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EPIDEMIOLOGY OF LOWER LIMB INJURIES IN UNIVERSITY LEVEL FOOTBALL AND HOCKEY PLAYERS OF PUNJAB, INDIA

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Abstract:
The aim of the study was to find out the effects of epidemiology of lower limb injuries in university level football and hockey players of Punjab aged between 18 to 25 years. The sampling of this study confined to a group of 129 hockey players and 147 football players, (total 276 players) belonging to the state of Punjab. A thorough review of literature was done to develop a questionnaire on the basis of demographic data, predisposing factors, training profiles and extent of injury. Since the questionnaire was originally in English and local language so players were interviewed personally. Mean, standard deviation and percentile were calculated. Statistical significance was set up at p value ≤0.05. This study illustrates that ankle & foot were most affected sites (34.0% football, 36.4% hockey), the most common injuries were sprains (59.2% football, 48.8% hockey), strains (25.9% football, 29.5% hockey) and extent of injury was commonly moderate (51.7% football, 56.6% hockey). This study might be helpful for the players as well as trainers, coaches to formulate effective and appropriate training protocols with minimal risk of injuries.

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Keywords: survey, questionnaire, lower limb injuries, football players, hockey players

1. Introduction

One defined injury as any condition that caused a player to be removed from a game, miss a game, or to be disabled enough to come to the medical tent (Kibler, W. B., 1993). An injury is defined as any pain that prevented the player from completing that particular match, practice, or training session and caused the player to seek medical attention. Acute injuries is those of rapid onset, chronic injuries were of longer duration involving very slow changes, and acute or chronic injuries is of longer duration and involved gradual changes, but were brought about by movements causing rapid onset (A. Grimm et al., 2007). Football and Hockey are the most popular sports in the world. Football is played in 203 countries, first in popularity and team sports games (Stubbe J., et al., 2015). Football and hockey players are exposed to various injuries during starting, turning, twisting, slopping, jumping and kicking to greater risk of lower limb injuries (Waston A., 1993).

Football and hockey are marked by physical contact and performance of specific sports actions such as running, jumping, landings, acceleration, slowdown, abrupt changes of direction, and tramping are the extrinsic causative factors related to the occurrence of sports injuries. Among other features, height, body weight and flexibility level of the athlete are the potential internal risk factors to the occurrence of sports injuries (Hoff J., 2005). In football lower extremity injuries accounted for 67% to 88% of all injuries reported in men. In women's body part ankle, knee and thigh, Groins, ACL, ankle sprain are common injuries (Alfredson et al., 2000, Giza E., et al., 2005, K. Soderman., et al., 2001). In hockey the most common lower limb injuries are patellofemoral pain, patellar tendinitis, iliotibial band friction syndrome and medialtibial stress syndrome (Michelle R. Devan., et al., 2004). Many studies have reported the frequency of injuries and examined selected risk factor that affects the football and hockey players. However, none of these studies have relationship of the epidemiological lower limb injuries of the interuniversity football and hockey players of the Punjab. So the purpose of this study was to determine the prevalence of different types of lower limb injuries in the university level Football and hockey players of Punjab.

2. Materials and Methods

2.1 Samples

The study population consisted of total 276 players (129 hockey players and 147 football players) belonging to state of Punjab. The mean ages of hockey and football players were 19.50 yr (range 18-23 yr) with a mean of 5.10 (±2.29) yr of playing experience. These players were inter-university level players.

Table 1: Descriptive Statistics of anthropometric variable, playing years, frequency & duration of training and days lost due to injury

Descriptive Statistics	Hockey (N=129)		Football (N=147)		Overall (N=276)	
	Mean	SD	Mean	SD	Mean	SD
Age	19.33	1.26	19.64	1.58	19.50	1.44
Height	168.38	8.92	174.20	7.68	171.48	8.76
Weight	57.80	9.16	62.33	6.25	60.21	8.05
BMI	20.32	2.25	20.58	2.13	20.46	2.19
Years of Playing	4.58	1.55	5.55	2.71	5.10	2.29
Frequency of Training (times/week)	6.00	0.00	5.79	.61	5.89	.46
Duration of Training (per day)	6.00	0.00	5.15	1.03	5.55	.86
Days Lost Due to Injury	20.47	43.86	34.10	83.14	27.73	67.91

2.2 Procedure

The type of sampling was stratified random sampling. The investigator personally established contact with the players and coaches of the university and the purpose of the study was explained to them. The self-administered questionnaire developed in the pilot study was used, to collect information about sports profile injuries, participation in warm up and cool down, frequency of training (times/week), type of playing surface, position of playing during injury, site of injury, extent of injury. The sample included only injured players of lower limb which signify the risk of injury to the players who are involved in those particular sports. Mean scores, standard deviation and percentage were calculated and utilized to identify the nature, site and extent of injury in football and hockey players.

3. Results and Discussion

A total of 276 players (129 hockey players and 147 football players) belonging to state of Punjab.

Figure 1: Percentage of football and hockey players in the sample

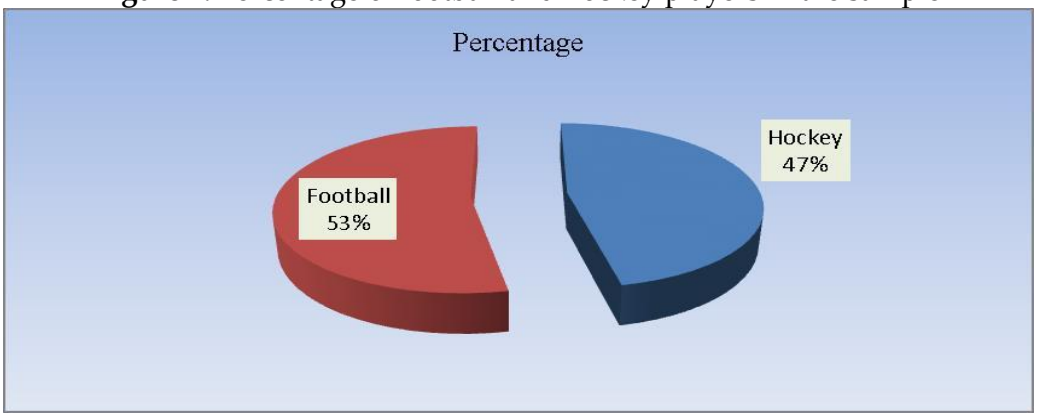

Table 2: Percentage distribution of warm up and cool down sessions of football and hockey players

Frequency (%)		Hockey		Football	
		N	Percentage	N	Percentage
Warm Up	Yes	129	100.0%	147	100.0%
	No	0	0.0%	0	0.0%
Cool Down	Yes	129	100.0%	147	100.0%
	No	0	0.0%	0	0.0%

Table 2 showed that all the players were performing warm up and cool down sessions.

Table 3: Percentage distribution of nature of playing surface of football and hockey players

Frequency (%)		Hockey		Football	
		N	Percentage	N	Percentage
Type of Playing Surface	Grass	76	58.9%	147	100.0%
	Concrete	0	0.0%	0	0.0%
	Asphalt	0	0.0%	0	0.0%
	Artificial Turf	129	100.0%	0	0.0%

Table 3 showed that football players were playing on grassy surface (100%) where as hockey players were playing on both grass (58.9) and artificial turf (100%).

Table 4: Percentage distribution of playing positions of football and hockey players when got injured

Frequency (%)		Football	
		N	Percentage
Position of Playing while Injury	Goal Keeper	20	13.6%
	Defenders	42	28.6%
	Mid Fielders	39	26.5%
	Wingers	17	11.6%
	Strikers	29	19.7%

Frequency (%)		Hockey	
		N	Percentage
Position of Playing while Injury	Goal Keeper	18	14.0%
	Defenders	40	31.0%
	Mid Fielders	26	20.2%
	Forward	45	34.9%

Table 4 showed that according to the playing positions in game defenders (28.6%) followed by mid fielders (26.5%) got injured commonly in football. Whereas forwards (34.9%) followed by defenders (31.0%) got injured more commonly in hockey. These results are also supported by Kumar et al., (2008) also explained that highest percentage of injuries was recorded footballers playing at center half position (25%) followed by center forward (18.51%). (Fox N. 1981 and Murtaugh K., 2001) concerned that the most

injured field hockey players would be forwards or defenders, who spend more time near the goal area.

Table 5: Percentage distribution of site of injury of football and hockey players

Frequency (%)		Hockey		Football	
		N	Percentage	N	Percentage
Site of Injury	Hip & Pelvic	7	5.4%	19	12.9%
	Anterior Thigh	12	9.3%	12	8.2%
	Posterior thigh	16	12.4%	16	10.9%
	Knee	29	22.5%	39	26.5%
	Leg	18	14.0%	11	7.5%
	Ankle & Foot	47	36.4%	50	34.0%

Figure 2: Shows percentage distribution of site of injury of football and hockey players

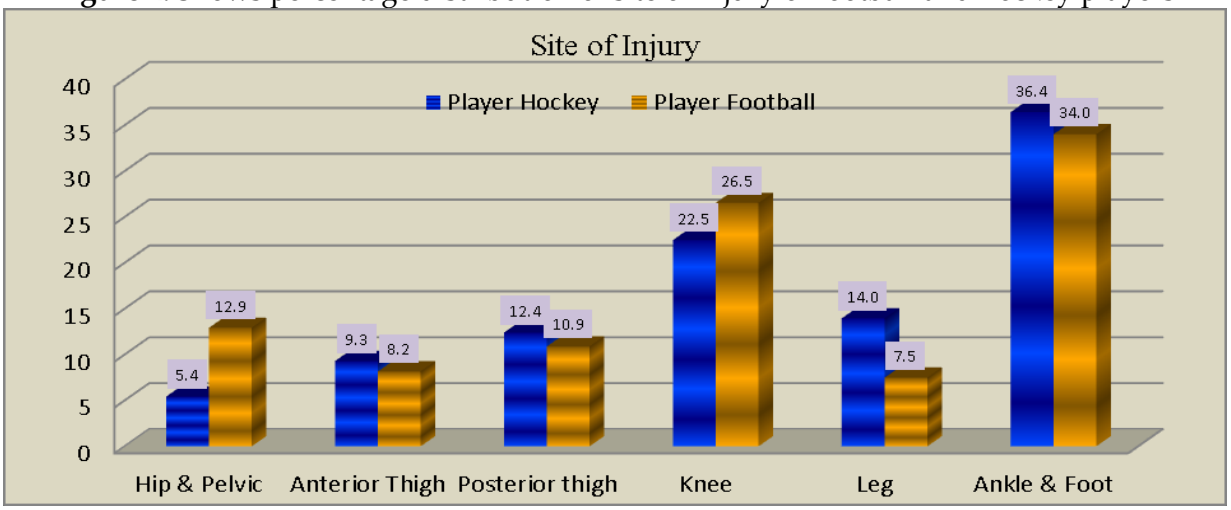

Table 5 showed most common sites of injury were ankle & foot (34.0% football, 36.4% hockey) followed by knee (26.5 % football, 22.5% hockey). Kumar et al., (2008) illustrated that the most commonly injured anatomical site in footballers was found to be the region of ankle (29.62%) followed by knee (17.59%). Garrick JC, (1977), Rose CP, (1981), Torg J, (1982) also revealed that ankle is the most frequent area in the body accounted for 27% of all reported injuries in hockey. Fox N. (1981) suggests that the stooped position used when dribbling the ball may be an unsound position for fast locomotion and could contribute to lower limb injury.

Table 6: Percentage distribution of classes of injuries in football and hockey players

Frequency (%)		Hockey		Football	
		N	Percentage	N	Percentage
Class of Injury	Fracture	8	6.2%	2	1.4%
	Dislocation	1	.8%	0	0.0%
	Strain	38	29.5%	38	25.9%
	Sprain	63	48.8%	87	59.2%
	Abrasion	6	4.7%	3	2.0%
	Contusion	13	10.1%	17	11.6%

Table 6 showed most common classes of injury were sprain (59.2% football, 48.8% hockey) followed by strain (25.9% football, 29.5% hockey). Dick. R., Hootman et al., (2007), Hootman & Vela. L., (2007) also explained that in football more than 15% of all injuries in lower extremity were sprain because of the twisting movement of the ankle joint. (Fong, et al., (2007) also explained that studies on sports injury from year (1977-2005) showed that ankle sprain was one of the major injuries in field hockey.

Table 7: Percentage distribution of extent of injuries in football and hockey players

Frequency (%)		**Hockey**		**Football**	
		N	**Percentage**	**N**	**Percentage**
Extent of Injury	Mild	27	20.9%	22	15.0%
	Moderate	73	56.6%	76	51.7%
	Severe	29	22.5%	49	33.3%

Table 7 showed moderate injuries were more common (51.7% football, 56.6% hockey). Which were followed by severe injuries (33.3% football, 22.5 hockey). S. Schmidt-Olsen, et al., (1985) revealed that moderate injury which requires medical care, but no hospitalization and for which advice of reduced activity is given and also suggested the active players 5.2% suffered from a soccer injury, 2.6% had moderate and/or severe injuries; 0.4% had serious injuries.

Table 8: Percentage distribution on the basis of diagnosis in football players

Frequency (%)		**Football**	
		N	**Percentage**
Diagnosis	Hamstring Strain	15	10.2%
	Adductor Strain	7	4.8%
	Quadriceps Contusion	4	2.7%
	Miniscus Injury	4	2.7%
	Inguinal Hernia	1	.7%
	Lateral Ankle Sprain	49	33.3%
	Acl Injury	11	7.5%
	Others	56	38.1%

Figure 3: Shows percentage distribution on the basis of diagnosis in football players

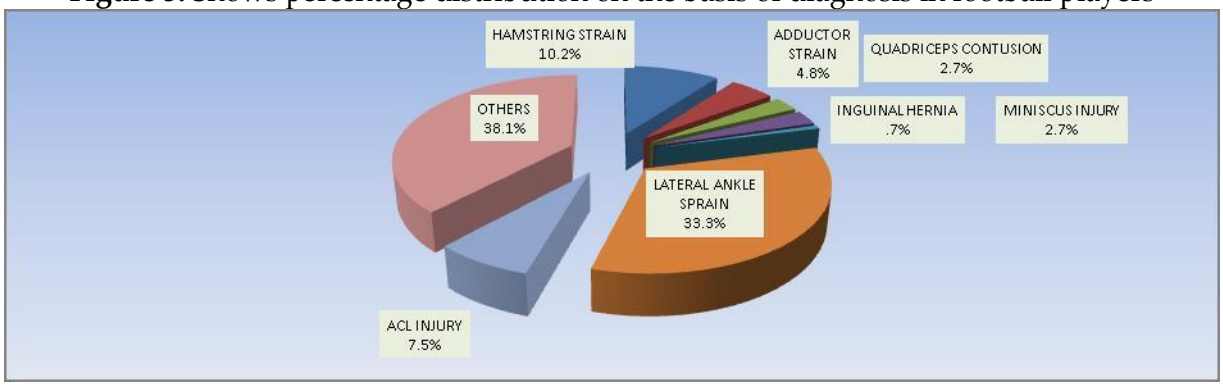

Table 8 showed diagnosis of most common injuries were ankle sprain (38.1%) in football players. Garrick JC (1977) & Mohammad Hassabi, et al., (2010) also explained that ankle sprain occurred to the professional soccer players with a percentage of 45%.

Table 9: Percentage distribution on basis of diagnosis in hockey players

Frequency (%)		**Hockey**	
		N	**Percentage**
Diagnosis	Hamstring Strain	15	11.6%
	Adductor Strain	5	3.9%
	Calf Muscle Tear	7	5.4%
	Shin Splint	4	3.1%
	Achilles Tendinopathy	1	.8%
	Lateral Ankle Sprain	38	29.5%
	Acl Injury	9	7.0%
	Others	50	38.8%

Figure 4: Show percentage distribution on the basis of diagnosis in hockey players

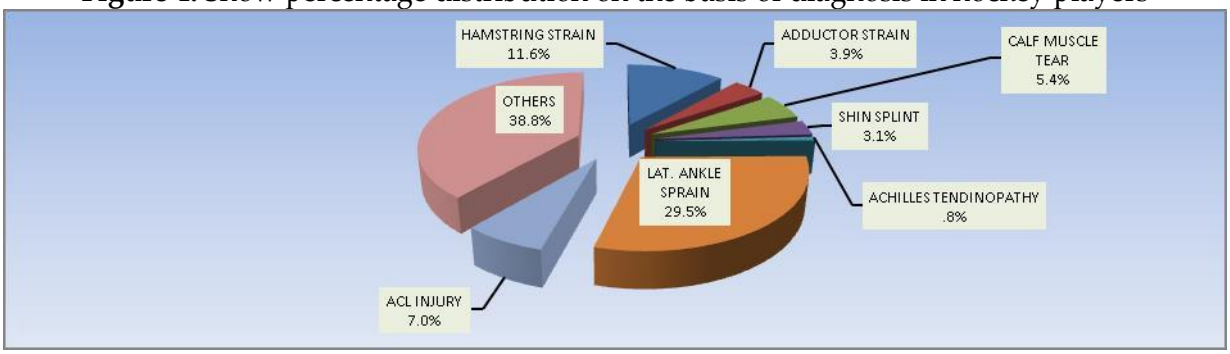

Table 9 showed diagnosis of most common injuries were ankle sprain (29.5%) in hockey players. Agel J., Dompier et al., (2007), Hootman, J. M. et al., (2007) & Murtaugh, K. (2001) concluded that ankle sprain is most prevalent diagnosis of injuries in the field hockey game.

Table 10: Percentage distribution of physiotherapy treatment taken by the football and hockey players

Frequency (%)		**Hockey**		**Football**		**Overall**	
		N	Percentage	N	Percentage	N	Percentage
Physiotherapy Treatment taken	Yes	68	52.7%	77	52.4%	145	52.5%
	No	61	47.3%	70	47.6%	131	47.5%

Figure 5: Shows percentage distribution of physiotherapy treatment taken by the football and hockey players

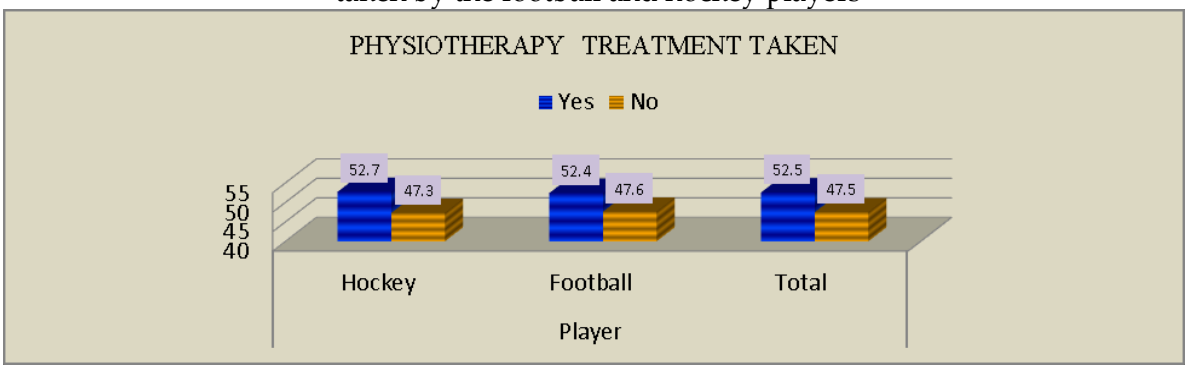

Table 10 showed that percentage of players who took physiotherapy treatment was only 52.5%. It was also observed that 46.83% of footballers got their injuries treated by medical practitioners followed by 29.11% who went to physiotherapist and 11.79% who went to sports masseur for treatment (Kumar et al., 2008). The study also observed that medical treatment was preferred in comparison to physiotherapy management.

4. Conclusion

From the findings of present study it might be calculated that most injuries of football and hockey players are sustained in lower limb; ankle & foot and knee injuries are common among football and hockey players, where ankle injuries being the most common. Regarding the class of injury in lower limb, ankle sprain was common in both football and hockey players. Regarding the position of playing most commonly injured players were defenders in football and forwards in hockey. The extent of injury was moderate in both football and hockey players.

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