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Assessment of mortality rate and causes of death in Ghasreshirin hospital, during 2000-2010

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ABSTRACT: Introduction: mortality is one of the most common factors for indicating the health status of a society, for knowing the risk factors of mortality in a region, determining the causes of death is essential, therefore this study was conducted for assessing the mortality rate and causes of death in Ghasre shirin hospital during 2000-2010. **Method:** this research was performed in descriptive- analytical, the population was all of the referred patients to Ghasre shirin hospital during 2000-2010, and the samples include all died patients in this time. Data was gathered by use of a checklist from the records of died patients, and analyzed by SPSS 16 software and descriptive and deferential statistics. **Finding:** the frequency of death was 227 cases, and regarding to the inpatient clients it was 1.82 percent per year, 67.8% was male, mean and SD of age was 56.6± 22.2. The most common causes of death were cardiovascular disorders (59.9%), poisoning and injury (13.7%) and car accident (8.4%) respectively. Cause of death was related to job and age variables significantly ($p<0.05$). **Discussion:** considering the high rate of mortality by causes of cardiovascular disorders, poisoning and injury, and car accident, it is suggested for promoting the efforts for education of inhabitants and allocation health facilities for preventing and reducing this factors.

***Keywords*:** mortality, hospital, cardiovascular diseases, death, poisoning, accidents.

INTRODUCTION

Death is defined as irreversible disorder in function of heart and pulmonary organs (Miller & Truog, 2010) which, According to literature, it happens in all the worlds by estimation of 5 per 1000 people annually, Of course this rate is differing in various regions based on registering system of mortality, health facilities, demographical characteristics and geographical conditions (Khoury, 1999). In a society, assessing the mortality rate and causes of death, accompany with other social and epidemiological evaluations, are the cornerstone of planning the health policies, it is also essential to determine priorities in term of allocating the resources, properly, in order to promoting health sector and quality of life (Akgun, 2007, Rao, 2010).

Nowadays, the trends of mortality and its causes have been changed compared to former decades; premature deaths have increased due to non-communicable diseases such as cardiovascular disorders, cerbrovascular attack (CVI), car accident and suicide (Poorolajal, 2012), in contrast, contagious and infectious conditions have been declined (Kim, 2012). In a review research by Lozano, (2012), which the mortality causes in 187 countries were investigated during 1980-2010; the results indicated, mortality by non communicable diseases increased 4 times and death rate has been raised from 46.5 million in 1990 to 52.8 million in 2010, but death due to gestational disorders, infectious and congenital diseases have been reduced (Lozano, 2012).

Though data and statistics related to causes of death and mortality are important for decision making and health policies planning (Harteloh, 2010, Franca, 2004), but there are not accurate and orderly system for recording and reporting of death in tow third of countries especially in developing nations (Akgun, 2007, Rao, 2010). In Iran, as 17th populous country in the world, howbeit all death indicators have been enhanced and live expectancy has risen during

the last three decades (after revolution of Islamic public), but there are many problems such as non- reporting of death and delay in registration by individuals. With attending to shifting the death causes toward chronic diseases, the main aim of registration system in Iran is collecting data about the reasons of mortality from different recourses (Amani & Kazemnejad 2010), hereof hospitals and other health centers are considered as one of the important place for estimating death pattern in a society, furthermore these documents are essential for staff education and standardization of medical equipments. Therefore, accurate recording and reporting in hospitals is essential (Sutra, 2012, Sanya, 2011). Ghasreshirin located in Kermanshah province, west border of Iran, and its population is more than 25000 according to census in 2011(statistical center of Iran 2011). There was not found any comprehensive research from literature review about mortality rate and death in Ghasreshirin, and considering of difference in mortality causes and its rate in various regions mainly because of climate state, smoking and drug use pattern, families income, education level and employment status (Poorolajal, 2012, Cheng & Kindi, 2012, Copeland, 2012), this study was conducted to determine mortality rate and cause of death in Ghasreshirine hospital from 2000-2010.

MATERIALS AND METHODS

***Methods**:*

this study was done in descriptive- analytical method. The population was all hospitalized patients of Ghasreshirin hospital during 2000- 2011. Sampling was performed as census method, for this purpose the records of all died patients during mentioned years were assessed. Inclusion criteria was all of the patients records whom died in the hospital and were undergone cardiopulmonary resuscitation (CPR), that means died cases in out of hospital have excluded from study. There are not any exclusion criteria, and records with missing information have stated.

The tool was a researcher- tailored checklist which designed with respect to existence information in the patients records, International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD10)(WHO 2010) and literature review. The checklist includes demographical characteristics (age, sex, living location, death date, education and job) and causes of death including; cardiovascular diseases, car accident, Poisoning and injuries, cancer and malignancy, gestational complications, mental and psychological disorders, respiratory disorders, infectious diseases, Kidney dysfunction, and unknown cases. Poisoning and injuries involving drug abuse, suicide and mine explosion. The criterion for diagnosing of death was based on written reports in the records, which expressed by physicians and nurses.

Data was gathered after taking permission from research deputy center of Kermanshah University of Medical Sciences (KUMS) and Ghasreshirine health network, and by referring to medical document sector of Hazrat Abolfazl Hospital of Ghasreshirin, so all records of died patients were assessed. Data was analyzed by SPSS 16 software and descriptive statistics (mean and frequency) and for determining relationship between cause of death and demographical factors, inferential tests (chi square, one way ANOVA) were applied. The significance level of the tests was 0.05..

RESULTS AND DISCUSSION

In this study, 227 cases of death was found during 2000-2010yrs. 67.8% (154 people) of them were male, mean and standard deviation (SD) of age was 56.7± 21.9 and the most frequency percent (23.8%) of death was in 61-70 yrs group, age of seven individuals (3.1%) were less than Ten. 76.4% have lived in urban areas, and education of 80.1% were less than diploma.

The overall estimating of death rate showed that 1.82% of hospitalized patients have died annually, the highest percent was in 2005 and lowest in 2008, (table1).

Table1. frequency of hospitalized patients and death and frequency percent of death for each year

year	Frequency of hospitalized patients	Frequency of death	Frequency percent of death
2000	Missed data	17	Non measurable
2001	560	18	3.21
2002	932	28	3.00
2003	1750	17	0.97
2004	760	26	3.42
2005	765	28	3.66
2006	695	16	2.29
2007	1368	18	1.31
2008	2556	17	0.66
2009	1114	22	1.97
2010	1037	20	1.92
all	11537	227	1.82

The most common causes of death were cardiovascular diseases (59.9%), poisoning and injuries (13.7%) and car accident (8.4%). In 7.5% of them, the cause of death was not indicated, and considered as unknown (table2). In poisoning and injuries, drug abuse (16 persons), mine explosion (11 cases) and suicide (4 individuals) had more frequency, orderly. The cause of death was not different based on variables including sex, education and living location by chi square test. But the rate of cardiovascular disease, poisoning and injuries and care accident were more in those who work as self- employed (χ^2=62.94 p< 0.001). According ANOVA test, the mean of age in died people from cardiovascular disease (66.70 yrs) was greater than car accident (28.42 yrs), poisoning and injuries (35.09 yrs), cancer and malignancy (54.33 yrs), respiratory disorders (59.28 yrs), mental and psychological disorders (63.44 yrs), and unknown cases (44.94 yrs), significantly (F= 20.17 P<0.001).

Table 2. distribution of frequency and frequency percent of causes of death

Statistical indices Cause of death	Frequency	Frequency percent
Cardiovascular diseases	136	59.9
Poisoning and injuries	31	13.7
Car accident	19	8.4
mental and psychological disorders	9	4.0
Malignancy and cancer	6	2.6
Respiratory disorders	7	3.1
Infectious diseases	1	0.4
Kidney dysfunction	1	0.1
Gestational complications	0	0.0
unknown	17	7.5
All	227	100

Discussion

The results revealed, 1.82% of hospitalized patients of Ghasreshirin Hospital have been died, annually. In this regard, in Ricciardi, (2011) study, the rate of mortality in clients of a general hospital was estimated 2.3%- 2.7% annually, which consistent with our study. In other researches the rate of mortality in critical care units and burn wards was 13.2%-17.9% and 7.7% respectively and also this amount in infant wards have been 10.7%- 14.9% (Morales, 2003, Peck, 1996, Fetuga, 2007). With respect the forgoing, the rate of mortality is differing based on the type of hospital, active units and geographical location, therefore considering that there was no any intensive care wards (ICU, CCU, and dialysis) in Ghasreshirin hospital during the study, all of critically ill patients, such as severe trauma, cardiovascular diseases, burn, cerberovascular attack, renal failure, and high risk infants and mothers, were dispatched to another close therapeutic centers, thus relatively low rate of mortality is justifiable.

In this study the main cause of death was cardiovascular diseases which are similar to Mathers, (2009) who investigated the causes of death in 111 countries. In another study in Germany, (2012), 46% of deaths were related to cardiovascular disorders (Zobel, 2012), but in Ansari, (2013) in Saudi Arabia and Sanya, (2011) in Nigeria, malignancy and cerebrovascular attack were the most common causes of death, respectively. Some factors have been demonstrated as the predisposing of cardiovascular diseases and their subsequent deaths; sedentary life style, high weight, dietary fats and alcohol consumption are some of them (Cascio, 2012, Fernandez, 2011, Shiyovich . 2013, Pun, 2013), in this regard, the factors like race agents, gender and place of residence also were mentioned (Quan, 2013). Considering, the high prevalence of cardiovascular diseases as a primary cause of death in recent years (Khosravi, 2008), it is suggested for preparing early diagnosing of cardiovascular diseases and its risk factors, warning the people of society about high incidence of these problems, and education to who affected by heart disorders for continuing use of prescribed therapeutic regimens.

The second factor of death was poisoning and injuries, which the age of more than 67% of these subjects was under 40 yrs. In this study Poisoning and injuries involving drug abuse, suicide, mine explosions, which had more frequency in young and middle age, male, self- employed individuals and people with diploma and over. In Dibben study (2009), from Scotland, one thirds of deaths in 15-54 years caused by drug abuse, and also in Iran, Drug abuse has been intended as the most common cause of suicide (Saberi-Zafaghandi, 2012), in Khademi, (2012) there are significant relationship between drug use and cardiovascular and pulmonary diseases and then high mortality. Explosions of mine are most common in borders of Iran (Jahunlu, 2002) which has not been well sanitized in Ghasreshirin, west of Iran, therefore it is recommended for more studies. In aspects of suicide and drug abuse it is believed that, because of legal and social issues, some people have avoiding to give detailed information about their victims, so the death registration systems have dealt with some difficulties in term of diagnosing of mortality. It is appears the high mortality rate in this persons is associated with; absence of knowledge about the drug complications, mine- land areas and its explosion; lack of follow-up and ongoing cares and also poor social and familial support for drug users and people who vulnerable to suicide; and infectious-transmitted by needle and during drug consuming; which demanded further investigations.

The third factor for death was car accident, which the most of victims were in age 11-30. WHO (2003) reported, 1.26 million people has being died via car accident annually, which is the second factor of mortality in 14-29 yrs group, and 25% of all deaths (Hejazi, 2012, Sanaei-Zadeh, 2002). Deaths from car accident are due to injuries into the vital organs like brain, chest and abdomen, which is expected for increasing these injuries and mortalities in next decades, because of developing motor vehicles, non- compliance to traffic rules by drivers and pedestrians, inadequate monitoring for standardization of vehicles and their safety, and defect in road construction (Moharamzad, 2008, Wong, 2002). Regarding the low safety of motorcycles and high mortality by them (Wong, 2002), the researcher of this study argued that many of the fatal accidents happens by this vehicle in Ghasreshirine, because of more misusing of it and lack of qualified drivers, which, other studies are needed for approving this issue

CONCLUSION

In this study the most common causes of death were cardiovascular diseases, poisoning and injuries and motor vehicle accidents. With regarding to preventability of these factors, thereby it is recommended for life style change toward regular exercise and healthy diet; avoiding drug abuse and referring to its treatment for cutting; notification to inhabitants about the potential areas of mine explosion and land-mine areas; and providing the necessary training to people on adhering to traffic rules. It is also suggested for equipping health centers, especially concerning on hospital facilities, ambulances, operation rooms, inpatients wards, and qualified staff in medical fields.

It is proposed for performing further research related to mine explosion injuries and motor vehicle accidents in Ghasreshine.

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REFERENCES

Akgun S, Rao C, Yardim N, Basara BB, Aydin O and Mollahaliloglu S. 2007. Estimating mortality and causes of death in Turkey: methods, results and policy implications. Eur J Public Health Dec;17(6):593-9.

Amani F and Kazemnejad A. 2010. "Changing Pattern of Mortality Trends in Iran, South, SouthWest Asia and World, 1970-2010", *Iranian J Publ Health,* vol. 39, no. 3, pp. 20-26.

Ansary LA, Esmaeil SA and Adi YA. 2012. Causes of death certification of adults: an exploratory cross-sectional study at a university hospital in Riyadh, Saudi Arabia. Ann Saudi Med Nov;32(6):615-22.

Cascio G, Schiera G and Di L I. 2012. Dietary fatty acids in metabolic syndrome, diabetes and cardiovascular diseases. Curr Diabetes Rev, 8(1):2-17.

Cheng ER and Kindig DA. 2012.Disparities in premature mortality between high- and low-income US counties. Prev Chronic Dis,;9:E75.

Copeland L, Robertson J, McKenzie J, Kimber J, Macleod J and Hickman M. 2012.Premature mortality in Scottish injecting drug users: a life-history approach. Scott Med J, Feb;57(1):38-42.

Dibben CJ. 2009. One-third of the excess death rate in 15-54 year olds in Scotland due to problem drug use. Evid Based Ment Health;12(2):42.

Fernandez LC, Serra JD, Alvarez JR, Alberich RS and Jimenez FP. 2011. [Dietary fats and cardiovascular health]. Aten Primaria;43(3):157-16.
Fetuga B, Ogunlesi T, Adekanmbi F, Olanrewaju D and Olowu A. 2007, "Comparative analyses of childhood deaths in Sagamu, Nigeria: implications for the fourth MDG", *SAJCH OCTOBER*, vol. 1, no. 3, pp. 106-111.
Franca E, de Abreu DX, Rao C and Lopez AD. 2008 . Evaluation of cause-of-death statistics for Brazil, 2002-2004. Int J Epidemiol;37(4):891-901.
Harteloh P, de BK and Kardaun J. 2010.The reliability of cause-of-death coding in The Netherlands. Eur J Epidemiol;25(8):531-8.
Hejazi R, Shamsudin MN, Radam A, Rahim KA, Ibrahim ZZ and Yazdani S. 2012. Estimation of traffic accident costs: a prompted model. Int J Inj Contr Saf Promot ; 20 (2): 152- 157.
Jahunlu HR, Husum H and Wisborg T. 2002 . Mortality in land-mine accidents in Iran. Prehosp Disaster Med;17(2):107-9.
Khademi H, Malekzadeh R, Pourshams A, Jafari E, Salahi R and Semnani S. 2012. Opium use and mortality in Golestan Cohort Study: prospective cohort study of 50,000 adults in Iran. BMJ;344:e2502.
Kim KS, Kim SD and Lee SH. 2012 . Trend of mortality rate and injury burden of transport accidents, suicides, and falls. J Prev Med Public Health;45(1):8-13.
Khosravi A, Rao C, Naghavi M, Taylor R, Jafari N and Lopez AD. 2008. Impact of misclassification on measures of cardiovascular disease mortality in the Islamic Republic of Iran: a cross-sectional study. Bull World Health Organ;86(9):688-96.
Khoury SA, Massad D and Fardous T. 1999. Mortality and causes of death in Jordan 1995-96: assessment by verbal autopsy. Bull World Health Organ;77(8):641-50.
Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K and Aboyans V. 2012 . Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 15;380(9859):2095-128.
Mathers CD, Boerma T and Ma FD. 2009. Global and regional causes of death. Br Med Bull;92:7-32.
Miller FG, Truog RD. 2010. Decapitation and the definition of death. J Med Ethics;36(10):632-4.
Moharamzad Y, Taghipour H, Hodjati FN, Hodjati FA, Hashemzadeh M and Mirjalili M. 2008 . Mortality pattern according to autopsy findings among traffic accident victims in Yazd, Iran. Chin J Traumatol;11(6):329-34.
Morales IJ, Peters SG and Afessa B. 2003 . Hospital mortality rate and length of stay in patients admitted at night to the intensive care unit. Crit Care Med;31(3):858-63.
Peck MD, Mantelle L and Ward CG. 1996 . Comparison of length of hospital stay to mortality rate in a regional burn center. J Burn Care Rehabil;17(1):39-44.
Poorolajal J, Esmailnasab N, Ahmadzadeh J and Motlagh TA. 2012. The Burden of Premature Mortality in Hamadan Province in 2006 and 2010 Using Standard Expected Years of Potential Life Lost: A Population-based Study. Epidemiol Health;34:e2012005.
Pun VC, Lin H, Kim JH, Yip BH, Chung VC and Wong MC. 2013 . Impacts of alcohol duty reductions on cardiovascular mortality among elderly Chinese: a 10-year time series analysis. J Epidemiol Community Health; 67 (6): 514-8.
Quan H, Chen G, Walker RL, Wielgosz A, Dai S and Tu K. 2013 . Incidence, cardiovascular complications and mortality of hypertension by sex and ethnicity. Heart; 99 (10): 715-21.
Rao C, Porapakkham Y, Pattaraarchachai J, Polprasert W, Swampunyalert N and Lopez AD. 2010. Verifying causes of death in Thailand: rationale and methods for empirical investigation. Popul Health Metr;8:11.
Ricciardi R, Roberts PL, Read TE, Baxter NN, Marcello PW and Schoetz DJ. 2011. Mortality rate after nonelective hospital admission. Arch Surg;146(5):545-51.
Saberi-Zafaghandi MB, Hajebi A, Eskandarieh S and Hmadzad-Asl M. 2012 . Epidemiology of suicide and attempted suicide derived from the health system database in the Islamic Republic of Iran: 2001-2007. East Mediterr Health J;18(8):836-41.
Sanaei-Zadeh H, Vahabi R, Nazparvar B and Amoei M. 2002 . An epidemiological study and determination of causes of traffic accident-related deaths in Tehran, Iran (during 2000-2001). J Clin Forensic Med;9(2):74-7.
Sanya EO, Abiodun AA, Kolo P, Olanrewaju TO and Adekeye K. 2011 . Profile and causes of mortality among elderly patients seen in a tertiary care hospital in Nigeria. Ann Afr Med;10(4):278-83.
Shiyovich A, Shlyakhover V and Katz A. 2013. [Sitting and cardiovascular morbidity and mortality]. Harefuah;152(1):43-8, 58, 57.
statistical center of Iran. census 2011. statistical center of Iran . 2014. Available at: http://www.amar.org.ir/Default.aspx?tabid=133, access date: 10.01.2015.
Sutra S, Chirawatkul A, Leelapanmetha P, Sirisuwan S and Thepsuthammarat K. 2012 . Evaluation of causes-of-death: which statistics should we rely on, hospital deaths or vital statistics? J Med Assoc Thai;95 Suppl 7:S262-S273.
Zobel C, Dorpinghaus M, Reuter H and Erdmann E. 2012 . Mortality in a cardiac intensive care unit. Clin Res Cardiol;101(7):521-4.
Wong E, Leong MK, Anantharaman V, Raman L, Wee KP and Chao TC. 2002 . Road traffic accident mortality in Singapore. J Emerg Med;22(2):139-46.
world health organization. International Statistical Classification of Diseases and Related Health Problems 10th Revision. world health organization . 2010.
available at: http://apps.who.int/classifications/icd10/browse/2010/en. Access date: 10.01.2015.