

COMMON SPORTS INJURIES AMONG THE INJURED CRICKET PLAYERS

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We the under sign certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

**COMMON SPORTS INJURIES AMONG THE INJURED
CRICKET PLAYERS**

Submitted by **Md. Tanzir-Uz-Zaman** for the partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

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DECLARATION

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also decline that for any publication, presentation or dissemination of information of the study. I would be bound to take written consent of my supervisor.

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Abbreviations

BCB:	Bangladesh Cricket Board
BHPI:	Bangladesh Health Professions Institute
BKSP:	Bangladesh Krira Shikkha Protistan
BMRC:	Bangladesh Medical Research Council
CRP:	Center for the Rehabilitation of the Paralyzed
SPSS:	Statistical Package of Social Sciences
WHO:	World Health Organization

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Abstract

Purpose: To find out the common injuries that occurs in the injured cricketers.

Objectives: To find out the common sports injuries among the injured cricket players.

Methodology: The study was a quantitative research model in the form of a retrospective type survey in design is carried out in this study. 31 samples were selected by simple random sampling procedure. Data were collected from BKSP and BCB. The investigator used a questionnaire to collect the data from filed documents himself. Data were numerically coded and captured in Excel, using an SPSS 16.0 version soft ware program. The researcher used descriptive statistics to analyze the data.

Results: The study has been provided a baseline of information about the common injuries of the injured cricket players. Among the 31 cricketers n=7, (22.58%) had shoulder injuries, n=3, (9.68%) had hand and finger injuries, n=5, (16.13%) had thigh and hip injuries, n=4, (12.90%) had knee and leg injuries, n=3 (9.68%) had ankle injuries, n=2, (6.45%) had foot injuries, n=6 (19.35%) had spine, back and trunk injuries and n=1, (3.22%) had head and neck injuries. n=28 (90.3%) were male and n=3 (9.70%) were female out of 31 injured cricketers. The cricketers who were in between 18-20 years of age group were most commonly faced injuries n=14 (45.2%). The mean ages of the samples were 19 years. Bowlers had most frequent n=14 (45.2%) injuries. Among 31 injured cricketers n=9 (29%) had direct injury and n=22 (71.00%) had indirect injury/ overuse injury. Most common injuries were rotator cuff injuries n=4 (12.9%), hamstring strain n=3 (9.7%) and back pain n=6 (19.4%). Among the injured cricketers n=7(22.6%) had taken only medication, n=4 (12.9%) had taken only physiotherapy and n=17 (54.8%) had taken both medication and physiotherapy. In medication n=4 (12.9%), in physiotherapy n=4 (12.9%) and in both medication and physiotherapy n=15 (48.4%) had improved their condition.

Conclusion: It will be said that, shoulder, hip and thigh, knee and leg and back injuries are most common injuries to all speciality of cricket players. Most commonly cricketers face indirect and overuse injuries. Over all, bowlers are more prone to sports injuries. More research should now be undertaken on sports related injuries of the cricketers, with an emphasis on larger sample sizes and response rate to be able to generalize the results and conclusions.

1.1 Background

Cricket has had a history of being regarded as a leisurely, gentleman's game. Today, with a solid ball weighing approximately 156 grams propelled from a distance of 20m at a speed of about 140 km/h to an awaiting batter, it can hardly be called a gentlemanly game (Stockhill & Bartlett, 1993; Corrigan, 1984). Cricket has been first taking place in 1861 (Mandle, 1973). Cricket is a major international sport played in more than 60 countries. The laws of cricket were drawn up by the London Club in 1944 formalizing a game that had been played for a hundred of years ago. While its popularity spread throughout the countries of the British Empire and Western Europe, it was not until the mid nineteenth century that cricket gained its international status and regular international matches were played between touring teams. Bangladesh got there international status by the International Cricket Council (ICC) by the year of 1999 (Crisp et al, 2001).

In Bangladesh cricket is developing day by day. The field of sports physiotherapy is also flourishing now days, because the injury to the sports is very common phenomenon. Though cricket is a very popular game injury to the national players and as well as county cricketers is very importantly highlighted to our media.

The pace of the game, hazards of the play and expectations of the players have all increased over time. Although strictly a non-contact sport, injuries in cricket can result in a number of ways. A direct blow from a cricket ball during delivery or fielding may result in fractures, bruising, or worse, while a fielder may fall or collide with a boundary fence. Players are now recommended to wear an array of protective gear to guard them from that particular injury. Probably the most common of injuries, particularly during formal participation of the elite level, are overuse injuries associated with fast bowler (Hardcastle, 1991).

According to Ashrafuzzaman., 2002; some cricket playing countries have studies about cricket injuries. But in our country there is no such specific study about cricket injury. For this reasons, the team managements are not being able to introduce a problem oriented training program, to prevent the common cricket injuries in

perspective of Bangladesh. On the other hand the risk factors of the cricket players influencing the injuries. In perspective of Bangladesh are still not identified by any study. Thus there are no recommendations of special care, in perspective of Bangladeshi cricket trainees. That's why our cricket players more frequently get injured and as the management of there does not maintained a good standard and because of these the performance of the players reduces. Despite the historical recognition of injury and possible death resulting from cricket, few well conducted studies have documented the incidence and nature of cricket injuries during a season. Cricket is essentially a British Commonwealth nation sport and given the limited number of countries involved, little international data exists focusing on the epidemiology of injury (McGrath and Finch, 1996).

Sports injuries have been reported with increasing frequency in a quest to identify patterns by which they can be predicted and prevented. Injury surveillance in cricket has been undertaken for almost a decade. The only sport with a true "World League" comprising 10 countries has not, however had universal reporting of injuries. Only reports from Australia, South Africa have been published, although other nations have started to setup injury databases and some for example England have produced reports (Mansingh et al, 2006).

It was reported that cricket injuries amongst adults (>15 years) who presented to emergency departments in Australia accounted for 7.3% of all sporting injury cases. This ranked cricket injuries as the fifth greatest source of sports-related emergency. At the time of injury, 94.6% of injured cases were involved in cricket as a formal sporting activity which means organized competition or practice were 82.8%, informal cricket were 7.1%, unspecified were 4.7%. The remaining 5.4% of cricket injuries presenting to emergency departments occurred during recreational cricket activities (Finch et al, 1995).

In Victoria, it was found that people injured in cricket contributed to 9% of all sporting injuries presenting to hospital emergency departments and 6% of all sports-related admissions. In this Victorian study, males were the predominant group injured representing 91% of cases, as were those aged 20-24 years (33%). Injury resulted from being hit by a moving object in 60% of cases, with the ball being the cause of

injury in 85% of these cases. Over-exertion and strain accounted for 21% of cricket related emergency. The most frequently injured body region was the head/face (26%). Injuries to the face, cheek, forehead and scalp accounted for 39% of these head/face injuries. Injuries to the eyes accounted for a further 23%, the nose 12%, mouth 9% and concussion resulted in 7%. The ball caused 87% of the head/face injuries. (Routley and Valuri, 1993).

The principal finding of this study was that cricket injuries are common in club and provincial players in South Africa, with a 49% seasonal incidence rate of injury being recorded. Younger players sustained more injuries than older players, with the majority of injuries occurring during matches (69%). Furthermore, 24% were re-occurring injuries from previous seasons and 23% of injuries were re-occurring injuries during the current season. Bowlers suffered a greater percentage of lower limbs (22%) and back injuries (17%) than other players and this may be attributed to run-up and the bowling action. Upper limb injuries (26%) were most frequent in fielders with a possible explanation being due to excessive throwing over a large distance (Stretch, 1992).

1.2 Justification of the study

Although some studies have dealt with common sports injuries among cricket players in other countries, the exact nature and prevalence of these Injuries has not been studied before in Bangladesh. This study was formulated to fill the gap of knowledge in this area. The aims of the study were to assess the common sports injury among the injured cricket players. And from this study awareness will be increased and may provide proper recommendation for every single risk which will be helpful for player. Beside this it will help to established proper guideline and proper technique. This study will also help to discover the lacking area of a cricket player, especially about their posture before doing any activities. Beside this it will help to professional development which is mandatory for current situation. So physiotherapist can help them to teach and give proper education about the posture the condition and preventive methods. And it will help to discover the role and importance of physiotherapy in every sector of Bangladesh.

1.3 Research question

What are the common sports injuries among the injured cricket players?

1.4 Study objectives

1.4.1 General objectives

- To find out the common sports injuries among the injured cricket players.

1.4.2 Specific objectives

- To find out the percentage of common injuries among cricket players.
- To interpret age ranges prone to injuries.
- To find out the nature of injuries.
- To identify whether the batsman, bowlers, all rounder or wicket keepers are more vulnerable for injuries.
- To extract the types of injuries.
- To know about the management of injuries (medication, physiotherapy or both).
- To evaluate that what was the beneficial for the players. Was it medication or Physiotherapy or both?

2.1 Cricket injury

In the 1970s cricket was regarded as a sport of 'moderate-risk injuries'. These days cricketers are more susceptible to higher risk injuries and cricket ranks fifth among causes of non-fatal accidents. Elite cricketers are expected to train longer, harder and earlier in life to excel in their chosen sport. The repetitive nature of the game and the need often to be out on the field of play for long periods further predispose cricketers to a wide range of injuries. Injury can occur during any phase of the game - bowling, batting or fielding- and can involve any part of the body (Moonot and Jain, 2006).

2.1.1 Injury while Bowling

Bowling is associated with high injury rate. Back injury is most common while bowling, especially the facet joint is most vulnerable to injury in cricket shoulder injury is most common and rotator cuff injury is most frequent of them. On the other hand, the spin bowlers may get wear and tear injury to the spinning finger (Crisp et al, 2001).

According to Haddad et al. (2006), Bowling is the most risky activity, accounting for 41.3% of all injuries. Bowling involves repetitive twisting, extension and rotation of the trunk in a short period, while body tissues and footwear must absorb large ground reaction forces of 4.1 to 9 times the bowler's body weight. It is the speed of the delivery, and thus the force of the action, that make the fast bowlers more prone and vulnerable to sports injuries particularly to bony abnormalities (e.g. spondylolytic incidences, spondylolisthesis, spondylolysis, pedicle sclerosis and pars defect), disc degeneration, stress fracture at various sites, primarily in the metatarsal bones, fibula and tibia, muscle and other tissue tears, and pain.

In "Back injuries to fast bowlers in cricket: a prospective study", it is found that 11% of the players sustained a stress fracture to a vertebra (L4 to S1), and 27% sustained a soft tissue injury to the back (Foster, John et al. 1989).

According to Gregory et al. (2004), Fast bowling in cricket is associated with pars interparticularis bone stress response and with development of incomplete stress fractures that occur more frequently on the left than the right.

According to Finch et al. (1999), 'In high level cricket, overuse injuries are common and related to the physical demands of the sport, particularly while bowling. The bowling action involves repetitive twisting, extension and rotation of the trunk at the same time as absorption of large ground reaction forces over a short period of time. These movements, if performed incorrectly or too frequently, can lead to overuse injuries of the back, particularly in elite and high level cricketers'.

In both fast and spin bowling, technique problems and over-use have been implicated in stress fractures of the pars interarticularis (the arch at the bony bridge that holds together the superior and inferior particular processes of a vertebral body). Hardcastle et al reported an incidence of 54% of pars interarticularis defects in the study (Hardcastle, Anner et al, cited in Haddad et al. 2006).

Spinal overuse injuries occur more frequently to cricketers adopting a mixed bowling action than to those who favor a front- or side-on bowling technique. Strategies to ensure that cricketers do not adopt the mixed action or bowl too fast for extended periods can prevent these back injuries (Finch et al. 1999).

Workload is another factor to produce injury while bowling. There is a relationship between high bowling workload and injury. The risk of injury is much higher for those bowlers who experience consistent and sustained high workload (Dennis et al. 2004).

Shoulder injuries in cricket tend to result from throwing but can be aggravated by bowling, because of the repetitive forces involved. In a good bowling action, the shoulder should not be subjected to forces that lead to instability. The arm should not get into the position of 'apprehension' (abduction and forced external rotation), as this is the mechanism that subjects the capsular ligaments to forces that threaten instability. Even with a good bowling action though, over-use injuries can weaken the rotator cuff and allow increased transnational movement of the humeral head,

resulting in instability and shoulder pain. With increased translation of the humerus, the long head of biceps is recruited to help stabilize the joint. This in turn can lead to traction on the long head of biceps tendon, predisposing the shoulder to tendonitis and superior labral anterior posterior (SLAP) lesions. Slow leg-spin bowlers develop internal rotation force at the end of their delivery and are therefore especially prone to these over-use injuries (Haddad et al. 2006). Fast bowler miss, through injury, about 16% of all potential playing time, whereas the prevalence rate for all other positions is less than 5% (Orchard, JW et al. 2006).

On the other hand Incidence of injuries in fast bowling is greater than is spin bowling. The incidence of injury (per 1,000 balls) at various anatomic sites in fast bowling was knee 0.057, ankle 0.043, low back 0.029, and shoulder 0.007. In spin bowlers, the site incidence was shoulder 0.055 and low back 0.011. The percentage with injuries at ankle, knee, and shoulder was significantly different (95% confidence intervals) for fast and spin bowlers (Gregory, Wallace et al. 2002).

2.1.3 Injury while Fielding

Fielder generally remains at prolonged periods of relative inactivation. For this while a fielder run for a ball suddenly, it may be induce a muscle strain. Fielders while throwing the ball, the shoulder remain at relatively unscratched situation. For this the shoulder may get injury. On the other hand, the fielders who places themselves close to the batsman, might get stricken by the ball and get injury. Server eye injury may induced by direct blow of a flying ball (Crisp et al. 2001).

Fielding injuries comprise 28.6% of the total injury. Injured outfield players tend to use a bowling action to return the ball when fielding because powerful throwing is impossible with a significant shoulder injury. This is less painful, can develop similar power to a throw and is very accurate. It does, however, take rather longer to prepare and deliver the ball. The later phases of throwing produce large 'distraction' forces (a force directed along the upper arm towards the elbow joint, in effect wrenching the arm away from the shoulder joint). The eccentric loading of rotator cuff muscles needed to resist these forces can stretch the muscles beyond their tensile limit, leading

or both macroscopic and microscopic trauma, most commonly from the mid-supraspinatus posterior to the mid-infraspinatus area (Haddad et al. 2006).

In cricket a fielder has to through the ball accurately and fast to prevent runs being taken by the batsman. So, if he is not warmed up or some problem occurs, there is a risk of rotator cuff injury usually the supraspinatus. The ball drops short and the shoulder is very painful while throwing over and over (Crisp et al. 2001).

Fielding injuries also reflect the vulnerability of the bare hands when struck by a cricket ball. The peripheral digits were most frequently involved and joint injuries predominated. These included soft tissue injuries with minor avulsion fractures, fracture dislocation at the base of the middle phalanx with dislocation of the proximal interphalangeal (PIP) joints, mallet finger, recurrent collateral ligament injuries of the distal interphalangeal (DIP) and PIP joints, and thumb injuries- mainly fractures of the condyles of the proximal phalanx, with or without dislocation (Belliappa, Barton, cited in Haddad et al. 2006).

All the players on the fielding side are unprotected except for the occasional close -in fielder who uses shin-pads and a safety helmet (but who is not allowed to wear gloves) and the wicket keeper, who routinely wears leg pads, lower abdominal girds and inner and outer gloves. Despite this protection, wicket keepers frequently injure their hands. Moreover, knee of a wicket keeper may be damaged due to prolonged squatting (Crisp et al. 2001).

2.1.4. Injury while Batting

Batsmen get 17.1% of the total injury, mainly from the direct impact of the ball or from over-use injuries (Stretch 2003). Although batsmen always wear knee and shin pads, they do not always wear other protective clothing. It is common to wear a 'box' over the scrotal area, some use thigh pads, and most batsmen will wear a helmet when facing a fast bowler. A direct blow to the shoulder and upper arm area by a rising delivery is legal and bowlers use it tactically to unsettle a batsman (Crisp et al. 2001). Batting can also cause stress fractures of the pars intra-particulars. It usually responds

to conservative management and may require a change of batting style (Hadded et al. 2006)

2.2. Types and causes of injuries

There are three broad categories: **direct impact**, **indirect**, and **overuse** (Crisp t, King JB cited in Moonot and Jain, 2006).

2.2.1 Direct blow injuries

Occur when a player is struck by the ball, collides with another player, or crashes into the boundary fence (Peterson et al. 2001). A cricket ball is a leather-covered solid cork sphere weighing 5.5 ounces and measuring 22.4cm to 22.9 cm in circumference. As the ball has been propelled down the pitch at speed of up to 90M/ph, the batsman must make a series of very quick decisions, including determining the line and length of the ball, whether to move forwards or backwards, whether to play a stroke and which stroke to play. Any misjudgment creates a visual inadequacy which could cause the ball to ricochet off the bat's edge or the batsman to miss the ball completely, either of which might end up with the cricket ball colliding with a body (Crisp et al. 2001).

The batsman's feet are vulnerable to being struck by a ball and lightweight batting shoes offer little protection against such impact (Moonot and Jain, 2006).

Wicket keeper can experience great trauma, especially on the receiving end of a fast delivery. Fielders are susceptible both to direct blows from the ball and running and sliding into the boundary fence (Crisp et al. 2001).

Other frequently reported impact injuries are fractures of the arm, hands and toes, and soft-tissue injuries to the upper arm and thigh, thorax, abdomen and testicles, Spleen rupture has been reported both because of a blow from a cricket ball and collision with the boundary fence, and the extreme, there was a report of fatal cardiac arrest after a player was hit in the chest by a cricket ball (Moonot and Jain, 2006).

Direct injury or direct blow can also be classified as acute injury and it may be due to extrinsic cause or intrinsic cause such as ligament sprain or muscle tear (Brukner & Khan 1993).

2.2.2. Indirect injuries

Moonot and Jain (2006) describe **indirect injuries** as muscle, ligament and tendon damage sustained while attempting to perform a specific activity. These injuries are most frequent at the start of a season and in players who do not pay much attention to warming up and their general level of fitness.

2.2.3. Overuse injuries

Over use injury is being increasingly common because both participation in sports and the intensity and duration of training is increasing. (Peterson et al. 2001).

Overuse can produce a range of injuries secondary to running (e.g. lower limb), throwing (e.g. shoulder and elbow) and bowling (e.g. lower back). But the most common overuse injury is associated with fast bowling. Bowling involves repetitive twisting, extension and rotation of the trunk in a short period, while body tissues and footwear must absorb large ground reaction forces of 4.1 to 9 times the bowler's body weight. It is the speed of the delivery, and thus the force of the action, that makes the fast bowler more prone to injury (Brukner & Khan 1993).

Overuse injuries are generally caused by repetitive overloading, resulting in microscopic injuries to the musculoskeletal. Depending upon individuals and frequency of the load, tissue can withstand great loads, though there is a critical limit to this capacity (Peterson et al. 2001).

The other overuse injury is splitting or wearing of the finger skin as spin bowlers repeatedly drag their skin across the seam of the ball to impart spin (Moonot and Jain n.d.). A wicket-keeper may also experience damage in the knees (because of the action of repeated squatting), and in the joints of the hand, from repeatedly catching the ball (Crisp et al. 2001).

Other overuse injuries are related to throwing, catching or running. Repetitious throwing can result in instability, impingement syndrome, degenerative changes in the

rotator cuff, and tendinitis in the biceps or a tear of the supraspinatus tendon. Running long distances during matches predispose the player to stress fractures, shin pain, patellar tendinitis and muscle tears (Peterson et al. 2001).

2.3 Study at various countries about cricket injury

South Africa

According to Stretch (2003), lower limb injuries accounted for nearly half of the injuries (49.8%), and injuries to the hamstring (17.8%) and quadriceps (10.1%) muscles, patella and knee (18.5%), and ankle (10.6%) comprised the majority of the 405 lower limb injuries. The hamstring injuries were mainly muscle strains (49) and tears (16), and injuries to the quadriceps were mainly muscle strains (28). These injuries were primarily caused by bowling (hamstring, 21; quadriceps, 19) and fielding (hamstring, 9; quadriceps, 8).

The 189 upper limb injuries were predominantly to the phalanges (24.3%), glenohumeral joint (21.7%), and metacarpals (11.1%). Injuries to the phalanges and metacarpals were primarily caused by impact from the ball while batting (25) and fielding (32), mainly resulting in fractures (19) and joint (14) injuries. The glenohumeral injuries were predominantly muscle (14), tendon (10), and joint (10) injuries caused by fielding, including throwing (22), overuse (5), and bowling (4).

“The injury occurred predominantly when practicing or playing for provincial (36.7%), provincial B (24.1%), and international (16.0%) term”. On the other hand “the injury occurred equally during first class (27.0%) and limited over matches (26.9%) and during practice and training (26.8%)”. The majorities (64.5%) of the injuries were first time injuries, and the younger players (up to 24 years) sustained 57% of these injuries. Of the new or first time injuries, 123 (23.5%) occurred during fielding.

West India

As mentioned by Mansing et al. (2006), sporting injuries have been reported with increasing frequency in a quest to identify patterns by which they can be predicted and prevented. Injury surveillance in cricket has been undertaken for almost a decade. The only sport with a true “World League” comprising 10 nations has not, however, had universal reporting of injuries. Only reports from Australia and South

Africa have been published, although other nations have started to set up injury databases and some –for example, England-have produced reports.

Most injuries occurred in the West Indies Test and One day international teams. Mean match injury incidence was 48.7 per 10 000 player-hours in Test cricket, and 40.6 per 10 000 player-hours in One day international cricket, with injury prevalence of 11.3% and 8.1% respectively. In domestic cricket, the match injury incidence was 13.9 per 10 000 player-hours in one day domestic competitions. There were more injuries on tour for the West Indies team than at home. The batsman and fast bowlers sustained 80% of injuries, with many leading to long absence from the game, although many of these injuries were sustained while fielding. Most injuries were of the phalanges (22%) and the lumbar spine (20%) sustained mainly while fielding (including catching) and fast bowling respectively.

Seventy nine injuries were reported over the study period, of which 50 (63%) led to at least part of a match being missed and were therefore considered for match incidence and prevalence calculations. Injuries occurred in players aged 18-37 years, with 50% in players less than 23 years of age.

Australia

According to Orchard et al. (2002), average injury match incidence in the seasons studied prospectively varied from a low of 19.0 per 10 000 player-hours in first class domestic matches to a high of 38.5 injuries per 10 000 player hours in one day internationals. The average seasonal incidence was 19.2 injuries per squad (25 players) per season (20 matches). Injury prevalence (the percentage of players missing through injury at any given time) was 14% for pace bowlers, 4% for spin bowlers, 4% for batsman and 2% for wicket keepers. The most common injuries were hamstring strains, side strains, groin injuries, and lumbar soft tissue injuries. Bowlers who had bowled more than 20 match overs in the week leading up to a match had an increased risk of sustaining a bowling injury (risk ratio 1.91, 95% confidence interval (CI) 1.28 to 2.85). A further risk for bowling injury is bowling second in a match-that is, batting first (risk ratio 1.62, 95% CI 1.04 to 2.05). A risk factor for injury in fielding is cooling with the boundary fence.

The study also says that, “In Australia at the amateur level, cricket injuries are common, probably reflecting the popularity of the sport rather than the relative danger. Cricket accounts for 7.3% and 3.7% of adult and child sporting presentations to emergency departments in Australia, making it respectively the fifth and eight most common sport presenting”.

Bangladesh

In Bangladesh there is n such study about cricket injury. But there some study related to general sport injury. At those studies there is some information of cricket injury. They are mentioned below:

According to Ashrafuzzaman (2002), 15% of the total injury at knee and ankle injury is more in cricket, football, basket ball and hockey as compared to the other sport discipline.

Debashis et al. (cited in Ashrafuzzaman 2002) conducted survey to find out the injuries caused by participation in sports among BKSP students. At the study they recorded 391 cases in ten different sports. From the result they concluded that among the ten different sports, percentage of injury is more at cricket, football and hockey. Among the injuries groin strain, neck pain, shin splint, Osgood-schlatter’s disease, patella-femoral joint disorder were more common.

3.1 Study design

The purpose of the study is to find out the most common sports injuries occurring to the cricketers. To conduct this study, quantitative research model in the form of a retrospective type of survey design was used. The goals of the quantitative research are to answer a specific research question by showing statistical evidence that the data may be addressed in a particular way (Bailey 1997).

A survey is a research which involves collecting information from a large number of people using interviews or questionnaire, in order that an overall picture of that group can be described in terms of any characteristics which are interest to the research (Hicks 1999). Survey design is primarily used to measure characteristics of a population. The advantages of survey design are that the investigator van reaches a large number of respondents with relatively minimal expenditure, numerous variables can be measured by a single instrument, and statistical manipulation during the data analytical phase can permit multiple use of the data set. (Dopoy & Gitlin 1998).

The most common survey approach is the retrospective design which focuses particularly on past events (Hicks 1999). So, for conducting of this study retrospective survey approach was used.

3.2 Study site

The sites of the study are BKSP and BCB.

3.3 Study population

Populations were the injured Cricketers of BKSP and BCB who had injuries in between last one year of cricket playing.

3.4 Sampling procedure

3.4.1 Sample selection

Samples were selected by convenience sampling procedure, because the cricket players remain in various tournaments on national and international level throughout

the year and in convenience sampling subjects are chosen who can be studied most easily, cheaply and quickly. (Bailey 1997).

3.4.2 Inclusion criteria

The subjects were cricket players who had injuries while playing or involving practice in between last one year. The subjects who had available documents in their medical report file.

3.4.3 Exclusion criteria

The cricket players, who had no injuries in between last one year and had no interest or willingness to be participant, were excluded. The subjects who did not have available documents about their conditions in their medical report file, were also excluded.

3.5 Sample size

Sampling procedure for cross sectional study done by following equation-

$$n = \left\{ \frac{Z(1 - \frac{\alpha}{2})}{d} \right\}^2 \times pq$$

Here,

$$Z(1 - \frac{\alpha}{2}) = 1.96$$

$$P = 0.78$$

$$q = 1 - p$$

$$d = 0.05$$

So the researcher aimed to focus his study by 263 samples following the calculation above initially. But as the study was done as a part of fourth professional academic research project and there were some limitations, so the researcher had to limit with 31 cricket players as sample for this study. 31 cricket players were taken as sample by convenience sampling procedure, the subjects who had faced injuries in the last one year.

3.6 Data collection procedure

Though there are several ways of collecting data, it will be easy and reliable if the questionnaire is completed or filled up in the presence of the researcher. (Bailey 1997) Subjects were chosen under convenience sampling procedure and the data were taken from the previous documents and filled up the questionnaire form by the researcher. Data collection is one of the most crucial parts of research. For this study data collection includes- method of data collection, materials used for data collection and duration.

3.6.1 Method of data collection

The data were collected from the filed data of BKSP and BCB. Data were collected by using a close ended structured questionnaire. Questionnaire is used because questionnaire is still a very popular and very useful technique of data collection with in the health care area (Hicks 1999).

Additionally the aim of the study was to identify the common injuries among cricket players of BKSP and BCB. So, it is easier to identify these problems by using questionnaires than any other methods. The strength of structured questionnaire is the ability to collect unambiguous and easy to count answer, leading to quantitative data for analysis. (Bowling 1997). So, structured questionnaire is the most suitable way for data collection.

Questionnaire was used to collect the data from the previous documents retrospectively.

3.6.2 Materials used for data collection

1. Questionnaire.
2. Pens.
3. Diary.

3.6.2.1 Questionnaire

For data collection English questionnaire was used. The samples of the study were the injured cricket players of BKSP and BCB.

The questions of the questionnaire were closed ended questions, which were set up sequentially. In the questionnaire there were 8 questions.

The questionnaire was set in such a pattern that was available in the filed data. Thus it has been tried to collect various information about the injuries of the cricket players and to find out and fulfill the objectives of the study. These questions includes: age, gender, specialty of cricket plays, the injuries, type of injuries, severity of the injuries, type of treatment taken and the state of improvement after treatment.

3.6.3. Duration of data collection

Data was collected within 3 weeks of time. Within 16/02/2012 to 03/03/2012 data were collected carefully as much as possible from the filed data. To collect data necessary time was taken, for each sample. This time varied for each participant. In general, each questionnaire took approximately 10-15 minutes to complete.

3.7 Data analysis

After collecting data, these were entered into SPSS 16 software package. Descriptive statistics was used to analyze data and outcome was displayed as charts and graphs.

3.8 Ethical considerations

A formal project proposal was submitted to the department of physiotherapy and after verifying that, the proposal was accepted by the Ethical Review Committee (ERC). Ethical principles of WHO and BMRC were followed in this study. This is purely an observational study. That is why nothing was intervened and thus ethical issues were minimized. The permission for data collection was obtained from the BKSP and BCB. This study was not associated with the treatment procedure. The authorities were clearly informed about the study and they were also informed that, any time any of them can withdraw their participation without any penalty. After that they gave permission for data collection from their previous documents of the last year.

3.9 Limitation of study

The study should be considered in light of the following limitations. Though the expected sample size was 263 for this study but due to resource constrain researcher could manage just 31 samples which is very small to generalize the result for the wider population of the cricket players. Samples were selected by convenience sampling procedure. There are a few literatures about the common injuries among the injured cricket players in the perspective of Bangladesh so it is difficult to compare the study with the other research. The researcher was able to collect data only from 2 selected areas - BKSP and BCB for a short period of time which will affect the result of the study to generalize for wider population. In this study, the types of bowlers as like as fast bowlers, medium pacers and spin bowlers were introduced as a whole in terms of bowlers. Specific documents were not eligible. The questionnaire was developed through searching sufficient literature and specially according to the available well documented data of BKSP and BCB but considering the context of the demography of the population a pilot study would substantial before developing questionnaire.

Age of the subjects

The mean age of the subjects was 19 years. However, among the 31 subjects n=9 (29.0%) subjects were between 15-17 years, n=14 (45.2%) were between 18-20 years, n=7 (26.2%) were between years 21-23 years and n=1 (3.2%) were greater than 23 years. Minimum age range was 15 years and maximum age range was 24 years.

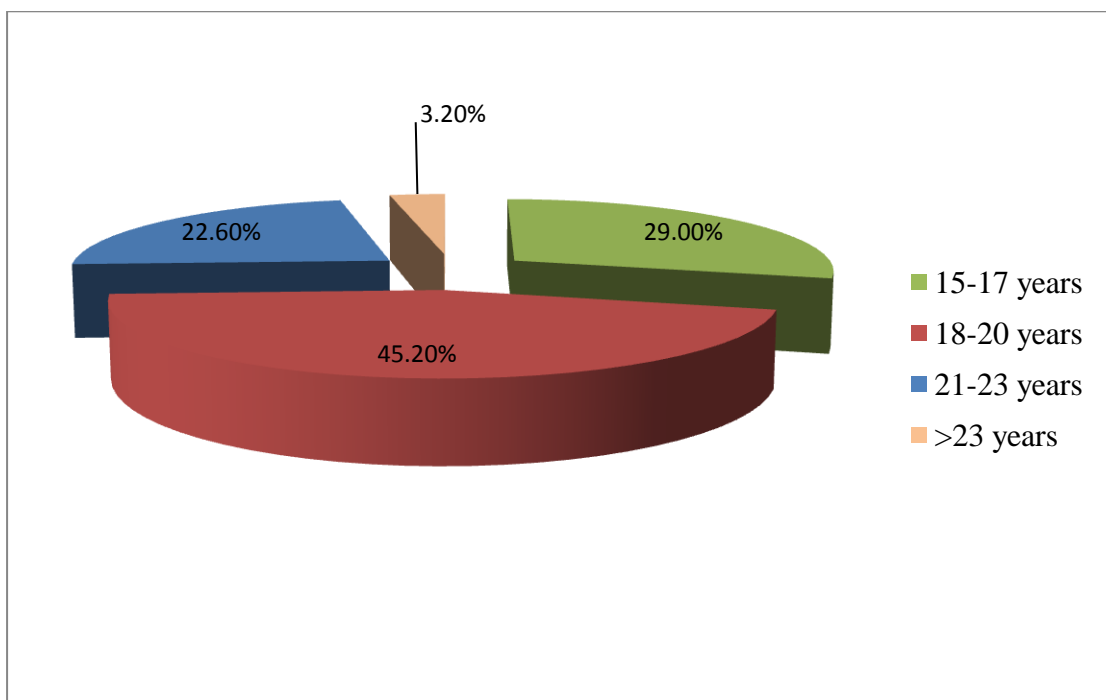


Figure -1: Age range of the subjects

Gender of the subjects

Analysis showed that among the 31 subjects n=28 (90.3%) were male and n=3 (9.70%) were female.

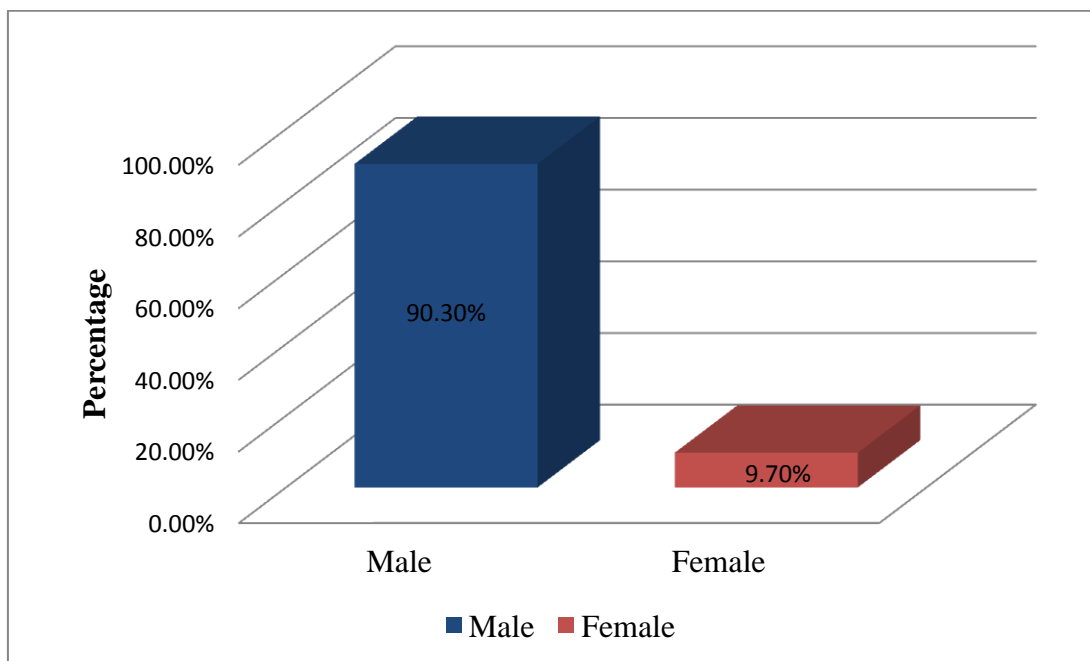


Figure-2: Gender of the subjects

Speciality of the cricketers

Analysis showed that bowlers are mostly affected by the injuries in cricket. Among the 31 cricketers n=9 (29.0%) were batsman, n=14 (45.2%) were bowler, n=6 (19.4%) were all-rounder (both bowling and batting), n=2 (6.5%) were wicketkeeper.

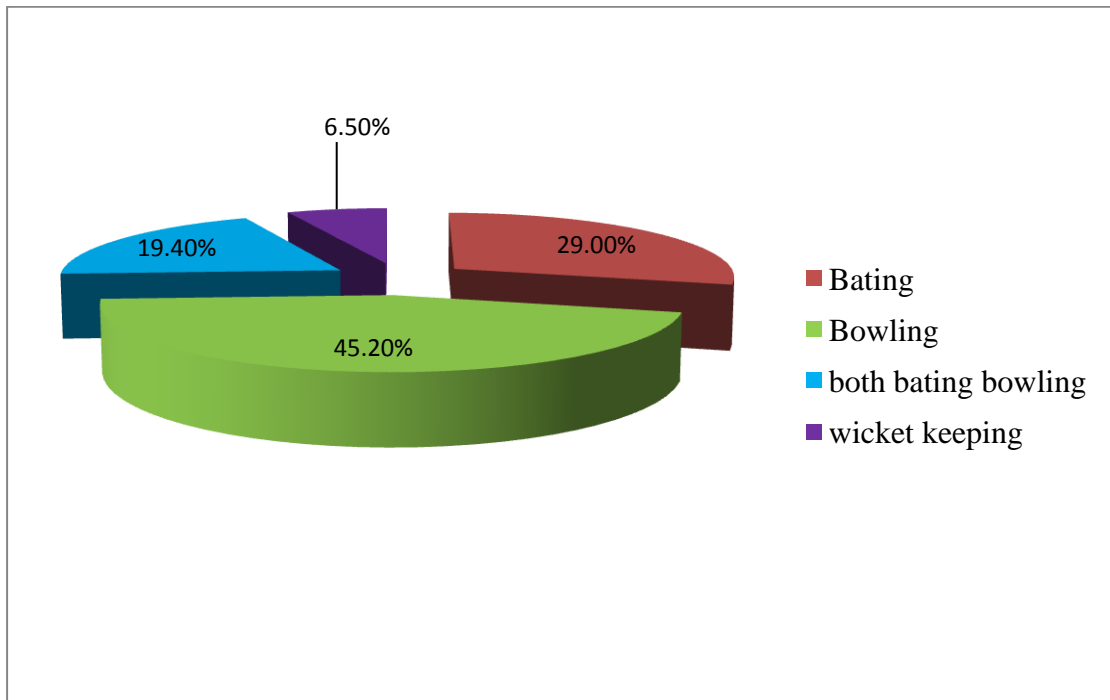


Figure- 3: Speciality of the cricketers

Injuries of the cricketers

A. Regional injuries

Analysis showed that among the 31 cricketers n=7, (22.58%) had shoulder injuries, n=3, (9.68%) had hand and finger injuries, n=5, (16.13%) had thigh and hip injuries, n=4, (12.90%) had knee and leg injuries, n=3 (9.68%) had ankle injuries, n=2, (6.45%) had foot injuries, n=6 (19.35%) had spine, back and trunk injuries and n=1, (3.22%) had head and neck injuries.

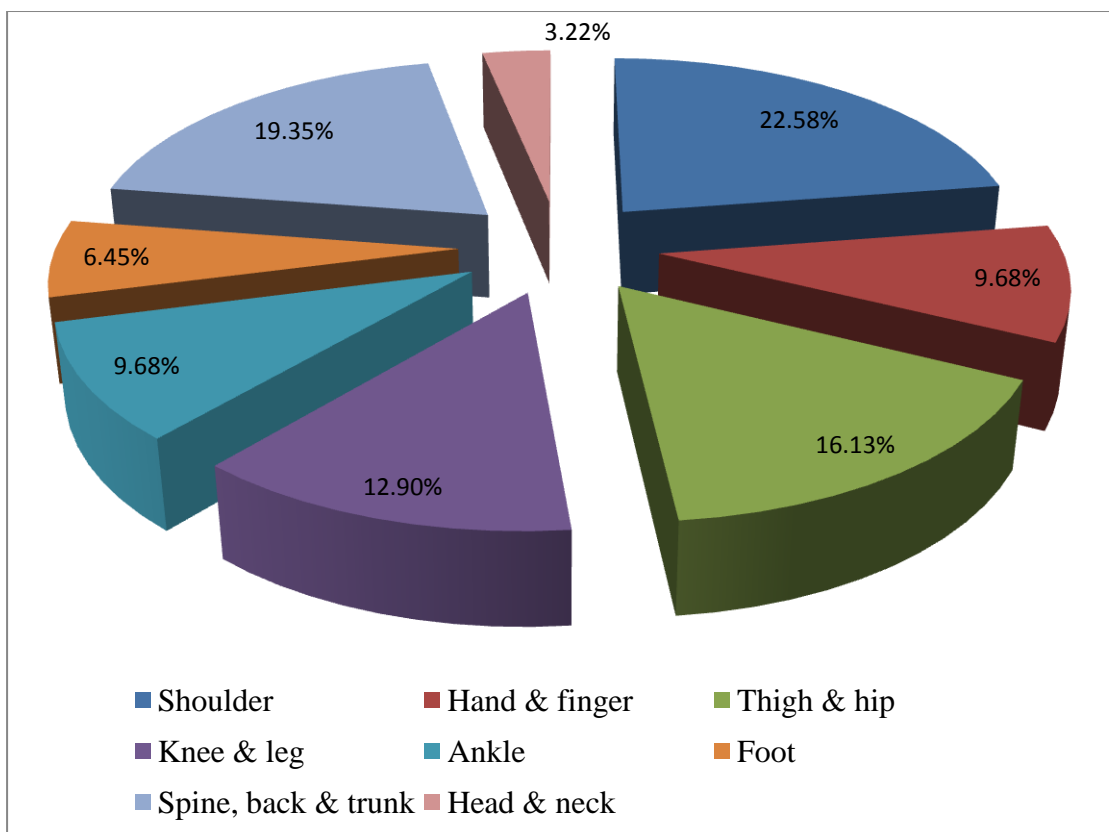


Figure- 4.1: Regional injuries

B. Shoulder injury

Among the 31 cricketers n=2 (6.5%) had shoulder pain, n=4 (12.9%) had rotator cuff injury and n=1 (3.2%) had shoulder instability.

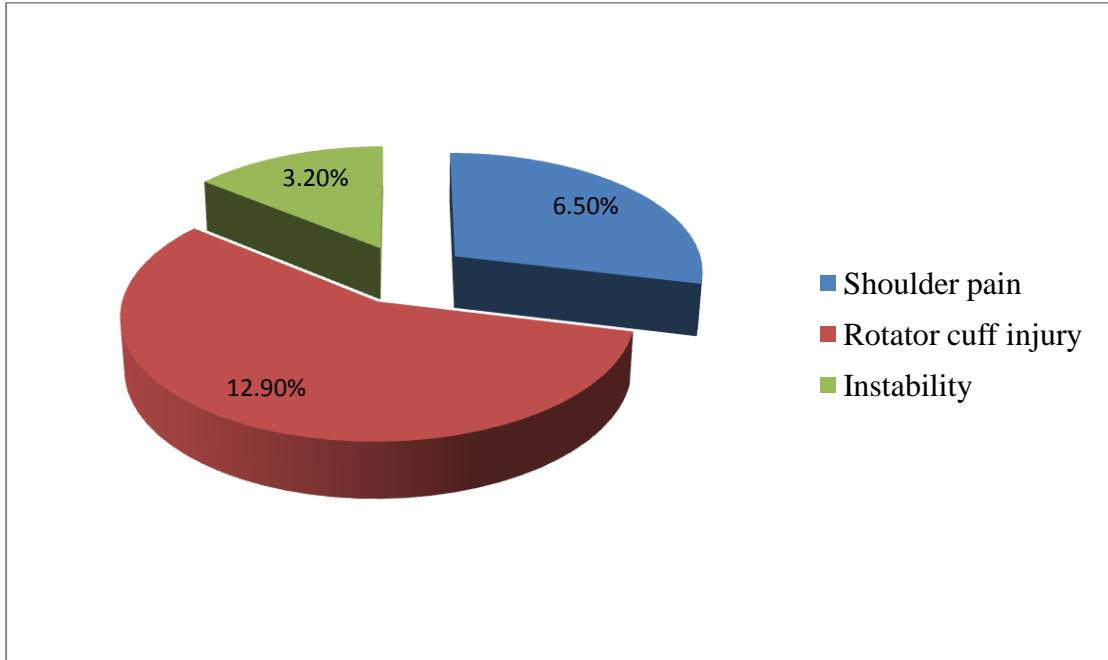


Figure- 4.2: Shoulder injury

C. Hand and finger injury

Analysis showed that only n=2 (6.5%) had MCP injury and n=1 (.32%) had mallet finger out of 31 cricketers.

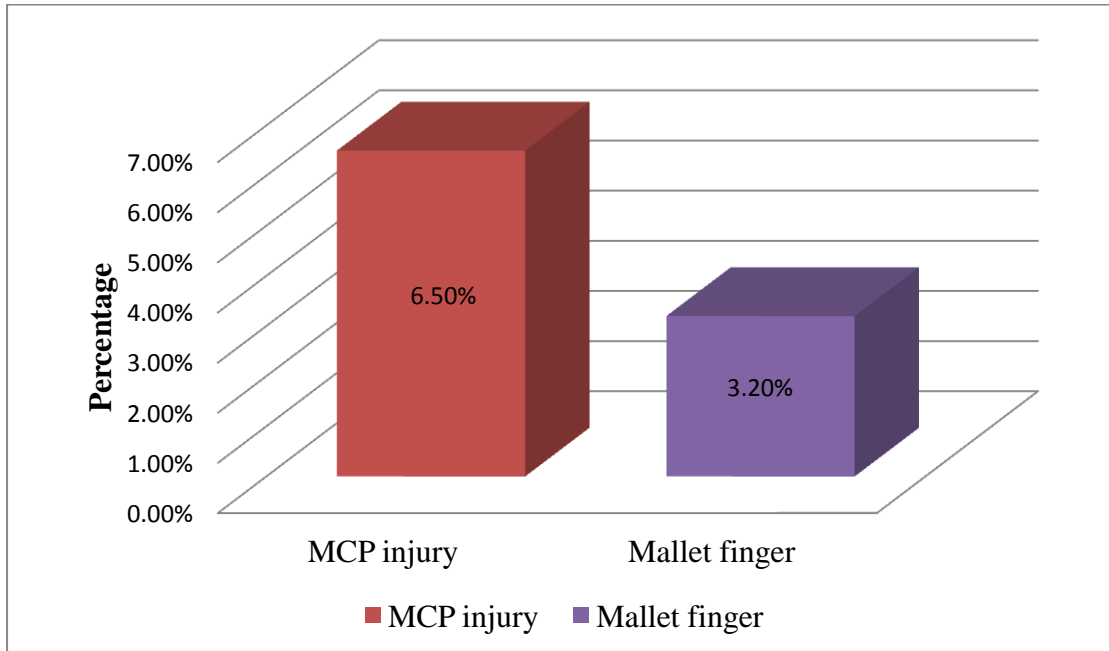


Figure- 4.3: Hand and finger injury

D. Thigh and hip injury

Among the 31 cricketers only n=1(3.2%) had groin pain, n=3 (9.7%) had hamstring strain and n=1(3.2%) had quadriceps contusion.

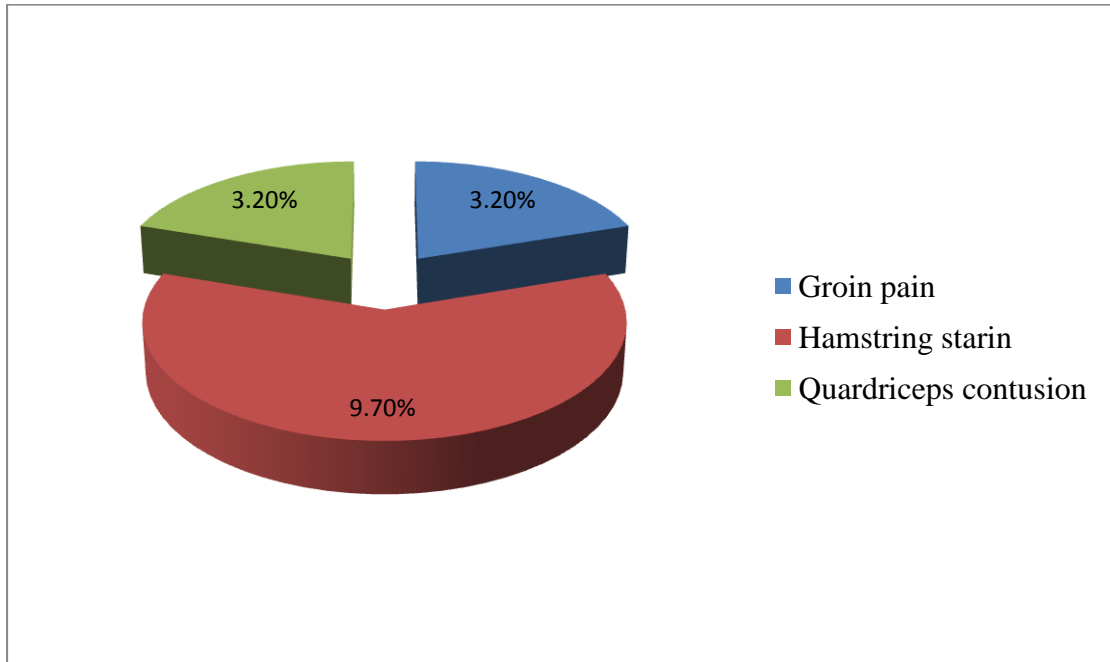


Figure- 4.4: Thigh and hip injury

E. Knee and leg injury

Analysis showed that only n=2(6.5%) had collateral ligament injury and n=2 (6.5%) had knee pain out of 31 cricketers.

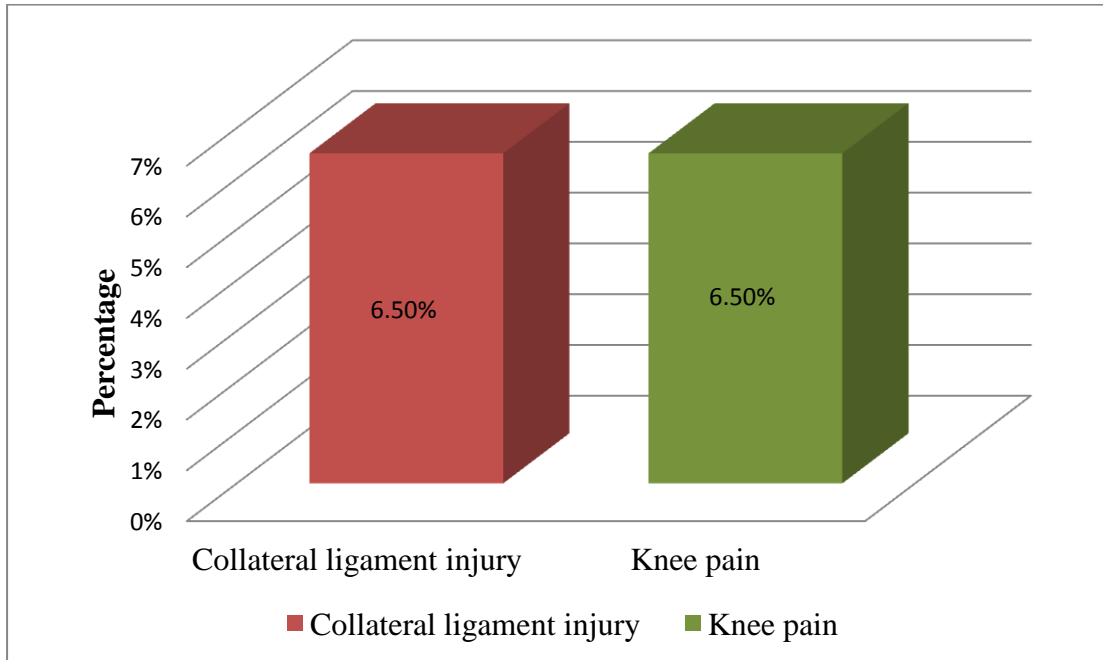


Figure- 4.5: Knee and leg injury

F. Ankle injury

Only n=2(6.5%) had ankle sprain and n=1 (3.2%) had ankle pain out of 31 cricketers.

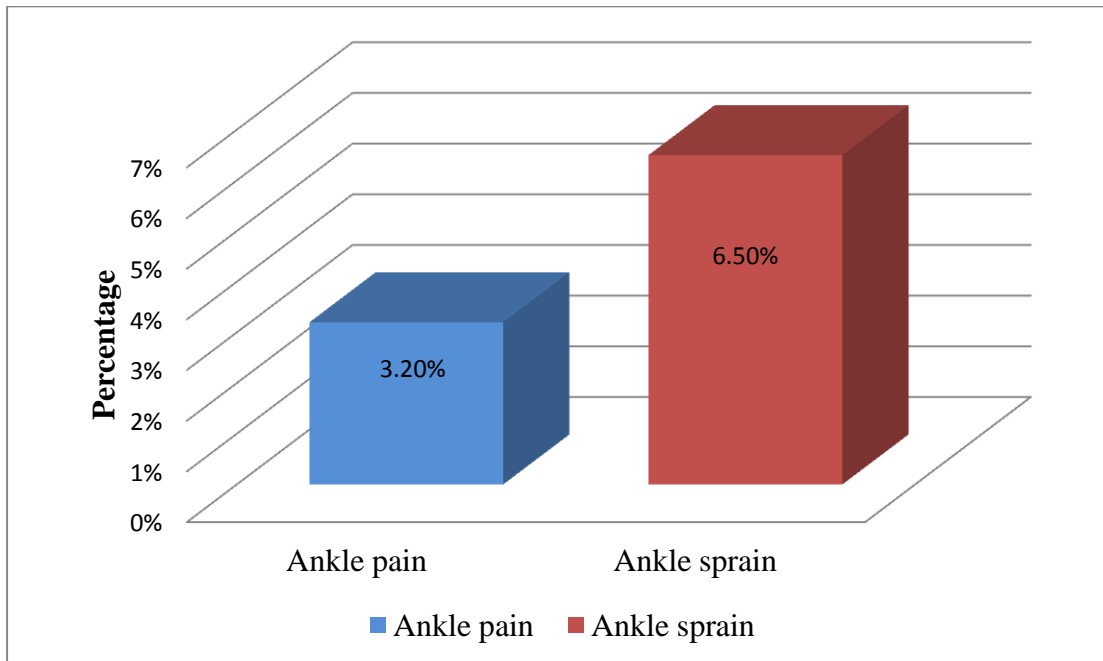


Figure- 4.6: Ankle injury

G. Foot injury

Among the 31 cricketers only n=1(3.2%) had heel pain and n=1 (3.2%) had great toe injury.

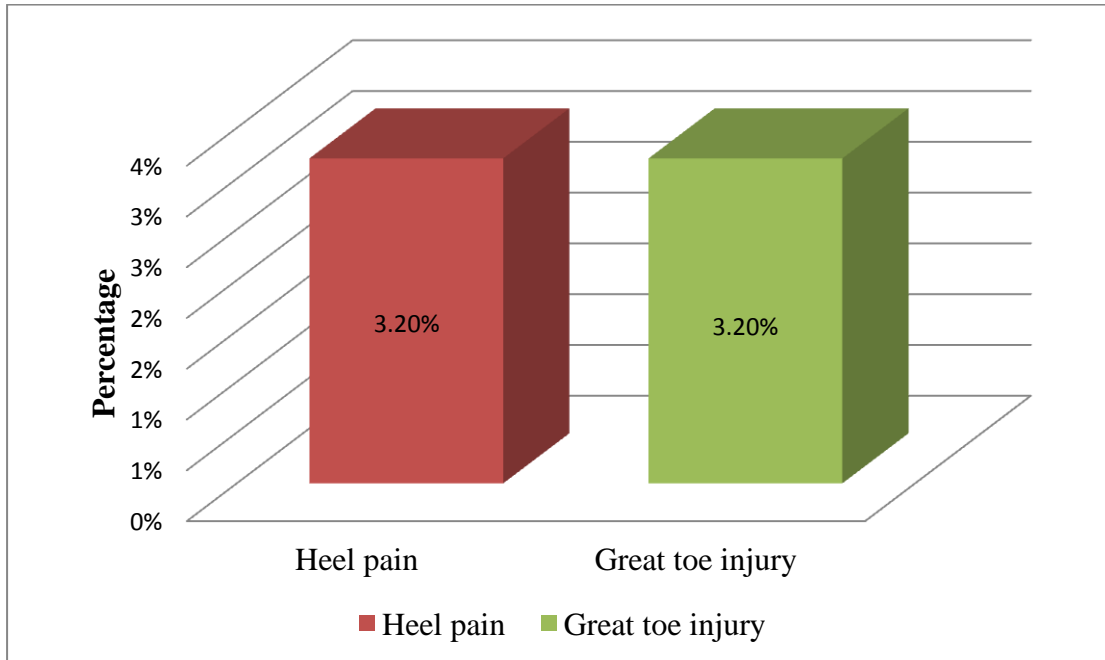


Figure- 4.7: Foot injury

H. Spine, back and trunk injury

Analysis showed that only n=6 (19.4%) had back pain out of 31 cricketers.

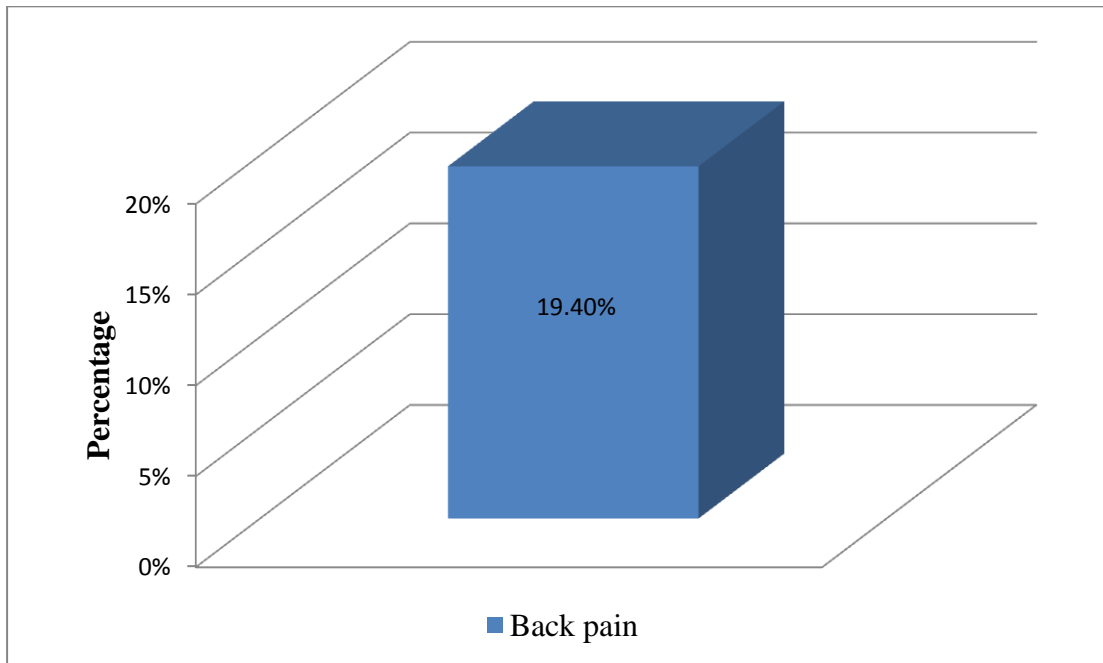


Figure- 4.8: Spine, back and trunk injury

I. Head and neck injury

Analysis showed that only n=1 (3.2%) had eye injury out of 31 cricketers.

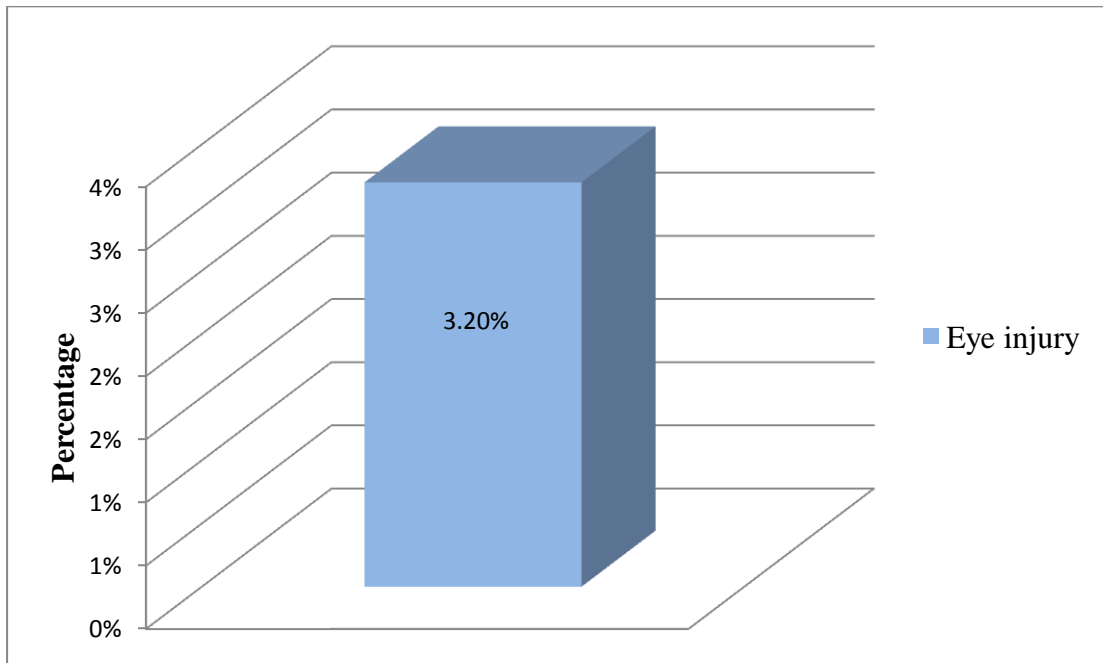


Figure- 4.9: Head and neck injury

Types of injury

Analysis showed that n=9 (29%) had direct injury and n=22 (71.00%) had indirect injury/ overuse injury out of 31 cricketers.

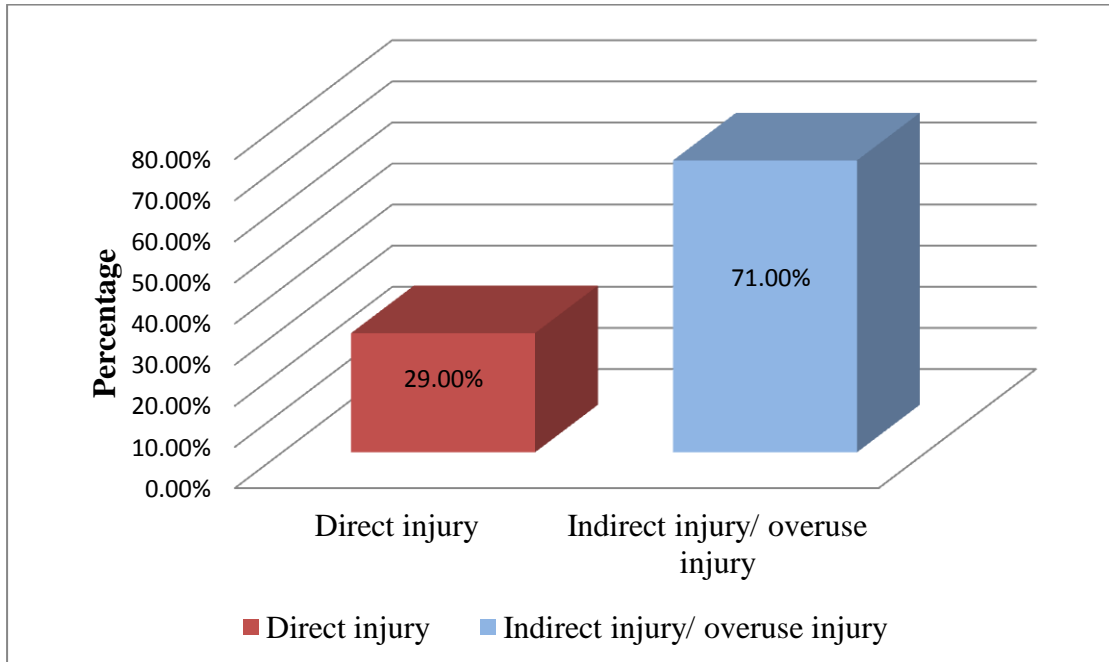


Figure 5: Types of injury

Severity of injury

Analysis showed that n=5 (16.10%) had mild injury, n=14 (45.2%) had moderate injury and n=12 (38.7%) had severe injury out of 31 cricketers.

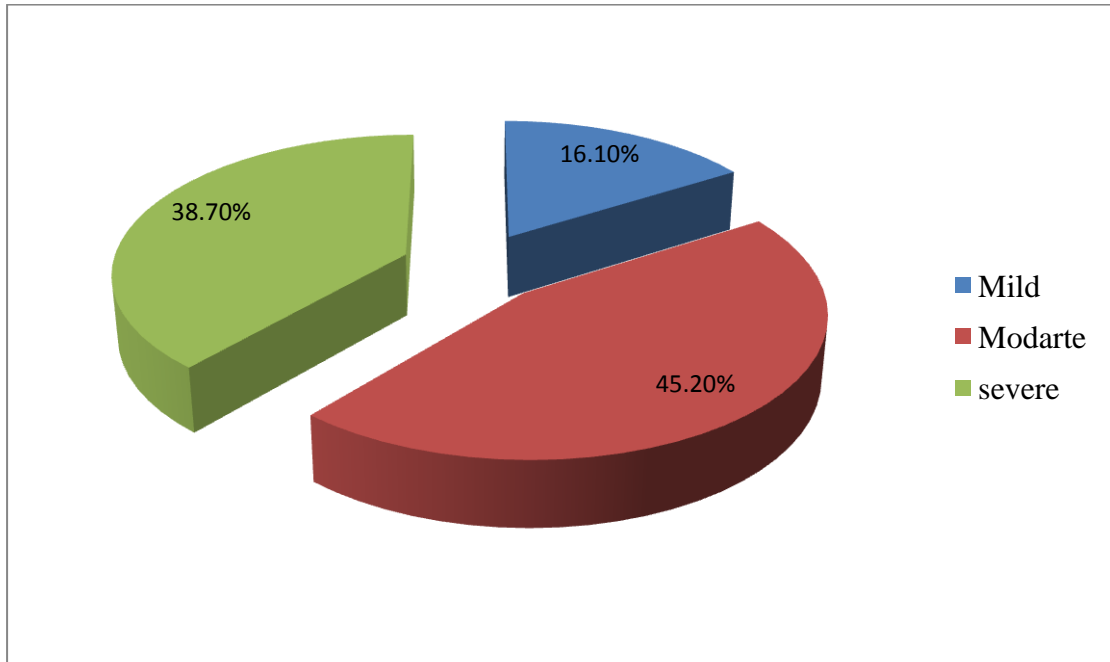


Figure- 6: Severity of injury

Types of treatment

Analysis showed that n=7(22.6%) had taken only medication, n=4 (12.9%) had taken only physiotherapy and n=17 (54.8%) had taken both medication and physiotherapy out of 31 cricketers.

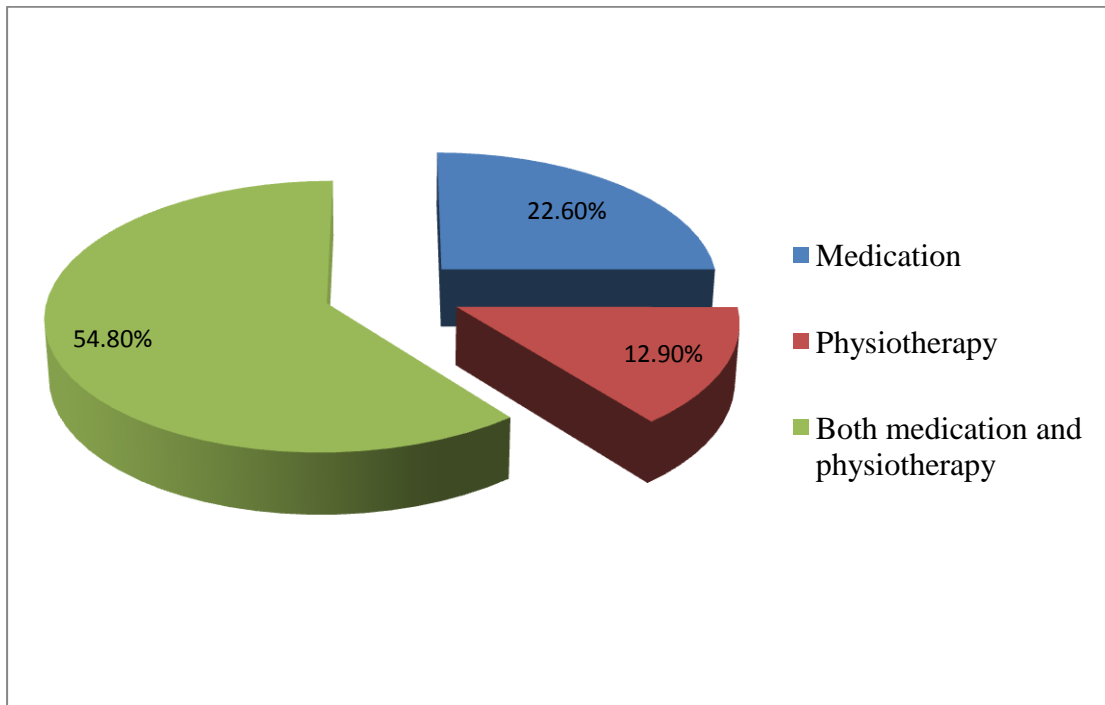


Figure- 7: Types of treatment

Treatment results

A. Medication

Analysis showed that n=4(12.9%) had improved their condition and n=3 (9.7%) remain unchanged after taking medication out of 31 cricketer.

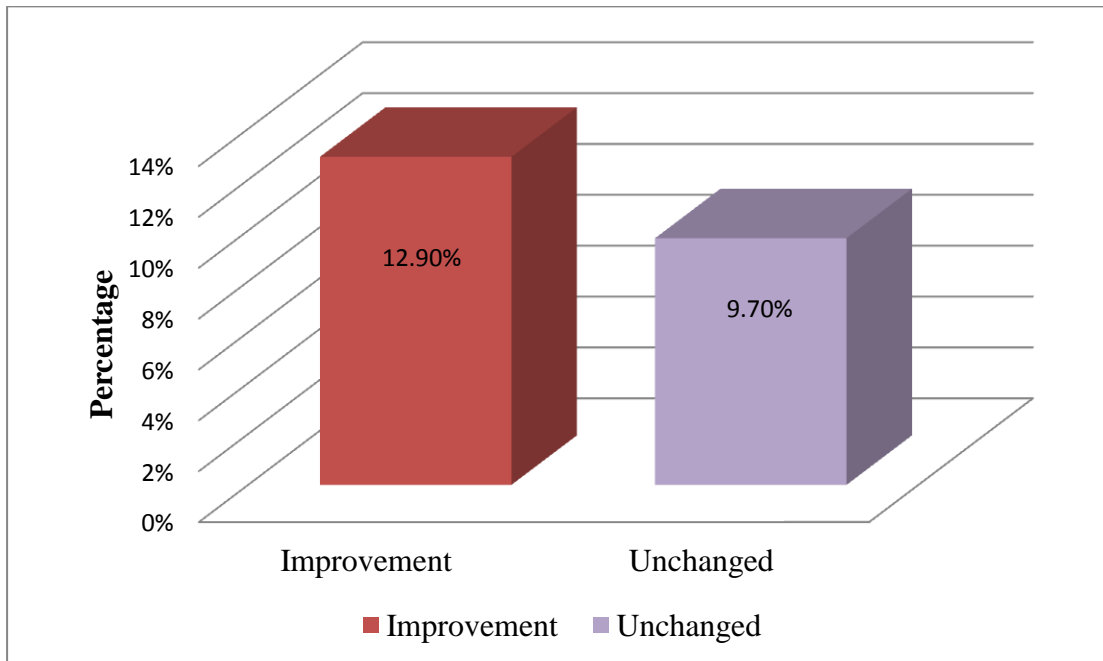


Figure- 8.1: Treatment results of Medication (only)

B. Physiotherapy

Analysis showed that n=4(12.9%) had improved their condition and n=1 (3.2%) remain unchanged after receiving physiotherapy out of 31 cricketers.

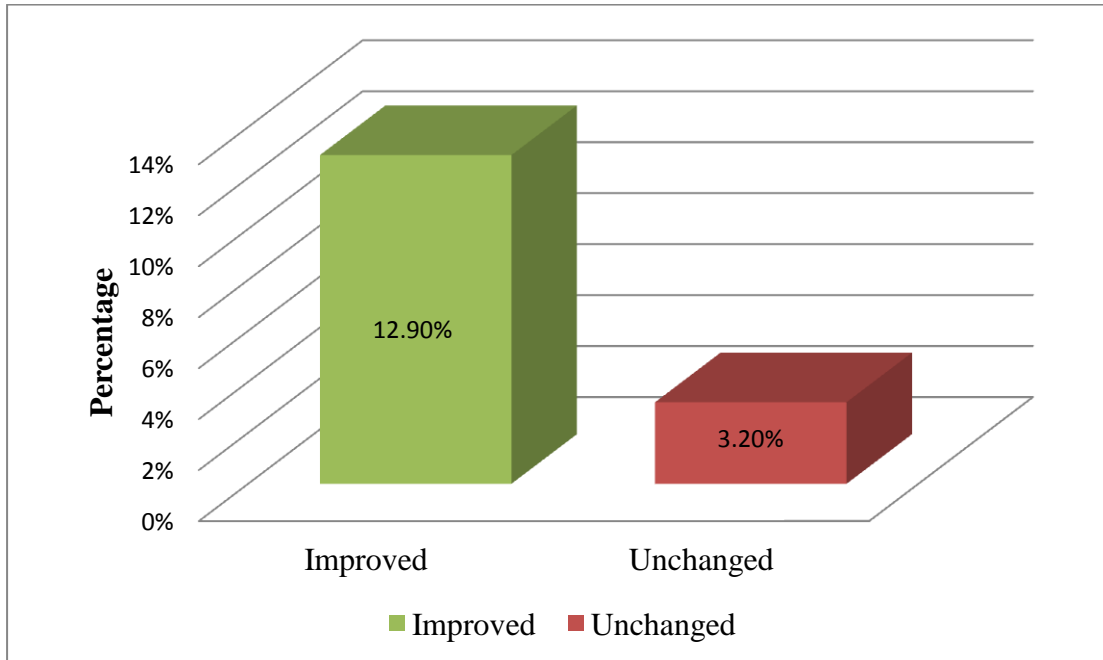


Figure- 8.2: Treatment results of Physiotherapy (only)

C. Both medication and physiotherapy

Analysis showed that n=15(48.4%) had improved their condition, n=1 (3.2%) condition worsen and n=2 (6.4%) remain unchanged after receiving both medication and physiotherapy out of 31 cricketers.

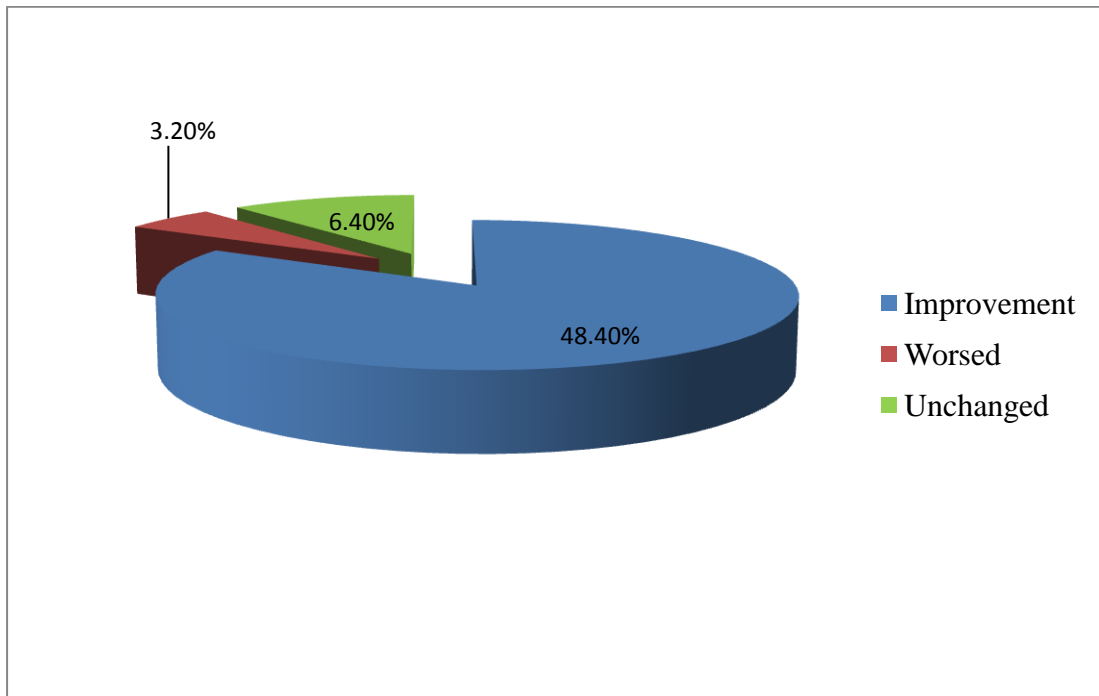


Figure- 8.3: Treatment results of both medication and physiotherapy

According to Crisp et al. (2001), the most commonly injured joint in cricket is shoulder and most injuries occurs during throwing. He mentioned that, injuries to the elbow in cricket are not common. The wrist joint may be affected when a player falls on the ground while field the ball. Wicket keepers are also prone to wrist injury. Muscle strain is common as hip and thigh problem. It may be due to lack of conditioning of the muscles. There also can be present adductor strain, stress fracture of pubic rami and groin strain. At knee patellar tendinitis, twisting injuries like ligamentous injury can be present. Back pain is most common to the bowlers. Mainly damage to the lumbar spine especially ligamentous sprain is the main cause of back pain.

In Australian Cricket at first class level 1995/1996 to 2000/2001, the most frequent injuries were, fractured facial bones, neck injuries, shoulder tendon injuries, shoulder dislocations and subluxations, arm lacerations and haematomas, wrist and hand injuries, upper limb stress fractures, trunk & back, side and abdominal strains, rib fractures (traumatic and stress), lumbar stress fractures, lower limb groin injuries, hamstring strain injuries, quadriceps strain injuries, knee ligament injuries, knee cartilage injuries, knee tendon injuries, foot stress fractures, leg stress fractures, shin soft tissue overuse injuries, ankle and foot sprains, heel and Achilles injuries, calf muscle strain injuries etc (Orchard et al. 2002).

From the results of the study it was found that there were two categories of injuries of the cricket players. 22 (71%) had indirect/overuse injury and only 9 (29%) of them had acute/direct injuries. Among injuries, Shoulder injuries were present at n=7 (22.58%) cricketers, which include Rotator cuff injury n=4 (12.9%), shoulder pain n=2 (6.5%) and shoulder joint instability n=1 (3.2). N=3 (9.68%) had hand and finger injuries, which includes n=2 (6.5%) had MCP injury and n=1 (3.2%) had mallet finger. Thigh and hip injuries were present at n=5 (16.13%) cricketers, which includes 1 (3.2%) had groin pain, 3 (9.7%) had hamstring strain and 1 (3.2%) had quadriceps contusion. Knee and leg injuries were present at n=4 (12.90%) cricketers, which include 2 (6.5%) had collateral ligament injury and 2 (6.5%) had knee pain. Ankle

injuries were present at n=3 (9.68%) cricketers, which include 2 (6.5%) had ankle sprain and 1 (3.2%) had ankle pain. Foot injuries, n=6 (19.35%), which includes 1 (3.2%) had heel pain and 1 (3.2%) had great toe injury. Spine, back and trunk injuries were present at n=6 (19.35%) cricketers and all of them had back pain. Only one trainees among the cricketers n=1, (3.22%) had head and neck injuries which includes eye injury 1 (3.2%).

Analysis showed that 9 (29.0%) were batsman, 14 (45.2%) were bowler, 6 (19.4%) were all-rounder (both bowling and batting), 2 (6.5%) were wicketkeeper. According to stretch (1995) the incidences of the injury at bowlers were 47.4%, which was greater than batsmen (29.8%) and fielders (22.8%). He also mentioned that, 66.6% injury was recurred. 29.8% of them from previous season and 36.8% of them were from same season. The incidence of sports injuries is 2% for wicket keepers (Orchard, 2002). According to Dannie et al. (2004) there is a constant relationship between high bowling workload and injury. So, it can be said that, bowlers get more injury and remain out of training and sports more. It may be for high workload than others. So, greater emphasize should provide towards bowlers to prevent their injuries. According to Finch et al. (1999) in high level of Cricket overuse injuries are most common due to physical demand of the sport and particularly while delivering the ball. On the other hand spinal overuse injury occurs more due to a mixed bowling action. Overuse injuries becoming more common because increased participation in general sports and increased intensity and duration of training. It was found that overuse injuries is more prevalent after 24 months of regular daily training (Peterson et al. 2001).

So, it can be said that overuse injuries are increasing simultaneously with period of playing cricket. But these injuries can be minimized by proper conditioning of the key muscles or motor components used for cricket; like rotator cuff of shoulder, back muscles, quadriceps etc. on the other hand correcting faulty action of playing by proper supervision, these types of injuries can be minimized. From the study these were found that, 9 (29.0%) were batsman, 14 (45.2%) were bowler, 6 (19.4%) were all-rounder (both bowling and batting), 2 (6.5%) were wicketkeepers batsmen had total 9 injuries, bowlers had 14 injuries, wicket keepers had 2 injuries and all-rounders had 7 injuries.

In West Indian cricket at 2003-2004 sessions, 63% of the cricket players missed at least part of a match due to injury (Mansingh et al. 2006). According to stretch (1995) the incidences of the injury at Bowlers were 47.4%, which was greater than Batsmen (29.8%) and fielders (22.8%).

Among the 31 participants 7 (22.6%) had taken medication, 4 (12.9%) had taken physiotherapy and 17 (54.8%) had taken both medication and physiotherapy. Treatment result shows that 4 (12.9%) had improved their condition and 3 (9.7%) remain unchanged after taking medication, 4 (12.9%) had improved their condition and only 1 (3.2%) remain unchanged after receiving only physiotherapy and 15 (48.4%) had improved their condition, 1 (3.2%) condition worsen and 2 (6.4%) remain unchanged after receiving both medication and physiotherapy.

Males were the predominant group injured representing 91% of cases, as were those aged 20-24 years (33%) (Routley and Valuri, 1993). According to Stretch (2003) younger players suffer more for the first time and the rate of sustaining that injury for prolonged period is higher than older players. Easy to say, that a player sustains an injury for prolonged time without proper treatment and rehabilitation.

So, it can be said that, early detection of the actual cause of the injury is very important. Afterwards, proper treatment and rehabilitation of the injury is needed. If the injury is not treated and rehabilitated properly, it increases the chance of recurrence and the player will remain out of training and sports for long time. That will affect his performance and ultimately will hamper his career.

6.1 Conclusion

It is important to develop research based evidence of physiotherapy practice. Physiotherapist's practice which is evidence based in all aspect of health care. There are few studies on sports and sports injures in Bangladesh. This study cannot cover all aspects of the vast area. So, it is recommended that the next generation of physiotherapy members should continue study regarding this area; this may involve-use of large sample size and participants from different districts of Bangladesh. We may conduct research on other sports injuries and sports related health problems such as dehydration, lack of nutrition, conditioning etc where physiotherapists can work. Like common musculoskeletal problems among cricketers, prevalence of LBP among the fast bowlers, effectiveness of physiotherapy for the overuse injuries among cricketers, common causes of the cricket injuries, prevalence of sports injuries among cricketers due to overtraining are some areas of further studies for future researchers.

6.2 Recommendation

A recommendation evolves out of the context in which the study was conducted. The purpose of the study was to explore the common sports injuries among the injured cricket players. Though the research has some limitations but researcher identified some further steps that might be taken for the better accomplishment of further research. For the ensuring of the generalization of the research it is recommended to investigate large sample. In this study researcher only took the cricket players from BKSP and BCB in Dhaka. So for further study researcher strongly recommended to include the cricket players from all over Bangladesh. Due to limitation of time, investigator was not able to do pilot study. But pilot study is very much important for the validity of questionnaire. For this it is strongly recommended that if any further study will be done in this area then pilot study should be done to format the questionnaire.

Beside this in this study the ratio of male and female participants were unequal. So it is recommended for further study to take the participants equally for comparison of gender and cricket injuries.

In this study investigator only identified the ratio of sports injuries among the injured cricket players, so it is recommended for further study to identify the prevalence of common injuries among the cricket players.

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APPENDIX-I

Title: common sport injuries among the injured cricket players.

Questionnaire

1. Age: -----years
2. Gender:
 - Male
 - Female
3. What types of cricket do you play?
 - Batting
 - Bowling
 - Both batting and bowling
 - Wicket keeping
4. What was your injury (last year during playing cricket)?
 - A. Shoulder Injury:
 - Shoulder pain
 - Rotator cuff injury
 - Instability
 - Dislocation
 - Tendinitis
 - Muscle strain
 - Not applicable
 - B. Elbow Injury:
 - Elbow pain
 - Tennis elbow
 - Golfers elbow
 - Not applicable
 - C. Wrist injury:
 - Wrist pain
 - CTS
 - Not applicable
 - D. Hand and finger injury:
 - MCP injury
 - Fracture of phalanges

- Fracture of MCP
 - Mallet finger
 - Not applicable
- E. Hip and thigh injury:
- Groin pain
 - Hamstring strain
 - Quadriceps strain
 - Adductor strain
 - Quadriceps contusion
 - Not applicable
- F. Knee and leg injury:
- Cruciate ligament injury(ACL/PCL)
 - Collateral ligament injury
 - Miniscal lesion
 - Calf pain
 - Knee pain
 - Stress fracture of tibia
 - Not applicable
- G. Ankle injury:
- Ankle pain
 - Ankle sprain
 - Not applicable
- H. Foot injury:
- Foot pain
 - Heel pain
 - Great toe injury
 - Stress fracture of MTP
 - Planter fasciitis
 - Not applicable
- I. Spine, back and trunk injury:
- Back pain
 - Muscle spasm
 - Ribs fracture
 - Chest pain

- Not applicable
- J. Head and Neck injury:
 - Head injury
 - Neck pain
 - Eye injury
 - Facial injury
 - Not applicable
- 5. What was the type of the Injury?
 - Direct injury
 - Indirect injury/overuse injury
- 6. How was the severity of your Injury?
 - Mild
 - Moderate
 - Severe
- 7. What type of treatment you have taken?
 - Medication
 - Physiotherapy
 - Both drug and physiotherapy.
 - Not applicable
- 8. How was the improvement after treatment?
 - A. Medication:
 - Improvement
 - Worsed
 - Unchanged
 - Not applicable
 - B. Physiotherapy:
 - Improvement
 - Worsed
 - Unchanged
 - Not applicable
 - C. Both medication and physiotherapy:
 - Improvement
 - Worsed
 - Unchanged
 - Not applicable

APPENDIX-II

Permission Letter



বাংলাদেশ হেল্থ প্রফেশন ইনস্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)

১৪.০২.২০১২

Ref:

Date :.....

প্রতি
সিইও
বাংলাদেশ ক্রিকেট বোর্ড
ঢাকা।

বিষয় : রিসার্চ প্রজেক্ট (dissertation) এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,

আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেল্থ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপী কোর্স পরিচালনা করে আসছে।

উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামূলক।

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপী কোর্সের ছাত্র মোঃ তানজির-উজ-জামান তার রিসার্চ সংক্রান্ত কাজের তথ্য সংগ্রহের জন্য আপনার সুবিধামত সময়ে আপনার প্রতিষ্ঠানে সফর করতে আগ্রহী। তার রিসার্চ শিরোনাম "Common sports injuries among the injured cricket players."

তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য প্রদান সহ সার্বিক সহযোগিতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ ওবায়দুল হক
সহকারী অধ্যাপক ও কোর্স-কো অর্ডিনেটর
ফিজিওথেরাপী বিভাগ
বিএইচপিআই।



বাংলাদেশ হেলথ প্রফেশনাল ইনস্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)

Ref:

১৬:০২:২০১২
Date :.....

প্রতি
মহাপরিচালক
বিকেএসপি।
ঢাকা

বিষয় : রিসার্চ প্রজেক্ট (dissertation) এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,

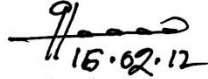
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ধন্যবাদান্তে



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