



Assessment of patient admission outcome at Sulaimani's Intensive Care Unit General Teaching Hospital in 2013: A retrospective study

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Article info	Abstract
<p>Original: 22 Dec. 2014 Revised: 14 Feb. 2015 Accepted: 22 Feb. 2015 Published online: 20 June 2015</p> <p>Key Words: <i>Hospital admissions, retrospective study-model, Intensive Care Unit, cerebral disease, heart disease</i></p>	<p>Measuring how many people died each year and why they died along with the assessment of the diseases and the injuries that affected the population, is important for the effectiveness of the country's health (WHO, 2005). This study has been done in order to assess the frequency of the patient's characteristics, reasons and outcome of admission patients in the Sulaimani's Intensive care Unit that determine the type of diseases for hospitalized patients. Information was obtained from the patients' medical records including (age, gender, occupation, patient's outcome, residency and disease type). The records of 655 hospitalized patients with medical diseases were analyzed from January 2013 to December 2013. Males represented 52.5% and females 47.5% of them. The most affected age groups were 61-70 followed by 71-80. Out of the total, 60.9% of those discharged from hospital were alive, while, 39.1% of them were deceased. Respiratory diseases were the most common cause of admission (22.0%), followed by cerebral disease (20.3 %.), blood disease (13.9%) and heart diseases (13.1%); these were having the highest frequency among hospitalized patients. In Sulaimani, cerebral diseases, respiratory diseases, renal and heart diseases were the more prevalent leading causes of death</p>

I. Introduction

The ultimate resources to estimate the potency of a country's health system are to measure the mortality rate annually, determine the causes of death and also to evaluate the effects of the diseases on population (Liu et al., 2012). The compulsory registration of birth and death are available in some of the developing countries (Rashid et al., 2009). The vitality of civil registration system worldwide is important, which leads to improvement in tracking of global mortality (Sacco and Dong, 2014).

The incidence of death varies greatly around the world, according to (Lozano et al., 2012) who found that in 2010 (52.8) million deaths were recorded globally, due to communicable, maternal, neonatal, and nutritional disorders. In comparison to 1990's records, in 2010 significant decrease was recorded in mortality from diarrheal disease (from 2.5 to 1.4 million), lower respiratory infections (from 3.4 to 2.8 million), neonatal disorders (from 3.1 to 2.2 million), measles (from 0.63 to 0.13 million), and tetanus (from 0.27 to 0.06 million).

In September 2004, a cluster survey constituting 33 clusters of 30 household was done throughout Iraq. Each was interviewed about their household composition, births and deaths with full information concerning the date, cause, and incidence of violence since January 2002. It was not possible to put an approximate number of the Iraqis who lost their lives because of the Gulf War in 1991 and the sanction afterwards. Myocardial infarction, cerebrovascular accidents, and other chronic disorders were the major causes of death in Iraq before invasion. While after invasion, violence was the main cause of death. It was estimated that about (95%) of death is due to violence which is 58 times higher in comparison to the period before the war (Roberts et al., 2004).

According to the records of Iraqi Ministry of Health, deterioration in young children mortality is notable since February 2000, which is due to the occurrence of only a third of all death incidences in the hospitals and the accurate data are not available. For more than a decade, no surveys were available to estimate the mortality rates in Iraq. The latest estimate was a UNICEF sponsored demographic survey, which was about the mortality in children below the age of 5 in 1999 (Garfield and Leu, 2000).

From January to June 2009, a cross-sectional study achieved in Rizgary Teaching Hospital in Erbil, Iraq, the study showed that the percentage of silent infarcts among apparently healthy individuals in the Kurdish population was approximately 19%. The higher prevalence was among the age group ≥ 70 years old and the lowest prevalence was among the age group < 50 years old. The significant association was found between hypertension and old age with presence of silent infarcts among Kurdish population (Al-Shimmery et al., 2010).

Ischemic heart disease and stroke were the leading cause of death of 12.9 million people in 2010, one in four deaths globally, while the ratio was one in five in 1990; 1.3 million died due to diabetes, twice as many as in 1990 (Jones et al., 2010). In the previous decade, primarily in western countries, total stroke mortality has reduced, due to control of vascular risk factor and improvements in the treatment of acute stroke treatment at many specialized stroke center (Audebert et al., 2009).

Aim

The aim of this study is to determine the outcome of the admitted patient's characteristics, at the Sulaimani's ICU. This aim will address the following objectives.

Objectives

- Determine the characteristics of all admitted patients to ICU
- Estimate the most common causes of death in Sulaimani's ICU.
- Find out the most common causes of admission in Sulaimani's ICU.
- Investigate the effects of different risk factors like (age, gender, residency, occupation and causes of death and disease types) for the outcome of the patients.

II. Patients and Methods:

This retrospective study was carried out in Intensive Care Unit in Sulaimani's General Teaching Hospital for the period of one year from first Jan to 31st Dec 2013. A well-structured questionnaire was used to record information about the patient's demographical data such as: most common cause of admission, age, gender, residency and occupation. Additional information was also obtained from the Obituary record of the deceased patients. The patients were recorded once in the list. This was due to the fact that we encoded the

list by the patient's name and hospital number. Permission was taken from the department of health and also from authorized person at the hospital in order to review the patient's information in our study.

SPSS package program (Ver.16.0) was used to enter and analyze data. Descriptive analyses were achieved calculating frequency, mean mode, median, standard deviation and cross tabulations. To know how risk factors (age, gender, occupation, residence, and disease types) have effect on the outcome of the patient, logistic model was used and the outcome of the patient is dependent variable which has two values (0=live, 1=died). From Cox and Snell R square =0.079 that means range of computability of logistic model to sample data. Throughout the analysis, P values < 0.05 entices regarded to statistically significant.

III. Results

The numbers of admitted patients were 655. Males represented 52.5%, while females represented 47.5%. The age patient ranged between (7-100) years old with mean age \pm SD of (58.93, \pm 18.982).

The figure below shows the distribution of age of patients admitted to ICU. The majority was in age group of (61-70) (find Figure 1).

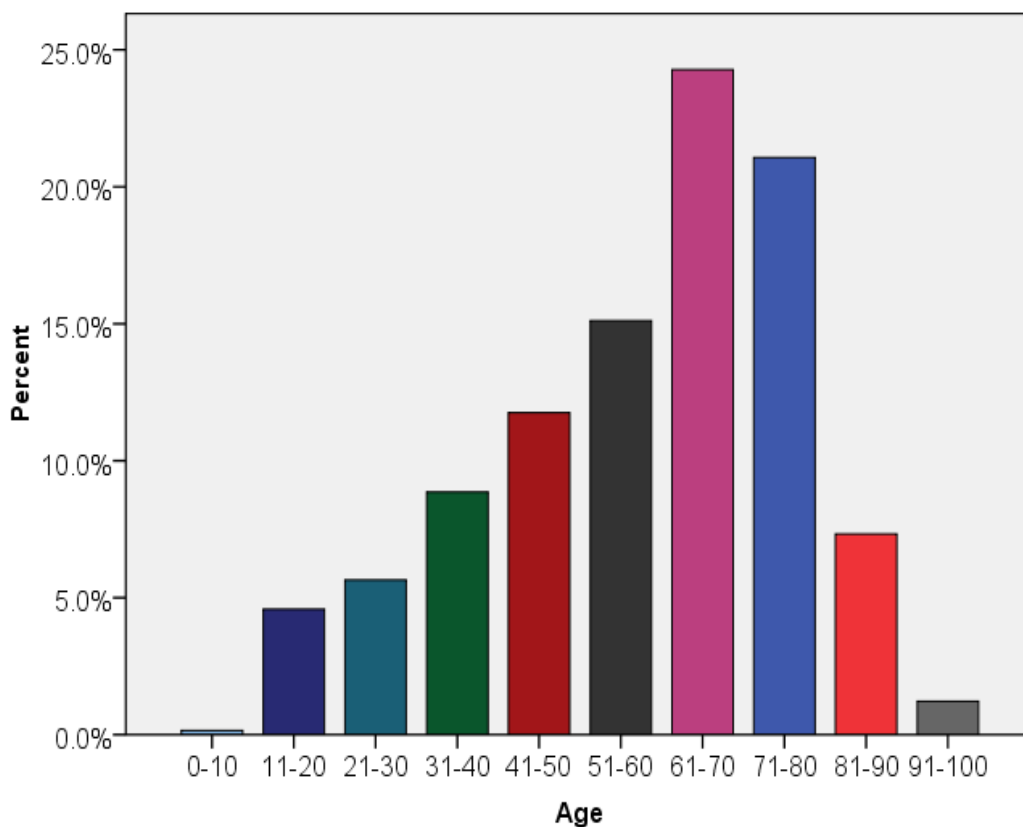


Figure 1Percentage of patients according to their age groups

Among a total of 655 patients admitted, 399 (60.9%) discharged alive, and 256(39.1%) were dead. In terms of gender risk factor, the males were slightly higher than females, (52.5% males and 47.5% for females), 52% of the patients were from city center, while 48% of them were from urban area. Regarding occupations, 268 of the patients were housewives (40%), 161 were employed (22%) and 226 of them were unemployed (38%). (Find table 1).

Table -1: Demographic characteristics

<i>Demographic characteristics</i>	<i>No.</i>	<i>%</i>
<i>IPatient's outcome</i>		
<i>Alive</i>	<i>399</i>	<i>60.9</i>
<i>Dead</i>	<i>256</i>	<i>39.1</i>
<i>Gender</i>		
<i>Male</i>	<i>344</i>	<i>52.5</i>
<i>Female</i>	<i>311</i>	<i>47.5</i>
<i>Residency</i>		
<i>City center</i>	<i>340</i>	<i>52.0</i>
<i>Urban areas</i>	<i>315</i>	<i>48.0</i>
<i>Occupation</i>		
<i>Housewife</i>	<i>268</i>	<i>40.0</i>
<i>Employed</i>	<i>161</i>	<i>22.0</i>
<i>Unemployed</i>	<i>226</i>	<i>38.0</i>
<i>Total</i>	<i>655</i>	<i>100%</i>

The figure below shows that the frequency of death is more likely to be presented among the population who were living in the urban areas and out of the region rather than those who were living in city center (Figure 2)

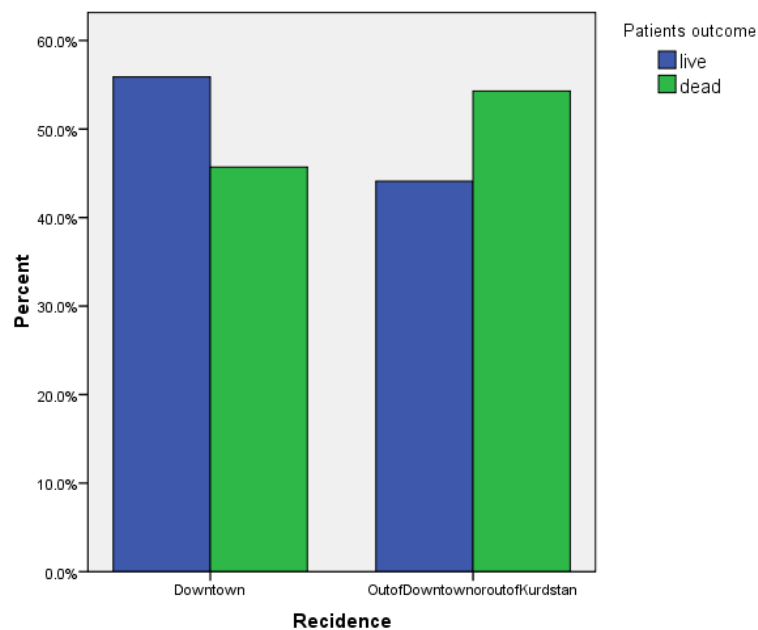


Figure 2: Percentages of patients according to their residency

The table below shows all the causes of admission. The table demonstrates the three leading causes of admission to ICU, which were respiratory disease, cerebral disease, blood disease (22%, 20.3% and 13.1% respectively) and the three leading causes of death were (cerebral disease, respiratory disease and renal disease) (table2).

Table 2 Numbers and percentages of patients status according to their disease type

<i>Disease Type</i>	<i>Live</i>	<i>Dead</i>	<i>Percentage %</i>	<i>Total</i>
<i>Cerebral disease</i>	60	73	20.3	133
<i>Heart Disease</i>	52	39	13.9	91
<i>Renal Disease</i>	38	43	12.4	81
<i>Liver &Pancreas</i>	46	13	9.0	59
<i>Blood Disease</i>	55	31	13.1	86
<i>Others</i>	20	9	4.4	29
<i>Respiratory Disease</i>	100	44	22.0	144
<i>Digestive Disease</i>	25	3	4.3	28
<i>Bone Disease</i>	2	1	.5	3
<i>Muscular Disease</i>	1	0	.2	1
<i>Total</i>	399	256	100%	655

The Wald statistical test for nonlinear model (e.g. logistic model) used to test the significance of individual logistic regression coefficient for each independent variable (risk factors). This table shows that residence, age and disease type give adequate predictions to the outcome of patient. However, gender, occupation do not have an effect on the outcome of patients (table 3)

Table 3 Test of corrected model effect through Wald chi-square test for the outcome of patient

<i>Variables in the Equation</i>						
<i>Variables</i>	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>Df</i>	<i>Sig.</i>	<i>Exp(B)</i>
<i>Gender</i>	-.117-	.245	.228	1	-.633	.890
<i>Residences</i>	.478	.169	7.994	1	*.005	1.612
<i>Disease Type</i>	-.189-	.036	27.178	1	**-.000	.828
<i>Occupation</i>	-.151-	.143	1.112	1	-.292	.860
<i>Age</i>	.163	.048	11.636	1	**-.001	1.178
<i>Constant</i>	-.986-	.818	1.455	1	-.228	.373

p* value<0.05, p** <0.001, - not significant

IV. Discussion

A retrospective - quantitative study was chosen in order to find out the main causes of death among admitted various age patients in ICU for the period of one year. This study carried out in the first of Jan 2013 to the end of Dec 2013.

Sulaimani is a rapidly developing and crowding city in Kurdistan region of Iraq due to the incidences of violence in other parts of Iraq since 2003. This big development has caused a lot of positive and negative changes to the people and the environment of the city. The positive change is the development of health care systems. However, the negative changes are the most concerning among these increasing number of cars and their pollution, some factories around the city. Therefore, it is not surprising that respiratory disease, cerebral disorder and blood disease, head the list of the most common diseases among hospital admission and incidence rate, in addition to hypertension which is the risk factor of the most common disease in this study.

An intensive Care Unit is available to manage critically ill patients in order to influence the outcome progress of most of the patients. The results of the present study revealed that compared to the discharged patients alive, more than a quarter of patients were dead, which is lower than the mortality rate in the other parts of Iraq. In a cross sectional study Hagopian et al (2013) raised awareness from the randomly selected survey of 2000 households throughout Iraq, in order to estimate the direct and indirect death from 2003-2011. This study reported that more than 60% of the death in Iraq is as a consequence of violence and about a third has occurred because of indirect causes. Whilst, these findings are of relevance to this study, however, they did not take Kurdistan mortality rate in to consideration.

Finding study exposes that there is a slightly higher incidence of death among males than females which agrees with the global mortality rate in 2004. An estimated 58.8 million deaths occurred globally, of which 27.7 million were females and 31.1 million males (Jemal et al., 2011). Our results show that there is no significant differences between the outcome of the patient and gender, which agrees with most studies except two studies found that stroke is more common in males than females (range for males 55.9–75%) (Rodica et al., 2009) One study from Saudi Arabia showed an equal ratio of males to females (El Sayed et al., 1999) and another from Kuwait showed a slightly higher female preponderance at 51.7% (Al-Shammri et al., 2003).

In terms of age, the findings show the majority of incidence rate was in age group of (61-70), which is consistent with the fact that increasing age is one of the most important risk factors for stroke. The results show that old age people usually suffer from chronic diseases such as hypertension, diabetes mellitus and heart diseases that are predisposing to cerebrovascular diseases (Benamer et al. 2009). The incidence of stroke as expected increases with age (Feigin et al. 2003). Stroke in the elderly (75 years and above) constituted 20.3% of all strokes reported in a study from Saudi Arabia (Agnoli et al. 2011).

Stroke is a common neurological disorder and the second commonest overall cause of death, and a major cause of disability in survivors (Menken et al., 2000). In terms of the reason of admission, the present study found that respiratory diseases, cerebral diseases, liver and pancreas disease and heart diseases were the leading causes of admission, which agreed with (Mitchell and Popham 2008) who stated that the respiratory disease is one of the major reasons of admission. Moreover, in the retrospective quantitative study done by (Alamoudi et al., 2006) interpreted the knowledge of five years medical records at the medical wards in King Abdul Aziz University Hospital in Saudi Arabia to determine the most common diagnosed medical disorder, they found that the large majority of affected systems were cardiac and respiratory systems (19.5%, 14.5). However finding results reveal that most of the patients died because of cerebral , respiratory, renal and heart diseases. This result supported by (Francesco, 2006), which reported that in the past decade, ischemic heart disease, stroke and lower respiratory infections have remained the top major causes of death.

Regarding incidence rate according to residence, the results show that the incidence of death is more likely present among population who were living out of region rather than those who were living in the city centre, which is agreed with the retrospective quantitative study done about obesity, and found that mortality rate

was four times more common in the urban population compared to the rural in both genders. Sedentary life style were significantly ($P<0.01$) higher in the urban population compared to the rural area (Horton, 2013).

V. Conclusions

This study concludes that (respiratory, cerebral diseases and blood diseases) were the three leading causes of admission to ICU and (cerebral, respiratory, renal and heart diseases) were the more prevalent causes of death. These risk factors (age, residency and disease type) does have an effect on the outcome of patient, however, (gender and occupation) does not have an effect on the outcome of patient. There are a limited number of surveys in the field of determining the status of patients admitted to ICU in Kurdistan region of Iraq. Also more observational studies will be needed to observe the quality of care offered to the critical ill patients in ICU.

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