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The epidemiology of pelvis and acetabular fractures in Kuwait

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ABSTRACT

Objectives: Pelvis fractures (PF) and acetabular fractures (AF) are major challenges in orthopedics. Epidemiological figures are not available for Kuwait, making it difficult to evaluate the success of future plans. This study aimed to analyze the epidemiology of pelvis and AF in Kuwait.

Methods: A retrospective cross-sectional design was used by reviewing the Database of PF and AF of level II trauma center, Kuwait.

Results: From October 2018 to September 2019, 2046 patients were admitted to the orthopedic wards of our hospital. PF prevalence was 3.66%; mean age (standard deviation) was 37.56 (18.09) years, and 74.5% were men. AF prevalence was 1.71%; mean age was 28.08 (17.77) years, and 71.6% were men. The most frequent mechanism of injury was motor vehicle accidents. Using the OTA/AO classification, the most frequent fracture of the PF was B1.1 fractures at 60.7%, and A1 fractures for AF at 80.0%. PF and AF were associated with other injuries in 54.4% and 38.2%, respectively. In terms of management, 24.3% of the patients with PF were managed operatively and the reported complications were metal failure (2.7%), post-operative infection (1.4%), and wound dehiscence (1.4%). The management of AF was operative in 54.3%, and the identified complication was only metal failure (2.9%). The mortality of PF was 2.7% and 0.0% for AF. Variables related to the ICU length of stay, mortality, and post-operative complications were explored.

Conclusion: The epidemiological figures explored could help determine PF and AF's burden in Kuwait and direct future management and preventive plans.

Keywords: Acetabulum, Fractures, Kuwait, Pelvis, Prevalence

INTRODUCTION

Traumatic injuries are a challenging health issue with significant morbidity, mortality, and socioeconomic burdens on both personal and society level.[1,2] It is one of the leading sources of death, causing 5.8 million deaths annually and accounting for 10% of the world's death rate.[3,4] Pelvis fractures (PF) form 3% to 10% of traumatic injuries, one of the major critical issues in orthopedics, and is often associated with life-threatening injuries.[5,6] In motor vehicle accidents (MVA), PF are the third most common cause of death, with mortality rates of 3–60%, and an incidence rate of 4.34/10 000 person/year.[5,7-9] Acetabular fractures (AF) are not common,

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with a prevalence of 0.4%, but they highly rely on surgical management, which could lead to the risk of mortality and AF are more associated with disability in the form of osteoarthritis.[10,11] In the short-term, pelvis and AF are highly associated with hospitalization and dependence on surgical intervention. In the long-term, they could be associated with complications in gait with a high risk of persistent pain to the hip and back.[9-14] Chronic pain after pelvis and acetabular trauma is significant, reaching an incidence rate of 48.4% and 50%, respectively, which could devastate the patient's health-related quality of life.[10,12,15]

The clinical challenges of the traumatic pelvis and acetabular injuries raise the need to optimize management approaches. Changes and improvement plans can be directed by acknowledging the epidemic figures and the burden of these injuries. The previous studies have explored the burden of the pelvis and AF and set essential parameters. A prospective study in the United Kingdom showed that age, early physiological derangement and the presence of other injuries were associated with reduced survival rates.[7] Another retrospective study showed that death was most often a result of acute blood loss.[16] A study conducted over 8 years found that PF are an independent risk factor for mortality in the blunt trauma population, and determined mortality predictors such as age, the severity of the injury, Glasgow Coma Scale Score, systolic blood pressure, and respiratory rate measured at admission.[17] Similarly, another review identified the risk factors for increased mortality, including age, gender and impact forces.[5] However, the literature is limited in studies analyzing the epidemiology and the prevalence of pelvis and AF in Kuwait and the Middle East.[18] Road traffic accidents are the leading cause of accidental deaths in Kuwait at 65%, with a significant disabling impact and mortality rate.[19] Exploring the epidemiology and determining the prevalence and mortality rate of the pelvis and AF in Kuwait can set benchmarks to direct future preventive and management plans.

Exploring epidemic figures in Kuwait should help evaluate the success of a multidisciplinary approach for patients with pelvis and AF. In Australia, they evaluated the effectiveness of holistic plans for pelvis trauma patients by comparing the prevalence and reported a change in the mortality figure from 20% to 7.7%.[20] Similarly, a 1-year prospective monocentric study suggested that prevention programs should be directed toward a specific population of men to prevent fractures in young individuals and women to prevent injuries in those above the age of sixty.[21] In Edmonton, a 5-year study evaluated the effectiveness of seatbelt legislation, which showed a reduction in the incidence and severity of AF.[22] The purpose of the current study was to analyze the epidemiology of pelvis and AF in Kuwait, including their prevalence and mortality rates. Secondary purposes include identifying the frequencies of demographic characteristics, mechanism of injury, fracture classification, association with other injuries, management, complications, and admission to Intensive Care Unit (ICU). Factors at the time of presentation were reviewed to determine essential factors associated with mortality rate, complications and length of stay in the ICU.

MATERIALS AND METHODS

Using a retrospective cross-sectional research design, the Orthopedic Surgery of the pelvis and AF database (OSPA) of level II trauma center in Kuwait was reviewed from October 2018 to September 2019. The OSPA included all patients that presented to the center with pelvis and AF. Data in the OSPA were recorded by hospital staff and registered daily according to the admissions. In addition, hospital charts, the operative room database, medical records, and the X-ray computer system were reviewed for additional information. EF application, pelvic packing, and immobilization were not included in the percentages of the operative management of pelvic fractures as permitted by the used database.

All trauma patients admitted with pelvis and AF from October 2018 to September 2019 were included: Men and women, adults and pediatrics, and Kuwaiti and non-Kuwaiti patients. The exclusion criteria included: (1) Patients initially resuscitated or managed in other hospitals, (2) patients transferred from other hospitals, and (3) patients who are brain dead on arrival. These types of patients were excluded because they were not registered in OSPA.

The data were arranged into three groups; (1) the data of the patients with PF, and this has been referred to as the PF Group (PFG), (2) the data of the patients with AF, and this has been referred to as the AF Group (AFG), and (3) the data of the patients from the PFG and AFG who were admitted to the ICU, and this has been referred to as the Intensive Care Unit Group (ICUG). For further exploration, each group was divided based on the management provided as operative and non-operative sub-groups.

A dedicated Excel sheet was used to collect the data. Patients' demographics were recorded, and essential variables were reviewed, including the mechanism of injury, association with other injuries, management, operative or non-operative, early post-operative complications, mortality, and ICU admission. In terms of the association with other injuries, a comprehensive figure was presented, which involved the association of pelvic fractures with extremities/spine fractures including acetabulum fractures as permitted by the used database. The fracture classification was determined using the X-ray computer system and OTA/AO classification system of the pelvis and acetabulum.[23] Torode and Zeig

classification was used for pediatric fractures as all the reported pediatric fractures were stable.[24,25] The data for the ICUG was recorded on a separate Excel sheet, including the length of the stay in the emergency room, heart rate, respiratory rate, blood pressure, the length of the stay in the ICU, and intubation. For each patient in the ICUG, the Injury Severity Score (ISS) was recorded.[26]

Statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS 23, IBM Corp., Armonk, NY, USA). Descriptive statistics have been used to present the results, including the mean, standard deviation, and frequency. Person product-moment correlation coefficient was used to examine the associations between nominal data, and Spearman's rank-order correlation coefficient was used to examine the associations between categorical data to examine the factors that correlated with complications and mortality.[25,26] Independent sample *t*-tests were used to compare the operative and non-operative sub-groups.[27,28] The significance level was set at ≤0.05. Multiple regression analyses were operated to identify the variables predicting the length of stay in the ICU.[27,28]

RESULTS

The total number of patients admitted to the orthopedic wards was 2046 patients, where 110 patients were admitted with pelvis and AF (prevalence of 5.37%). All the admitted patients to the orthopedic wards are patients with fractures. Seventy-five patients sustained PF resulting in a prevalence of 3.66%, and 35 patients sustained AF (prevalence of 1.71%). The demographic characteristics of the PFG, AFG and ICUG are presented in Table 1.

There were five pediatric cases in our cohort, all with pelvic fractures (stable) and were managed conservatively. According to the Torode and Zeig classification of pediatric pelvic fracture, the identified types were Torode I (one case), Torode II (two cases), Torode III-A (one case), and Torode III-B (one case).

Table 1: The demographic characteristics of the PFG and AFG.

	PFG (*n*=75)	AFG (*n*=35)	ICUG (*n*=8)
Age in years Mean (standard deviation)	37.56 (18.09)	38.08 (17.77)	32.1 (16.0)
Gender			
Males	71.6%	80.0%	75.0%
Females	28.4%	20.0%	25.0%
Nationality			
Kuwaitis	43.7%	58.8%	37.5%
Non-Kuwaitis	56.3%	41.2%	62.5%

PFG: Pelvis fractures group, AFG: Acetabular fractures group, ICUG: Intensive care unit group

The results show that the most frequent mechanism of injury is MVA, followed by falling from height [Table 2]. The most frequent fracture is pelvis B1.1 fracture and acetabular A1 fracture. The association with other injuries ranged from 38.2%, 54.3%, and 62.5% for the AFG, PFG, and the ICUG, respectively. The presented figure of the association with other injuries for the pelvic group also involves the association with acetabulum fractures. The operative management provided ranged from 24.3%, 54.3%, and 62.5% for the PFG, AFG and the ICUG, respectively [Table 2]. The mortality rate was 2.7% for the PFG, 0.0% for the AFG, and 12.5% for the ICUG, taking into account that patients who were dead upon arrival were excluded from the analysis [Table 2].

ICU length of stay showed significant correlations with the emergency room length of stay, respiratory rate, and the need for intubation at 0.587, 0.999, and 0.845 ICCs, respectively [Table 3]. Linear regression analysis for the ICU length of stay with the respiratory rate showed an R of 0.921, R square 0.848, and adjusted R square to correct for the small sample size of 0.797. The unstandardized coefficient B indicates an increase in the respiratory rate of 0.442 predicts a stay in the ICU for 1 additional day. Multiple regression analysis was operated for the ICU length of stay with the respiratory rate, age, emergency room length of stay, heart rate, respiratory rate, and ISS. The multiple regression analysis indicates that the respiratory rate is the predictor for the ICU length of stay; R = 0.999, R square = 0.997, and the adjusted R square = 0.996. The model excluded the other variables, which suggests that the multiple regressions explains 99.6% of the data variance, where the F test is significant at 0.000.

The association between complications and the other variables is presented in Table 4. For the PFG, the admissions to the ICU is moderately correlated with the complications: r = 0.415, and for the AFG, fracture classification is moderately correlated with the complications: r = 0.430 [Table 4].

The PFG's mortality is weakly associated with the management provided, and the ICUG's mortality is moderately associated with age [Table 5]. No mortality was recorded for the AFG, so correlations cannot be tested. Additional correlations were examined for the ICUG. The results show that the ICUG's mortality is correlated with emergency room length of stay: 0.619, heart rate: −0.581, respiratory rate: 0.725, systolic blood pressure: 0.415, diastolic blood pressure: 0.514, intubation: −0.293, ICU admission: 0.577, and the ISS: 0.334.

Regarding the PFG, for the operative sub-group aged 38.8 (15.5) years, and the non-operative sub-group aged 37.1 (18.9) years, significant differences were found between the two sub-groups in the fracture classification, association with other injuries, complications, mortality rate and ICU admissions; all $P < 0.05$ [Table 6]. For the AFG, the operative sub-group aged 34.1 (16.1) years,

Table 2: Analysis of essential variables related to the PFG, AFG and the ICUG.

	PFG (*n*=75)	AFG (*n*=35)	ICUG (*n*=8)
Mechanism of injury	MVA 44.4% FFH 20.8% Fall down 12.5% Knocked by car 15.3% Fall from horse 2.8% Motorcycle accident 1.4% Fall heavy object over 1.4% Gunshot 1.4%	MVA 58.8% FFH 17.6% Fall down 14.7% Assaulted 2.9% Person fall on him 2.9% Fall heavy object over 2.9%	MVA 37.5% FFH 25.0% Knocked by car 12.5% Fall heavy object over 12.5% Gunshot 12.5%
Fracture classification	B1.1 60.7% B2.2 19.6% B3.1 10.7% B1.2 5.4% B2.3 3.6%	A3.1 10.0% A1 80.0% A3.3 0.0% A2 3.3% B1 6.7%	A3.1 14.3% A1 28.6% B1.1 42.9% B2.3 14.3%
Association with other injuries	54.3%	38.2%	62.5%
Management	24.3% operative 75.7% non-operative	54.3% operative 45.7% non-operative	62.5% operative 37.5% non-operative
Complications	Metal failure 2.7% Post op infection 1.4% Wound dehiscence 1.4%	Metal failure 2.9%	Metal failure 12.5% Post op infection 12.5%
Mortality rate	2.7%	0.0%	12.5%
ICU admission	6.8%	8.6%	----

PFG: Pelvis fractures group, AFG: Acetabular fractures group, ICUG: Intensive care unit group, MVA: Motor vehicle accident, FFH: Fall from height. ICU: Intensive care unit. Fracture classification is according to the OTA/AO classification of the pelvis and acetabulum

Table 3: Vital variables related to the patients admitted to the ICU; (*n*=8).

	Minimum	Maximum	Mean (Standard Deviation)	Correlation between length of stay in ICU with other vital variables
Age (years)	9	52	32.1 (16.0)	0.156
Length of stay in emergency room (hours)	1	7	2.8 (2.4)	0.587*
Heart rate (Beat/minute)	74	150	115.7 (26.0)	−0.372
Respiratory rate (Breath/minute)	18	30	21.0 (5.0)	0.999*
Systolic blood pressure	70	170	118.3 (30.6)	−0.050
Diastolic blood pressure	50	80	67.0 (11.61)	0.098
Length of stay in ICU (days)	1	57	14.6 (19.1)	-----
ISS	27	66	44.8 (13.7)	0.384
Intubation need	----	----	62.5% intubated 37.5% not intubated	0.845*

ISS: Injury Severity Score, ICU: intensive care unit. *Correlation is significant at the level of 0.01 (2-tailed). Pearson test was used for nominal data, and Spearman was used for categorical data.

and the non-operative sub-group aged 43.1 (18.9) years, significant differences were found between the two sub-groups in sex, fracture classification, association with other injuries and complications; all $P < 0.05$ [Table 6]. The statistically significant differences found are between the operative and non-operative sub-groups are illustrated in Figures 1 and 2.

DISCUSSION

Despite the barriers in Kuwait for conduction trauma epidemiological studies in terms of infrastructure, and the availability of comparable variables meeting the international standard, this study provides an insight into the pelvis and AF in Kuwait using the available data. The explored level II trauma center is the main public center in

Table 4: Factors correlated with post-operative complications in the PFG and AFG.

	PFG	AFG
Age	0.092	−0.258
Gender	−0.116	−0.343
Mechanism of injury	−0.124	0.14
Fracture classification	0.291	−0.430*
Association with other injuries	0.099	0.221
ICU admission	0.415*	−0.053

PFG: Pelvis fractures group, AFG: Acetabular fractures group, ICU: Intensive care unit. All correlations were tested with Spearman's rank-order correlation coefficient as the complications variable is categorical. *Indicates moderate, strong or very strong correlation. r=0.00–0.19 indicates very weak correlation, r=0.2–0.39 indicates weak correlation, r=0.40-0.59 indicates moderate correlation, r=0.6–0.79 indicates strong correlation, and r=0.8–1.0 indicates very strong correlation.[27]

Table 5: Factors correlated with mortality in the pelvis fractures and ICU.

	PFG	ICUG
Age	0.183	0.412*
Gender	−0.105	−0.218
Nationality	0.150	0.293
Mechanism of injury	0.030	0.000
Fracture classification	−0.105	0.214
Association with other injuries	−0.157	−0.293
Management	−0.284	−0.293
Complications	0.040	0.216
ICU admission	−0.287	----

PFG: Pelvis fractures group, AFG: Acetabular fractures group, ICU: Intensive care unit. ICUG: Intensive care unit group. All correlations were tested with Spearman's rank order correlation coefficient as the mortality rate variable is categorical. *Indicates moderate, strong or very strong correlation. r=0.00–0.19 indicates very weak correlation, r=0.2–0.39 indicates weak correlation, r=0.40–0.59 indicates moderate correlation, r=0.6–0.79 indicates strong correlation, and r=0.8–1.0 indicates very strong correlation.[29]

Al-Ahmadi Governorate in Kuwait, serving a population of 1.2 million. Therefore, the findings of the current study are highly representative of Kuwaiti trauma centers, and the figures identified are highly generalizable to the whole country. Unfortunately, the Kuwaiti Health System lacks a computerized trauma registry and systematic data recording in trauma centers, which limits the ability of researchers and healthcare stakeholders to extract essential data to solve related issues. The management provided in Kuwait is at high and international standards for pelvis and acetabular reconstruction. However, the lack of a trauma registry makes it hard to evaluate the effect of the availability of high-standard trauma reconstruction centers.

Table 6: In between-group comparisons regarding operative and non-operative analysis for the PFG and AFG.

	PFG	AFG
Age	0.524	0.409
Gender	0.152	0.003*
Nationality	0.021	0.810
Mechanism of injury	0.103	0.590
Fracture classification	0.024*	0.001*
Association with other injuries	0.014*	0.037*
Complications	0.001*	0.025*
Mortality rate	0.001*	---
ICU admission	0.001*	0.380

PFG: Pelvis fractures group, AFG: Acetabular fractures group, ICU: Intensive care unit. *Indicates a statistically significant difference at P<0.05.

The prevalence of pelvis and AF identified was 5.37%. PF' prevalence forms 3.66% and AF' prevalence forms 1.71%. Men in their late 30s were at higher risk of pelvis and AF. MVA was the most frequent mechanism of injury in Kuwait. PF' prevalence determined by the current analysis is in line with the figures reported in other countries, ranging from 3-10%.[5] Similarly, AF' prevalence, recorded by the current study, is relatively in line with those previously reported at 0.4%.[10] Men in their late thirties were found to be the most likely to sustain PF in the United Kingdom, and MVA was similarly the most frequent mechanism of injury, as also reported in the current study.[30] The pelvis is a strong structure, therefore high-energy events from MVA can lead to pelvic fractures.[5,7] However, in older adults with pelvis weakness and possible osteoporosis, even low-energy events can cause pelvic fractures.[31] For example, the study shows that falling down formed 12.5% of the reported mechanism of injuries. Acetabular fracture figures are similar to those reported in the United Kingdom, China, the United States, Qatar and Oman, where men in their late 30s/early 40s were at higher risk and MVAs were the predominant mechanism of injury.[10-11,18,32] The current study shows that AF were more prevalent among Kuwaitis compared to non-Kuwaitis, which could be related to the predominant mechanism of injury among Kuwaitis of MVAs. In contrast, falling from height rates were higher among non-Kuwaitis due to the nature of their jobs, often as labor workers, which could explain why PF were more prevalent among non-Kuwaitis.[19] Such findings are highly suggestive of the need to implement more safety measures for labor workers.

The most frequent fracture classification was B1.1 of the pelvis, reaching 39.1%. In general, lateral compression forces cause the most frequent pelvis injuries.[33] Similar to the current study's findings, unstable fractures were more frequent.[30] Unstable fractures were frequent in Kuwait and

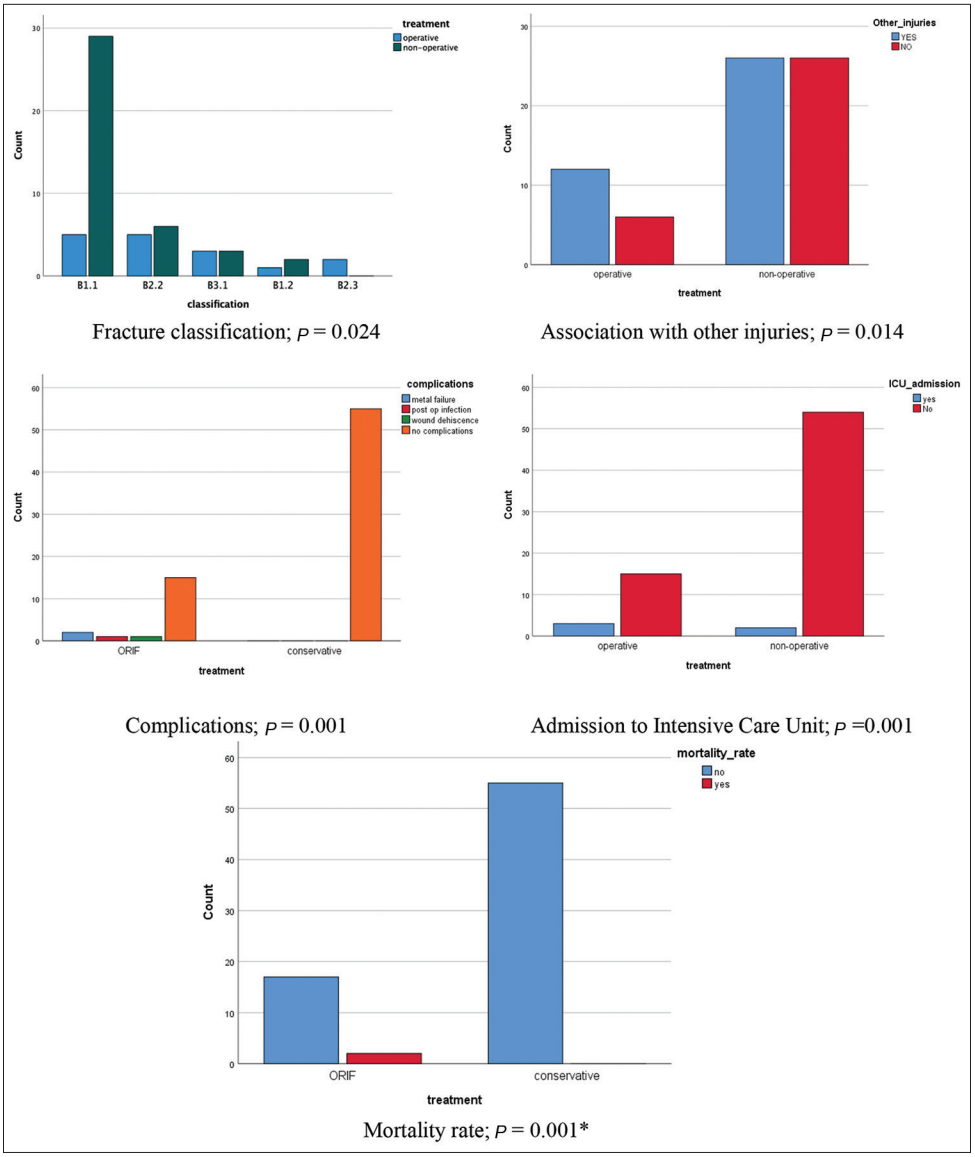

Figure 1: Clustered bars for the pelvis fractures group comparing operative and non-operative sub-groups for the variables found that are statistically significant.

that could be related to the severity of the MVAs. PF were found to be highly associated with other injuries, reaching 54.3%, when compared to AF at 38.2%. For the acetabular region, A1 fracture was the most frequent, reaching 28.7%. Acetabular posterior wall fractures were also the predominant fracture classification in the United Kingdom, China, the United States, and Qatar, which is in agreement with the current study.[10,11,32]

The mortality rate identified for PF was 2.7% and AF' mortality was 0.0%. Thus, the highlighted figure of PF was relatively lower when compared to the previous studies' figures of 3–60%.[5,7-9] Kuwait is a small country with a landmass of 18,000 sq-km, and it is divided into six parts to organize the ambulance services so that the time needed from the injury site to the hospital is short. In addition, Kuwait has an excellent ambulance service, where ambulances reach the location in under 8 min using the Emergency Medical Service Control Center. Such factors might explain the high survival rate of the pelvis and AF in Kuwait.

Possible correlations were explored with the available data in Kuwait to understand pelvis fracture mortality figures. No strong correlations were identified to predict mortality significantly. However, some weak correlations were noticed between mortality and being admitted to the ICU on arrival and operative management. However, for people admitted to the ICU on arrival, a moderate correlation was found

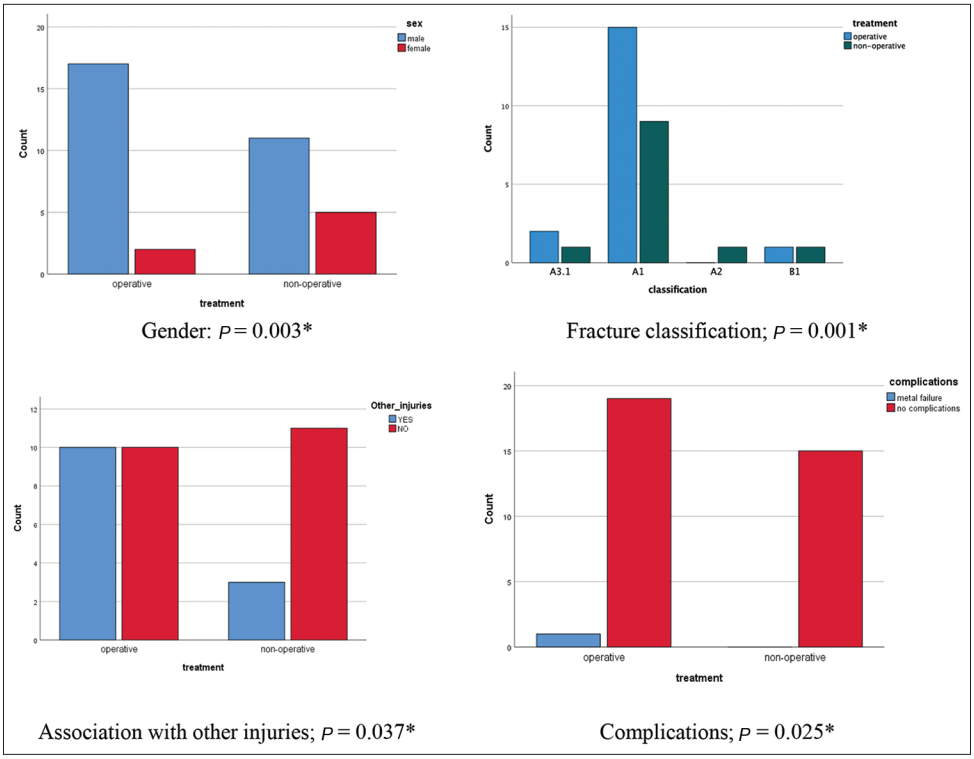

Figure 2: Clustered bars for the acetabular fractures group comparing operative and non-operative sub-groups for the variables found that are statistically significant.

between mortality and age, indicating that the higher the age, the greater the risk of mortality, which agrees with the previous studies.[5,7,17] No mortality was reported for AF, and that is the same as the figure reported in Qatar.[32] However, the United Kingdom reported a mortality figure of 4.7% for AF.[10]

Operative management is provided for unstable fractures to improve the survival rate, stabilize the fracture and maintain the long-term function. The decision to provide operative management could be based on training, cultural differences and insurance status.[11] The Kuwaiti government covers the medical services provided for Kuwaitis and that could affect the decision in providing operative management. In terms of PF, 24.3% were managed operatively, which is less when compared to the operative management provided to AF at 54.3%. Operative management was provided for 22% of PF in Germany and for 43% of AF in the United Kingdom.[10,34] The operative management figures were lower when compared to the figures identified by the current analysis, and these differences could be related to the full governmental coverage for medical services in Kuwait. Such factors might influence the surgeon's decision to provide operative management in certain cases instead of conservative management. The fracture type could be another factor. In Germany, stable pelvic fractures of type A injury were the most prevalent of 54.8%, followed by unstable fractures of 24.7% for type B injury and 20.5% for type C injury.[34] In the United Kingdom, the Letournel system was used to categorize the fractures into displaced (219 cases from 351 cases) and undisplaced (132 cases from 351 cases), where 153 cases with displaced fractures were operatively managed.[10] Operative management allows earlier mobilization and lowers the risk of prolonged bed rest complications. Post-operative complications were metal failure (2.7%), infection (1.4%), and wound dehiscence (1.4%) for PF. For AF, it was metal failure in 2.9%. The percentages of complications reported in Kuwait were less when compared to other figures, where 6% of osteosynthesis failure and 2.3% of infection were reported.[35] The study shows that stable fractures were more frequent in Kuwait, which might explain the small figures for post-operative complications. This may be supported by the moderate correlation identified between complications and fracture classification.

Predicting the ICU length of stay can aid in planning ICU resources. Three factors showed significant correlations with the ICU length of stay for patients who sustained pelvis and AF. The longer was the stay in the emergency room, the higher was the respiratory rate, and the need for intubation prolonged the ICU length of stay. However, the respiratory rate was the only predictor for the ICU length of stay. Similarly, mechanical ventilation and admission source were not considered as

predictors for the ICU length of stay, as reported by a systematic review, yet the respiratory rate as a predictor was not explored in previous studies.[36] The lack of correlation between mortality and fracture type could be related to the high ICU standard in our institute as, in general, the mortality rate is low.

The study is limited to several factors. As this is a retrospective design study, various outcomes could not be measured. Moreover, the sample size of the ICU group in the current study is small, so future studies are needed to confirm the observation identified in this group to eliminate the risk of type II error. It is recommended to start a multi-center computerized trauma registry in Kuwait using essential international parameters. Future research should specify the surgical management and approaches to provide more value for strategic management planning. Prospective studies are required to report other complications, which are highly related to acetabular and PF, such as sciatic nerve injury and DVT.

CONCLUSION

The prevalence of pelvic and acetabulum fracture in Kuwait is 5.37%. Men in their thirties were found to be at higher risk for pelvis and AF. The most frequent mechanism of injury reported was MVA. The most frequent fractures were B1.1 of the pelvis and A1 fracture of the acetabulum. Higher rates of complications and mortality were recorded for PF when compared to AF, while AF relays more on operative management compared to PF. The low operative rate, especially in pelvic fractures, is attributable to the nature of the fractures in our cohort as they were mostly nondisplaced fractures. The current study provides an insight into the epidemiology of pelvis and AF in Kuwait to possibly set a benchmark for future preventive and management approaches to optimize the outcome.

AUTHORS' CONTRIBUTIONS

MA conceived and designed the study, provided research materials, and collected and organized data. NA designed the study, performed the statistical analysis, and wrote the manuscript. HA collected the data. All authors have critically reviewed and approved the final draft and are responsible for the manuscript's content and similarity index.

ETHICAL APPROVAL

The study was approved by the Kuwait Ministry of Health, Ethics Committee (ref: 2019/1199). Date: 14th December 2019.

Declaration of patient consent

The authors certify that they have obtained all appropriate patients consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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