THE OCCURRENCE OF KNEE INJURY IN BADMINTON: A CASE STUDY OF SINDH

Dr. Syed Akhtar Adil Shah, Dr. Muhammad Akram Ansari
and Dr. Muhammad Rafique Qambrani

ABSTRACT

Badminton is an indoor game which is played in covered hall. This game is popular in urban areas as well as in rural areas among boys and girls in Sindh. Knee injury is the most common injury in this game. According to limitations of related available studies especially in Sindh and Pakistan, a survey method was planned for information collection. Pretest questioner was designed and the team of sports personals equipped with methods of survey and performance method. Thirteen out of twenty four districts of Sindh province were surveyed through personal interviews of injured badminton players. The collected data and information was tabulated by the statistical tool SPSS-15. In the sixty seven injured players were interviewed and analyzed. 30.8% were from Karachi out of them 42.3% were graduates, the mean age, weight and height was 33.69 year, 77.85kg and 68.15 inches respectively. 53.8% of injuries occurred in right knee and 80% injured during the training. 61.5% were injured in cold climate. 92.3% injured intrinsically. 19.2% had severe injury, 7.7% were hospitalized, only X-ray technology was used to diagnose in 42.31%. 76.9% availed physiotherapy after the recovery. The most of the reasons of the injuries in the badminton were related to unawareness of the players and insufficient facilities in the sport fields.

INTRODUCTION

Shuttlecock is also known as the bird is equipment played with racket which is called the game of badminton. This is an old game played in ancient Greece and Egypt and historian believed this game was played by children called Battledore and shuttlecock. Until 1887 this sport was played in England. Later this game transferred and spread to common wealth countries and worldwide. This game got popularity all over the world among the men and women at the same time. The proof of popularity is that starting from 1873 up to the end of Second World War about 500 badminton clubs were formed in England and 9000 clubs were established in British Isles after the Second World War.

This game is played between two to four players on each side of the net, between the area about 44ft long and 20 ft wide with light weight racket. This game is mostly played in indoor halls (court) and also popular in urban areas as well as in rural areas among boys and girls in Sindh Province. It is observed that knee injuries are common in this game. Many talented players end their playing career because of knee injuries on early stage due to lack of knowledge about prevention, diagnosis and treatment. Method was plan for information collection about the injury occurrence, pretest questionnaire was designed and personal interviews were done with the injured players of badminton from 13 out of 24 districts of Sindh.

Literature Review

The history of sports and sports-related injuries go side by side which is centuries old. Some historians date sports and injuries as old as Ayaredic period. According to the investigation of Risberg, Mork, Jenssen, and Holm (2001) providing neuromuscular training to sports people could help to improve the ability of the nervous system to generate a fast and optimal muscle firing pattern, enhance dynamic joint stability, decrease joint forces on impact with the ground and refine movement patterns and skills and injury risk.

Likewise, Risberg et, al. (2001) suggested that neuromuscular control improves knee joint stability by enhancing conscious and subconscious motion responses by stimulating both afferent signals and nervous system centers responsible for maintaining dynamic joint stability. Similarly, Mullaney (2003) also emphasized on training which continually improves sensorymotor feedback control system and improves the ability to utilize proprioceptive information. To date, several training interventions including but not limited to jump landing techniques and plyometrics have been suggested to be associated with a decrease in the incidence of ACL injuries (Grandstrand, Pfeiffer, Sabick, DeBeliso, & Shea, 2006; Hewett, Lindenfeld, Riccobene, & Noyes, 1999; Meyer, Ford and Hewett, 2004; Noyes et al. (2005).

An extensive search for relevant literature was made for this study and it has been found out that most of the investigations have been undertaken in Western and advanced countries. On the contrary, there seems shortage of empirical evidence to witness the cases of sports-related knee injuries in badminton which essentially develops huge academic and research gap. Therefore, exploratory research methodology along with empirical study was applied to narrow this gap.

Research Methodology

This study is based on descriptive research. The survey was conducted through questionnaire to collect the incident of the knee injuries during competition and training in badminton game. The empirical study was done and snow ball technique was used to collect the injured players from different districts of Sindh. 41 male and 26 female participants from 13 districts of the province were selected through snow ball method. Structured questionnaire was designed to cover the personal profile of the injured players and the possible causes of incidents of injuries. This study focused on those sportsmen who were injured during playing on the ground. As a result, the population of study will reflect all the players of thirteen out of twenty four districts of Sindh Province in Pakistan. In depth interviews were also conducted parallel to get detailed views to uncover hidden aspects of knee injuries in badminton in the area of research. Through interviews using survey questionnaire, respondents were asked to share information about the circumstances of knee injury as well as their recovery, medication, rehabilitation and back into the field. The data was also collected from the subjects about the circumstances and participants, feeling of availability of the coaching, mentoring, training, practice, stadia, health care awareness and several relevant issues. Using snow ball sampling method means to identify someone who meets the criteria for encourage in study and refer to someone else injured who he knew. This process continued and more references and recommendations were made. To analyze the personal data of the subjects different tables were made and

results and information of the injuries are given in these tables from the incidents of injuries including time on set, whether, side of the body, type of the floor up to physiotherapy and rehabilitation.

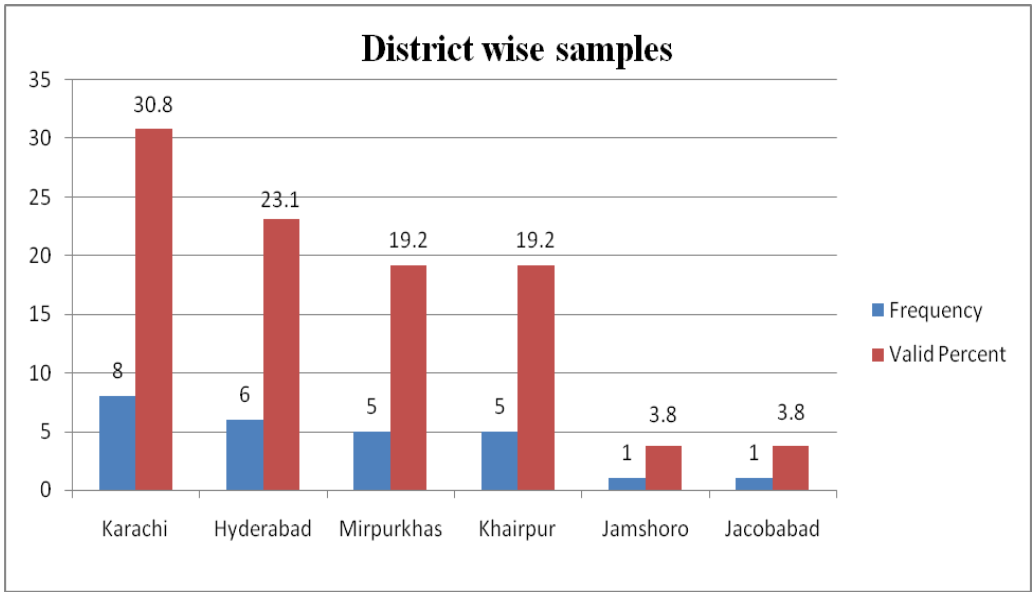
Results

67 participants were collected from the 13 out of 24 districts of Sindh province. Structured questionnaire was made to cover all the possible aspects of injury incidents and snow ball technique was applied to reach in different areas of the province and gathered the information from the injured badminton players and tabulated accordingly.

Study population and participants

Following graph shows district-wise participation of respondents in the survey. Graph further reveals that 30.8 percent respondents participated from Karachi followed by another 23.1 percent from Hyderabad. The respondents' participation from Mirpurkhas and Khairpur estimated to be 19.2 percent whereas Jamshoro and Jacobabad appear to have 3.8 percent participation in the survey respectively. The results represented in the table shows the popularity of the game among the districts.

Figure-1 Sample wise of Sample



Personal Profile

Table-1 divulges the personal profile of the respondents. The mean age of the respondents was found to be 42 years. On overall basis, the mean height and weight were recorded as 67.5 inches and 78 kilograms respectively.

Table-1
Personal Profile of Respondents

	N	Minimum	Maximum	Mean in %
Age in years	67	18	66	42
Height in inches	67	63	72	67.5
Weight in k.gs.	67	55	101	78

Injury in Knee

Table-2 is evident of the place of injury occurred during the game. The data in this table reveals that about 53.73% players injured in right knee while 46.26 percent have injury in left knee.

Table-2
Injury in Knee

	Frequency	Valid Percent
Right	36	53.73
Left	31	46.26
Total	**67**	**100**

Type of Floor

Table-3 reveals that most of the players preferred indoor playground. 73.14% got injuries on wooden floor while only 26.86%in got injuries on cemented floor.

Table-3
If indoor, type of floor

	Frequency	Valid Percent
Wooden	49	73.14
Cemented	18	26.86
Total	**67**	**100**

Climate during Injury

Table-4 tells us about the climate when the injury occurred. It is revealed from the table that nearly 38.81% of the players injured during hot season while 61.19% during cold climate. The proportions indicate the popularity of game in both the climates.

Table-4
Climate during Injury

	Frequency	Valid Percent
Cold	42	61.19
Hot	25	38.81
Total	**67**	**100**

Nature of injury

Table-5 is evident of nature of injury occurred during the badminton. It was reported that majority of the players 92% injured intrinsically while only 8% players injured extrinsically.

Table-5
Nature of injury

	Frequency	Valid Percent
Intrinsic	62	92
Extrinsic	5	8
Total	**67**	**100**

Medical Tests

The results regarding various medical tests, which were conducted during the treatment of the injury. This table indicates that only 42% injured utilized the X-ray technique in diagnoses of the injury. No one of the modern technology such as MRI ultrasound, Athrogram and Arthroscopy was used for the diagnose purpose.

Table-6
Medical Tests

	Frequency	Valid Percent
X-Rays	28	42
Ultrasound	0	0.00
Athrogram	0	0.00
Arthroscopy	0	0.00
MRI	0	0.00
NA	39	58
Total	**67**	**100**

Physiotherapy

Table-7 is evident of the physiotherapy given to the injured players. According to the table 76.9% got the physiotherapy while only 23.1% did not as rehabilitation.

Table-7
Physiotherapy

	Frequency	Valid Percent
Yes	51.53	76.9
No	15.46	23.1
Total	**67**	**100**

Type of Physiotherapy

The table-8 shows the type of physiotherapy given to the injured players of the badminton. It is revealed from the table that major portion of the respondents 53% were treated with manual physiotherapy followed by instrumental 17.09%. Those who were treated by both manual and instrumental physiotherapy their percentages was reported as 6.87%.

Table-8
Type of physiotherapy

	Frequency	Valid Percent
Manual	36	53.00
Instrumental	13	17.09
Both	3	6.87
NA	15	23.04
Total	**67**	**100**

Conclusions

According to the survey it was found that most of the knee injuries in the badminton were researched in developed and western countries. In our study area no empirical study was found on this topic. In this survey it was found that badminton is the popular game all over the province and it's being played indoor and outdoor equally, there are some major reasons for knee injury occurrence in the badminton. The players, coaches and even trainers are not aware about the basic of body movements (biomechanics) of badminton and also lack of knowledge of basic technique of training program, warm-up and warm-down exercises, prevention of the injuries and also the body conditioning.

Use of modern technology like MRI, ultrasound, arthrogram and arthroscopy can help to identify and diagnose various injuries, but unfortunately in our study area no such technology was utilized because of unavailability of the above facilities.

All the respondents suggested that they need Badminton halls and Clubs to play, Coach to guide, Exercise instruments, funds to manage playing material, Physiotherapist and Specialist doctor for medical treatment, shuttlecock and venile court. At the end of survey respondents were asked to provide recommendations that they would like to make to improve sports and sports-related conditions at ground. The main recommendations made by the respondents for the government include presence of coach, generator and Lighting system in the playgrounds. When the medical problem was discussed with them, they recommended for the availability of medical facility such as first aid, and physiotherapist, and specialist. It was also reported by them that funds should be provided to them and these should be utilized properly. Finally, they said that government should establish training centers where the players should be trained for the national and international.

According to this research it was observed that most of the injuries occur playing on improper grounds (court), without warming-up before playing the

game and matches, consequence the micro traumas occur inside the knee joints. On initial stage players do not notice or ignore the problem. There is also unavailability of the qualified coaches and trainers, end result the faulty technique of playing initially. As we mentioned that there is no any previous study done on this topic in the study area, so we cannot compared this finding on the local level but, we can compare with the experiences of international incidents.

Recommendations

At the end of survey respondents were asked to provide recommendations that they would like to make to improve sports and sports-related conditions at ground to avoid the incidents of the injury.

i. Proper and equipped badminton halls with wooden floor may be built in the study area.

ii. Well equipped fitness gym may be built beside each playing facility.

iii. Proper training program and qualify coaches may be arrange regularly.

iv. Knowledge of the sports injuries and its prevention courses may be organized regularly in different local areas.

v. Qualified medical persons may be arranged during training and competitions.

vi. First-Aid facility with quailfied personals may be available during training and competitions.

vii. Diagnose facility may be available at grass root level.

viii. Physiotherapy play important role in rehabilitation after the recovery of the injury, so well equipped physiotherapy facility may be built in local areas.

ix. Sports medicine conferences may be conducted in school, college, local and district level to give awareness to the players to avoid the possible injuries.

x. Due to social and cultural setup there should be separate playing facility with trained coaches for girls and badminton may be provided in local areas.

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