Assessment of Disability Adjusted Life Years (DALYs) due to Occupational Injuries and Health Related-Quality of Life of injured Workers in Eastern Delta region of Egypt

Thesis submitted for partial fulfillment of Doctoral Degree in Occupational and Environmental Medicine
By :

Waleed Salah El-din Ahmed Saleh
Assistant lecturer, Department of community, Environmental and Occupational medicine Faculty of Medicine, Ain Shams University

Supervised by:

Prof.Abdel-Aziz Mohamad Kamal
Professor of Community, Environmental and Occupational medicine, Faculty of Medicine, Ain Shams University

Prof. Aisha Mohamed Abo-El-Fotouh
Professor of Community, Environmental and Occupational medicine, Faculty of Medicine, Ain Shams University

Prof. Maged Abdel-Karim El-Setouhy
Professor of Community, Environmental and Occupational medicine, Faculty of Medicine, Ain Shams University

Faculty of Medicine-Ain Shams University
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لجنة الحكم على الرسالة

الأستاذ الدكتور/عبد العزيز محمد كمال

الأستاذ بقسم طبّ المجتمع و البيئة و طب الصناعاتّ
ّ كلية الطب جامعة عين شمس

الأستاذة الدكتورة /عائشة محمد أبوالفتوح
الأستاذ بقسم طبّ المجتمع و البيئة و طب الصناعاتّ
كلية الطب جامعة عين شمس

الأستاذ الدكتور/ محمود رضوان محمد
الأستاذ بقسم طبّ المجتمع و البيئة و طب الصناعاتّ
كلية الطب جامعة عين شمس

الأستاذ الدكتور/ عبد الرازق عواد الشاعر
الأستاذ بقسم طبّ المجتمع و البيئة و طب الصناعاتّ
كلية الطب جامعة الأزهر

كليةالطب- جامعة عين شمس
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Protocol submitted for partial fulfillment of Doctoral Degree in Occupational and Environmental Medicine
By :

Waleed Salah El-din Ahmed Saleh
Assistant lecturer, Department of community, environmental and occupational medicine Faculty of Medicine, Ain Shams University

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Prof. Aisha Mohamed Abo-El-Fotouh
Professor of Community, Environmental and Occupational medicine, Faculty of Medicine, Ain Shams University

Prof. Maged Abdel-Karim El-Setouhy
Professor of Community, Environmental and Occupational medicine, Faculty of Medicine, Ain Shams University

Faculty of Medicine-Ain Shams University
200٨

PROTOCOL

An injury is the physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy. It can be a bodily lesion resulting from acute exposure to energy in amounts that exceed the threshold of physiological tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements (i.e. air, water, warmth), as in drowning, strangulation or freezing ***(Krug E., 1999).***

Historically, injuries have been regarded as a random, unavoidable "accident". Within the last few decades, a better understanding of the nature of injury has changed these old attitudes, and today both intentional and unintentional injuries are viewed as largely predictable and therefore preventable events ***(Peden M. et al., 2002).*** Both unintentional and intentional injuries constitute a major public health problem, killing more than 5 million people worldwide each year and causing many more cases of disability. Injuries are a leading cause of death for both sexes and in all age groups and it is considered the primary cause of death among the persons aged 15–44 years(***Krug E., 1999).***

An occupational injury is defined as an injury, such as a cut, fracture, sprain, strain, amputation, burn etc., which results from a workplace event or from a single instantaneous exposure in the work environment (***Minnesota department of labor and industry, 2002).*** For centuries, occupational injuries have affected a large number of workers all over the world. They are considered to be a public health problem that is estimated to kill more than 300,000 workers worldwide every year and to cause more cases of disabilities (***Takala, 1998***). Mortality from occupational

injuries tend to be higher in developing countries where workers experience a greater number and variety of hazards that lead to injuries and where fewer resources for injury prevention, treatment, and rehabilitation exist (***Concha-Barrientos M. et al., 2005).***

According to the best available estimates 100 million workers are injured each year in occupational accidents .Such high numbers of severe health outcomes contribute to one of the most important burden on the health of the world's population. ***(www.who.com).***

A disability-adjusted life year (DALY) is a measure for the overall "burden of disease." Originally developed by the World Health Organization, it is becoming increasingly common in the field of public health and health impact assessment (HIA). It is designed to quantify the impact of premature death and disability due to any disease on a population by combining them into a single, comparable measure. (***www.wikipedia.com).*** DALYs for a disease are calculated as the sum of the years of life lost due to premature mortality (YLL) in the population and the years lost due to disability (YLD).

DALYs = YLLs + YLDs *(www.who.com)*

Globally, occupational incidents are responsible for 8.8% of the burden of mortality and 8.1% of disability adjusted life years (DALYs) due to unintentional injuries. (***Concha-Barrientos M. et al., 2005)*** .In Egypt, the burden of unintentional injuries as estimated by the burden of disease and injuries study was responsible for 638,984 DALY'S lost, which represent 6% of the total DALY'S lost due to diseases and injuries in 1999.(***MK Mohamed et al, 2004).*** However, the burden of occupational injuries in Egypt in terms of DALY'S hasn't been calculated.

Egypt as a developing country has an urgent need for prevention strategies that are appropriate, cost-efficient and effective to face the problem of occupational injuries and decrease the burden directly related to such injuries. To develop effective prevention strategies, Egypt needs better information about the magnitude of the problem that could be obtained through the calculation of DALY's due to occupational injuries. Details of the types of injuries and the DALYs for each type could be calculated. Moreover, stratification of DALYs according to age, gender, level of education, experience, medical condition, and other characteristics of injured workers will help in determining higher risk group workers.

Work-related injuries and deaths resulting from motor vehicle crashes during work-related driving, workplace violence, falls, contact with industrial and agricultural machinery, electrical shock, fires and explosions, and many other causes continue to claim many lives. These events also cause significant impact to an injured worker's physical and psychological wellbeing and can overwhelm family resources ***(NIOSH, 1998)*** which can lead to deterioration in the quality of life (QOL) of injured workers.

Today understanding quality of life is particularly important in health care. Decisions on what research to do or which treatments to give are closely related to their effect on a patient's quality of life. ***(www.wikipedia.com)*** .The quality of life of injured Egyptian workers has not been studied before, although of its importance in detecting the physical, social, psychological outcome of occupational injury. The factor playing the key role in affecting quality of life of injured workers hasn't been determined yet, so by identifying this factor and targeting it, much improvement in the QOL of injured workers is expected.

SPECIFIC AIMS:

1- To provide a description of the rates and types of main injuries yielded in the eastern delta industrial region during the study period, in addition to the description of the personal and environmental factors related to such injuries.

2- To calculate DALY's (disability adjusted life years) lost due to morbidity and mortality from occupational injuries.

3- To determine the health-related quality of life (HR-QoL) of workers suffering from occupational injuries and the factors affecting it.

4- To provide basic information to target preventive measures for high-risk worker groups.

5- To establish and apply an electronic registry system in the Nile Insurance Hospital for recording data of cases of occupational injuries.

METHODOLOGY:

Study setting:
Our proposed study will be conducted at the Nile Insurance Hospital where all workers working in the Eastern Delta Factories are admitted in case of occupational injuries

Type of the study
The first phase is an observational prospective study among Eastern Delta workers to determine **Rates**, **Types**, and **Burden** of occupational injuries. The study sample will be all incident cases of occupational injuries presented to the Nile Insurance Hospital in the year 2008. The sample size will be about 3500 cases as estimated from the previous year 2007.

Tool:
A data collection sheet will be used to obtain data from injured workers visiting Nile Insurance Hospital for medical management. Two trained Physicians attending in the injuries center in Nile Hospital will fill the data sheet from injured workers. The Data collection sheet will include the following section:

Section 1: Personal and demographic data:
-age
-sex
-education level
-residence
-marital status
-medical history (diseases, medications, surgery)
-smoker or not
-history of previous injury

Section 2: Occupational history

-Previous jobs
-Current job
-Duration of current job
-Factory department
-Description of work tasks
- Hours of work
- Work shifts
- Use of Personal Protective Device (PPD)

Section 3: Injury history

- Type of injury sustained

- Time of injury

- Place of injury

- Body part injured

- Events or exposure
- Circumstances of event
- PPD use at time of event
- Medical Treatment
- Work Sequence

Section 4: Characteristics of workplaces:

- Economic activity.
- Private or public
- Location.
- Number of persons employed
- Date of construction.

Data Analysis

DALY's will be used to measure the burden of morbidity and mortality from occupational injuries. DALY's is the sum of the years of life lost due to premature mortality (YLL) and the years lost due to disability (YLD) for cases of health impairment in the population.

DALYs = YLLs + YLDs

YLL (Years of life lost due to premature mortality) = Egyptian life expectancy table - age at which death occur.

YLD (years lost due to disability) =

Duration of disease in years * disease weight (from global burden disease study)

Study Phase 2:

The second phase of the study will be a descriptive study among injured workers to measure the impact of occupational injury on their health related quality of life. This will be conducted in the same insurance hospital

Study sample:

In the second half of the year 2008, all injured workers visiting the insurance hospital for follow-up will be sampled approximately **6 month** after injury. The sample size will be about 300 cases as estimated from the number of cases in the same period in the year 2007; their quality of life will be measured and then compared according to the type and site of injury.

Study tool

An interview questionnaire adopted from the EQ-5D (Euro Quality of life five-dimension) will be used to measure health related quality of life. The interview questionnaire will be held by two trained physicians working in the occupational injury center in the Nile Insurance Hospital.

The EQ-5D is comprised of two parts: The EQ-5D self-classifier and the EQ Visual–Analogue Scale (VAS) **.**

The **EQ-5D self-classifier** is a self-reported description of health problems according to a five dimensional classification; *mobility*, *self-care, usual activities, pain/discomfort* and *anxiety/ depression.* Each dimension comprises three levels (no problems, some/moderate problems/extreme problems).

For example, under mobility there are three possible answers:

(N) I have no problems in walking --------
(M) I have some problems in walking----
(E) I am confined to bed----------

The **EQ VAS**, is a self-rated health status using a VAS, similar to a thermometer, to record perceptions of participants own current overall health; the scale is graduated from 0 (the worst imaginable health state) to 100 (the best imaginable state). The Mean of the self-rated health status collected by EQ VAS from injured workers will be calculated and interpreted.

Data management and analysis:
The data collected from both phases of the study will be coded and entered into a Microsoft Access database. SPSS 15.0.1 will be used to statistically analyze the data. Chi-square test will be used for qualitative data and ANOVA test will be used for quantitative data.

Study Phase 3:
This phase is concerned with establishing an electronic system for registering medical data of cases of occupational injuries through a PC using Microsoft access program. Data collected from cases will be introduced to PC through a Microsoft access program previously designed to record such data. The data will be entered by previously trained medical personnel attending in the Nile Insurance Hospital Center of Injuries.

Microsoft access program previously designed to record such data. The data will be entered by previously trained medical personnel attending in the Nile Insurance Hospital Center of Injuries.

Ethical considerations

- IRB approval will be obtained from Ain Shams University
- Informed consent from interviewed workers will be obtained in the first and second phase of the study
- All data will be coded and kept confidential.

Limitations

- The data collected will be from registered workers only as non registered workers (temporary workers) have no access to Nile Insurance Hospital

REFERENCES

- http://en.wikipedia.org/wiki/Disability-adjusted_life_years

- http://en.wikipedia.org/wiki/Quality_of_life#Measuring_health-related_quality_of_life_.28HRQoL.29

- http://www.euroqol.org/ Accessed August 10th, 2007

- http://www.who.int/healthinfo/boddaly/en/index.html

- http://www.who.int/occupational_health/publications/declaration/en/

- Holder Y., Peden M., Krug E., Lund J., Gururaj G., Kobusingye O., Injury surveillance guideline, 2001)

-Krug E. Injury: a leading cause of the global burden of disease. Geneva, World Health Organization, 1999.) Available on the Internet at: www.who.int/ violence_injury_prevention

-Marisol Concha-Barrientos, Deborah Imel Nelson, Marilyn Fingerhut, Timothy Driscoll, James Leigh. The Global Burden Due to Occupational Injury. AMERICAN JOURNAL OF INDUSTRIAL MEDICINE 48:470–481 (2005)

- Minnesota department of labor and industries, The Survey of Occupational Injuries and illnesses, 2002.

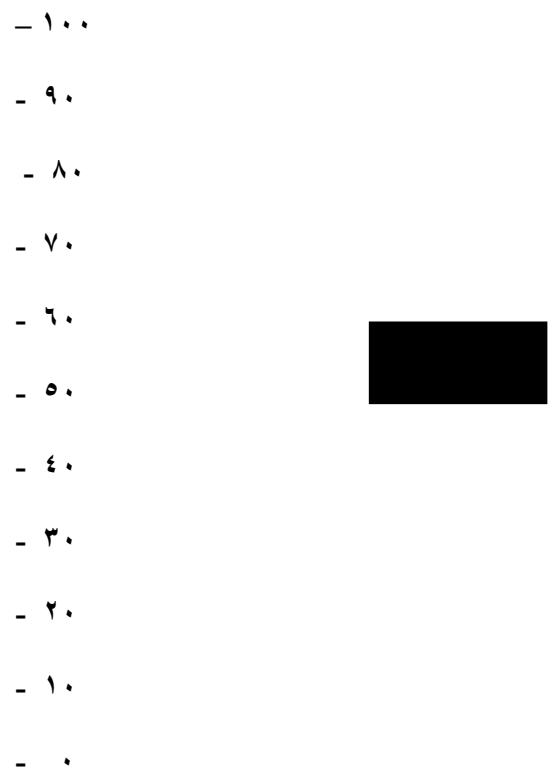
-Mohamed M.K., El-Sawy M.T., El-Hosaini M.M, The burden of disease and injury study in Egypt, August 2004.

-NIOSH, Traumatic Occupational Injury Research Needs and Priorities: A Report by the NORA Traumatic Injury Team, Publication No. 98-134.

-Peden M., McGeek K., Krug E. injury: a leading cause of the global burden of disease.

-Takala J. 1998. Global estimates of fatal occupational injuries. Sixteenth
International Conference of Labour Statisticians. Geneva, October 1998.

نريدك أن تشير على هذا المقياس لتبين لنا كيف ترى صحتك اليوم. من فضلك اعمل هذا بسحب خط من الصندوق بالاسفل إلى النقطة التى تراها تمثل صحتك اليوم



ملحق١

الحركة:

(طبيعى) ليس لدي أي مشكلة في المشي- - - - - - - -

(متوسط) لدي بعض المشاكل في المشي- - - -

(شديد) أنا أُلزم إلى السّرير- -

العناية بالنّفس

(طبيعى) ليس لدي أى مشكلة بالعناية بالنفس- - - - - - - - - - - - - - - - - - - -

(متوسط) لدي بعض المشاكل فى العناية بنفسي- - - - - - - - - - - - - - - - - -

(شديد) أنا غير قادر أن أغسل أو ألبس نفسي -

-الأنشطة المعتادة (على سبيل المثال عمل، الدّراسة، العمل المنزلي، العائلة أو أنشطة وقت الفراغ)

(طبيعى) ليس لدي أي مشكلة بإجراء أنشطتي المعتادة- - - - - - - - - - - - - - -

(متوسط) لدي بعض المشاكل بإجراء أنشطتي المعتادة- - - - - - - - - - - - -

(شديد) أنا غير قادر أن أجري أنشطتي المعتادة -

-ألم / عدم راحة

(طبيعى) ليس لدي أيّ ألم أو عدم راحة- - - - - - - - - - - - - - -

(متوسط) لدي بعض الألم المعتدل أو عدم راحة- - - - - - - - - - - - - - -

(شديد) لدي ألم شديد أو عدم راحة- -

قلق / اكتئاب

(طبيعى) أنا غير قلق أو مكتئب- -

(متوسط) أنا قلق بشكل معتدل أو مكتئب- - - - - - - - - - - - - - - - -

(شديد) أنا قلق جدًّا أو مكتئب - - -