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Overt Acts of Perceived Discrimination Reported by British Working Age Adults with and without Disability

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Abstract

Background: Exposure to discrimination can have a negative impact on health. There is little robust evidence on the prevalence of exposure of people with disabilities to discrimination, the sources and nature of discrimination they face, and the personal and contextual factors associated with increased risk of exposure.

Methods: Secondary analysis of de-identified cross-sectional data from the three waves of the UK's *Life Opportunities Survey*.

Results: In the UK: (1) adults with disabilities were over three times more likely than their peers to be exposed to discrimination; (2) the two most common sources of discrimination were strangers in the street and health staff; (3) discrimination was more likely to be reported by participants who were younger, more highly educated, who were unemployed or economically inactive, who reported financial stress or material hardship and who had impairments associated with hearing, memory/speaking, dexterity, behavioural/mental health, intellectual/learning difficulties and breathing.

Conclusions: Discrimination faced by people with disabilities is an under recognised public health problem that is likely to contribute to disability-based health inequities. Public health policy, research and practice needs to concentrate efforts on developing programs that reduce discrimination experienced by people with disabilities.

Introduction

That people with disabilities experience discrimination has underpinned the development of disability discrimination legislation and disability-focused social policies in many countries,[1, 2] and the development of the UN Convention on the Rights of Persons with Disabilities.[3] Discrimination represents a violation of the right of people with disabilities to participate in society on equal terms with others and growing evidence indicates that exposure to acts of perceived discrimination may be detrimental to physical and mental health.[4-9]

However, there is little robust evidence on the prevalence of exposure to specific forms of discrimination, the sources of such discrimination, and the personal/contextual factors that predict which people with disabilities are likely to experience discrimination. We are aware of only seven population-based studies which have investigated discrimination among people with disabilities. Estimates of the prevalence of exposure to disability discrimination in the past year among adults with disabilities have included: 9%-14% of Australian adults;[10, 11] 15-25% of disabled adults in England and Scotland [12, 13] and 34% of English adults with an intellectual disability[14, 15]. In addition, it has been estimated that 19% of Peruvian adults with disabilities had been exposed to disability discrimination in their lifetime.[16] Higher rates of discrimination have been reported among people living in more disadvantaged circumstances, younger people, unemployed people, more socially isolated individuals, non-migrants, people not married and people with psychosocial disabilities.[10, 11, 14, 15, 17, 18] The most common perpetrators of discrimination faced by adults with disabilities in Australia were employers, family or friends and strangers in the street.[11]. The most common perpetrators faced by adults with intellectual disabilities in England were strangers.[14, 15] None of these studies have investigated other forms of discrimination that may be experienced by people with disabilities (e.g., discrimination on the basis of age, gender, ethnicity, religion, sexual orientation) and only two studies of people with a range of disabilities have investigated personal/contextual factors associated with disability discrimination [10, 11].

Robust knowledge about the prevalence of and factors associated with discrimination is important for targeting social policies to reduce discrimination and monitoring their impact. Consequently, we addressed three research questions:

1. What is the probability that, over the previous 12 months, working age British adults with and without disabilities report having been exposed to discrimination?
2. What is the nature of the discrimination reported?
3. Does the probability of exposure to discrimination vary with personal factors and contextual factors?

Methods

We undertook secondary analysis of data from the UK's *Life Opportunities Survey* (LOS). LOS was a longitudinal study focusing on the life experiences of disabled people in Great Britain. Data were downloaded from the UK Data Service. Full details of the survey's development and methodology are available in a series of reports,[19-27] key aspects of which are summarised below.

Sample

In the first wave of data collection (June 2009 to March 2011), random unclustered sampling from the small users Postcode Address File identified 34,004 eligible households. Interviews were completed with 37,513 individuals from 19,951 households (household response rate = 59%). Of these, 27,819 were aged 18-64, our operational definition of the working age population. Respondents were followed up after approximately 1 year (Wave 2) and approximately 2.5 years

after the Wave 2 interview (Wave 3). Wave 2 achieved a household level response rate of 77% and an individual response rate of 74% with 12,789 interviews undertaken with working age adults. Wave 3 achieved a household level response rate of 66% and an individual response rate of 64% with 7,687 interviews undertaken with working age adults. Further details of the sampling strategy are included in Supplementary Table 1.

Procedures

All data used in the present study were collected using Computer Assisted Personal Interviewing. Proxy interviews, which were taken ‘strictly as a last resort, for example in situations where a respondent was unavailable or lacked physical or mental capacity to take part in the interview’,[21] were undertaken for approximately 10% of all adult interviews.[21]

Measures

Disability

At each wave, information was collected on the presence of 13 groups of impairments or health conditions (for specific questions see Supplementary Table 2). For each impairment/health condition that the respondent reported affected them, two follow up questions were asked:

1. Either *‘How would you describe the level of severity of this difficulty?’*
(mild/moderate/severe) or *‘How would you describe your difficulty with [name of impairment]? (no difficulty/mild difficulty/moderate difficulty/severe difficulty)*
2. *‘How often does this limit the amount or kind of activities that you can do?’*
(always/often/sometimes/rarely/never)

We defined disability as the self-reported presence of at least one impairment/health condition that presents the person with at least ‘mild’ difficulty and ‘often’ or ‘always’ limits activities. Disability information was available for: 26,592 (95.6%) working age respondents at Wave 1; 11,859 (92.7%) respondents at Wave 2; and 6,777 (88.2%) respondents at Wave 3. Our approach to defining disability represents just one of several possible options and does not directly correspond with disability as defined in UK legislation.[22] It specifically includes people with a ‘mild’ level of difficulty if their impairment ‘often’ or ‘always’ limits their activities.

This approach gave an overall prevalence of disability in the working age population of 14.6% (95% CI 14.2%-15.0%) at Wave 1, 14.3% ((13.7%-14.9%) at Wave 2 and 18.0% (17.2%-18.8%) at Wave 3. The prevalence of disability at Wave 1 was higher among older participants (7.6% in 18-24 age group, 21.0% in 45-64 age group), women (15.8% vs. 13.3%), white ethnic groups (14.8% vs. 13.1%), participants with lower educational qualifications (none 30.2%, degree 7.3%) and among people experiencing material hardship (22.4% vs. 9.7%).

We also created 10 binary variables recording the presence of disability associated with groups of impairments versus no disability. Given the low prevalence of some impairments in the original 13 items, we combined several low prevalence impairment groups if the prevalence was lower than 1% of the population and the presence of the impairments was correlated. The prevalence of disability associated with these impairment groups is presented in Table 1 for Wave 1 data. Overall, 8.9% (8.6%-9.3%) of participants reported two or more impairments and 6.1% (5.8%-6.4%) reported three or more impairments.

Discrimination

At each wave participants were asked: *‘In the last 12 months, do you feel that you have been treated unfairly by others for any of [these] reasons?’* (1) Age, (2) Sex, (3) A health condition, illness or

impairment, (4) Disability related reasons, (5) Ethnicity, (6) Religion, (7) Sexual orientation, (8) None of these reasons, (9) Other (please specify). This item was recoded to give three additional variables per wave: (1) exposure to discrimination; (2) exposure to disability discrimination (unfair treatment based on '*a health condition, illness or impairment*' or '*disability related reasons*'); (3) exposure to non-disability related discrimination. Discrimination data was available for: 23,176 (83.3%) working age respondents at Wave 1; 10,059 (78.7%) respondents at Wave 2; and 6,776 (88.1%) respondents at Wave 3. Discrimination data was not collected by proxy interview.

If exposed to disability discrimination participants were then asked: '*In the past 12 months, who do you feel treated you unfairly because of a health condition or disability?*' (1) Employer, (2) Work colleagues, (3) Family or relatives, (4) Friends or neighbours, (5) Teacher or lecturer, (6) Health staff (GP, nurse, hospital staff), (7) Social workers, (8) Care workers, (9) Police officers, (10) Bus drivers, (11) Rail staff, (12) Taxi drivers, (13) Retail staff, (14) Strangers in the street, (15) DWP/benefits agencies, (16) Others (please specify).

Participants who were working were also asked a specific question about workplace discrimination: '*In the past 12 months at work, have you experienced anything on this card because of a health condition or disability?*' (1) Been given fewer responsibilities than you wanted, (2) Been denied a transfer, (3) Not been promoted, (4) Been paid less than other workers in similar jobs working the same hours, (5) Been denied other work-related benefits, (6) Been refused a job interview, (7) Been refused a job, (8) None of these. This item was recoded to give one additional variable per wave: exposure to workplace disability discrimination.

Covariates

We used three covariates related to personal characteristics (age, gender, ethnicity), five covariates that have previously been used as indicators of socio-economic position (financial stress, material hardship, educational attainment, housing tenure, employment status) and one covariate based on urban/rural location. Details of these measures are presented in Supplementary Table 3.

Approach to Analysis

In the first stage of analysis we report cross-sectional population weighted prevalence rates (with 95% CIs) of exposure to discrimination, disability discrimination, non-disability discrimination and workplace disability discrimination for participants with and without disability at each wave of data collection. We also report prevalence rate ratios (PRRs) adjusted to control for between group differences in age, gender and ethnicity for exposure to these four measures of discrimination with non-disabled participants as the reference group.

In the second stage of analysis, we report cross-sectional prevalence rates (with 95% CIs) for exposure to discrimination for participants with and without specific impairments associated with disability at each wave with PRRs (adjusted for age, gender and ethnicity) for exposure with non-disabled participants as the reference group. It should be noted that, given the opportunity for participants to report multiple impairments (see above), participants may be included in several impairment groups in these analyses.

In the third stage of analysis, we report cross-sectional analyses of the association between the covariates listed above and exposure to discrimination among working age adults with disabilities at each wave. As above, we report prevalence rates (with 95% CIs) and PRRs adjusted for age, gender and ethnicity.

PRRs were estimated in IBM SPSS 24 using Poisson regression with robust standard errors.[28] Given the small amounts of missing data we undertook complete case analyses using cross sectional

weights provided by ONS designed to take account of the complex sample design and known biases in recruitment and, in Waves 2 and 3, retention.

Results

Prevalence of Exposure to Discrimination

The prevalence of self-reported exposure to discrimination over the previous year among working age adults with and without disabilities is presented in Table 2. In all three waves, adults with disabilities were over three times more likely than their peers to be exposed to discrimination (once adjustments had been made for between group differences in age, sex and ethnicity). Rates of exposure to discrimination reduced over time for all participants. While the level of absolute inequality between the two groups showed a modest decline (16.9 percentage points at Wave 1, 14.3 points at Wave 3), the level of relative inequality showed a modest increase (3.1 at Wave 1, 3.7 at Wave 3).

For most participants with a disability, discrimination was related to their disability or health condition, with 15-20% of participants with a disability reporting exposure to disability related discrimination. It is notable, however, that participants with disability were also 50% more likely than their non-disabled peers to report being exposed to non-disability related discrimination. Approximately one-in-four participants with disability who reported discrimination only reported exposure to non-disability related discrimination (Table 2). The most common forms of non-disability related discrimination reported by participants with and without disability are presented in Supplementary Table 4.

Among participants with disabilities who reported exposure to disability discrimination at Wave 1, the most common sources of discrimination were strangers in the street (33%), health staff (32%) and employers (23%). Full details of all sources of discrimination at each wave are presented in Supplementary Table 5. Among participants with disabilities who reported exposure to workplace disability discrimination at Wave 1, the most common forms of discrimination were being given fewer responsibilities (46%) and not being promoted (33%). Full details of all types of workplace discrimination at each wave are presented in Supplementary Table 6.

Factors Associated with Exposure to Discrimination Among Participants with a Disability

We repeated the analyses based on 'any discrimination' separately for each impairment group (Table 3). The reference category in all analyses was participants with no disability. All impairment groups were at least three times more likely to report having been exposed to discrimination in the previous 12 months than participants without disability. The highest PRRs across waves (adjusted for age, sex and ethnicity) were for participants with hearing impairments and people with memory/speaking impairments (both over 5 times more likely to report discrimination).

The associations between exposure to discrimination and personal/contextual factors at Wave 1 are presented in Table 4 (prevalence of exposure of participants with and without disability to each covariate are presented in Supplementary Table 7). In these multivariate analyses age was the only personal factor associated with exposure to any discrimination, with significantly lower exposure rates among older adults. Of the five variables related to socio-economic position four were independently associated with exposure to any discrimination, but in an apparently contradictory manner. While exposure to any discrimination was significantly higher for participants experiencing material hardship, financial stress, unemployment or economic inactivity (typically indicators of lower socio-economic position), it was also significantly higher among more highly educated

participants (typically an indicator of higher socio-economic position). These analyses were repeated for Waves 2 and 3 giving similar results (Supplementary Tables 8 and 9).

Discussion

Main finding of this study

In the UK between 2009 and 2014: (1) adults with disabilities were over three times more likely than their peers to be exposed to discrimination; (2) rates of exposure to discrimination reduced over time; (3) for most participants with a disability, discrimination was related to their disability or health condition; (4) among participants with disabilities who reported exposure to disability discrimination the two most common sources of discrimination were strangers in the street and health staff; (5) among participants with disabilities who reported exposure to workplace discrimination the two most common forms of reported discrimination were being given fewer responsibilities and not being promoted; (6) discrimination was more likely to be reported by participants who were younger, more highly educated, who were unemployed or economically inactive, who reported financial stress or material hardship and who had impairments associated with hearing, memory/speaking, dexterity.

What is already known on this topic

There is little robust evidence on the prevalence of exposure to specific forms of discrimination, the sources of discrimination and what factors predict which people with disabilities are likely to experience discrimination.

What this study adds

Our study is the first to estimate the percentage of participants with disability who reported discrimination that was related to factors unrelated to their disability. Nearly 1 in 2 of the participants with disabilities who reported facing discrimination reported discrimination based on factors independent of their disability. Approximately 1 in 4 reported that none of the discrimination they faced was based on their disability. These observations highlight the potential importance of intersectionality in public health research; the notion that power structures based on identities such as gender, race, sexuality, functioning and class interact with each other in various ways and create inequalities, discrimination and oppression.[29]

The longitudinal nature of our study allowed us to investigate possible trends over time in the prevalence of discrimination and the consistency of our other analyses. The data suggested that rates of exposure to discrimination in the UK reduced over time for participants with and without disability. However, some caution needs to be exercised in interpreting these trends due to the complex resampling method introduced at Wave 2. It is notable, that most of the decline in prevalence reported by people with disabilities between Waves 1 and 3 (6.3 percentage points) occurred in the one-year period between Waves 1 and 2 (4.2 percentage points), with a much more modest decline in the two-and-a-half-year period between Waves 2 and 3.

Our results were broadly consistent with previous research regarding the overall prevalence of discrimination faced by adults with disabilities,[10-13] and increased risk of discrimination being associated with younger age, indicators of low socio-economic position and type of impairment.[10, 11, 14, 15] They differ from the results of previous research on two counts. First, we found that people with disabilities reported significantly higher rates of non-disability related discrimination. The only previous study examining relative differences in non-disability related discrimination between people with and without disability reported very similar levels of exposure to non-disability related forms of discrimination between participants with and without disability.[12] Second, we

found that participants with disability with higher educational attainments reported higher rates of exposure to discrimination. While this is consistent with the results of a previous Australian study,[11] another Australian study has reported slightly lower rates of reported discrimination among more highly educated working age adults with disabilities.[10] Possible reasons for these differences include differences in patterns of reporting discrimination between Australian and British working age adults, variation due to question wording, and our use of estimates that were adjusted for the effects of age, gender and ethnicity.

Limitations of this study

Four limitations of the study should be considered when interpreting our results. First, LOS relied on self-report of experiences of discrimination, a measure that previous research has shown can be under and over-reported.[9] Second, LOS primarily investigated participants' perceptions of overt acts of inter-personal discrimination.[4] Exposure to structural, systemic or institutional discrimination that arises from laws, policies and the ingrained habits of social institutions are also important in shaping the life opportunities of people with disabilities. Only those items relating to workplace discrimination are likely to be indicative of exposure to structural discrimination. Third, no information is available within the dataset to determine whether instances of discrimination reported by participants would meet the definition of discrimination used in specific legal codes. Finally, discrimination data was not collected by proxy interview. Given that proxy interviews are likely to have been undertaken for participants with more complex and severe disabilities, this may lead to an underestimation of prevalence of exposure to discrimination.

Conclusions

Discrimination faced by people with disabilities is an under recognised public health problem that is likely to contribute to disability-based health inequities. Addressing the high levels of discrimination faced by working age adults with disabilities is likely to reduce social and economic disadvantage and improve the health of people with disabilities.[1]

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Table 1: Prevalence of Impairment Groups Associated with Disability (Wave 1)

Impairment Group	N	Prevalence (95% CI)
Chronic pain	2,455	9.1% (8.8%-9.5%)
Long-term health conditions	2,111	8.0% (7.6%-8.3%)
Mobility	1,388	5.4% (5.1%-5.7%)
Dexterity	885	3.5% (3.3%-3.7%)
Behavioural/Mental	840	3.3% (3.1%-3.6%)
Memory/Speaking	514	2.1% (1.9%-2.2%)
Breathing	470	1.9% (1.7%-2.1%)
Intellectual/Learning	420	1.7% (1.5%-1.9%)
Vision	316	1.3% (1.1%-1.4%)
Hearing	183	0.7% (0.6%-0.9%)

Table 2: Prevalence of Self-Reported Exposure to Discrimination among Working Age Adults with and without Disabilities in the UK

	W1 (2009-11)	W2 (2010-12)	W3 (2012-14)
Sample size	Dn=3,811 NDn=21,021	Dn=1,826 NDn=9,990	Dn=1,650 NDn=7,496
Prevalence of Disability	14.6% (14.2-15.0)	14.3% (13.7-14.9)	18.0% (17.2-18.0)
Any Discrimination			
With disability	26.2% (24.8-27.6)	22.0% (20.1-23.9)	19.9% (18.0-21.9)
No disability	9.3% (9.0-9.7)	8.3% (7.7-8.8)	5.6% (5.1-6.1)
PRR (adjusted)	3.11*** (2.90-3.30)	3.18*** (2.74-3.70)	3.67*** (3.19-4.22)
Disability Discrimination			
With disability	18.6% (17.4-19.8)	17.2% (15.4-18.9)	14.8% (13.1-16.6)
No disability	1.6% (1.4-1.8)	1.4% (1.2-1.6)	1.0% (0.8-1.2)
PRR (adjusted)	11.99*** (10.54-13.63)	15.00*** (11.36-19.80)	14.53*** (11.24-18.77)
Non-Disability Related Discrimination			
With disability	12.0% (10.9-13.0)	8.7% (7.4-10.0)	8.2% (6.9-9.6)
No disability	8.1% (7.7-8.4)	7.2% (6.6-7.6)	4.9% (4.4-5.4)
PRR (adjusted)	1.66*** (1.51-1.84)	1.47** (1.18-1.83)	1.65*** (1.34-2.03)
Disability Related Workplace Discrimination			
	Dn=1,441 NDn=15,059	Dn=711 NDn=7,200	Dn=1,001 NDn=5,945
With disability	4.4% (3.4-5.5)	3.0% (1.7-4.3)	3.1% (2.0-4.2)
No disability	0.4% (0.3-0.5)	0.3% (0.1-0.4)	0.3% (0.1-0.3)
PRR (adjusted)	11.23*** (7.88-16.00)	20.90*** (8.48-51.26)	13.33*** (6.97-25.48)

Notes: * p<0.05, ** p<0.01, *** p<0.001

Dn = sample size for disability group, NDn = sample size for no disability group

PRR adjusted for age, sex, ethnicity

Table 3: Adjusted Prevalence Rate Ratios of Self-Reported Exposure to Any Discrimination among Working Age Adults with and without Specific Impairments in the UK

Impairment	Wave 1 PRR	Wave 2 PRR	Wave 3 PRR
Memory/Speaking	5.38 (4.80-6.03)***	4.71 (3.90-5.69)***	6.57 (5.23-8.25)***
Hearing	5.34 (4.43-6.45)***	3.80 (2.56-5.62)***	5.60 (3.45-9.08)***
Behavioural/Mental	4.99 (4.53-5.49)***	4.30 (3.72-4.96)***	7.61 (6.41-9.04)***
Intellectual/Learning	4.49 (3.89-5.17)***	4.06 (3.24-5.10)***	6.31 (4.93-8.08)***
Dexterity	4.10 (3.67-4.58)***	3.54 (2.97-4.22)***	4.73 (3.83-5.85)***
Mobility	3.96 (3.60-4.36)***	3.42 (2.97-3.95)***	4.74 (3.94-5.70)***
Breathing	3.76 (3.22-4.40)***	4.22 (3.48-5.11)***	4.73 (3.56-6.29)***
Vision	3.67 (3.04-4.43)***	4.08 (3.17-5.23)***	3.16 (2.55-3.92)***
Long-term health conditions	3.56 (3.27-3.87)***	3.35 (2.97-3.77)***	4.52 (3.87-5.29)***
Chronic pain	3.18 (2.92-3.46)***	2.77 (2.45-3.14)***	4.29 (3.63-5.08)***

Notes: *** p<0.001

PRR = Prevalence Rate Ratio adjusted for gender, age and ethnicity

Table 4: Unadjusted Prevalence Rate Ratios for Factors Associated with Exposure to Discrimination Among Participants with a Disability (Wave 1)

	Any Discrimination (n=3,800)	Disability Discrimination (n=3,800)	Non-disability Discrimination (n=3,800)	Disability Workplace Discrimination (n=1,436)
Gender				
Men	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Women	0.98 (0.88-1.09)	0.94 (0.83-1.08)	1.02 (0.86-1.21)	0.93 (0.57-1.51)
Age				
18-24	1 (ref)	1 (ref)	1 (ref)	1 (ref)
25-44	0.96 (0.79-1.17)	1.23 (0.92-1.64)	0.71 (0.53-0.95)*	0.88 (0.31-2.53)
45-64	0.71 (0.58-0.87)**	0.82 (0.61-1.11)	0.68 (0.51-0.92)*	0.49 (0.16-1.46)
Ethnicity				
White	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Minority Group	1.06 (0.91-1.24)	0.68 (0.53-0.87)**	1.55 (1.24-1.92)***	0.54 (0.20-1.46)
Financial stress				
No	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Yes	1.30 (1.15-1.47)***	1.18 (1.01-1.37)*	1.72 (1.41-2.09)***	1.23 (0.60-2.52)
Material hardship				
No	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Yes	1.46 (1.28-1.68)***	1.70 (1.43-2.01)***	1.35 (1.09-1.67)**	1.85 (1.07-3.20)*
Educational attainment (highest level)				
Degree	1 (ref)	1 (ref)	1 (ref)	1 (ref)
A-Levels or higher	0.90 (0.76-1.07)	0.93 (0.74-1.18)	0.75 (0.59-0.95)*	0.28 (0.12-0.66)**
O Levels/ GCSE A-C or equivalent	0.68 (0.58-0.81)***	0.75 (0.59-0.94)*	0.48 (0.37-0.62)***	0.51 (0.27-0.98)*
GCSE D-G	0.79 (0.63-0.98)*	0.84 (0.63-1.13)	0.51 (0.35-0.73)***	0.57 (0.23-1.39)
No formal qualifications	0.48 (0.40-0.58)***	0.56 (0.44-0.71)***	0.25 (0.19-0.35)***	0.43 (0.17-1.05)
Other (including overseas)	0.55 (0.54-0.68)***	0.59 (0.45-0.77)***	0.33 (0.24-0.46)***	0.37 (0.16-0.86)*
Employment status				
Employed	1 (ref)	1 (ref)	1 (ref)	n/a
Unemployed	1.63 (1.38-1.92)***	1.67 (1.30-2.15)***	1.81 (1.44-2.28)***	n/a
Economically inactive	1.39 (1.22-1.57)***	2.02 (1.71-2.38)***	0.80 (0.65-0.99)*	n/a

Table 4: Unadjusted Prevalence Rate Ratios for Factors Associated with Exposure to Discrimination Among Participants with a Disability (Wave 1)				
	Any Discrimination (n=3,800)	Disability Discrimination (n=3,800)	Non-disability Discrimination (n=3,800)	Disability Workplace Discrimination (n=1,436)
Housing tenure				
Not rented	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Rented	1.07 (0.93-1.23)	1.19 (0.99-1.44)	0.95 (0.77-1.18)	1.13 (0.59-2.14)
Location				
Urban	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Rural	0.92 (0.79-1.07)	0.89 (0.74-1.07)	0.89 (0.70-1.13)	0.50 (0.23-1.08)

Notes: * p<0.05, ** p<0.01, *** p<0.001

Supplementary Tables

Table S1: Sampling Strategy

Impairment status at Wave 1 was used by the ONS to assign participants to one of three groups for inclusion in subsequent waves of data collection: (1) adults with at least one impairment; (2) control; (3) onset-screening.[25, 27]

1. All adults who reported at least one impairment at Wave 1 (29%), as well as all adult members of their households, were invited to be interviewed in person at Wave 2.
2. Of the 71% of adults who did not report having an impairment at Wave 1, a subset was selected to form a ‘control’ group. ONS reported that ‘the adults in this group were chosen to provide a comparison group that was similar to the adults with at least 1 impairment on the following characteristics: sex, age, region of residence, urban or rural classification of residence’.[30] No information is provided on how this ‘matching’ was achieved. The sample size of the control group was designed to be 50% of the sample size of the group of adults with at least one impairment at Wave 1. All of the adults in the control group, as well as all adult members of their households, were invited to be interviewed in person at Wave 2.
3. Adults who did not have an impairment at Wave 1 and who were not selected for the control group, were assigned to an ‘onset screening group’. They were only invited to be interviewed in person at Wave 2 if they, or an adult member of their household, had acquired an impairment between Wave 1 and Wave 2. Acquisition of impairment was determined by a brief telephone interview.

All adults interviewed at Wave 2 were invited to be interviewed at Wave 3. In addition, adults in the ‘onset screening group’ were invited to be interviewed if they, or an adult member of their household, had acquired an impairment between Wave 2 and Wave 3. Again, acquisition of impairment was determined by a brief telephone interview.

Table S2: Interview Questions Used to Identify Impairments

1. Do you have any difficulty seeing, or wear glasses or contact lenses?
2. Do you have any difficulty hearing, or use a hearing aid?
3. Do you have any difficulty speaking or making yourself understood, or use aids or special equipment to help you communicate?
4. Do you have any mobility difficulties, for example moving about, walking, climbing stairs; or use special equipment or support services to help you to be mobile?
5. Do you have any dexterity difficulties, by that I mean lifting, grasping or holding objects, or use special equipment to help you with these actions?
6. Do you experience long-term pain or discomfort that is always present or reoccurs from time to time or take medication to manage any long-term pain or discomfort?
7. Now I'd like to talk about chronic health conditions. Do you have any of the following long-term conditions that have lasted or are expected to last 12 months or more and that have been diagnosed by a health professional... Code all that apply: (1) Asthma or severe allergies; (2) Heart condition or disease; (3) Kidney condition or disease; (4) Cancer; (5) Diabetes; (6) Epilepsy; (7) Cerebral Palsy; (8) Spina Bifida; (9) Cystic Fibrosis; (10) Muscular Dystrophy; (11) Migraines; (12) Arthritis or Rheumatism; (13) Multiple Sclerosis (MS); (14) Paralysis of any kind; (15) Any other long-term condition not already covered (please specify)
8. Do you have shortness of breath or difficulty breathing or use specialised equipment such as a nebuliser, oxygen concentrator or cylinder or ventilator to assist with breathing?
9. Do you have a difficulty learning, for example at school, college, work or in other places?
10. Do you have an intellectual difficulty or developmental delay? This may not have a name but include things like Down's syndrome, autism and other conditions.
11. Do you have a social or behavioural difficulty, for example difficulty making friends or aggressive outbursts? This may not have a name but may be associated with ADD (Attention Deficit Disorder), autism, Asperger's Syndrome or have no apparent cause.
12. Do you frequently have periods of confusion or difficulty remembering things?
13. Do you have any emotional, psychological or mental ill health conditions that have lasted, or are expected to last, 12 months or more?
14. Do you have any other difficulties or limitations because of a physical condition, mental health condition or health problem that we have not already covered? Please think of difficulties or limitations that have lasted, or are expected to last 12 months or more.

Table S3: Covariates

Personal characteristics	Age was coded in years and gender was based on a simple binary question. Both were available for 100% of working age respondents at Wave 1. Ethnicity was recorded in 14 categories. Given the low numbers of working age participants from some minority ethnic groups, we created a binary variable white vs. other ethnic groups. Ethnicity data was available for 95.7% of working age respondents at Wave 1.
Financial stress	Financial stress was assessed by a single question: ' <i>Thinking of your household's total monthly or weekly income, is your household able to make ends meet, that is pay your usual expenses... (1) with great difficulty, (2) with some difficulty, (3) fairly easily, (4) or very easily?</i> ' We recoded this into a binary variable; great difficulty vs. other valid response options. These data were available for 99.8% of working age respondents at Wave 1.
Material hardship	Material hardship was assessed by ability to afford four items: (1) To pay for a week's annual holiday away from home; (2) To eat meat, chicken or fish (or vegetarian equivalent) every second day; (3) To pay an unexpected, but necessary, expense of £500; (4) To keep your home adequately warm. We recoded this into a binary variable; could afford all items or could not afford one item vs. could not afford two or more items. These data were available for 99.9% of working age respondents at Wave 1.
Educational attainment	Highest level of educational attainment was recorded in eight categories: (1) Degree level qualification (or equivalent); (2) Higher educational qualification below degree level; (3) A-Levels or Highers; (4) ONC / National Level BTEC; (5) O Level or GCSE equivalent (Grade A-C) or O Grade/CSE equivalent (Grade 1) or Standard Grade level 1-3; (6) GCSE grade D-G or CSE grade 2-5 or Standard Grade level 4-6; (7) Other qualifications (including foreign qualifications below degree level); (8) No formal qualifications. Due to small counts in some cells we recoded this into a six-category variable by combining groups (1) and (2) and groups (4) and (5). These data were available for 95.5% of working age respondents at Wave 1.
Housing tenure	Housing tenure was recorded in six categories (1. Own it outright, 2. Buying it with the help of a mortgage or loan, 3. Pay part rent and part mortgage (shared ownership), 4. Rent it, 5. Live here rent-free (including rent-free in relative's/friend's property; excluding squatting), 6. Squatting). We recoded these into a binary variable; renting vs. other tenure options (primarily purchasing through a mortgage). These data were available for 100.0% of working age respondents at Wave 1.
Employment status	Employment status was recorded in terms of three International Labour Organisation categories in employment, unemployed, economically inactive. These data were available for 95.1% of working age respondents at Wave 1.
Urban/rural location	Location was derived from household postcode and coded as urban or rural according to 2011 ONS urban/rural classifications.[31] These data were available for 99.9% of working age respondents at Wave 1.

Table S4: Forms of non-disability related discrimination reported by participants with and without disability

	Wave 1		Wave 2		Wave 3	
	Disability	No Disability	Disability	No Disability	Disability	No Disability
Age	5.9% (5.2-6.7)	3.8% (3.5-4.0)	5.1% (4.1-6.1)	3.4% (3.0-3.8)	4.1% (3.1-5.1)	2.1% (1.8-2.4)
Ethnicity	4.2% (3.6-4.8)	2.9% (2.7-3.1)	2.8% (2.0-3.6)	2.3% (2.0-2.6)	2.0% (1.3-2.7)	1.6% (1.3-1.8)
Sex	2.9% (2.0-4.0)	2.0% (1.9-2.2)	2.2% (1.5-2.9)	1.5% (1.2-1.7)	2.2% (1.5-2.9)	1.2% (0.9-1.4)
Religion	1.6% (1.2-2.0)	0.8% (0.7-0.9)	1.4% (0.9-1.9)	0.7% (0.5-0.8)	1.2% (0.7-1.7)	0.7% (0.6-0.9)
Sexual orientation	1.1% (0.8-1.4)	0.4% (0.3-0.5)	0.5% (0.2-0.8)	0.3% (0.2-0.5)	0.6% (0.2-1.0)	0.2% (0.1-0.3)

Table S5: Sources of disability discrimination

	Wave 1	Wave 2	Wave 3
Strangers in the street	33% (29-36)	30% (25-35)	28% (23-34)
Health staff	32% (28-35)	27% (22-32)	25% (19-30)
Employers	23% (20-26)	24% (19-29)	21% (16-26)
Friends or neighbours	18% (15-21)	14% (10-18)	21% (15-26)
Family or relatives	14% (11-17)	13% (9-16)	11% (7-15)
Retail staff	13% (11-16)	13% (9-17)	13% (9-17)
Work colleagues	13% (10-15)	18% (14-23)	13% (9-17)
Bus drivers	12% (9-14)	7% (4-10)	9% (5-12)
Police officers	7% (5-9)	5% (3-8)	7% (4-11)
Social workers	5% (4-7)	8% (5-11)	6% (3-9)
Taxi drivers	4% (2-5)	4% (2-6)	3% (1-5)
Teacher or lecturer	4% (2-5)	2% (1-4)	4% (1-6)
Care workers	3% (2-4)	4% (2-6)	3% (1-5)
Rail staff	2% (1-3)	3% (1-5)	1% (0-2)

Table S6: Forms of workplace disability discrimination

	Wave 1	Wave 2	Wave 3
Being given fewer responsibilities	46% (33-58)	59% (37-82)	62% (44-80)
Not being promoted	33% (21-45)	39% (16-62)	18% (3-32)
Being refused a job	19% (9-29)	28% (3-42)	22% (7-38)
Being denied work-related benefits	19% (9-29)	36% (14-58)	22% (6-37)
Being payed less than other workers in similar jobs working the same hours	17% (7-26)	34% (12-56)	12% (0-24)
Being denied a transfer	10% (2-18)	14% (0-30)	27% (10-44)

Table S7: Exposure of Participants with and without Disability to Covariates (Wave 1)

		Participants with disability	Participants without disability
Gender			
	Men	44.6% (43.1-46.1)	49.7% (49.1-50.3)
	Women	55.4% (53.9-56.9)	50.3% (49.7-51.0)
Age			
	18-24	7.2% (6.4-8.0)	14.9% (14.5-15.4)
	25-44	32.2% (31.1-33.3)	46.0% (45.4-46.7)
	45-64	60.6% (59.2-62.1)	39.0% (38.4-39.7)
Ethnicity			
	White	89.4% (88.5-90.4)	88.1% (87.7-88.5)
	Minority Group	10.6% (9.6-11.5)	11.9% (11.5-12.3)
Financial stress			
	No	81.7% (80.5-82.8)	94.1% (93.9-94.4)
	Yes	18.3% (17.2-19.5)	5.9% (5.6-6.2)
Material hardship			
	No	41.0% (39.5-42.5)	65.2% (64.6-65.8)
	Yes	59.0% (57.5-60.5)	34.8% (34.2-35.4)
Educational attainment (highest level)			
	Degree	12.5% (11.5-13.5)	27.2% (26.7-27.8)
	A-Levels or higher	15.4% (14.3-16.5)	21.8% (21.3-22.3)
	O Levels/ GCSE A-C or equivalent	22.7% (21.4-23.9)	22.8% (22.3-23.4)
	GCSE D-G	6.7% (5.9-7.4)	5.1% (4.8-5.4)
	No formal qualifications	28.1% (26.8-29.5)	11.1% (10.7-11.5)
	Other (including overseas)	14.7% (13.6-15.7)	11.9% (11.5-12.3)
Employment status			
	Employed	42.8% (41.3-44.3)	76.9% (76.4-77.4)
	Unemployed	8.6% (8.0-9.3)	6.2% (6.0-6.5)
	Economically inactive	48.6% (47.1-50.1)	16.9% (16.4-17.3)
Housing tenure			
	Not rented	85.5% (84.4-86.6)	81.6% (81.1-82.1)
	Rented	14.5% (13.4-15.6)	18.4% (17.9-18.9)
Location			
	Urban	82.0% (80.3-83.2)	80.2% (79.7-80.7)
	Rural	18.0% (16.8-19.2)	19.8% (19.3-20.3)
Notes:			

Table S8: Factors Associated with Exposure to Discrimination Among Participants with a Disability (Wave 2)

	Any Discrimination (n=1,800)	Disability Discrimination (n=1,800)	Non-disability Discrimination (n=1,800)	Disability Workplace Discrimination (n=705)
Gender				
Men	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Women	0.97 (0.83-1.13)	1.05 (0.88-1.25)	0.93 (0.71-1.22)	1.34 (0.63-2.84)
Age				
18-24	1 (ref)	1 (ref)	1 (ref)	1 (ref)
25-44	0.98 (0.69-1.39)	0.98 (0.66-1.46)	0.64 (0.37-1.11)	0.28 (0.08-1.05)
45-64	0.83 (0.58-1.17)	0.82 (0.55-1.23)	0.64 (0.37-1.11)	0.29 (0.09-0.89)*
Ethnicity				
White	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Minority Group	1.30 (1.05-1.61)*	1.05 (0.79-1.39)	1.69 (1.19-2.42)**	1.86 (0.60-5.74)
Financial stress				
No	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Yes	1.52 (1.28-1.82)***	1.50 (1.22-1.84)***	1.90 (1.39-2.61)***	1.85 (0.76-4.49)
Material hardship				
No	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Yes	1.38 (1.13-1.68)**	1.42 (1.13-1.80)**	1.20 (0.85-1.70)	3.58 (1.49-8.62)**
Educational attainment (highest level)				
Degree	1 (ref)	1 (ref)	1 (ref)	1 (ref)
A-Levels or higher	0.89 (0.69-1.14)	0.91 (0.67-1.25)	0.71 (0.47-1.09)	0.65 (0.19-2.25)
O Levels/ GCSE A-C or equivalent	0.62 (0.49-0.80)***	0.68 (0.50-0.92)*	0.43 (0.28-0.67)***	0.40 (0.13-1.30)
GCSE D-G	0.88 (0.65-1.19)	1.08 (0.77-1.51)	0.48 (0.26-0.86)*	0.22 (0.03-1.59)
No formal qualifications	0.49 (0.37-0.64)***	0.52 (0.38-0.71)***	0.33 (0.20-0.55)***	0.76 (0.22-2.63)
Other (including overseas)	0.78 (0.60-1.01)	0.85 (0.63-1.16)	0.61 (0.39-0.95)*	0.89 (0.32-2.50)
Employment status				
Employed	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Unemployed	1.57 (1.22-2.01)***	1.73 (1.28-2.35)***	2.43 (1.65-3.58)***	n/a
Economically inactive	1.48 (1.23-1.79)***	1.85 (1.49-2.31)***	1.06 (0.75-1.49)	n/a

Table S8: Factors Associated with Exposure to Discrimination Among Participants with a Disability (Wave 2)

	Any Discrimination (n=1,800)	Disability Discrimination (n=1,800)	Non-disability Discrimination (n=1,800)	Disability Workplace Discrimination (n=705)
Housing tenure				
Not rented	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Rented	0.90 (0.75-1.09)	0.89 (0.71-1.13)	1.32 (0.90-1.93)	2.09 (0.64-6.83)
Location				
Urban	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Rural	0.97 (0.79-1.19)	0.94 (0.74-1.20)	1.01 (0.71-1.43)	1.33 (0.56-3.20)

Notes: * p<0.05, ** p<0.01, *** p<0.001

Table S9: Factors Associated with Exposure to Discrimination Among Participants with a Disability (Wave 3)

	Any Discrimination (n=1,570)	Disability Discrimination (n=1,570)	Non-disability Discrimination (n=1,570)
Gender			
Men	1 (ref)	1 (ref)	1 (ref)
Women	1.05 (0.87-1.26)	1.05 (0.85-1.30)	1.15 (0.82-1.62)
Age			
18-24	1 (ref)	1 (ref)	1 (ref)
25-44	0.78 (0.55-1.12)	1.30 (0.82-2.07)	0.33 (0.19-0.57)***
45-64	0.70 (0.50-0.97)*	1.19 (0.76-1.87)	0.27 (0.16-0.46)***
Ethnicity			
White	1 (ref)	1 (ref)	1 (ref)
Minority Group	1.18 (0.90-1.54)	1.10 (0.97-1.52)	1.77 (1.16-2.68)**
Financial stress			
No	1 (ref)	1 (ref)	1 (ref)
Yes	1.40 (1.13-1.73)**	1.29 (1.02-1.64)*	1.35 (0.90-2.03)
Material hardship			
No	1 (ref)	1 (ref)	1 (ref)
Yes	1.62 (1.26-2.07)***	1.82 (1.37-2.42)***	1.49 (0.98-2.25)
Educational attainment (highest level)			
Degree	1 (ref)	1 (ref)	1 (ref)
A-Levels or higher	0.78 (0.58-1.06)	0.81 (0.57-1.17)	0.52 (0.31-0.86)*
O Levels/ GCSE A-C or equivalent	0.63 (0.47-0.84)**	0.71 (0.50-1.00)*	0.42 (0.25-0.70)**
GCSE D-G	0.60 (0.41-0.89)*	0.64 (0.41-1.00)	0.46 (0.24-0.88)*
No formal qualifications	0.37 (0.26-0.54)***	0.44 (0.29-0.67)***	0.10 (0.04-0.26)***
Other (including overseas)	0.84 (0.62-1.15)	0.81 (0.56-1.18)	0.78 (0.47-1.32)
Employment status			
Employed	1 (ref)	1 (ref)	1 (ref)
Unemployed	2.48 (1.88-3.26)***	3.37 (2.46-4.61)***	2.04 (1.22-3.42)**
Economically inactive	1.83 (1.47-2.30)***	2.29 (1.74-3.02)***	1.47 (1.02-2.12)*
Housing tenure			
Not private rental	1 (ref)	1 (ref)	1 (ref)
Private rental	0.69 (0.54-0.89)**	0.87 (0.65-1.17)	0.41 (0.28-0.61)***

Notes: * p<0.05, ** p<0.01, *** p<0.001

Location not available for Wave 3

Workplace disability discrimination model would not fit due to small sample size