

## CARDIOVASCULAR DISEASE IN THE ASIATIC (INDIAN) POPULATION OF DURBAN\*

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Tables produced by the Actuarial Society of South Africa reveal a higher mortality in certain age-groups in respect of Indian lives as compared with White lives. The reason for the higher mortality is not immediately clear since causes of death are not recorded, but it is believed that cardiovascular disease is a major factor. The press has commented that the mortality from coronary heart disease in the White population of South Africa is the highest in the world. An extremely high incidence has also been noted among the Indian population. According to Campbell 'It is accepted that the incidence in Natal Indians is already fully as high as in the Whites'. These statements

TABLE I. COMPARISON OF INDIAN AND WHITE MORTALITY (ACTUARIAL SOCIETY) 1956 - 1962

Age-group	Actual Indian deaths	Expected deaths*	A/E %
35 - 39	59.5	47.40	125.5
40 - 44	79.5	65.10	122.1
45 - 49	127	85.10	147.8
50 - 54	109.5	85.45	128.1
55 - 59	126	76.40	164.9
60 - 64	101	66.09	152.8
65 - 69	69	43.61	152.2

\*Expected Indian deaths based on South African 1956-58 ultimate mortality for White lives.

do not at first sight appear to be borne out by published statistics on deaths due to 'Atherosclerotic and degenerative heart disease' (categories 420 - 422, international classification) which are mainly deaths from occlusive coronary disease (myocardial infarction, ischaemic heart disease).

Two statistical reports give the death rates as follows: In 1960 the rate per 100,000 population in South Africa was Whites 195.9 and Asiatics 83.2, while in the USA the rate was 307.4, and in the UK it was 310.9.<sup>2</sup> In 1966 the *Statistical Year Book*<sup>3</sup> gave the mortality in South Africa as White males 270.2, White females 139.8, Asiatic males 106.7 and Asiatic females 48.8.

Such figures are not really comparable, being dependent on the age distribution of the population. The 1960 census showed that in region 30 (Durban-Pinetown area) 69% of the Asiatic (Indian) population, as compared with 42% of the White population, was under the age of 25 years. To assess more accurately the relative importance of cardiovascular disease in the two population groups, deaths for the period 1957 - 1966 have been tabulated in 5-year age-groups from 35 to 69 years of age, older age-groups not being considered, as there were relatively few Asiatics over 70 years of age. This was readily undertaken for the Durban municipality from the records of the City Health Department, where White and Asiatic deaths have been carded and classified according to the international code. The 1960 census population age-distribution figures were available for district 30, together with the estimated population of the Durban municipality for the relevant years. The total deaths of selected categories in each age-group were related to the population at risk in that age-group

and standardized to deaths per 100,000. Deaths investigated were 'Arteriosclerotic and degenerative heart disease'

TABLE II. DEATHS DUE TO ARTERIOSCLEROTIC AND DEGENERATIVE HEART DISEASE (CATEGORIES 420 - 422), DURBAN MUNICIPALITY

Age-group	Act. deaths 1957 - 1966		Est. deaths/ 100,000		A/W%
	White	Asiatic	White	Asiatic	
<b>Males</b>					
35 - 39	49	55	86	93	108
40 - 44	73	93	134	177	132
45 - 49	154	131	283	320	113
50 - 54	254	170	496	539	109
55 - 59	292	137	774	624	80
60 - 64	348	127	1,185	889	75
65 - 69	360	111	1,679	1,350	81
Total	1,530	824	505	362	72
<b>Females</b>					
35 - 39	5	19	8	32	400
40 - 44	20	17	36	38	106
45 - 49	42	55	72	119	165
50 - 54	52	55	102	206	201
55 - 59	102	73	235	465	198
60 - 64	116	103	290	843	290
65 - 69	209	79	630	1,300	206
Total	541	401	160	195	132

TABLE III. DEATHS DUE TO CEREBROVASCULAR DISEASE (CATEGORIES 330 - 334), DURBAN MUNICIPALITY

Age-group	Act. deaths 1957 - 1966		Est. deaths/ 100,000	
	White	Asiatic	White	Asiatic
<b>Males</b>				
35 - 39	9	25	15	42
40 - 44	14	56	25	108
45 - 49	24	61	44	149
50 - 54	51	101	100	321
55 - 59	71	152	188	690
60 - 64	85	114	289	797
65 - 69	94	99	437	1,207
Total	348	608	114	267
<b>Females</b>				
35 - 39	7	27	12	47
40 - 44	18	31	34	74
45 - 49	27	60	48	43
50 - 54	44	105	84	401
55 - 59	67	100	154	636
60 - 64	74	122	186	1,000
65 - 69	81	103	244	1,737
Total	318	548	94	260

(categories 420 - 422), 'Hypertensive disease' (440 - 447) and 'Vascular lesions affecting the central nervous system' (330 - 334). The findings are shown in Tables II - IV. The first 2 columns show the total White and Asiatic deaths in the 10-year period under review; the next 2 columns give the estimated deaths per 100,000 in each age-group. Table II, consisting mainly of deaths from occlusive coronary disease, includes a final column showing the ratio, ex-

pressed as a percentage, of Asiatic to White rates, there being some variation with age and sex.

TABLE IV. DEATHS DUE TO HYPERTENSIVE DISEASE (CATEGORIES 440 - 447), DURBAN MUNICIPALITY

Age-group	Act. deaths 1957 - 1966		Est. deaths/ 100,000	
	White	Asiatic	White	Asiatic
<b>Males</b>				
35 - 39	0	5	0	8
40 - 44	1	22	2	42
45 - 49	6	22	10	54
50 - 54	10	40	19	157
55 - 59	19	38	50	174
60 - 64	24	56	81	391
65 - 69	22	56	105	683
Total	82	239	27	105
<b>Females</b>				
35 - 39	0	6	0	10
40 - 44	3	14	5	30
45 - 49	1	38	2	80
50 - 54	6	43	12	165
55 - 59	6	54	13	350
60 - 64	10	58	25	480
65 - 69	32	46	100	780
Total	58	259	17	124

In Tables III and IV, where hypertension is the major factor, this final column has been omitted since the Asiatic rate in all groups is considerably in excess of the White rate. The bottom line in each table shows the total deaths between 35 and 69 years in the 10-year period and the estimated rate per 100,000 for all the above age-groups. This figure is influenced by the greater number of Whites in the older age-groups.

Table II reflects the anticipated higher death rate from coronary heart disease in males as compared with females in both the White and Asiatic population. In males there is an apparent enhanced mortality in the Asiatic from 35 to 54 years, in particular in the 40 - 44 age-group. Thereafter the death rate is appreciably lower in Asiatic than in White males, suggesting an earlier onset of coronary heart disease in Asiatic males. The large numbers of White males in the older age-groups which are particularly susceptible to 'heart attacks' are responsible for the higher over-all death rate in White males. The mortality rate for Asiatic females greatly exceeds that for White females in all age-groups.

Tables III and IV show the Asiatic mortality to be considerably greater, both for cerebrovascular disease (which is largely related to hypertension) and other hypertensive diseases, than the White mortality in both males and females and in all age-groups. One is surprised by the small number of Whites in whom hypertensive disease is given as the primary cause of death; this illustrates the limited value of death registration for statistical purposes. A patient with hypertension who dies from coronary occlusive disease might be registered under either category of primary cause of death. The interrelation is all the more complex since hypertension is said to be associated with a sixfold increase in coronary artery disease.<sup>4</sup>

If we consider the mortality rates for the combined age-groups 35 - 69 years we can make the following observations (Table V):

TABLE V. MORTALITY RATE FOR 35 - 69-YEAR GROUPS

Diagnosis	Males		Females	
	White	Asiatic	White	Asiatic
'Coronary'	505	362	160	195
'Cerebrovascular'	114	267	94	260
Other 'hypertensive' disease	27	105	17	124
Total	646	734	271	579

In males there is a higher mortality from coronary disease in the White population, but this can be explained by the large numbers in older age-groups. Despite this age difference in the populations, the Asiatic mortality from cerebrovascular and other hypertensive disease is higher than the White, and the combined mortality from all three pathological entities is greater in the Asiatic.

In females, despite the larger number of Whites in the older age-groups, Asiatic mortality is greater in coronary, cerebrovascular and other hypertensive disease, and the combined mortality from these 3 pathological entities is double that of the White.

In both males and females one can conclude that hypertensive disease is far more common in the Asiatic than in the White.

Why the Asiatic should be so susceptible to hypertensive vascular disease is not quite clear. Clinical investigators<sup>1,5,6</sup> have commented on the high incidence of diabetes mellitus, and we have shown elsewhere<sup>7</sup> that in hospital necropsies diabetic retinopathy is found in about 23% of Asiatic females and 12% of Asiatic males over the age of 35 years. Cosnett<sup>8</sup> found that 36.4% of a series of diabetic Indians were hypertensive, but further evidence is required before one can accept diabetes as the sole factor for the severity of hypertensive disease.

We have put forward evidence that ischaemic heart disease (in certain age-groups), hypertensive vascular disease and diabetes mellitus are more prevalent in the Asiatic than in the White population. Both diabetes and hypertension tend to accelerate the development of atherosclerosis. This makes all the more puzzling the fact that a survey on racial distribution of atheroma failed to show the Asiatic population to be more prone to this disease than the White population of Durban.<sup>8</sup> This observation has been confirmed by an international atherosclerosis survey conducted from New Orleans, where aortas and coronary arteries from various centres in the world, collected and prepared by a standard technique, were graded at random for the degree of atheroma. The Durban Asiatic ranked high in the list as regards severity of atheroma, but was below that of the White population of New Orleans, Oslo, etc.

TABLE VI. CORONARY ATHEROSCLEROSIS: % AREA OF INTIMAL SURFACE SHOWING FIBROUS PLAQUES\*

Race	Age-group	Age-group
	35 - 44 years	45 - 54 years
Durban Bantu	4.30	6.97
Durban Asiatic	11.08	20.46
New Orleans White	20.68	27.71
Oslo White	21.11	27.14

\*Extracted from the international atherosclerosis survey.

It is true, of course, that the mortality figures presented in this paper represent the whole Indian community,

whereas the atherosclerosis survey covers only the hospital population and may not be representative. On the other hand, the apparent discrepancy between severity of coronary atheroma and incidence of ischaemic heart disease in the Indian, as compared with the White, may indicate the importance of factors other than coronary atheroma in the development of myocardial infarction.

From statistics presented in this paper one must question the press report mentioned earlier that coronary heart disease in the White population of South Africa was the highest in the world.

#### SUMMARY

It would appear that a major cause of the higher mortality in Asiatics as compared with Whites in the age-groups 35 - 69 years is the high incidence of hypertensive vascular disease in

addition to ischaemic heart disease. Diabetes mellitus would seem to be a significant factor.

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