ELSEVIER

Extent of Social Inequalities in Disability in the Elderly: Results From a Population-based Study of British Men

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PURPOSE: Little is known about social inequalities in disability in the elderly. We examined the extent and determinants of socioeconomic inequalities in disability and functional limitation in elderly men in Britain.
METHODS: Disability was ascertained as problems with activities of daily living (ADLs) and instrumental ADL in a socioeconomically representative sample of 3981 men from 24 British towns who were between 63 to 82 years of age in 2003. We also examined functional limitation. Measures of socioeconomic position were social class, age at leaving full-time education, and car and house ownership.
RESULTS: Men in lower social classes had greater risks of both ADL and instrumental ADL disability and functional limitation compared with higher social classes; odds ratios (95% CI) for social class V compared with I were 3.13 (1.64–5.97), 2.87 (1.49–5.51), and 2.65 (1.31–5.35), respectively. Behavioral risk factors (smoking, body mass index, physical activity) and particularly co-morbidity attenuated these differences; together, they reduced relative risks to 1.11 (0.49–2.51), 1.01 (0.45–2.25), and 1.05 (0.46–2.42). Age at leaving full-time education had no relation to functional limitations after taking social class into account. Men who were not house or car owners had greater odds of functional limitation and ADL disability compared with house or car owners, independent of behavioural risk factors, comorbidities and social class.
CONCLUSION: Strong socioeconomic inequalities in disability exist in the elderly, which were considerably explained by behavioral factors and comorbidity. Policy efforts are needed to reduce the social disparities in disability in the elderly.
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KEY WORDS: Disability, Elderly, Social inequalities.

INTRODUCTION

Disability has been defined as limitation or loss of the ability to perform social roles and activities in relation to family, work, or independent living (1–3). With increasing life expectancy, improving the quality of life is an important dimension of improving the health of the elderly population. The process underlying developing disability has been elaborated with the use of a sociomedical model according to which social, personal, and environmental factors operate to speed or slow the disablement process.(2) These factors act in different ways. Risk factors that could be demographic, lifestyle, or biological can predispose an individual to having disability, whereas interventions, including medical care, rehabilitation, assistance, or built/social environment, can reduce the impact of disability (2).

Within this framework, the impact of socioeconomic conditions on disability is vital because of their influence on these factors underlying the disablement process. Inequalities in health in relation to socioeconomic status are well documented for morbidity as well as for mortality and life expectancy (4). Cardiovascular disease (CVD) and arthritis, two chronic diseases strongly associated with disability (5–7), also show strong social gradients (8, 9). However, social inequalities in disability in the elderly have been less studied than other health outcomes. Previous studies have reported important socioeconomic disparities/inequalities in disability and functional mobility or limitations (10–15). However, the focus has largely been on functional mobility/limitations, and the extent of social inequalities in disability is less reported. Although functional limitation and disability are related, they are not identical. Disability is an expression of functional limitation in a social context; functional limitations refer to problems in carrying out a task, whereas disability is difficulty in performing social roles (2, 16).

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Selected Abbreviations and Acronyms

ADLs = activities of daily living
IADLs = instrumental activities of daily living
BMI = body mass index
CI = confidence intervals

In this article, we aim to describe the burden or extent of social inequalities in disability in the elderly in Britain. Measures of disability in the form of problems in performing basic activities of daily living (ADLs), such as eating, dressing, bathing, and problems in coping with instrumental activities of daily living (IADLs), like shopping, using the telephone, and managing money (2, 17, 18), have been used. These markers of disability not only form the core constructs of disability but are also indicative of the quality of life in the elderly. In addition to disability, we also measured functional limitations, which are important predictors of disability (19). Socioeconomic position was measured by social class based on the longest-held occupation of the subjects to obtain a stable measure of socioeconomic conditions in adult life. Because measuring socioeconomic position in the elderly is difficult to characterize (20), we explored social inequalities in disability by using additional markers of socioeconomic conditions, such as education and house and car ownership. We also investigated the impact of behavioral factors and presence of disease on the relationship between socioeconomic conditions and disability. This study was conducted in a socioeconomically and geographically representative sample of older British men ages 63 to 82 years in 2003.

METHODS

The British Regional Heart Study is a prospective population-based study of cardiovascular disease comprising a socially and geographically representative sample of 7735 men who were 40 to 59 years of age in 1978–1980 drawn from one general practice in each of 24 towns representing all major British regions (21). Subjects have been followed-up for all-cause mortality and have completed questionnaires at regular intervals. In 2003, when the men were 63–82 years of age, information on disability, presence of disease, behavioral factors, and socioeconomic circumstances was sought; these data were used for this article. Additional information on occupational social class was available from baseline, and information on education was collected in 1996.

Disability was ascertained as problems with ADLs and IADLs from a self-completed questionnaire in 2003. ADLs included performing the following activities unaided: walking across a room; getting in/out of bed; getting in and out of a chair; dressing and undressing oneself; bathing/showering; self-feeding, including cutting food; and getting to and using the toilet. IADLs included shopping for personal items such as toilet items or medicines; doing light housework such as washing up; preparing one's own meals; using the telephone; taking medications; managing money (e.g., paying bills, etc); and using public transport. Reporting of some difficulty or inability/needing help to do one or more of the items was taken a having problem with ADLs or IADLs. These are established markers of disability used in previous studies (14, 22, 23). One or more of the following responses was taken as a functional limitation: walking more than a few steps but less than 200 meters or only a few steps without stopping and without discomfort; unable to walk up and down a flight of 12 stairs without resting or only by holding and taking a rest; and unable to bend down when standing and pick up a shoe from the floor.

Information on different markers of socioeconomic position was collected in the study, including social class, education, and car and house ownership. The longest-held occupation of each man was recorded at study entry, when they were 40–59 years to age, and categorized by using the Registrar Generals' Social Class Classification (I, II, III non-manual, III manual, IV, and V). Subjects were grouped into three categories according to their age at leaving full-time education, which was asked in a questionnaire in 1996: <14 years, 14–18 years and >18 years. In the questionnaire in 2003, subjects were asked whether they had a car available for their own use and whether they owned their house/accommodation; this was used to assess car and house ownership as markers of socioeconomic position in addition to occupational social class and education.

Behavioral Factors

In the questionnaire in 2003, detailed questions were asked on smoking habits, physical activity, and body weight. Physical activity scores were assigned on the basis of frequency and type of activity and divided into six groups: none, occasional, light, moderate, moderately vigorous, and vigorous. Scores of none and occasional were used to classify physically inactive subjects. Body mass index (BMI) was calculated as body weight/(height)^2 in kg/m^2. Obesity was defined as BMI of $\geqslant 30$.

Comorbidities

Subjects were asked to report doctor diagnosis of the following conditions: cardiovascular disease (heart attack, angina and stroke), diabetes, cancer, arthritis, and respiratory disease (asthma, emphysema, bronchitis, pneumonia). They were also asked to describe their health status as excellent, good, fair, or poor.

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Statistical Analyses

Multiple logistic regression was used to assess the relation between socioeconomic conditions (social class groups, age at leaving full-time education, and car and house ownership), and disability (problems with ADLs and IADLs) and functional limitation. Odds ratios with 95% confidence intervals (CIs) for these outcome measures were obtained using social class I, <14 years at leaving full-time education, car owner, and house owner as reference categories. Social class and age at leaving full-time education were also fitted as continuous variables to obtain regression coefficients and odds ratio (95% CI) per unit increase of these scores. Age, behavioral factors, and comorbidity were adjusted for in different models. The effects of education and house and car ownership were adjusted for social class. For the adjustment, age and BMI were fitted as continuous variables; social class (5 levels), smoking (6 levels), and physical activity (5 levels) were fitted as categorical variables.

RESULTS

A total of 3981 men ages 63–82 years responded to the questionnaire in 2003 (80% response rate). The overall prevalence of problems with ADLs, IADLs, and functional limitation was 16%, 15% and 21% respectively. Prevalences of disability and functional limitations in men with and without comorbidity are presented in Figure 1. The prevalence of disability and functional limitation (3–4%) was lowest in men without comorbidities. Approximately 25–35% of men with CVD, arthritis and respiratory diseases had disability and functional limitations. A total of 40–50% of men reporting fair/poor health had disability and functional limitations. The prevalence of these specific forms of comorbidity also varied according to social class as seen in Table 1. Men from manual social class groups (social classes III manual, IV, and V) had a greater prevalence of diseases particularly cardiovascular disease, arthritis, and respiratory diseases. The proportions reporting fair or poor health were also greater in subjects of manual social classes. Men with adverse behavioural risk factors also had a greater prevalence of disability and functional limitation compared with non-smokers, non-obese and physically active (see Table 2).

There were approximately graded relations between social class, disability, and functional limitations (Table 3). Men in manual social class groups had approximately three times greater odds of having functional limitations compared with social class I. Similarly, men from manual social class groups had greater odds of having ADL and IADL disability compared with social class I. These associations were weakened after adjustment for behavioral risk factors and particularly after adjustment for comorbidities. The effect of attenuation was particularly marked in social class V. The relationship of social class and ADL disability was no longer significant after these adjustments.

A greater age of leaving full-time education was associated with lower odds of having functional limitations, but not with ADL and IADL disability (Table 4). The association of education with functional limitation was attenuated after adjustment for social class (Table 4). Men who did not own a house or car had a 2.5- to 3-fold greater relative risk of having functional limitations, and ADL and IADL disability (Table 5) compared with those who owned a house or car. The association of house ownership with IADL disability was not significant after adjusting for behavioral factors, comorbidities, and social class. The relationship of house ownership with functional limitation and ADL disability, although was weakened, remained after adjustment for behavioural factors, comorbidities and social class. Similar

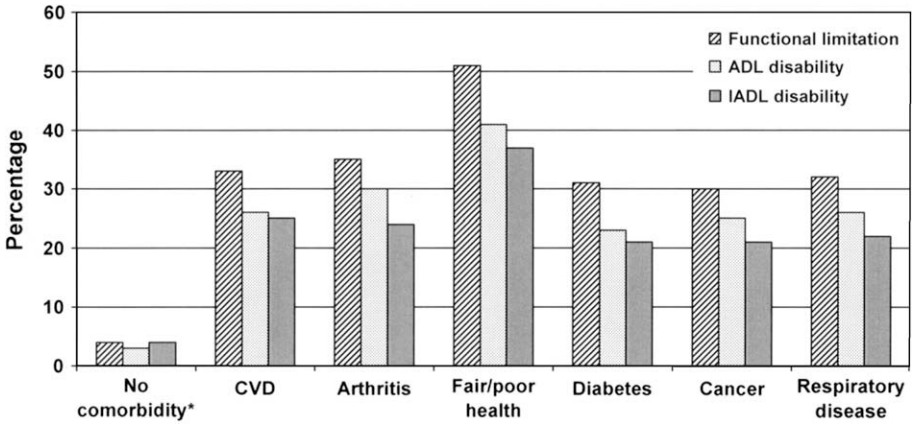

FIGURE 1. The prevalence of disability and functional limitations in men from the British Regional Heart Study ages 63–82 with chronic diseases. *"No comorbidity" included men with no history of cardiovascular disease (CVD), arthritis, cancer, or respiratory disease; no self-report of fair/poor health; diabetes; and no history of other comorbidities, including heart failure, high blood pressure, aortic aneurysm, deep vein thrombosis, pulmonary embolism, gout, osteoporosis, and Parkinson's disease.

TABLE 1. Prevalence of chronic diseases in 2003 according to social class in men ages 63–82 from 24 towns in Britain

Social class	Cardiovascular disease, n (%)	Arthritis, n (%)	Self-report of fair/poor health, n (%)	Diabetes, n (%)	Cancer, n (%)	Respiratory disease, n (%)
I	83 (21)	106 (28)	50 (13)	31 (8)	34 (9)	90 (24)
II	293 (27)	335 (31)	252 (23)	102 (9)	103 (9)	244 (23)
IIINM	116 (29)	124 (32)	112 (28)	44 (11)	40 (10)	101 (26)
IIIM	425 (29)	559 (38)	490 (33)	159 (11)	116 (8)	365 (26)
IV	100 (30)	127 (38)	131 (39)	35 (11)	29 (9)	97 (30)
V	39 (37)	46 (46)	48 (45)	10 (10)	7 (7)	24 (25)

associations were observed for car ownership with disability and functional limitation.

DISCUSSION

In this study of older British men, strong social class gradients were apparent both in disability and functional limitations; men from lower social class groups had an increased risk of having disability and functional limitation. Differences in disability according to house and car ownership were also present and were greater than social class inequalities. These socioeconomic disparities were considerably explained by presence of comorbidities and behavioral factors.

The results highlight strong socioeconomic inequalities in disability in a socially and geographically representative sample of older British men, using measures of disability including ADL and IADL disability, as well as functional limitations. Because the measures of disability were based on self-report, it is possible that this was influenced by presence of disease resulting in reporting bias. However, self-report of disability is an important evaluation tool for the health of older populations (6), and problems with ADLs and IADLs are widely used measures of disability (6, 14, 15, 22).

Using these measures, authors have found self-report of disability to be reliable and valid, although they may not be consistent over an extended time because of change in disease status or use of interventions (24). Objective measures may be better at capturing functional impairments/limitations but may not reflect the extent of disability, which is a manifestation of functional limitations in a social context (2). In this article, we also examined functional limitation since it is a key precursor of disability (19). It is possible that self-report of fair/poor health may have been influenced by presence of disability.

TABLE 2. Prevalence of functional limitation and disability according to behavioral risk factors

Behavioral risk factors	Functional limitation	ADL disability	IADL disability
Smoking			
Current smokers, n (%)	117 (31%)	85 (22%)	76 (21%)
Nonsmokers, n (%)	689 (20%)	547 (16%)	492 (14%)
Obese, n (%)	280 (31%)	216 (24%)	189 (21%)
Nonobese, n (%)	492 (17%)	393 (14%)	360 (13%)
Physically activity			
Inactive, n (%)	593 (39%)	460 (30%)	439 (29%)
Active, n (%)	174 (8%)	135 (6%)	103 (5%)

However, self-report of health, known to be related to underlying disease and mortality (25, 26) is a useful proxy measure of underlying comorbidities that need to be taken into account when assessing the association between socioeconomic conditions and disability. We used a range of different measures of socioeconomic conditions in our elderly subjects including social class, age at leaving full-time education, and car and house ownership. The association of car and house ownership with disability appeared to be stronger than and independent of social class. However, although car ownership in the elderly may be influenced by poor health and disability, previous evidence from our study has shown that car ownership in middle-age (45–64 years) was prospectively related to developing locomotor disability in later life (27). Earlier studies have shown that measures of material wealth such as car and house ownership are stronger markers of socioeconomic conditions than occupational social class (28, 29).

In our results, despite strong social gradients in disability according to social class, there were no differences in ADL and IADL disability according to education, especially after taking into account pre-existing disease and behavioral factors. The association of education with functional limitations was also no longer significant after taking into account occupational social class. This result could be because education was not a strong marker of socioeconomic status in old age. The main measure of socioeconomic position in our study was social class based on the longest-held occupation of the subjects. Occupational social class measures can be problematic in the elderly in postretirement age. However, in our study social class was based on the longest-held occupation which was collected when the men were 40–59 years of age. Therefore, we believe that it provides a stable marker of socioeconomic conditions over most of the adult life.

Our results are consistent with previous studies that have shown that poorer or worse socio-economic conditions are

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TABLE 3. Percentages and odds ratios (95% CI) for functional limitations and ADL and IADL disability in 2003 According to social class

	Social class							
	I	II	IIINM	IIIM	IV	V	Social class (trend)	*P* for trend
Functional limitation								
Number (%)	32 (9)	120 (13)	59 (17)	297 (24)	74 (28)	18 (23)		
Adjusted for age and behavioral factors	1.00	1.38 (0.91, 2.09)	1.99 (1.25, 3.16)	3.12 (2.11, 4.61)	3.69 (2.34, 5.82)	3.13 (1.64, 5.97)	1.39 (1.29, 1.49)	<.0001
Adjusted for age and comorbidities[a]	1.00	1.25 (0.78, 2.01)	1.58 (0.92, 2.69)	2.77 (1.77, 4.34)	2.72 (1.59, 4.65)	2.27 (1.06, 4.85)	1.32 (1.21, 1.44)	<.0001
Fully adjusted model[b]	1.00	0.99 (0.61, 1.63)	1.13 (0.64, 1.98)	2.02 (1.26, 3.24)	1.98 (1.12, 3.51)	1.11 (0.49, 2.51)	1.23 (1.12, 1.35)	<.0001
ADL disability								
Number (%)	32 (9)	106 (11)	59 (17)	212 (17)	56 (21)	17 (22)		
Adjusted for age and behavioural factors	1.00	1.21 (0.79, 1.83)	2.00 (1.26, 3.18)	2.02 (1.37, 3.00)	2.57 (1.60, 4.11)	2.87 (1.49, 5.51)	1.26 (1.17, 1.36)	<.0001
Adjusted for age and comorbidities[a]	1.00	1.06 (0.67, 1.68)	1.64 (0.98, 2.75)	1.57 (1.01, 2.45)	1.67 (0.98, 2.86)	2.07 (0.98, 4.35)	1.17 (1.07, 1.28)	.0008
Fully adjusted model[b]	1.00	0.84 (0.52, 1.37)	1.20 (0.70, 2.07)	1.07 (0.67, 1.70)	1.11 (0.62, 1.97)	1.01 (0.45, 2.25)	1.06 (0.96, 1.17)	.27
IADL disability								
Number (%)	28 (8)	96 (10)	46 (13)	198 (16)	59 (22)	14 (18)		
Adjusted for age and behavioural factors	1.00	1.24 (0.80, 1.93)	1.72 (1.04, 2.83)	2.17 (1.43, 3.29)	3.17 (1.95, 5.16)	2.65 (1.31, 5.35)	1.30 (1.20, 1.41)	<.0001
Adjusted for age and comorbidities[a]	1.00	1.08 (0.66, 1.76)	1.32 (0.75, 2.30)	1.75 (1.09, 2.79)	2.23 (1.28, 3.88)	1.89 (0.85, 4.18)	1.22 (1.11, 1.35)	<.0001
Fully adjusted model[b]	1.00	0.88 (0.53, 1.46)	1.00 (0.56, 1.79)	1.29 (0.79, 2.10)	1.60 (0.90, 2.86)	1.05 (0.46, 2.42)	1.14 (1.03, 1.26)	.01

[a]Comorbidities included cardiovascular disease, arthritis, respiratory disease, diabetes, cancer, and self-report of poor/fair general health.
[b]Age, behavioral factors, and comorbidites.

TABLE 4. Percentages and odds ratios (95% CI) for functional limitations and ADL and IADL disability in 2003 according to age at leaving full-time education

	Age at leaving full-time education				
	<14 years	14–18 years	>18 years	Trend	*P* for trend
Functional limitation					
Number (%)	247 (26)	238 (15)	49 (12)		
Age-adjusted	1.00	0.66 (0.53, 0.83)	0.48 (0.34, 0.68)	0.69 (0.59, 0.80)	<.0001
Adjusted for age and behavioural factors	1.00	0.63 (0.48, 0.82)	0.50 (0.33, 0.74)	0.68 (0.57, 0.82)	<.0001
Adjusted for age and comorbidities[a]	1.00	0.66 (0.51, 0.86)	0.58 (0.40, 0.85)	0.73 (0.61, 0.88)	.0007
Adjusted for age and social class	1.00	0.85 (0.67, 1.07)	0.86 (0.59, 1.26)	0.90 (0.75, 1.08)	.25
Fully adjusted model[b]	1.00	0.73 (0.54, 0.98)	0.69 (0.43, 1.12)	0.80 (0.64, 1.00)	.05
ADL disability					
Number (%)	172 (18)	207 (13)	50 (12)		
Age-adjusted	1.00	0.85 (0.67, 1.09)	0.76 (0.54, 1.08)	0.87 (0.74, 1.03)	.09
Adjusted for age and behavioral factors	1.00	0.90 (0.68, 1.19)	0.92 (0.62, 1.37)	0.94 (0.78, 1.14)	.53
Adjusted for age and comorbidities[a]	1.00	0.91 (0.68, 1.22)	1.07 (0.72, 1.60)	1.01 (0.83, 1.22)	.95
Adjusted for age and social class	1.00	1.02 (0.78, 1.32)	1.21 (0.81, 1.80)	1.08 (0.89, 1.31)	.44
Fully adjusted model[b]	1.00	0.95 (0.69, 1.32)	1.19 (0.74, 1.93)	1.06 (0.84, 1.33)	.65
IADL disability					
Number (%)	168 (18)	176 (11)	44 (10)		
Age-adjusted	1.00	0.80 (0.62, 1.03)	0.72 (0.50, 1.04)	0.84 (0.70, 0.99)	.04
Adjusted for age and behavioral factors	1.00	0.81 (0.60, 1.09)	0.83 (0.55, 1.26)	0.89 (0.73, 1.08)	.23
Adjusted for age and comorbidities[a]	1.00	0.86 (0.65, 1.15)	0.96 (0.64, 1.44)	0.95 (0.78, 1.15)	.60
Adjusted for age and social class	1.00	0.97 (0.74, 1.27)	1.14 (0.75, 1.27)	1.04 (0.85, 1.27)	.71
Fully adjusted model[b]	1.00	0.93 (0.67, 1.28)	1.07 (0.66, 1.76)	1.01 (0.80, 1.27)	.96

[a]Comorbidities included cardiovascular disease, arthritis, respiratory disease, diabetes, cancer, and self-report of poor/fair general health.
[b]Age, behavioral factors, comorbidites, and social class.

TABLE 5. Percentages and odds ratios (95% CI) for functional limitations and ADL and IADL Disability in 2003 according to house and car ownership

	House owner			Car owner		
	Yes	No	*P* value	Yes	No	*P* value
Functional limitation						
Number (%)	426 (15)	167 (41)		422 (15)	175 (35)	
Age-adjusted	1.00	3.55 (2.83, 4.44)	<.0001	1.00	2.60 (2.09, 3.22)	<.0001
Adjusted for age and behavioral factors	1.00	2.50 (1.90, 3.29)	<.0001	1.00	2.26 (1.73, 2.93)	<.0001
Adjusted for age and comorbidities[a]	1.00	2.82 (2.16, 3.69)	<.0001	1.00	1.85 (1.43, 2.39)	<.0001
Adjusted for age and social class	1.00	2.94 (2.33, 3.71)	<.0001	1.00	2.13 (1.70, 2.67)	<.0001
Fully adjusted model[b]	1.00	2.15 (1.59, 2.91)	<.0001	1.00	1.70 (1.27, 2.29)	.0004
ADL disability						
Number (%)	353 (13)	125 (31)		335 (12)	145 (29)	
Age-adjusted	1.00	2.85 (2.24, 3.63)	<.0001	1.00	2.68 (2.13, 3.37)	<.0001
Adjusted for age and behavioral factors	1.00	1.89 (1.42, 2.53)	<.0001	1.00	2.33 (1.78, 3.05)	<.0001
Adjusted for age and comorbidities[a]	1.00	2.10 (1.58, 2.78)	<.0001	1.00	1.99 (1.52, 2.61)	<.0001
Adjusted for age and social class	1.00	2.49 (1.94, 3.19)	<.0001	1.00	2.36 (1.85, 2.99)	<.0001
Fully adjusted model[b]	1.00	1.68 (1.23, 2.31)	.001	1.00	2.00 (1.47, 2.71)	<.0001
IADL disability						
Number (%)	327 (12)	110 (27)		298 (11)	140 (28)	
Age-adjusted	1.00	2.53 (1.97, 3.25)	<.0001	1.00	2.79 (2.21, 3.53)	<.0001
Adjusted for age and behavioral factors	1.00	1.58 (1.17, 2.13)	.003	1.00	2.45 (1.86, 3.24)	<.0001
Adjusted for age and comorbidities[a]	1.00	1.70 (1.28, 2.25)	.0003	1.00	1.92 (1.47, 2.50)	<.0001
Adjusted for age and social class	1.00	2.14 (1.66, 2.78)	<.0001	1.00	2.40 (1.87, 3.07)	<.0001
Fully adjusted model[b]	1.00	1.26 (0.91, 1.73)	.16	1.00	1.87 (1.38, 2.54)	<.0001

[a]Comorbidities included cardiovascular disease, arthritis, respiratory disease, diabetes, cancer, and self-report of poor/fair general health.
[b]Age, behavioral factors, comorbidites, and social class.

associated with greater levels of disability (10–15). Although previous studies have mostly used functional limitations or mobility problems, we have also explored the extent of inequalities in disability as measured by problems with performing ADLs and IADLs. In our results men with adverse behavioural risk factors including smoking, physical inactivity and obesity had higher levels of functional limitation and disability.

Although, our study is cross-sectional, these behavioral factors have previously been shown to be strong predictors of developing mobility problems and disability in later life (5, 30). Chronic diseases, particularly cardiovascular disease, arthritis, and diabetes, also greatly increase the risk of disability in old age (7, 31). Behavioral factors and particularly comorbidities were largely responsible for the social class differences, especially for ADL disability but also to some extent for IADL disability and functional limitations. The greater relative risks for disability in manual social class groups were nearly halved after controlling for behavioral risk factors and pre-existing disease. The effect of attenuation was particularly strong in social class V, possibly because of greater levels of comorbidities and adverse behavioral risk factors in this social class group.

The increased risk of functional limitation in social classes III manual and IV, on the other hand, remained significant even after the adjustments. Apart from behavioral factors and comorbidity, other pathways could be linking socioeconomic status and disability, including poorer access to services or resources, rehabilitation, and worse living conditions (32–34). All of these contribute to increased chances of developing disability or retard the process of recovering from or coping with functional decline or disability (2, 34). In this study we were unable to control for or take into account the availability of coping mechanisms or the lack of it on inequalities in disability.

An understanding of pathways underlying disability or the "disablement process" (2) has direct implications for health policy to reduce the burden of disability and inequalities in disability. First, improving the overall health of the elderly is important because of the strong association between disease and disability. Comorbidities were to a large extent responsible for the social differences in disability in this study. Second, continued efforts on reducing levels of behavioural factors such as smoking, physical inactivity and obesity are needed. Although these may be regarded as 'individual' risk factors, they are influenced by the social context (35, 36) and, therefore, policy plays a vital role in reducing these factors in the population. Change in lifestyle, including smoking cessation and taking up physical activity, even later in life, has been shown in our cohort to have the potential to reduce onset of mobility limitations and improve recovery from disability in the elderly (37).

Third, adequate rehabilitation, interventions, and care would be needed to cope with functional decline in old

age. The ability to perform tasks for independent living and functioning in old age is not only dependent on the functional ability of older people but also on the facilities available in the physical or environmental context in which they live (2, 34, 38). This implies provision for the needs of older people in housing and environmental policies. Although trials have been conducted to study the effectiveness of interventions to reduce the impact of disability (39, 40), more such evidence is needed to understand ways of reducing disability, particularly among the socially disadvantaged. Evaluation of the effectiveness and cost-effectiveness of interventions targeted at reducing inequalities in disability in the elderly are needed. These implications and efforts will address issues which particularly affect lower socioeconomic groups who are more vulnerable to disability.

CONCLUSIONS

Socioeconomic inequalities in disability exist in old age. Our findings show about a 3-fold greater risk of disability among older British men of lower compared with higher socioeconomic groups. Just as disability reflects the overall impact of diseases/comorbidities in older people (6), social inequalities in disability in the elderly can be indicative of the overall extent of health inequalities in later life. Policy efforts, for tackling determinants of disability and improving recovery from disability, are needed to reduce the overall burden of disability in later life as well as to reduce the greater burden of disability experienced by those in lower socio-economic groups.

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