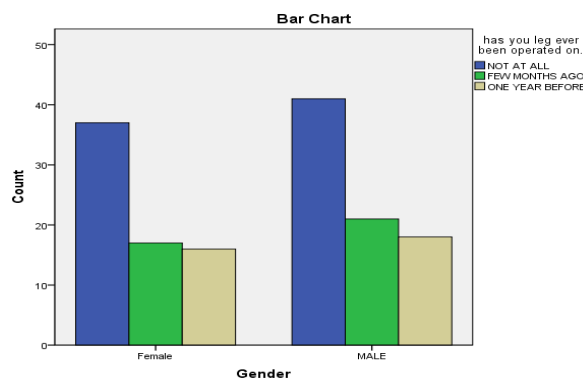


Figure 6: Frequency of Leg Operation

Table 6: Frequency of Pain during Walking

		do you feel any pain during walking.			Total	
		NO	SOMETHIMES	ALL THE TIMES		
Gender	Female	Count	30	20	20	70
		% of Total	.2	.1	.1	.5
	MALE	Count	38	27	15	80
		% of Total	.3	.2	.1	.5
Total		Count	68	47	35	150
		% of Total	.5	.3	.2	1.0

The table 6 & figure 7 determined the frequency of pain during walking because pain is associated with walking and sitting. 68 out of 150 participants said that they did not feel any pain during walking while 47 patients feel pain sometimes. Furthermore, the results indicated that only 35 out of 150 patients feel pain during walking all the time. The statistical value of chi-chart is 0.361, which is greater than 0.05, which shows that data is insignificant.

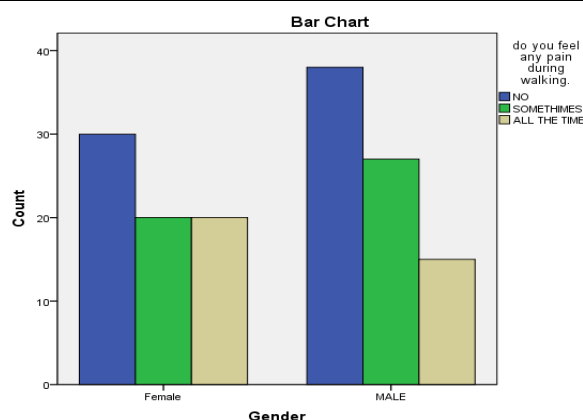


Figure 7: Frequency of Pain during Walking

Table 7: Frequency of Joint Problem

			Crosstab		Total
			do you have any joints problem.		
			NO	YES	
Gender	Female	Count	33	37	70
		% of Total	.2	.2	.5
	MALE	Count	53	27	80
		% of Total	.4	.2	.5
Total		Count	86	64	150
		% of Total	.6	.4	1.0

The table 7 & figure 8 indicated the frequency of joint problem in patients. The

results indicated that 86 patients out of 150 did not have any joint problem while only 64

patients dealt with joint problem too. The statistical value of chi-chart is 0.18, which is greater than 0.05, which shows that data is insignificant.

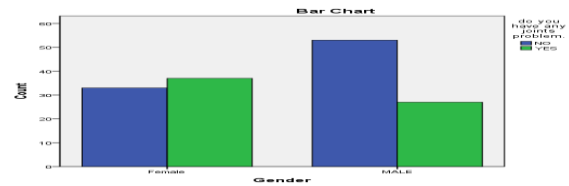


Figure 8: Frequency of Joint Problem

Table 8: Cause of Problem

		Crosstab			Total	
		what causes the problem				
Gender	Female	FROM SITTING	FROM STANDING	BY WALKING	70	
		Count	26	26		18
	% of Total	.2	.2	.1		
Gender	MALE	FROM SITTING	FROM STANDING	BY WALKING	80	
		Count	40	20		20
	% of Total	.3	.1	.1		
Total		Count	66	46	38	150
		% of Total	.4	.3	.3	1.0

The table 8 & figure 9 determined the cause of problem in participants due to hamstring problem. The results indicated that cause of problem in 66 patients was sitting while 46 patients feel pain while standing. Furthermore, it was also found that only 38 out of 150 patients feel pain during walking as compare to other activities. The statistical value of chi-chart is 0.201, which is greater than 0.05, which shows that data is insignificant.

Discussion

The study was conducted to determine the prevalence of hamstring strains regarding to gender, age. The objective of study was to find the effects of different regular activities on pain and to determine the overall frequency of pain due to injury. The patients feel pain while sitting, walking, jumping and running. The results showed that the frequency of pain was high in urban areas as compared to rural areas. 131 out of 150 patients belong to urban areas. The results were similar to a study conducted by Priyanka et al. which stated that occurrence of Hamstring injuries was higher in urban

areas instead of rural areas. It was stated that the reason behind high rate of injuries in urban areas was that there is more traffic in cities.

The results showed that prevalence of study is higher in males than females as 80 out of 150 patients were male. Similar study was conducted by D. Fife et al. according to which males are at higher risk of hamstring pain due to large exposure with traffic as compared to women. The results indicated that mostly people feel pain during sitting and walking. Worrell et al. also showed same results and stated that people mostly feel pain during work or regular activities and these activities include sitting, walking, running, jumping and exercising.

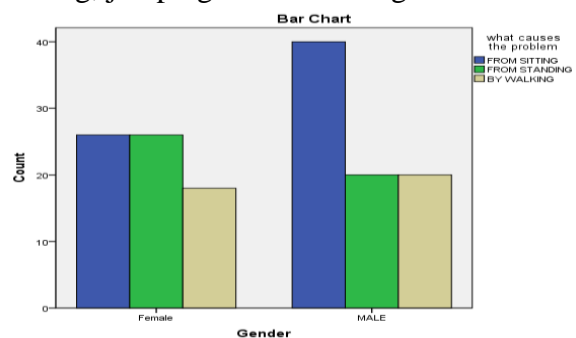


Figure 9: Cause of Problem

Conclusion

Hamstring injuries are most common cause of pain in young people and occur due to many reasons. People dealing with this disease feel pain all the time and the pain due to this injury is unbearable. The patients feel pain during all activities such walking, jumping and running. Mostly people belongs to urban areas which means pain in hamstring is related with traffic, as there is more traffic in urban areas as compared to rural areas. The study also found effect of some other activities on pain and its relationship with leg injury or operation.

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