eAppendix

Health Surveys for England (HSE)

The HSE comprises a series of annual surveys commissioned, until recently, by the Department of Health and designed to provide regular information on a range of aspects concerning the nation's health that cannot be obtained from other sources. The HSE 1999 and 2004 focused on the health of ethnic minority groups. In these years the general population had no nurse visit, so data from HSE 1998 and 2003 have been used to allow comparisons with the general population. This was possible because of the comparability of the questionnaires across the survey years. The individual response rate for the ethnic minority sample was 60% for surveys in 1999 and 63% for 2004; the equivalent figures for the general population were 69% in 1998 and 66% in 2003. Ethnic groups were classified in the HSE according to the principles of the classification used in the England censuses, based on self identification using a list of potential categories. The HSE datasets are freely available for use.

The Newcastle Heart Project (NHP)

The NHP was carried out between 1994 and 1997 to compare CHD risk factors in English- Indians, Pakistanis, and Bangladeshis and also compared combined South-Asian groups with White-English people. The White-English sample was drawn from the family health services authority register for the Newcastle health and lifestyle survey. The South-Asian samples were drawn from the full register. The sampling frames were each divided into 10 year age and sex strata and equal numbers from each stratum were randomly selected. The response rate was 67.5% for South-Asians and 64.2% for White people. Ethnic groups were classified by name analysis confirmed by self-report and grandparents' place of birth. Indians were defined as residents with ancestral origins in India, who had three or more grandparents born there and they self identified as such at interview, using 1991 census categories of ethnic group.

The SUNSET study

The SUNSET study was carried out to assess cardiovascular risk profile of Dutch-Africans, Dutch South-Asians and White-Dutch people. A study sample of 35-60 year-old people was drawn from the Amsterdam population register. People were approached for an oral interview between 2001 and 2003. The overall response rate was 60% among the Surinamese and 61% among White-Dutch. Ethnic groups were classified according to the self-reported ethnic origin of the respondent and/or the ethnic origin of the mother and father. Dutch-Indians were defined as persons with ancestral origins in India of whom both parents were born in Suriname and persons who were born in Suriname and who had at least one parent

who was born in Suriname. Dutch-Africans were defined as persons with ancestral origins in Africa of whom both parents were born in Suriname and persons who were born in Suriname and who had at least one parent who was born in Suriname.

All the studies had similar focus and design, and were carried out, in part, to assess CVD and risk profiles among different ethnic groups. This makes them suitable for the present study. In addition, a cross-standardization of data was undertaken to ensure that measurement techniques and questionnaire were as comparable as possible between studies. To achieve this, two workshops attended by all the collaborators and a methodologist were held at the Academic Medical Centre, Amsterdam to discuss methodological issues relating to the datasets including standardization of content, formatting and analytic programs. The workshops provided a platform to share experiences and to discuss the possible drawbacks and solutions. A standardization protocol was then developed and all the individual datasets were merged in co-operation with all the collaborators. The age distribution of participants in HSE was ≥ 16 years, in the NHP was 25 to 74 years and in the SUNSET study was 35 to 60 years. Because of differences in the ages covered in the different studies, only those aged 35 to 60 were included in the analyses. In addition, we included only Indian, African Caribbean and the European White origin populations with fasting glucose measurements from England (HSE, n= 1378 and NHP n=593) and the Netherlands (the SUNSET n= 1,415).

Measurements

All the studies had measurements on fasting glucose, anthropometry, and similar questions on self-reported doctor diagnosis of diabetes, lifestyle and socio-demographic factors. In all studies, participants were asked to fast from 22:00 hours the night before and a fasting venous blood sample was taken for the measurement of glucose. In the HSE, the fasting sample was either collected at the same time as the non-fasting sample if the participant had fasted from 22:00 hours the night before, or at a second nurse visit. In 1999, measurement of plasma glucose was done using the Bayer DAX-72 automated analyzer using the specific glucose oxidase mediated peroxidase/4-aminoantipyrine method. In 2004, the measurement of plasma glucose was determined using the Hexokinase method on an Olympus 640 analyzer. The measurements were carried out by the Biochemistry Department at RVI. In the NHP, glucose was measured by the glucose oxidase method using an automated colorimetric method on a Hitachi 717 analyzer. Participants without known diabetes also underwent a standard WHO oral glucose tolerance test (OGTT). In the SUNSET study, glucose was measured by the dehydrogenase method using P800 Roche Diagnostics analyzer. The HSE and the SUNSET studies had no data on OGTT, consequently fasting glucose was used for the analyses. DM was defined as fasting glucose ≥ 7.0 mmol/l and/or self-reported doctor diagnosed DM.

In all studies, height was measured without shoes with a measuring tape. Weight was measured with the subject lightly clothed with Seca mechanical scale in the NHP and the SUNSET study, and with Seca, Soehnle and Tanita electronic scales in the HSE. Waist circumference was measured at the midpoint between the lower rib and the upper margin of the iliac crest using a measuring tape in each study. The height, weight and waist circumference were measured once in the UK studies and twice in the Dutch study; hence the first reading was used in the analyses.

In all studies, participants completed a similar questionnaire that included educational level and employment status, physical activity (playing sport and brisk walking), smoking and doctor diagnosed of diabetes (yes or no). Educational level was based on the highest qualification gained and was classified as 'less than Secondary School or an A-level certificate', ''A'-levels or Dutch 'A'-level equivalent (VWO) graduation certificate' and 'those with polytechnic or university degrees. Employment status was classified as 'employed or in fulltime education', 'unemployed' and 'other economic inactive or retired'. Playing sports was classified into yes or no. Brisk walk was categorized into no brisk walk or brisk walk ≥1/week.