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HEALTH AND HEALTH-RELATED BEHAVIOUR IN NCDS4

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Health and health-related behaviour in the National Child Development Study (between the ages of 16 and 23).

1. Early adulthood is considered to be a period of relatively few health problems. At the age of 23, 86% of members of the National Child Development Study (NCDS) reported that they had had a health problem since 16. Whilst many of these problems were transitory, it is a surprisingly large proportion considering the age of the cohort.

2. This paper describes the types of problems and some of the social and economic characteristics of those who reported a health problem. The main purpose here is to be descriptive rather than explanatory, since an important first stage in the longitudinal analysis of health outcomes at 23 is to describe what these outcomes are. It must be stressed that this paper aims to present an overview and is in no way a detailed study.

3. A wide range of health problems was reported in response to four open-ended questions which asked about longstanding illness and disability, conditions needing regular medical supervision, hospital admissions, and other physical and mental health problems. In addition, specific questions relating to accidents, asthma, epilepsy, migraine and respiratory symptoms were asked.

4. Initially, the responses to the four open-ended questions have been analysed separately, with particular emphasis on those who reported a longstanding illness or disability. The separate analysis of the four questions is of interest not only because of the different types of problems which emerge, but also because it is likely to reflect differences in the way in which individuals regard their illness. However, the questions were not mutually exclusive and duplications of individuals will have occurred. For example, a diabetic may have received regular medical supervision and been admitted to hospital during the period. Therefore, the responses to the four open-ended

questions have also been combined and duplications excluded. In the second part of this paper, the amalgamated data have been presented in relation to social and economic variables.

5. It should be remembered that the data are self-reported and reliable prevalence figures are not available without further information. For studies of specific conditions, it would be necessary to confirm diagnosis.

Longstanding illness and disability.

6. Four per cent of women and five per cent of men (256 and 319 respectively) said that they had a longstanding illness or disability. Twenty-four per cent of those with disabilities had always had them, 31 per cent reported onset between birth and their sixteenth birthday and 45 per cent between the ages of 16 and 23. Fifty-three per cent of those who reported a longstanding illness or disability received regular medical supervision for their condition.

7. The range of conditions reported by the cohort varied from severe physical and mental disability to less handicapping conditions such as hayfever. Conditions have been coded using the 1977 9th revision of the International Classification of Diseases (ICD). Table 1 shows the major ICD categories for men and women separately. There were 637 reported conditions, since 62 individuals reported two. However, Table 1 represents 545 reported conditions since 15 individuals had 2 conditions in the same ICD category and have been counted once only. Also seventy-seven injuries or disabilities which had resulted from accidents have been omitted from Table 1 and will be discussed later in the paper.

TABLE 1. Conditions resulting in longstanding illness or disability

ICD category	Longstanding illness/disability. Men No.	(Rate)*	Women No.	(Rate)*	Both Sexes No.	(Rate)*
Infectious.	1	(2)	3	(5)	4	(3)
Neoplasms.	2	(3)	3	(5)	5	(4)
Endocrine, Nutritional, Metabolic & immunity.	11	(18)	8	(13)	19	(15)
Blood and bloodforming organs.	2	(3)	2	(3)	4	(3)
Mental disorders.	27	(43)	46	(73)	73	(58)
Nervous and sense organs.	79	(126)	58	(93)	137	(109)
Circulatory system.	6	(10)	6	(10)	12	(10)
Respiratory.	46	(73)	41	(65)	87	(69)
Digestive.	13	(21)	7	(11)	20	(16)
Genitourinary	3	(5)	9	(14)	12	(10)
Complications of pregnancy & birth.	-	-	2	(3)	2	(2)
Skin and subcutaneous tissue.	10	(16)	8	(13)	18	(14)
Musculoskeletal & connective tissue.	50	(80)	34	(54)	84	(67)
Congenital anomalies.	21	(33)	24	(38)	45	(36)
Other.	12	(19)	11	(18)	23	(18)

* Figures in brackets are prevalence rates per 10,000.
Actual numbers are based on responses from 6270 men and 6268 women.

8. The highest reported prevalence rates for both men and women of 126 and 93 per 10,000 were for diseases of the nervous system and sense organs. Most of the 79 men and 58 women in this group had one of four major handicapping conditions, namely poor visual acuity and disorders of the eye, deafness, epilepsy or migraine. Respiratory diseases were also commonly reported longstanding illnesses affecting 46 men and 41 women. Most of these

people suffered from asthma (70%). More men compared with women reported musculoskeletal problems (50 and 34 respectively), which included back problems and acquired deformities. Conversely, more women compared with men (46 and 27) reported mental disorders which were largely neurotic disorders or mental retardation.

9. The three main disabilities at 16 and 23 were the same but there were large discrepancies in the number of individuals recorded as having these conditions. At both ages visual and hearing problems were the most common disabilities. At 16, 233 individuals were identified compared with 137 who reported nervous and sensory disorders at 23. (As mentioned previously, in addition to visual and hearing difficulties, this category includes epilepsy and migraine). There were 158 cohort members with respiratory problems (mainly asthma) at 16 and 87 at 23. Musculoskeletal disorders affected 143 cohort members at 16 and 84 at 23. However, identification of those with a disability at 23 depended upon the individual regarding themselves as having a "longstanding illness, disability or infirmity which limited activities in any way compared with people of the same age". Also there may have been an improvement in some conditions, for example asthma. The analyses at 16 and 23 are so far cross-sectional. Differences in the total number of respondents at each sweep need to be taken into account. Longitudinal analysis will allow a more meaningful comparison of disability to be made.

10. The severity of reported illnesses and disabilities at 23 was not recorded. However, in response to specific questions, individuals described the degree to which their condition limited their activities. Table 2 shows the proportion of men and women who had experienced difficulty washing and dressing, getting about the house, doing housework, getting out of the house independently and in leading their social life. A large proportion (94 per cent of men and 55 per cent of women) had experienced no difficulties in these seperate activities. If these responses are grouped together, 65 per cent of men and 43 per cent of women experienced no difficulty with any of these activities (Table 3). Thirteen per cent of the men and 20 per cent of the women had severe difficulty (i.e. they had "great difficulty" or "could not do at all" any of these activities).

TABLE 2: Limitations of longstanding illness/disability*
(percent who experience difficulty in daily activities).

Difficulty.	Number	None		Some		Great deal.		Complete	
		Men.	Women.	Men.	Women	Men.	Women.	Men.	Women.
Washing & dressing.	559	85	86	10	11	1	2	3	1
Getting about the house	560	92	84	5	13	1	2	1	1
Doing house-work.	559	84	67	8	26	1	5	5	2
Getting out of house alone	561	86	75	4	15	2	4	7	6
Leading a social life.	561	70	55	19	30	5	7	6	8

* Individuals who had injuries and reported these as "longstanding illness or disability" are included in Tables 2 - 4.

TABLE 3: Degree of difficulty with daily activities.

Degree of difficulty **	Men N = 307.	Women N = 249
None	199 (65%)	106 (43%)
Some	69 (22%)	93 (37%)
Severe	39 (13%)	50 (20%)

** See text (paragraph 10) for definition.

11. Table 4 shows the economic status of those who reported having a longstanding illness or disability and those who did not. Data are shown also for the three groups who experienced different degrees of difficulty in their daily activities. Men who reported having a longstanding illness or disability were less likely to be currently working full-time (65 per cent) compared with those who did not report a disability (82 per cent). They were also more likely to be unemployed (15 per cent) compared with others, (12 per cent). Furthermore, men who reported a longstanding illness or disability accounted for 38 out of the 45 men in the entire NCDS 4 who were out of the labour force because of sickness. There were no differences in the proportions who were in full-time or part-time education (three per cent). However, amongst those who reported a longstanding illness or disability, economic status varied according to the degree of difficulty experienced in daily activities. The majority of men who were severely restricted in their activities were out of the labour force through sickness (69 per cent) and more of them were in full- or part-time education. Whereas the pattern of economic status for men who experienced no difficulties in their daily activities, resembled more closely that of the rest of the cohort. Seventy-six per cent were employed full-time compared with 82 per cent of the rest and 15 per cent were unemployed compared with 12 per cent.

12. Amongst women there was a smaller proportion of those who reported a longstanding illness or disability who were employed full-time (41 per cent) compared with other women (58 per cent) and more were unemployed (9 per cent compared with 7 per cent). Overall, 13 per cent were out of the labour force through sickness (less than one per cent of other women were so classified), although this proportion increased to 44 per cent for those who were severely restricted in their daily activities.

TABLE 4. Current economic status of those with longstanding illness or disability compared with the rest of the cohort.

(A) MEN.

Current economic Status	Respondents with disability/illness				Rest of cohort.
	Degree of difficulty with daily activities*				
	None.	Some.	Severe.	Total.	
Full or part-time education	8	2	-	10 (3%)	202 (3%)
Full-time employment	150	43	5	198 (65%)	4867 (82%)
Part-time employment	6	3	3	12 (4%)	102 (2%)
Unemployed.	29	11	4	44 (15%)	706 (12%)
Out of the labour force (housework)	-	1	-	1 -	4 (-)
Out of the labour force (sickness)	3	8	27	38 (12%)	7 (-)
Out of the labour force (other reason)	2	1	-	3 (1%)	52 (1%)
Total	198	69	39	306 (100%)	5940 (100%)
(B) WOMEN.					
Full or part-time education	-	2	-	2 (1%)	112 (2%)
Full-time employment	49	38	16	103 (41%)	3479 (58%)
Part-time education	12	11	1	24 (10%)	420 (7%)
Unemployed	12	8	3	23 (9%)	426 (7%)
Out of the labour force (housework)	26	23	8	57 (23%)	1456 (24%)
Out of the labour force (sickness)	4	7	22	33 (13%)	6 (-)
Out of the labour force (other reason)	3	4	-	7 (3%)	102 (2%)
Total	106	93	50	249 (100%)	6001 (100%)

The figures represent actual numbers.

* See text (paragraph 10) for definition.

13. However, the above provides a preliminary analysis only. Further analyses which examine those with longstanding illness or disability as a proportion of the economically active, should be done. It would be possible to compare the employment experiences of those with a chronic illness or disability as they enter the labour market at 16 and those who have become disabled subsequently. The disabled might also be compared with the rest of the cohort in terms of their housing facilities, income and other health problems.

Medically supervised conditions.

14. Cohort members were asked specifically if they suffered from epilepsy or asthma or wheezy bronchitis and whether they were treated for these conditions. Forty-one men and 62 women were prescribed medicines for epilepsy and, 224 men and 293 women were treated for asthma or wheezy bronchitis. In addition to these people and those who received medical supervision for a longstanding illness or disability, nine per cent of the women in the cohort (568) and five per cent of the men (324) reported having other conditions which required regular medical supervision.

15. Table 5 shows these additional conditions for which members of the cohort received regular medical supervision. As for Table 1, injuries resulting from an accident (45) have been excluded, leaving a total of 837 supervised conditions.

16. Three disorders, namely skin, genitourinary and digestive accounted for 40 per cent of medically supervised problems. Not surprisingly, there were differences in the type of conditions for which young adults received regular medical supervision (Table 5) and reported longstanding illness or disability (Table 1).

17. Fifty-five men and 74 women reported skin disorders. This group of conditions was largely comprised of 27 cohort members who suffered from eczema and 34 with psoriasis. However, the overall prevalence rate of 103 per 10,000 is likely to be an underestimate of those with skin conditions. Respondents had been asked specifically if they had suffered from eczema in the 12 months previous to interview and 436 women and 227 men (i.e. 530 per 10,000 overall) reported that they had. It appears therefore, that skin conditions were common complaints amongst young adults and a main reason for receiving medical help.

TABLE 5: Medically supervised conditions by ICD category.

ICD category	Medically supervised condition. Men No.	(Rate)*	Women No.	(Rate)*	Both sexes No.	(Rate)*
Infectious.	14	(22)	15	(24)	29	(23)
Neoplasms.	10	(16)	7	(11)	17	(14)
Endocrine, Nutritional, Metobolic & Immunity.	21	(33)	36	(57)	57	(45)
Blood and bloodforming organs	3	(5)	23	(37)	26	(21)
Mental disorders.	20	(32)	64	(102)	84	(67)
Nervous and sense organs.	34	(54)	16	(26)	50	(40)
Circulatory system.	12	(19)	33	(53)	45	(36)
Respiratory.	19	(30)	26	(41)	45	(36)
Digestive.	43	(69)	47	(75)	90	(72)
.Genitourinary	10	(16)	109	(174)	119	(95)
.Complications of pregnancy & birth	0	-	6	(10)	6	(10)**
.Skin & subcutaneous tissue	55	(88)	74	(118)	129	(103)
Musculoskeletal & connective tissue	22	(35)	23	(37)	45	(36)
Congenital anomalies	3	(5)	6	(10)	9	(8)
Symptoms.	10	(16)	30	(48)	40	(32)
Poisoning	4	(6)	13	(21)	17	(14)
Investigations.	7	(11)	8	(13)	15	(12)
Inadequate.	9	(14)	5	(8)	14	(11)

* Figures in brackets are prevalence rates per 10,000

** rate for women only.

18. Although skin problems were the most common conditions for which the cohort received regular medical supervision overall, for women the most common reason was for genitourinary problems. These included kidney infections, breast lumps, infertility, and disorders of the cervix, uterus and ovaries. Of those women in the cohort who were receiving regular medical supervision at the time of the interview 174 per 10,000 had genitourinary problems. The comparable rate for men was 16 per 10,000.

19. A similar number of men and women (43 and 47 respectively) had digestive disorders, which included 24 individuals with peptic ulcer. Although digestive disorders were the third most common conditions for which cohort members were receiving regular medical supervision overall, amongst women mental disorders were more common. One hundred and two per 10,000 women received regular medical help for mental disorders compared with 75 per 10,000 for digestive problems.

Hospital admissions.

20. Three thousand cohort members reported a hospital admission between the ages of 16 and 23, for reasons other than accidents or routine childbirth. For the majority, 69 per cent, this was one admission only. More women compared with men reported an admission to hospital (30 per cent and 18 per cent respectively). Table 6 shows that women were also more likely to be admitted more than once (34 per cent of women had more than one admission compared with 25 per cent of men).

TABLE 6: Number of hospital admissions.

		Number of admissions 1	2	3	4	5	6+	Not known.	Total
Men	Number	823	206	48	14	12	11	3	1117
	%	74	(18)	(4)	(1)	(1)	(1)	(-)	(100)
Women	Number	1232	418	134	49	23	23	4	1883
	%	(65)	(22)	(7)	(3)	(1)	(1)	(-)	(100)
Total		2055	624	182	63	35	34	7	3000

21. The reasons for hospital admission are given for men and women separately in Table 7. Admissions for injuries have been omitted. Cohort members who were admitted to hospital for different reasons are represented in more than one category. However, repeat admissions for the same condition have been excluded. Therefore, the figures in Table 7 are the numbers of individuals who, for a particular condition, were admitted to hospital between 16 and 23. Therefore, the rates are (seven-year) period prevalence rates.

TABLE 7. Hospital admissions by ICD category.

ICD category.	Hospital admissions. Men No.	(Rate)*	Women No.	(Rate)*	Both Sexes No.	(Rate)*
Infectious.	59	(9)	36	(6)	95	(7)
Neoplasms	13	(2)	31	(5)	44	(4)
Endocrine, Nutritional, Metabolic, Immunity.	19	(3)	24	(4)	43	(3)
Blood and bloodforming organs.	4	(1)	13	(2)	17	(1)
Mental disorders.	37	(6)	46	(7)	83	(7)
Nervous and sense organs.	64	(10)	48	(8)	112	(9)
Circulatory system	23	(4)	54	(9)	77	(6)
Respiratory	125	(20)	186	(30)	311	(25)
Digestive.	268	(43)	329	(52)	597	(48)
Genitourinary	33	(5)	216	(34)	249	(20)
Complications of pregnancy & birth	-		537	(86)	537	(86)**
Skin and subcutaneous tissue.	86	(14)	65	(10)	151	(12)
Musculoskeletal and connective tissues.	41	(7)	38	(6)	79	(6)
Congenital anomalies.	6	(1)	13	(2)	19	(2)
Symptoms.	63	(10)	87	(14)	150	(12)
Poisoning.	43	(7)	75	(12)	118	(9)
Operations & investigations.	291	(46)	498	(79)	789	(63)
Inadequate.	18	(3)	18	(3)	36	(3)

* Figures in brackets are period prevalence rates per 1,000

** rate for women only.

22. Amongst women admitted to hospital, 29 per cent (or 9 per cent of all women in the cohort) had had a complication of pregnancy or birth, commonly a miscarriage or abortion. These did not account for the excess admissions amongst women, since rates within ICD categories were frequently higher than those of the men. For both sexes a major reason for hospital admission, affecting 498 women and 291 men, was for an operation or investigation such as a tooth extraction, cartilage operation or diagnostic curettage (D.&.C).

23. Digestive problems were mentioned previously as a common reason for members of the cohort to receive medical supervision. There were also many individuals admitted to hospital with such problems. Over half of the 329 women and 268 men who were included in this group were admitted for appendicitis.

24. Three hundred and eleven men and women, that is 25 per 1,000 population had been admitted to hospital with a respiratory condition, commonly tonsillitis. A further 249 men and women (20 per 1,000) had been admitted to hospital with genitourinary problems. However, this figure will underestimate prevalence since a proportion of the D.&.C's (included in a category described above) would have been performed for genitourinary problems.

25. All of those whose admissions were coded as 'inadequate' or 'symptoms' were checked subsequent to the original ICD coding and where possible allocated to appropriate ICD numbers. However, 36 individuals either refused to give a reason for their hospital admission or the information was insufficient for classification. A further 150 cohort members had been admitted for a variety of symptoms, including abdominal pain, headaches, breathlessness and nausea.

26. In addition to the questions described above, respondents were asked if they had any other health problems which had not been covered by earlier questions. Eight hundred and ninety-one members of the cohort reported other conditions. Fifteen per cent of this group had musculoskeletal problems (commonly backache), ten per cent had nervous and sensory disorders and a further ten per cent were classified as symptoms. The remaining 55 per cent were distributed between the other ICD categories. The 891 individuals who reported these conditions have been included in the composite table which follows in the next section.

27. The description of those who had been admitted to hospital, or had had a condition needing regular medical supervision or a longstanding illness or disability, has been restricted to the types of health problems they have experienced. These groups are of interest separately and further analysis may be needed. However, in the comparison of health and social and economic circumstances which follows, the responses to these three health questions and that described in paragraph 26, have been amalgamated in order to eliminate duplication between the questions.

28. This preliminary analysis has many limitations. In particular, many of the health problems experienced by people of this age would have been transitory and have few, if any, impacts on later health. No attempt has been made to rank conditions according to severity although this may be necessary in future analyses.

Social and economic circumstances and health.

29. Table 8 shows reported health problems of cohort members between the ages of 16 and 23 by ICD category. Injuries have been excluded. Hospital admissions were numerically the largest group and provide the major contribution to the table. Since hospital admissions have been described above, further description of Table 8 is not given here. However, Table 8 is included to show the numbers in each ICD category on which subsequent tables are based. Whilst the composition of each ICD category is largely a reflection of hospital admissions,

TABLE 8: Disability, supervised conditions and hospital admissions by ICD category.

ICD category.	Men. No.	(Rate)*	Women. No.	(Rate)*	Both sexes. No.	(Rate)*
Infectious.	91	(15)	68	(11)	159	(13)
Neoplasms	19	(3)	41	(7)	60	(5)
Endocrine, Nutritional, Metabolic & Immunity	45	(7)	59	(9)	104	(8)
Blood and bloodforming organs.	11	(2)	46	(7)	57	(5)
Mental disorders.	98	(16)	174	(28)	272	(22)
Nervous and sense organs.	214	(34)	144	(23)	358	(29)
Circulatory system.	48	(8)	105	(17)	153	(12)
Respiratory.	208	(33)	267	(43)	475	(38)
Digestive.	337	(54)	393	(63)	730	(58)
Genitourinary	50	(8)	389	(62)	439	(35)
Complications of pregnancy and birth	-		543	(87)	543	(87)***
Skin and subcutaneous tissue.	183	(29)	171	(27)	354	(28)
Musculoskeletal and connective tissue	174	(28)	155	(25)	329	(26)
Congenital anomalies.	34	(5)	47	(7)	81	(6)
Symptoms.	123	(20)	165	(26)	288	(23)
Poisoning.	55	(9)	111	(18)	166	(13)
Operations and investigations.	300	(48)	506	(81)	806	(64)
Inadequate.	30	(5)	27	(4)	57	(5)
"Healthy"**	1475	(235)	393	(63)	1868	(149)

* Figures in brackets are period prevalence rates per 1,000

** "healthy" are defined here as cohort members who reported no health problems between the ages of 16 and 23.

*** Rate for women only.

there is some variation between the categories. For example, 56 per cent of the 81 men and women with congenital anomalies shown in Table 8 reported having a longstanding illness or disability, whereas complications of pregnancy and birth, and digestive problems were largely identified through an admission to hospital.

30. In addition to ICD categories, Table 8 includes a group of "healthy" cohort members. 1,475 men and 393 women have been defined as "healthy" since they reported no health problems between the ages of 16 and 23. The number of cohort members who were healthy during this period was likely to be greater than that given here since the definition adopted for the "healthy" is particularly rigorous. Future analyses may include a wider definition in which individuals' assessment of his or her own health could be taken into account. Therefore a comparison of ICD categories and self-assessed health status is given below.

Self assessment of Health

31. Overall, 45 per cent of cohort members at the age of 23 assessed their health as excellent, a further 46 per cent rated their health as good, 9 per cent fair and 1 per cent poor. The relationship between self-assessed health and particular health problems (Appendix A) may indicate, to some extent, those problems which were transitory. Of course, an individuals' assessment of his or her health is influenced not only by the severity of one particular condition but also by the association of other health problems, and most importantly, the individual's perception of these. The influence of the latter is evident in these data. Men and women who reported having a mental disorder (this category includes many with depression and anxiety in addition to mental retardation) were the most likely to assess their health as fair or poor: 43 per cent of men and 47 per cent of women in this category did so.

32. Nevertheless, of those who had had an operation or an investigation, such as a tooth extraction or cartilage operation, 88 per cent of men and 81 per cent of women reported that they had "excellent" or "good" health at the time of the interview. Amongst the "healthy", 96 per cent of both sexes described their health in this way. Similarly, at the time of the interview, 83 per cent of women who had had complications during pregnancy and birth, rated their health as "excellent" or "good".

33. In future analyses, the "healthy" category may include some of the individuals who had had an operation or investigation, a complication during pregnancy or birth, or other specified problem. For these initial analyses, however, the "healthy" as defined here, provide a useful comparison group.

Social class variations in morbidity.

34. NCDS offers an opportunity to compare the health experiences of young adults in the different social classes. The Registrar Generals (1980) classification of occupations was used to derive the Social class of 96 per cent of NCDS 4. Four per cent were unclassifiable. Eighty-one per cent of men and 58 per cent of women were classified according to their occupation at the time of the interview and the remainder by a previous occupation.

35. Table 9 shows the social class of men and women who reported a medically supervised condition. Prevalence rates were consistently higher for semi- and unskilled workers (56 per 1,000 for men and 106 for women) compared with professional and managerial groups (48 per 1, 000 for men and 96 for women). These rates are not directly comparable with GP consultation rates which show no consistent social class trends. However, there are well known differences between the social classes in the use of GP services (Black report, 1980) and NCDS 4 provides an alternative indicator for social class differences in conditions which do not require hospitalization.

36. Table 9 also shows hospital admission rates for men and women in the different social classes. These rates represent the number of admissions over the seven year period per 1,000 population. Repeat admissions for the same condition have been excluded. Admission rates were higher for women compared with men (300 and 173 per 1,000 respectively). The range in rates for the social classes varied from 148 per 1,000 for men in social classes I and II to 196 in IV and V. For women in social classes I and II the admission rate was 282 per 1,000, whereas for classes IV and V the rate was 325 per 1,000. Unfortunately, although routine hospital admission statistics are recorded (in Hospital In-Patient Enquiry,HIPE) social class is not included for England and Wales. However, the Scottish In-patients Survey (SHIPS) does record social class. The higher admission rates for men and women in social classes IV and V compared with classes I and II shown in NCDS 4 is consistent with the trend in discharge ratios for the different social classes in Scotland.

TABLE 9: Morbidity and social class
(prevalence rates per 1,000 population)

Social Class	Number	Medically supervised illness. Rate	(Number)	Hospital admission Rate	(Number)
Men.					
I + II	(1280)	48	(61)	148	(222)
IIIN	(1000)	47	(47)	153	(153)
IIIM	(2407)	52	(125)	169	(406)
IV + V	(1240)	56	(70)	196	(243)
Women.					
I + II	(1283)	96	(123)	282	(362)
IIIN	(2959)	86	(254)	297	(880)
IIIM	(565)	69	(39)	293	(165)
IV + V	(1275)	106	(135)	325	(415)

37. Table 10 shows prevalence ratios calculated to show excess morbidity within the different social classes. The ratio represents the number of observed cases divided by the number expected in each category multiplied by a hundred (base = 100). The expected number of cases were calculated on the assumption that all categories had the same social class distribution.

38. Amongst women there were more who were "healthy" in social classes I and II than expected, and fewer in social classes IV and V. The ratio of 134 in social classes I and II was almost double that of 71 in the semi- and unskilled manual groups. This class gradient of "healthy" women reflects the trends within the individual ICD categories. Although women in social classes I and II had the highest prevalence ratio for musculoskeletal, respiratory, skin and infectious diseases, the operations and investigations (mainly D.and C's), women in social classes IV and V had the highest ratio in most categories. These include blood, mental, sensory, circulatory, congenital disorders, complications during pregnancy and birth, genitourinary problems and symptoms. Women who worked in manual occupations had the highest prevalence ratio for poisoning (including overdose). However, these are preliminary analyses only and further studies are needed to explore these complex relationships.

39. Amongst men, however, there was an excess of "healthy" cohort members in the skilled manual group, although the range in prevalence ratios was not as great for men as it was for women. One possible explanation for the higher ratio in social class IIIM men is the "healthy worker effect" in which individuals, or their employers select for particular types of employment (from which social class is derived) on the basis of abilities and physical health attributes (McMichael, 1976). The effect of this selection is that particular occupations are characterised by a healthy workforce. However, this would not explain the lower prevalence ratio in social classes IV and V.

TABLE 10. Prevalence ratios and social class.

Social Class	Population.	Infectious	Neoplasms	Endocrine, Nutritional, Metabolic & Immunity	Blood and bloodforming organs	Mental disorders	Nervous and sense organs.	Circulatory system.	Respiratory	Digestive	Genitourinary	Complications of pregnancy and birth	Skin and subcutaneous tissue	Musculoskeletal & connective tissue.	Congenital anomalies	Poisoning	Operations and investigations	Symptoms.	Inadequate.	Healthy.
Men																				
I + II	(1280)	94	136	113	46	66	89	132	132	97	103	-	95	81	37	118	125	69	66	92
IIIN	(1001)	80	0	72	237	71	98	141	88	79	119	-	101	96	119	81	102	109	42	95
IIIM	(2407)	107	116	114	49	97	99	82	90	109	71	-	98	109	89	87	85	91	106	111
IV + V	(1240)	110	113	82	144	165	115	68	95	102	138	-	109	107	172	124	103	143	173	70
Women.																				
I + II	(1283)	156	112	100	69	62	91	70	116	101	102	77	120	118	79	78	116	105	99	134
IIIN	(2960)	90	103	105	85	70	98	98	106	98	101	96	90	105	93	92	99	84	94	98
IIIM	(565)	135	150	76	53	127	79	117	71	116	76	105	104	79	77	138	74	80	90	99
IV + V	(1275)	52	100	100	186	194	123	128	83	95	107	130	101	80	148	123	97	141	119	71

$$\text{Prevalence ratio} = \frac{\text{No. of observed cases per 1000 per social class.}}{\text{No. of expected cases per 1000 (from social class composition of entire cohort)}} \times 100$$

40. The ratios for men in the different ICD categories showed several similarities to those for women. There were higher ratios for mental and sensory disorders and symptoms in social classes IV and V and lower ratios in social classes I and II. For respiratory conditions and operations and investigations, however, social classes I and II had higher ratios. As expected, there were some differences in the prevalence ratios for men and women, but these were invariably in those categories with smaller numbers, for example infectious diseases and congenital anomalies, and less reliance should be placed on the results for these groups. Further statistical analyses would indicate the relative significance of these differences.

41. Social class differences in health may reflect differences in income and/or lifestyle. NCDS 4 includes these data and future analyses are required to examine these relationships.

Regional variations in morbidity.

42. Regional variations in mortality within Britain are well-known. Variations in morbidity, however, have been restricted to adhoc studies for specific diseases and routinely collected GP consultation rates and hospital admissions which are not always suitable for this purpose. Further documentation of regional inequalities in health could readily be obtained from an analysis of NCDS data.

43. Among the "healthy" the prevalence ratio varied between the 11 standard regions in Britain, from 116 in the West Midlands to 89 in Greater London and East Anglia (Appendix B). The range in the ratio for the "healthy" is not large compared with that for particular ICD categories. For example, amongst those with skin disorders there were fewer cases resident in East Anglia (prevalence ratio = 45) than expected, and more in the North West (prevalence ratio = 64). For mental disorders, the highest ratio was 142 in Wales, and the lowest was 72, in the South-West. There were also variations in reported cases of poisoning, with prevalence ratios varying from 130 in Greater London to 39 in East Anglia.

44. This preliminary analysis suggests that interesting and important regional variations in health do occur within Britain. However, more sophisticated analyses which take account of the social class composition of the regions are needed in order to make more meaningful comparisons.

Morbidity and the Malaise Inventory.

45. The Malaise Inventory consists of 24 questions on physical and mental manifestations, or symptoms, of psychiatric disturbance. The inventory was developed by the Institute of Psychiatry from the Cornell Medical Index, and has been used to indicate a tendency towards depression. A fuller description of the malaise inventory is given in Working Paper No. 2. Briefly, a score ranging from 0 - 24 is obtained from the respondents replies and a score of 0 - 6 is generally used to indicate the 'normal' group; 7 or more for the 'depressed'. Eighty-nine per cent of NCDS 4 respondents fell into the 'normal' category and 11 per cent were therefore rated as depressed. Women were more likely to be rated as depressed than men (16 per cent and 6 per cent respectively).

46. The ratios in Table 11 compare the prevalence of "depression" in the ICD categories and "healthy" with that in the cohort overall. There was a consistent and marked trend of less depression than expected amongst "healthy" men and women. Within the ICD categories there were also differences in the prevalence ratios. Not surprisingly, there was a greater number of 'depressed' men and women in the category of mental disorders compared with the numbers expected. For men the ratio varied from 660 for the 'depressed' and 64 for the 'normal' group and for women the range was 412 to 42. There was also a disproportionate number of 'depressed' men and women in the ICD poisoning category, which included cohort members who had taken an overdose. The differences within the remaining ICD categories were not as large as those for mental disorders and poisoning, but nevertheless, there were few categories in which the proportion of 'normal' and 'depressed' approximated that expected.

TABLE 11: Prevalence ratios for ICD categories for 'normal' and 'depressed' groups.

ICD category	Men		Women	
	Normal (n=5889)	Depressed (n=381)	Normal (n=5281)	Depressed. (n=987)
Infectious.	96	163	101	94
Neoplasms	107	0	101	38
Endocrine, Nutritional, Metabolic, Immunity.	92	219	90	151
Blood and bloodforming organs.	87	300	77	221
Mental disorders.	64	660	42	413
Nervous and sense organs.	93	208	82	199
Circulatory system	96	171	81	200
Respiratory	95	189	98	109
Digestive	94	194	93	139
Genitourinary	100	99	90	206
Complications of pregnancy & birth	-	-	91	151
Skin and subcutaneous tissue	97	143	91	149
Musculoskeletal & connective tissues	92	217	88	164
Congenital anomolies	97	145	98	108
Poisoning	80	420	78	218
Operations and investigations	100	115	98	113
Symptoms.	92	227	79	212
Inadequate.	89	275	88	165
"Healthy".	105	33	113	28

(base = 100)

47. Whilst these data suggest that the "healthy" were less depressed than cohort members who reported health problems, interpretation of these are difficult. . Thus, the inclusion of an individual in one of the ICD categories was based on reported health problems from the age of 16 to 23, whereas the Malaise Inventory related to the disposition of the cohort member at the time of the interview. Also, some of the items in the malaise inventory may indicate physical discomfort rather that depression. It would not be surprising therefore, that individuals with disabilities might be shown to be more 'depressed'.

48. Notwithstanding these cautions, the data offer a valuable opportunity to examine the relationship between emotional well-being and health. Possible analyses include the development of ill-health in those individuals with emotional problems (as identified in previous NCDS sweeps) and an examination of the emotional status of physically disabled people.

49. Drinking behaviour and health.

Working Paper No. 4. has provided a preliminary analysis of the drinking behaviour of NCDS 4. Analysis in this paper is therefore restricted to demonstrating the associations between drinking and health. Smoking data are also available for future analyses.

50. Table 12 shows the "healthy" classified into five drinking categories. Respondents were asked if they ever drank alcohol, and if so, the amount they had consumed in the week preceding the interview. The amounts drunk were converted into units and classified into high, medium and heavy drinking according to the OPCS classification*. Those who did not drink at all or had consumed no alcohol in the week preceding the interview are shown separately.

51. There were fewer "healthy" cohort members than expected amongst men and women who did not drink and women who were heavy drinkers. Conversely heavy drinking men were relatively "healthy". However, the range in prevalence ratios for the "healthy" amongst men was not great and further analyses are needed to explore the relationship between alcohol consumption and health.

*For a further description of alcohol categories see Working Paper 4.

TABLE 12. Prevalence ratio of the "healthy" according to alcohol consumption.

	Men (N = 1475)	Women (N = 393)
Alcohol groups:		
Non-drinkers.	82	75
None in last week	104	80
Light drinkers	88	110
Medium drinkers	102	127
Heavy drinkers	112	43

(baSE = 100)

Health and Physical development.

52. The relationship between health and obesity has been the subject of a recent report of the Royal College of Physicians (1983). Whilst it is intended that the health consequences of overweight should be pursued in a separate working paper, preliminary associations of both over- and under-weight and the ICD categories are discussed briefly here.

53. Respondents in NCDS4 reported their height and weight from which the body mass index (BMI) was calculated, (the BMI is kilograms divided by metres^2). Table 13 shows the distribution of the "healthy" between BMI categories for men and women separately. Both sexes show a trend of higher prevalence ratios for those in the medium weight categories and lower ratios amongst the under- and over-weight groups.

TABLE 13: Prevalence ratio of the "healthy" categoried according to the body mass index (BMI)

	BMI range	Men (N = 1475)	Women (N = 393)
Very underweight	(< 18)	64	64
Underweight	(18 - 19)	89	100
Medium weight	(20 - 24 for women)		105
	(20 - 29 for men)	104	
Overweight	(28 - 29 for men)	78	
	(25 - 27 for women)		92
Obese	(⩾ 28 for women)		63
	(⩾ 30 for men)	77	

54. Table 14 shows prevalence ratios for ICD categories for women only. The distribution of BMI's in NCDS4 has been used as the standard for each ICD category). For 11 out of the 17 ICD categories there were more observed cases than expected for both the underweight and overweight groups. The categories which showed this trend were:endocrine and nutritional disorders, mental, sensory, respiratory, genitourinary, congenital disorders, complications of pregnancy and birth, poisoning and symptoms. For those with blood disorders (commonly anemia) there was a higher ratio for the underweight women and a decrease in the rate as the BMI increased. For digestive disorders this trend was reversed, with lower ratios in the underweight groups and higher ratios amongst the overweight. The data for men and a fuller discussion of health and bodysize will be presented in a later working paper.

TABLE 14: Prevalence ratios for ICD categories by body mass index (women only)

ICD category.	BMI (kg/m²) (< 18) Very under-weight (n=247)	(18-19) Under-weight (n=1287)	(20-24) Medium weight (n=3716)	(25-27) Over-weight. (n=568)	(> 28) Obese. (n=328)
Infectious.	74	93	107	97	85
Neoplasms	62	83	115	107	0
Endocrine, Nutritional Metabolic, Immunity	131	50	97	112	294
Blood and bloodforming organs.	390	74	95	47	83
Mental disorders.	192	76	90	126	177
Nervous and sense organs.	126	101	96	76	148
Circulatory system	146	83	90	178	92
Respiratory	115	100	95	103	129
Digestive	92	89	100	123	115
Genitourinary	144	98	97	113	110
Complications of pregnancy & birth.	103	84	97	102	190
Skin and subcutaneous tissue.	60	94	107	109	56
Musculoskeletal and connective tissue.	66	104	102	85	75
Congenital anomalies	272	52	83	93	244
Poisoning	116	83	97	99	173
Operations and Investigations.	142	94	98	100	125
Symptoms.	200	92	78	180	175

(base = 100)

Accidents.

55. Between the ages of 16 and 23, 62 per cent of men (3858) and 26 per cent of women (1654) reported having had an accident which required hospital treatment. Working Paper No. 3 described the individuals who had had these accidents, the frequency with which they occurred and where they took place. 245 men and 104 women reported that they had had a disability as a result of an accident between 16 and 23. However, of these 20 per cent of men and 13 per cent of women had identified their disability which had resulted from an accident as a "longstanding illness or disability which limited their activity compared with people of the same age". This is a considerable proportion amounting to 11 per cent of all of those who reported longstanding illness of disability (12 per cent if the results of childhood accidents are included).

56. For those individuals who had more than one accident, it is not possible to identify where these injuries took place from the data in NCDS 4. However, for those who experienced one accident only, it would be possible to show whether the accident which resulted in disability took place on the road as a pedestrian or vehicle driver, in the home, at work or as a sporting injury. National data for accidents is extremely limited. Hospital data do not take account of repeat admissions, nor do they provide data on social class. NCDS 4 offers a unique opportunity to measure the consequences of accidents amongst young adults and longitudinal analyses would enable possible predictors of accidents to be identified.

Conclusions.

57. The analyses presented here have been highly selective. Importantly, factors such as lifestyle and smoking have not been included. Furthermore, the discussion of the measures used has been limited. For example, the ICD categories lump together several conditions and where numbers permit, it may be more interesting to focus on specific conditions. Alternatively, the ICD categories could be abandoned and health groups based on self-rating may be more appropriate for some analyses. The quality of self-reported health data is another issue which has been largely omitted. More detailed analyses of particular groups should include these important details.

58. Despite these limitations, preliminary analyses of NCDS 4 data suggests that there are considerable variations in the health experience of young adults, particularly among women. Future longitudinal studies of NCDS data should focus on the influence of past and present inequalities in circumstances and their impact on the health of the cohort.

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APPENDIX A: Respondents own assessment of health (Percent in each ICD category)

Health rating	No.	%	Infectious	Neoplasms	Endocrine, Nutritional, Metabolic & immunity.	Blood and bloodforming organs.	Mental disorders	Nervous and sense organs.	Circulatory system	Respiratory	Digestive.	Genitourinary	Complications of pregnancy & birth	Skin & subcutaneous tissue.	Musculoskeletal & connective tissue	Congenital anomolies.	Poisoning	Operations and investigations.	Symptoms.	Inadequate	Healthy.
Men.			(91)	(19)	(45)	(11)	(98)	(214)	(48)	(208)	(337)	(50)		(182)	(174)	(34)	(55)	(300)	(123)	(30)	(1475)
Excellent	(2999)	48	40	42	20	36	15	33	31	39	38	38		41	28	38	42	45	38	39	58
Good	(2736)	44	44	47	44	45	42	49	50	49	47	42		48	47	41	35	43	49	43	38
Fair	(476)	8	12	11	27	18	32	14	4	19	13	18		10	19	15	14	10	11	10	4
Poor	(51)	1	4	0	9	0	11	5	15	2	2	2		0	6	6	9	2	2	10	0
Women.			(68)	(41)	(59)	(46)	(174)	(144)	(105)	(267)	(393)	(389)	(543)	(171)	(155)	(47)	(111)	(506)	(165)	(27)	(393)
Excellent	(2597)	41	26	32	24	20	13	23	24	27	31	27	33	30	25	17	31	36	27	22	58
Good	(2992)	48	54	54	49	37	41	46	42	55	47	52	50	50	44	45	40	45	46	56	38
Fair	(614)	10	19	12	27	35	38	26	30	17	20	18	14	18	27	34	28	17	21	22	4
Poor	(61)	1	0	2	0	9	9	5	5	1	3	3	3	2	4	4	2	3	6	0	0

Figures in brackets are actual numbers.

APPENDIX B: Prevalence ratios for the ICD categories and standard regions of Britain.

Region	Pop^n	ICD Category. Infections:	Neoplasms	Endocrine, Nutritional, Metabolic & immunity	Blood & bloodforming organs.	Mental disorders.	Nervous and sense organs	Circulatory system	Respiratory	Digestive	Genitourinary	Complications of pregnancy & birth	Skin & subcutaneous tissue	Musculoskeletal & connective tissue	Congenital anomalies	Poisoning	Operations & investigations.	Symptoms	Inadequate	Healthy.
Greater London	1499	160	82	127	173	104	107	59	127	102	111	100	122	95	95	130	128	96	43	89
South East	2174	100	104	101	89	122	127	98	108	93	112	102	73	99	95	118	123	90	89	94
South West	860	118	142	85	25	72	81	103	100	122	73	97	98	120	147	87	121	81	150	107
Wales	635	59	97	96	0	142	132	140	76	92	112	84	61	127	175	83	83	143	102	105
West Midlands	1108	92	55	55	136	90	85	32	78	85	78	106	79	121	86	61	76	102	78	116
East Midlands	787	148	104	124	55	84	102	56	82	103	102	94	102	78	40	96	77	66	110	108
East Anglia	386	101	159	0	0	102	63	115	146	94	108	114	45	139	82	39	100	124	112	89
Yorks and Humberside	1063	44	96	127	122	125	105	117	99	96	115	89	96	54	75	92	90	94	142	112
North West	1368	120	90	107	111	76	79	143	108	117	115	118	154	123	116	115	85	117	126	94
North	768	51	160	96	84	105	105	104	77	112	62	78	91	70	165	137	97	102	113	103
Scotland	1218	64	84	111	150	78	80	153	91	89	122	106	129	98	52	74	83	114	89	97

Prevalence ratio = $\frac{\text{no. of observed cases per 1000/per region.}}{\text{no of expected cases per 1000 (calc. from cohort as a whole)}} \times 100$