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Original article

Ajman's Youth in Sport: Unraveling Injury Trends and Factors

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Abstract

Objective: The objective of this study was to determine the prevalence of sports-related injuries among athletes in Ajman, UAE, and to determine possible risk factors associated with these sports injuries. ***Methods:*** This study adopted a cross-sectional study format in which we surveyed 100 athletes attending a medical university in Ajman, UAE. The subjects of this study were all over the age of 18 and reported practicing the sport or exercise more than twice a week, consistently. An interviewer-administered questionnaire was administered, which inquired about the subjects' socio-demographic characteristics, details of sports activity, type of injury, and factors associated with a sports-related injury. The results were expressed in frequencies and percentages, wherever applicable. The association between dependent and independent variables was tested by performing a chi-square test as well as binary logistic regression for significant chi-square values. This study's significance level was set at $p \leq 0.05$. ***Results:*** Among the participants engaged in football, 20 (44.4%) were identified as having sustained injuries, marking football as the sport with the highest incidence of sports-related injuries. Cricket and weight-lifting emerged as the most injury-prone sports, with 60% (6 & 3, respectively) of participants in these activities reporting injuries. The most frequently self-reported type of injury was sprains, accounting for 47.8% (33 respondents), followed by bruises at 33.33% (23 respondents). Among the participants, 59.2% (N = 58) reported experiencing no sports-related injuries, while 40.8% (N = 40) did encounter a sports injury in the last 12 months. When examining the specific injury sites, the lower limb was the most common, with 51% of participants experiencing injuries in this area (N = 20). The upper limb followed closely, where 35% of participants reported injuries (N = 14). A smaller proportion experienced injuries in the head (7%, N = 3), chest (4%, N = 2), and groin (3%, N = 1). Gender was identified as the sole significant risk factor (P = 0.02), as revealed by simple binary logistic regression analysis. The findings indicated that male respondents were 2.9 times more likely to sustain sports-related injuries than their female counterparts (95% CI: 1.1- 7.2). ***Conclusions:*** Within the last 12 months, 40.8% (N=40) of participants were identified as having experienced an injury, and approximately 70.4% (N=69) reported a history of sports-related injuries. Our investigation underscores that organized sports activities are primarily associated with injuries to the lower limbs, specifically the legs, with 51% (N=20) of participants attributing their injuries to this region. This correlation is likely influenced by the prevalence of football (soccer) participation, which demands extensive use of the lower limbs. The most commonly reported injury was a sprain, noted by 47.8% (N=47) of participants. Notably, the only factor exhibiting a statistically significant association with injury prevalence was gender.

Keywords: ***Sports Injuries, risk factors, sports, youths, Ajman.***

Introduction

Virtually all adolescents, youth, and young adults participate in athletics or physical activity, whether it be on a highly competitive level or playground or backyard play. There are many well-established benefits to athletic participation, among them being improved health, a sense of team and individual accomplishment, the promotion of self-esteem, and the improvement and refinement of fine and gross motor skills. Despite the tremendous benefits of athletic participation, there are inherent risks to any athletic endeavor, whether the activity is organized or spontaneous. With the growing interest in sports, there are even higher risks involved than before.

Several studies have explored the relationship between sports injuries and the types of sports played. With the growing interest in the Gulf Region, more specifically in the United Arab Emirates (UAE), the risk of injuries and other complications among athletes will increase as the interest in sports does as well. The survey [1], conducted by the "First National Health Survey for the Federal Republic of Germany" sought to connect the association between the incidence of sports injuries and sick leave. The study suggested that about 62% of all sports injuries result in sick leave. A similar study was done in the United States using the 1997 and 1998

National Hospital Ambulatory Medical Care Survey data [2]. Here, the main objective of the research was to examine the effect and magnitude of sports injuries that were presented at the emergency department. The study concluded that an average of 2.6 million people presented to the emergency department with a sports-related injury. More than one-fifth of the visits were by people who were 5 to 24 years old. Visits from sports-related activities for this age group were more frequent for basketball and cycling compared with other categories (e.g., baseball, skateboarding, gymnastics).

An epidemiological study was conducted within the Qatar national football team for two whole seasons. The article suggests a higher injury incidence during matches than during training (65.9 vs. 4.3/1000h, P<0.001). The study results were in accordance with previous data from European football, thus suggesting that guidelines for injury management and prevention were followed in the country [3].

In recent times, the UAE has been urging the growing population to lead a healthy lifestyle through promotions and campaigns such as the Dubai Fitness Challenge to tackle the increasing incidence of lifestyle disorders such as obesity and cardiovascular diseases. As more people participate in sports activities, the risk of injury will also increase; this calls for a better understanding of sports-related injuries, their risk factors, and their prevention and intervention [4]. The Lower limb was most injured due to sports compared to other parts of the body. There are many sports injuries, but the most common ones include patellofemoral syndrome, sprains (stretched or tearing of the ligaments that result in pain), muscle or tendon strains, dislocations, fractures, and rotator cuff muscle injuries.

A study suggests that younger children and people in their adolescent years may have a higher risk of a more severe sports injury in comparison to an adult due to factors such as growing cartilage, which can be more vulnerable to stress [5]. Another study found that acute injuries were more commonly found in team sports, while overuse injuries were presented in individual sports [6]. Another study observed that training was responsible for 83% of the injuries, technique (46%), equipment (37%), and nutrition (30%). Intervention strategies proved to help prevent injuries. This included psychological and behavioral interventions (97%) and nutritional changes (50%) [7]. Many studies acknowledge the types of injuries resulting from sports but don't place a primary focus on the specific sports that caused the injury. Athletes around 17 to 21 years old are more likely to develop more severe sports injuries compared to other age groups because they participate in more physically straining activities. A lot of sports injuries result from overuse, which puts adolescents and young adults at greater risk. To better facilitate sports and avoid injuries, it is crucial to recognize the risk factors for athletes. A lot of studies tend to focus on the injury and its cause. However, acknowledging and understanding what sports are responsible for certain injuries would help to make better prevention programs.

A major factor that influences the risk of sports injuries is stretching and warming up pre-workout and post-workout. The alterations made in the body after warming up can be beneficial in injury prevention. For example, increasing neural transmission speed may improve reaction time and allow athletes to avoid injurious twists or falls. Different sports require and dictate different warm-up methods. The sport that is responsible for a sports injury can be prevented with the appropriate warm-up exercises and stretches. This factor affecting the prevalence of sports injuries will be detrimental to contributing to prevention and intervention strategies [8].

A study published recently determined certain intervention strategies that can be put in place to prevent athletes from getting injured. The study found that athletes were best protected when they focused mainly on changing individual athletes's behavior [9]. A study conducted [10], determined that lower extremity sports injuries are more common among high school athletes and disproportionately affect girls more than boys. Though evidence on rule-related solutions is scarce, the few studies exploring them have proved to be effective in minimizing the danger in certain sports [9,11]. More studies have been reported stating that the type of sport influences the likelihood of an acute or severe injury [11]. Sports injuries affect every individual differently and may pose greater risks to specific groups of people later on in life. A study in Kuwait determined that volleyball was the leading cause of sports injuries [12].

However, more research is required to formulate new methods for each sport. While some overlap may occur in the prevention of sports-related injuries, the intervention methods should be more unique to each sport. This study will aim to determine the relationship between the type of sport and the sport-related injury in the hopes that the data can be used to help determine prophylactic strategies for each sport.

Materials and Methods

The current study adapted cross-sectional survey was conducted among university students in Ajman, U.A.E. The setting of the study was Medical University, Ajman, U.A.E. The Duration of the study was 10 months. A questionnaire was used to assess the prevalence of and factors associated with sports injuries. A self-administered questionnaire was developed after a thorough literature search, and the questionnaire was divided into multiple domains that included socio-demographic characteristics such as age, gender, nationality, course, and year of study. Details of sports activity: This domain will have items related to the type of sports activity, duration, and frequency. Type of injury: upper limb injury, lower limb injury, torso injury, or head/spinal injuries; Factors associated with sports-related injury: This domain had items related to the factors associated with sports-related injury, an increase in weight, and medical conditions. The draft questionnaire content was validated by two experts in the areas of public health and sports medicine. The questionnaire was modified based on the suggestions received from the experts and sent back to them for final approval. A pilot study was done among five students to determine the feasibility, time consumption, and comprehension of the question before finalizing the questionnaire.

Before any data was collected, this proposal was sent to the Medical University Institutional Review Board for approval. A concise overview of the study's objectives was given to the participants. Through the use of a permission form, the participants' informed consent was acquired. Respondents' anonymity was ensured by not recording any information that revealed their identity. Confidentiality was ensured by storing the information in the Department of Community Medicine for three years and only for researchers. Members of the IRB and members of the statistical team may have access to the data with appropriate regulatory approval. The Data was analyzed in groups. Participants' privacy was respected by avoiding the distribution of questionnaires among groups. There were no drugs or placebos involved in this research. This research did not cause any physical or psychological trauma to participants.

After obtaining approval from the Medical University IRB, our team reached out to the captains of all associated sports at the medical university and asked them to send the electronic survey to their team. Informed consent was obtained from all who were

willing to participate in the research. Online questionnaires were distributed to those who had consented to participate, and the filled-in questionnaires were collected back. Following the gathering of data, the information was entered into an Excel spreadsheet and then imported into SPSS version 28 for analysis. The study population was described using descriptive statistics. A chi-square test was used to test the association between independent variables and dependent variables. The P value is set at ≤ 0.05, which is considered statistically significant. Using the Kuwait study as a Model [12].

Results

In this study, 58% of people were 20 or above the age of 20 (N=58), and 42% of people were below the age of 20 group (N=42). Of the 100 participants, there were 68 males and 32 females. 37% (N=37) were from the South East Asia Region (SEAR), 42% (N=42) were from the Eastern Mediterranean Region (EMR), and 21% were from the category "Others," which includes the African Region (AFR), the Americas Region (AMR), Europe (EUR), and the Western Pacific Region (WPR) (N=21). Out of 100 participants, 53.4% were from the College of Medicine (N=47), 30.7% were from the College of Health Sciences (N=27), 11.4% were from the College of Pharmacy(N=10), and 4.5% were from the College of Dentistry (N=4). In our Study 43.3% were from Year 3 (N=35), 30.9% were from Year 1 (N=25), 14.8% were from Year 2 (N=12), 7.4% were from Year 4 (N=6), and 3.7% Were from Year 5 (N=3). According to our study, 58% were normal weight (N=58), 24% were overweight (N=24), 13% were obese (N=13), and 5% from underweight (N=5).

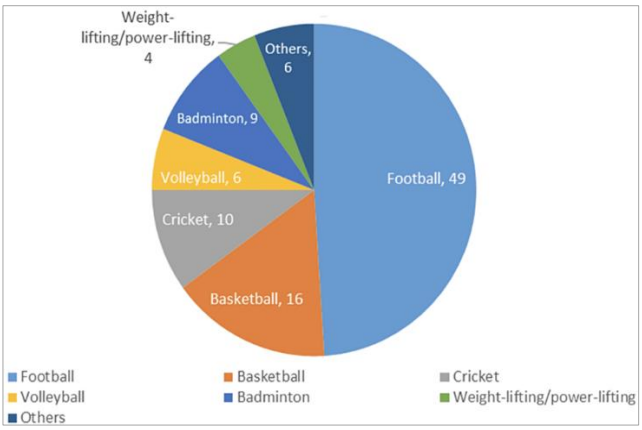

Figure 1: Distribution of Self-Reported Sports Activity

Football serves as the primary sport for 49% (N=49) of participants, while 16% engage in basketball (N=16). Cricket is the primary sport for 10% (N=10), and badminton for 9% (N=9). Volleyball and other sports each account for 6% of participants (N=6, N=6, respectively). Additionally, 4% of participants chose weightlifting or powerlifting as their primary sport (N=4).

Among the participants, 56% engage in strength training (N=56). Half of the participants, 50% each (N=50), have received instruction in injury prevention and have undergone coaching. Additionally, 41% incorporate interval and cross-training into their routines (N=14), while only 14% mention having a team physiotherapist (N=14).

Out of the 100 participants, 87 were observed engaging in warm-up exercises, and all of them spent less than 10 minutes warming up (100%). Regarding cooldown, 69 participants incorporated cooldown exercises, with the majority (64 participants) spending less than 10 minutes on cooldown. Only 4 participants engaged in cooldown exercises for more than 10 minutes.

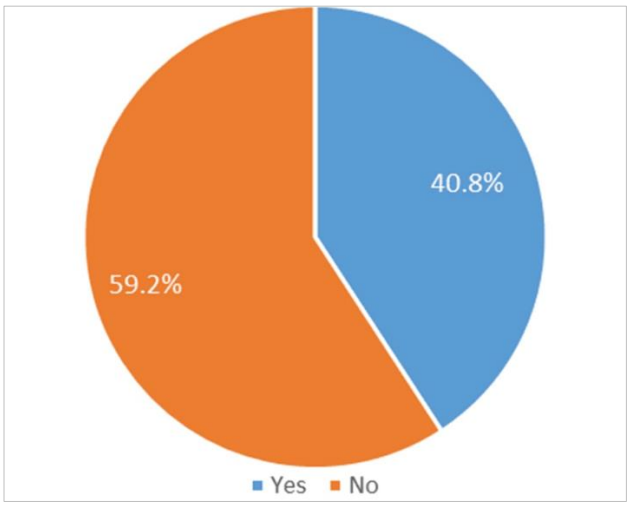

Figure 2: Distribution of Self-Reported Sports Injuries in the Past 12 Months

Out of 100, only 98 participants answered this question, and 40.8% of them were found to have suffered from an injury in the past 12 months (N=40). 59.2% have not experienced an injury in the last year (N=58).

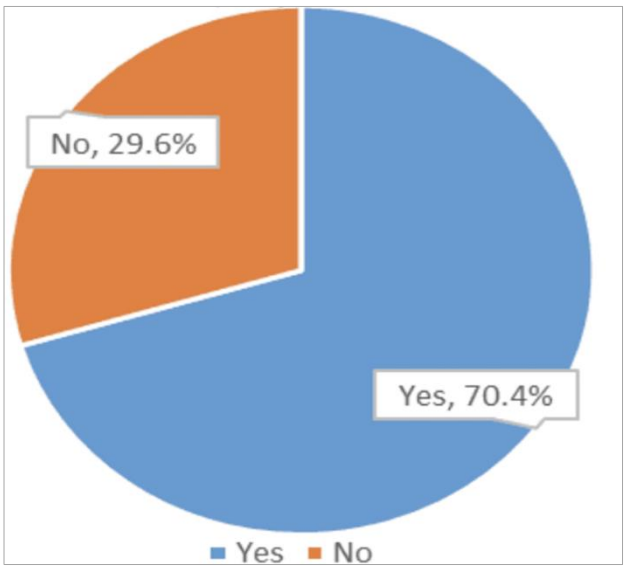

Figure 3: Distribution of Self-Reported Sports Injuries within Lifetime

Ninety-eight out of 100 participants responded to this question. Among the 98 respondents, 70.4% reported having experienced a sports-related injury before (N=69), while 29.6% stated they had never encountered a sports injury (N=29).

Fifty-one percent of participants reported experiencing injuries in their legs, while 35% indicated injuries in their arms. Seven percent reported head injuries, and four percent mentioned injuries in their chest or torso area. Three percent stated injuries in their groin.

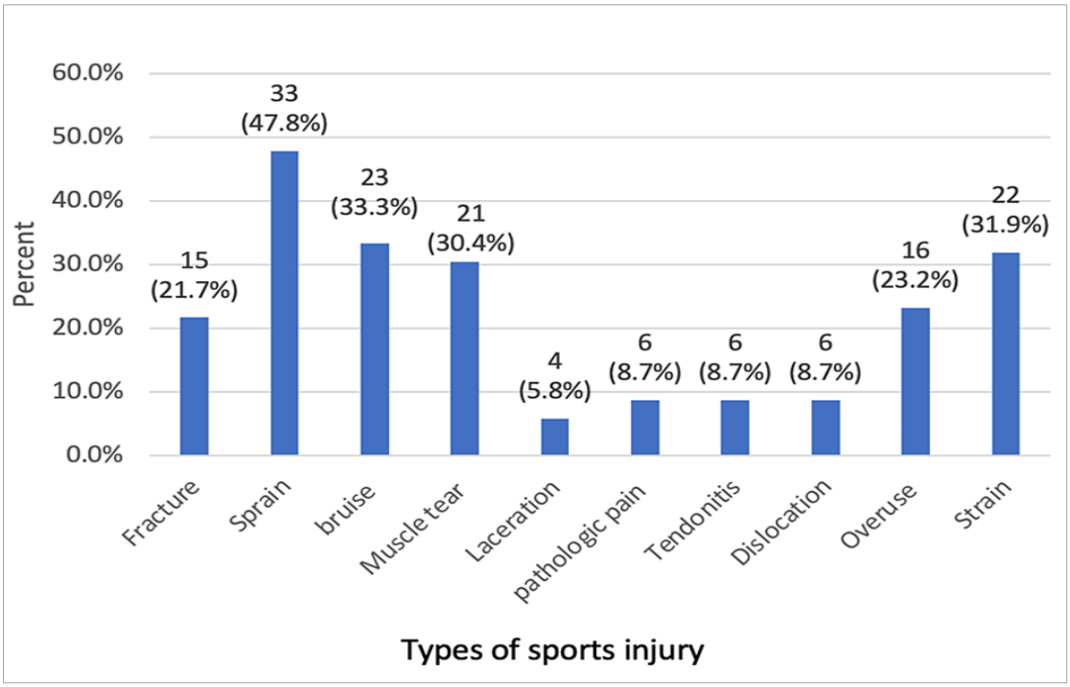

Figure 4: Distribution of Self-Reported Type of Sports-Injury

Almost half of the participants (47.8%, N=33) encountered a sprain, while 33.3% had a bruise (N=23). Additionally, 31.9% experienced a strain (N=22), 30.4% faced a muscle tear (N=21), and 23.2% dealt with overuse (N=16). Around 21.7% reported experiencing a fracture (N=15). Pathologic pain, tendonitis, and dislocation each had an 8.7% prevalence (N=6), and 5.8% of participants dealt with a laceration (N=4)

A surgical procedure was undergone by 7.2% (N=5), while 21.7% had to use a cast (N=15). The majority, 71%, needed to take time off for recovery (N=45). Additionally, 18.8% utilized medications to aid in healing, and 2.9% employed alternative treatment methods. A recovery period of less than 4 weeks was necessary for 71.4% of individuals. For 7.9%, the recovery span extended to 5-8 weeks (N=5), while an additional 7.9% needed 9-12 weeks (N=5). Twelve-point seven percent of respondents faced a recovery period exceeding 12 weeks (N=8).

Analgesics were the most used drugs among the participants, with 16 out of 22 respondents saying they have used them to treat an injury. Four participants said they used NSAIDs, and two used physiotherapy as their method of healing.

A third of the participants (30%, N=30) sought advice from a physician, while 40% did not consult any healthcare professionals (N=40). Another 30% chose not to see a doctor but instead opted for self-treatment (N=30).

Out of 31 respondents who said they experience repeated injuries, 12/31 said they experience the injury twice a year. Only two participants said they experience their injuries more than five times a year. 5/31 have had repeat injuries at least once a year. 4/31 participants have had a re-occurrence of injuries up to four times a year. 3/31 respondents experienced five repeat injuries in a year.

Approximately 13% of the 100 participants acknowledged experiencing injuries related to weight training (N=13), while the majority, 87%, reported not having encountered any weight-training-related injuries (N=87).

Out of the 12 participants who suffered from weight training injuries, six of the participants admitted that it was the same muscle or bone injury in their respective sports injuries.

Table 1: Socio-Demographic Factors versus Injury < 12 Months

Socio-Demographic Factor		Injury < 12 Months				P-Value
		Yes	%	No	%	
Age	**Age < 20 years old**	20	47.6	22	52.4	0.23
	Age ≥ 20 years old	20	35.7	36	64.3	
Gender	**Male**	32	48.5	34	51.5	0.02
	Female	8	25	24	75	
Nationality	**Southeast Asia Region (SEAR)**	19	51.4	18	48.6	0.22
	Eastern Mediterranean Region (EMR)	15	36.6	26	63.4	
	Other Nationalities	6	30	14	70	
BMI	**Underweight**	3	60	2	40	0.21
	Normal Weight	18	32.1	38	67.9	
	Overweight	13	54.2	11	45.8	
	Obese	6	46.2	7	53.8	

Almost half (47.6%) of participants under the age of twenty reported a sports-related injury in the last year (N=20), while 35.7% of those above twenty also experienced an injury during the same period (N=20). On the contrary, 52.4% of participants under twenty remained injury-free (N=22), and 64.3% above twenty did not experience a sports injury (N=36). The p-value of 0.23, exceeding

0.05, indicates no statistically significant difference between the two age groups.

Among those individuals who suffered from an injury in the past 12 months, 48.5% of the injured were males (N=32) and only 25% were females(N=8). According to the p-value (P value= 0.02), there is a statistically significant association between gender and self-reported sports injuries.

Around 51.4% of participants hailing from the Southeast Asia Region (SEAR) reported a sports injury in the last 12 months (N=19), while 36.6% from the Eastern Mediterranean Region (EMR) experienced a similar situation (N=15). Participants from other regions accounted for 30% of the injuries (N=6). Conversely, 48.6% from SEAR did not have sports injuries in the past year (N=18), along with 63.4% from EMR (N=26) and 70% from other regions (N=14). The p-value of 0.22, exceeding 0.05, renders this factor statistically insignificant.

Among those classified as underweight, 60% experienced a sports injury in the past year (N=3), while 32.1% from the normal weight category reported a similar occurrence (N =18). Additionally, 54.2% of the overweight category (N=13) and 46.2% of the obese category (N=6) suffered sports injuries in the last 12 months. The p-value of 0.21 indicates statistical insignificance in this context.

Table 2: Distribution of participants according to Type of Sports and Injury < 12 Months

Type of Sports	Injury < 12 Months			
	Yes		No	
	No.	%	No.	%
Football	20	44.4	25	55.6
Basketball	5	35.7	9	64.3
Cricket	6	60.0	4	40.0
Volleyball	1	12.5	7	87.5
Badminton	2	25.0	6	75.0
Weight-Lifting/Power-Lifting	3	60	2	40
Others	3	37.5	5	62.5

The most common sport for injury was football, with 44.4% of participants getting injured in it (N=20). 55.6% played and did not get injured (N=25). The next most injurious sport was cricket, with 60% of participants getting injured (N=6) while 40% didn't (N=4). Next was basketball, with 35.7% of participants getting injured (N=5) and 64.3% not getting injured (N=9). Following basketball was weight-lifting (60% reported injuries) and others (37.5% reported injuries) (N=3 & 3, respectively). Finally, was badminton 25% (N=2) and 12.5% from volleyball (N=1).

Table 3: Distribution of participants according to Sports Practice and Injury < 12 Months.

Sports Practice	Groups	Injury < 12 Months				P-Value
		Yes	%	No	%	
Years Played	**<10 Years**	28	38.4	45	61.6	0.24
	>10 Years	12	52.2	11	47.8	
Practices per Week	**<5 Times**	25	37.3	42	62.7	0.19
	>5 Times	15	51.7	14	48.3	
Hours per Day Practiced	**<1 Hour**	11	36.7	19	63.3	0.52
	>1 Hour	28	43.8	36	56.3	
Indoors vs Outdoors	**Outdoors**	15	35.7	27	64.3	0.67
	Indoors	19	44.2	24	55.8	
	Both Outdoors and Indoors	6	40.8	7	59.2	

More participants experienced an injury when playing for more than 10 years when compared to players who played less than 10 years (52.3% vs. 38.4%) (N=12 vs N=28), and 61.6% did not experience an injury while playing for less than 10 years (N=45). 47.8% did not experience an injury when playing for more than 10 years (N=11). The P-value was not statistically significant at 0.24.

Participants who practiced less than five times per week at 37.3% were found to have been injured in the past 12 months (N=25) compared to those who practiced more than five times per week at 62.7% (N=42). The p-value was found to be 0.19, which is greater than 0.05; hence, there is no statistically significant association between the number of practices per week and sports injuries. Though these studies' statistics do not support the claim that having more practice increases one's risk of developing sports injuries, other studies have found data to support this claim.

The majority of injuries in the past 12 months were found to occur among those participants who practiced for more than 1 hour per day (43.8%, N = 28), and only 36.7% (N = 11) of the injured participants were found to have been practicing for less than 1 hour per day. According to the p-value, there is no statistically significant association between hours of practice per day and sports injuries (p-value = 0.52).

Out of the participants surveyed, 35.7% engaged in outdoor sports and suffered an injury in the past year (N=15). Meanwhile, 64.3% participated in outdoor sports but did not disclose any injuries (N=27). For those involved in indoor sports, 44.2% reported an injury within the last year (N=19), while 55.8% played indoors without encountering any sports-related injuries during the same period (N=24). Among respondents who played both indoors and outdoors, 40.8% experienced injuries in the past year (N=6), whereas 59.2% engaged in both indoor and outdoor sports without facing any injuries (N=7). The P-value was 0.67, which is greater than 0.05, so there is statistically no significant difference.

Table 4: Distribution of participants according to Sports Behavior and Injury< 12 Months

Sports Practice	Groups	Injury < 12 Months				P-Value
		Yes	%	No	%	
Years Played	**<10 Years**	28	38.4	45	61.6	0.24
	>10 Years	12	52.2	11	47.8	
Practices per Week	**<5 Times**	25	37.3	42	62.7	0.19
	>5 Times	15	51.7	14	48.3	
Hours per Day Practiced	**<1 Hour**	11	36.7	19	63.3	0.52
	>1 Hour	28	43.8	36	56.3	
Indoors vs Outdoors	**Outdoors**	15	35.7	27	64.3	0.67
	Indoors	19	44.2	24	55.8	
	Both Outdoors and Indoors	6	40.8	7	59.2	

Among the respondents, 48.5% indicated experiencing a sports injury despite utilizing protective gear (N=16), while 51.5% reported using protective gear without encountering injuries (N=17). Additionally, 36.9% reported experiencing sports injuries without using protective gear (N=17), while 63.1% reported no sports-related injuries despite forgoing protective gear (N=41). The calculated P-value was 0.271, surpassing the significance threshold of 0.05, indicating a lack of statistical significance and suggesting that there is no substantial difference in outcomes based on the use of protective gear.

In our study, 48.0% of participants experienced injuries despite undergoing instruction on injury prevention (N=24), while 33.3% incurred injuries without such instruction (N=16). No statistically significant association was found between injury occurrence and the teaching of injury prevention (P = 0.140).

Our study concludes that 44.0% of them got injured in the last 12 months with training under a coach (N=22), while 37.5% got injured in the last 12 months without training under a coach (N=18). There is no statistically significant association between injury and training under a coach (P = 0.513).

In our study, we observed that 8.2% of them got injured in the last 12 months with the support of a team physiotherapist (N=8), while 32.7% got injured in the last 12 months without the support of a team physiotherapist (N=32). There is no statistically significant association between injury and team physiotherapy (P = 0.17).

A study that we conducted states that 40.0% of them got injured in the last 12 months while performing strength training (N=22). 41.9% got injured without performing strength training (N=18). There is no statistically significant association between injury and strength training (P = 0.852).

Among those individuals who suffered from an injury in the past 12 months, 47.5% of the injured individuals undergo interval training (N=19). 52.5% of the individuals did not suffer from a sports injury (N=21). There is no statistically significant association between interval training and self-reported sports injuries (p-value = 0.264).

Among those individuals who suffered from an injury in the past 12 months, 40.0% of the injured individuals underwent cross-training (N=16). Whereas 60.0% of the individuals did not undergo cross-training (N=12). There is no statistically significant association between cross-training and self-reported sports injuries (p-value = 0.891).

Among the 100 participants, 40 respondents said that they had knowledge of ergogenics. Out of these 40, 40% reported consuming them and getting injured (N=8). 60% reported consuming them and not getting injured (N=12). 35% reported not consuming ergogenics and still getting injured (N=7). 65% reported they did not consume ergogenics and did not experience an injury in the last year (N=13). The p-value was 0.744, thus there was no significant statistical association.

Our study concludes that 42% of them got injured in the last 12 months with the warm-up (N=37), while 30% got injured in the last 12 months without the warm-up (N=3). There is no statistically significant association between injury and warm-up (P = 0.463).

In our study, we observed that 39.1% of them got injured in the last 12 months while performing cooldowns at the end of their exercise (N=27), while 44.8% got injured in the last 12 months without cooling down (N=13). There is no statistically significant association between injury and cooldown (P = 0.600).

Table 5: Logistic Regression Model for Gender & Sports Injuries

Variable	Groups	Crude		P-Value
		OR	CI	
Gender	**Female**	1	-	0.02
	Male	2.9	(1.1-7.2)	

Only gender showed statistical significance with sports injuries (p≤0.05). This factor was included in the simple binary logistic regression model, and it was found that male respondents are 2.9 times more likely to experience sports-related injuries than females. (95% CI: 1.1–7.2).

Discussion

A study found a 65% prevalence rate of injuries in young adults aged 11 to 19 participating in sports, with lower limb injuries being more common than injuries to other body parts [13]. Football, cricket, and hockey were identified as the sports causing the most injuries. In our study, 40.8% of 100 participants self-reported injuries in the last 12 months (N=40) with legs being the most common site N=20 (51%), followed by arms N=14 (35%), head N=3 (7%), chest/torso N=2 (4%), and groin N=1 (3%). The predominant injury type was sprains at 47.8% (N=33), aligning with previous research highlighting lower-limb injuries as prevalent, shown in Figure 4.

The prevalence of injuries was highest among volleyball athletes, according to a study conducted in Kuwait [12]. This is in contrast to our study, which indicates injury due to volleyball as the least common sports injury (1%). The lower limb was a common site of injury, as can be seen in our study, where 51% of the participants got a leg injury. These findings determine that there is a correlation between a sport (volleyball) and the site of injury (lower limb).

A study documented 529 injuries, with 75.98% occurring in participants of three sports: football (68.81%), basketball (10.96%), and judo (7.75%) [14]. In our study, football was the most common sport for injuries, affecting 44.4% of participants, while 55.6% played without injury. Cricket ranked as the next most injurious sport, with 60% of participants sustaining injuries. Both our study and the previously mentioned one concurred that football has a higher incidence of sports injuries.

A study found that males (23.7%) faced a higher risk of serious sports injuries than females (12.5%), aligning with our results. Gender showed a significant association with sports injuries (p-value < 0.01) [15]. Our data reinforces this, with 48.5% of males reporting injuries in the past year (N=32), compared to 25% of females (N=8), as shown in Table 5.

A study showed that practicing longer sports was an independent risk factor for poor well-being [16]. Our research revealed that 28.4% (N=25) of participants injured themselves after practicing for more than 10 hours each week and 11.1% (N=10) less than 10 hours. The association could not be shown because of the p-value of 0.82. As shown in Table 3. Our findings indicate that more practice time was associated with increased injury, although no correlation was seen. This is most likely because our sample size was small, and the survey would have yielded better results if given a larger population.

A study published in 2020 concluded that former rugby players (contact sport) had more injuries than non-contact athletes. Especially at the elite level, they are associated with high concumulative sports injuries, which also have more impact even after retirement [17]. In our study, 29.6% (N= 29) of contact sports participants and 11.2% (N=11) of non-contact sports participants reported injuries in the last 12 months (P-value = 0.57). Despite a higher injury rate in contact sports, no statistically significant association was found, possibly influenced by the prevalence of contact sports in the UAE, as observed in this study.

A study revealed that most injuries (63.8%) happened during sports practices, and 21.9% led to athletes missing 7 or more days. Competition injuries were more severe, with higher surgery (5.4% vs. 3.1%) and emergency transport (1.4% vs. 0.6%) rates [18]. Despite the common belief that more practice increases injury risk, our study found that 51.7% of those practicing over 5 times per week reported injuries (N=15), while only 37.3% of those practicing less than 5 times did (N=25). The data can be found in Table 3. Although our findings support this, the p-value was insignificant at 0.19.

An article published suggests that playing or exercising for two hours a day is important for optimum youth health. They also stated that greater hours practiced outside of the recommended range led to a higher risk of the participants falling under the category of poor well-being [19]. Our study supports this, as more of our participants (43.8%, N=28) reported getting injured after playing more than 1 hour compared to subjects that played less than 1 hour (36.7%, N=11), as seen in Table 3.

Our results can be supported by a study that came across similar results among a similar population. According to one study, the relative risk of injury implies that there is no significant variation in injury rates by age group or gender in indoor soccer vs. outdoor soccer [20]. In our study, indoor sports showed the highest rate of injury in 44.2% of participants (N=19) as seen in Table 3, and this is most likely due to the bad weather in the UAE, so more people practice indoors.

A study published stated that “football, which mandates the use of hard-shell helmets and pads, had an injury rate approximately one-third the rate in rugby, which prohibits the use of these protective items" [21]. They found that in sports where protection is in greater abundance, injuries are less prevalent. Our study supports this, as more of our participants (36.9%) who do not use protective gear reported getting injuries in the last 12 months (N=24), as seen in Table 4. This is most likely because most sports require protective gear to avoid injuries.

An American study on CrossFit athletes (386 responses) reported an overall injury rate of 19.4%. Males (53/231) had higher injury rates than females (21/150), attributed to females seeking more supervision. The study found a significant reduction in injury rates (P-value 0.028) with coach involvement [22]. Surprisingly, our study showed a 44% injury rate among participants trained by a coach (N=22), as depicted in Table 4, likely due to the study's small size, resulting in no statistical significance between coach involvement and injury.

A study with 118 participants found that physiotherapy significantly reduced running-related injuries (RRI). The intervention group underwent foot-ankle muscle training for 8 weeks, followed by supervised training. Compared to participants in the intervention group (P = 0.035), participants in the control group were found to be 2.42 times (95% CI, 1.98-3.62) more likely to experience an RRI within the 12-month study period. The study determines that there is a correlation between physiotherapy and a reduction in injury rates [23]. Our study supports this, as 32.7% of participants without team physiotherapists experienced injuries (N=32), shown in Table 4, highlighting the role of physiotherapy in injury prevention across sports.

A study talks about strength training as a safe way to prevent acute and overuse sports injuries. The study determines that there is a correlation between strength training and a reduction in injury rates. It mentions that a 10% increase in strength training volume decreased the risk of injury by 4% [24]. In contrast to the previously stated study, ours revealed that respondents who engaged in strength training experienced injuries more frequently (40.0%, N=22) than those who did not (41.9%, N=18), shown in Table 4. Such a disparity might result from inadequate training regimens, ineffective training techniques, or even my mishaps.

A study published reported that with the increase in interest in HIIT (274%), there was a 114% increase in all injuries [25]. Contrary to the above-mentioned study, we found a higher response to sports injuries among those who did not undergo interval training (N=21, 36.2%) compared to those who underwent interval training (N=19, 47.5%), presented in Table 4. This may be because interval training, to some extent, helps prevent injury by keeping the body fit and in top condition. However, according to the above studies, excessive training can lead to injuries. Hence, developing a proper personal training regime fit for an individual must be given more importance.

A study states that “30.5% of the participants surveyed reported experiencing an injury in the past 12 months due to their participation in CrossFit training." The study showed that the highest incidence of cross-fit training-related injuries was seen in individuals who had been practicing the regime for 3-5 days per week. Unlike our results, this study shows a statistically significant association between CrossFit training and injuries (p-value = 0.0019) [26]. In our study, individuals who did not undergo cross-training were found to suffer more from a sports injury (N=24, 41.4%) compared to those who underwent cross-training (N=16, 40.0%).

When compared to athletes who did not use creatine supplements, creatine users had a lower incidence of muscular cramping, heat illness or dehydration, muscle tightness, muscle strains, and overall injuries [27].

Evidence concluded that athletes who consume creatine during sports experienced a lower incidence of injuries when compared to athletes who did not utilize creatine in their diet. Findings from this study are somewhat similar to our results, as we had more participants who used ergogenics and did not get injured. We had only eight people out of twenty who got injured when consuming ergogenics, as seen in Table 4. Though our results show a similar trend when compared to the study shown, our p-value was insignificant. This is most probably the case because only one-fifth of our participants even used ergogenics.

A study investigated preventing ankle sprain injuries (ASI) through neuromuscular training (NMT) warm-up programs, encompassing aerobic, strength, agility, and balance exercises. The results highlighted a significant reduction in ASI risk with NMT warm-ups, emphasizing the link between warming up and injury prevention [28]. However, our study revealed a discrepancy, with warm-up participants (N=37, 42%) experiencing more injuries than non-participants (N=3, 30%), as seen in Table 4. Possible factors contributing to this difference include climate, training variations, facilities, and improper warm-up methods.

Limitation

Respondents had to recall injuries and other factors associated with injury from their past, and this resulted in something known as recall bias. Cross-sectional studies are difficult to establish cause and effect and they are very limited in establishing a relationship between the two.

Conclusion

Our study investigated the injury patterns in organized sports, revealing that lower-limb injuries, particularly in the legs, were most prevalent, with football (soccer) having the highest incidence. Arms ranked as the second most common site of injury, while other regions such as the chest/torso, head/neck, and groin experienced fewer injuries. In our secondary objective, gender emerged as the sole factor significantly associated with injury prevalence ($p \leq 0.05$). A simple binary logistic regression indicated that males were 2.9 times more likely than females to experience sports-related injuries, with a 95% confidence interval of 1.1-7.2.

Ethics approval and consent to participate

This research was approved by the Institutional Review Board of Gulf Medical University Ajman UAE (IRB/COM/STD/45/Dec-2021).

Data Availability

Data is available in the Dept. of Community Medicine, College of Medicine, Gulf Medical University, upon request it can be provided.

Conflicts of interest

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

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Authors contribution

JSAR, WK, AHA, and AMS developed the concept, and research proposal, designed the questionnaire, and carried them out under the supervision of JM and WAS. JSAR prepared the manuscript with contributions from all co-authors. JM and JSAR edited the manuscript. "All authors read and approved the final manuscript".

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