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Role Of X-Ray In Road Traffic Accident (RTA)

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Abstract:
Saudi Arabia is a vast country of 2,149,690 km^2, and is the largest Arab state in Western Asia. The Kingdom has been categorized as a high-income nation. It has a total population of approximately 27 million, one-fourth of whom are expatriates, with the highest population density (per km^2) of 101 in Jizan, and 38 in Makkah, and the lowest of 2.8 in Najran, and 3.6 in Al Jawf. In KSA, motor vehicles are the main means of transportation within, and in-between cities. According to a recent estimate, more than 6 million cars are found on the roads of KSA. According to the morbidity and mortality records in the Ministry of Health hospitals, 30% of beds are occupied by RTA victims, and 81% of deaths in the hospitals are due to RTIs. KSA has recorded 86,000 deaths, and 611,000 injuries in RTAs with 7% resulting in permanent disabilities. The economic implications of RTAs estimated in terms of potential productive years life lost were examined in a study that reported a 31.6% increase in deaths due to RTA among males in 1997-2002 compared with a 1.3% increase in deaths due to RTA among females, and this percentage is increases with the number of vehicles and the numbers of road inside and outside the cities also. Road traffic accidents are a major health hazard with 19 killed daily, and 4 injured every hour in KSA. The young and economically e productive age groups are the most affected. In industrialized countries, the gross loss due to accidents is 1 - 2% of the national income, while for KSA, this loss has been estimated to be between 2.2 and 9%. The accident or injury reporting system in KSA has been much improved over the last couple of decades. Legislation on seat belt use has been put into practice, along with fully operational speed camera systems in large cities under the control of police departments, and police department record keeping of road mortalities and collisions. This improved reporting system shows a paradoxical rise in the magnitude of the problem over the years. The WHO has identified 5 Road Safety Pillars, namely: road safety management or policy; road infrastructure; safe vehicles; road users' safe behavior; and post-crash care. Driver errors has been mostly reported in different regions of KSA as a cause of RTAs, in addition to some deplorable vehicles, and road conditions. However, post-crash care is largely ignored in all possible direct, or indirect evidence on the subject. There is scarcity of local standardized information on RTAs; therefore, measures for injury related mortality and disability are mostly available, either in popular press articles, police records, or WHO projected estimates. The aim of this study was to identify the changing trends and crucial preventive approaches to RTAs adopted in KSA over the last 2.5 decades. This analysis aims to provide helpful information in limiting the overall incidence of RTAs, and the severity of the resultant injuries in KSA.

I-Material and Methods.

- The search for related articles for this review was carried out through Google Scholar, PubMed, Scopus, Saudi Medical Literature, Saudi Med base, and Science Direct using the key terms "road traffic accident", "road traffic injuries", "road fatalities" combined with the term "Saudi Arabia". The search was further complimented by WHO statistics reports, and related reports under the Ministry of Interior (MOI) KSA, and police department websites.
- Data collection sheet and retrospective review of trauma patient from Traffic website and major hospitals in Dammam .

Instrumentation:

Conventional X-ray machine and Picture archiving and communication system (PACS).

Results

Some types of fractures happened for patients during (RTA)

S	Patients	Age	Spot in the area	Type of Trauma
1	Male	21 y	Fibula	Transverse fracture of distal end of fibula
2	Male	21 y	Tibia	Transverse fracture of distal end of tibia
3	Male	13 y	Femur	Transverse fracture of femur shaft

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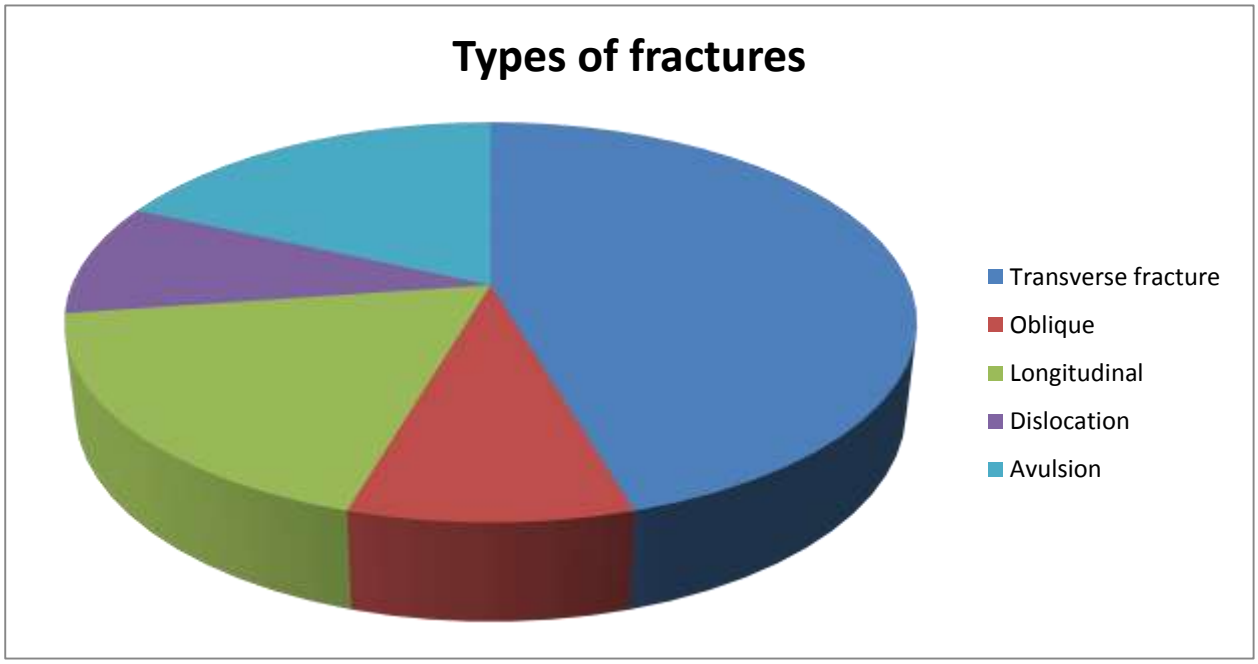
4	Male	19 y	femur	Oblique fracture of femur shaft
5	Male	13y	Calcaneus bone	Longitudinal fracture of the Calcaneus
6	female	12y	Rt. Ulna	Transverse fracture of distal head of ulna
7	female	47 y	Rt. Shoulder	Dislocation
8	female	42 y	Lt. femur	Transverse fracture of femur shaft
9	female	42 y	Lt . shoulder	Avulsion
10	female	43 y	Sacroiliac joint	Dislocation
11	Male	36 y	Rt. clavicle	Longitudinal fracture of clavicle shaft

NOTE : some body parts and internal parts are imaging by other radiology system.



Some types of fracture(X-Ray Images)

FIG 1 A.P view Spiral Fracture of Lt Femur

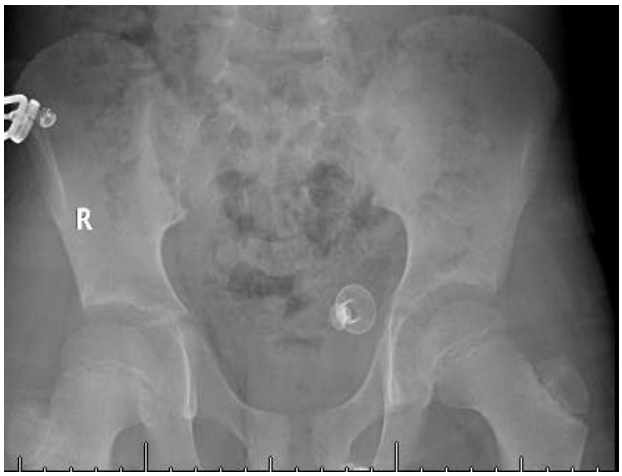


FIG 2 A.P view Transverse Fracture of Rt. Hip

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FIG 3 Lat view Transverse Fracture of Rt. Tibia and Fibula

FIG4 .PA view Transverse Fracture of Distal Head of Radius

FIG 5 lat view of Elbow joint Supracondylar fracture (Transverse)

The Number of effected patients due to (RTA) depends on gender of patients as a fallow :

Male	Female	Pediatric	
50 patients	26 patients	Males	Females
		13	13

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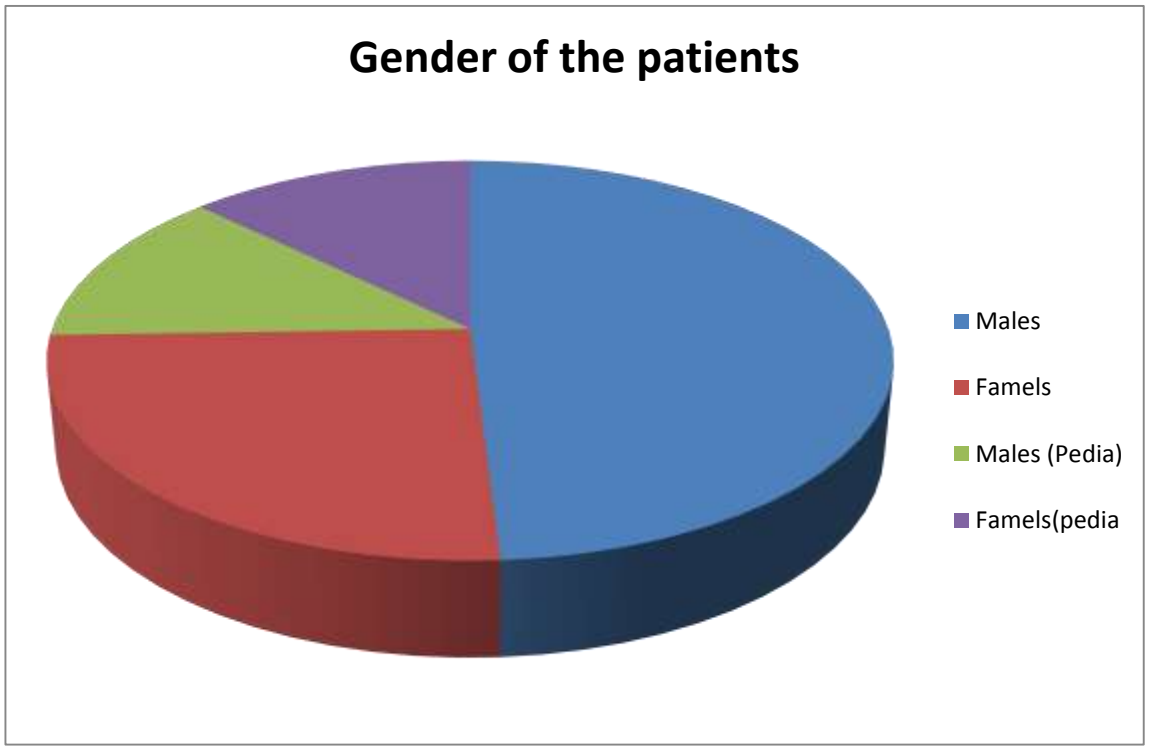
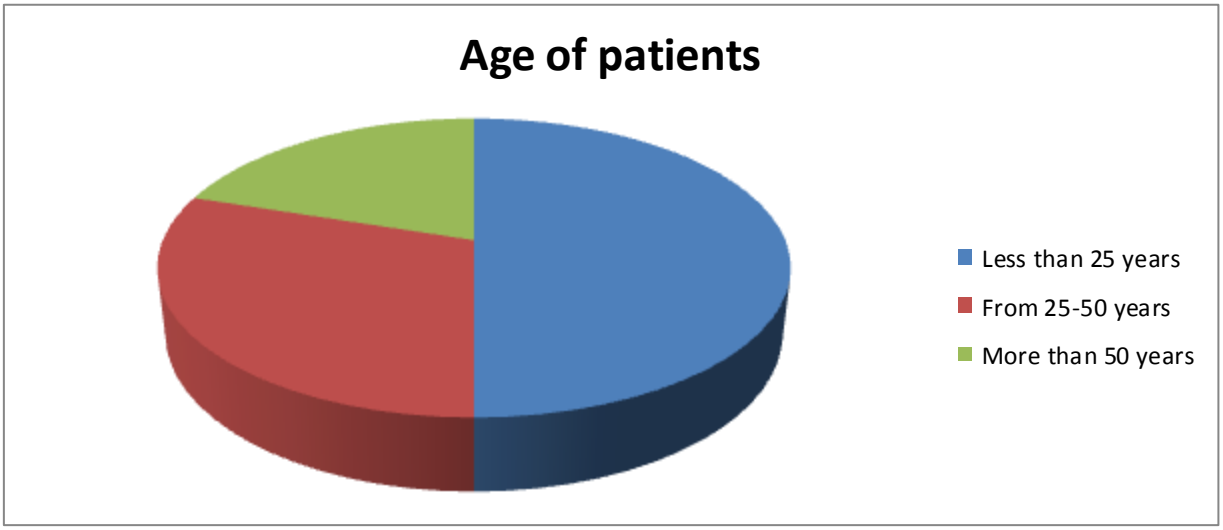


The number of effected patients due to (RTA) depend on ages of drivers as a fallow:

Less than 25 years	From (26 years to 50 years)	More than 50 years
50 patients	30 patients	20 patients



The injured body parts because of (RTA) for (male-female) are :

Chest	Lower extremity	Upper extremity	Vertebral column	Skull	Abdomen	Pelvis
35	33	29	14	12	12	2

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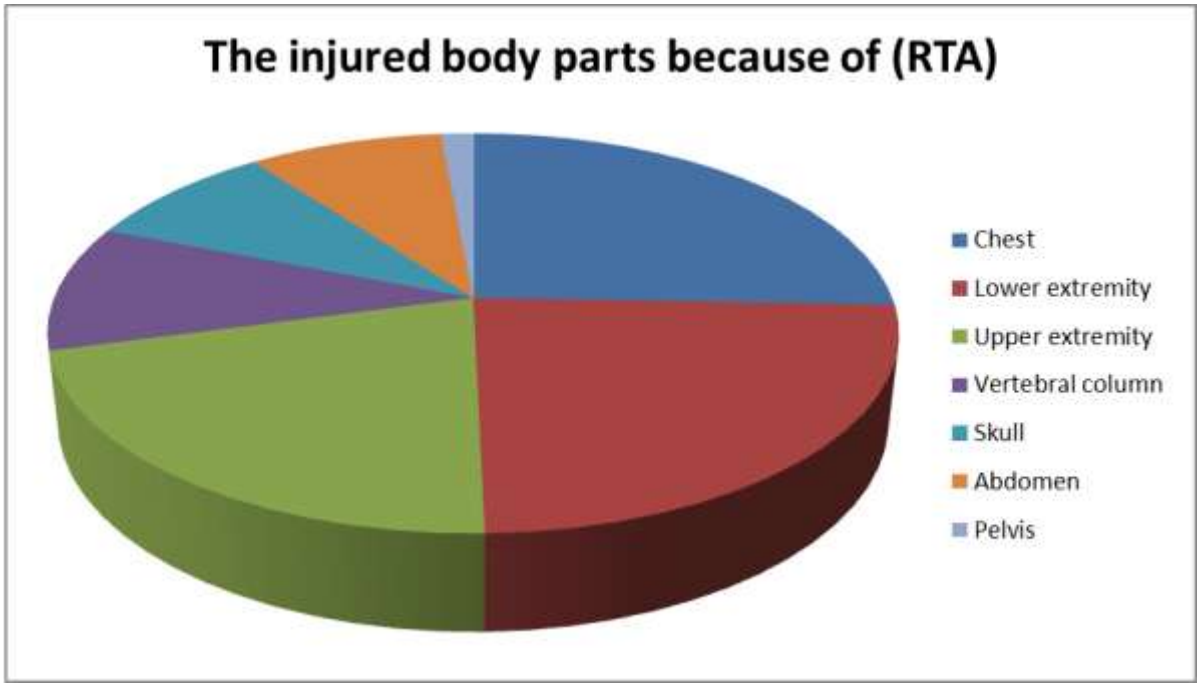

Chapter Sex

Discussion

The evidence sufficiently supports that the action plans in KSA so far have mostly focused on the prevention of RTIs rather than RTAs, including seat belt laws, speed camera systems(Saher system), emergency medical rescue services, and the role of the police in the documentation of RTAs. While the international recommendations emphasize on developing institutional framework, safer roads and vehicles, proper surveillance or data system, safer road users, and post-crash care.

We noted that the most common reported site of injuries in recent studies were the head and neck, limbs, and trunk in contrast to previous studies where limb and trunk injuries were more common than the head and neck. Some studies reported injury per individual regions, or parts of body, and others as multiple parts. Complications of road injuries, such as amputations, neurological deficit. Likewise, we identified discrepancies in some vital statistics, such as, mortality rates between sources of data as noticed by other investigators as well. In all of these studies, the causes were focused around drivers' fault, road and vehicle conditions, either alone, or as multitude. The evidence was not found in local studies on data systems, or post-crash care, or implementation of widespread primary preventive strategies, and so forth.

Our review of all aspects of reported RTAs, allows us to propose the neglected areas in prevention of RTAs, such as young drivers' behavior, and lack of focus on post-crash care, including both pre-hospital and hospital care. This surveillance system approach along with a few suggested interventions to modify the behavior of young drivers would prevent both RTAs and resultant injuries. The WHR on prevention of injury has identified separate risk factors for road crash, road injuries, and post-crash care.

The use of reliable Geographical Information Systems should also be used as an aid in identifying the problem sites and risk factors for the accidents, and launching relevant interventions in those areas. That is how we hope to address the issue of RTAs, both from its public health, and as well as, social equity aspects .Also we noted that the males injuries are more than females and pediatric by around 50%. The younger drivers (less than 25 years) are more prone to accidents and injures because of the speed and recklessness and concern mobile while driving .

Conclusions:

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An X-ray machine uses to take images of the bones and other internal structures. These X-ray images used to record radiographic pathology due to trauma or any other disease , but many are now recorded digitally. Bones block the x-ray particles emitted by the machine, so they appear white on the resulting images. Muscles and fat have a grayish on X-ray images ,while any structure containing air will be black.

The study recorded that the:

1- Types of fractures happened for patients body parts during (RTA) diagnostic by Conventional X-ray machine

2- Number of males is around 50% of the injured during the RTA ,the females injured are around 25% and also the pediatric injured around 25%.

3-The younger drivers less than 25 years are nearly 50% of the total injured by RTA ,the ages from 25 years to 50 years around 30 % and more than 50years are around 20% .

4- The injured body parts because of (RTA) in different cases are also recorded different parts and different percentage as fallowing :

Chest	Lower extremity	Upper extremity	Vertebral column	Skull	Abdomen	Pelvis
25.7 %	24.2%	21.3 %	10.2 %	8.8 %	8.8%	1.47 %

Recommendation:

1-We recommend the punishment on violators driving.

2-Make people aware of the importance of seat belt.

3- Comply with the instructions of traffic safety and speeds specified inside and outside the cities.

4. Periodic inspection of vehicles and ensure the safety of tires and other parts of private vehicles before traveling and long distance driving.

5- Do not drive for long periods without rest during travel, as well as the lack of leadership in the narrow roads, which lacks the means safety.

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