

MILITARY MEDICINE

ORIGINAL ARTICLES

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MILITARY MEDICINE, 163, 12:797, 1998

Patterns of Death in World Leaders

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This study presents an analysis of the mortality patterns of people who become world leaders. Using information in the public domain, we identified 261 world leaders who died between 1965 and 1996. Of these, 118 died while in office, 44% violently, often by assassination. Of the 143 leaders who died after leaving office, 11% died violently. The violent deaths occurred worldwide but most frequently in the Middle East/South Asia and sub-Saharan Africa regions. The most frequent natural causes of death among world leaders were heart disease, cancer, and stroke. Mortality patterns reveal that the longevity of those leaders who died of natural causes could have been predicted by U.S. life tables. This study suggests that world leaders are neither biologically "tougher" nor more vulnerable to disease than others; however, their odds of dying violently while in office are high.

Introduction

The survival of world leaders is usually of great interest—and at times of intense concern—to their subjects, supporters, detractors, and foreign counterparts.¹ Although their deaths can profoundly influence events around the globe, there are few systematic data regarding patterns of death in world leaders. Popular beliefs and speculations tend to be based on fragmentary evidence.

The examples of well-known leaders who remained active well into old age—such as Konrad Adenauer, the Ayatollah Khomeini, and Deng Xiaoping—may foster the belief that individuals who rise to power are born biologically stronger than ordinary citizens or that the attainment and exercise of power promote longevity.² In informal discussions, students of international affairs have expressed to us concerns that long periods of physical and emotional stress make leaders more vulnerable to cancer, strokes, and heart attacks. We know of no research to

substantiate any of these ideas or of any systematic studies on causes of death in world leaders.

This study presents an analysis of the mortality patterns of people who become world leaders, defined as those who at any time during their careers were a country's principal decision-maker, exercising final authority for formulation and execution of national government policies.³ The positions they held included monarch, president, prime minister, party secretary or chairman, supreme religious authority, or head of junta.

Study Design and Methods

Using unclassified information from readily available English-language or translated newspapers, books, and periodicals, we studied two cohorts of non-U.S. world leaders, as defined above (CIA regulations prohibit the study of U.S. citizens): the "mortality analysis group," consisting of all those who died between January 1, 1965, and December 31, 1996, and the "1980 cohort," consisting of all those in office on January 1, 1980.

To focus on leaders with truly national responsibilities, we excluded those from countries—essentially a score of island-states—with populations less than 250,000 during their terms of office. For each group, we collected data on age at death (year of birth, if still alive), cause of death, country, region, and office-holding status.

Because we had included the 1980 cohort to test our findings about the mortality patterns of the mortality analysis group, we also compared their actual to their predicted survival. We used U.S. life tables, rather than country-specific tables, for the year 1980⁴ because, in our experience, foreign leaders have a standard of living and medical care at least equivalent to that in the United States.

We then assigned the subjects to six geographic regions using conventional U.S. Department of State categories: sub-Saharan Africa; Latin America (including the Caribbean); Eastern Europe and the former Soviet Union; East Asia and the Pacific; Western Europe and Canada; and Middle East/South Asia (including North Africa and the Indian subcontinent). Subjects were also assigned to seven categories—one violent, six natural—for

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This paper has been reviewed by the CIA. That review neither constitutes CIA authentication of information nor implies CIA endorsement of the authors' views.

This manuscript was received for review in December 1997. The revised manuscript was accepted for publication in May 1998.

TABLE I
MORTALITY ANALYSIS GROUP WORLD LEADER DEATHS, JANUARY 1, 1965, TO DECEMBER 31, 1996

	All	Died while in Office	Died after Leaving Office
Number	261	118 (45%)	143 (55%)
Age (mean) at death	68.8 years (SD, 13.4)	62.8 years (SD, 13.5)	73.8 years (SD, 11.2) ^a
Cause of death			
External (all causes)	68 (26%)	52 (44%)	16 (11%) ^b
Age (mean) at death	56.4 years (SD, 12.2)		
Assassination	45	35	10 ^c
Natural (all causes)	193 (74%)	66 (56%)	127 (89%)
Age (mean) at death	73.1 years (SD, 11.0)		
Cardiac	86 (45%)	32 (48%)	54 (43%)
Myocardial infarction	69	28	41
Cancer	33 (17%)	15 (23%)	18 (14%)
Vascular	22 (11%)	7 (11%)	15 (12%)
Stroke	19	6	13
Pulmonary	9 (5%)	3 (5%)	6 (5%)
Other known	12 (6%)	3 (5%)	9 (7%)
Unknown	31 (16%)	6 (9%)	25 (20%)

^aKruskal-Wallis test ($t = 7.048$, $df = 255$, $p < 0.01$).

^bYates corrected χ^2 test ($\chi^2 = 33.51$, $df = 1$, $p < 0.01$).

^cYates corrected χ^2 test ($\chi^2 = 28.72$, $df = 1$, $p < 0.01$).

causes of death: "external" (assassination, air crashes, suicide, murder, other violent causes); cardiac; cancer; vascular (including strokes); pulmonary; other known natural causes (including surgical); and unknown natural causes. When available, a specific diagnosis was recorded.

Data were analyzed using the program Epi Info 6.02 (Centers for Disease Control, Atlanta, GA) and reviewed by CIA statisticians.

Results

The Mortality Analysis Group

Of the 261 world leaders (2 women and 259 men) we identified as having died between January 1, 1965, and December 31, 1996, dates of birth were available for 259, specific causes of death were reported for 230, and a natural or external cause could be assigned for all. Cardiac causes of death were the most common (45%), followed by external causes (26%). Within these categories, the two most frequent specific diagnoses were myocardial infarction and assassination, respectively. The average age of death for those who died of natural causes was 73.1 years.

There were clear differences between leaders who died while

in office and those who died after leaving office. The average age at death of the 118 leaders who died while in office was significantly lower than that of those who died after leaving office (average, 62.8 versus 73.8 years). They were also significantly more likely to die of external causes (44%), including assassination (30%), than their retired colleagues (11%) (Table I).

Although Middle Eastern/South Asian and sub-Saharan African leaders constituted only 38% of the total group, 62% of the deaths from external causes—and 73% of the assassinations—occurred in these two groups (Table II).

The 1980 Cohort

The cohort of 143 leaders identified as holding office on January 1, 1980, consisted of 3 women and 140 men, with a mean age of 56 years at the time. At the end of the study period, 95 were still alive; 22 of them remained in office. Of the 48 leaders who had died, 40% died of external causes and 35% died of cardiac causes.

Of the 31 leaders in the 1980 cohort who died in office, 55% died of external causes. Of those who died after leaving office, only 12% died of external causes. Nine of the 10 assassinations were of active office-holders. External causes of death were most

TABLE II
MORTALITY ANALYSIS GROUP EXTERNAL CAUSES OF DEATH BY REGION, JANUARY 1, 1965 TO DECEMBER 31, 1996

	Total Deaths	All External Causes	Assassination
Middle East/South Asia	46	22	20
Sub-Saharan Africa	53	20	13
Subtotal	99 (38%)	42 (62%)	33 (73%)
Latin America/Caribbean	57	12	5
Western Europe/Canada	45	6	3
Eastern Europe/former Soviet Union	18	5	2
East Asia/Pacific	42	3	2
Subtotal	162 (62%)	26 (38%)	12 (27%)
Total	261	68 (26%)	45 (17%)

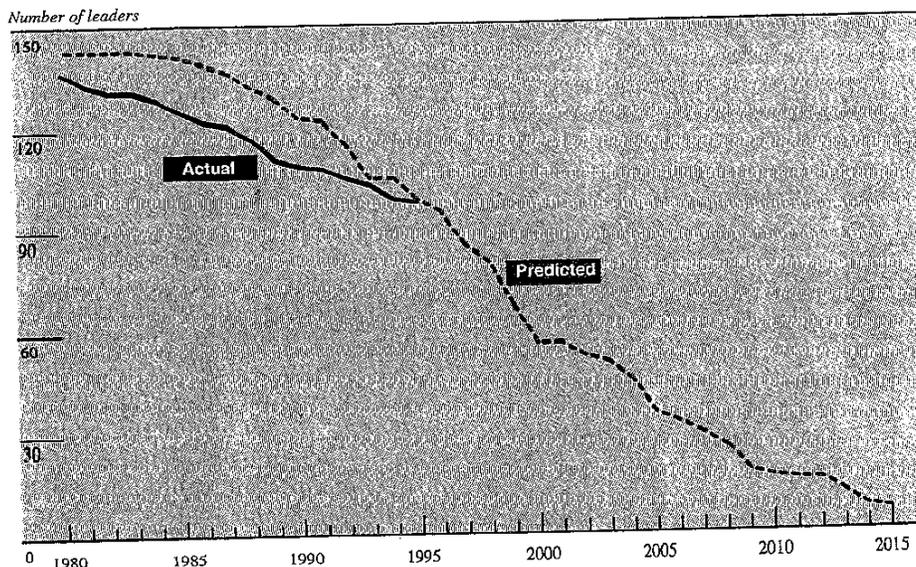


Fig. 1. Actual and predicted survival of 143 leaders holding office in 1980. (Data derived from ref. 5.)

TABLE III
1980 COHORT REGIONAL VARIATIONS IN SURVIVAL

	All	Sub-Saharan Africa and Middle East/South Asia Regions	All Other Regions
Number	143	66	77
Alive on December 31, 1996	95	42	53
In office	22	18	4 ^a
Out of office	73	24	49 ^a
Dead	48		
Died in office	31	18	13
External causes	17 (55%)	12	5 ^b
Natural causes	14	6	8
Died out of office	17	6	11
External causes	2 (12%)	0	2
Natural causes	15	6	9

^aYates corrected χ^2 test ($\chi^2 = 14.49$, $df = 1$, $p < 0.01$).

^bYates corrected χ^2 test ($\chi^2 = 6.81$, $df = 1$, $p < 0.01$).

frequent among sub-Saharan African and Middle Eastern/South Asian leaders. To date, 12 of the 24 (50%) deceased leaders in those regions have died violently (Table III).

Despite an initial variation attributable to violent deaths, by 1993 there were no longer any differences between the actual mortality of the 1980 cohort and the mortality predicted by U.S. life tables (Fig. 1).

Discussion

For specialists in both medicine and political leadership, these findings provide only a preliminary overview of the causes and patterns of mortality in world leaders. As physicians, we want to know more details—type, onset, treatment, and course—of the “natural causes” to which leaders succumb. We

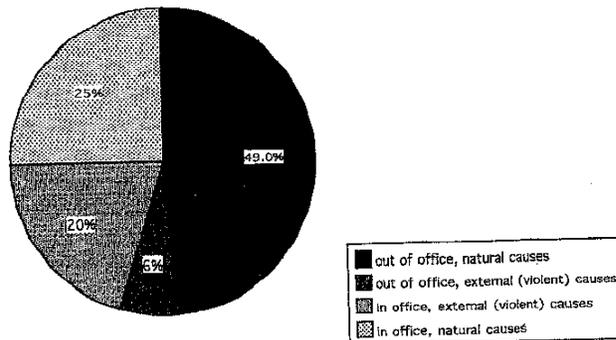


Fig. 2. Office status and causes of death for 261 world leaders, 1965 to 1996.

particularly need to better understand the physical and psychological stresses to which they are exposed and the relationship of such stresses to particular disease processes and normal aging. Our first impressions, nevertheless, do call into question some prevalent beliefs or intuitive assumptions, which, in turn, may have practical planning implications.

(1) World leaders are not superhuman. By all accounts, they receive the best medicines, technology, and professional services their country can offer or import, and generally they can travel to the best institutions in the world when required. Nevertheless, as a group, those who died of natural causes between 1965 and 1996 closely resembled the U.S. male population. Their chief causes of death, when known, were cardiac (45%), mostly myocardial infarction; cancer (17%); and vascular (11%), mostly stroke. Because the diagnosis was unknown in 16% of cases, the actual ranking of causes of natural death in this group might be different, but the overall picture would most likely be the same.

(2) It is not at all unusual for leaders to die violently, especially while in office. Death from assassination or other external means occurs commonly among world leaders, often while they are in office. Almost half of those leaders who died were still in

office, and almost half of that group died violently. Overall, violent deaths accounted for a surprisingly large proportion of the totals in both the mortality analysis group (26%) (Fig. 2) and the 1980 cohort (40% through 1996). By comparison, although it represented only a single year's experience, in 1993, violent death constituted less than 7% of deaths among the U.S. population.⁵

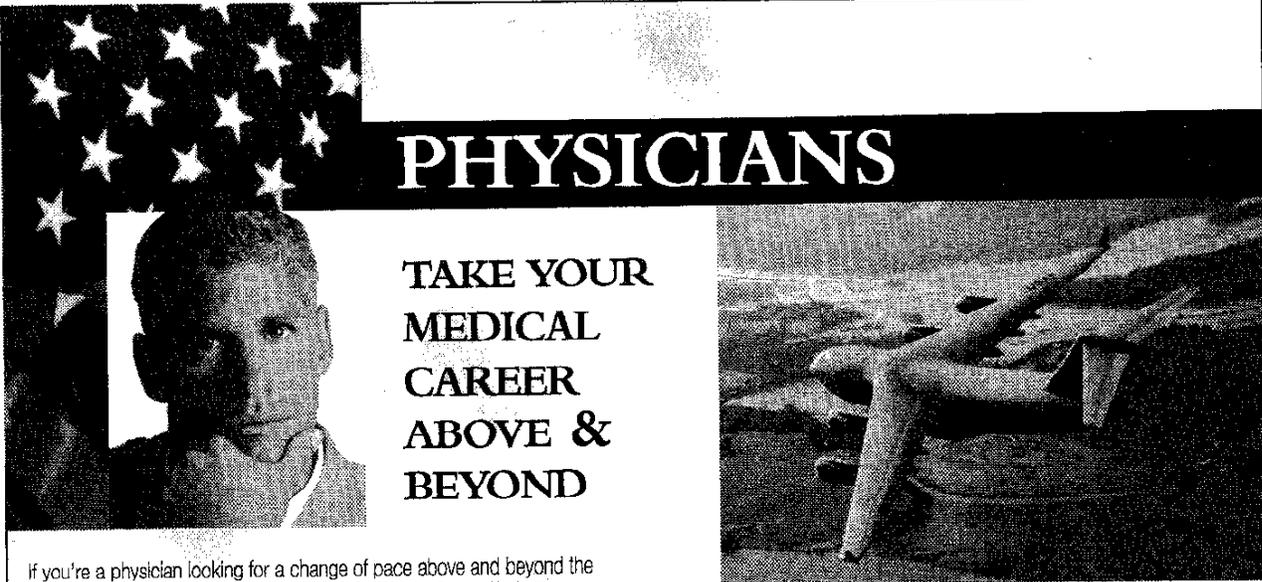
(3) The risk of assassination remains greatest in Middle Eastern/South Asian and sub-Saharan African countries (Table II). In our 1980 cohort, 18 of the 22 leaders still in office are in these regions, where deaths from "external" causes have been most common. Our review of press reports reveals that more than half of the rulers in these areas have already survived serious assassination attempts. Even so, the assassinations of Aldo Moro of Italy, Chong Pak of South Korea, and Olaf Palme of Sweden demonstrate that no region is exempt from this risk.

Our work suggests the need for civilian and military advisors to increase their emphasis on succession issues as well as leadership safety and security. Bienen and van de Walle indicate

that a violent end to rule is more likely in nondemocratic systems.³ They found that turnover in national leadership was highest in the most stable political systems (North America, Europe, Australasia), whereas Middle Eastern and African leaders had the longest duration of rule. They found, as we did, that the latter were most likely to leave office via death, coup, or some other extralegal means.

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