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The Impacts of Motorcycle Accidents on Mortality and Disability in Gaza City

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The Impacts of Motorcycle Accidents on Mortality and Disability in Gaza City

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The Impacts of Motorcycle Accidents on Mortality and Disability in Gaza City

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AL-Quds University

August, 2011

Dedication

To my family who is close to my heart that support me to accomplish this work

And specially for my mother, wife and my daughter Dena

Declaration

I here declare that this thesis submitted for the degree of master is the result of my own research, except where otherwise acknowledged, and that this thesis or any of its parts has not been submitted for a higher degree to any other university or institution.

Signed

Zeyad Hassan Yousef Al Kahlout

Date: August, 2011

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Abstract by English:

This study on "*The Impacts of Motorcycle accidents on Mortality and Disability in Gaza City"* had been implemented to assess the impacts of motorcycle accidents on mortality and disability in Gaza City during the period from January 2008 to January 2010, and to find out the causes of accidents, and what are the drives behind motorcycles' use by teenagers and young men. Two types of research designs were used; the first was a quantitative descriptive study design and data were collected retrospectively by reviewing and searching the available statistics and records about motorcycle accidents at the relevant institutions; and the second was a qualitative historical design that is helpful to describe and analyze events that had happened in a remote or recent past to know the causes of motorcycles use and the causes of accidents associated with motorcycles; data were collected by doing semi structured interview.

For the quantitative part, statistics about motorcycles accidents in the year 2008, 2009 and until mid 2010 were reached and only 88 files of motorcycle accidents were found at the relevant institutions, and they were reviewed and documented in special forms. For the qualitative part, only 7 subjects (three family members of death cases and four disabilities) were found and participated in the interviews. The results of the quantitative show that, in the year 2008 there were 95 severely injured cases and 20 deaths due to motorcycle accidents in Gaza Strip, cause specific death rate 1.4, case fatality rate 3.2%. In 2009, there were 19 severely injured cases, 4 deaths in Gaza City, 3.8 cases severely injured every 100.000 person and 0.8 dead cases for 100.000 people, and case fatality rate is 6.7% Also, from January to June 2010 there were 17 severely injured cases and three deaths in Gaza City with case fatality rate about 2%.

Of the 88 found cases and files, 100% of the drivers where males, did not wear the helmets, did not have insurance for driving motorcycles and only 8% had hold a license to drive motorcycles, and 62.5% aged between 16 – 25 years. About date and time of the accident, 62.5% of the accidents happened in the year 2009, the majority (39.8%) had happened between 12.01 PM and 6:00 PM, 42% had happened at municipal and City streets, 52.3% were due to collision with other vehicles. About 59% of the affected cases were pedestrians, and the majority of the injuries (36.4%) were multiple body injuries including the head.

The qualitative results (semi structured interviews) show that, the main causes of motorcycles use are fun and jealousy from other people peers and friends and the causes of accidents were high speed and lack of attention. The study includes some recommendations for each of the different related institutions to reduce the number of accidents and the resulting severe injuries and deaths.

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Chapter one: Introduction

1.1 Background:

Astonishingly, the popularity of scooters and motorcycles in Gaza City is markedly surged right along with gas prices which have a great impact on human health fatalities by the risk of death and injury. Motorcycle crash victims form a high proportion of those killed or injured in road traffic crashes by surpassing the limited speed which increase the risk of accidents among motorcyclists (World Health Organization, 2009). These vehicles were spreading in Gaza Strip after the year 2008 and still aggravated until now with little attention or restriction on their hazard on human lives in one hand and in Gaza City as a specific and main City among Gaza governorates on the other hand.

Here, compared with other geographical entities, Gaza Strip has a small and a very poor road network. The Rasheed Coastal Road or the Sea Roads (Al Bahar Street), for example, runs along Gaza's coastline and connects it with the rest of Gaza Strip's coastline north and south. In addition, the main road of the Gaza Strip named Salah Aldden runs through the middle of Gaza City to connect its north with south towns. Reflectively, small streets are the main infrastructures in connecting Gaza Cities with each other may cause some accidents from cars or other vehicles.

Furthermore, The Yasser Arafat International Airport opened in 24 November, 1998 and is 40 kilometers (25 miles) in the south of Gaza became significantly damaged during the Second Intifada (Al-Aqsa Intifada) and closed in October 2000 by an Israel order. That devastated destruction had affected on the runways and facilities of the road network.

As a main transportation in Gaza Cities, a motorcycle phenomenon is widely spreaded after the breakdown of the border line between Gaza Strip and Egypt for smuggling thousands of these types of vehicles into Gaza Strip throughout tunnels.

Consequently, it is hard to prevent the influx of motorcycle vehicles and even to confiscate teen and adult groups from driving their motorcycles in crowded roads and narrow streets inside the heavily crowded inhabitant areas. On the other hand, the residents of the Gaza City and the car drivers cannot tolerate this problem. The traffic law does not include motorcycle riders, but theoretically they must wear helmets and must have a driver’s license and be above 16 years of age, but few gives an attention

for that. At the same time there may be two or three persons riding the same vehicle without putting helmets which makes it more dangerous and more casualties are expected when accidents occur.

1.2 Geography:

The location of Gaza Strip is in the Palestine, bordering the Mediterranean Sea between Egypt and the 1948 occupied Palestine. The total area of Gaza Strip is 378 Square kilometers; it has a 51km border with occupied Palestine and 11 km border with Egypt. Gaza Strip has a temperate climate with a mild winter and a dry hot summer subject to drought (United Nation Environment Program, 2009).

Gaza Strip contains large population aggregations including Gaza, Rafah, Khanyounis, Deir Al-Balah, Alburaij, and Alnosierat) which are connected with the Egypt by one road for the passenger movement and some commodities purposes. Also it contains eight refugee compounds (Alnosierate, Alshatee, Jabalia, Magazee, Deir Al-balah, Alburaij, Rafah and Khanyounis).

Most of the trade centers and the ministries, government institutions and universities locate in Gaza city.

1.3 Demography:

Gaza City is the Strip's biggest population centre and has 497 thousand inhabitants (Palestinian Central Bureau of Statistics, 2007). This number of inhabitance is formed of about 253 thousand males and 244 thousand females classifies as about 76,800 households. Moreover, the total urban population is about 449,221 and the rural population is 12,542, whereas the total numbers of the refugees who live in camps are 34.648 persons. Comparing to the population size of Rafah (173,372) and about one million UN registered refugees, who are the descendant of the refugees who were forced, killed and obligatory displaced to leave their homes during the 1948 Arab Israeli war, are considered as the majority of Gaza Strip population. The number of Gaza Strip population is anticipated to be enlarged due to the high fertility rate. The majority of residents' religion is Islam with just about 2.000 to 3.000 Christians (*Demographic of Palestinian territories, 2010*).

1.4 Socioeconomic status:

The economic situation is badly deteriorated due to high population density, lack of security control, limited land access, the devastated lost of capital, and the absence of ports existence. From industrial wises, the existence of small factories that mainly produce insufficient products such as textile, olive-oil soap, olive-wood carvings is not enough to provide gazans' society needs.

Under this weakness of economical sector, Gaza depends on importing the primary goods figuring in food, construction material, consumer goods and electricity and exporting citrus, flowers and other potential needs.

Recently, Gaza Strip is under constant suffering from bad economic situation resulted from suffocated blockage since about ten years, but some exceptions occur acknowledge by the work of tunnels that are slightly decrease the pressure over people who live in Gaza Strip.

Therefore, Gaza face severe noticeable decline in social and economical situation resulted from political division and economical blockade since 2007 and 2008 war that has destroyed the infrastructure and deferent sectors in the Strip.

1.5 Health status:

Regarding health status of Palestinian, it was shown that there is a high level of dietary deficiency among Palestinian people where 17.5% of the children aged from 6 to 59 months with chronic malnutrition, 53% of women in reproductive age and 44% were found to be anemic. The internal political fragmentation has a negative impact on health status. Dr. Shabin indicated that there is an increase in the number of cases that complain of blood cancer; in March 2010 there were 55 cases compared to 20-25 cases in an entire year. The United Nations development program (UNDP) indicates that the average life expectancy in Gaza Strip is 72 years.(Abdeen et al., 2002).

Recently, Gaza Strip has a bad health situation especially after the Israeli war in January 2009. The Ministry of health (MOH) expects an increase of mortality among sick people in Gaza Strip regarding to the tight siege. Hence, the situation became worse and more complicated after the rapid spread of motorcycles' use in Gaza Strip especially in Gaza City.

1.6 Problem statement

Motorcycles' use in Gaza cities is spreading over the time with little attention to their hazard on human health that can lead to mortality on one side and disabled causes on the other. Therefore, laws and regulations, rules and follow up measures must be taken to control this state.

Despite of its largest number of population, Gaza infrastructure demonstrated in roads and streets, which are in a miserable condition, are very crowded around the clock especially in mornings and early evenings. Moreover, the evaders to thousands of motorcycles in the last two years became very dangerous for pedestrians. This absolute miserable situation has been caused by motorcyclists and motorcycles accidents in many recorded cases. As a result, the number of casualties (mortalities and disabilities) is increasing which requires thorough investigation necessities to clarify the mortalities and disabilities and to evaluate rules and regulations that must be taken to control this problem that is widely spreading among Gaza City population in the Gaza Strip.

1.7 Justification of the research

Motorcycle use in Gaza Strip especially in Gaza City is widely spreading after the breakdown of the border line fence between Gaza Strip and Egypt and from tunnel trade since January 2008. This has lead to a remarkable increase of road accidents as a result of riding or from exposure to motorcycle accidents. The number of affected cases has been raised and the mortality rate has also been increased and aggravated by time. In addition to the human casualties, a large number of people are suffering from this problem especially the medical teams at Alshefa Hospital who are depressed from this miserable and terrible situation by being hazarded about what is the cause of this problem, how it can be solved and what actions need to be taken to protect people from this new “epidemic”?

So it is very pressing to shed the light on this problem to assess the effects and magnitude of this problem in Gaza City.

1.8 Objectives:

1.8.1 Main objectives:

To assess the impact of motorcycles' accidents on mortality and disability in Gaza City from the year 2008 to the year 2010 ultimate goals can be achieved:

1.8.2 Specific objectives:

1. To illustrate the prevalence of deaths that resulted from motorcycle accidents in Gaza City during the study period (Jan 2008 to Jan 2010).
2. To explore the number of disabled cases resulted from motorcycle accidents.
3. To expose what is the effect of demographic variables on motorcycle accidents.
4. To assess the main causes that lead to increased mortality and disability from motorcycles' use in Gaza City.
5. To compare the situation of mortality and disability that resulted from accidents before and after the spreading of motorcycle in Gaza Strip.
6. To develop conclusions and recommendations to help for solving this new phenomena in Gaza City in specific and in Gaza Strip in general.

Chapter two: Conceptual framework

As shown in figure (2.1), the conceptual framework which is characterized by the dependent variables (mortality and disability) as the variables of concern, and the independent variable as the impact of motorcycle accidents, other variables are going to be tackled in order to be connected with the major variables, such as:

2.1 Demographic variable: the demography of affected cases will be studied in depth to acknowledge which groups of ages are affected, male or female, and other related issues.

2.2 Causes of uses and accidents: the causes of motorcycles' use ad also the cause of accident will be endeavored during the interview to know the roots of the problem.

2.3 Number of motorcycles and licenses for motorcyclists: this variable also will be studied because it may have an effect on the possibility of occurrence of motorcycle accidents.

2.4 Mortality and disability: these dependent variables will be studied and measured to know if the death and disability rate that resulted from accidents have been increased or decreased.

In general all of the variables are connected, correlated, and affect each other.

The following figure of the conceptual framework is illustrated.

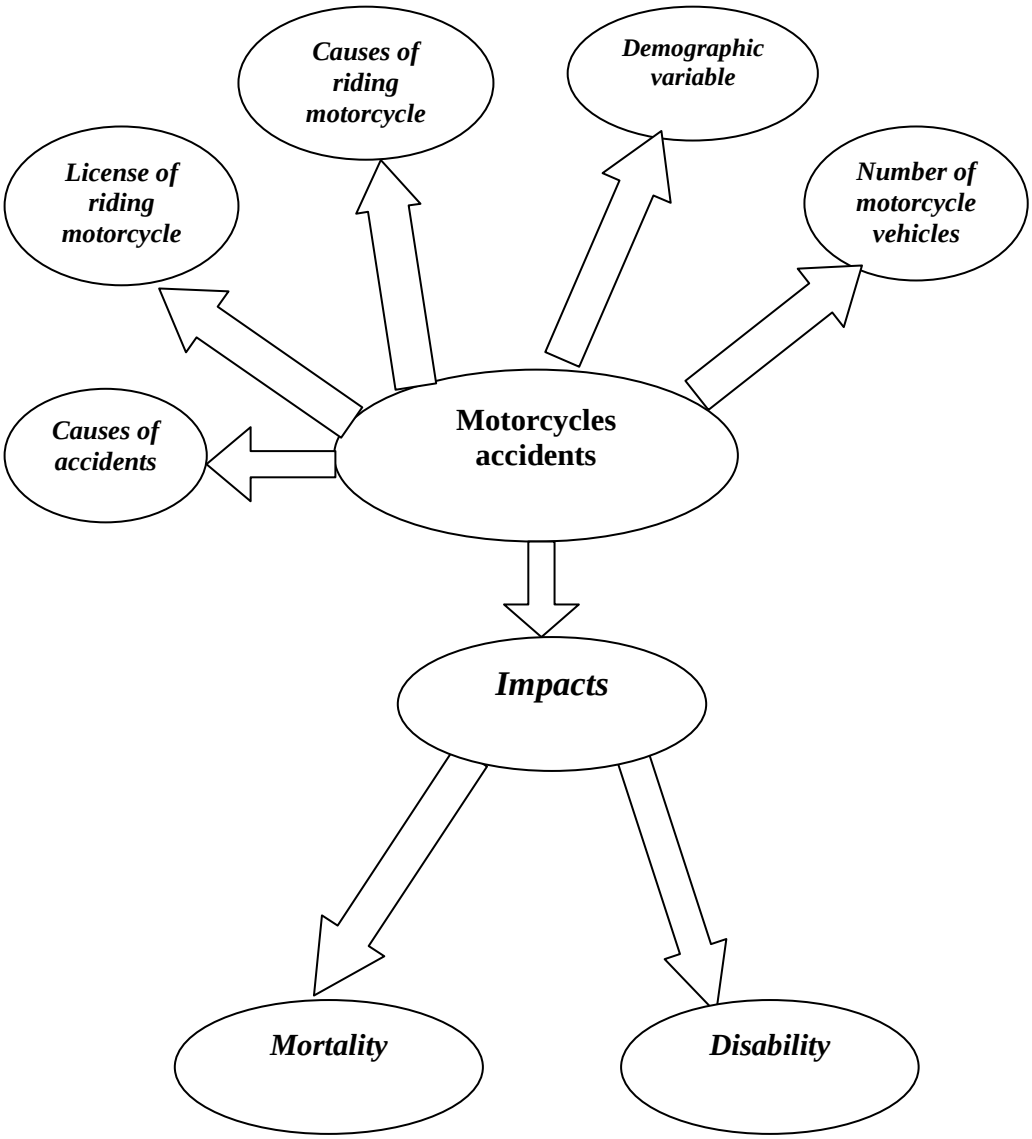


Figure: 2.1: Conceptual Framework.

2.5 Definitions:

2.5.1: Impact:

The impact is defined as the totality of negative or positive effect, or primary and secondary effect which is produced by the development of intervention, directly or indirectly, intended or unintended (Working Party on Aid Evaluation, OECD-DAC 2001).

2.5.2 Health impact assessment:

Health impact assessment (HIA) is commonly defined as "a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population" (World Health Organization, 2011).

2.5.3 Mortality:

It is the whole sum or number of deaths in a given time or a given community; also, the proportion of deaths to population, or to a specific number of the population. (*Definition of mortality, n.d*)

2.5.4 Disability:

Disability is defined as any restriction or shortage (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. (World Health Organization, 1976)

2.5.5 Mortality rate:

Mortality rate is the death rate per defined population usually expressed per 1000. (European, parliament, 1998)

2.5.6 Impairment:

Impairment is any loss or abnormality of psychological, physiological or anatomical structure or a function. (World Health Organization, 1976)

2.6 Types of helmet and safety standard:

2.6.1 Standard style and types of motorcycle helmet:

Types of helmets were identified to protect the riders and passengers from head injuries, so it is very important to be wore during driving. There are fundamental styles of motorcycle helmets such as full helmet, three quarter shell helmet, and half shell helmets. Choice of these styles relates to the person taste, each type of them have advantages and disadvantages, and the type of motorcycle you ride affect the type of helmet to wear (Kayne, 2010).

2.6.1.1 Full face helmet:

This type of helmet covers most of the head and face, while the shell covers the head from the brow over the cranium to the skull base at neck top, and there is acrylic visor over the view port where the driver see to prevent the effect of wind, dust and rain that may affect the vision during driving. Also there are pores for ventilation for the chin and in the shell which have doors to close in winter and in cold. This type of helmet is the safest type to protect the drivers or the passengers from injuries through accidents. On the other hand, the disadvantages resemble in the heavy weight which may cause neck fatigue during wind and limit sensory input. These types are used in sport races like Kawasaki ninjas or Honda inter reception, but the better helmet for sports are racing helmet that usually designed for that kind of competitions. (Kayne, 2010).

2.6.1.2 Three quarter shell helmet:

This style of helmet is like full face helmet, but does not cover the whole face; the shell over the brow over the cranium to the base of the neck and forward over the ears. This type of helmet is usually used by police officers. The advantage here is to provide good communication and can easily be removed without any blocking of vision. It's also preferred by people who rack up the road miles on large full dress bikes, in addition, head set can be used to communicate with other riders, but it's not used in racing (Kayne, 2010).

2.6.1.3 Half shell motorcycle helmet:

Beanie helmet is another name of half shell motorcycle helmet which covers only top half of the cranium. It is light in comparison with other types of helmets but it offers less wind resistance and less protection. Those who ride cruisers or older bikes usually use it and the race riders do not wear it because it provides low protection (Kayne, 2010).

2.6.1.4 Helmet Safety standard:

USA department of transportation in 2001 elaborated that there are two sources which provide safety standard for helmet use; the first referred to the department of transportation (DOT) which had suggested the minimal safety requirement while the other standard source is SNELL (Snell Memorial Foundation) which sets stricter

voluntary standard. Hence, if the use of helmet does not meet any from the last standards (DOT and SNELL), the helmet will be designed to meet the highest standards of protection which means more weight and more cost (United States of America- Department of Transport, 2001).

Chapter three: Literature Review

3.1 History of motorcycles:

Motorcycles are considered as the oldest vehicles used for transportation in many countries when they had been began to be produced since the 19th century. The production of motorcycles continued to grow until the year of 1985, and then it declined in 1987 and rose again in the 1989. Nowadays, different large motorcycle company producers were greatly and widely established in 1990 till 1995 for accomplishing different kinds of bikes.

Here, this type had descended from safety bicycles; a bicycle with front wheels and rear and pedal crank mechanism to drive the rear wheel.

However, motorcycles in Gaza Strip especially in Gaza City have widely spread after the breakdown of the borders between Gaza Strip and Egypt in January 2008 *(The future of motorcycles- an opinion, n.d).*

3.2 Types of motorcycles:

Globally, many types of motorcycles are presented and made to match the specific purpose in which the producers entail. Therefore, many contrastive designs had been named referring to producers' goals such as standard motorcycle, cruiser motorcycle, dirt motorcycle, sport motorcycle, sport motorcycle, dual tour and sport motorcycle.

In relation to that number of motorcycles' names, most of the above mentioned bikes had been presented and driven in Gaza City under little attention or rules or control. (*Types of motorcycles, n.d)*

3.3 Major types of disability:

It is something hard for everyone to be disabled under any conditions or circumstances. Disability doesn’t only mean a condition of visual impairments or blindness or hearing loss or deafness but there are different types of disability which are mentioned in the following site.(*Different types of disability, n.d)*

3.3.1 Eye sight disability: it refers to any case with abnormal or impaired vision or sight in spite of wearing glasses or contact lenses. The impairment of vision may be caused by multiple factors which can be treated medically while some of them resulted from accidents can’t be treated.

3.3.2 Hearing impairment: This type includes people who are completely or partially deaf in one or both ears, and it can be treated by using hearing aids. However, in the case of permanent loss of hearing, the affected people use the sign language in order to communicate.

3.3.3 Mobility disability: This type of disability is commonly caused by accidents. It refers to people with varied types of physical disability and also refers to upper limb mobility problems, manual dexterity, and coordination problems. This type of mobility affect movement ranging from gross motor skills like walking to fine motor movement like manipulation of objects by hand. Some people with mobility disability use assistive devices to cooperate.

3.3.4 Cognitive disability: This disability is commonly close to schools and students, and it refers to people with dyslexia; brain based type of learning disability which impairs specially the ability to read and other learning difficulties and it differs from mental impairment parts.

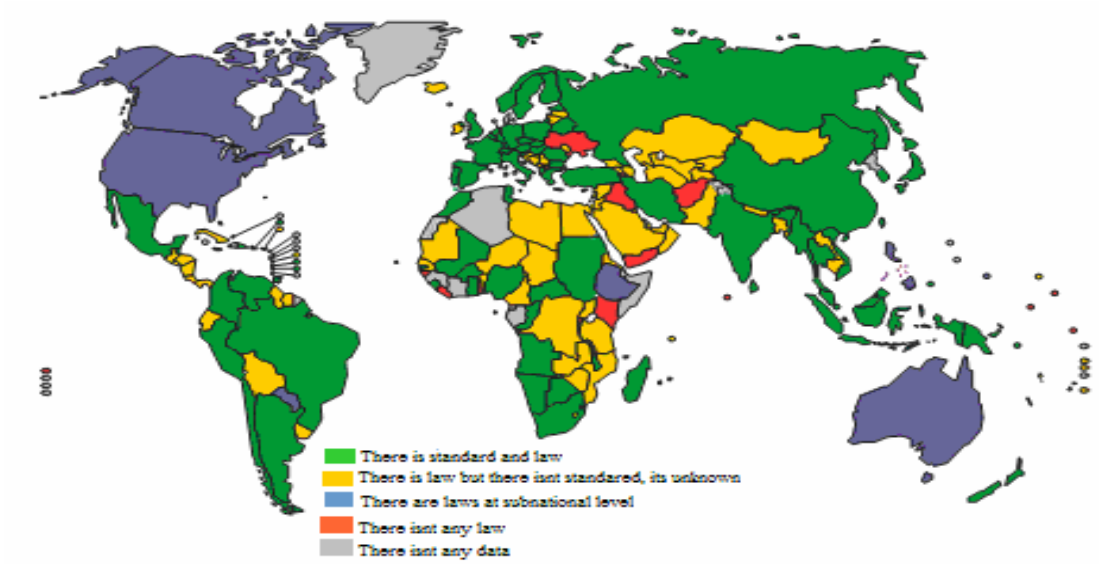
In general, any one who suffers from disability can decrease its effect by using assistive devices. Many people who use these devices can be adapted to them and lead a comfortable life.

3.4 Safety on street:

In its report in 2009, World Health Organization (WHO) indicates that more than 1.2 million persons die from street collisions all over the world, and from 20 to 50 million suffer from nonfatal injuries. This pandemic situation is still increasing in most countries around the world. Moreover, the great percentage of mortality rates result from street collisions, which mainly happen in low income countries and middle income population. Mortality rate is estimated at about 20 to 22 persons per 100.00. Approximately half of the expected exposed injuries (46%) are pedestrians or motorcycle riders, this percentage is specifically high in the very poor countries. The table in annex number three illustrates that low and middle income countries represent 80% of the deaths as the output of collision accidents. Nevertheless, about 15% of the worldwide countries' laws consider five danger factors which may decrease or increase ultimate accidents; these factors can be classified as driving under alcohol

effect, surpassing limited speed, decrease use of helmet, the carelessness of using seat belts and children seat belts (World Health Organization, 2009).

By referring to traffic laws, the permitted speed in the rural areas must not surpass 50km/ hr but it should be decreased to 30km/hr in risky areas. In addition, alcohol level in the blood during driving should not be more than 0.04mg/dl, because this will increase the risk of accidents. However, over 90% of countries have laws regarding driving under alcohol effect, but 49% of these countries enforce that law by recommending not higher than 0.05mg/dl of alcohol level while 11% of other countries impose lower levels of alcohol (0.02mg/dl) for youths and new drivers. Logically, the commitment to the safety laws shows that helmet users while riding their motorcycle decrease the number of deaths by 40% and head injury about 70 percent. Furthermore, 74% of countries impose helmet use for two or three wheeled motorcycles, 43% of countries don't have regulations regarding helmet and its use. There is a law for helmet use adapted by 40% of countries including drivers and passengers taking in consideration the international and national standers of helmet productions. (World Health Organization, 2009)



Translated from world health organization (2009)

Figure 3.1: Laws on Motorcycle Helmets and helmet Standards by Country/ Region

3.5 Increasing problem of motorcycle accidents:

Dillihunt, et al (1966) found that small types of motorcycles are creating new epidemic in the United States, the registration of motorcycle number is raised for a million in 1965 with concomitant increase in injuries and fatalities. The increased incidence of this problem is facing the medical profession in recent years due to high number of fatalities and injuries from accidents that result from two wheeled motorcycles.

Here, this study conducted on 38 victims at Maine medical center in Portland during four months, from May to August 1965. Those victims were classified as the following; 27 of them were drivers, 10 passengers, and one pedestrian. The mechanism of injury was illustrated by having 14 patients in accidents caused by the loss of control of the vehicle and overt turn, 16 patients due to hit of another vehicle, 2 patients from the hit or swerved to missed dog, 3 patients fell out of vehicle, 1 pedestrian struck by a vehicle, and 2 patients were injured from miscellaneous causes.

From demographic variables, age group from 15 to 20 the 23 patients had been recorded, while other group from 23 to 25 had 11 patients, from 26 to 30 were two patients and over 30 years two patients. By distributing these casualties on gender, 38 patients consisted of 30 males and 8 females were represented. Accordingly, different types of injuries were performed through 9 patients with head and neck injuries, 13 patients with extremity fracture, 2 patients in spine fracture, 2 patients with pelvis fracture, 2 patients intra-abdominal injury, and 19 patients with miscellaneous soft tissue injury.

Significantly, very important remarks were brought out through reviewing these injuries and deaths by noticing that most motorcycle accidents caused slight injures despite of the small number of helmet users in which they were thrust in high speed into another vehicle or into pavement. The injuries varied significantly, from auto injuries with head injury while compounding contaminated fracture is more common. The head receives high force due to collision with another object. The distressing fact is that the affected age group is the young and healthy persons who represent the largest age group in any society. Prolonged hospitalization for many cases has led to economic problems which added to the investment value of productivity loss, and another disquieting factor is psychological impact often noted with these accidents.

3.6 Motorcycle accidents in Gaza Strip:

A workshop was held by Palestinian Center for Human Rights (PCHR) titled “Road Accidents Caused by Motorcycles in Gaza Strip" were organized in Khanyounis and discussed some activities to protect the civilians from this danger and to promote the right of security and safety among civilians. During that workshop, many reports and complains about motorcycle accidents were submitted to the PCHR by the victims or their families. Many participants announced their opinions clearly. The first speaker was "Abo Samra"; he mentioned that this problem affects the inhabitants of Gaza Strip and needs urgent solutions to decrease the danger of motorcycles. The second speaker was "Shaheen" in his presentation, he pointed out that safety and security of Palestinian civilians are fundamental rights and must be protected and respected. Shaeen also stated that the government must take all the necessary measures and precautions to protect civilians' lives and ensure their safety through developing the infrastructure of Gaza Strip roads, continual supervision of the means of transportation in Gaza Strip, checking the legal status of the private and public vehicles and drivers' licenses and considering all the precautions that may help in protecting civilians from accidents. he also mentioned that there is a huge number of motorcycles entered Gaza Strip through unofficially tunnels; its estimated number may be between 8.000-10.000, whereas other sources indicated that there are more than 30.000 motorcycle vehicles from the year 2008- 2009. Shaheen illustrated that there were 883 road accidents happened the year 2008.

Six hundred and ten (610) of the accidents were caused by motorcycles; these accidents that resulted in 20 civilian deaths, 837 serious injuries, some of them were permanently disabled, 495 with moderate injuries and 282 with slight injuries. In the year 2009 there was a significant increase of road accidents caused by motorcycles. At the end of May 2009, there were 210 motorcycle accidents resulted in 9 civilians causality, 32 cases with severe injury and some of them are permanently disabled, the director of the general rescue police, held a meeting with this organization and illustrated that there are practical steps taken to reduce the danger of motorcycles. 1.000 civilians have obtained license to drive motorcycles and more than 6.000 motorcycles have been licensed so far, he also called the different parities to co-operate with each other to raise awareness among the civilians and drivers through performing campaigns in different to reduce traffic accidents caused by motorcycles on Gaza roads.

He also highlighted media role in raising the public awareness about the danger of riding non-licensed motorcycles. MR Al-Agha, the director of the department of driving training schools, illustrated that all measures have been taken to reduce accidents caused by motorcycles. Finally, the participants discussed in detail the procedures that the government should take to reduce motorcycle accidents and came up with some recommendations (Palestinian Center for Human Rights, 2009).

3.7 Injuries and deaths from road traffic accidents in Gaza Strip:

Road traffic accident will develop many cases with many injuries, those injuries or injured cases varied between slight injured and dead cases, Palestinian central bureau develop statistics about that for Gaza Strip and from the year 2001 to the year 2006, regarding slight injuries Gaza Strip in the year 2001 there is 578 cases, 645 in 2002, 797 in 2003, 765 in 2004, 1161 in 2005, and 708 in the year 2006.

About moderate injuries there is 922 cases in 2001, 774 in 2002, 1048 in 2003, 981 in 2004, 1062 in 2005 and 833 in the year 2006.

Regarding fatal injuries that resulted from road accidents in Gaza Strip there is 69 cases in 2001, 71 in 2002, 80 in 2003, 76 cases in the year 2004, 64 cases in year 2005 and 73 case in the year 2006. (Palestinian Central Bureau of Statistics, 2006)

3.8 Injuries and deaths from road traffic accidents in West Bank from year 2001-2006:

About injuries and dead cases from road traffic accident in West Bank there is 2799 case with slight injuries in year 2001 and the number of affected cases varied each year until reaching 3242 in the year 2006, moderate injured cases in the year 2001 were 752 cases and varied each year to became 796 cases in the year 2005 and 750 cases in the year 2006.

For the severe injury cases, there are 311 cases with severe injuries in 2001 and varied around a year to become 243 cases in 2006. Finally, fatal injury cases record 81 cases with fatal injuries and the number is aggravated by time to reach 110 cases in 2006. (Palestinian Central Bureau of Statistics, 2006)

3.9 Road traffic accidents in Gaza Strip in the year 2008:

Gaza Strip In 2008 encountered the increased number of accidents due to introduction of thousands of motorcycle vehicles. At the beginning; the majority of youths had

recognized that kind of vehicle as a desire to own as a tool of amusement unexpectedly, this desire of amusement reflected a massive number of accidents harming human being lives. As a result, 1102 accidents were caused by all kinds of vehicles in Gaza Strip recorded in 2008. Therefore, these accidents affected 610 cases with slight injuries, 71 death cases and 271 have material damage only (General administration of traffic, 2010).

3.10 Affected cases from motorcycle accidents in Gaza strip in from year 2009 to mid 2010:

Motorcycle accidents in Gaza Strip were resulted with many injured and death cases while the severity of injuries varied from slight to moderate and severe injuries. In 2009, there were 236 accidents happened compiled by 34 cases with slight injuries, 90 cases with moderate injuries, 41 cases with severe injuries, 28 dead cases and 43 cases have material damage only (General administration of traffic- Gaza, 2010).

Moreover, the first six month in 2010 there is 223 cases with slight injuries, 176 cases with moderate injuries, 53 cases with severe injuries, 16 dead cases and 296 cases in all Gaza Strip in which Gaza City have material damage only without any injuries on human (General administration of traffic- Gaza, 2010).

3.11 Number of training schools that for motorcycles driving licenses in Gaza Strip:

After spreading of motorcycle vehicles in Gaza Strip, many car training schools develop program to train people, who want to get official papers, to drive motorcycle and give them official license for their students.

The distribution of these training schools in Gaza Strip is as the following:

21 training school in Gaza Strip; eight in Gaza governorate, three in north governorate, three in mid zone governorate, three in Rafah governorate and 4 training school in Khanyounes, the large number of schools present in Gaza City and the other governorates have approximately equal number of school. (Association of Driving Training Schools – Gaza, 2010).

3.12 Dangerous of motorcycle accidents and safety measures:

Here, it is worth mentioning that the widely use of this kind of transportation refers to the lower price of that vehicle which encourage people to own instead of car. Roman,

(2009), an Arab doctor who have studied about motorcycle accidents and motorcycle safety, illustrated that hospital records about traffic accidents had been increased day by day, and most of these accident are caused by motorcycles which are considered as the main mean of transportation for rural population because it is very cheap and provides easier and fast access way to their farms. Unfortunately, this replacement doesn't reach the safety level as car because that four wheel vehicles has more balanced than motorcycle and a heavy weight to stuck at once. On the other hand, the weight of motorcycle is lighter than any other vehicles which make it easier to go away in the case of crashes or collisions and doesn’t have safety tools such as the belt like car which make them in danger in case of accidents.

3.13 Motorcycles in Syria:

The number of registered motorcycles in Syria has reached about one million vehicles, this huge number make citizen very annoyed and lead to mass accidents specially when the drivers are teenagers. Undoubtedly, the huge number of population plays a crucial role to prevent using motorcycles in cities in addition to the immoral use of these kinds of vehicles like girls harassment in public gardens put a limit in dominating motorcycles. Also these motorcycles scramble big problem for pedestrians especially when motorcyclist are driving in the opposite path of the street which may lead to accidents. Motorcycles are usually used by persons aged between 15 and 30 years old. According to the World Health Organization (WHO), In Syria, motorcycles kill 3 persons daily and injure 75 persons in Syria daily (Roman, 2009).

3.14 Statistics about motorcycles accidents in Abu Dhabi:

In Abu Dhabi emirates, the percent of severe injuries from motorcycles among the age- group 10 to 17 years old is 75% from total injuries. According to hospital reports in Arabian countries, in the year 2009 more than 3425 cases came to hospitals as a result of motorcycle accidents with injures on head, chest, abdomen, spine or on other organs of the body; a huge number of them died due to severe head injuries (Roman, 2009).

3.15 Motorcycle accidents in Yemen:

Some statistics reported that there are 30 to 40 deaths caused by motorcyclists every month and about 100 to 120 injured cases every month. In the first months of the year

2009, there were 806 traffic accidents that caused by motorcycles. In Amman City, there were 325 accidents, in Ta'ez 177, Hadeda 85 accidents, whereas the rest of accidents happened in other cities. The terrifying motorcycle accidents forced the Counsel of Interior Ministries to set severe regulations regarding using motorcycles safely such as putting plates on motorcycles after being compiled with all the required traffic rules (Radfan press, 2009*)*.

3.16 Motorcycle accidents in Saudi Arabia:

The Traffic Management in Mecca City, Saudi Arabia, carried out a study to know the causes that lead to road accidents in Mecca. The study mentioned that 85% of the accidents caused by exceeding the permitted speed limit. Moreover, the study indicated that many drivers were non- competent, with low concentration during driving, driving with bad psychological feeling and having a vehicle of low quality, and violating the traffic laws. The number of cars in the year 1970 was 22.805, but this number increased to reach 8.6 million cars in the year 2001. This means every person has 2.5 cars. In the 1976, the traffic accidents were not more than 15.785, whereas in the year 2002, the number of accidents increased to reach 223.816. In the year 2002 accidents, 4161 persons died and 28.372 were injured; that means there is 25.5 accidents happened per hour with 32 injuries and one death every 2 hours. In addition of that, this huge number of accidents leads to big number of disabled people.

By and large, the number of accidents in Saudi Arabia from 1992 to 2001 was 1907.644 cases. In 2002, there were 4161 persons died from traffic accidents and it was increased in 2004 to reach more than 5000 deaths. Hence, most of the accidents occurred from 12 pm to the 6 pm (41.6%), and also most of accidents caused by exceeding speed and committed by people aged 31 to 40 years (Shahrane, 2006).

3.17 Motorcycle injures in Tehran:

About patterns of motorcycle related injuries in Tehran reflected that the most common causes of death and disability took place among the age group from 1 to 34 years old. The results had shown that there were about 8500 cases admitted to 6 hospitals with trauma during the period of the study (23rd of August, 1999 to 21st of September, 2000); 1332 (15.7%) cases recorded from motorcycle crashes; male to female ratio was 15-1 (p-value = 0.0001), the mean for age was 28.11 years with a

range from 1 to 75 years and about 917 cases (68.8%) were younger than 30 years. Concerning motorcycles' injury cases, 1226 were driver patients, 75 were passengers and 31 cases were unspecified. Helmets were not commonly used; only 115 (8.6%) cases wore helmets and 1217(91.4%) did not wear helmets. Of the 1226 driving the motorcycles, only 110 (9%) were wearing helmets compared to 75(6.7%) who were passengers. The time of helmet use varies; from 4 pm to 7pm, 25.2% uses helmets, and this percentage decreases to 4.4% between 11pm and 7am. About 34.8 of the motorcycles riders uses helmets in winter, about 26% uses it in autumn 26%, 16% in spring and 23.2% in summer (Zargar et al, 2006).

For the location of accidents, 158 (11.9%) had accidents in urban areas whereas 1174(88.1%) has accidents in rural areas, the largest percent of motorcycle accidents (16%) occurred among the age group 17 to 19 years old, and most of the injuries occur during the summer months (32.4%). Concerning the type of accidents; 967(72.5%) accidents were caused by crashes involving another vehicle, collisions with cars were the most common with 860 (64.6%) cases; over a quarter of patients 365 (27.4%) suffered from non collision injury, of these 70% was injured due to overturning of motorcycles. The mean of ISS of the patients was 6.1. About 62 (6%) had mild injuries, 29.7% had moderate injuries and 7.7% had severe injuries. Just 441 (30.9%) had received pre hospital care; length of hospitalization averaged 6-9 days (1-105 days). Patients admitted to the ICU with glasco coma scale were 1279 (96%) and just 474 (35.6%) had a source of reimbursement (Zargar et al., 2006).

3.18 Motor vehicle accidents in Hong Kong:

Cameron, et al (2004) studied and described the epidemiology of motor vehicle mortality in Hong Kong and its impact on the trauma services delivery. All motor vehicles accidents were reported to the coroner in Hong Kong and retrospectively all cases were reviewed and noted for the year 2001. The results illustrate that 165 cases were involved; 111 male and 54 female patients, elderly cases represented 37% of the cases involving individuals older than 60 years old, most of the cases were pedestrians that represent 59%, and half of them were previously exposed to collision with public light buses and trucks. Alcoholics were not commonly involved, most individuals died from major head injures alone or from multiple injuries. There were little injuries in the major vessels, and those include 13 aortic transactions.

3.19 Morbidity trends from motorcycles:

The result of a study that happened in Benin City shows About 68 motorbike riders/pillion passengers were struck down by cars, 14(27.5%) affected has impact injuries with 8 single limb fractures and 5 double limb fractures, 5(9,8) sustained secondary impact injury with multiple body injury, 17(33,3) sustained secondary injuries with 5 having minor head injury and 12 died from intracranial hemorrhage and intracranial fracture.

Seven motorbike riders/pillion passengers (13.5%) were struck by articulate vehicle and 5(9, 8%) had primary impact injury, 1(1, 96%) sustained secondary impact injury and gradual injury from skull fracture and intracranial hemorrhage, while another one (1.96%) sustained secondary injury. Also 7 cases were struck by buses, they have secondary injuries with 5 dying from skull fracture and intracranial hemorrhage, two pillion passengers fell off bikes due to epilepsies and sustained secondary injures mainly many soft tissue leisure (Nzegwn et al., 2008).

3.20 Lower limps injury from motorcycles:

Kress, et al (1990) studied the impact of motorcycle on human leg and tibias. They found that leg injuries to the most common type of non fatal injury associated with motorcycle accidents, and the majority of motorcycles leg injures resemble those experienced by pedestrians who are not involved in crash. These injuries are marked by only a direct impact between opposing rigid object and the leg, soft tissue of the limbs is injured from inside out in the sharp bone fragment and jagged end laceration the soft tissue as relative motions occurs. This study took several years and provided fundamental data about bone impact response and about cadaver leg. Also this study was sponsored by Japan automobile manufacture association (JAMA), and the previous mentioned results were presented to understand the fracture behavior of human leg and tibia.

3.21 Center for disease control (CDC) reports regarding motorcycles:

CDC report shows that motorcycle is the most dangerous type of vehicles, and fatal crashes are in the rate of about 35 per 100miles of travel in comparison with 1.7 per million traveling by car (CDC, 2004).

In another report about non fatal injuries from off road motorcycle riding among children and teenagers in the United States during the period 2001 and 2004. This

report explored that there were 245 dead cases from motorcycle accidents and estimated that 56.870 cases were treated in US hospitals during the year 2003; these cases aged as 19 years old or less. During the year 2003, at least 13 motorcycle riders aged 19 or less died in non traffic places other than public roads. In detail, an estimated 23,800 off road motorcycle accidents aged 19 years or younger, and the programs and policies directed toward reducing the number of injuries by requiring minimal ages for off road motorcycle riding. The injury rate increased from 20.4% per 100.000 population in 2001 to 35.3% in 2004; this difference was not statistically significant (p=0.31). Patients aged 12-15 have the greatest non fatally injuries with a rate of 62.1 per 100.000, patients less than 16 years old represented about 69.9%, 88.4% of these are males, 97.1% were driving motorcycles, 7.5% of the injured cases were hospitalized. About 20% of injuries occurred in motocross areas, 70.2% of riders during injury are riding dirt, bikes, trail bikes motorcycles, motocross injured cases are more hospitalized than off road motorcycle accidents (14.9% versus 5.6% with p=0.01), 8.9% of injuries were sustained during motorcycle jump, 5.3% from hitting another motorcycle or other vehicle. Among jump related injuries 74.3% occurred in motocross areas, serious injuries represent 39.1%, primary injury for extremity in 61.9% and 35.6% of extremity injury were fractures, 16.8% injuries for head, neck, and 47.4% involved an internal head injury (CDC, 2006).

3.22 Deaths after motorcycle crashes:

Ankarath, et al study, (2002) on injury patterns and its relationship with mortality following motorcycle crashes, showed that 74 patients had died from 1239 patients who needed hospital admission due to motorcycle crashes.

In another study about motorcycle related trauma in Alberta- Canada, Monk, et al,2009, showed that there were 286 motorcyclists deaths during 11 years and there were 5386 deaths related to other vehicle accidents. And in another study by Solagberu et al, 2006, about the trend of motorcycle injuries in the developing countries in addition to the vulnerability of passengers, pedestrians and riders, the result showed that there were dead 2 persons from collisions of motorcycle with another vehicle, and one person died from motorcycle collision with a pedestrian, 2 persons died from motorcycle crashes, and three persons died from crashes between motorcycles.

3.23 Causes of motorcycle accidents:

A report by Hurt, et al (1981) about the causes of motorcycle accidents illustrated that the most common accidents had happened by involving another vehicle casing, where the collisions usually occur due to violating the right of way of the motorcycle at an intersection by turning and the car driver didn't see the motorcycle. The drivers of motorcycles involved in accidents are usually inconspicuous in traffic, untrained, unlicensed, unprotected, inexperienced and do little to avoid the collision. In detail, the driver usually fails to detect inconspicuous motorcycle in traffic, lack of skills and traffic strategies increase the risk of collision and injury severity increases with speed. The only used protective equipment is helmet which is capable to reduce the severity of head injury and there isn't reason to be without a helmet. The trained riders are less involved and injured from motorcycle accidents, and this is needed before driving or using motorcycle; license for motorcycle should be improved to decrease injury, law enforcement should be enacted to enforce license requirement, most motorcycles accident are inconspicuous, and use of head lamps on the day light and high visibility jackets definitely reduce accident involvement, the use of helmet also reduces head injury significantly and protecting eye to prevent injury.

3.24 Moped and motorcycle accidents:

On a study about the difference between moped (bicycle) and motorcycle accidents. The data from 211 moped accident victims and from 214 motorcycle accidents in hospitals during 5 years (1977-1981) were analyzed and compared, and demographic variables were also considered. The results show that, among moped, head injury is the common type of injury, but it is markedly and significantly decreased after application of the helmet use law for moped driver. In 1978, there were more females in moped accidents and the mean age was higher among moped driver. In the injures that resulted from moped accidents, 21% are 60 years and older which represent 56% of fatalities in this group; the most common cause of accidents was collision with the car and over turning or turning off the road in motorcycle accidents, the deference of injury was unexpectedly small and there is more severe injuries in motorcyclists, there isn't difference between moped and motorcycle accidents which seems unjustified in regard to moped as helmet is less used. It is obvious that there is a need for driving license, formal registration and helmet use law for mopeds (Matzsch & Karlsson, 1986).

3.25 Ways to decrease number and effect of motorcycle accidents:

Perez et al, 2009, studied the relationship between licensing requirements for driving light motorcycles and road injures in Spain. They found that in the period before the law enforcement, the number of injured people in light motorcycle collisions has a non significant increase in trend.

In another study about motorcycle rider conspicuity and crash related injury, Wells et al, 2004 had shown that drivers who wear fluorescent or other reflective clothing have 37% lower injuries than other drivers, white helmets are associated with 24% lower risk than black helmets, self reported light colored helmets have 19% lower risk than dark colored helmets, and turning on head lights during the day is associated with 27% lower risk.

On another study about the effect of motorcycle license law on mortality rate that resulted from motorcycle accidents, the results show that the rate of mortality was markedly decreased in the states after the application of motorcycling requirement skill test for motorcycle permission (rate ratio RR 0.76, 95% confidence interval {0.69 – 0.84}), longer duration of learners permits is from 95 – 190 days (RR 0.86, 95% confidence interval {0.79 – 0.95}), and more than 190 days (RR 0.80, 95% confidence interval {0.74 – 0.86}), three or more learners permits restrictions (RR 0.78, 95% confidence interval 0.73 – 0.84), and full helmet law (RR 0.76, 95% confidence interval {0.71 – 0.81}) (Mcgwin et al., 2004).

3.26 Age group affected by motorcycle:

In a study published in 2006 by Solagberu et al *" Mortality Injures in a Developing Country and Vulnerability of Riders, Passengers, and Pedestrians"*, the results show that 99 males and 13 females presented with motorcycle injures, age ranged from 5 to 70 years , peak of incidence from 21 to 30 years, and the majority of motorcycle injuries were among students ; attending school and high school 30 (20.5%), traders 17.9%, artisans 17% and commercial cyclists 11.6%; the majority, 60 (53.6%) were riders, 36 (32.1%) passengers and 16 (14.3%) pedestrians.

In a report about the analysis of motorcycle accidents in Germany during a one-year period, the findings from the review of 86 motorcycle accident show the following: about 90.7% of patients were men with average age of 28.8 years and most of the accidents (27.9%) had occurred among the age group of 25 to 30 years old (Wick et al., 1998).

3.27 Effect of age on type, severity of injury and mortality:

In a study about motorcycle related injuries regarding the effect of age on the type and severity of injuries and mortality in Los Angeles County emergency hospital, California. The results illustrate that among 6,530 admissions, 493 patients (7.5%) aged as 18 years or younger, 5,627 victims or patients (86%) aged from 19 to 55 years, and 398(6, 5%) patients were older than 55 years. The severity of injury in three ascending age groups were 23.5%, 30.3% and 36.2%, and the p-value was less than 0.05, and critical injuries occurred in 6.5%, 12.3% and 13.8% with p-value of less than 0.05. Severe head injuries were more common in the age group older than 55 years (OR, CI 95% = 1.45{1.03 – 2.03} p=0.04) and there is an increase in the risk of sustaining severe chest injury in the stepwise fashion with increasing age (OR, CI 95%= 1.86{1.44 – 2.39}) in the age group from 19 to 55 years and 2.81(2.03 – 3.88) in older than 55 years group(OR, CI 95%= 2.30{1.08 – 4.93}, P=0.03) and three fold higher in older age than 55 years(OR, 95% CI= 3.28{1.36 – 7.93}, p=0.05) compared with 18 years old age group or more (Talving, 2010).

Another study about the effect of age and experience on the protection against motorcycle injuries. The results illustrated that there is a strong and consistent relationship between the increase of the driver's age and decreasing the risk of moderate to fatal injuries. The drivers who aged above 25 years have more than 50% lower risk than those aged from 15 to 19 years(odds ratio 0,46- 95% confidence interval 0,26 to 0,81). The results also show that the protective effect to riders with more than 5 years of experience is higher than that for riders with less than 5 years, and this protection was not sustainable when driver's age and other confounding factors or variables are included in the analysis. The only experience measure that was associated with the specific protective effect is familiarity with the specific motorcycle 0.79 (odds ration "more than or equal to 10,000km experience" 0.52–95% confidence interval 0.33 to 0.79) (Mullin et al., 2000).

3.28 On-road and off-road motorcycle injuries:

Grange, et al (2004) studied the street bikes versus dirt bikes, and a comparison had been done among injured motorcyclists presented to regional trauma centers, off road motorcycle subjects were 376, and on road motorcycle subject were 371, and the two groups used helmets. Multiple variables were considered to do the comparison between the two types of accidents. The results show that there is no significant

difference between on road and off road motorcycle accidents in terms of initial systolic blood pressure, loss of consciences, initial glasco coma scale, and initial revised trauma scale, hand, forearm, wrist, arm, foot, clavicle, femur, ankle, and pelvis, spinal and head injuries. On road motorcycle accidents are more significantly to require transfusion (P was less than 0.025); sustained chest, abdomen, or skin blunt trauma or death (P is less than 0.05).

3.29 Impacts of motorcycles emissions:

There are other harmful impacts of motorcycles such as the impacts of motorcycle emissions. Hare, et al in the year 1974 studied motorcycle emissions, their impacts and possible control techniques. In that study multiple motorcycles (7) that ranged in size from 100 to 1200 cm/u3 are tested for their emissions characterization purpose, 4 of the motorcycles machines had 4 stroke engines, and the other three motorcycles had 2 stroke engines, the gases and emissions that were measured include hydrocarbons, CO, CO_2, NO, NO_2, SO_2, light hydrocarbons, aldehydes. Particulate matter and smoke, and SO_2 were estimated on the basis of fuel consumption. Evaporative hydrocarbons losses from 4 stroke machine crankcase emissions were measured. The impact of motorcycles on national pollutant total was estimated by standing on the test result and information. In addition, the little or brief overview of the emission control technology which might be applicable to motorcycle is presented, the result indicates that CO emission from 2 stroke machines are immediate priority for meeting the tentative 1976, environment projection agency (EPA) motorcycle emission standard (Hare et al., 1974).

3.30 Effect of motorcycles on environment:

Kutiel, et al (2000) studied the impact of motorcycle traffic on soil and vegetation of stabilized coastal dunes in Israel. They were concerned on verifying the intense of off road motorcycle traffic, and to know their resilience and resistance to such disturbance. They used slandered experimental procedure which included 0, 20, 50, 100, and 200 off road motorcycle straight passes and 150 off road motorcycle turn passes. Species diversity and other variables in the study were measured on several dates within a period of 372 days after the experiment. The result illustrated that off road motorcycle passes had significant immediate impact on annual plant and increased with in traffic intensity. The explored effect on soil was only increased of

penetrable depth, and the wheel ruts and turn areas had the maximum impact. The impact on the area between wheel ruts and on the margins outside the wheel ruts was indirect and smaller. Concerning determining the impact of off road motorcycle traffic on area annual plant ground cover and mean plant height were less sensitive parameters than species richness and species diversity. The soil and annual plant vegetation in all passes were very similar to their pre-experimental condition after one year from experiment which indicates high resilience and recovery.

In another related study done by Yang, et al, about polycyclic aromatic hydrocarbons emissions from motorcycle, the result indicated that low molecular weight polycyclic aromatic hydrocarbons (PAHs) are emitted from exhaust, 86.4%, 46.3% are percentage as average soluble organic fraction for the 2- Stk/cb, 4-Stk/cb and 4-Stk/FI motorcycles vehicles. PAHs in cold start engine are more than in hot start engine, and the total PAH emission factors were 8320, 5990, 3390 microgram per kilometer for three types of motorcycle by order. The correlation coefficient between CO and total PAH emission for all types of motorcycles was 0.51, which means that the means of CO and PAHS are not highly correlated.

3.31 Protecting clothes and decreasing disability:

In a study by Schuller, et al, 1986, about the disability and impairment of protected and unprotected motorcycle riders, it was shown that the crash can affect the helmeted or un-helmeted riders and facing a high injury risk, and they are frequently associated with long term or permanent disability. The main subject of the paper was the effect of protective garment in reducing the duration of hospitalization. The results indicate that the injured motorcyclist wearing motorcycle clothing on the average the hospitalization days decreased by 7 days, disability to school and to work decreased by 20 days, and the incidence of consequence of the sustained injures and the permanent physical defect was reduced by 40% compared with riders not wearing motorcycle clothing. There will be 45 days with respect to disability to work and school, and 60% with respect to incidence of permanent physical defect if 30% of protected riders are included who were not injured due to the protective effect of motorcycle clothing. This is corresponding to a reduction of 15 days with respect to hospitalization.

3.32 Dangerous aspect in driving motorcycle without helmet:

A study done by Mcswain, et al in 1984, on the medical consequences of motorcycle helmet non use showed that a significant decrease in helmet usage causes a significant increase in head injury and deaths. In Kansas State there was a significant increase in accident rate and financial impact of the accidents of about 200% increase of medical cost and significant increase in days of disability regarding the affected cases, in addition to that, canceling of mandatory helmet legislation is highly costly in any measured parameters.

3.33 Helmet use and death:

In their study that tried to find the association between helmet use and death in motorcycle crashes (matched pair cohort study), the researchers estimated the effect among naturally matched pair on the same motorcycles, one can account for potential confounding by motorcycle characteristics, crash characteristic, and other factors that may influence the outcomes. Fatality analysis reporting system data was used in this study from year 1980 to the year 1998 for driver or passenger or both, and for motorcycles that crashed with two riders, died. In analysis of data, conditional Poisson regression was used to estimate the relative risk of death and the results showed that the relative risk of death accounting for matching on motorcycles and adjusted for age, sex and seat position for a helmeted rider compared with un helmeted riders was 0.61 (95% CI 0,54_ 0,70). The authors supposed that conditional Poisson regression is used for traffic crash data analysis (Norvell & Cummings**,** 2002).

3.34 Factors that affect motorcycle helmet wear:

The authors Skalkidou, et al in 1999 studied the factors that affect motorcycle helmet use in population of greater Athens, Greece. They stopped 982 two-wheel motorized vehicles, 349 of which have two riders which represent 36% and then they interviewed them. The results showed that the average prevalence regarding helmet use was 20.2% that ranged from 9, 7% on small suburban streets to 50.8% on highways. The prevalence of helmet use was significantly lowered in weekend either during day or night, women are wearing helmets more than men, drivers where more likely to be helmet user, riders and passengers of more powerful two wheel motorized vehicle who themselves had driving license are helmet users more frequently. About nonuser, the majority of them (46%) responded that they are uncomforted when

wearing helmets especially in warm weather and 18% said that there is little need of helmet during low speed riding.

3.35 The impact of motorcycle helmet use law:

In a study about the effect of the 1992 California motorcycle helmet use law on motorcycle crash fatalities and injures, the subjects of this study were the patients including a total of 850 fatal injuries, 547 fatally injured riders and 3252 non fatally injured. The results show that after implementation of helmet use law, there was a remarkable decrease in statewide motorcycle crash fatalities (37.5%) from 523 fatalities in 1991 to 327 cases in 1992, more than 37% and an estimated 29 to 122 fatalities were prevented. There is also a reduction in motorcycle fatally rate of 26.5% from 70.1 per 100,000, in 1992, head injuries markedly decreased among both fatally and non fatally injured motorcyclist (Kraous et al., 1994).

Another study about the impact of repealed motorcycle helmet law in Miami- Dade country showed that there were 52 cases evaluated in the centers compared with 94 cases after changing of the law. Helmet use decreased from 83% in the year 1999 to 56% in the year 2000, and the number of head injury increased from 18 to 35 cases during the same period, in addition to that the number of fatalities increased from 2 to 8 in the same period (Hotz et al., 2002).

3.36 Helmeted and un-helmeted adolescent and injuries:

Lin, et al (2001) studied and examined crash severity and injury patterns between helmeted and un-helmeted motorcycle riders. The results showed that the incidence rate of hospitalization injury, crash and death per 1,000 persons per year were 358, 104, 14, and 13cases. In comparison with helmeted riders, un-helmeted riders have fewer collision with moving case and more non collision, but there was no significant deference in repair cost of motorcycle damage between these groups. The most severe is when injuries are in skin, face and on the other hand, head injury is more severe in un-helmeted victims than helmeted, and more injuries in face and head did occur in un helmeted riders than helmeted.

3.37 Economic effects of motorcycle helmet use:

Eastridge, et al (2006) studied the benefits of motorcycle helmet use in decreasing cost. The results illustrated that the transport of un-helmeted patient to hospital was in about 78.6% of the cases and in helmeted it was 73.3% (p-value was less than 0.01). About hospital admission; un-helmeted 39.9%, helmeted 32.8%, un-helmeted motorcyclist incurred charges of 12,353$ per injury, while helmeted incurred charges of 36.334+ 1.232 per injury. Mathematical extrapolation derived a charge of 12.353 for un-helmeted injured case, 8.735 per helmeted case with difference of 3.618 between helmeted and un helmeted.

In another study about the benefits of motorcycle helmet in decreasing cost, Max, et al (1998) have study the economic impact of the California motorcycle law, the result showed that the cost of medical care for injured people from motorcycle accidents decreased by 35 million dollars in the year 1993 than that in the year 1991 by about 35%, 73% reduction of hospitalization cost due to reduced head injuries; cost of patients with head injury was about 18.527$ that compared with patient without head injury 10.350$.

3.38 Effect of different types of helmets in preventing head injuries:

In a case control study, about the effectiveness of different types of helmet in preventing head injuries among motorcycle riders in Taipei, Taiwan. The subjects in this study were 1,351 patients affected by motorcycle accidents. Those victims or patients were brought to 1 of 15 hospitals responsible for emergency care in Taipei between august 1 and October 15, 1990; 562 cases with head injuries and 789 without head injury were considered as emergency room control. The control group was divided to day group and evening group according to the accident for each day time case. They took four pictures for passing motorcycles at the same time and place during the week after each accident. They successfully took pictures for 224(88%) from 254 day time cases, and identified 1,094 motorcycle riders in picture as street control. The used the SPSS package logistic regression analyses to determine the role of multiple variables in predicting risk of head injury. The relative risk of head injury in motorcycle riders was significantly reduced by wearing full helmet face, but not by wearing a full or partial covering helmet (Tsai et al., 1995).

Offner, et al in May, 1992, studied the impacts of motorcycle helmet use on the prevention of head injuries. The results show that helmet use reduces the need and

duration of mechanical ventilation of injured cases in ICU, and also decreases the time of rehabilitation and perverts head injury. Also the cost is reduced, and regression analysis indicated acute cost was 40% less than with helmet use (Tsai et al., 1995).

3.39 Helmet use didn't increase injury:

Some studies suggested that helmet may cause injuries to the head or neck because they add pressure and mass on the head, but Sarkar, et al, 1995, reviewed and examined hospital records, coroner reports and police report for motorcyclists fatally injured in crashes from 1st of July 1988 to the 31st of October 1989. The main results of the study illustrated that skull vault; face, cervical spine injuries, intracranial hemorrhage and cerebral injury are more found in fatally injured un-helmeted motorcyclists than the helmeted motorcyclists.

3.40 Danger of motorcycle in spite of helmet use:

There are many injuries that may happen from motorcycle accidents in spite of wearing helmets. These bad impacts or injuries may happen in the chest or abdomen. Kraus, et al (2002) studied the frequency, severity, and pattern of intra-thoracic and intra-abdominal injuries in the cases that were in the emergency room, hospital, coroner from cohort motorcyclist injured during the period from 1991 to 1992in California. The data were obtained from 28 hospitals and 11 coroners in California and the results indicated that there were many cases with intra-thoracic and intra-abdominal injuries, and the number of rib fracture in both sides of the chest (right and left) are highly associated with chances of injuries to the thoracic and abdominal organs.

In another study about spinal injuries in motorcycle crashes and their patterns and outcomes. This study was done on 1,121 motorcyclists involved in motorcycle accidents during three years. Spinal injuries were reported in 126 (11.2%) riders classified as 112 males (88.9%) and 14 females (11.1%), age ranged from 16 to 61 years with mean age of 30.2 and a range of injury severity score from 4 to 66 with mean score of 18.8. Isolated spinal injuries had occurred in 30 (23.8%) riders; cervical spine injury occurred in 34 (27%) cases, thoracic spine injury in 69(54.8%) cases and lumbar spine injury occurred in 37(29.4%) cases. Multiple vertebral level were affected in 54 (42.9%), 25 riders (19.8%) with neurological injury, complete distal

neurological injury happened in 14 cases (4 cervical, 9 thoracic, 1 lumber), eleven patients (8.7%) needed spinal surgery. Finally, thirteen (10.3%) of the affected cases had died (Angus et al., 2002).

Chapter four: Methodology

4.1 Study design:

In this study two different designs were used; the first one is quantitative descriptive study design in which the data were collected retrospectively. This design is considered as useful method because it helps to explore and describe the statistical side about mortality and disability that resulted from motorcycle accidents in the past, and save money and time.

The second design is a qualitative historical design by tackling backward of accidents. It is helpful to describe and analyze the event that had happened in a remote or recent past to know the causes behind using motorcycles and the causes of accidents involving motorcycles.

4.2 Methods:

For the quantitative part of the study, records and files were checked and a special form (Annex 2) was used to collect and gather the data from the files that were presented in the general administration of traffic and in public prosecution.

On the other hand, a semi-structured interview was formulated and applied with the only recorded 7 participants to know the causes of motorcycle accident and the other dimensions of the problem.

4.3 Study area:

The study area included Gaza City which is the center city of the Strip.

4.4 Study population:

The study population in this research included all registered mortality and disability cases in Gaza City which resulted from motorcycles' accidents.

4.5 Sampling procedure:

In quantitative part:

The sample included searching and reviewing all records and registered cases that resulted from motorcycle accidents in Gaza City from Jan, 2008 to Jan, 2010.

In qualitative part:

The probability, purposive or criterion sampling was used to select respondent cases who were judged to be typical of population sample to conduct interview with and illustrate the cause of motorcycle use and the causes of mortality and disability. In the case of mortality, a close relative of the dead person was interviewed to know the causes of death.

4.5.1 Criteria for selecting participants for the interview:

The subject was an injured or dead from motorcycle accident as driver, passenger or pedestrian from the period of January 2008 until January 2010. In the case of a dead subject, a close relative such as father, mother, sister or friend was interviewed.

N.B: the only reached participants were 7 cases after calling all cases (88 cases) and after calling all cases registered as injured from (RTA) or(FD) in rehabilitation centers in Gaza City.

4.6 Study duration:

Due to the shortage and difficulty to find the data, the study duration was about 10 months.

4.7 Data collection:

In quantitative part:

The data collection method in this part of the study had been tackled by records check, reviewing and searching for the statistical analysis about mortality and disability cases that had resulted from motorcycles in the general administration of traffic and in public prosecution, Gaza City from January, 2008 to January, 2010. The statistics outcomes were searched to find out that 88 cases and files were found and reviewed. The data were written in special form (Annex 2) then analyzed by SPSS.

NB: Ministry of health didn't register any case as resulted from motorcycle accidents.

In qualitative part:

Semi-structured interviews had been conducted with 7 cases to know the cause of motorcycle use and accidents. The 7 cases were 2 subjects with moderate disability, 2 with severe disability and 3 close relatives of the death cases.

NB: the classification of cases as moderate and severe disability is mentioned in the medical reports.

4.7.1 The main questions that are asked in semi structured interview:

- What are the major causes of purchasing motorcycles?
- Do you like riding motorcycle or not?
- What is the family concern about motorcycles?
- How the accident had happened?
- Do you think high speed lead to accidents?

4.8 Sample size:

The sample size of this study was impossible to calculate due to many reasons; not all motorcycle accidents were registered in the general administration of traffic or in public prosecution. In addition, The Palestinian Ministry of Health didn't completely register any case of motorcycle accident although they were registered as a case of road traffic accident (RTA) or falling down (FD), therefore it's impossible to know the complete sample size.

4.9 Validity and reliability:

In quantitative part the data were collected from many resources and the abstract sheet was used to register the data (annex 2). Here, in qualitative part, the validity were met by standardization of tools that used to collect data, were participants asked with same questions and data were registered and added as annexes.

4.10 Data entry and analysis:

4.10.1 Quantitative part:

The data from 88 reached files in quantitative part were entered and analyzed using statistical package for social science (SPSS) program version 13.

Data analysis was carried out as follows:

- Reviewing the data collected about variables in the study.
- Coding the variables.
- Choosing data entry model.
- Frequency table for all study variables.

4.10.2 Qualitative part:

Data that obtained from interviewees were analyzed as follows:

- Open coding: was used by forming initial categories of the phenomena which is being studied by segmenting information.
- Axial coding: gathering the data from open coding was assembled in new way.
- Coding diagram: the data from axial diagram was presented by using coding diagram.

4.11 Response rate:

During data collection in the quantitative part the interviews rate of the visited facility were 100% and they showed a great cooperation to gain the required information also in qualitative part the collaborators rate were also 100% and none of participant refused to be interviewed.

4.12 Ethical consideration:

The permission for data collection was obtained from the university and the all other visited places in addition to Helsinki committee approval to conduct this study. Considerably, confidentiality and privacy of the participants were respected during the study period and all interviewees received the explanations and clarifications of the purpose of the study.

4.13 Limitations of the study:

The study limitation for data collection concerning motorcycle accidents entailed the following points:

- Lack of registered data regarding motorcycle accident in the general administration of traffic, ministry of transportation and public prosecution.
- The complete absence of any registered case informing injures from motorcycle accident in the ministry of health in secondary health care center-Alshefa Hospital by being recorded as a case of falling down or road traffic accidents.
- The fragile information system in the ministry of health.

Chapter five: Result and discussion

5.1 Motorcycle accidents' variables:

To investigate the demographic and other variables that affect motorcycle accidents, 88 files were checked in detail to obtain full information about motorcycle accidents that had happened during the period from 2008 until January 2010. These files were only found in the general administration of traffic – Gaza and the public prosecution-Gaza, where all data from these files were obtained, registered in a form which had been designed for this purpose in order to be analyzed after all.

5.1.1 Motorcycle drivers:

The number of motorcyclist accidents which had happened in Gaza City was males. This is to reflect that that 100% of motorcycle drivers in Gaza City are males. Also the following table shows the number of persons who were riding the vehicle when the accident took place.

Table 5.1: Number of Motorcycle Riders at the Time of Accident

Riders	Number	Percent
The driver alone	72	81.8%
The driver + one passenger	16	12.2%

As seen from the above table, (81.8%) percentage of the majority of the rides was driving the motorcycle alone while (12.2%) represented one accompanied passenger with the diver. Obviously, the majority of accidents had happened with the drivers who are driving motorcycles without passengers, and this is supported by Solagberu et al (2006) who also found that the majority of injured cases were among the riders. In this study, of the 88 cases there isn't any file that contain motorcycle driver with two passengers.

5.1.2 Age of motorcycles drivers:

Table 5.2: Age of Motorcycles Drivers:

Age group	Number	Percent
15 years and less	3	3.4%
16 to 25	55	62.5%
26 to 40	25	28.4%
41 to 50	2	2.3%
51 and more	3	3.4%

Table 5.2 reflects that the age-group of motorcycle drivers were involved in motorcycle accidents. In other words, most of the drivers' age was from 16 to 25 years old which means (62.5%). This result is supported by Mullin, et al (2000) who explained that there is a strong and consistent relationship between the increase of the driver's age and decreasing the risk of moderate to fatal injury. The driver whose age is above 25 years has more than 50% lower risk than that whose age is from 15 to 19 years (odds ratio 0,46- 95% confidence interval 0,26 to 0,81).

In this study, drivers who are 26 to 40 years old represent 28.4% of the motorcycles drivers' population involved in the accidents, 3 of those who are less than 15 years old and another three of the 51 and above. That's to say, the mean age of drivers who had caused motorcycle accidents was 24.5 years.

5.1.3 Data and time of the accidents:

Table 5.3: The Registered Files Were Dated in 2008, 2009 and January 2010

Date	2008	2009	Jan 2010
Number of accidents	29 (33%)	55 (62.5%)	4 (4.5%)

As seen in table 5.2, 62.5% of the registered accidents had happened in 2009, after the wide spread of this problem in Gaza streets, 33% of the registered accidents happened in 2008 and the rest (4) was in January of 2010. It can be inferred from the previous table that motorcycle accidents in 2009 was higher than in 2008.

Table 5.4: Distribution of the Accidents According to the Time of the Day they Occurred

Time	Number of accidents	Percentage
6:00 AM to 12:00 PM	20	22.8%
12:01 PM to 6:00 PM	35	39.8%
6:01 PM to 12:00 AM	32	36.3%
12:01 AM to 5:59 AM	1	1.1%
Total	88	100%

The table shows the number of motorcycle accidents by time of the day. It is clear that the majority of accidents had happened between 12 pm until 6 pm (39.8%) and 6 pm to 12 am (36.3%). This result is similar to motorcycle accidents in Saudi Arabia as being tackled by Roman, (2009) where most of the accidents occur from 12 pm to 6pm (41.6%). In other words, this time is considered as the time of crowded and traffic congestion especially in Gaza City which is the main City in the Strip. Also the table shows that 22.8% of the accidents occurred in the morning, and 1.1% in the early morning time.

5.1.4 Place of accidents:

Table 5.5: Classification of Place of Motorcycles Accidents

Place of accident	Number	Percentage
Crossroads	33	37.5%
Highways	18	20.5%
Other roads	37	42%

The above table clarifies that the percentage and the number of accidents had happened in the three scattered places which are figured in: highway roads (Salah Alden and Albahar), cross roads and other roads (in the City streets, municipal streets). On the other hand, the majority of accidents happened in other ways (42%) and in crossroads (37.5%) and the remaining accidents had happened in the highways.

That's to say, the drivers must take care and increase their attention while crossing the crossroads and the city road to decrease the probability of accidents.

N.B: There isn't clear classification of roads in Gaza Strip by the ministry of transport.

5.1.5 Scenario of accidents:

About the scenarios or type of accident: they are classified as collision with other vehicles, crushing pedestrian and others (collision with carts or with other nonmoving objects or falling down alone). The results had been displayed in the following table:

Table 5.6: Scenario or Type of Accident.

Scenario of the accident	Number	Percentage
Collision with other vehicles	46	52.3%
Crushing pedestrian	39	44.3%
Others	3	3.4%
Total	**88**	**100%**

This table indicates that 52.3% of the accidents occurred due to collisions with other vehicles; this is supported by Matzsch and Karlsson (1986) who mentioned that most common cause of accidents is the collision with other cars and over turning.

Moreover, the table represents about 44.3% of the accidents in Gaza City were due to crushing pedestrians and the remaining accidents were due to collisions or crushing with carts or falling alone or crushing with other things. Astonishingly, It becomes clear that the majority of accidents were due to collisions with other vehicles.

5.1.6 Result of accidents:

These accidents resulted with injuries for motorcycle drivers, passengers, pedestrians or all. The results were represented in the following figure:

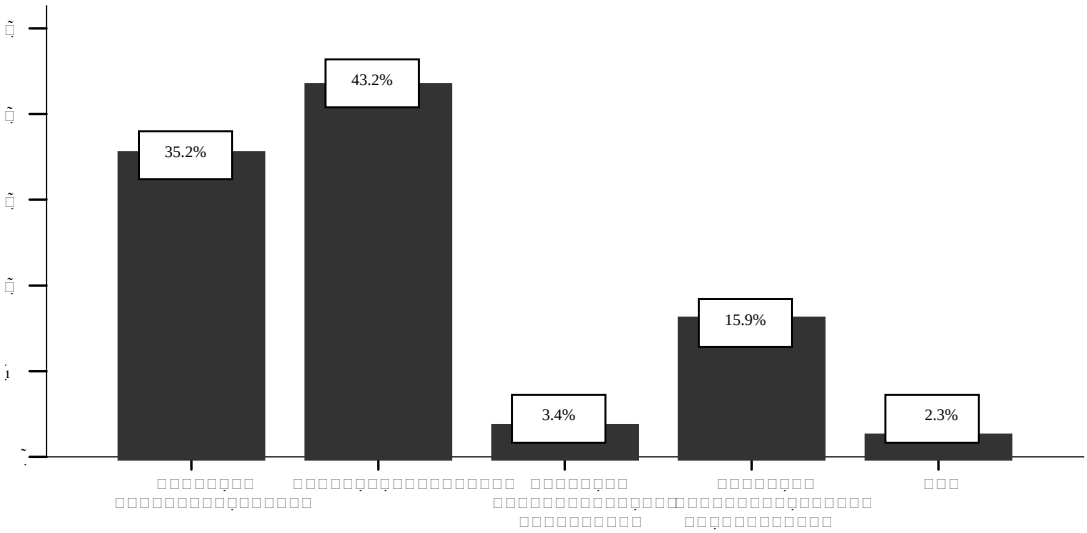


Figure 5.1: Results of Motorcycles Accidents.

Here, the above figure shows that about 43.2% of accidents resulted by pedestrians crush which approved by Cameron, et al (2004) who found that most of the cases affected by motorcycle accidents were pedestrians which represent 59% from the injury cases, the other percentage in the figure is 35.2% of injuries of motorcycle driver, while 15.9% injuries of motorcycle drivers and passengers, 3.4% injuries were of both motorcycle drivers and pedestrians, finally the 2.3% of accidents were resembled by material damage which signaled by (non) in the above figure. It is obvious that most of accidents have resulted by crushing pedestrians in the streets. Therefore, it spirits a believe that pedestrians are the victims of these bad vehicles.

5.1.7 Type of injury:

Motorcycle accidents usually result with injuries to humans. In this study these accidents are classified as follows:

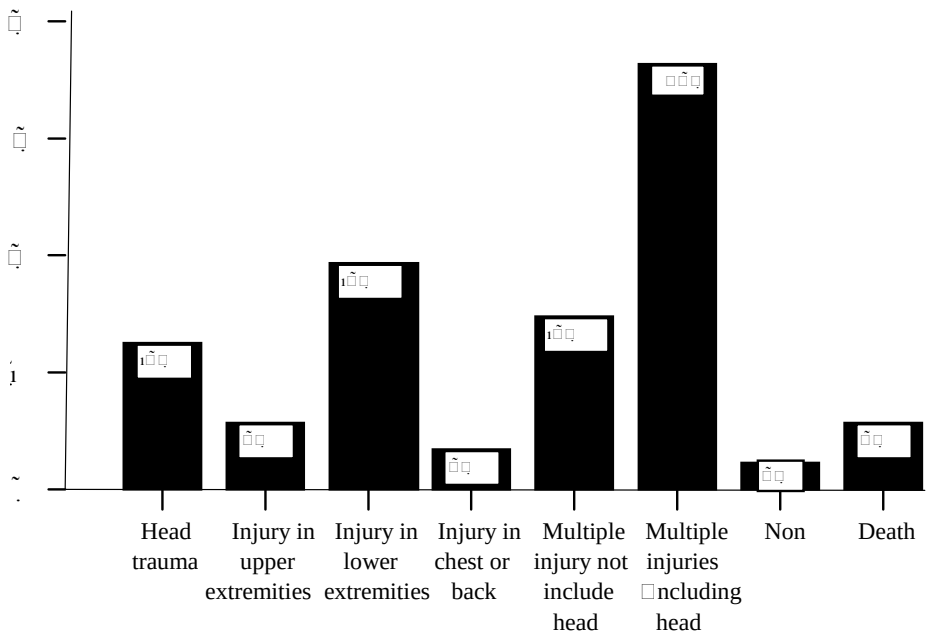


Figure 5.2: Place of Injured Body Part

Figure 4.7 represents that injured body parts are the results of motorcycle accidents. It had shown that the majority of accidents caused multiple injuries in different parts of the body distributed as: the head with 36.4%, head trauma alone of 12.5% in total accidents, 19.3% in lower extremities which are the most common injuries as mentioned by Kress, et al (1990), 5.7% injuries in upper extremities, 3.4% in chest or back, 14.8% multiple injuries not including head, 5.7% death cases, in addition to 2.3% damages in human material.

5.1.8 Helmet use:

The ministry of transportation (2010) reported that there are helmet regulations applied but it is not frequently used by motorcyclists and no one can deny that. In

addition to that, the total registered motorcycle accident (100%) neither the drivers nor the passengers were wearing their helmets and this had lead to high risk exposure to head injury. This is supported by most of the previous studies mentioned in the literature review.

5.1.9 License and insurance:

According to the association of driving training schools - Gaza (2010), there are 52 driving schools train drivers to obtain driving licenses for different types of vehicles. Twenty one of these schools offer training for motorcycle driving licenses, 8 of them are located in Gaza City. The registered motorcycle accidents are classified according to the acquisition of license and insurance as follows:

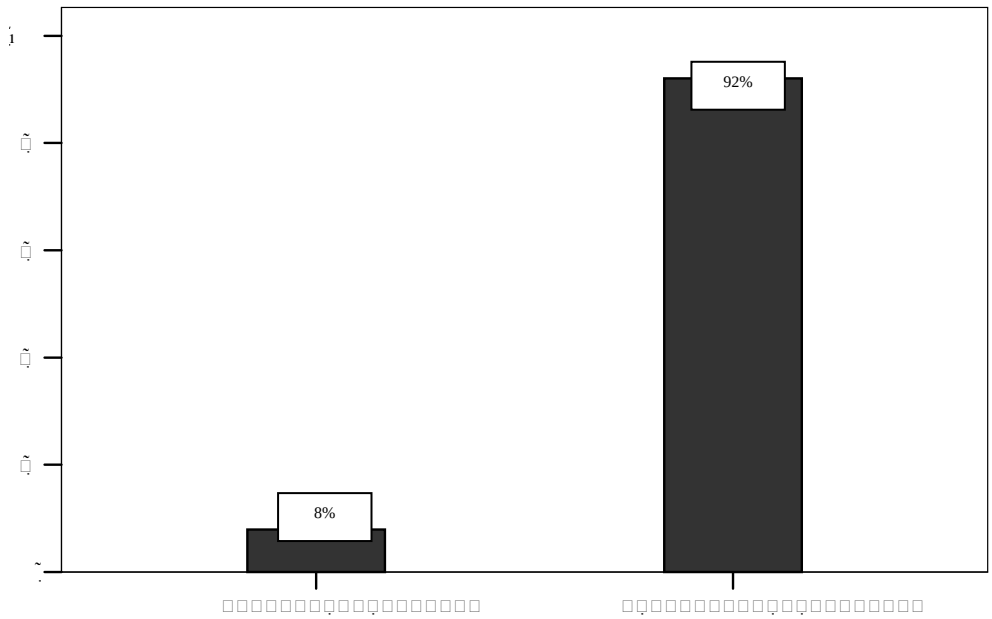


Figure 5.3: Percentage of Licensed and Insured Motorcycles

The above figure displays the percentage of those who are licensed but not get insurance and those who are not licensed and not having motorcycle drivers insurance. Almost 100% of motorcycle vehicles are not recorded by having insurance; just 8% of drivers have license to drive and that 92% were driving their motorcycle vehicles without either license or insurance which is an illegal practice according to

the Palestinian traffic rules and regulations (2010). This illegal action contributes to increase the rate of accidents and mortality as mentioned by Mcgwin, et al (2004)**.**

5.2 Statistics:

The statistical analysis about motorcycle accidents were collected from the general administration of traffic- Gaza, ministry of transport. Furthermore, there are no sufficient statistical records about these accidents in addition to the fact that 50% of the accidents are not registered because the incidents are usually settled by amicable solutions between families and ministry of health which has no data regarding motorcycle accidents.

Accordingly, after the end of investigations accidents causes, the public of prosecution- Gaza highlighted the factors of speed, lack of attention and precautions were responsible for all motorcycle accidents in Gaza City, this is supported by WHO (2009) report which found that surpassing the speed limits may increase the risk for severe accidents among motorcyclists.

N.B: The reached and available statistics in the year 2008 for all Gaza Strip, in the year 2010 for first six months without separation of each month alone in Gaza City, so the researcher depend on these available statistics.

5.2.1 General statistics:

The following table shows the number of registered motorcycles in Gaza Strip by year, from the year 2001 until the year 2010 according to the ministry of transport records.

Table5.7: Distribution of Motorcycles Vehicles in Gaza Strip from 2001 to 2010

Year	Motorcycle vehicles
2001	18
2002	0
2003	1
2004	0
2005	25
2006	0
2007	1
2008	1770
2009	7600
Until June 2010	3260
Total	**12,675**

Source: Ministry of transport, (2010)

The table shows the increased number of motorcycle vehicles was after 2008 especially after the break down of the border line between Gaza Strip and Egypt and due to the number of trade tunnels along that line. Consequently, this raise may increase the risk of accidents from motorcycle vehicles or being aggravated by time. Moreover, the table presents that there is little number of motorcycle vehicles before 2008 meanwhile the existed numbers are not regarded as accumulative number but they are the number of newly registered vehicles every year.

5.2.2 Motorcycle accidents through 2008:

Table 5.8: Motorcycle Accidents in Gaza Strip in the Year 2008

Number of accidents	Slight injuries	Severe injuries and disabilities	Deaths
610	495	95	20

Source: The General Administration of Traffic (2010)

The founded statistics in table 5.8 is referring to the number of motorcycle accidents in 2008 for all Gaza Strip Cites and governorates. Here, the inaccurate registration system and lack of interest to this problem in Gaza Strip as a general and in Gaza City as a main City in Gaza Strip were the main reason behind that specification number for each area.

In this year there were 610 motorcycle accidents in which the proximate numbers of accidents that occurred in the Strip as mentioned by the Palestinian center for human rights (2009).

After researcher calculations; These accidents represented 55.3% of the total road traffic accidents (1102) in the year 2008, (general administration of traffic, 2010); these accidents resulted in 495 slightly injured cases, 95 cases severely injured, 20 death cases which is closed to the number of dead cases in west bank from road accident in the year 2002 (Palestinian Central Bureau of Statistics, 2006).

As a result, it's 1.4 rate Regarding the death causes specific rate of motorcycles in Gaza strip in that year referring to the previous statistics and according to Gaza Strip population (Palestinian Central Bureau of Statistics, 2007), while the 3.2% rate is the case fatality rate of motorcycle deaths.

Motorcycle accidents, their impact on human health are presented as percentages of total road traffic accidents in the following table (5.9):

Table5.9: Motorcycles Accidents Health Impacts in Gaza Strip, 2008

Percent of accidents	Slightly and moderately injured cases	Severely injured cases and disability	Deaths
55.3%	81.1%	Unknown	28.2%

The previous table illustrates that slight and moderate injuries represent 81.1% from total road traffic accidents in Gaza Strip (610), and deaths represent 28.2% from total dead cases from road accidents (71) in the same year (general administration of traffic, 2010).

For every 30.5 injured cases from motorcycle there is one death case. That is close to the statistics on motorcycle accidents in Syria which is, according to the World Health Organization, 25 injured cases for every single death case. (Roman, 2009).

5.2.3: Motorcycle accidents in the year 2009:

Motorcycle accident in this year can be presented as the following:

Table 5.10 Results of Motorcycle Accidents in the Year 2009 in Gaza City:

City	Number of accidents	Slight injuries	Moderate injuries	Severe injuries	Deaths	Material damages
Gaza	59	10	19	19	4	7

General administration of traffic (2010)

the above table it is shown that motorcycle accidents in Gaza City in 2009. Here, the number of accidents is 59 from the total accidents (236) that had happened in Gaza Strip (general administration of traffic, 2010).

These 59 accidents were classified as 10 cases with slight injuries, 19 with moderate injuries, 19 with severe injuries, 4 deaths which close to the number of deaths in North governorate (general administration of traffic, 2010) and 7 accidents with material damages only. The death cases represent about 6.7% of the motorcycle accidents in Gaza City and severely injured cases represent 32.2% of the total motorcycle accidents in Gaza City in year 2009, these death cases also represent 14.2% from total motorcycle deaths in Gaza Strip in the same year and severely injured cases also represent 46.3% from total motorcycle severely injured cases in2009.

Concerning the proportion of deaths and severely injured cases to total population in Gaza City; there is 3.8 severely injured case for100.000 person, and 0.8 death case for every 100.000 person in Gaza City, regarding case fatality rate it's about 6.7%.

5.2.4: Motorcycle accidents for year 2010:

Table 5.11: Motor vehicle Accident in Gaza City from January to June 2010:

City	Number of accidents		Type of injuries						Death		Material damage	
	Cases	Amicable	Slight		Moderate		Severe		Motorcycle	Vehicle	Motorcycle	Vehicle
			M	V	M	V	M	V				
Gaza	288	1492	38	53	51	56	17	15	3	9	20	27

V = vehicle, m = motorcycle

First of all, the output statistics is for the first six months in Gaza City without separation of each month alone.

The above table shows the number of accidents that resulted from motorcycles and from other vehicles in Gaza City, and the results of these accidents during the period of six months (January 1st to June 30th) in the year 2010.

It's shown that there is 38 cases resulted from motorcycles with slight injures, 51 cases with moderate injuries, 17 cases with severe injuries and three dead cases (General Administration of Traffic, 2010).

Slight injuries from motorcycles represent 41.7% from all injured cases of all vehicles, moderate injuries represent 47%, severe injuries represent 53% and dead cases represent 25% from total dead cases of motor vehicle in Gaza City.

It is concluded that motorcycle accidents are highly associated with severe injuries according to the previous table, regarding the proportion of severely injured cases and death cases from total population in Gaza City which is 497.000 person (Palestinian Central Bureau of Statistics, 2007) it can be summarized that for every 100.000 person there is 0.6 death case and for every 100.000 person there is 3.4 severely injured case in Gaza City, case fatality rate is about 2%.

NB: It’s seen in the previous table that not all injured or death cases or material damage from either motorcycles or vehicles were registered because total number of accident is (1780) which is higher than total number of injured, death cases and material damage (289).

5.2.5: Results from Motorcycle accidents over years:

Table 5.12: Number of affected cases from Motorcycle Accidents by Years in Gaza City

Year	Slight injuries	Moderate injuries	Severe injuries	Dead cases
2008ⁿ	495	N.A	95	20
2009	10	19	19	4
2010□	38	51	17	3
Total	**543**	**70**	**131**	**27**

ⁿ = Cases from all Gaza governorates.
□= Cases from January to June.
N.A= Not available.

This table illustrates the number of affected cases from motorcycle accidents in Gaza City (from 2008 to 2010). The year 2008 and 2010 represented the highest number of accidents because year 2008 it involves all the accidents in Gaza Strip (ⁿ), and 2010 is viewed as statistics for first 6 month (□).

According to the ministry of transportation (2010) motorcycle accidents cause 60% of the disabilities as a result of these accidents. This is supported by a study in Tehran which indicated that injuries from motorcycle were the most common causes of disability in younger age groups (Zargar et al., 2006).

The proportion of number of deaths and severely injured cases to the total Gaza City population (Palestinian Central Bureau of Statistics, 2007) are as the following; for every 17.740 person there is one death case from motorcycle vehicle and for every 3793 person there is one severely injured case, case fatality rate for those years is about 3%.

5.2.6 Road traffic accidents before and after spreading of motorcycles:

The following tables and figures illustrate situation regarding road traffic accidents before and after the spreading of motorcycles.

Table 5.13: Case Fatality Rate From Road Traffic Accident in Gaza Strip Before and After Spreading of Motorcycles:

Years	2006	2007	2008	2009	2010
Deaths	74	46	71	85	51
Total injured cases	1602	780	678	642	974
Case fatality rate	4%	5%	10%	13%	5%

The above table shows the comparison between the rate of fatality cases from road accidents in Gaza Strip before and after spread of motorcycle vehicles through the period of 2006 and mid 2010 without separation of each City alone. Remarkably, It is obvious that rate was increased in the year 2008 and year 2009 after widely spreading of motorcycles in Gaza Strip, and return to decline in the first six months in 2010, this is associated with the motorcycle accidents and deaths. This raise can be shown in the following figure:

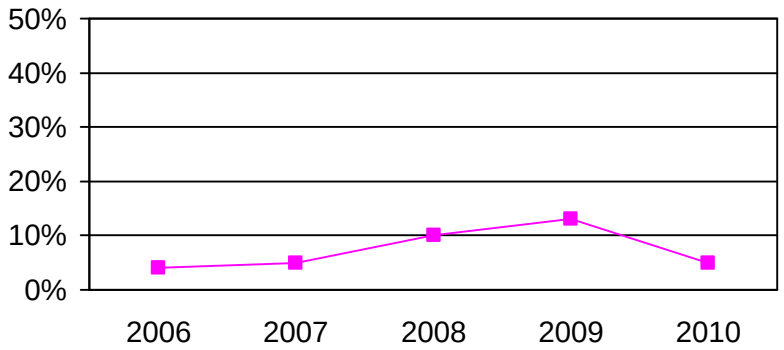


Figure 5.4: Case Fatality Rate from Road Traffic Accidents In GazaStrip

It is very clear that rate are increasing after the wide spreading of motorcycle in Gaza Strip especially in 2008 and 2009 were motorcycle remarkably increased with little attention to this problem then it is returned to be declined in 2010.

Table 5.14 Percentage of Deaths From Road Traffic Accident Out of Total Deaths in Gaza Strip

Years	2006	2007	2008	2009
Deaths	74	46	71	85
Total dead cases	4883	4940	5137	5697
Percent of deaths from total	1.51%	0.93%	1.38%	1.49%

To calculate the percentage of dead cases from road accidents out of total deaths, Table 5.14 elaborates that in 2006 about 1.5% were the rate of the total death of that year, then it returns to be declined in 2007 to 0.93%. On the other hand, after spreading of motorcycles in Gaza Strip the percentage has been returned to increase to reach 1.38% in 2008 and 1.49% in 2009 (Ministry of Health- Annual report, 2009).

It can be inferred that from 2006 till 2007 the percentage of road traffic accidents deaths were decreased by 0.58%, and from 2007 till 2008 after spreading of motorcycle vehicle its increase by 0.45% and its sill increasing from year 2008 to the year 2009 by 0.11%.

N.B: regarding disabled cases there isn't sufficient and accurate statistics.

5.3: Qualitative data results:

After semi-structured interview with 7 participants, the data and information was analyzed and coded as follows:

5.3.1: Open coding and axial coding:

Data from previous interviews were coded to illustrate the causes of accidents, disabilities and deaths. Also other important information was coded as the following:

Table 5.15: Open Coding and Axial Coding

Open coding	Axial coding
• Tried to cross the road then surprised. • Without any intention of what can happen from motorcycle. • Without light. • Surprised by a car crossing the road. • Surprised by a cart in the road.	Poor attention
• Another motorcycle coming very fast and crushed me. • Driving their motorcycles very fast and no one can deny that. • Speeding car came and crushed us. • Very high speed because it's so funny. • Driving his car in high speed and in opposite direction. • Driven their motorcycle at very high speed. • Driven his motorcycle in high speed.	Speeding
• Hemiparesis. • Until Amal wake up. • The accident is horrible. • Witness there said he is died. • Forty days in intensive care unit. • Two days in the intensive care unit. • Massive bleeding and dissipation. • Amputation. • It causes disability and death. • Completely not able to work. • It’s very hard to remember. • I didn’t know what happened. • Severe injury is in my head. • My health status was so bad.	Severity
• Would have not happened what happened. • I faced a bad luck. • It’s very bad because it's completely destroyed country. • Its scourge came to our country	Bad feeling

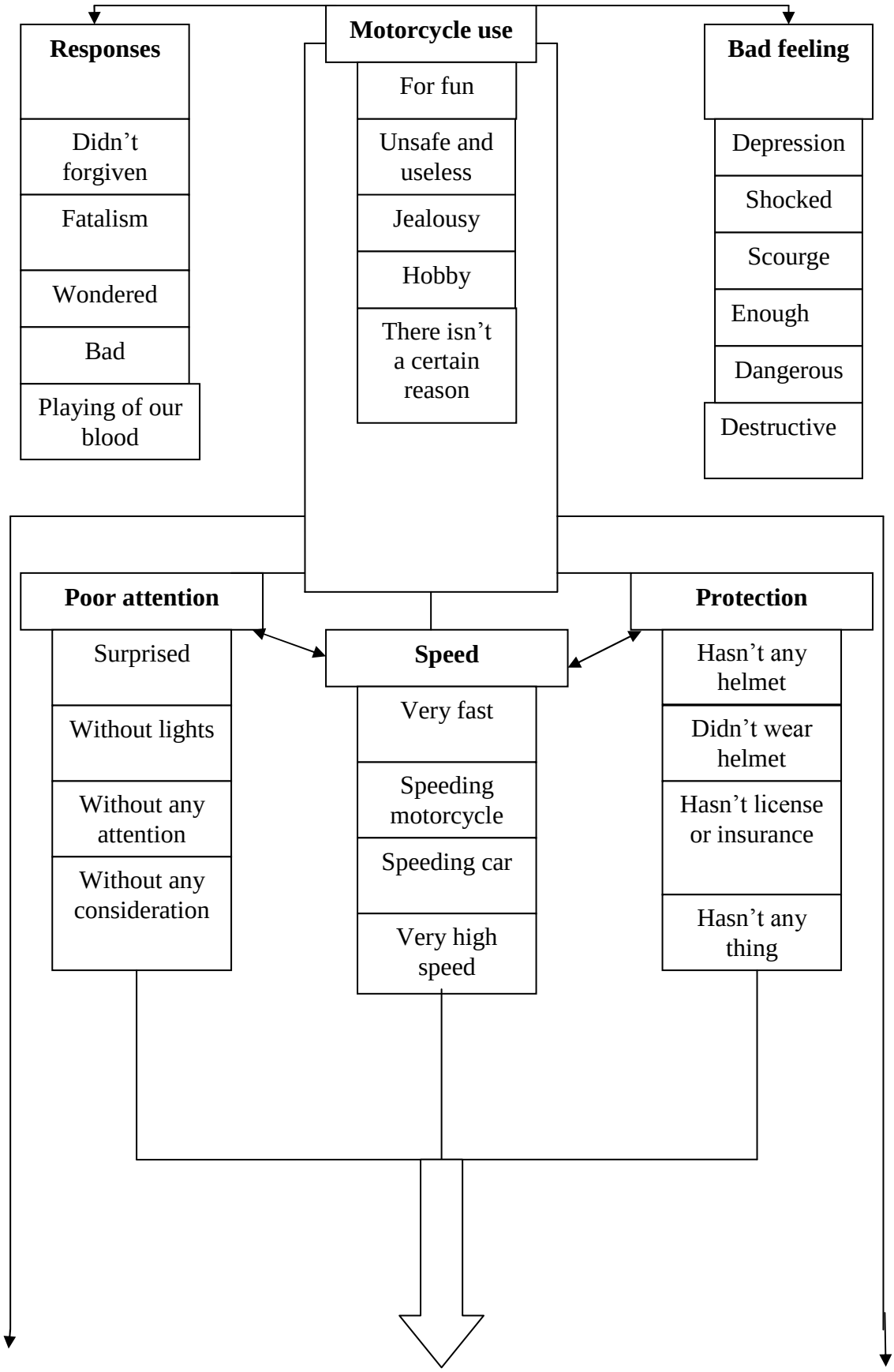
beside Jewish. • Suffice it, and yes. • It's very dangerous. • I feel frustrated and depressed. • Shocked.	
• Injury was in the left side of the head. • The right side was affected by hemiparesis. • There is a fracture in the left leg with internal fixation. • Right leg and head. • Ataxia in the right leg. • Injury was in head. • Injured mainly in his head. • Injury was in head. • Left leg. • Injured in head and in my left leg. • Concentrated in head.	Injuries
• Didn’t know the right way. • I didn’t forgive. • Escaped and turned himself to police station. • Its fatalism. • I wondered. • Love driving motorcycle. • Very remorse about all of these. • Briefly, it's so bad. • Wholesales that are playing of our blood. • Extremely bad.	Responses
• Taken physiotherapy sessions in Al-wafa hospital. • Year after that receiving physiotherapy. • Spend the rest of her live complaining of disability. • I was received physiotherapy. • Rehabilitation. • Its warped as a result of accident. • Referred to al wafa hospital. • Physiotherapists came on my house. • Impaired during walking.	Disability

• It's cause and lead to death. • The cause of his death is head injury. • Then dead. • He was dead. • Seen its lead to death. • He died quickly. • Its lead to death.	Death
• Driver of motorcycle must be above 18 years old. • Must have insurance and license. • Prevent every one less that 20 years old to driving motorcycle. • License and insurance law must by apply to decrease number of accidents. • Punishment. • Motorcycle driver to be over 18 year. • Use his mind and manners when he drives motorcycle. • Aged over 30 years and have insurance and driving license. • To quickly get license for driving motorcycle. • Avoid motorcycle. • Eliminated from Gaza. • Apply all deterrent laws. • Eliminating all motorcycle. • Who have motorcycle to get rid of it. • And must remove from streets in spite of being insured or licensed. • Insure and license his vehicle and wear helmet. • Completely destroy these motorcycles. • Completely get rid of motorcycles and to pull it from all citizens by force.	Solutions
• They are riding it just for funny. • Transport mean. • It's completely unsafe and it's useless. • Who ride motorcycle is ride it just for fun. • Its useless. • Bought motorcycle just for fun like other. • There isn’t a certain reason for	Motorcycle use

bought. • I feel of jealousy, after that I decide to buy a motorcycle. • There isn't any one in Gaza drive motorcycle for a reason. • Driving it just for fun. • I love driving motorcycle so much like other people just for fun. • Driven it as a hobby and fun. • I felt of jealousy that I haven't motorcycle then I bought it. • There isn't a certain reason for buying motorcycle.	Motorcycle use
• If he driven his vehicle slowly would have not happened what happened. • If wear it, would have not happened what happened. • Very high speed and fall down or collision with car; certainly it will kill him.	Cause of injuries
• Didn't wear helmet or protective clothes. • I didn't wear helmet or any thing. • Hasn't any helmet for motorcycle. • If he wears it his injury shall less in severity. • No he haven't license or insurance of any thing.	Protection

5.3.2: Coding diagram:

Data from axial coding are presented as the following:



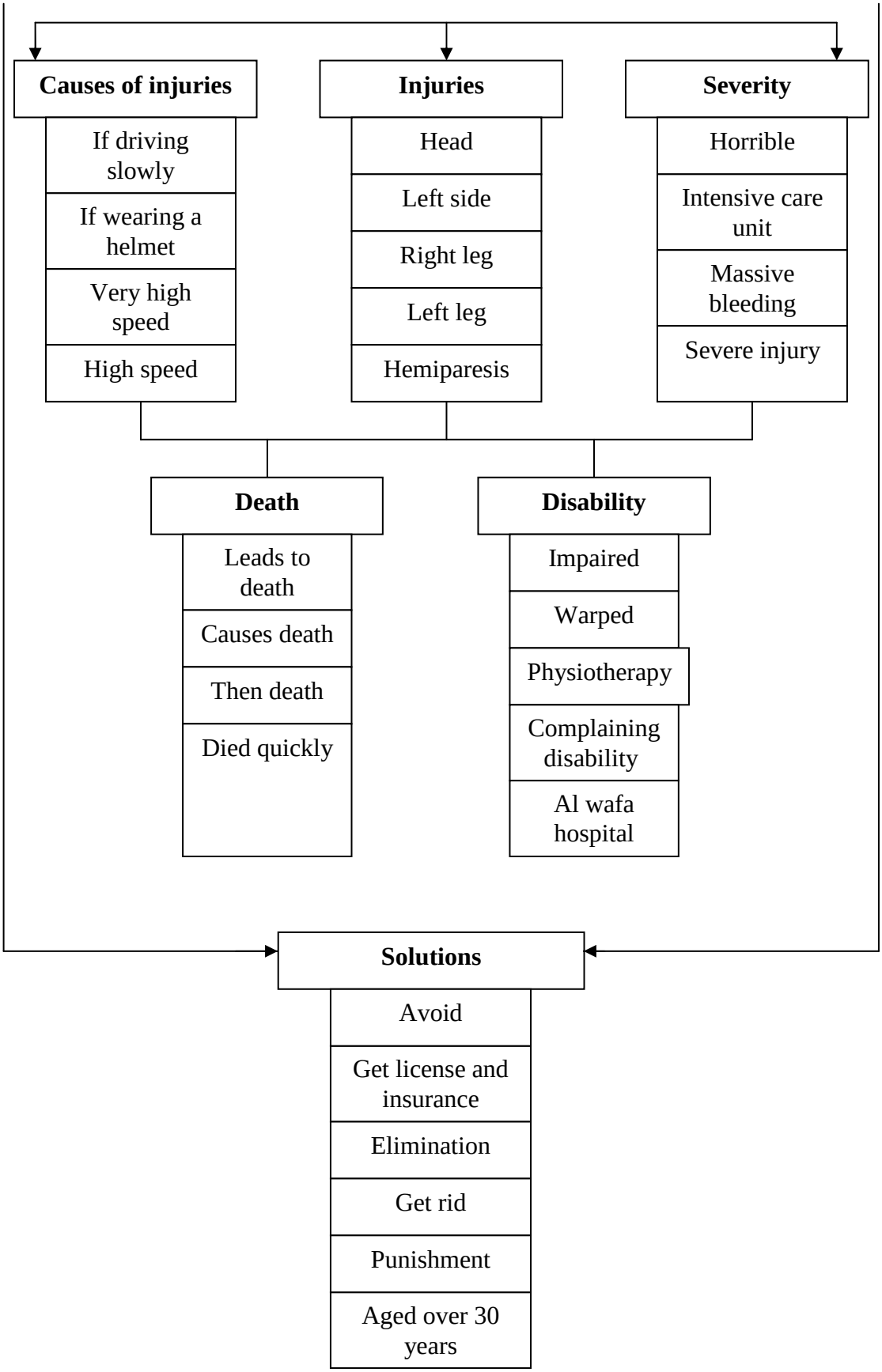


Figure5.5: Coding Diagram

5.3.3: Qualitative data result summary:

Qualitative data were collected by semi-structured interviews with seven participants who were hardly found and reached because there were no any registry records about motorcycle accidents in the health information system either at Alshefa or Al wafa Hospitals. All were registered as injured cases from road traffic accidents. All of found cases (88 files) called by phone; case by case to know the results of accident; if it is disability or not. Rehabilitation centers were also visited to find any disability cases due to motorcycle accidents, but unfortunately all of the visited rehabilitation centers such as Physiotherapy Unit at the Ministry of Health, general union of disabled Palestinian, national society for rehabilitation of disabled, association of physical disabled and Al wafa hospital, didn't register any disabled cases as a result of motorcycle accident; all are registered as a cases of road traffic accidents (RTA). Records were taken from these centers, and all patients that were registered as a case of road traffic accidents were called case by case to know the cause of disability.

About dead cases; from 88 cases that were registered, 5 dead cases were identified as due to motorcycle accidents. Only three of the five cases were reached and semi-structured interviews were done with their close relatives.

The proposal was designed to do semi-structured interviews with 10 cases; 7 disabled cases that classified as 3 cases with mild disability and 4 cases with severe disability, and the remaining three participants were dead cases and interviewing there close relative.

It was possible to reach only seven cases that were classified as the following: three dead cases, 2 cases with moderate disability, according to their medical records , and 2 cases with severe disability.

During interviewing the disabled cases, very sad facial expressions dominated the interviewees all the time. These sad expressions resulted from their suffering due to the motorcycle accident, and bad responses were felt from their words. Regarding the cause of motorcycle use, approximately all of them confirmed that the main cause of motorcycle use was just for fun and it was bought as a result of jealousy feeling from other friends. The interviewees also mentioned that protective measures like helmet, protective clothes, license and insurance are needed to protect all motorcycle drivers from accidents. Of course, all of them didn't wear helmets and haven't either license or insurance. This had lead to the severity of the injuries that are illustrated in the

coding diagram. During interviewing the driver participants, they mentioned that they like driving motorcycles at a very high speed. When they explained the scenarios of the accident, it is obvious that lack of attention and high speed are the causes of accidents, and the causes of disability are mainly head injuries.

About the interviews that were done with close family members of dead cases, they are also feeling severe grieve due to the loss of their sons from this bad vehicle. High speed and poor attention when driving motorcycles are the causes of accidents; and the causes of death are severe brain injuries.

All participants repeated the words" what had happened might not have happened " if the way of driving the motorcycles was not in a high speed, and great attention the things wouldn't happen like this way.

Regarding the interviewees opinions to solve this problem (motorcycle accidents), some mentioned that drivers must be above 20 or 30 years of age and must have license and insurance to drive motorcycles; others completely hate these vehicles as a result of what had happened to their sons by mentioning that motorcycles must be destroyed, pulled from all citizens and responsible authorities must get rid of all of it.

Chapter six: Conclusion

This study has investigated the impacts of motorcycle accidents on mortality and disability in Gaza City. Two types of study design were used in this study; quantitative and qualitative. The study area was Gaza City and the study population was all reachable mortality and disability cases that resulted from motorcycle accidents in Gaza City. Deeply, data collection in the quantitative part was achieved by searching and reviewing all statistics and registered files for motorcycle accidents from the period of January, 2008 until January, 2010, but, as it being notices, a big problem has faced the researcher. The problem was that the Ministry of Health (MOH) doesn't register any case as resulted from motorcycle accident; but it recorded that as resulted from road traffic accident (RTA) or as falling down (FD). In addition to that, the general administration of traffic and public prosecution had inaccurate statistics regarding motorcycle accidents because some of the accidents' problems are being solved by amicable solution, so that the found files are 88 files (cases) varied between deaths and injured cases.

The Quantitative Part:

1. Statistical variables:

Gender:

- 100% of drivers were male didn't wear helmet, 81.8% without passenger.
- 12.2% with one passenger.

Age:

- Most of driver ages between 16- 25 years with mean age 24.5%.

Year and time of accident:

- 33% of the accidents happened in the year 2008.
- 62.5% in the year 2009.
- 4.5% happened in January of 2010.
- About 39.8% of the accidents happened at the time from 12:00 PM to 6:00 PM.
- 36.3% of happened between 6:01 PM and 12:00 AM, The rest of the accidents mostly happened in the morning time.

Place of accident:

- 42% of the accidents happened in City streets and municipal streets.
- 37.5% happened in crossroads.
- 20.5% of the accidents happened in highways.

Scenario or type of accident and injured body part:

- 52.3% of the accidents happened due to collision with other vehicles.
- 44.3% happened by crushing pedestrian.
- 36.4% of the accident result in multiple injuries including head.
- 12.5% injuries in head alone.
- 19.3% injuries in lower extremities.
- 5.7% injuries in upper extremities.
- 3.4% injures in chest or back.
- 14.8% injuries not including head.
- 5.7% death cases and 2.3% material damage.

Traffic rules:

- 100% of the drivers do not have insurance.
- 8% have license to drive motorcycles.

2. Motorcycle accidents in the year 2008:

- Slight injuries represented 81.4% of the total injured cases due road accidents in that year.
- 95 cases with severe injuries.
- 20 dead cases that represent 28.2% of the total deaths from road accidents in the same year.
- Cause specific death rate is 1.4.
- Case fatality rate in this year is 3.2%.

3. Motorcycle accidents in the year 2009:

- 59 accidents in Gaza City.
- 10 cases with slight injures.
- 19 cases with moderate injures.

- 19 with severe injuries which represent 46.3% of the total severe motorcycle injuries in Gaza governorates.
- 4 dead cases which represent 14.2% of all deaths from motorcycle accidents in Gaza governorates.
- 3.8 severely injured case for 100.000 person.
- 0.8 death case for 100.000 person.
- Case fatality rate is about 6.7%.

4. Motorcycle accidents in the year 2010:

- 17 cases with severe injuries.
- 3 death cases.
- 3.4 severely injured case every 100.000 person.
- 0.6 dead case every 100.000 person.
- case fatality rate is about 2%.

5. Road traffic accident before and after spreading of motorcycles:

- Case fatality rate in the year 2006 is 4%, 5% in the year 2007, 10% in the year 2008, 13% in the year 2009 and 5% for first six months in the year 2010 in Gaza Strip.
- Percent of deaths from road accidents to total deaths is 1.5% for the year 2006, 0.93% in 2007, 1.38% in 2008 and 1.49% in the year 2009 in Gaza Strip.

The Qualitative Part results:

After interview the participants expresses and results briefed as the following:

- So sad facial expressions had dominated the interviewees.
- The participants expressed that motorcycles are just used and bought for fun and as result of jealousy from other people, peers or friends.
- Motorcycle drivers like to drive at extremely high speed. The drivers didn't wear helmets.
- Lack of attention and high speed are the causes of accidents.

Chapter seven: Recommendation

Motorcycles in Gaza governorates as a whole and in Gaza City in specific have great impacts on human health which have lead to increase mortality and disability from road accidents involving motorcycles. So it is very important to shed the light on this deadly problem to decrease the effect of this vehicle on our youths. All ministries, related institutions and decision makers should react quickly to set the necessary rules and legislations to alleviate the number of road traffic accidents, especially those resulting from motorcycles.

The following are some recommendations to relevant institutions and ministries:

1. **Ministry of Transport and General Administration of Traffic:**

- Improve the registration system in the general administration of traffic and register all cases which are affected by motorcycles without any exclusion.
- Apply helmet use for all motorcycle riders to decrease the effect of injuries.
- Request mandatory license and insurance for all motorcycles and punish all drivers who haven't license and insurance.
- Increase the age for giving motorcycle driving license to above 25 years to reduce the probability of accidents.
- Monitor all speeding motorcycles and punish the drivers.
- Provide instructions by advertisement on radio and television about the dangerous impacts of driving motorcycles at a high speed to reduce the number of motorcycle accidents.
- Increase the price of motorcycle vehicles to decrease the rate of buying this deadly vehicle.

2. **Ministry of health:**

- Register all injured cases that result from motorcycle accidents.
- Improve the present fragile information system in the ministry.
- Distinguish between injured cases from motorcycle and those from other vehicles to attain accurate statistics.
- Take complete history from cases injured in motorcycle accidents.

3. **For rehabilitation centers:**

- Take a complete history of the causes of disability and collaborate with the ministry of health and with secondary health centers in Gaza Strip.
- Improve collaboration among the centers regarding caring of disabled cases.

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Annex 1

Qualitative data by Arabic

المشارك رقم 1(أنثي بحالة عجز شديدة)

أين حصل الحادث بالضبط يا أمل؟

حصل الحادث عند الجامعة حيث أنني كنت ذاهبة مع أختي التي في الجامعة لحضور احتفال حينها كنا نحاول قطع الطريق فتقدمت قليلا عن أختي فتفاجئت بقدوم الدراجة مسرعة فصدمتني وبعدها لا اعرف ما جري.

هل كان سائق الدراجة يقود الدراجة بشكل سريع؟

بالطبع كان يقود الدراجة بشكل سريع جدا لأنه كما تعرف أنت فانه لا يمكن أن يحصل ما حصل لولا انه كان يقود دراجته بشكل بطيء ومنظم وهذا هوا السبب الرئيسي في الإصابة.

أين مكان الإصابة حسب رأيك بعدما تمت إفاقتك؟

الإصابة كانت في الناحية أليسري من الرأس فتأثر الجزء الأيمن من الجسم بكامله ويوجد كسر في الرجل أليسري وتم وضع بلاتين داخلي في الرجل لعلاج الكسر حيث أن الرجل مشوهة من الخارج نتيجة وجود الغرز وأثار الجرح وأنني أعاني من عرج في الرجل اليمني كما تري نتيجة الإصابة وأنني لا اجري جيدا وكنت اذهب مع أمي يوميا لأخذ جلسات علاج طبيعي في مستشفي الوفاء للتأهيل الطبي حيث أنني بقيت في مستشفي الوفاء نائمة في المستشفي لمدة شهر كامل وبعدها علاج طبيعي لمدة سنة.

ماذا كان تصرف سائق الدراجة بعد صدمك؟

علي حسب رد الأهل فان سائق الدراجة بعدها لم يهرب لأنه سقط عن الدراجة فقامت الشرطة بحبسه حتي فاقت أمل من غيبوبتها.

كم كان عمر سائق الدراجة؟

عمر سائق الدراجة 16 عام بالضبط وكما تعرف فان الشخص في هذا العمر يكون في فترة مراهقة ولا يعرف طريق مصلحته جيدا.

ما رأيك يا أخت سناء (الأم) علي ما جري؟

طبعا أنا أحب أن أوصي كل الناس بعدم شراء درجات نارية لأنها تؤدي إلي الوفاة والإعاقة الدائمة، وإنني أقول ذالك لكي لا يكون هنالك ضحية أخري مثل أمل .

رأي الأم بالنسبة للدراجة النارية؟

نحن مصدومون جدا من الذي جري والسبب في ذالك يعود علي أهل سائق الدراجة لأنهم يعطونه المال لشراء الدراجة وهم لا يعرفون من قد يقع ضحيتها.

رأي الأم لتقليل الحوادث؟

علي حسب رأيي فان أفضل وسيلة لتقليل الحوادث هي أن يكون سائق الدراجة فوق 18 عام وان يكون حاصل علي تامين وترخيص ورخصة لقيادة الدراجة، وان يكون معه رخصة بالدرجة الأولي.

رأي الأم بمن يركب الدراجة النارية؟

أنا غير مسامحة الشخص الذي قام بدهس ابنتي نهائيا لأنها كما تري فإنها سوف تمضي حياتها وهي معاقة ، أما بالنسبة لمن يركب الدراجة النارية فإنني متأكدة أنهم يركبونها بغرض المتعة فقط دون وضع أي اعتبار لما قد ينتج عنها لو انه تعرض لحادث أو انه صدم أي شخص سائر علي الطريق كما حصل لأمل.

رأي الوالد بالنسبة للدراجات النارية؟

الدراجات النارية موجودة في كل بلدان العالم ، ولكنها في غزة تسبب مشكلة كبيرة لان الذين يركبونها ناس أطفال وهجائيين لا يهمهم أي شيء حيث أنهم يقودون دراجاتهم بسرعة مفرطة ولا احد يستطيع أن ينكر هذا الأمر، وأريد أن أعرج علي شيء حيث انه عندما حصل الحادث لأمل كان هنالك صاحب سيارة مرسيدس شاهد ما حصل فتبع الأمر في المستشفي لكي يري ما حصل للفتاه لأنه علي حسب كلامه أن سائق الدراجة النارية كان يقودها بسرعة مفرطة جدا عندما صدم الفتاه.

ما هو الحل علي حسب رأيك؟

الحل هو أن يمنع كل شخص اقل من 20 سنة من قيادة الدراجة النارية حيث انه وكما تعرف في هذا العمر يكون واعي ومدرك بمضار ومنافع هذه الدراجة ويعرف أن أولاد الناس ليسوا لعبة في يديه، وان يتم أيضا تطبيق قانون الترخيص والتامين لمحاولة تقليل الحوادث، ومن لا يحمل رخصة قيادة دراجة ويقود دراجة فانه يجب وضعه في بئر حتى يكون عبرة لغيرة.

الحالة رقم 2:(سائق دراجة متوفى) تم مقابلة عمه وأخيه

أين مكان الحادث الذي وقع لحسنين بالضبط؟

الحادث الذي حصل كان مروع جدا حيث انه حصل علي الطريق الشرقي شرق الشجاعية مقابل ديوان المغني

هل كان يقود الدراجة لوحده؟

كان حسنين لا يحب أن يكون يقود دراجته ويكون هنالك أي راكب أخر غير ابنه كما تعرف فانه طفل وعندما يري والده فانه يلحقه، ولكن وقت الحادث لم يكن هناك أي شخص يركب معه علي الدراجة

هل كان وقت الحادث سرعة الدراجة عالية؟

علي حسب كلام شهود العيان فلقد كان مسرعا قليلا عندما حصل الحادث ولكن الخطأ كان من صاحب السيارة وليس منه.

هل ممكن أن تشرح آلية الحادث بالضبط؟

السائق كان يريد الالتفاف بالسيارة عندها قدم حسنين من الشمال فصدم في السيارة فسقط علي الأرض ومن رأي حسنين وقتها قال انه مات لان إصابته كانت في الرأس

ما سبب شراء حسنين للدراجة النارية؟

كان سبب شرائها في الغالب لكي تقرب عليه الطرق بما يعني كوسيلة للمواصلات

هل كان يحب قيادة الدراجة النارية؟

نعم كان يحب قيادتها حدا حيث انه كان لا يخرج من البيت حتي ولو كان ذاهبا إلي مشوار قريب إلا وذهب بالدراجة

هل كان معه رخصة لقيادة الدراجة؟

لا لم يكن يحمل ترخيص ولا تامين ولا رخصة لقيادة الدراجة لأنها في ذالك الوقت لم يكن احد يطلب أن تكون هنالك رخصة علي الدراجة وعلي حد علمنا فان هذا حصل جديد في البلد.

ماذا كانت ردة فعل سائق السيارة عند الحادث؟

سائق السيارة عندها لم يقم بإسعاف حسنين وقام بالهروب وسلم نفسه لمركز الشرطة.

علي حسب المصادر الطبية أين كانت إصابة حسنين؟

الإصابة عنده كانت متركزة في الرأس وهنالك بعض الإصابات في باقي الجسم وفي الأطراف العلوية والسفلية ولكن سبب المشكلة وسبب الوفاة الرئيسي كما قال الأطباء هوا إصابته في الرأس.

هل كان حسنين لابس خوذة أو انه كان يرتديها؟

لم يرتديها نهائيا ولم يكن عنده أي خوذة للدراجة النارية، في الأصل أن الدراجة النارية كانت عنده سنتين فقط قبل الحادث.

هل كان حسنين من النوع الذي ينتبه وهو يقود الدراجة؟

علي حسب ما كنت أري فانه كان ينتبه وهو يقود دراجته.

كم مكث حسنين في المستشفي؟

مكث حسنين في المستشفي مدة 40 يوم في العناية المركزة وتوفي بعدها وهذا قضاء وقدر من عند الله ماذا يمكننا أن ننفعل لا شيء.

ما هو رأيك في وضع البلد الحالي بالنسبة للدراجات وما هي الحلول لذالك؟

رأي هوا انه لا يمكن منع الدراجات النارية من غزة وأنها أيضا موجودة في الدول المجاورة ، وأنا أري انه يتم استخدامها هنا في غزة فقط لكي يستمتع الشباب فقط بغض النظر علي ما تسببه أو ما قد تسببه، وفي بعض الأحيان يتم استخدامها للشغل والعمل ، وأوصي كل صاحب دراجة نارية استخدام العقل الأخلاق عندا يقود الدراجة النارية وعمل ترخيص وتامين والحصول علي رخصة لقيادة الدراجة بحيث انه يكون مؤمن علي نفسه لو صدم إنسان أو قام هوا نفسه بالاصطدام بأي شيء مثل الذي حصل مع حسنين وبالإضافة إلي ذالك أوصي أن يكون سائق الدراجة النارية فوق 18 عام لكي تقل نسبة الحوادث في غزة.

المشارك رقم 3 (سائر طريق متوفي)، تم مقابلة زوجته

أين حصل الحادث بالضبط؟

أريد أن أقول لك القصة بالكامل كان هنالك شهيد في عائلة دار مرشود فكان ذاهب ليقوم بالواجب كما يفعل باقي الناس فقرر عندها العودة إلي البيت لكي يأخذ أولاده لكي يقوموا بالواجب معه في بيت العزاء، وهوا راجع إلي البيت قام بشراء علبة سجائر من محل وهوا ماشي في الطريق كان هنالك سائق دراجة نارية مسرع ولم يكن هنالك أضواء في الدراجة حيث أن الرؤيا كانت صعبة قليلا لأنه بعد المغرب فصدمه سائق الدراجة النارية وكان علي الدراجة راكب أيضا.

هل كان صاحب الدراجة مسرعا؟

علي حسب من شاهد الحادث فان صاحب الدراجة كان مسرع جدا ولو ما كان يقود بسرعة عالة لما جري ما جري ولما صار حالنا كما تري حيث أننا نسكن في بيت بلأجار ووضعنا المادي سيئ فوق ما تتصور.

أين مكان الحادث بالضبط؟

مكان الحادث هو الشجاعية شارع النزاز أمام مطحنة مريش

ماذا كان رد فعل صاحب الدراجة عند الحادث؟

كان يريد صاحب الدراجة الهروب ولكنه لم يتمكن لان الناس تجمعوا سريعا في مكان الحادث.

أين كانت إصابة ناصر؟

إصابته كانت في الرأس فقط، ويا ريت أن كانت في أي مكان في جسمه لما توفي.

كم مكث في المستشفي؟

مكث في المستشفي في قسم العناية المركزة مدة يومين وبعدها اخبرني أخوه انه انتقل إلي رحمة الله فصدمت كثيرا وقت ماذا سوف يحصل لي وللأسرة التي عندي.

كم عدد أفراد أسرة ناصر؟

الأسرة تتكون من تتكون من 9 أفراد 5 أولاد وبنتين، البنت الكبرى متزوجة واكبر الأولاد عمره 23 سنة يعمل في البويا مع شخص ويوجد بنت في الجامعة يتم اعالتها من هنا وهنا.

ماذا كان يعمل ناصر؟

كان ناصر يعمل سائق علي سيارة شخص ولكنه في وقت الحادث لم يكن هنالك أي دخل للسيارة كما قلت لك سابقا كان في الطريق فصدمته الدراجة.

ما رأيك بالنسبة للدراجة النارية؟

الدراجة النارية هي اكبر غلطة وجدت وتوجد في غزة حيث أنها كما تري فإنها تؤدي إلي الوفاة والإعاقات والإصابات لأنها غير أمنة نهائيا وانه لا يوجد منها فائدة نهائيا.

ما هو رأيك بمن يركب الدراجة النارية؟

حسب رأي فان كل من يركب الدراجة للنارية فانه يركبها بغرض المتعة فقط لأنه كما تري فانه اغلب من يقود الدراجات النارية هم صغار في الين لا يتجاوزون 30 عام

ما هي توصياتك بالنسبة للجهات المسئولة؟

كل شخص عنده أولاد وعنده شباب يجب أن يمنعهم من قيادة الدراجة النارية أو حتى الركوب عليها لأنها تؤدي إلي الكسر والحوادث ولأنها غير مفيدة نهائيا ، ويجب علي الشخص الذي يقودها أن يحصل علي ترخيص وتامين واهم شيء رخصة لقيادة الدراجة وان يكون سائقها فوق 30 عام لأنه عندها سوف يكون مدرك وفاهم ما هي مخاطر الدراجة النارية فيما لو حصل حادث وان يقودها ببطء.

المشارك رقم 4 (سائق دراجة، يعاني عجز متوسط)

أين حصل الحادث بالضبط؟

حصل الحادث في أخر شارع الجلاء في منطقة أبو اسكندر قريب من بيتا وحصل تقريبا الساعة 11 ليلا

ما هي آلية الحادث؟

كنت أقود الدراجة النارية حيث أنني كنت قد شريتها قبل الحادث بيومين فلقد كنت أقود الدراجة تقريبا بسرعة 80 كم / س حينها كانت هنالك سيارة فاجأتني بعبور الشارع عند مفترق طريق فاصطدمت بها ، سائق السارة هو سبب الحادث لأنه لم يعطني المجال لكي اعبر الشارع .

هل كنت تقود الدراجة لوحدك؟

كنت أقود الدراجة أنا وأخي ومن حسن الحظ أن أخي أصيب فقط بجروح بسيطة أما أنا فكان حظي سيئ.

ما هو سبب شراء الدراجة؟

سبب شراء الدراجة النارية هو أنني أريد أن استمتع بها فقط كما يفعل باقي الناس ولا يوجد هنالك سبب رئيسي لشرائها حيث أنني كنت أري أصدقائي وبعض الشباب يقودون دراجات وشعرت بالغيرة فقررت شراء الدراجة.

هل كنت تحب قيادة الدراجة النارية؟

بالتأكيد كنت أحب قيادتها حيث أنني كنت في بعض الأحيان استعير دراجات من أصدقائي وأقوم بقيادتها لبعض الوقت، ولو أنني لم أحب الدراجة النارية لما قمت بشرائها نهائيا ولكنني الآن ندمان كثيرا علي كل هذا.

هل كان معك ترخص وتامين ورخصة؟

لم يكن معي أي شيء لا رخصة ولا تامين ولا ترخيص

هل كنت ترتدي خوذة في راسك؟

لا لم أكن ارتدي خوذة ولا حتى ملابس واقية كما نسمع ولو كنت ارتدي ملابس في رجلي لما حصل ما حصل.

أين الإصابة بالضبط؟

الإصابة كانت متركزة في الساق اليسري حيث كان هنالك قطع في الأوردة حيث أنني أغمي علي بعد الحادث مباشرة ولكنني بعدها سمعت من أهلي أن كنت أعاني من نزيف حاد ومن تهتك في الساق اليسري مما أدي إلي بترها في النهاية.

من قام بإسعافك بعد الحادث؟

الذي قام بإسعافي هم أهلي لأني كما قلت لك سابقا فان الحادث حصل قريبا من البيت ولم يسعفني صاحب السيارة لأنه قد هرب وسلم نفسه للشرطة خوفا من المشاكل.

كم مكثت في المستشفي؟

مكثت في المستشفي مدة 29 يوم حيث انه بعدها تم بتر الساق اليسري كما تري لأنها كانت متهتكة كليا.

هل تتلقي تأهيل في احد المراكز؟

نعم أتلقي تأهيل في احد مراكز التأهيل في غزة ولكنه كما أري غير مجدي نهائيا.

ما هي حالتك النفسية بعد الإصابة؟

حالتي النفسية سيئة جدا هاذا باختصار.

ما هو رأي الأهل بشكل عام بالنسبة للدراجات؟

نرجو عدم اقتراب أي شخص من الدراجات النارية حيث انه من الأصل يجب القضاء عليها لأنها تؤدي إلي الإعاقات والوفاة حيث أننا نوصي الحكومة بتطبيق كل القوانين الرادعة للحد من مخاطر الدراجات النارية ووضع حد للتجار الذين يلعبون بدمائنا ودماء شعبنا وننصح من معه دراجة نارية أن يذهب بسرعة للحصول علي رخصة لقيادة الدراجة النارية ويحصل علي تامين وترخيص وألا يغلط غلطة ابننا إياد لكي يحمي نفسه من أي مشاكل.

برأيك لماذا الشباب يركبون الدراجات النارية؟

لا يوجد أي شخص في غزة يقود الدراجة النارية لسبب حيث انه يقودها فقط للمتعة وحتي من يقودها بهدف استخدامها كوسيلة مواصلات فهوا خاطئ لان أكثر شئ في غزة هي سيارات الأجرة.

المشارك رقم 5 (مسافر علي دراجة، يعاني عجز شديد)

هل أنت متزوج؟

نعم أنا متزوج ولكن لا يوجد أولاد ونأمل من الله أن يرزقنا الأولاد، ولكنني مسئول عن عائلتي بكاملها يعني أمي وأخواتي الصغار لان أبي وأخي الكبير توفيا في النفق في رفح، وكما تري فإنني لا اقدر علي العمل نهائيا.

أين حصل الحادث بالضبط؟

حصل الحادث الساعة الثانية ليلا يوم عيد بالقرب من مركز شرطة العباس.

هل كنت تقود الدراجة أم كنت راكب عليها فقط؟

أنا لم أكن السائق كان ابن خالتي هو السائق حيث أننا أردنا أن نشم الهواء في يوم العيد.

اشرح لي أليه الحادث بالضبط؟

علي ما أنا أتذكر مع انه من الصعب عليا تذكر ما حصل فلقد كنا أنا ابن خالتي واقفين نتحدث مع شرطي فإذا بسيارة قادمة مسرعة عكس سير الطريق فقامت بصدمنا وبعدها لا ادري ما جري.

هل تعرضت لحادث قبل هذه المرة؟

نعم تعرضت لحادث مرتين حيث أنني عندها كنت أقود دراجة نارية لأنه كان عندي دراجة ، في الحادث الأول حدث فقط كحوت في الساق اليمني أما الحادث الثاني فلقد كان أكثر شدة لأنه عندها كسرت يدس أليسري وكما تري فان فيها اعوجاج قليلا نتيجة الحادث.

هل تأثرت نفسيا بعد أول حادثين حصلا لك؟

لا لم اتاثر نهائيا ويا ريت أنني تأثرت لما حصل لي ما حصل في أخر حادث لأنني بعد أول حادثين استمررت في قيادة الدراجة وركوبها بعدها دون خوف.

هل كنت تحب قيادة الدراجة النارية؟

نعم كنت أحب قيادتها كثيرا مثل باقي الناس للاستمتاع فقط، كنت أقودها فقط للمتعة وكهواية وفي بعض الأحيان استعين بها كوسيلة مواصلات.

ما هي الإصابة ألتي لديك؟

الإصابة أللتي لدي هي في رجلي اليمني وفي راسي، ولكن أكثرها كان في راسي ذالك أدي إلي مكوثي في المستشفي مدة طويلة وكانت حالتي الصحية سيئة جدا وكما قال أهلي وأقربائي فلم أكن استطيع التكلم ولا الحركة وبعدها انتقلت إلي مستشفي الوفاء ومكثت فيها لفترة وبعدها أصبح طبيب علاج طبيعي يأتي إلي البيت لعلاجي.

من ماذا تشكي حاليا؟

اشكي حاليا من صداع بالرأس وألم في الرجل أليسري وإنني اتعب سريعا من ابسط الأشياء وغير قادر علي المشي ويوجد عرجه في المشي والذاكرة ضعيفة جدا ويوجد صعوبة في النوم ويوجد عصبية بشكل كبير جدا ويحصل عندي إغماء في بعض الأحيان.

مكان الإصابة بالتحديد؟

الإصابة كانت اغلبها بالرأس والرجل اليمني مثلي مثل ابن خالتي فانه يعاني من نفس الإصابة تقريبا ولكنني اشد حدة منه.

أوصف لي حالتك النفسية بعد الحادث؟

الحالة النفسية سيئة جدا حيث أنني تدمرت كليا بعد الحادث عندما أتذكر ما حصل لي فإنني اشعر بالإحباط.

ماذا كنت تعمل قبل الحادث؟

كنت اعمل قبل الحادث اعمل حرة يعني في أي شيء وكنت في بعض الأحيان اعمل في الانفاق.

برأيك ما هو سبب مشكلتك الصحية؟

سبب المشكلة أو الأعراض التي عاني منها الآن هو الإصابة بالرأس حيث أنني لم ارتدي أي شي علي راسي وقت الإصابة لا خوذة ولا أي شيء ولو أنني ارتديها لما حصل لي ما حصل.

ما هو حل مشكلة الحوادث حسب رايك؟

الحل هو التخلص من الدراجات النارية نهائيا لان حوادثها كثيرة جدا ولأنها تسبب إلي الموت والإصابات كما تري فإنني أصبحت عالة علي أهلي.

ما هي توصياتك لمن لديه دراجة نارية؟

أوصي من لديه دراجة نارية أن يتخلص منها بأسرع وقت ممكن قبل أن تقضي عليه وعلي مستقبله وحياته.

رأي الأهل بالدراجات النارية(الأم)؟

الدراجات النارية سيئة جدا حيث أنها دمرت البلد كليا نتج عنا العديد من الإصابات والقتلى فبراي يجب علينا التخلص منهم نهائيا وان يتم سحبهم من الشوارع حني لو حصل لهم تامين وترخيص فانه يجب التخلص منهم.

المشارك رقم 6 (19 عام، سائق دراجة، يعاني عجز متوسط.)

كم عمرك يا عبد الله؟

عمري 19 عام

اشرح لي آلية الحادث؟

آلية الحادث هي أننا أنا وابن خالتي أنور كنا ذاهبين في ليلة العيد إلي غزة وكان ذالك بعد منتصف الليل فتوقفنا قليلا مع شرطي بالقرب من مستشفي الشفاء، فاتت سيارة مسرعة وصدمتنا وبعدها لا اعرف ما جري.

هل كنت تقود الدراجة أم راكب عليها فقط؟

كنت أنا السائق وابن خالتي هو الراكب ولكن وقت الحادث كما قلت لك فإننا كنا متوقفين ولا نسير بالدراجة.

ما هو سبب شرائك للدراجة النارية؟

لا يوجد سبب معين للشراء ولكنني بعض الأحيان كنت اذهب بها إلي الانفاق وكما تعرف فان كل الشباب الآن عندهم دراجات فكنت أحس بالغيرة انه لا يوجد عندي دراجة فقررت شراء واحدة.

أين مكان إصابتك بالتحديد؟

الإصابة في راسي ورجلي الشمال تقريبا مثل إصابة أنور

ما هي شكواك الحالية؟

اشكي حاليا من عرجه في الرجل اليمني حيث أن مشيتي غير معتدلة واشعر بعض الأحيان بصداع في الرأس وضعف في الذاكرة.

هل كنت من النوع الذي يقود الدراجة بسرعة عالية؟

لا أريد الكذب عليك نعم فلقد كنت أقودها في بعض الأحيان بسرعة لأنها بصراحة ممتعة جدا.

ها احتجت إلي تأهيل طبي أو علاج طبيعي بعض الحادث؟

لجأت إلي بعض الجمعيات ولكنني لم استفيد منها فقررت وقف العلاج ولا زلت علي ما أنا عليه، أريد فقط أن أوضح لك نقطة وهوا أنني لست سبب الحادث وإنما سائق السيارة هو الذي كان يقود بسرعة عالية وبشكل معاكس فانا لا دخل لي بما حصل نهائيا.

ما هي نفسيتك بعد الحادث؟

نفسيتي الحمد لله نشكر الله علي ما حصل لان كل شيء هو قضاء وقدر من عند رب العباد لا نستطيع أن نعترض حكمه.

ماذا تنصح كل شخص لديه دراجة؟

انصح كل من لديه دراجة أن يؤمنها ويرخصها وان يرتدي الخوذة حني لا يصاب بالرأس وان يقود الدراجة بسرعة بطيئة حني لا يتعرض أو يكون عرضة لأي مكروه قد يصيبه.

ما رأي الأهل بالنسبة للدراجات النارية(الأم)؟

أنها بلاء جاءنا علي البلد بجانب اليهود، فان التجار يلعبون بدماء أبنائنا ، لقد كنا عايشين بأحسن حال من دون الدراجات وإنني واثقة حني من دون سيارات يمكننا العيش، فارجوا من الجهات المسئولة أن تقضي علي هذه الدراجات نهائيا.

ما هو برأيك سبب حوادث الدراجات النارية؟

بالتأكيد سبب الحوادث هو أن معصم سائقين الدراجات هم أطفال لا يفهمون شيء غير اللهو واللعب حيث أنهم يقودون الدراجة بسرعة عالية جدا دون اعتبار أي اعتبار لما أماهم هذا إذا كانوا يرونه من أساسوا فإنهم مغرورين بأنفسهم فقط.

الحالة رقم 7 (متوفى)، تم مقابلة والده وزوجته

أين مكان الحادث بالتحديد؟

الحادث بالقرب من نت سريم عند غزة عند مفترق طرق

هل كان راكب معه احد علي الدراجة؟

لا لم يكن معه احد وانه كان لا يحب أن يركب معه احد في الدراجة

هل من عادته أن يسير بالدراجة بسرعة؟

في بعض الأحيان كان يقود الدراجة بسرعة ولكن سبب السرعة هو أن يصل مشواره وليس للتشخيص مثلما يفعل الشباب اليوم.

أين كانت إصابته بالتحديد؟

كانت إصابته تقريبا في كل أنحاء الجسم ولكنها تركزت في الرأس

هل كان يرتدي الخوذة؟

في الأساس انه لم يرتديها أو يعرفها نهائيا ولو انه ارتداها لكانت إصابته اخف حيث انه كما ورد لنا فانه توفي بسرعة ولم يجلس في المستشفي نهائيا.

اشرح لي آلية الحادث؟

الحادث حصل بالقرب من نت سريم عند تقاطع طرق علي حسب الناس الذين شاهدوا الحادث حيث أن توفيق كان يقود الدراجة فتفاجأ بكارة يخرج من الطريق فاصطدم بها.

حسب رأيك هل كان يقود دراجته بشكل سريع؟

اضن ذالك لأنه لو كان يقودها بشكل بطيء لما توفي.

هل لدي توفيق رخصة لقيادة الدراجة؟

لم يكن لديه رخصة ولا ترخيص ولا تامين ولا أي شيء

هل كان توفيق ينتبه وهو يقود الدراجة؟

في غالب الأحيان نعم كان بنتبه عند قيادة الدراجة ولكن أن اجيت للصحيح فان الدراجة هي خراب ودمار علي الأمة وعلي شعبنا في غزة.

ما رايك بالدراجة النارية؟

حسبنا الله ونعم الوكيل علي الذي ادخل الدراجات إلي قطاع غزة، أنها تؤدي إلي الموت والجروح لأنها خطيرة جدا، تخيل أن تسقط علي الأرض فجأة من دون أي شيء فبالتأكيد فانك سوف تصاب بجروح فما بالك الذي يكون يقودها بشكل سريع جدا ويسقط عنها أو يرتطم بسيارة فبالتأكيد فإنها سوف تقتله.

هل كان توفيق يحب قيادة الدراجة النارية؟

نعم كان يحب قيادتها كثيرا وكان يقضي عليها بعض مشاويره وكنت دائما انصحه كثيرا بان يأخذ حذره منها ولكن ما حصل قضاء وقدر الله يريد ذالك.

ما هي توصياتك بالنسبة لحل مشكلة الدراجات النارية؟

أوصي الحكومة بان تتخلص من الدراجات نهائيا وان تسحبها من المواطنين ولو بالعنف لأنها اخطر من السلاح في البيت ، أن لم تقتلك فسوف تقتل غيرك أو تصيب غيرك.

Annex 2

Form to record data from founded 88 files

SN	سائق الدراجة	سائق دراجة مصاب	سائر طريق مصاب	سائق سيارة	سائق سيارة مصاب	غير ذالك	العمر	هاتف المصاب	تاريخ الحادث	الساعة	مكان الحادث	ألية الحادث	الإصابة	ترخيص
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

Annex 3

Modified Traffic Accidents Death Rates per 100,000 Persons According to Region and Income Group

Region	High income countries	Middle income countries	Low income countries	Total
Africa	_	32.2	32.3	32.2
Americas	13.3	17.3	_	15.8
Southeast Asia	_	16.7	16.5	16.6
East Mediterranean	28.5	35.8	27.5	32.2
Europe	7.9	19.3	12.2	13.4
West Pacific	7.2	16.9	15.6	15.7
Global level	10.3	19.5	21.5	18.8

Translated from: World Health Organization (WHO), 2009

Annex 4

Qualitative data by English:

Participant number 1 (female pedestrian with severe disability)

Where had the accident happened?

The accident had happened close to al Al-Azhar University where I was going with my sister to attend a celebration. When I was trying to cross the road, I suddenly saw a motorcycle that was running very fast, and it severely crushed me. After the collision I didn't know what had happened.

Was the motorcycle driver driving his vehicle with high speed?

Of course, he was driving very fast. As you know if he had been driving his motorcycle slowly, cautiously and consciously the accident would have not happened.

Where were your injuries after you became conscious and oriented?

The injury was in the left side of the head and the right side was affected by hemiparesis. Also there is a fracture in the left leg with internal fixation and scare tissue in the place of stitches; in addition to that there is an ataxia in the right leg.

As you see the accident resulted in many problems that disabled me to the extent that I cannot walk. Because of that, I have been taking physiotherapy sessions at Al wafa hospital. I spent one month in the hospital and one year after that I am still receiving physiotherapy treatment.

What was the motorcycle's driver reaction after the accident?

According to the family, the motorcycle's driver didn't escape from the place of the accident because he had fallen down and then arrested by police until my sister Amal woke up.

How old is the motorcycle driver?

He is 16 years old and at this age the youths are very dangerous drivers and they don't know the right way of driving even if they are licensed.

What is your opinion (mother) about what had happened?

I just want to advise all people to avoid buying motorcycles because it cause and lead to death and disability. I said that because I didn't want any one to be a victim like my daughter Amal.

What is your opinion about motorcycles?

We are all shocked from what had happened and the root reason of the problem is the driver's family who gave him money to buy the motorcycle without any thinking of what can happen from irresponsible use of the motorcycle.

What is your opinion to decrease number of accidents?

According to my opinion the best way to decrease accident is that the driver of motorcycle must be above 18 years old and must have insurance and license to drive motorcycle.

What is your opinion (mother) of who is riding motorcycle?

I didn't forgiven the person who crush my daughter because she will spend the rest of her live complaining of disability, about my opinion of who ride motorcycle I am sure they are ride it just for funny without giving any attention of the result of this vehicle if he face an accident or crush any pedestrian like what happen to amal.

What is your opinion (father) about motorcycle?

Motorcycle if found all over the world but in Gaza its cause a big problem because its drivers is children and disorganized people, they didn't care about any thing, driving there motorcycle very fast and no one can deny that, I just want to said when the accident happened to amal there is car driver seen the accident as witness, he follow what happened to amal in hospital, and according to his word motorcycle driver was driving very fast.

What is the solution of the problem according to your opinion (father)?

The solution is to prevent every one less that 20 years old to driving motorcycle, as you know at this age the human is know the benefits and danger of the motorcycle and know that the sons is not a game in his hand, in addition of that license and insurance law must by applied to decrease number of accidents, and who is driving

motorcycle without license he must be places in water well (punishment) to be an example of others.

Case number 2 (dead driver), the interviewee were brother and uncle.

Where is the location of the accident that happened to Hasaneen?

The accident was horrible that had happened in the east road of Shejaeyyah in front of dewan Al Moghanni.

Was he driving his motorcycle alone?

Hasaneen did not like to drive his motorcycle with any passenger except his son. As you know when the kid sees his father he used to follow him, but at the time of the accident no one was accompanying him, Hasaneen was driving the motorcycle alone.

At the time of accident, did he was driving the motorcycle at a high speed?

According to the witnesses he was driving at a low speed, but the mistake was from a car driver with whom the accident took place.

Explain to me exactly the scenario of the accident?

The car driver wanted to turn back where Hasaneen was coming from north and crush with the car and fall down. An eye witness said that he died because his injury was in the head.

Why did he buy the motorcycle?

Mostly he bought the motorcycle to use it as a transport means.

Did he love motorcycle driving?

Yes, he loves driving motorcycle so much that he didn't go outside without his vehicle (motorcycle).

Did he hold a license for driving motorcycles?

No he haven't any thing, neither a driving license nor an insurance, because at that time (2008) no one was asking for motorcycle license and according to our knowledge the asking for license in new at recent time.

What did the car driver do after the accident?

He escaped and turned himself to the police station.

According to the medical sources where were Hasannen's injuries?

He was injured mainly in his head with other injuries in upper and lower extremities, but the cause of his death was a severe head injury as the doctors said.

Was he wearing a helmet when driving the motorcycle?

Absolutely not, and he hadn't any helmet for motorcycle, he owned the vehicle for 2 years before the accident.

Was Hasaneen of the type of people who give attention when driving motorcycles?

As I saw him he used to be cautious when driving his motorcycle.

How much time Hasannen stayed in the hospital?

He spent 40 days in the intensive care unit and then died. The injuries were fatal and we couldn't do anything.

What is your opinion about the problems regarding motorcycles, and what are the solutions?

My opinion is that we can't prevent motorcycles and it's found in the neighboring countries. I see that they are used here in Gaza just for fun without giving any concern about what it can cause. Sometimes they are used for job and work. I recommend that every motorcycle owner to use his mind and manners when he drives the motorcycle and must have a license and insurance for saving himself even he crushes any person or crushed by anything like what had happened to Hasaneen. In addition to that, I recommend that motorcycle drivers should be of an age over 18 year to decrease motorcycle's accidents in Gaza.

Case number 3 (dead pedestrian), the interviewee was wife.

Where did the accident happen exactly?

I want to tell the entire story. At the time of the accident, there was a martyr from our family and Nasser was in his way to give his duty to the martyr's close relatives, then he decided to come back home to bring his sons to go with him to the solace house. During his way back home and after stopping by a shop to buy cigarettes, then while completing his way home to bring his sons, a speeding motorcycle came in the same road without lights and it was slightly dark after evening time. Then it crushed him, motorcycle vehicle has driver and passenger.

Was the driver of the motorcycle driving very fast at the moment of accident?

According to the people who saw the accident, the motorcycle driver was driving vary fast, and if he was driven his vehicle slowly the accident would have not happened.

Where is exactly the site of accident?

It was in Shejaeay, Nazaz Street, close to Mreesh grindery.

What did the motorcycle driver do at the moment of the accident?

He had intended to escape but he failed because the people had quickly gathered in the site of accident.

Where were Nasser's injuries?

His injuries were in the head, if it was in other parts, he wouldn't be dead.

How much time did he spend in hospital?

He spent 2 days in the intensive care unit department then his brother told me that he was dead, after that I was shocked and I wondered what happened of me and of my family.

What is the family size of the victim?

The family consists of 9 members; five sons and two daughters, me and him. The eldest daughter is married and the eldest son is 22 years old and he is working as a painter assistant. There is one daughter at the university.

What was Nasser's job?

He worked as a car driver but at the time of the accident there wasn't any car.

What is your opinion about motorcycles?

The presence of motorcycles is the biggest mistake in Gaza, as you see have lead to deaths, disabilities and injuries because it's completely unsafe and useless.

What is your opinion of those who ride motorcycles?

According to my opinion those who ride motorcycles are doing this just for fun because most of motorcycles' riders are young and not exceeding 30 years of age.

What are your recommendations to responsible authorities?

Everyone who has children or youths must prevent them from driving or riding motorcycles because this may result in fractures and accidents. Everyone who driving a motorcycle must be over 30 years of age and must have insurance and a driving license because when he is over 30 years, he becomes more cautious and know the danger of motorcycles and he will drive slowly.

Participant number 4 (driver with moderate disability)

Where did the accident have exactly happen?

It had happened at the end of Jala' Street in the Abu Eskander area near my house approximately at 11 pm.

What is the scenario of the accident?

I was driving my motorcycle which I had bought just before 2 days from the accident. I was driving with a speed approximately 80 km/hr, then I was surprised by a car crossing the road then I crushed the car. The car driver is responsible for the accident because he didn't give me a chance to cross the road.

Were you driving the motorcycle alone?

I was driving the motorcycle with one passenger, my brother. He was lucky that he received slight injuries.

Why did you buy the motorcycle?

I bought motorcycle just for fun like other people and there is no any other specific reason. I saw my friends and some other youths driving motorcycles then I felt jealous, after that I decided to buy a motorcycle.

Did you love motorcycle driving?

Sure, I love driving motorcycles and sometimes I used to borrowed my friends' motorcycles and drive for a while. If I hate motorcycles I should not have bought it, but now I feel very remorse about all of what I had done.

Did you have insurance and a valid motorcycle driving license?

I didn't have anything of that.

Did you wear a helmet to protect your head?

I didn't wear a helmet or protective clothes like what we heard about that, if I wear that on my leg, I would not have been in such a condition of disability.

Where is site of injury in your body?

The main injury was in the left leg with cutting in blood vessels, at this time I was fainting. I heard from my family that I complained of massive bleeding and dissipation in the left leg that had lead to its amputation.

Who gave you the first aid after the accident?

My family members were the first to give me the first aid as the accident took place very close to my house as I said.

How much time did you spend at hospital?

I spent 29 days at the hospital, and after that my leg was amputated because it was crushed.

Are you receiving any physiotherapy?

Yes I had received some physiotherapy at some rehabilitation centers in Gaza but it's useless.

How is your mental state after the accident?

Briefly, it's so bad.

In general, what is the family opinion (father) about motorcycle?

I wish that everyone avoids motorcycles. Motorcycles must be eliminated from Gaza because they cause disabilities and deaths, and I recommend the application of all deterrent laws to decrease motorcycle dangers and to put an end to the merchants who are playing of our blood and the blood of our people. Also, I advise those who have motorcycles to quickly get a license for driving motorcycles and don't commit Eyad's mistake, and to protect themselves from any problem.

In your opinion, why youths drive motorcycles?

There isn't any one in Gaza who drives motorcycles for an any reason; all are driving it just for fun. Even though, those who drive it as a transport means are wrong, because there are many taxis in Gaza.

Participant number 5 (passenger with severe disability)

Are you married?

Yes I am married but I haven't children, but I am responsible for my whole family (sisters, brothers and mother) because my father and my eldest brother died in Rafah tunnels. As you see I am completely not able to work.

Where the accident exactly had happened?

It had happened near Al-Abbas police station at 2 o'clock after midnight.

Were you a motorcycle driver or a passenger?

At the time of the accident, I was on the motorcycle as a passenger and my cousin was the driver, we were in the eid day.

Explain to me the scenario of the accident?

I remember even though it is very hard to remember that I was with my cousin on the motorcycle talking with a policeman until a speeding car came through the opposite way and crushed us. After that I didn't know what had happened.

Were you exposed to any accident before this one?

Yes I was exposed to two accidents, at that time I was driven motorcycle because I have one, small laceration wound in the left leg was resulted from first accident but the second accident was more severe that my left arm was broken, as you seen its warped as a result of accident.

Are you psychologically affected after the two previous accidents?

No, I was not completely affected due to the previous accidents. I wish if I was affected, because if that happened then I would not have continued driving the motorcycle and the latest accident would not have happened.

Did you love driving motorcycle?

Yes I loved driving motorcycles so much like other people just for fun. I used to drive it as a hobby and for fun and sometimes as a transportation means.

Where were your injuries?

I was injured in my right leg and head, most and severe injury was in my head that resulted in spending a lot of time in the hospital. At that time of hospitalization my health status was so bad, as my family and relatives said I was not able to walk or speak. After that I was referred to Al wafa hospital which I spent a lot of time, after that a physiotherapist came on my house to treat me.

What is your complaint now?

I complain of headache and pain in the left leg, I feel tired from doing any simple activity and unable to walk normally because I have ataxia. My memory is bad and I complain from insomnia, severe nervousness, and sometimes fainting.

Describe to me your psychological status after the accident?

It's extremely bad that I am completely destroyed after the accident, when I remember what had happened I feel frustrated and depressed.

What was your job before the accident?

I work in anything, sometimes I worked in tunnels.

In your opinion what is the cause of your recent health status?

The cause of the problem and of my complaints is the head injury. At the time of the accident I didn't wear helmet or anything to protect my head and body. If I wore the helmet, what had happened to me would not have happened.

In your opinion what is the solution to such accidents?

The solution is by eliminating all motorcycles because it causes a lot of accidents that lead to deaths and severe injuries, as you see I became a burden on my family.

What is your recommendation to those who have motorcycles?

I advise all those who have motorcycles to get rid of them as soon as possible before it destroys them and their lives and future.

What is your opinion (mother) regarding motorcycles?

It is very bad because it completely destroyed the country because it caused many injuries and deaths. In my opinion we must get rid of it forever and must remove them from the streets in spite of being insured or licensed.

Participant number 6 (a 19 year old driver with moderate disability)

Explain to me the accident scenario?

The accident scenario is that, I and my cousin were going to Gaza City at the time of the eid after midnight. We had stopped for a while with a policeman near Alshefa hospital, and then a very speedy car had crushed us. After that I didn't know what had happened.

Were you a motorcycle driver or a passenger?

I am a motorcycle driver, but at the time of the accident we were not driving. As I mentioned before, I stopped for a while to talk to a policeman.

Why did you buy the motorcycle?

There isn't a certain reason for buying the motorcycle, sometimes I used it to go to the tunnels. As you know all youths have motorcycles and I felt jealous that I haven't a motorcycle then I decided to buy it.

Where were exactly your injuries?

I was injured in the head and the left leg like Anwar injuries.

What is your recent complaint?

I complain of ataxia, a lame in the right leg that impairs walking. Sometimes I feel headache and memory weakness.

Are you of the type who drives motorcycles with a high speed?

I don't want to lie; sometimes I drove with a very high speed because it's so funny.

Did you need physiotherapy or medical rehabilitation after the accident?

I was referred to some rehabilitation societies for sometime but it was useless then I stopped that treatment. I just want to illustrate something; I am not the cause of the accident but the car driver was the cause when he was driving his car in high speed and in the opposite traffic direction. I haven't any relation with what had happened.

How is your psychological status after the accident?

Thanks for god for every thing; every thing is from god we can't be against that.

What is your recommendation for everyone who has a motorcycle?

I recommend every one to insure and license his vehicle and wear a helmet to avoid head injury and to drive motorcycle slowly to avoid exposing others to any harm.

What is your opinion (mother) regarding motorcycles?

It's a scourge that came to our country beside Jews. Traders are playing of our people blood, at previous time we lived in best situation without motorcycles and I am sure if there isn't cars we can live. I hope from the responsible authorities to completely eliminate these motorcycles.

In your opinion (mother) what is the cause of motorcycles' accidents?

It is clear that the causes of accidents are that most of motorcycle drivers are children who didn't know anything except playing and recreation. They drive their motorcycles at very high speed without any consideration to what is in front of them. Even if they see it they are egotistic

Case number 7 (dead driver), the interviewee were father and wife

Where was exactly the site of the accident?

It was close to the crossroads of Natsareem (name of an evacuated Israeli settlement south of Gaza City.

Was there another rider on his motorcycle?

No there wasn't any one on his motorcycle and he hated to have any passenger on his vehicle.

Was he driving the motorcycle at high speed before the accident?

Sometimes he drove his motorcycle at high speed, and he used to do that to reach quickly to where he wanted to go, not like what youth do nowadays.

Where were exactly his injuries?

His injuries were in all his body but they were concentrated in the head.

Did he wear a helmet?

Originally he didn't wear or know it, if he wore the helmet; his injuries would have been less severe. As we had been informed, he didn't stay in hospital because he died very quickly.

Explain to me the scenario of the accident?

The accident had happened near Natsareem in the cross roads according to people who had seen the accident. Tawfeq was driving his motorcycle and suddenly he had been faced by cart which he collided with.

According to your opinion was he driving the motorcycle at a high speed?

I think so, if he was driving slowly the accident would not have had happened and he wasn't dead.

Did Tawfeq have a motorcycle driving license?

No he haven't license or insurance of any thing.

Was Tawfeq paying attention when he drove the motorcycle?

Yes, most of the time he drove his vehicle with attention, but the truth is that motorcycles ruin and destroy our people.

What is your opinion about motorcycles?

May Allah punish the agents who allowed motorcycles to enter Gaza Strip. It has lead to many deaths and injuries because they are very dangerous. Imagine that you fall down without any cause, certainly you will be injured, what about the person who drives it with very high speed and fall down or collide with a car; certainly it will kill him.

Did Tawfeq love driving motorcycles?

Yes he loved driving motorcycles so much, he spend a lot of time driving it from here to there. Always I advised him to take care but what had happened is the will of Allah.

What is your recommendation to solve the problem of motorcycles?

I request the government to completely get rid of motorcycles and to pull it from all citizens by force because it's more dangerous than any other weapon found in the house. If it didn’t kill you it will kill or affect somebody else.

Annex 5

22

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

التاريخ7/6/2010

Name:

الاسم: زياد حسن الكحلوت

I would like to inform you that the committee has discussed your application about:

Impacts of motor cycle accidents on mortality and disability in Gaza City.

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

In its meeting on June 2010
and decided the Following:-
To approve the above mention research study.

و ذلك في جلستها المنعقدة لشهر 6 2010
و قد قررت ما يلي:-
الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member
عضو

Member
عضو

Chairperson

Conditions:-

- Valid for 2 years from the date of approval to start.
- It is necessary to notify the committee in any change in the admitted study protocol.
- The committee appreciate receiving one copy of your final research when it is completed.

Annex 6

Al-Quds University
Jerusalem
School of Public Health

جـامـعـة الـقـدس
القدس
كلية الصحة العامة

2010/7/17

الأخ/د. تيسير البلتاجي المحترم
مدير عام مستشفى الوفاء
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب زياد حسن الكحلوت

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Impacts of Motor Cycle Accidents on Mortality and Disability in Gaza City"

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار صحة البيئة و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة من مستشفى الوفاء التابع لإدارتكم.
علماً بأن المعلومات ستكون متوفرة لدى الباحث و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد
منسق عام برامج الصحة العامة

نسخة:
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Annex 7

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

2010/7/17

الأخ/ د. سمير أبو جياب المحترم
مدير جمعية المعاقين حركياً
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب زياد حسن الكحلوت

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Impacts of Motor Cycle Accidents on Mortality and Disability in Gaza City"

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار صحة البيئة و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة من جمعيتكم الموقرة.
علماً بأن المعلومات ستكون متوفرة لدى الباحث و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد
منسق عام برامج الصحة العامة

نسخة:
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Annex 8

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

2010/7/17

الأخ/ الرائد. فهد عرب المحترم
مدير قسم الحوادث في شرطة المرور
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب زياد حسن الكحلوت

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Impacts of Motor Cycle Accidents on Mortality and Disability in Gaza City"

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار صحة البيئة و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة من قسم الحوادث.
علماً بأن المعلومات ستكون متوفرة لدى الباحث و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،

د. بسام أبو حمد
منسق عام برامج الصحة العامة

نسخة:
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Annex 9

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

2010/8/10

حضرة الاستاذة امنة السرحي المحترمة
وكيل نيابة المرور
تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب زياد حسن الكحلوت

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Impacts of Motor Cycle Accidents on Mortality and Disability in Gaza City"

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار صحة البيئة و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة.
علماً بأن المعلومات ستكون متوفرة لدى الباحث و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد
منسق عام برامج الصحة العامة

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Annex 10

Palestinian National Authority
Ministry Of Health
Hospitals General Administration

السلطة الوطنية الفلسطينية
وزارة الصحة
الإدارة العامة للمستشفيات

الرقم:عام

التاريخ:٢٠١٠.١٠.٢١

الأخوة / مدير عام مجمع الشفاء الطبي **حفظه الله**

السلام عليكم ورحمة الله وبركاته

الموضوع/ إجراء بحث

بالإشارة لكتاب السيد مدير عام تنمية القوى البشرية بخصوص الموضوع أعلاه يرجى تسهيل مهمة **الحكيم/زياد حسين الكحلوت** والذي يعمل في مجمع الشفاء الطبي وملتحق ببرنامج ماجستير الصحة العامة- صحة البيئة- جامعة القدس لإجراء بحث بعنوان.

"The Impact of motor cycle accidents on mortality & disability in Gaza city "

حيث سيقوم الباحث بالاطلاع على ملفات المرضى الذين تعرضوا إلى حوادث الطرق والسقوط من الأعلى في مستشفى الشفاء الطبي في الفترة (يناير ٢٠٠٦-يناير ٢٠١٠م) وذلك لعمل مقارنة بين حالات حوادث الطرق خلال الفترة المذكورة وأخذ بيانات خاصة بالبحث، وذلك بما لا يتعارض مع مصلحة العمل وضمن ضوابط وأخلاقيات البحث العلمي، دون تحمل الوزارة أي أعباء ، وإتباع الأنظمة الإدارية في المستشفى .

ولا مانع لدينا من إجراء الاستبيان.

آملين حسن تعاونكم،،،

٢٠١٠.١٠.٢١
د.محمد الكاشف

مدير عام المستشفيات

-صورة للسيد مدير عام تنمية القوى البشرية المحترم
-صورة للسيد مدير عام م.ناصر الطبي المحترم
-صورة للسيد مدير عام م.الشفاء الطبي المحترم

الإدارة العامة للمستشفيات
صادر
رقم: .....
التاريخ: .....

فندق الأمل – وزارة الصحة تليفاكس : ٢٨٢٠٧٣٤

Annex 11

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

2010/7/17

وزارة الأشغال العامة - مدير النقل والمواصلات

الأخ/ المهندس حسن عكاشة المحترم

مدير عام الشئون الفنية و هندسة المركبات–وزارة النقل و المواصلات

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب زياد حسن الكحلوت

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Impacts of Motor Cycle Accidents on Mortality and Disability in Gaza City"

كمتطلب للحصول على درجة الماجستير في الصحة العامة–مسار صحة البيئة و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة من دائراتكم الموقرة.

علماً بأن المعلومات ستكون متوفرة لدى الباحث و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد

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ملخص الدراسة:

عنوان هذه الدراسة هو تأثير حوادث الدراجات النارية علي الوفيات والإعاقات في مدينة غزة والتي تهدف لفحص تأثير هذه المركبات علي الوفيات والإعاقات خلال الفترة من يناير 2008 إلي يناير 2010، ولقد تم استخدام نوعين من البحث، البحث الأول هو الكمي الوصفي وتم جمع البيانات بشكل رجعي عن طريق البحث عن الإحصائيات والسجلات حول حوادث الدراجات النارية. البحث الثاني هو الكيفي التاريخي الذي يساعد علي وصف وتحليل الأحداث التي حدثت في وقت سابق قريب أو بعيد وذالك لمعرفة أسباب استخدام الدراجة النارية وأسباب حوادث الدراجات النارية وجمعت البيانات عن طريق عمل مقابلة شبه مصممة. تم الحصول علي إحصائيات لحوادث الدراجات النارية في سنة 2008، 2009 والي منتصف سنة 2010 بالإضافة إلي ذالك تم الحصول على 88 ملف فقط حيث تم مراجعتها وتسجيلها في جدول خاص، ولم يتم الوصول إلا لأربع حالات إعاقة وثلاثة وفيات حيث أجريت المقابلات مع احد أفراد عائلاتهم.

في البحث الكمي أظهرت النتائج انه في سنة 2008 كان هناك 95 إصابة شديدة و 20 حالة وفاة من حوادث الدراجات النارية في قطاع غزة، السبب المحدد للوفيات يساوي 1.4 ومعدل إماتة الحالات يساوي 3.2 %.

في سنة 2009 يوجد هنالك 19 حالة إصابتهم خطيرة و أربع حالات وفاة في مدينة غزة، لكل مائة ألف شخص هنالك 3.8 حالة بإصابة خطيرة وأيضا لكل مائة ألف شخص هناك 0.8 حالة وفاة ومعدل الإماتة 6.7%. من يناير 2010 إلي منتصف سنة 2010 كان هنالك 17 حالة إصابتهم خطيرة ، ثلاث حالات وفاة ومعدل ألاماته 2% في مدينة غزة.

من مراجعة ال88 حالة وملف لوحظ أن 100% من السائقين كانوا ذكور، لا يرتدون الخوذة وليس لديهم تامين لقيادة الدراجة النارية، 62.5% منهم أعمارهم تتراوح بين 16 – 25 سنة، حول الوقت والتاريخ تبين أن 62.5% من الحوادث حدثت سنة 2009، معظم الحوادث (39.8%) حدثت ما بين 12:01 ظهرا و السادسة مساء، 42% من الحوادث حصلت في شوارع المدينة والبلدية، 52.3% من الحوادث حصلت نتيجة تصادم مع مركبة أخري، 59% من الحالات المتأثرة هم من المشاة، النسبة العظمي من الإصابات (36.4%) هي أصابت متعددة في الجسم تشمل الرأس، من جميع السائقين 8% منهم لديهم رخصة لقيادة الدراجة النارية.

أما بالنسبة للبحث الكيفي وبعد عمل المقابلة شبه المصممة تبين أن أسباب استخدام الدراجة النارية هو للمتعة والغيرة من الآخرين، وأسباب الحوادث هو السرعة الزائدة وعدم الانتباه، في النهاية فان الدراسة تتضمن العديد من التوصيات للمؤسسات المعنية للتقليل من الحوادث وللتقليل من عدد الإصابات الخطيرة والوفيات.