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A STUDY OF MORTALITY IN IRAQ 1978-1979, PLACE AND TIME VARIABLES

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دراسة الوفيات في العراق ١٩٧٨-١٩٧٩
المتغيرات المكانية والزمانية

الخلاصة :

تُعنى هذه الدراسة بعلاقة اسباب الوفيات بالمتغيرات المكانية والزمانية . وقد بينت ان اعلى معدل للوفيات كان في منطقة الفرات الاوسط عندما درست اسباب الوفيات مجتمعة وكذلك بالنسبة لاكثر اسباب الوفيات عند دراستها على حدة . كذلك بينت الدراسة ان اغلب الوفيات حدثت في المستشفيات وكان فصل الشتاء هو الفصل الذي حدثت فيه اكثر نسبة من الوفيات . .

وقد وجد ان هناك تمايز احصائي في العلاقة بين المكان الذي حدثت فيه الوفيات من جهة وبين كل من المنطقة التي يسكنها المتوفى ، الفصل الذي حدثت فيه الوفاة والفئة العمرية من جهة اخرى. كما كان هناك تمايز احصائي في العلاقة بين المنطقة التي يسكنها المتوفى والفئة العمرية . .

SUMMARY:

This study deals with the relationship of the causes of death under study to place and time. It shows that the mid-Euphrates province to have the highest death rates from all causes of death combined as well as from most of the specific causes, and that most of the deaths have taken place in hospitals. The winter season has the highest incidence of death, generally, and for most of the specific causes of death.

A statistically significant relationship was found between the place of death on one hand and the province, season and age group on the other hand. This was also true for the relationship between provine and age at death.

INTRODUCTION:

The determinants of death can be studied using the "person, place, time" epidemiological model. Jamil et. al. paper[1] had already dealt with the "person" variables. This part will deal with the "place and time" variables and their relationships to the causes of death under study and to one of the demographic "person" variables which is age.

Place: frequency of disease can be related to place of occurrence in terms of areas set off either by natural barriers, such as mountain ranges, rivers, deserts or political boundaries[2].

Time: Study of disease occurrence according to time is a basic aspect of epidemiologic analysis[2]. This is true for disease incidence but not true for death due to many causes[2]. Death due to acute causes, e.g. infections and injuries, may reflect the seasonal variations in their incidence, but death due to chronic conditions dose not reflect seasonal variation, e.g. death due to cancer and connective tissue diseases. Therefore, our interpretation as to the effect of time on the occurrence of death rather than disease will be very cautious

MATERIALS AND METHODS:

In our country we have eighteen governorates which we have grouped into four provinces as in table 1.

Unfortunately we had no urban-rural based data.

Another variable that deals with the element of "place" is the place of death (home, hospital or other).

The month of death was also studied to complete the person-place-time distribution. The months of the year were grouped into four seasons.

Statistical Method: For statistical description we have used rates and percentages and for the analysis we have used the Chi-square statistical test.

RESULTS:

Table 1 shows the distribution of the death rates per 100000 population

according to different causes of death and province, while table 2 shows the percentage distribution of the causes of death according to place of death. Table 3 shows a statistically significant relationship between the province and the place of death ($P<0.005$), While table 4 shows that most of the deaths had taken place in the winter season. However, table 5 shows that the relationship between the season and place of death is statistically significant ($P<0.005$) with the summer season having much more home deaths and less hospital deaths. Table 6 reveals a statistically significant relationship between the age group and the place of death ($P<0.005$), while table 7 shows a statistically significant relationship between province and age group ($P<0.005$).

DISCUSSION:

The Mid-Euphrates province has shown the highest crude death rate, and together with the Southern Province, have shown the highest cause-specific

Table 1. Distribution of the death rates per 100000 population according to different causes of death and province*.

Cause of Death	Central	Northern	Southern	Mid Euph.	Total
Infections and parasites	23.7	26.1	46.8	54.6	32.8
Neoplasms	24.8	7.9	29.3	31.1	21.5
Nervous and sense	7.6	9.7	8.7	10.1	8.6
Circulatory	124.9	66.2	176.8	202.4	132.9
Respiratory	29.9	31.0	27.0	60.5	34.4
Digestive	18.9	21.3	37.3	35.3	25.0
Genitourinary	7.1	4.9	10.3	6.7	7.1
Congenital anomalies	4.0	1.8	6.3	5.0	4.1
Perinatal conditions	15.2	6.7	15.1	20.2	14.1
Ill-defined	88.4	99.0	159.4	157.1	113.1
Injury and poisoning	23.4	35.2	49.9	45.4	33.8
All causes	367.7	310.0	558.1	628.2	427.3

* 1. The Central Province: Baghdad, Diala, Al-Ta'mim, Al-Anbar, Wasit and Salah Aldin.

2. The Northern Province: Nenava, Erbil, Al-Sulaimaniya and Duhok.

3. The Southern Province: Basrah, Maysan and Thi-kar.

4. The Mid Euphrates Province: Al-Muthana, Al-Najaf, Al-Qadisiya, Kerbala and Babylon.

Table 2. Percentage distribution of the causes of death according to place of death Iraq, 1978-1979 (row persentage).

Causes of death (diseases & disorders)	Place of Death			
	Home	Hospital	Other	Total 100% No.
Infections & parasitic	(58.6)	(40.2)	(1.2)	251
Neoplasms	(34.8)	(65.2)	-	164
Nervous and sense	(54.5)	(45.5)	-	66
Circulatory	(33.5)	(65.0)	(1.5)	1015
Respiratory	(55.5)	(41.8)	(2.7)	263
Digestive	(58.1)	(40.3)	(1.6)	191
Genitourinary	(57.4)	(42.6)	-	54
Congenital anomalies	(51.6)	(48.4)	-	31
Perinatal conditions	(82.4)	(14.8)	(2.8)	108
Ill-defined conditions	(16.4)	(80.7)	(2.9)	861
Injury and poisoning	(49.8)	(19.1)	(31.1)	257
All causes No.	1242	1883	136	3261
%	(38.1)	(57.7)	(4.2)	100

Table 3. Percentage distribution of the place of death according to province. Iraq, 1978-1979 (row percentages).

Province	Place of death			
	Home	Hospital	Other	Total (%) No.
Central	(44.2)	(52.5)	(3.3)	1300
Northern	(38.8)	(53.7)	(7.5)	510
Southern	(39.6)	(57.0)	(3.4)	703
Mid Euphrates	(23.5)	(72.3)	(4.3)	728
Total No.	1222	1883	136	3241
%	(37.7)	(58.1)	(4.2)	100

$X^2 = 112.4058$

$df = 6$

$p < 0.005$

Table 4. Causes of death distributed according to season. Iraq, 1978-1979 (row percentages).

Causes of death	Winter	Spring	Summer	Autumn	Total 100% No.
Infections & parasitic	(33.5)	(24.7)	(17.9)	(23.9)	251
Neoplasms	(30.5)	(23.8)	(18.3)	(27.4)	164
Nervous and sense	(27.3)	(25.8)	(19.7)	(27.8)	66
Circulatory	(37.6)	(17.8)	(16.9)	(27.7)	1016
Respiratory	(43.4)	(23.2)	(12.6)	(20.9)	263
Digestive	(39.3)	(17.8)	(17.8)	(25.1)	191
Genitourinary	(37)	(24.1)	(9.3)	(29.6)	54
Congenital anomalies	(22.6)	(41.9)	(19.4)	(16.1)	31
Perinatal conditions	(34.3)	(25)	(17.6)	(23.2)	108
Ill-defined conditions	(35.5)	(19.9)	(16.8)	(27.8)	864
Injury and poisoning	(26.7)	(19)	(23.3)	(31)	258
All causes No.	1163	668	562	873	3266
%	(35.6)	(20.5)	(17.2)	(26.7)	100

Table 5. Place of death distribution according to season. Iraq, 1978-1979, (row percentages).

Season	Place of death: Home	Hospital	Other	Total 100% No.
Winter	(38.2)	(85.7)	(3.1)	1162
Northern	(38.8)	(62.3)	(3.9)	666
Summer	(45.4)	(50.0)	(4.6)	560
Autumn	(36.5)	(58.0)	(5.5)	813
Total No.	1242	1883	136	3261
%	(38.1)	(57.7)	(4.2)	100

$X^2 = 27.307$

$df = 6$

$p < 0.005$

Table 6. Placesof death distribution according to age groups. Iraq, 1978-1979. (column percentage).

Age-groups (years)	Place of death			
	Home	Hospital	Other	Total 100% No. 100%
0-1	(31.7)	(10.9)	(8.2)	603(18.8)
2-14	(15.7)	(7.5)	(29.6)	371(11.6)
15-44	(15.1)	(10.3)	(36.3)	425(13.2)
45-64	(17.7)	(21.7)	(17.0)	640(19.9)
65+	(19.8)	(49.7)	(8.9)	1170(36.5)
All age No.	1240	1834	135	3209 100%

$X^2 = 548.111$

$df = 8$

$p < 0.005$

Table 7. Death by province by age groups. Iraq, 1978 and 1979.

Province	Age groups (Years)					
	0-1	2-14	15-44	45-64	65+	Total No. 100%
Central	(7.8)	(4.1)	(5.5)	(8.1)	(14.6)	1288(40.1)
Northern	(3.4)	(2.6)	(3.1)	(3.3)	(3.8)	508(15.8)
Southern	(3.6)	(2.2)	(4.3)	(4.3)	(9.2)	691(21.5)
Mid Euphrates	(4.4)	(2.6)	(2.4)	(4.3)	(8.9)	727(22.6)
No.	604	372	425	640	1173	3214
Total %	(18.8)	(11.6)	(13.2)	(19.9)	(36.5)	100%

$X^2 = 69.8118$

$df = 12$

$P < 0.005$

death rates formost of the causes under study (Table 1). We could not find any explanation for this result. Had we known the age structure for each province we could have calculated the age adjusted death rates. The difference in the age structure between different communities can affect death rates[3]. The higher

death rates due to infections and parasitic diseases and respiratory diseases may reflect unhygienic living conditions, and the higher death rates due to these and other causes of death may reflect the inavailability of medical services or the poor utilization of these sevices.

As for the place of death, most of the deaths have taken place in hospitals. because the person is usually taken to the hospital when seriously ill. Home deaths ranked second and there were only a few deaths in other places, except for injury and poisoning where death in places other than hospital or home had accounted for up to 31.1%. This is due to the fact that these deaths could take place on the roads (Road Traffic Accidents) as well as drownings and other violent deaths, as death is mostly immediate in these instances.

The relationship between province and the place of death was statistically significant as can be seen from Table 3. However, we cannot compare our results to those from other studies as we could not find similar studies neither from Iraq nor from other countries. Our speculation is that this difference might be due to cultural differences between the communities in the different provinces. The excess deaths in places other than hospitals or homes in the Northern Province may be due to excess road traffic accidents due to the mountainous nature of this province, or poor transportation facilities and segregation.

As for the seasonal variation, death due to infections and parasitic diseases, and respiratory disease is understandably higher in the winter due to the adverse effect of cold weather on the course and outcome of these diseases. Deaths due to circulatory causes is also highest in the winter. This result is in accordance with the work of many other authors who have demonstrated excess death due to ischaemic heart diseases in particular in winter[4]. Deaths due to perinatal conditions was also found to be highest in the winter possibly due to a higher incidence of cold injury (hypothermia) which may accentuate other perinatal conditions or even lead to death by itself[5]. The finding that death during winter is generally higher than other seasons was also demonstrated by other authorities[2].

It is worth mentioning here, that seasonal effect on the occurrence of disease conditions is much more profound than its effect on the actual death due to the disease. The disease that occurs in a particular season may kill the

patient in a short time, e.g. acute infection or run a rather protracted course before ending in death, e.g. malignant conditions. This is one of the reasons why we cannot speculate on the relationship of the season to the cause of death, because we don't know the time period between the onset of the disease and the death.

This study has demonstrated a statistically significant relationship between the place of death and the season, where most of the home deaths have occurred in the summer, most of the hospital deaths in the spring and most of the deaths in other places in the autumn (Table 5).

It had also demonstrated a statistically significant relationship between age groups and the places of death. The highest percentage of home deaths occurred among infants (Table 6), probably because those infants die mostly of infections diseases, congenital anomalies and perinatal conditions as shown in Table 1, Jamil et.al. paper[1]. These conditions especially infections and perinatal conditions tend to be acute and severe, to which the infant will succumb fairly quickly may be even before the parents have a chance to bring the condition to medical attention. The severity of these conditions tend to be underestimated by the parents, especially those who live in remote and rural areas and do not avial properly of medical services.

Most of the hospital deaths occurred in the oldest age group (65 + years) who usually die due to rather chronic conditions e.g. neoplasms, circulatory and ill-defined conditions as can be seen in Table 1, Jamil et. al paper[1]. These conditions usually necessitate hospitalization.

As for deaths in other places it had mostly happened in the 15-44 years and the 2-14 years age groups respectively. This can only be explained on the basis of the higher risk in these age groups to die from accidents and injuries which may happen in places away from homes and hospitals, usually on the roads[6]

The relationship between age group and the province was found to be statistically significant (Table 7). However, we cannot draw conclusions from this table as we do not know the age structure of each province, and therefore we cannot calculate the age adjusted rates.

RECOMMENDATIONS:

It would be very useful for us, and indeed for all of those involved in research work to have an annual publication issued by some official body to give a yearly numerical description of the population of Iraq. This statistical publication should have the following information:

Age structure of each governorate, Urban and rural population, Socio-economic structure of the population, Income categories of the population, etc.

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