Spatial Patterns of Exogenous Mortality in Kuwait

Makki Muhammad Aziz

Abstract

Although records show the increasing role of endogenous mortality, exogenous causes still represent a serious threat to health in Kuwait, where they accounted for over 40 percent of the total mortality in 1985. This paper is concerned with the spatial distribution of these diseases. It will also help to reflect the influence of various social, economic, and demographic factors on the patterns of distribution.

Mortality rates are calculated for 100,000 persons of the country's two communities: Kuwaitis and non-Kuwaitis.

The seventeen major causes of death incorporated by the international classification are adopted and split into two major groups: infections and parasitic diseases, and all other causes excluding cardiovascular diseases, neoplasms and accidents.

Although the role of infectious and parasitic diseases is declining, they were still responsible for nearly 10 percent of total deaths in 1980. Mortality figures were higher among Kuwaitis, and the majority were male.

In some parts of the country, and the Capital governorate in particular, nearly half of the deaths were caused by parasitic diseases. Other major causes are tuberculosis and intestinal infections.

Mortality rates of the remaining exogenous causes run at a level of 40 percent compared with 60 percent in 1970. Death tolls among Kuwaiti nationals are more than twice those of non-Kuwaitis. Mortality figures are highest among Kuwaiti males and non-Kuwaiti females.

The number of deaths is higher in the densely populated areas of both communities, particularly those in remote areas. Diseases of the respiratory system seem to be the major cause of death, especially among Kuwaiti citizens. Other prominent causes of death in some areas are those related to conditions of the perinatal period, congenital anomalies and diseases of the digestive and urinary systems.

Key words: Kuwaiti, non-Kuwaiti, exogenous mortality, endogenous mortality.

I. INTRODUCTION

It is usually difficult to distinguish between the two broad endogenous and exogenous causes of death. The causes in each of these groups are only arbitrary.1) In this study exogenous mortality will exclude those caused by the degenerative diseases, such as cardiovascular diseases and cancer, in addition to those of accidents which were the topic of a previous study by the author.2) The purpose of this study is to detail and identify the spatial distribution of exogenous causes of mortality in the major administrative units of Kuwait.3)

Although the study is mainly concerned with the distribution patterns of diseases, it should indirectly reveal the areal differentiation of social, economic and environmental factors.

Mortality rates are calculated for one hundred thousand persons of the two distinct communities in Kuwait: Kuwaitis and non-Kuwaitis.4) The seventeen major causes of mortality incorporated by the international classification are adopted, with the exclusion of the three above mentioned causes and are regrouped into two main categories for the purpose of this study.5) These are: Infectious and parasitic diseases, and all other diseases.

Population and vital data compiled by con-
cerned governmental departments provide the basic source of information. Mortality data on an administrative level only became available in the census year of 1985, and they will be used in this study.6)

II. INFECTIOUS AND PARASITIC DISEASES

According to mortality records of all seventeen causes of death, the infectious diseases group is regarded as the eighth most important cause.7) It appears also that the role of such diseases is declining quickly whether in terms of deaths or mortality rates as time passes. Mortality rates for the total population, for example, dropped from 82 percent in 1970 to 76 percent in 1975, then to 35 percent in 1980 and less than one third of this in 1985.8) It can be said, therefore, that nearly 10 percent of total deaths were due to such causes in 1980, but only 4 percent in 1985. This trend can be seen among both segments of population. Mortality among the Kuwaitis looks higher, but it is declining very quickly as well. Of both sexes, males seem to be more vulnerable to the risks of death (Table 1).

Mortality rates, however, vary greatly from one governorate to another. Rates in two governorates, the Capital and Hawalli, were much less than those of the total population (Figs. 2 and 3). This was especially true among the Kuwaiti males and non-Kuwaiti females of the Capital. The mortality rate for the Kuwaiti population of this governorate was much less than half that of the total Kuwaiti population in the country. Among the male Kuwaitis the rate was much less than a quarter of that of the total male Kuwaiti population.

The low mortality figures in the Capital governorate are to be expected since here is located the capital city of the state, the oldest inhabited Kuwaiti area of the country. Therefore, it was among the first places where health services were established and people began to enjoy a better standard of living. However, Kuwaitis represent only about 36 percent of the total population here.9)

According to death records, about half of the deaths caused by infectious diseases is due to unspecified parasitic diseases. As the same time about three out of each four deaths are Kuwaitis or females, whereas these diseases account for not more than 10 percent of their total deaths in the country as a whole.10) Other death

Figure 1. Governorates of Kuwait
Table 1 Mortality Rates in Kuwait by Exogenous Causes of Death, Governorate, Nationality and Sex, 1985
(Deaths per 100000 population in specified governorate)

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Nationality</th>
<th>Governorate</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Capital</td>
<td>Hawaiili</td>
<td>Ahmadi</td>
<td>Jahra</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M  F  T</td>
<td>M  F  T</td>
<td>M  F  T</td>
<td>M  F  T</td>
<td>M  F  T</td>
</tr>
<tr>
<td>Infectious and</td>
<td>K</td>
<td>3.4 9.7 6.6</td>
<td>10.1 17.7 14.0</td>
<td>13.6 16.1 14.9</td>
<td>19.7 27.0 23.4</td>
<td>13.9 20.4 17.2</td>
</tr>
<tr>
<td>Parasitic</td>
<td>N.K</td>
<td>6.8 0.0 4.7</td>
<td>5.4 4.2 5.0</td>
<td>8.7 3.7 7.0</td>
<td>7.0 22.0 12.1</td>
<td>6.4 5.1 5.9</td>
</tr>
<tr>
<td>Diseases</td>
<td>T</td>
<td>5.8 4.7 5.4</td>
<td>6.5 8.5 7.4</td>
<td>10.7 11.0 10.8</td>
<td>16.0 26.1 20.7</td>
<td>9.0 12.3 10.4</td>
</tr>
<tr>
<td>Other Causes</td>
<td>K</td>
<td>20.2 28.5 188.2</td>
<td>179.7 142.6 161.0</td>
<td>174.4 134.4 154.3</td>
<td>195.1 290.0 178.0</td>
<td>194.0 154.9 174.3</td>
</tr>
<tr>
<td></td>
<td>N.K</td>
<td>51.6 81.3 61.6</td>
<td>61.1 63.1 61.9</td>
<td>65.7 90.5 87.4</td>
<td>97.0 105.3 100.0</td>
<td>66.1 74.0 69.1</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>95.5 126.1 107.2</td>
<td>89.8 88.1 89.0</td>
<td>111.4 116.0 113.5</td>
<td>166.8 151.3 159.5</td>
<td>111.4 112.0 111.6</td>
</tr>
<tr>
<td>Total (endogenous &amp; exogenous)</td>
<td>K</td>
<td>626.4 418.2 520.3</td>
<td>402.9 312.0 357.3</td>
<td>403.1 247.3 324.7</td>
<td>432.5 303.5 367.8</td>
<td>480.0 321.0 400.0</td>
</tr>
<tr>
<td></td>
<td>N.K</td>
<td>244.5 153.6 216.4</td>
<td>186.0 135.2 165.3</td>
<td>225.4 161.5 216.5</td>
<td>270.6 201.8 246.9</td>
<td>222.5 152.0 195.5</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>353.9 281.0 326.0</td>
<td>238.3 191.2 218.0</td>
<td>299.8 211.3 262.6</td>
<td>385.8 285.7 339.2</td>
<td>313.3 231.0 277.7</td>
</tr>
</tbody>
</table>

Basic Data From:


M=Male, F=Female, T=Total.
cases are due to a variety of causes, each with small numbers, and confined only to the female population.

The same can be said about mortality rates in Hawalli governorate. Figures don’t differ much from those of the capital compared with those of national level. This governorate in contrast to the Capital, represents the oldest residential
area for non-Kuwaiti immigrants. Hence, it has been enjoying good health and public amenities long before other non-Kuwaiti suburbs. This probably indicates why mortality rates among immigrants is only about one third that of Kuwaitis, who are considered only a small minority or about 27 percent of the governorate’s total population.11)

Mortality toll in this governorate comprises about 40 percent of total Kuwait population deaths by infectious diseases. Tuberculosis seems to be the major cause of death, where it claims more than 34 percent of total infectious diseases deaths. Male mortality constitutes more than 54 percent of the victims.12) About two thirds of tuberculosis deaths are among the Kuwaitis only, and their women in particular, while the opposite is true with non-Kuwaitis. Intestinal infectious diseases are the second most important cause with about 23 percent of total deaths. Here female mortality comprises three quarters of total deaths. Kuwaitis again are the main victims with about 63 percent of the governorate total losses. Diseases such as other parasitic diseases and viral diseases are of minor importance.

Mortality figures among the population of Ahmadi governorate on the other hand, look closer to those of the total population, compared with previous governorate. Also, mortality rates among non-Kuwaitis appear to be a little higher, and closer to those of Kuwaitis. Unlike previous governorates, Kuwaitis here constitute about half of its total population.13)

The highest number of deaths, or more than 36 percent, is due to tuberculosis here. It seems that both sexes are affected equally by the disease. Although tuberculosis incidents constitute here about a quarter of the disease’s total number deaths in the country, about three quarters of all cases are among the Kuwaitis. Other unspecified parasitic diseases represent the second biggest cause with about 27 percent of deaths distributed almost equally between males and females once again. These diseases account for one fifth of total population deaths in the country, and about 80 percent of these deaths are among the Kuwaitis only.14) Other diseases in this group are the intestinal infections and viral diseases, but these play a smaller role.

Mortality rates recorded in Jahra for Kuwaitis and non-Kuwaitis in 1985, are the highest in the country. They easily exceed many times the national and other governorates rates. This is not surprising, however, since this governorate and Ahmadi include the largest desert areas both in northern and southern parts of Kuwait respectively. People from the eastern and northern parts of the Arabian Peninsula have long been attracted to the Jahra Oasis, and Kuwaiti citizens constitute more than 76 percent of the total population.15) Until its conversion to a governorate in the late seventies, Jahra was a small village. Medical and municipal services are therefore limited and the standard of living is lower than in other areas of Kuwait.

Intestinal infectious diseases claim about 57 percent of total infectious diseases group deaths. Females suffered twice as much as males, while only 12 percent of total deaths occurred among the non-Kuwaitis. Inadequate health and socio-economic conditions can be attributed to the high incidence of intestinal deaths, which exceed 58 percent of all deaths due to disease. The second cause is the other parasitic diseases, and these claim another 22 percent of the total infectious diseases deaths in the country. More than 85 percent of the victims are Kuwaitis, while female mortality comprises nearly two thirds of both communities deaths. The remaining cases are attributed to other causes which play only a minor role in this respect.

III. OTHER CAUSES16)

Although this group includes most of the death causes in the country, its mortality rates only equal to the combined rates of circulatory system diseases and neoplasms. Rates for Kuwaitis and non-Kuwaitis are either the same or a little higher than that of heart diseases. These causes therefore amount to no more than 40 percent of total deaths in Kuwait.

The death figures for this group have been declining sharply over the past fifteen years. In 1970 about 58 percent of deaths were due to these diseases. The figure was 52 percent in
1975, and had declined to 49 percent in 1980.\(^{17}\)

Death records indicate the increasing role of endogenous causes, and the declining role of exogenous causes, which include this group and infective and parasitic diseases.

The highest incidence of death can be seen among native Kuwaitis. For every six of their deaths in the country there are only three non-Kuwaiti deaths. Death rates are higher among both Kuwaiti males and non-Kuwaiti females.

Since the death risks of these diseases are strongly related to environmental and socio-economic factors, their distribution pattern is expected to be different from one part of the country to another (Figs. 4 and 5). In the Capital, for instance, deaths from these causes amount to more than 32 percent of total deaths in the governorate. Mortality of Kuwaitis from exogenous causes seems to be predominant, comprising more than 78 percent of total deaths. Females were less affected, having only two deaths for every eight male deaths.

The biggest single cause of death in this group is that related to respiratory system diseases. It is responsible for about 8 percent of total deaths in the governorate. Three quarters of these are Kuwaiti, and two thirds are male. The governorate contributes about 13 percent to the number of total deaths from this cause in Kuwait.

Other less important causes are certain conditions originating in the perinatal period, and congenital anomalies.

Contrary to the case in the Capital, the lowest figures of death seem to be those recorded in Hawalli governorate. For every ten people that die here, four of them die from these causes. Three quarters of the victims are Kuwaiti. Both sexes are affected equally by these causes of death. Mortality figures show, however, that the heaviest loss of life from these diseases is in Hawalli. The highest casualties are caused by certain conditions of the perinatal period. Nearly 45 percent of their total deaths are recorded in this governorate alone. Females and non-Kuwaitis are the major victims.

The second most important cause, as in other parts of the country, are the congenital anomalies. Half of the country's total deaths from these ailments are in Hawalli. Two thirds of the victims are Kuwaiti, and 60 percent of them are male.

The third biggest cause are respiratory dis-

---

**Figure 4. Mortality Rates for Other Causes Among Kuwaitis per 100,000 Persons**
cases. Of the total deaths from these diseases, about 55 percent are Kuwaiti, and for every ten deaths, six are male. Other diseases in this group are those of the digestive and urinary systems and unspecified symptoms and conditions.

The second highest figure was that recorded in Ahmadi. Mortality from these diseases here, equalled 40 percent of the total mortality figure for Kuwait. Three fifths were Kuwaiti, and they were evenly distributed among the sexes.

As in previous governorates, 20 percent of deaths were caused by various conditions from the perinatal period. Two thirds of them were Kuwaiti, with a male majority.

Unspecified symptoms and conditions in this governorate accounts for a quarter of the country's total deaths from these causes. Most were Kuwaiti with an even distribution among the sexes.

Congenital anomalies and respiratory diseases account for 16 percent of all deaths in Kuwait. Diseases of the digestive and urinary systems play a minor part here.

The highest mortality rates were in Jahra. These diseases were responsible for half of all deaths. They affected both communities and sexes equally.

Various conditions of the perinatal period seem to be the major cause of death once again. Most of the victims are Kuwaitis, and three fifths of them are male.

The next biggest cause of death are symptoms and unidentified conditions. They claim about one third of total deaths, the majority being Kuwaiti and female.

The third biggest cause of death are the congenital anomalies, accounting for one fifth of their total death in Kuwait. Almost all victims are Kuwaiti, and about half are male.

Diseases of the respiratory system have a similar impact as congenital anomalies here. Those who suffer most are the Kuwaitis, and the majority of these are female.

**IV. CONCLUSION**

Analyzing and studying mortality variations is increasingly being used as an indicator of the geographic distribution of mortality and health care in Kuwait. Because of the review of spatial patterns of exogenous mortality, the importance of its role can clearly be seen among the Kuwaiti and non-Kuwaiti communities. In the
middle eighties exogenous causes accounted for more than 40 percent of total deaths. Infectious diseases still represent a major threat to public health, despite their decreasing incidence. In 1980 they caused one out of ten of the country's total deaths. This figure decreased by more than 50 percent after five years. However, mortality rates differ from one part of the country to another. Low figures have been recorded in the Capital and Hawalli governorates. These are the oldest residential areas for both communities. Therefore a higher standard of living and health care has been established here for much longer than other areas.

Higher figures are recorded in the other two governorates, particularly in Jahra. This is due to the relatively limited medical and social services in the past. It is not surprising that 60 percent of deaths from infectious diseases are caused by intestinal infections. Although the standard of health care has improved in these areas over the past few decades, attention as well as preventive medicine is still needed in this area.

Other causes of exogenous mortality have been decreasing in occurrence throughout the country since the early seventies. As before, mortality rates differ in various parts of the country. The highest figures are recorded in Jahra and Ahmadi governorates, Jahra being in northern and Ahmadi in southern Kuwait. Conditions of the perinatal period, congenital anomalies, diseases of the respiratory system and viral diseases are the biggest risks to health. It is hoped, however, that their incidence will decline, due to the comprehensive and highly advanced medical services which are being provided in those areas that need them most. But the ever increasing threat of these and other parasitic and viral diseases due to large scale immigration and the increasing role of endogenous causes will undoubtedly create a great challenge for the public health services of the country.

(Received Mar. 31, 1990)
(Accepted July 7, 1990)

Notes and References

3) The State of Kuwait is located in the northwestern corner of the Arabian Gulf in south-west Asia between 28.45–30.05°N and 46.30–48.30°E. It covers an area of 18000 km² with a population of nearly two millions. Kuwait has very hot and dry summers and mild winters. Despite Kuwait's size, large scale economic, social and urban diversifications have been characteristic of the country since oil production began in 1950. The State is divided according to general census of 1985 into the following major administrative units or governorates: the Capital, Hawalli, Ahmadi and Jahra (Fig. 1).
4) Non-Kuwaitis are immigrants from nearly a hundred countries that are residing in Kuwait for various purposes. In the 1985 census Kuwaitis made up only 40 percent of the population. Age and sex compositions differ in the two communities. Less than half the Kuwaitis are adults (15–59) while 70 percent of the non-Kuwaitis are adults. Three quarters of non-Kuwait adults are male compared to half of the Kuwaiti adults. See: State of Kuwait, Ministry of Planning, Central Directorate of Statistics (1986): General Census of Population 1985, Vol. 1, Kuwait, p. 6, Table 2.
6) A general census has been conducted in Kuwait every five years. The first was in 1957, and the latest in 1985.
7) According to official records this group of causes consists of the following diseases: 1. Intestinal Infectious Diseases. 2. Tuberculosis. 3. Other Parasitic Diseases. 4. Viral Diseases. 5. Rickettsioses and Other Anthropoid-Born Diseases. 6. Veneral Diseases. 7. Other Infectious and Parasitic Diseases and Late Effects.
10) Calculated from:
   a. Ministry of Planning, Central Directorate of


16) This group includes all the remaining thirteen causes of the seventeen major causes list mentioned earlier in this paper as following: I. Endocrine, Nutritional & Metabolic Diseases. II. Diseases of Blood and Blood Forming Organs. III. Mental Disorders. IV. Diseases of the Nervous System and Sense Organs. V. Diseases of the Digestive System. VI. Diseases of Genito-Urinary System. VII. Complications of Pregnancy, Childbirth and the Puerperium. VIII. Diseases of Skin and Subcutaneous Tissue. IX. Diseases of Musculoskeletal System. X. Congenital Anomalies. XI. Certain Conditions Originating in the Perinatal Period. XII. Signs, Symptoms and Ill-defined Conditions.


Other References


クウェートにおける外因性死亡の地域パターン

M. M. アジズ*

本研究はクウェートにおいて、1985年に死因の40%以上を占めた外因性疾患による死亡を地域的に考察したものである。クウェートの人口は、クウェート人と非クウェート人の2つの明瞭に異なるコミュニティから成り立ており、両グループの社会的、経済的、人口学的特性は死亡の分布に大きく影響している。

死亡率は、死因に関する国際分類により、クウェート人と非クウェート人別に、10万人ごとに算定した。外因性死因は細菌・寄生虫感染によるものと、心疾患・腫瘍・事故を除く、それ以外のものに分けられる。前者は、減少しつつあるが、1980年の死亡の10%を占め、クウェート人と男性に著しく、クウェート市を含む首都地区では、死亡の半数が寄生虫病によるものである。後者による死亡は、1970年に60%であったものが、1980年には40%台に減少した。クウェート人の死亡者数は、非クウェート人の2倍以上に上り、クウェート人の男性と非クウェート人の女性に顕著である。

死亡者数は、クウェート人・非クウェート人ともに人口密度地区において多く見られるが、呼吸器系の疾患が、特にクウェート人の主たる死因となっている。

* クウェート大学文学部地理学教室　クウェート国クウェート市