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MEDICAL COVERAGE AT SOCCER SESSIONS

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Abstract**Introduction**

Soccer in Rwanda exposes soccer players to the risk of injury warranting a need for medical coverage at both training and competitive sessions. This study aims to identify the prevalence, period of injury occurrence, and severity of common soccer injuries among the 1st and 2nd division soccer teams in Rwanda.

Methods

A cross-sectional retrospective quantitative study design was used. Simple random sampling, clustered within teams, was used to get a sample of this study. During sample selection, the random order was determined using the random number generator in Microsoft Excel®. Data for soccer players was gathered, using a close-ended questionnaire. The data from soccer players were captured and analyzed with the Microsoft Excel package.

Results

The study revealed 68.1 % injury prevalence with a significantly high rate of injuries occurring during training ($p < 0.005$). Most of the training injuries were moderate followed by major, minor and severe injuries while most injuries during competition were major-moderate, followed by severe-minor.

Conclusion

The prevalence, period of injury occurrence and severity of injuries in Rwanda indeed warrants medical coverage as a first preventive strategy.

Key Words

Soccer, prevention, injury prevention, Rwanda

Introduction

Soccer, commonly known as football, is one of the most popular team sports in the

world and continues to provide many young people with an opportunity for healthy exercise (Levy and Lohnes, 1996;

McGrath and Ozanne-Smith, 1997; and Mithoefer, Gill, Giza, Mandelbaum, Peterson and Minas, 2002). It is characterized as a vigorous, high intensity, intermittent ball and contact sport (McGrath and Ozanne-Smith, 1997).

The characteristics of soccer, along with the required functional activities, obviously place great demands on the technical and physical skills of the individual player. According to Hawkins and Fuller (1999), soccer is known to be associated with a relatively high injury rate compared to other contact team sports, with the injury rate being around 1000 times higher than for industrial occupations generally regarded as high risk. The overall level of injury to the professional football player has increased tremendously and thus calls for preventative action, based on the results of epidemiological research (Hawkins, Hulse, Wilkinson, Hodson and Gibson, 2001).

The secret of success in sports medicine is to take a broad view of the patient and his or her problem. Sports medicine, as a wide-ranging discipline, is composed by different practitioners. In an isolated rural community, the sports medicine team may consist of a family physician or even only a physiotherapist.

In a fairly populous city, the team may consist of a family physician, sports physician, orthopaedic surgeon, radiologist, physiotherapist/physical

therapist, massage therapist, podiatrist, dietician/nutritionist, psychologist, sports trainer/athletic trainer and other professionals (osteopaths, chiropractors, exercise physiologists, biomechanists, nurses, occupational therapists, orthotists, optometrists, coach and fitness adviser (Brukner and Khan, 2003). The skills of these professionals will fulfil the challenge that sport injury management face. Soccer is one sport area in which such a multidisciplinary team is required.

Many people in Rwanda and the rest of the world now know that professional soccer is a great employer and thus there is an increased level of participation in sporting activities. This could suggest a possible increase in sports-related injuries. Although the level of league and tournament competitions in Rwandan soccer is not higher than that of developed countries the chances of sustaining injuries still exist.

This is due to the fact that some soccer players in Rwanda participate in competition at both national and international level, which expose them to a higher risk of injury. In addition, with the emphasis on World Cup 2010 in Africa, winning is over emphasised and this increases the injury rate. Injuries to players could mean an inability to participate in major competitions making them ineligible for selection for World Cup in 2010.

Although the sport governing bodies such as the International Federation of Football Association (FIFA), the International Olympic Committee (IOC) and the African Football Confederation (CAF) have conducted sport medicine seminars in Rwanda in 1998, 1999 and 2000 respectively, there are still a low number of team medical practitioners. Medical coverage is an essential care delivery within soccer teams.

As soccer is associated with a relatively high injury rate (Yard et al 2008), different types of injuries probably occur and each individual in the medical team will play a crucial role, either in prevention or rehabilitation of soccer injuries.

According to Van Mechelen, Hlobil & Kemper (1992), Van Mechelen (1997), and Hawkins *et al.* (2001) the process of injury prevention can be considered in four stages: firstly, the extent of injury must be identified and described; secondly, the factors and mechanisms that play a part in the occurrence of injuries have to be identified; thirdly, preventive strategies must be implemented based on stages 1 and 2 and finally strategies are evaluated for effectiveness. The present paper focused on the third stage of injury prevention and started with medical coverage as the first issue to face in injury prevention strategies.

Subjects and Methodology

Rwandan male soccer teams are 30 in total with 14 teams from the first and 16 teams from the second divisions, registered in the Rwandese Federation of Football Amateur (FERWAFa) for the 2003 season. A cross-sectional retrospective quantitative design with a simple random sampling, clustered within the teams, was used to target a sample of 300 players from both divisions. The random order determined by using the random number generator in Microsoft Excel®, was used to select ten soccer players from each team and the study ended with 273 soccer players. The close-ended questionnaire adapted from validated ones used in various literature (Jelsma et al., 1997 and Hawkins and Fuller, 1998a) was used to collect data from soccer players. The content of those validated questionnaires included demographic data, injuries sustained, injury dates, injury status, management received, availability of and need for physiotherapy services, preventive programmes and nutritional advice. The data were retrospectively collected over a period of less than one year and in most cases prior to the new soccer season. This allowed for a recall period of 6 months in most cases. The questionnaires for soccer players instructed them to only report the injuries sustained in the previous season. All players were given time to think about or remember injuries sustained during the previous season in

order to produce a realistic result. Permission was obtained from the federations, as well as team officials and guardians of under age players. Written consent was obtained from all the players and confidentiality and anonymity was assured.

Reliability and Validity

The questionnaires were adapted from two validated questionnaires: The first one was used in The Sixth All Africa Games, developed to record physiotherapy data based on those used during the 1994 Commonwealth Games in Victoria, Canada and the World Police and Fire Games held in Melbourne in 1995 (Jelsma *et al.*, 1997). The second one was the one used in the preliminary assessment of professional footballers' awareness of injury prevention strategies (Hawkins and Fuller, 1998a). For validity purposes, all questionnaires for this study were pre-tested during the pilot stage among soccer players not used in the study.

The questionnaires were tested for face validity and no changes needed to be made to the questionnaire. Injuries reported were those sustained in training or competition and requiring medical assistance. Severity of injury data was determined on how many days were missed due to injury.

Data Analysis

Data was captured on an excel spreadsheet. The data-capturing sample was processed in Microsoft Excel®. Both descriptive and inferential statistics were determined in Microsoft Excel®. Descriptive statistics, frequencies, means, standard deviation, maximum and minimum of the variables measured in the questionnaire of soccer players were separately displayed for both the 1st and 2nd divisions. While the questionnaire contained a high number of ordinal variables, non-parametric statistics (e.g. McNemar test) were used to determine whether differences exist between the groups. Associations between ordinal variables were evaluated by means of the Spearman Rank Correlation at a $p < 0.05$ and $p < 0.01$ level.

Results

Of the 300 questionnaires provided for both the 1st and 2nd division soccer players, 273 questionnaires were answered. These results yielded an overall response rate of 91% (273 players). The demographic data of the players are presented in Table 1 below.

Table 1: Demographic data of players

Variable	1 st Division (n=137)	2 nd Division (n=136)	Overall (N=273)
Age			
Range	17-32 years	15-35 years	15-35 years
Mean	23.6 (3.1)	22.2(3.5)	22.9(3.4)
Experience			
Range	1-16 years	1-5 years	1-16 years
Mean	3.8 (2.6)	1.7 (0.9)	2.8 (2.2)
Playing position			
Defenders	53 (39%)	51 (38%)	104 (38%)
Forwards	39 (28%)	40 (29%)	79 (29%)
Midfielders	34 (25%)	33 (24%)	67 (25%)
Goalkeeper	11 (8%)	12 (9%)	23 (8%)

The prevalence of injuries was calculated from the total number of players in both the 1st and the 2nd division teams who at least, sustained one or more injuries at any time (of training or competition) from soccer sporting activity.

The overall injury prevalence revealed within the sample of this study was 68.1% (186 players). Injury prevalence during training and competitive sessions, were 52.7% (144 players), and 42.5% (116 players) respectively. The 1st division sample showed an injury prevalence of 70.8% (97 players) compared to an injury prevalence of 65.4% (89 players) among 2nd division players.

The injuries reported in this study, showed that the number of injuries sustained during training and the number of injuries sustained during competition were significantly related (p=0.0017). However,

there was a higher significance (p< 0.005) that more injuries occurred during training (144 players) than during competition (116 players).

Severity of soccer injuries

Figure 1 shows the severity of the injuries occurring in both training and competitive sessions. The severity of injury was classified under four types of injury according to the time taken to return to the sport activity: minor (2-3 days), moderate (4-7days), major (1-4weeks) and severe (more than 4 weeks). Of all the injuries reported, minor injuries accounted for 23.5% and 12.5% in training and competition respectively. The results of this study revealed that more severe injuries occurred during training than the competitive injuries (p<0.01) when only considering first injuries (Fig 1).

Figure 1: Type of injuries sustained during training and competition

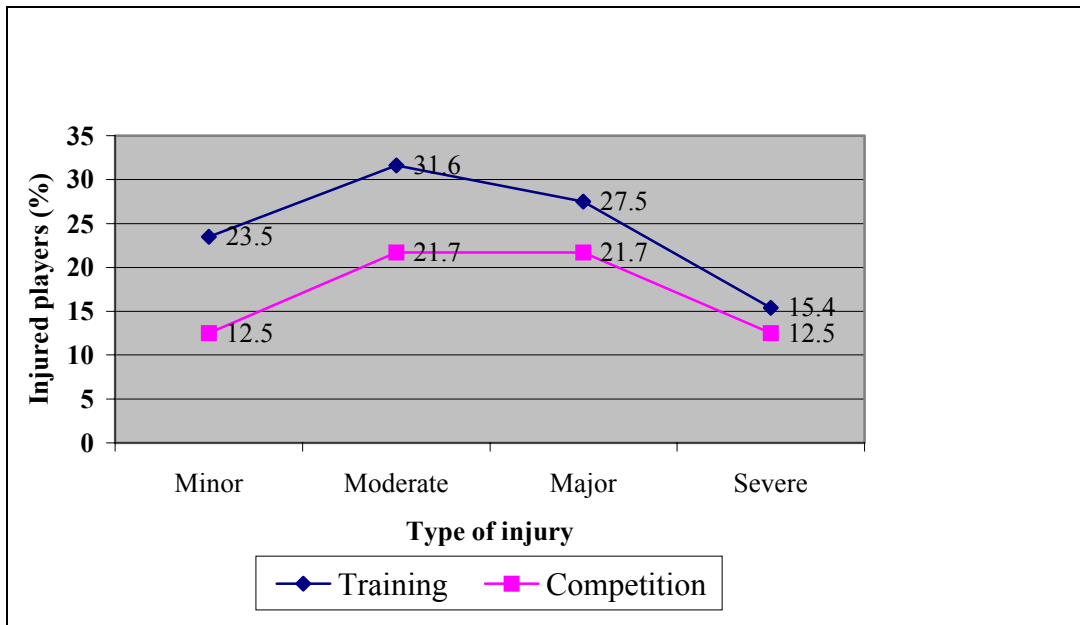


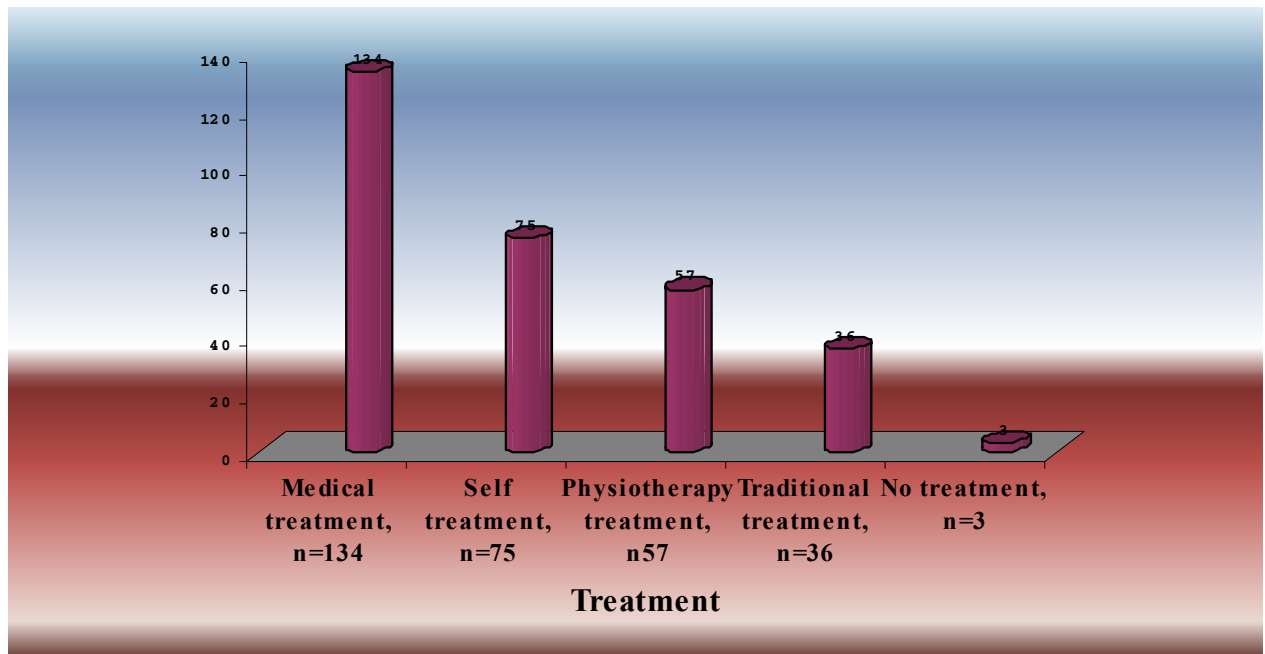
Figure 2 illustrates the given treatments following injuries. Five types of treatment were inclusive within the present study: medical, physiotherapy, traditional, self and none.

The percentages were calculated in terms of number of players who sustained at least one sporting injury at any time (of training or competitive). Since one or more treatments could be reported, the total

percentages did not equal 100%. Of the 186 injured players, 72% (134 players) got medical treatment, 40.3% (75 players) got self-treatment, 30.7% (57 players) got physiotherapy treatment, 19.4% (36 players) received traditional treatment and 1.6% (3 players) did not benefit at all from any treatment.

Each of the above treatments could be used in conjunction with other treatments.

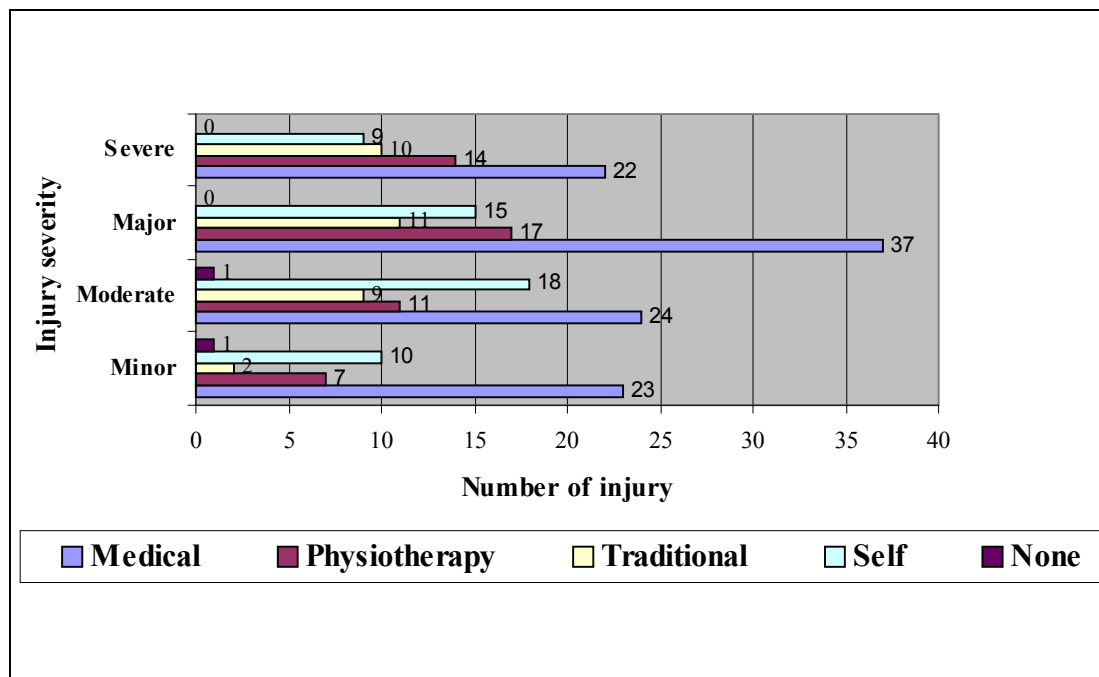
Figure 2: Treatments obtained following injuries



After medical treatment, physiotherapy treatment seemed to be the second most commonly used mode of treatment used in many severe and major training and competitive injuries (figure 3). However,

the self-treatment was more commonly used after medical treatment for moderate and minor training and competitive injuries.

Figure 3:



Discussion

The response rate of 91% in this study was very high compared to rates reported in previous studies (Hawkins and Fuller, 1998a; Guskiewicz, Weaver, Padua & Garrett, 2000; Junge and Dvorak, 2000; and Woods, Hawkins, Hulse and Hudson, 2002). The results of this study revealed a higher prevalence (68.1%) of soccer injuries than reported in similar studies (Hawkins and Fuller, 1998b; Orchard and Seward, 2002). However, a more recent longitudinal study revealed a prevalence rate of 89% (Yard et al 2008).

The definition of injury and injury prevalence adopted in this study was different from those used in some other studies and could contribute to the wide range of injury prevalence between

studies. In this study, injury was defined as an incident occurring during a training session or a match and causing a soccer player to miss the following session(s) (Hawkins and Fuller, 1999; Orchard, 2001), and the injury prevalence was calculated from the total number of players, in both the first and the second divisions, who sustained one or more soccer injury at any time (during training or competition).

These definitions limited the comparability of this study with many similar studies because the other studies included the issue of seeking medical attention in injury definition (Frantz, Amosun & Weitz., 1999 and Woods et al., 2002) as well as the issue of 1000 playing hours in calculating injury prevalence (Morgan and Oberlander, 2001; Rahnama, Reilly &

Lees., 2002, Merron, Selfe, Swire and Christer, 2006; and Yard et al 2008). The issues of injury and injury prevalence definitions could not be ruled out due to the nature of this study.

The study also found that more injuries occurred during training than during competition. Similar findings have been reported in a previous study (Heidt et al., 2000). In contrast Chomiak et al. (2000).

The authors in a previous study also agree that the limited training attendance of team medical practitioners may lead to the underestimation of minor injuries causing players to miss one or two training sessions (Arnason et al., 2004). However, more recent literature indicates that the incidence of injury for competition games is higher than during training (Merron et al 2006). Arnason et al (2004) stated in their study that, only physical therapists were present before, during and after matches and that, very few teams had a team physician present during matches or training sessions.

In Rwanda therefore, despite there only being a few of them, if medical practitioners are absent during training sessions, injuries occurring in their absence may be missed and delayed treatment may lead to unnecessary complications and possible permanent damage.

The definition of injury severity adapted in this study was the same as the one used in other studies (Hawkins and Fuller, 1999; Hawkins et al., 2001 and Woods et al., 2002). The injury was classified as slight/minor, moderate, major and severe/serious depending on the length of time needed for recovery. The time for recovery is two to three days for slight/minor, four to seven days for moderate, one to four weeks for major, and more than four weeks for severe/serious injuries.

The study revealed that the soccer injuries were more moderate and major rather than minor and severe which was contrary to what had been found in other studies (Hawkins et al., 2001; Rahnama. et al., 2002 and Merron et al 2006). Due to lack of complete rehabilitation and early return to sport activity, a minor injury can be followed by a major injury, with a number of these being of the same type and location (Woods et al., 2002).

The severity, which is more prominent in training than in competition, could occur due to unsafe playing surfaces, lack of appropriate training equipment as well as negligence of some pre- and post-soccer sporting activities, which probably play a big role in injury occurrence during training sessions in Rwanda.

The study revealed that physiotherapy treatment was considered secondly after medical treatment in most major and severe injuries sustained in both training

and competitive sessions. Although, self-treatment seemed secondary too, in most moderate and minor training as well as injuries sustained during competition, its use and benefit are still critical. First of all, even if the treatment is so-called self-treatment, the researcher believes that medical or physiotherapy means could have been used. Secondly, where there is no medical practitioner, self-treatment might be the only way the injured players could help themselves.

However, some other factors such as financial standards, ignorance and lack of information could have played a role in choosing self-treatment in moderate and minor injury treatment. In addition, some players neglected minor injuries as they were sometimes considered as part of the game.

Limitations of the Study

Comparison to similar studies is difficult due to the nature and adopted definitions of injury and injury prevalence. The soccer players' questionnaire did not assess the playing hours and exposure time, hence limited the current study to express prevalence and incidence as they are expressed in other studies.

Conclusion

This study highlights the high prevalence and most common injuries in soccer in Rwanda and thus emphasises the need for medical coverage at both training and competition sessions. If World Cup 2010 is

to become a reality for Rwanda, emphasis on injury prevention is essential. As a start medical coverage of soccer teams must be regarded as a priority when highlighting strategies for injury prevention.

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