Derived and adjusted variables

BRHS Baseline examination 1978-80 (Q1)

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Derived variables

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Derivation methods

1.0 Smoking status

Eight or six categories are used, derived from questions 12.2 to 12.6 of the baseline 1978-80 (Q1) questionnaire.

Derived variables Smoking	Value labels/categories	BRHS Variable name	Data access
Smoking (8 categories)	1 = Current Non-smoker, Never smoked 2 = Current Non-smoker, Ex cigarette smoker 3 = Current pipe/ cigar smoker, never cigarette 4 = Current pipe/ cigar smoker, ex-cigarette 5 = 1-19 per day 6 = 20 a day 7 = 21-39 a day 8 = 40 or more a day 9=missing	q1smok8	Yes
Smoking (6 categories) The Six categories ignore pipe/ cigar smoking	1 = Current Non cigarette smoker, Never smoked 2 = Ex cigarette smoker 3 = 1-19 per day 4 = 20 a day 5 = 21-39 a day 6 = 40 or more a day	q1smok6	yes

1.1 The derivation of the eight smoking categories is as follows:

Set variable cigarette = 0 and smoking = 1
If either 12.2(ii) or 12.2(iii)=99 set smoking=9

if smoking=1, find current cigarette consumption by multiplying hand rolled consumption, 12.2(iii) by 5.3571 and adding manufactured cigarette consumption 12.2(ii) to it, put this sum in to cigarettes.

if 0.5 < cigarettes < 19.5 then smoking =5
if 20.5 < cigarettes < 20.5 then smoking =6
if 20.5 < cigarettes < 39.5 then smoking =7
if 39.5 < cigarettes then smoking =8

If smoking = 1 find if these non-smokers are current pipe or cigar smokers: if 12.4(ii) or 12.5(ii) falls between 0.5 and 98.5 then set smoking=3.

If smoking= 1 or 3 find whether these non-cigarette smokers once smoked cigarettes. if 12.3(ii) or 12.6(i) fall between 0.5 and 98.5 increment smoking by 1.

2.0 Alcohol intake

Derived variables Alcohol intake	Value labels/categories	BRHS Variable name	Data access
Alcohol (8 categories)	1= daily 1-2 drinks 2 = daily, 3-6 drinks 3= daily, 6 drinks 4= weekends, 1-2 drinks 5= weekends, 3-6 drinks 6= weekends, 6 drinks 7= Monthly/special 8= never drank 9= Missing	q1alc8	
Alcohol (5 categories) - re-categorised into 5 categories	1= (8= never drank) *(Never)* 2= (7= Monthly/special) (*Occasional)* 3= (1= daily 1-2 drinks) *(Light)* 3= (4= weekends, 1-2 drinks) (*Light)* 3= (5= weekends, 3-6 drink) (*Light)* 4= (2 = daily, 3-6 drinks) (*Moderate)* 4= (6= weekends, 6 drinks) (*Moderate)* 5= (3= daily, 6 drinks) (*Heavy)*		
Alcohol (5 categories)	1= Never 2= Occasional 3=Light 4=Moderate 5= Heavy	q1alc5	

2.1 Derivation of the 8 alcohol categories is as follows:

The classification is derived from Questions 11.6(i) and (iii) on the baseline 1978-80(Q1) questionnaire.

	Derivation			
1= daily 1-2 drinks	if Q11.6(i)=	5	and Q11.6(iii) =	1
2 = daily, 3-6 drinks		5		2
3= daily, 6 drinks		5		3
4= weekends, 1-2 drinks		4		1
5= weekends, 3-6 drinks		4		2
6= weekends, 6 drinks		4		3
7= Monthly/special		2 or 3		
8= never drank		1		
9= Missing				

3.0 Physical activity score

"A physical activity (exercise) score was derived for each man based on the frequency and type (intensity) of the physical activity. Scores were assigned for each type of activity and duration based on the intensity and energy demands of the activities reported. This was based on the recommendations of a National Heart, Lung and Blood Institute (NHLBI) workshop and the Minnesota intensity codes. Scores were heavily weighted on vigorous exercise. Physical activity at work was excluded from the score partly because few middle-aged men do physically demanding work and partly because such activity is not readily amenable to modification. Though the gradings were arbitrary we tried to ensure that any given score implied approximately equal intensity and energy demands for the various types of activity. The total score for each man was not a measure of total time spent in physical activity but was a relative measure of how much physical activity has been carried out or energy expended. Regular walking and cycling related to weekday journeys, including those to and from work. Recreational activity includes gardening, pleasure walking, and do-it-yourself jobs. Sporting (vigorous) activity includes running, golf, swimming, tennis, sailing, digging, etc. It was not possible to identify the type of vigorous activity for each man (copies of the questionnaire are available on request) but it was regarded as being vigorous." [1]

1. *Shaper AG, Wannamethee G, Weatherall R. Physical activity and ischaemic heart disease in middle-aged British men. Br Heart J1991;66:384–94.*

Derived variables Physical activity	**Value labels/categories**	**BRHS Variable name**	**Data access**
Q1 Physical Activity status	0= Inactive 1= Occasional 2= Light 3= Moderate 4= Moderate vigorous 5= Vigorous	Q1pa	Yes

4.0 Body Mass Index (BMI)

Body mass Index was calculated/derived using the measured height and weight from the baseline physical examination in 1978-80.

BMI = Weight (kg)/ Height $(m)^2$

Derived variables	**units**	**BRHS Variable name**	**Data access**
Body Mass Index (BMI)	kg/m^2	q1bmi	Yes

5.0 Adjusted Systolic and Diastolic blood pressure

Adjusted variables Blood Pressure	units	BRHS Variable name	Data access
Sitting SBP (mean of two readings)	mmHG	q1sbp	yes
Sitting DBP (mean of two readings)	mmHG	q1dbp	yes

Methods of adjustment used for Systolic and Diastolic BP.

5.1 Blood pressure adjustments (method)

1. It was firmly believed that for the first 4 days of our visit to Darlington (8th-11th October 1979) the sphygmomanometer was giving progressively higher readings. A rough method of adjustment has been applied and used for all published work. For 8th -10th October, systolic BP readings have been reduced by 10mmhg, and diastolic BP readings by 5mmhg. For 11th October, systolic BP readings have been reduced by30mmhg and diastolic BP readings by 20mmhg.

2. <u>Adjustment for observer differences</u>

   x = unadjusted BP

   y = adjusted BP

$$y = \exp\left(Ln(x_{ijk}) - \frac{1}{n_{ij}} \sum_{k} Ln(x_{ij_k}) + \frac{1}{n_i} \sum_{jk} Ln(x_{ijk}) \right)$$

$$= \frac{x_{ijh} \left(\prod_{jh} x_{ijh} \right)^{1/n_i}}{\left(\prod_{k} x_{ijh} \right)^{1/n_{ij}}}$$

average for j^{th} observer in town i => $\frac{1}{n_{ij}} \sum_{k} Ln(x_{ij_k})$

average for i^{th} town $\frac{1}{n_i} \sum_{jk} Ln(x_{ijk})$

i = 1, 2,…24 town

j = 2,3 4,7 observer

k = 1,2, ……men in i^{th} town seen by j^{th} observer

6.0 MI or Ischaemia grade using ECG Minnesota codes

(see also BRHS 1978-80 Baseline Q1 Electrocardiography(ECG).doc)

Derived variables Description	Value label	BRHS Variable name	Data access
MI or Ischaemia grade using Minnesota codes from ECG	1 = None 2 = Possible Ischaemia 3 = Definite Ischaemia 4 = Possible MI 5 = Definite MI	q1ECG_mish	

6.1 Derivation of MI or Ischaemia grade using ECG Minnesota codes

Code	Meaning	Definition *(see also BRHS 1978-80 Baseline Q1 Electrocardiography(ECG).doc)*
1	None	
2	Possible Ischaemia	coded 2 or 3 in Myocardial Ischaemia Type (*q1ECG_MIsch_Type*) **or** coded 1(LBBB) in Conduction Defects (q1ECG_CD)
3	Definite Ischaemia	coded 1 in Myocardial Ischaemia Type (*q1ECG_MIsch_Type*)
4	Possible MI	coded 3 in Myocardial Infarction Type - X anterolateral, Myocardial Infarction Type - Y inferior, Myocardial Infarction Type - Z anteroseptal. (q1ECG_MI_x_anteroL, q1ECG_MI_y_inferior, q1ECG_MI_z_anteroS)
5	Definite MI	coded 1 or 2 or 4 in Myocardial Infarction Type - X anterolateral, Myocardial Infarction Type - Y inferior, Myocardial Infarction Type - Z anteroseptal. (*q1ECG_MI_x_anteroL, q1ECG_MI_y_inferior, q1ECG_MI_z_anteroS*)

A hierarchy was imposed so that a man with both definite MI and definite Ischaemia is coded to the higher code, definite MI.

7.0 Pre-existing IHD variables

Derived variables Description	Value label	BRHS Variable name	Data access
Severe Chest pain/Possible MI(Q)	1 = None 2 = Wrong site 3 = Possible MI	q1severe_chestpain_possMI	
Chest pain/Angina(Q)	1 = No 2 = Not on Exertion 3 = Possible grade I 4 = Possible grade II 5 = Definite I 6 = Definite II	q1chest_pain_angina	
IHD (Derived from Severe chest pain and chest pain/Angina above)	1 = None 2 = Angina 3 = Possible MI 4 = Both	q1IHD_class	
Recall of doctor diagnosis MI/Angina	1 = None 2 = Angina only 3 = MI only 4 = Both	q1recall_ddiag_MI_Ang	

7.1 Definitions of Pre-existing IHD

Four variables have been used to identify men with pre-existing IHD

	Pre-existing IHD	BRHS variable name
1	Severe chest pain *(see 7.2 below)*	q1severe_cpain_possMI
2	Chest pain/angina *(see 7.4 below)*	q1chest_pain_angina
3	MI or Ischaemia grade using ECG Minnesota codes *(see 6.0/6.1 above or 7.3 below)*	q1ECG_mish)
4	Recall of doctor diagnosis MI/Angina	q1recall_ddiag_MI_Ang

Pre-existing IHD

Men have been defined as having pre-existing IHD as follows:

those with severe chest pain	q1severe_cpain_possMI	= 3 (poss MI)
or with chest pain	q1chest_pain_angina	= 3,4,5,6,(poss or def, grade I or II)
or with ECG(MI or Ischaemia)	q1ECG_mish	= 3, 4, 5 (def isch, poss or definite MI)
or with Recall of MI/Angina diagnosis	q1recall_ddiag_MI_Ang	= 2, 3, 4 (angina or MI or both)

or any combination of these. (1497 men)

Men without pre-existing IHD must have:

severe chest pain	(q1severe_cpain_possMI) = 1 or 2
and chest pain/angina	(q1chest_pain_angina) = 1 or 2
and ECG(MI or Ischaemia)	(q1ECG_mis)h = 1 or 2
and Recall of MI/Angina diagnosis = 1	(total 6204 men, 34 missing)

NB Sometimes possible ischaemia on ECG (ECG = 2) is also included, making the total number with pre-existing IHD 1934 men (5767) without and 34 missing.

Derivation of Pre-existing IHD variables above:

7.2 Severe chest pain

Derived from responses to baseline questionnaire (1978-80) Section 5 – questions 5.1 and 5.2

BRHS Variable name q1severe_cpain_possMI			
Code	Meaning	Q5.1	Q5.2
1	None	2	
2	Wrong Site	1 and	not 4 or 5 or 8 or all blanks
3	Poss MI	1 and	4 or 5 or 8
9	Missing	9	
		or 1 and	all blanks

7.3 MI or Ischaemia grade using ECG Minnesota codes

Derived from ECG data. See also BRHS 1978-80 Baseline Q1 Electrocardiography(ECG).doc

BRHS Variable name q1ECG_mish

Code	Meaning	Definition
1	None	
2	Possible Ischaemia	coded 2 or 3 in Myocardial Ischaemia Type (*q1ECG_MIsch_Type*) or coded 1(LBBB) in Conduction Defects (*q1ECG_CD)*
3	Definite Ischaemia	coded 1 in Myocardial Ischaemia Type (*q1ECG_MIsch_Type*)
4	Possible MI	coded 3 in Myocardial Infarction Type - X anterolateral *(q1ECG_MI_x_anteroL)* or Myocardial Infarction Type - Y inferior *(q1ECG_MI_y_inferior),* or Myocardial Infarction Type - Z anteroseptal *(q1ECG_MI_z_anteroS).* (ie code 3 in q1ECG_MI_x_anteroL or q1ECG_MI_y_inferior or q1ECG_MI_z_anteroS)
5	Definite MI	coded 1 or 2 or 4 in Myocardial Infarction Type - X anterolateral (*q1ECG_MI_x_anteroL)* or Myocardial Infarction Type - Y inferior (*q1ECG_MI_y_inferior)* or Myocardial Infarction Type - Z anteroseptal (*q1ECG_MI_z_anteroS)* (ie code 1 or 2 or 4 in *q1ECG_MI_x_anteroL or q1ECG_MI_y_inferior or q1ECG_MI_z_anteroS*)

A hierarchy was imposed so that a man with both definite MI and definite Ischaemia is coded to the higher code, definite MI.

7.4 Chest pain/Angina

Derived from responses to Baseline questionnaire (1978-80) Section 6 – questions 6.1 to 6.9

BRHS variable name q1chest_pain_angina

Code	Meaning	Q6.1	Q6.4	Q6.5	Q6.6	Q6.7	Q6.8	Q6.9
1	None	2						
2	Not on exertion	1		2	2			
3	Poss I	1	not all blank	2	1	Not Missing		
4	Poss II	1		1	1	Not Missing		
5	Def I	1	4,or 5, or 8	2	1	1 or 2	1	1
6	Def II	1	4,or 5, or 8	1	1	1 or 2	1	1

A few individuals answering 1 for q6.5 and 2 for q6.6 are included with appropriate Grade Is.

7.5 IHD

Derived from Severe chest pain and Chest pain/Angina variables above.

BRHS Variable name q1IHD_class

Code	Meaning	Definition
1	None	Sever chest pain 1 or 2 AND Chest pain/Angina 1 or 2
2	Angina	Sever chest pain 1 or 2 AND Chest pain/Angina 3 to 6
3	Possible MI	Sever chest pain 3 AND Chest pain/Angina 1 or 2
4	Both	Sever chest pain 3 AND Chest pain/Angina 3 to 6

7.6 Recall of IHD diagnosis

Derived from Baseline 1978-80 questionnaire Section 10 Medical history questions. Using recall of a doctor diagnosis of Angina, Heart attack (HA), Coronary thrombosis (CT) and Myocardial Infarction (MI).

BRHS Variable name q1recall_ddiag_MI_Ang			
Code	Meaning	Definition(based on old format)	(Definition TRANSLATED)
1	None	cols 13-16 on card 2 all=2	NO to Angina, HA, CT and MI
2	Angina	col 13=1 and col 14-16 =2	YES to Angina and NO to HA, CT and MI
3	MI	col 13=2 and one of cols 14-16=1	NO to Angina and YES to one of { HA,CT,MI }
4	Angina and MI	col 13=1 and one of cols 14-16=1	YES to Angina and YES to one of { HA,CT,MI }
9	Missing	all of cols 13-16=9	ALL of Angina, HA,CT,MI = 9 *(n=9)* OR N0 to Angina, CT and MI but Missing for HA *(n=1)* OR YES to Angina, NO to HA and missing for CT&MI *(n=1)*

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