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A Report on the Cause of Death of Expatriates from Kerala in the Persian Gulf Countries

Introduction

SINCE the beginning of 1970's, employment in the countries surrounding the Persian Gulf has become very lucrative for the people of Kerala and there has been a regular exodus of Keralites to countries such as Kingdom of Saudi Arabia, United Arab Emirates, Sultanate of Oman, Kuwait, etc. for salaried employment as well as for business. Names like Dubai, Abu Dhabi, Sharja, Muscat and Riyadh have become byewords for prosperity.

However, a special circumstance attending the Kerala NRI's (Non-Resident Indian) in the Gulf countries is that, whatever their length of stay, they are hardly ever given the citizenship of their country of domicile. They are always NRI's. And, when they die, their bodies are, almost always, brought home to Kerala.

There seems to be a general impression that most of the deaths of the expatriates from Kerala living in the Persian Gulf countries are due to 'heart attack' or 'heart failure'. However no systematic study based on hard evidence has yet been made (at least to our knowledge) about the cause of death of Kerala's expatriates to the Gulf countries. An attempt is made in this paper to do just that.

Source of Data

The bodies of the deceased Keralites arriving from Gulf countries are brought into India mostly through the International airports at Thiruvananthapuram and Calicut. In these airports, a number of documents are to be presented to the Customs authorities before the bodies are released. One of them is a doctor's death certificate. This gives information on, among other things, age, sex and the disease or injury that has caused the death. The cause of death given in the death certificate, though generally clear and reasonably precise, is sometimes quite vague. Examples: "Old age", "natural death", etc. In many cases the cause of death is "Unknown".

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Usually the Customs do not preserve these documents beyond a year after arrival. However, Dr. S. S. Mani, Chief

Medical Officer, Thiruvananthapuram Airport, has taken the pains to systematically copy the essential particulars contained in the death certificates into a notebook. He very kindly gave us this book containing data for 1989 to 1998 for copying. We were not so lucky with Calicut. We could get only around 50 cases from there—mostly cases of 1998 and a few of 1999. However, while the number of cases arriving at Calicut is about 50 per year, it is about 300-400 at Thiruvananthapuram. This report is thus based on 3251 cases out of which 3200 were obtained from Thiruvananthapuram and the rest from Calicut.

Place of Death

Of the total number of cases obtained, an overwhelming majority is of course from the Gulf countries—2972 or 91.4 per cent of cases. And among the Gulf countries UAE's share is the highest (1363) followed by Kingdom of Saudi Arabia (KSA) (608) and Oman (536). All other Gulf countries together account for 465 cases.

A detailed distribution of cases by countries is given in Table 1.

TABLE 1: DISTRIBUTION OF CASES BY COUNTRY OF DEATH

| <i>Country</i> | <i>Frequency</i> | <i>Percentage</i> |
|---------------------------|------------------|-------------------|
| 1. U. A. E. | 1363 | 41.9 |
| 2. Saudi Arabia (K. S. A) | 608 | 18.7 |
| 3. Oman | 536 | 16.5 |
| 4. Behrain | 177 | 5.4 |
| 5. Kuwait | 142 | 4.4 |
| 6. Qatar | 139 | 4.3 |
| 7. Other Gulf Countries | 7 | 0.2 |
| Gulf countries total | 2972 | 91.4 |
| U. S. A. | 79 | 2.4 |
| European countries | 43 | 1.3 |
| African countries | 28 | 0.9 |
| Others | 115 | 3.5 |
| Unknown | 14 | 0.4 |
| Others total | 279 | 8.6 |
| Grand total | 3251 | 100.0 |

In the sequel, analyses are carried out taking all the available 3251 cases, which includes 279 cases from non-Gulf countries also.

Distribution of Deaths by Cause

For classification of deaths by cause we have followed the International Statistical Classification of Diseases, Injuries and Causes of Death (Ninth Revision) published by WHO (1977). Considering the number of cases obtained under the different major groups and 3-digit codes of the WHO ICD code list, for the purpose of this study the following major groups have been formed:

TABLE 1.1: THE MAJOR GROUPS OF CAUSE OF DEATH USED FOR THIS STUDY AND THEIR COMPOSITION IN TERMS OF WHO ICD CODE LIST

| <i>Major groups used/or this study</i> | | <i>Corresponding WHO ICD codes</i> |
|---|--|---|
| <i>Major group number used for this study</i> | <i>Description</i> | |
| I | Infectious and parasitic diseases | Group 1:001 to 139 |
| II | Neoplasms | Group II: 140 to 239 |
| III | Endocrine, nutritional and metabolic diseases, immunity disorders and diseases of blood forming organs | Groups III & IV : 240 to 289 |
| IV | Diseases of nervous system and sense organs | Group VI: 320 to 389 |
| V | Diseases of the circulatory system | Group VII: 390 to 459 |
| VI | Diseases of the respiratory system | Group VIII: 460 to 519 |
| VII | Diseases of the digestive system | Group IX: 520 to 579 |
| VIII | Diseases of genito urinary system and complications of pregnancy, childbirth and puerperium | Groups X & XI: 580 to 676 |
| IX | Other diseases including ill-defined and unknown causes | Groups XII to XVI: 680 to 799 |
| X | Injury and poisoning including burns and self-inflicted causes | Group XVII and Supplementary causes: 800 to 999 and E800 to E999. |

Note: Group V of ICD code list. Mental disorders, was not included in any group as there was no case in this category.

The descriptions of the causes of death given in the records do not follow any standard pattern. Therefore, for the purpose of this report, the nomenclature of the WHO ICD code list has been adopted'. In the following section we analyze the causes of death, which are important as far as this data set on deaths of expatriates are concerned.

Table 2 gives the distribution of deaths by major groups of causes. It can be seen that by far the most frequent causes of death are diseases of the circulatory system (Group V) and injuries including poisoning and burns (Group X). The cause "other diseases..." (Group IX) mostly consists of causes not reported or reported as unknown.

We shall now consider the groups individually.

Of the 34 cases in Group I, pulmonary tuberculosis accounts for 10 and septicaemia for 19 deaths.

The 57 cases of neoplasm are well distributed over a large number of body sites. But neoplasm of the brain (10) and leukemia (13) are relatively more frequent.

Almost all the cases of Group III are accounted for by diabetes mellitus (29 out of 32).

In the largest group of cause of death—diseases of the circulatory system—"heart failure" is the cause for 849 deaths out of 1380. This is followed by "acute myocardial infarction" (210) and "acute pulmonary heart disease" (108). Of the diseases leading to death, heart

¹The detailed information according to the WHO ICD Code list on the distribution of causes by groups, and individual causes mentioned in the "Mortality List" appended to the 3-digit code list can be obtained from the author(s) on the request.

failure is by far the major killer of the expatriates. Going by the descriptions of the cause of death contained in the papers, the distinction between the former two causes are rather blurred.

TABLE 2: DISTRIBUTION OF DEATHS BY MAJOR GROUP OF CAUSES (SEX WISE)

| Cause (major Group) | Frequency | | | | Percentage | | | |
|---------------------------|-----------|--------|----------|-------|------------|--------|----------|-------|
| | Mule | Female | Un-known | Total | Male | Female | Un-known | Total |
| I(001 - 139) | 32 | 2 | | 34 | 1.06 | 0.82 | | 1.0 |
| II(140-239) | 34 | 23 | | 57 | 1.13 | 9.47 | | 1.8 |
| III (240 - 289) | 27 | 5 | | 32 | 0.90 | 2.06 | | 1.0 |
| IV (320-389) | 20 | 1 | | 21 | 0.67 | 0.41 | | 0.6 |
| V (390-459) | 1285 | 95 | | 1380 | 42.73 | 39.09 | | 42.5 |
| VI (460-519) | 76 | 3 | | 79 | 2.53 | 1.23 | | 2.4 |
| VII (520-579) | 29 | 2 | | 31 | 0.96 | 0.82 | | 1.0 |
| VIII (580-676) | 14 | 4 | | 18 | 0.47 | 1.65 | | 0.6 |
| IX (680 - 799) | 485 | 43 | | 528 | 16.13 | 17.7 | | 16.2 |
| X (800-999 & E800 - E999) | 1005 | 65 | 1 | 1071 | 33.42 | 26.75 | 100 | 32.9 |
| All causes | 3007 | 243 | 1 | 3251 | 100 | 100 | 100 | 100 |

In Group IV, pneumonia and asthma are the relatively major causes (19 and 11 cases ; respectively out of 79). The residual category "respiratory conditions due to other and unspecified external agents" accounts for 30 deaths, however.

In the 31 cases of Group VII, diseases of the digestive system, one single major cause is gastro intestinal haemorrhage which has caused 10 deaths. The rest are distributed evenly over several causes.

In Group VDI, by far the most frequent cause is renal failure, accounting for 16 out of 18 deaths.

Group IX actually is comprised of causes unknown. This includes 131 cases of cause described as "due to old age" and we have classified them under "senility without mention of psychosis" (ICD 797). Many cases are described as "natural death". Out of the 3251 cases, 528 fall in this group (16.2 per cent). This is the major weakness of this study.

Group X, the last major group, consists of death due to various types of injuries, accidents etc. Of the 1071 cases classified as belonging to this group, "road traffic accidents" is by far the single largest cause (453 cases). It is likely that some of the other injury cases also may be due to traffic accident, i.e. number of deaths due to road accidents may be in fact higher than 453. The next major cause included in this group is suicide (263 cases) and that too by hanging. The other significant causes in this group are: drowning (34), burns (19), head injury (56) and fracture of unspecified bones (34).

The diseases of the circulatory system is the major cause of death among women also. In this group acute myocardial infarction (9), acute pulmonary heart disease (14) and heart failure (57) are the most frequent causes of death. Among the 23 cases of neoplasm, 9 cases are

sex related of which 5 are cases of breast cancer. Out of the 65 cases of deaths due to injury, etc., 21 are due to road accident and 20 due to suicide. This pattern is similar to the general trend. Apart from major groups of causes, it will be of interest to see what are the major individual causes (3-digit codes) contributing to the death of the expatriates. The following table, Table3, gives the frequencies for the top 10 causes.

TABLE 3: THE TOP 10 INDIVIDUAL CAUSES OF MORTALITY OF EXPATRIATES WITH THE NUMBER OF DEATHS DUE TO EACH

| | <i>Description</i> | <i>ICD code</i> | <i>No. of deaths</i> | <i>% of total deaths</i> |
|-------------------------|---|-----------------|----------------------|--------------------------|
| 1. | Heart failure | 428 | 845 | 26.0 |
| 2. | Road traffic accident | E819 | 453 | 13.9 |
| 3. | Other ill defined & unknown causes | 799 | 356 | 11.0 |
| 4. | Suicide by hanging, strangulation etc. | E953 | 263 | 8.1 |
| 5. | Acute myocardial infarction | 410 | 210 | 6.5 |
| 6. | Senility without mention of psychosis | 797 | 131 | 4.0 |
| 7. | Other & unspecified environmental & accidental causes | E928 | 110 | 3.4 |
| 8. | Acute pulmonary heart disease | 415 | 108 | 3.3 |
| 9. | Head injury | 803 | 56 | 1.7 |
| 10. | Intracerebral haemorrhage | 431 | 46 | 1.4 |
| All top 10 causes total | | | 2578 | 79.3 |

TABLE 3.1: THE TOP 10 INDIVIDUAL CAUSES OF MORTALITY OF EXPATRIATES WITH THE NUMBER OF DEATHS DUE TO EACH FOR MALES

| | <i>Description</i> | <i>ICD code</i> | <i>No. of deaths</i> | <i>% of total deaths</i> |
|-------------------------|---|-----------------|----------------------|--------------------------|
| 1 | Heart failure | 428 | 792 | 26.34 |
| 2 | Road traffic accident | E819 | 432 | 14.37 |
| 3 | Other ill defined & unknown causes | 799 | 335 | 11.14 |
| 4 | Suicide by hanging, strangulation etc. | E953 | 243 | 8.08 |
| 5 | Acute myocardial infarction | 410 | 201 | 6.68 |
| 6 | Senility without mention of psychosis | 797 | 116 | 3.86 |
| 7 | Other & unspecified environmental & accidental causes | E928 | 103 | 3.43 |
| 8 | Acute pulmonary heart disease | 415 | 94 | 3.13 |
| 9 | Head injury | 803 | 53 | 1.76 |
| 10 | Intracerebral haemorrhage | 431 | 45 | 1.5 |
| All top 10 causes total | | | 2414 | 80.29 |

As can be seen, the top 10 causes (3-digit code) are responsible for nearly 80% of the total deaths. Of these, approximately one-third of the causes are contributed by just one cause, viz. Heart failure, which appears at the top of the list. The 3 heart related causes (serial nos, 1, 5, & 8) together cause 1163 mortalities— 36% of all deaths.

TABLE 3.2: THE TOP 10 INDIVIDUAL CAUSES OF MORTALITY OF EXPATRIATES WITH THE NUMBER OF DEATHS DUE TO EACH FOR FEMALES

| | <i>Description</i> | <i>ICD code</i> | <i>No. of deaths</i> | <i>% of total deaths</i> |
|-------------------------|---|-----------------|----------------------|--------------------------|
| 1 | Heart failure | 428 | 57 | 23.46 |
| 2 | Other illdefined & unknown causes | E819 | 25 | 10.29 |
| 3 | Road traffic accident | 799 | 21 | 8.64 |
| 4 | Suicide by hanging, strangulation etc. | E953 | 20 | 8.23 |
| 5 | Senility without mention of psychosis | 410 | 15 | 6.17 |
| 6 | Acute pulmonary heart disease | 797 | 14 | 5.76 |
| 7 | Acute myocardial infarction | E928 | 9 | 3.7 |
| 8 | Other & unspecified environmental & accidental causes | 415 | 7 | 2.88 |
| 9 | (a) Essential hypertension | 401 | 5 | 2.06 |
| | (b) Diabetes mellitus | 250 | 5 | 2.06 |
| | (c) Malignant neoplasm without specification of site | 199 | 5 | 2.06 |
| | (d) Malignant neoplasm of female breast | 174 | 5 | 2.06 |
| 10 | (a) Leukaemia of unspecified cell type | 208 | 3 | 1.23 |
| | (b) Intracerebral haemorrhage | 431 | 3 | 1.23 |
| | (c) Accidental drowning | E910 | 3 | 1.23 |
| | (d) Chronic renal failure | 585 | 3 | 1.23 |
| All top 10 causes total | | | 200 | 82.3 |

Variation by Age

The following table, (Table 4) studies the distribution of the cases by age. For this purpose the reported ages have been grouped into 4 age groups: less than 15,15-34,35-59 and 60 & above.

TABLE 4: DISTRIBUTION OF MORTALITY CASES BY AGE GROUP

| <i>Age group</i> | <i>Male</i> | <i>Female</i> | <i>Frequency</i> |
|------------------|-------------|---------------|------------------|
| Less than 15 | 24 | 12 | 36 |
| 15-34 | 823 | 76 | 899 |
| 35-59 | 1997 | 104 | 2101 |
| 60 & above | 114 | 51 | 165 |
| Total | 2958 | 243 | 3201 |

50 cases did not report age.

The mortality pattern by age group is shown in Table 5. It is surprising that in the age group 0-15 there are 2 cases of heart failure and one case of suicide. Traffic accident is the single major cause of death in this age group (7/36). In the other age groups acute myocardial infarction and heart failure together account for a majority of deaths. Under the diseases of the circulatory system, acute pulmonary heart disease is also a major cause. Road traffic

accident as well as suicide accounts for a considerable number of deaths for the age groups 15-34 and 35-59 (see Table 6).

TABLE 5: DISTRIBUTION OF CASES BY CAUSE OF DEATH X AGE GROUP.

| <i>Cause of death Group</i> | <i>Age group</i> | | | | |
|-----------------------------|---------------------|--------------|--------------|---------------------|-----------------|
| | <i>Less than 15</i> | <i>15-34</i> | <i>35-59</i> | <i>60 and above</i> | <i>All ages</i> |
| I | 2 | 11 | 18 | 3 | 34 |
| II | 4 | 11 | 35 | 6 | 56 |
| III | - | - | 21 | 11 | 32 |
| IV | 1 | 7 | 11 | 2 | 21 |
| V | 7 | 267 | 997 | 88 | 1359 |
| VI | 2 | 17 | 52 | 8 | 79 |
| VII | 1 | 7 | 22 | 1 | 31 |
| VIII | 2 | 2 | 14 | 1 | 19 |
| K | 4 | 109 | 362 | 41 | 516 |
| X | 13 | 468 | 569 | 4 | 1054 |
| All cases | 36 | 899 | 2101 | 165 | 3201 |

TABLE 6: PROPORTION OF DEATHS CAUSED BY ROAD TRAFFIC ACCIDENTS (RTA) AND SUICIDES BY AGE GROUP

| <i>Age-group in years</i> | <i>Total number of cases</i> | <i>Road traffic accident</i> | | <i>Suicide by hanging strangulation</i> | |
|-------------------------------|----------------------------------|----------------------------------|----------|---|----------|
| | | <i>Count</i> | <i>%</i> | <i>Count</i> | <i>%</i> |
| | | <15 | 36 | 7 | 19 |
| 15-.34 | 899 | 185 | 21 | 131 | 15 |
| 35-.59 | 2101 | 249 | 12 | 129 | 6 |
| 60 & above | 165 | 4 | 2 | - | - |
| Total | 3201 | 445 | 14 | 261 | 8 |

The highest proportion of deaths due to RTA and suicide occur in the age group 15-34. In this age group, 21 per cent of the deaths are due to RTA and 15 per cent due to suicides. On examining the deaths due to suicide, it is found that out of 261 cases, 220 cases are of those seen in the age group 25-45. There are many Keralites who sell all they own and run into huge debts for the purpose of getting into any Gulf country and then on arrival find all their expectations coming to nothing. Most of these cases may belong to this class of people who have none and nowhere to turn to for help. It is felt that only a comprehensive socio-economic survey of Keralites in GCC countries will reveal the real picture.

Comparison with Cause of Death Statistics of Residents

We could obtain some data on the distribution of deaths by cause for the residents of Kerala State. The sources are two publications of the Department of Economics and Statistics; Government of Kerala, and the report of a health survey carried out in 1987 by Kerala Sasthra Sahithya Prishad (KSSP).

The Department of Economics and Statistics, Government of Kerala publishes data on vital statistics, based on registration of births and deaths, in their publication: *Vital Statistics Bulletin*. Bulletin No. 54,1990 gives district-wise distribution of deaths by some "specialized causes" for 1990 (Government of Kerala, 1990). Another publication of the same agency, *Residential Vital Rates in Corporations and Municipalities*, Annual Report, 1995 (published in 1998) (Government of Kerala, 1995) gives cause of death data based on a sample survey of households resident in the Corporations and Municipalities. (The survey is actually intended for checking the completeness of registration of vital events and the final tables give adjusted data.)

The main problem for making a comparative study of the two data sets is that the Department has followed their own system of classification and not the WHO classification. However, the causes given in the reports of the Department can be grouped to form classes comparable with ICD groupings.

The following table, (Table 7), compares the three sets of data relating to cause of death, viz., (a) deaths of expatriates, (b) deaths of residents of Kerala, 1990 and (c) deaths of urban residents of Kerala, 1995.

TABLE 7: PERCENTAGE DISTRIBUTION OF DEATHS BY CAUSE FOR (a) EXPATRIATES, (b) KERALA RESIDENTS. 1990 AND (c) URBAN RESIDENTS OF KERALA. 1995

| Major group of causes | Expatriates | | Residents, 1990 | | Urban residents, 1995 | |
|--------------------------|---------------|-------|-----------------|-------|-----------------------|-------|
| | No. of deaths | % | No. of deaths | % | No. of deaths | % |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| I | 34 | 1.0 | 14131 | 9.6 | 698 | 1.7 |
| II | 57 | 1.8 | 9049 | 6.1 | 1545 | 3.7 |
| III | 32 | 1.0 | - | - | — | — |
| IV | 21 | 0.6 | - | - | - | - |
| V | 1320 | 42.5 | 28912 | 19.6 | 7469 | 18.1 |
| VI | 79 | 2.4 | 11768 | 8.0 | 1097 | 2.7 |
| VII | 31 | 1.0 | 528 | 0.3 | - | - |
| VIII | 18 | 0.6 | 49 | 0.03 | - | - |
| IX | 528 | 16.2 | 83185 | 56.4 | 30393 | 73.8 |
| X | 1071 | 32.9 | | | | |
| All causes | 3251 | 100.0 | 147622 | 100.0 | 41202 | 100.0 |

One or two points are striking in the above table. The proportion due to infectious and parasitic diseases (Group I) is very high in col. (5) (residents, 1990). Cancer cases are also high for this category. The proportion of deaths due to diseases of the circulatory system (among them, heart attack, heart failure and myocardial infarction are the predominant causes reported) among the expatriates are more than twice the proportion among residents (both 1990 and 1995). The reports are, intentionally or otherwise, suppressing data relating to some important causes of death: traffic accidents, murder and suicide. All these are clubbed in "others".

Kannan *et al.*, in their book *Health and Development in Rural Kerala* (Kannan *et al.*, 1991), gives, in Table 4.6, page 47, the death rates per 100,000 population by cause.

The results are reproduced below:

TABLE 8: DEATH RATES PER 100,000 POPULATION DUE TO SELECTED SPECIFIC CAUSES

| <i>Cause of Death</i> | <i>Death Rate</i> | <i>Percent of Total Deaths</i> |
|-----------------------|-------------------|--------------------------------|
| Heart attack | 60.7 | 12.7 |
| Abdominal disease | 43.4 | 9.1 |
| Cancer | 43.4 | 9.1 |
| Other respiratory | 29.5 | 6.2 |
| Accidents | 20.8 | 4.3 |
| Suicide | 17.3 | 3.6 |
| Tuberculosis | 13.9 | 2.9 |
| Cerebral thrombosis | 13.9 | 2.9 |
| Urinary disease | 3.5 | 0.7 |
| Others | 229.0 | 48.1 |
| Total | 475.4 | 100.0 |

Note: 1. This excludes infant mortality. 2. Computed by us.

The proportion of deaths due to heart diseases, accidents and suicides are much less in rural Kerala as well, compared to the situation among Gulf Malayalees. However the large percentage of "others" in this table of which "Unknown causes" may constitute a large part, (as stated in the report) diminishes the validity of these estimates.

Conclusion

The general impression about the cause of deaths of expatriates in the Gulf countries from Kerala, mentioned in the beginning, has been more or less confirmed by this study. Deaths due to heart-related diseases are comparatively very high among the expatriates. However the high proportion of deaths from accidents and injuries, especially traffic accidents and suicides, as revealed in this study is rather striking and unexpected to some extent. In this context we would like to say that the Kerala Government Department of Economics and Statistics may henceforth publish data on the number of deaths due to accidents and suicides among the residents of the state, as there is special interest in the number and trend of these deaths due to their sociological and administrative implications.

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