

EPIDEMIOLOGY, TREND AND COMMON CAUSE OF MORTALITY IN MAHSHAHR CITY DURING 2010-2014

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ABSTRACT

Introduction: Epidemiological study related to causes and trend of mortality is very necessary for health policy and control of diseases and even accountability at the community level. This study investigates the trend and causes of death in the city of Mahshahr during the 5 years (2010-2014). **Materials and Methods:** In this study, data was derived from records in Health Centers in the city of Mahshahr, Khuzestan Province, Iran. The data was obtained by different sources such as the cemeteries registration of Mahshahr, hospitals and health centers. International Classification of Diseases (ICD10) was used for grouping causes of death. Data were analyzed by SPSS Version 19 and tables and charts by EXCEL statistical software. **Results:** 4637 deaths occurred during the years 2010-2014 in the city of Mahshahr that most of the deaths (21.6%) were reported in year 2014. About 56.6 percent of the total cases were men and 43.1% were women. The highest frequency of death occurred in age group of older than 65 years with

the 2034 cases (43.8%). The lowest frequency of deaths by 37 deaths was observed in the age group of 6-10 years (0.7%). About 54% and 31.7% of deaths occurred in hospital and in the home, respectively. Based on the list of classification of causes of death (ICD10), in the city of Mahshahr, five common causes of death are blood circulatory system (40.5%), accidents and poisoning (8.9%), endocrine and nutritional diseases (7.6%), cancer and tumor (7%) and respiratory diseases (3.3%). **Conclusion:** The cause of death of the last five years shows that

despite prevention programs non-communicable diseases particularly cardiovascular disease, cancer and accidents are on the top causes of death. Planning for the control and prevention through public educating about risk factors of chronic disease and risk factor reduction demands is necessary.

KEYWORDS: Mortality, Death, Trend, Epidemiology, ICD10.

INTRODUCTION

Mortality is an inherent phenomenon in any society and is a non-renewable events unlike other demographic phenomena that include all members of society and therefore it has the same intensity or publicity for all. Death is the most important issue compared to other demographic events that has always attracted the human mind. Although death is inevitable, due to its nature, the human will die eventually. However, people always throw in an attempt to escape and delay it. Accordingly, efforts and economic policies, health and social cares are always and will be for the reduction of mortality and life expectancy increase.^[1] There is no doubt that the level of mortality in the past has been very high compared to the present, so that before the industrial revolution the overall mortality rate in all countries was not lower than 30 per thousand and even in some of the conditions scored 50 per thousand. However, today mortality rate is low in the world, and in fact, most countries have entered the transitional phase. Study on global trends in mortality shows that mortality rates have decreased worldwide in the last two centuries, but the historical beginning of the decline, processing, and their severity are varied.^[2] One of the most appropriate strategies for prolonging human life is pattern recognition causes of death and dealing with its agents. To ensure long life, pattern of deaths in the community should be identified and deal with the causes of premature death ponder and confront them. One of the most basic principles of planning, managing and evaluating health sector in all countries is credible information on the causes of morbidity and mortality, explaining the process and its changes.^[3] The main strategy is to increase longevity and improve human health is identify the causes of mortality and its associated risk factors in the community and identify and deal with its causes. Thus, the number of deaths in the country and the reasons for them is important.^[4] This study also included consideration of all requirements of previous research (changing the image of death from infectious diseases to non-communicable diseases). Pattern of death has been changed in Mahshahr, because this city has been a hub for industry and geographical proximity of petrochemical factories, oil industry and local dust contaminants in recent years and

moreover due to changes in nutrition and lifestyle globalization. In addition, the possible effect of chemical and environmental contaminants on the process will be hoped to get the most appropriate solutions to reduce this amount and provide increased life expectancy.

Research Method

In this retrospective study, information relating to the death during the years 2010-2014 in the city of Mashhad was analyzed. Data on the number and causes of death during five years were derived from health departments' records and from different sources such as the registration of Mahshahr City, cemeteries, hospitals and health centers. For grouping causes of death from the International Classification of Diseases (ICD10) was used.^[5] The trends of mortality based on these sources in five studied years were analyzed. Data were analyzed by SPSS19 and using EXCEL statistical software for tables and charts.

FINDINGS AND RESULTS

A total of 4637 number of deaths occurred during the period of 2010-2014 in the city of Mahshahr, that the highest number 1004 (6.21%) was related to the year 2014 (Table 1). The 4637 number of deaths during the five years, 2627 were men (56.6%) and 2003 were women (43.1%). 91% of the deaths were related to urban population and 5/8% were related to the rural population. From the point of the place of death, 96.5% was in the city and 6.2% was in villages. 54% and 31.7% of deaths occurred in hospital and in the home, respectively. The age group of older than 65 years, by the 2034 number of deaths has the highest frequency of death (43.8%). The lowest frequency of deaths by 37 deaths was observed in the age group of 6-10 years (0.7%) (Figure. 1). According to the seasonal variable, from 4637 deaths, most frequently with 1241 deaths (26.7%) occurred in autumn and winter with 1160 deaths (25%) was second (Table 2). Based on the ranked list of ICD 10, the five most common causes of death in the city of Mahshahr, were respectively related to diseases of the blood circulatory system with 1881 deaths (40.5%). Then related to accidents and poisoning with 416 deaths (8.9%), endocrine and nutritional diseases with 355 deaths (7.6%) cancer and tumors with 333 deaths (7%) and respiratory diseases with 157 deaths (3.3%) (Table 3). From 1881 deaths related to diseases of the blood circulatory system, heart attack was 1213 cases (64.4%) and 293 cases (15.5%) had a stroke. 666 patients (54.9%) and 557 cases (45.9%) of the 1213 deaths caused by heart attack were men and women, respectively (Table 4). From 293 stroke deaths, 149 patients (50.8%) were male and 144 (49%) were women (Table 5). 321 cases (77%) of 416 deaths from accidents, injuries and poisoning were related to traffic accidents

with 255 cases (79.4%) were male and 66 (20.5%) were female. From total of registered deaths caused by cancer during years of 2010 to 2014, lungs and bronchus cancer had the highest number of 56 cases (16.8%), breast cancer with 37 (11.11%), liver with 30 cases (9%) were in 2th and 3th place respectively (Figure 2).

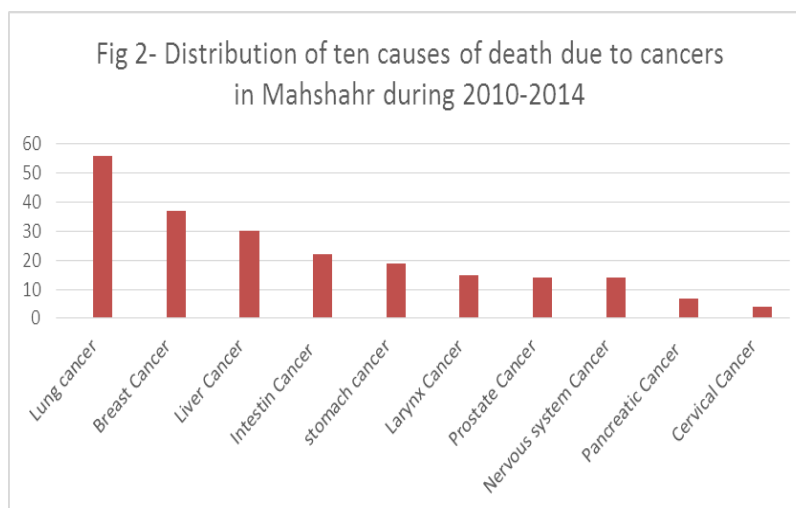
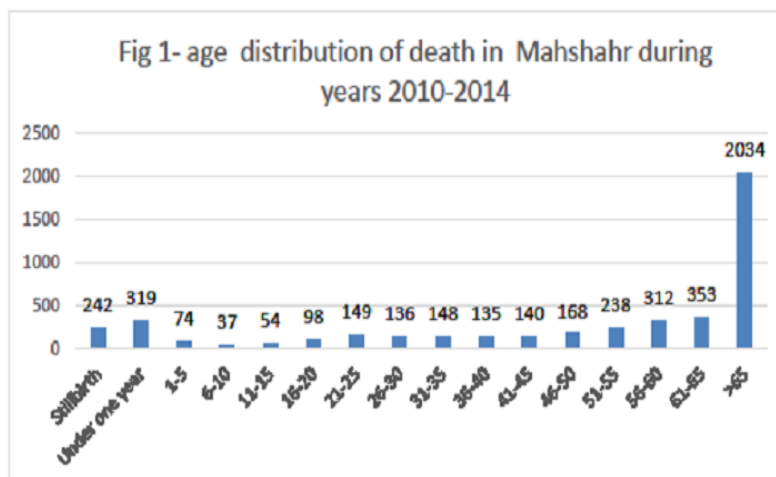


Table 1- Distribution of crude deaths rate in Mahshahr during 2010-2014.

Years	Population	Recorded Deaths	Crude Death
2010	258607	924	3.57
2011	276734	842	3
2012	271340	917	3.37
2013	276461	950	3.43
2014	280856	1004	3.57

Table 2- Seasonal Distribution of death in Mahshahr during 2010-2014.

Year	Spring	Summer	Autumn	Winter	Total
2010	242	201	246	235	924
2011	218	232	243	149	842
2012	207	200	252	258	917
2013	184	240	259	267	950
2014	254	258	241	251	1004
Total	1105	1131	1241	1160	4637

Table 3- Distribution of five common causes of deaths in Mahshahr during 2010-2014.

Causes of deaths	2010	2011	2012	2013	2014
Diseases of the circulatory system" Cardiovascular diseases"	336 36.3%	443 52.6%	414 45.1%	387 40.7%	301 29.9%
Accidents and poisoning	96 10.3%	76 9%	82 8.9%	75 7.8%	87 8.6%
Endocrine diseases, nutrition and metabolism	18 1.9%	19 2.2 %	72 7.8%	109 11.4%	137 13.6%
Cancer and tumors	50 5.4%	60 7%	68 7.4%	56 5.8%	99 9.8%
Respiratory system diseases	31 3.3%	34 4%	35 3.6%	31 3.2%	26 2.5%

Table 4- Distribution of Infarction death in Mahshahr during 2010-2014.

Year	Male	Female	Total
2010	192	143	335
2011	136	136	272
2012	144	141	285
2013	137	106	233
2014	57	31	88

Table 5- Distribution of Brain stroke deaths in Mahshahr during 2010-2014.

Year	Male	Female	Total
2010	43	36	79
2011	56	38	94
2012	20	32	52
2013	15	23	38
2014	15	15	30

Table 6- Distribution of deaths in traffic accidents in Mahshahr during 2010-2014.

Year	Male	Female	Total
2010	61	10	71
2011	50	11	61
2012	42	16	58
2013	46	13	59
2014	56	16	72

DISCUSSION

In this study, most of the cases with 2627 deaths (56.6%) of 4637 numbers were men. The findings of the study is similar to findings^[6-9] related to mortality statistics in developed countries. The high mortality ratio in men may be related to their business activities in job environment, exposure to risk factors and smoking. Men also are less sensitive than women for their health and medical cares. Considering the crude rate of death in the country (5.5-5.9%), the crude rate of death in city of Mahshahr (3.57%) is lower than the country death ratio in 1393. The findings of this study are similar to.^[6] In Lorestan province 4.4% was reported in the year 2011, which was lower than the national death rate. Crude death ratio of less than 0.005 should be considered with caution. It is seen as an indication that death registration is incomplete and should be amended.^[10] Based on these findings, the age group over 65 years (43.8%) and 6-10 year (0.7%) had the highest and lowest death rate, respectively. The findings are similar to Farzandipour and Rangrazjedi in Kashan^[9], which found that the highest mortality was at the age of 65 years (54%), and Forouzanfar et al.^[7] that reported the highest mortality rate was at the age of 65 years (48.9%) in Birjand. Forty-one deaths (0.8%) were recorded due to infectious disease. Low mortality due to infectious and parasitic diseases could be considered as evidence of effective health care system of the country. The study showed that death from blood circulatory system diseases, accidents, toxicity and cancer are the top causes of death. The diseases of the Blood circulatory system causing over 40.5% deaths of the total death numbers may be related to the lack of reporting of causes of death registration systems. Because in some cases, doctors record cardiac arrest (the group of diseases of the circulatory system) on the death certificate instead of the actual death reasons, which this has led to a higher portion of this group than their real portion.^[3] Our results corroborated some findings.^[3,9,11] and confirmed the results of economical developed countries (OECD).^[12] From the 4637 deaths, 26% was allocated to a heart attack (Table 4). 54.9% of these numbers were men and 45.9% were women. In 2011, the death rate from heart attack was reduced compared to 2010. In the year 2011, this ratio increased then significantly reduced between 2013 and 2014. In studies on mortality rates in 18 province of our country in 2001, 45.7% of deaths were due to cardiovascular diseases that 45.72% and 41.88% of them were belong to men and women, respectively which confirmed our findings. The numbers of 293 (6.3%) of 4637 deaths were related to stroke (Table 5). However, studies carried out in 18 provinces in 2001, stroke total ratio was 8.9%.^[13] Men's stork ratio was 50.8% and in women was 49%. Stroke ratio in men was higher than women although this difference in the stork mortality ratio was very little. These results were similar to the results

of mortality surveys in European countries like Spain, France, Portugal, Finland and Russia.^[13] In 2011, there was an increase in deaths from stroke and then by the year 2014 the death rate from stroke decreased. The registered cases of deaths caused by accidents and poisoning cases were 416 (8.9%) that is the second cause of death. 321 cases (77%) Of these deaths were due to traffic accidents in which 255 people died were men and 66 were women. These findings confirmed results of some studies.^[3,8,11,14,15] Although our results were incompatible to other findings^[6,16], which found that deaths from accidents were in first rank. Traffic accidents are one of the important health risks in our society. Use of safety devices such as seat belts, helmets, seats for children, reduction of drug abuse, primary and urgent care at the scene, observing the traffic rules could considerably reduce casualties in traffic accidents. Overall results of this study show that cancer deaths with 333 cases (7%) were the fourth leading cause of deaths. Every year, over 30,000 of Iranian people lose their lives because of cancer. Annually, more than 80,000 new cases of cancer are estimated to occur in Iran. Increasing life expectancy and increase in the percentage of elderly in the population, expect to increase cancer cases in the next two decades will be double than the current rate^[17]. The results of this study confirmed other studies.^[15] Recorded deaths related to cancer show that Lung cancer with 56 deaths (16.8%) was the most common during 2010-2014, followed by breast cancer by 37 deaths (11.1%), liver with 30 deaths (9%), stomach with 22 deaths (6.6%) and intestine with 19 deaths (5.7%), respectively. The findings of this research about common cancers (lung and breast) are consistent with the other findings.^[18] According to a study, 1590000 people died by lung cancer in 2012.^[19] Lung cancer is now a leading cause of death worldwide and has a large variety in both men and women that this difference is due to the desire to smoke. Increasing the portion of death because of cancers may be related to some factors such as increasing urbanization, major changes in nutritional supplementation model, lifestyle, air pollution, smoking etc. Special attentions to identify high-risk groups, screening, treatment, education about avoiding the use of tobacco and alcohol, modified eating habits to prevent related cancers, workplace safety and effective protection against biological and chemical pollutions have vital role in reducing cancer deaths.^[3] Extensive operations in primary and secondary prevention of the risk factors such as increase in daily caloric intake, intake of saturated fats, lack of exercise, smoking cigarettes stressful life, as well as air pollution caused by petrochemical and local dust, can significantly reduce the death rates due to these diseases.

CONCLUSION

The study of the causes of death in the city of Mahshahr during 2010-2014 show that death from non-communicable diseases, particularly cardiovascular disease, cancer and accidents are still in the first rank of causes of mortality. The major reasons of this are increasing the human lifespan, increasing the risk of prolonged facing time to the risk factors, changes in life style and lack of compliance with safety rules. Now many of the deaths from circulatory system diseases and cancer are preventable by proper life style, healthy nutrition, physical activity to prevent overweight and obesity, non-smoking and reducing stress. Rapid and timely actions of local authorities of the city also are effective to control pollutions especially dust emissions in recent years. To reduce the increasing trend of non-communicable diseases, improving lifestyle modification, pattern of food consumption with emphasis on reducing consumption of salt, sugar and fat is recommended. It should be noted that women are responsible for family and have the most important roles in this. It is better to incorporate the education of healthy eating culture from kindergartens and primary schools. In our society traffic accidents is one of the major health risks. Traffic accidents and casualties are significantly reduced by using protective devices such as seat belts, helmets, seats for children and comply with traffic rules, particularly to maintain proper speed.

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