RESEARCH ARTICLE

INJURY PATTERN OF FIFA, CAF AND UEFA SOCCER TOURNAMENTS: A RETROSPECTIVE STUDY OF SELECTED 2002 MATCHES

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ABSTRACT: *This retrospective study was undertaken to detail the injuries sustained by players in the 2002 event of the Federation of International Football Association (FIFA) male senior world cup, Confederation of African Football (CAF) male nations' cup and Union of European Football Association (UEFA) clubs championship competitions. This was aimed at determining the frequency, causes, severity and treatment modalities of injuries sustained in selected matches at these three competitions.*

Twenty four matches (eight from each tournament) were randomly selected from the pool of matches played. Video tape footage of the selected matches was reviewed to assess the possible cause and severity of injuries, parts of the body injured and different lines of injury management undertaken during these tournaments. The data are presented using frequency, percentages and means.

A total of 111 injuries were recorded. CAF matches had the highest occurrence of soccer injuries (42.34%). The knee was the most commonly injured part of the body in each of the three competitions (FIFA-23.5%, CAF-14.9% and UEFA-20.0%). Ice-massage therapy was used extensively in the three tournaments. Knee injuries were most commonly caused by tackling attempts. Most of the injuries sustained were minor and the leading immediate therapeutic intervention was cryotherapy.

KEY WORDS: INJURED PLAYER, SEVERITY OF INJURY, TOURNAMENTS.

INTRODUCTION

Soccer presents sports medical practitioners with a wide variety of musculoskeletal and medical problems (Turker, 1997). The high incidence of soccer injuries amongst players may be attributed to factors such as inappropriate equipment, poor training, inadequate footwear and muscle- tendon imbalance (Odion, 2001).

A large number of people play soccer and there are therefore significant time and cost implications of what are often relatively minor injuries. Shawdon and Bruckner (1994) were of the opinion that more work was required to establish what injuries are common and importantly what measures could be taken to decrease their incidence. The team physician, physiotherapist and athletic trainers would therefore require basic understanding of the most common injuries in sport in order to ensure safe participation for athletes (Turker, 1997). This is pertinent as a thorough understanding of the causes and mechanism of soccer injury, body parts injured and form of treatment applied could help in the overall administration of the game. It would also assist the team physiotherapist in planning adequately for a particular game or tournament.

A number of studies on professional and semi-professional soccer players have been done, establishing the nature and frequency of injuries that occur in the game (Shawdon and Brukner, 1994; Boden, 1998; Juma, 1998). However all these studies were confined either to a certain level of play or specific regional soccer competitions. It was based on this observation that this retrospective study was carried out. Three different levels of soccer competitions (male senior world cup, African Nations' cup and European champions clubs) were studied. The competitions were organized by the Federation of International Football Association (FIFA), Confederation of African Football (CAF) and the Union of European Football Association (UEFA) respectively. The aim was to detail and compare the frequency, causes, affected body parts, severity and treatment modalities for injuries that occurred.

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MATERIALS AND METHODS

Selection of matches:

Stratified and simple random (fish-bowl) sampling techniques were used to select eight matches from each of the three tournaments, giving a total of 24 matches.

Matches were stratified as follows:

(a) Group matches: Two matches were randomly selected from the group matches of each of the tournaments.
(b) Quarter-final matches: Two matches were randomly selected from each tournament.

(c) Semifinal matches: Two semifinal matches were selected in the FIFA and CAF matches while three were selected for UEFA matches. This was because there is no third place match in UEFA championship.
(d) Third place matches: The only third place matches played at each of the FIFA and CAF tournaments were studied.
(e) Final matches: Final match of each tournament was studied.

PROCEDURE

The audiovisual cassettes of the selected matches were procured and played back with the aid of the video cassette recorder and a television set. Two of the authors viewed the tapes of all selected matches together and came to an agreement during the observation. The obtained information was then recorded on the assessment format specifically designed to ease data collection. The content validity of the assessment format was determined before being used in this study.

The assessment format noted the following, among others:
- Occurrence of injury
- Cause(s) of the injury.
- Site of injury on the player (i.e. part of the body injured).
- Severity of the injury.
- Form of treatment administered (if shown in the video recording).
- Place of treatment (field, side line or outside the field of play).
- Ability of player to go back to play after injury.

Immediately an injury occurred, the tape was put to slow play movement and the assessment format filled for that event. The audiovisual tape was also rewound when necessary. For the purpose of this study, a player was said to be injured only if there was a halt in the play ordered by the referee to attend to the player who had been roughly tackled or had collision with another player. Severity of injuries was classified as minor, moderate and severe.

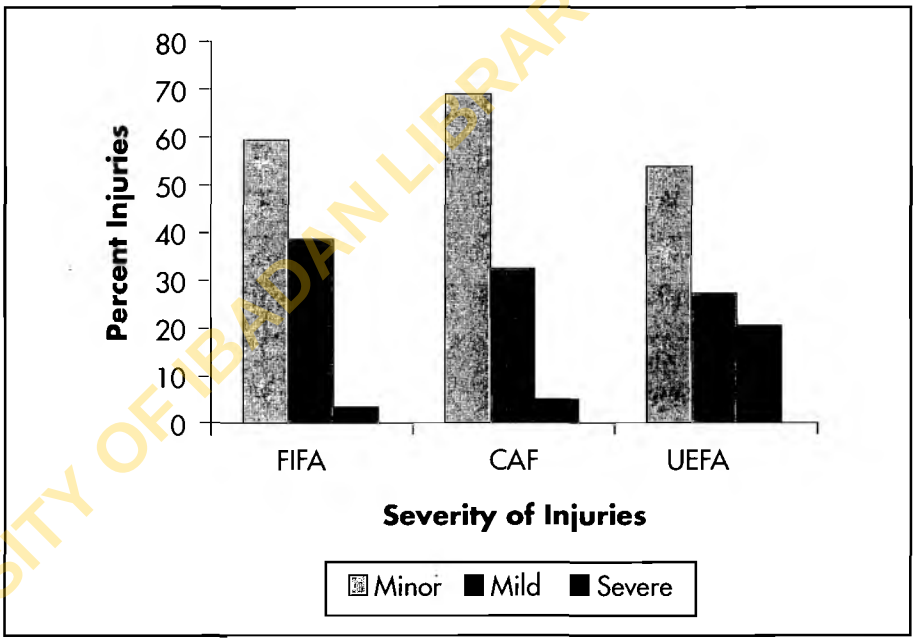
Injury was recorded as 'minor' when the injured player continued to play without requiring treatment. A player who continued playing in the same match only after receiving treatment was noted as having sustained a 'moderately' severe injury. A 'severe' injury occurred when the player could not continue to play in the same game even after receiving medical treatment.

Table 1: Frequency Distribution of Injuries by Tournaments (N=111).

Tournament	No of Matches	No of Injuries	Mean Injury/Match	% of N
FIFA	8	4	4,25	30.63
CAF	8	47	5.88	42.34
EUFA	8	30	3.79	27.03
Total N	24	111		100.00

KEY:
FIFA: Federation of International Football Association
CAF: Confederation of African Football
UEFA: Union of European Football Association

Figure 1: Distribution of Severity of Injuries Sustained by the Players.



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ANALYSIS OF DATA

Descriptive statistics of mean, percentage and frequency as well as bar charts are used to present the data obtained.

RESULTS

The frequency distribution of soccer injuries in the three tournaments are as shown in Table 1. The injuries sustained in the CAF nations' cup tournament (42.34%) were more than those sustained at each of the FIFA male world cup (30.63%) and UEFA champions club (27.03%) competitions.

Table 2 presents the distribution of the different parts of the body injured. The knee was the most injured part of the body in each of the three tournaments (23.5% for FIFA, 14.9% for CAF and 20.0% for UEFA matches). The causes of the injuries sustained as presented in Table 3 showed that tackling attempts were responsible for approximately one-third of the injuries. Classification

Table 2: Distribution of Injuries Sustained by Different Parts of the Body (N=111).

Body Parts	FIFA		CAF		UEFA		Total
	n	%Na	n	%Nb	n	%Nc	(N)
Head	3	8.82	6	12.7	3	10.00	12
Eye	1	2.94	0	0.00	1	3.33	2
Face/Mandible	4	11.76	4	8.51	5	16.67	13
Arm	0	0.00	0	0.00	1	3.33	1
Hand	0	0.00	1	2.13	0	0.00	1
Wrist	1	2.94	6	12.76	1	3.33	8
Groin	0	0.00	4	8.51	2	6.67	6
Hip	2	5.88	2	4.25	0	0.00	4
Thigh	3	8.82	5	10.64	1	3.33	9
Knee	8	23.53	7	14.89	6	20.00	21
Leg	3	8.82	6	12.76	2	6.67	11
Ankle	3	8.82	5	10.52	5	16.67	13
Foot	5	14.71	0	0.00	2	6.67	7
Spine/Back	1	2.94	1	2.13	1	3.33	3
Total (N)	34		47		30		111

KEY:

FIFA: Federation of International Football Association
CAF: Confederation of African Football
UEFA: Union of European Football Association
Na= Total number of injuries at the FIFA competition
Nb= Total number of injuries at the CAF competition
Nc= Total number of injuries at the UEFA competition

Table 3: Distribution of Injury by Causes.

Causes of Injury	FIFA		CAF		UEFA		Total
	n	%	n	%	n	%	(N)
Accidental Contact	6	17.65	11	23.40	6	20.00	23
Individual Fall	3	8.82	1	2.13	1	3.33	5
Goal Post Fall	0	0.00	0	0.00	0	0.00	0
Interference by Fans	0	0.00	0	0.00	1	3.33	1
Tackling Attempts	23	67.65	35	74.47	21	70.00	79
Others	2	5.88	0	0.00	1	3.33	3
Total (N)	34		47		30		111

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Na= Total number of injuries at the FIFA competition
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Nc= Total number of injuries at the UEFA competition

of severity of the injuries sustained (Figure 1) showed that minor injuries were the most common type of injury sustained in the three tournaments: FIFA (58.82%); CAF (68.83%) and UEFA matches (53.33%). Ice-massage technique of cryotherapy was used extensively in both the FIFA (70.0%) and CAF tournaments (50.0%). Cold spray and combination of cold and stretching were used equally (25.0% each) in the UEFA matches. The outcome of the treatment received by injured players is as shown in Table 4.

DISCUSSION

Twenty four matches were studied in the three tournaments. The highest incidence of injuries occurred in the CAF nations' cup and the least occurrence was in the UEFA clubs tournaments. This may suggest that there were probably more

Table 4: Outcome of Treatment of Injured Players (N=111).

Causes of Injury	FIFA		CAF		UEFA		Total
	n	%	n	%	n	%	(N)
Player returned immediately without sign of injury	4	28.57	0	0.00	4	28.57	8
Player returned immediately with some signs of injury	2	14.29	7	41.18	3	21	12
Player returned after some minutes without signs of injury	7	50.00	7	41.18	1	43	15
Player did not return to play after treatment	1	7.14	3	14.65	6	7.14	10
Total (N)	14		17		14	42.86	45

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CAF: Confederation of African Football

UEFA: Union of European Football Association

Na= Total number of injuries at the FIFA competition

Nb= Total number of injuries at the CAF competition

Nc= Total number of injuries at the UEFA competition

physical contacts in the African nations' cup matches than the other two groups and thus leading to increased number of injuries. Green and Rayan (1997) had reported that player-to-player contact is the most common cause of soccer injuries.

The knee joint was the most frequently injured part of the body in the three tournaments studied. This observation agrees with the submission of Raty et al (1997) and Steinbruck (1999) who stated that knee injuries form the main part of soccer injuries, followed by ankle injuries. The high risk of knee joint to injuries in soccer may be due to its weight bearing function and relatively exposed nature, as it is not protected by the player's garment. Garrick and Webb (1990) stated that hyperextension of the knee joint causes knee injuries. Stacoff et al (1996) reported that sideward cutting movements were responsible for injuries to the lateral aspect of the knees. The least injured parts of the body in the three tournaments were the upper extremities, namely; arms and hand. This could have been due to minimal involvement of the upper extremities by players who are not goalkeepers in the game of soccer.

"Tackling attempt" was the leading cause of soccer injuries observed in the three tournaments studied followed by accidental contact by the players. Boden et al (1999) observed that most of soccer injuries were caused by injurious tackling attempts. The aggressive nature of players when they jostle for a loose ball may be responsible for the magnitude of tackling attempt as the highest cause of soccer injury. The least causes of injury in the three tournaments were goal post fall and interference by fans. This could imply that the risk of goal post fall as a cause of injury described by Blond and Hansen (1999) has been removed by securing the post with counter-weights. The injuries caused by interference of fans were also minimal probably because of the sanctions placed on the teams of the erring fans.

The injuries sustained in the three tournaments were mostly minor and this may suggest that the players were in good physical and psychological state, were skilled and playing areas were in good condition (Juma, 1998; Thacker et al, 1999). However, high occurrence of severe injuries mainly in the CAF and UEFA matches may indicate that players at the club and continental levels of competition are more aggressive than those playing at the world level. This may have a bearing on the level of professionalism inherently exhibited by players at the world soccer ruling body (FIFA) organized competitions.

For all three tournaments, the choice treatment modality was cryotherapy in the form of ice-massage. The efficacy of ice providing quick analgesia to soft tissue injuries in sports has been alluded to by Turker (1997), Saartok (1998) and Odebiyi et al. (2001). Other forms of treatment used in this study were cold sprays; massage; stretching; bandaging and combinations of two or three of these. We also observed that after treatment was carried out on injured players, about 42.86% of the injured and treated players in the UEFA matches did not return to the field of play to continue with the game thus confirming the severity of the injuries sustained by players. An equal percentage of players returned to the field of play in the FIFA and UEFA matches without obvious symptoms of injury such as limping or bandaging after treatment. However all the treated players in the CAF matches who returned to the field of play had obvious symptoms of an injury. This suggests that the coaches in the African nations' cup returned their unfit players to the field of play more than the coaches in the other two competitions.

CONCLUSION

The CAF matches recorded the highest incidence of injuries followed by FIFA matches. The knee joint was the most injured part and tackling attempt was responsible for most of the injuries in the three tournaments. Whereas most of the injuries in the three tournaments were minor injuries, the FIFA and UEFA matches had the highest and least number of severe injuries respectively.

REFERENCES

Blond L, Hansen L B 1999 Injuries caused by falling soccer goal posts in Denmark. British Journal of Sports Medicine 33(2): 110 - 112.

Boden B P 1998 Leg injuries and shin guards. Clinics in Sports Medicine 17(4): 769-777.

Boden B P, Lohnes J H, Nunley J A, Gar W E 1999 Tibia and fibula fractures in soccer players. Knee surgery, Sports Traumatology, Arthroscopy 7 (4): 262 -266.

Garrick J G, Webb D R 1990 Sports Injuries: Diagnosis and Management Webb Sanders Coy, Philadelphia.

Green J R, Rayan G M 1997 Scaphoid fractures in soccer goal keepers. Journal of Oklahoma State Medical Association. 90(2): 45 -47.

Juma A H 1998 Outline of sports injuries in the World Youth Championship for FIFA cup in Saudi Arabia. Indian Journal of Medical Sciences 52(10): 433-437.

Odebiyi D O, Olalekan A T, Odunuga O A C 2001 Sports medicine: Role of a sports physiotherapist. Journal of Nigerian Medical Rehabilitation Therapists 6(1): 21 - 24.

Odion A A 2001 Injury pattern of the national female soccer team of Nigeria (The Falcons) from 1997 to 1999. Journal of the Nigerian Medical Rehabilitation Therapists 6(1): 11 - 15.

Raty H P, Kujala U M, Videman T, Impivaara O, Crites B M, Sarna S 1997 Lifetime musculoskeletal symptoms and injuries among former elite male athletes. International Journal of Sports Medicine 18(13): 625 -631.

Saartok T 1998 Muscle injuries associated with soccer. Clinics in Sports Medicine 17(4): 811 -817.

Shawdon A, Brukner P 1994 Injury profile of amateur Australian Rules footballers. Australian Journal of Science and Medicine in Sports. 26(3-4): 59 - 61.

Stacoff A, Stage J, Stussi E, Reinschimidt C 1996 Lateral stability in sideward cutting movements. Medicine and Science in Sports and Exercise 28(3): 350 -358.

Steinbruck K 1999 Epidemiology of sports injuries 25yrs analysis of sports orthopaedic traumatologic ambulatory care. Sportverletzung Sportschaden. 13(2): 38 -52.

Thacker S B, Stroup D F, Branche C M, Gilchist J, Goodman R A, Weitman E A 1999 The prevention of ankle sprains in sports. A systemic review of the literature. American Journal of Sports Medicine 27(6): 753 - 760.

Turker A M 1997 Common soccer injuries, diagnosis, treatment and rehabilitation. Sports Medicine 23(1): 21 - 32.