

Since one of the aims of this study was to assess the effect of treatment on deaths from cardiovascular causes, it was imperative to evaluate the distribution of risk factors associated with cardiovascular mortality. The distribution of those considered here is presented in Table 2. In this population 10.4% of the individuals had a positive history of arteriosclerotic heart disease (ASHD). This proportion did not vary much between the groups; however, large differences by sex were present in both the insulin and diet groups. Hypertension was defined as blood pressure greater than 150/90. The prevalence of hypertension at entry varied between the groups as well as between the sexes. Consistently the proportion of hypertensives was greater among females than among males. The prevalence among males was similar in each of the groups, however it varied a great deal among females from 56.7% among women on tolbutamide to 40.3% among women on diet alone.

Previous history of cerebral vascular accidents was negligible and present in only 0.38% of the population. A previous history of all other cardiovascular complications occurred in 21.3% of the population. This percentage did not vary among the treatments, although, in general the prevalence of cardiovascular complications was higher among females than among males.

Differences in smoking histories were evident between the groups although the variation was seen in part to be a reflection of differences in the distribution of sex. The average proportion of non-smokers was 27.2% among males and 64.9% among females. Percentages by sex varied between the groups, but in general persons on tolbutamide smoked less than those on either insulin or diet alone.

Obesity or relative weight was another factor thought to influence cardiovascular mortality. Florey (16) had described and investigated several mathematical measures of correcting weight for height. For purposes of this study weight/height was chosen as a relevant measure. In general, the males appeared to be less obese than females. Among males there appeared to be relatively little difference between these indices in the groups; however, females on insulin appeared to be relatively heavier than those on either of the other two treatments.

The final factor considered was history of early death in the parents. A positive history was defined as that parent dying before the age of 60. Four hundred ninety-six (496) out of 2167 or 22.9% had fathers who died before age 60 and 451 of 2167 or 20.8% had mothers who died before age 60. These proportions were very similar between treatments and sexes.

It has been shown that major differences occur between the groups in the distribution of age, sex and level of blood glucose. Differences in factors such as history of ASHD, hypertension and smoking have been shown to be correlated with sex; analysis of survival will therefore have to consider age, sex and level of blood glucose.

Mortality results

Crude mortality results for this population are presented in Table 3. Of the total 2167, 884 (40.8%) had died by the end of the study period. Of these 884 total deaths 444 (50.2%) were attributable to arteriosclerotic heart disease (including myocardial infarction), 63 (7.1%) to other heart disease, 105 (11.9%) to cerebral vascular accidents and 153 (17.3%) to all cancers. Autopsy information was available for 20% of the population and 6% of the deaths were listed as sudden on the death certificate. The distribution of deaths by cause was similar for both sexes although in all cases more males died than females.

Differences in mortality by treatment are striking. In general, mortality among persons on either tolbutamide or insulin was considerably higher than that for individuals on diet alone; mortality among those on insulin was only slightly higher than for those on tolbutamide. Differences in mortality from all causes by sex were not evident in either the insulin or tolbutamide groups; however, a much larger proportion of males on diet died than did females. Although the overall probability of death was higher among those on insulin than tolbutamide, the probability of death from ASHD was higher among persons on tolbutamide; this was especially true among males. Of the 264 total deaths to males on tolbutamide 97 (59.1%) were due to ASHD whereas 72 of the 177 total deaths (40.6%) among males on insulin were due to ASHD. The same pattern is observed for all cardiovascular causes of death.

The results presented in Table 3 are crude since they consider neither differences in observation time nor levels of disease severity. The life table and relative survival methods discussed previously were used to evaluate the survival experience of this population.