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Social determinants of disability pension: a 10-year follow-up of 62 000 people in a Norwegian county population

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Background	Non-medical factors may be important determinants for granting disability pension (DP) even though disability is medically defined, as in Norway. The aim of this analysis was to identify determinants of DP in a total county population in a 10-year follow-up study.
Methods	Participants were people without DP, 20- to 66-years-old in 1984–1986. The baseline data were obtained in the Nord-Trøndelag Health Study (HUNT): 90 000 people were invited to answer questionnaires on health, disease, social, psychological, occupational, and lifestyle factors. Information on those who later received DP was obtained from the National Insurance Administration database in 1995. Data analyses were performed using Cox regression analyses.
Results	The incidence of DP showed great variation with regards to age and gender, accounting for an overall increase in the follow-up period. Low level of education, low self-perceived health, occupation-related factors and any long-standing health problem were found to be the strongest independent determinants of DP. Low level of education and socioeconomic factors contributed more to younger people's risk compared to those over 50 years. For people under 50 years of age with a low level of education compared to those with a high level of education, the age-adjusted relative risk for DP was 6.35 for men and 6.95 for women. The multivariate-adjusted relative risk was 2.91 and 4.77, respectively.
Conclusions	Even for a medically based DP, low socioeconomic status, low level of education and occupational factors might be strong determinants when compared to medical factors alone. These non-medical determinants are usually not addressed by individual based health or rehabilitation programmes.

Keywords	Insurance, disability, pensions, socioeconomic factors, risk factors, social medicine, epidemiology
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Most industrialized countries have public income-maintenance programmes to protect workers in case of disability.[1] For long-term illness or injury, disability pension (DP) is typically comprised of both universal and earnings-related programmes.[2] Many countries in Europe and North America have experienced a dramatic increase in rates of such government paid benefits.[1,3–5] In Norway, incidence of the medically based DP started to increase in 1982–1983, after a stable period throughout the 1970s. In 1999 there were 33 551 people (14 822 men and 18 729 women) who were granted DP in a working population of 2.5 million people; this compared to a stable incidence of approximately 19 000 per year in the 1970s.[6]

Medical certification for granting DP has become one of the major paths to public aid in modern welfare states. In periods where the number of DP increases rapidly, there is often a general concern that the programmes are in crisis.[1] Policy-makers and analysts have explained the increased programme size in different ways. The sociological traditions take the perspective of disability as a social role, and discuss what leads individuals to adopt the 'disabled role'.[7,8] Economic theory takes the perspective of the welfare-maximizing rational man and suggests that people will define themselves as disabled when the benefits of that role are greater than those derived from work.[1] Background factors such as the increasing number of women in paid work, pressure from physicians facing people with illness and pressure from both the legal and the economic realm have also been discussed.[1]

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The diagnoses most often applied for DP are musculoskeletal, psychiatric and cardiovascular.[5,9] The proportion of recipients with psychiatric disorders seems to increase[10] and these disorders are of special concern because they affect people in early adulthood.[11]

Low level of education,[12] low socioeconomic status (SES),[13–15] physically strenuous work,[16] too quick a pace at work, unpleasant working conditions,[17] unemployment[18] and poor physical condition[19] have been found to be determinants of DP in different population samples. Significant differences in prevalence of DP by area deprivation have also been shown.[20] Sociologists have noted that there is an increasing health-related selection out of the workforce, especially affecting people with low SES, which seems to be an increasing problem connected to working life and employment conditions in Western societies.[21]

Most epidemiological studies on DP have used narrow cohorts, included only one gender or investigated the effects of few specific risk factors. A total population study addressing causes of inequalities in risk of receiving a DP by SES controlled for a wide range of confounders has, to our knowledge, not been performed. The main objective of this 10-year follow-up study was to examine SES and education level (which may serve as a proxy for SES) as predictors of DP.

Materials and Methods

Subjects

A comprehensive health survey, the Nord-Trøndelag Health Study (HUNT), was conducted in Nord-Trøndelag county, central Norway, in 1984–1986.[22] All inhabitants ⩾20 years residing in the county were invited to participate in the study. A total of 74 599 people participated, accounting for 88.1% of the adult population. In addition to filling in questionnaires each participant was screened for a number of health measures. The analyses in this study were restricted to men (n = 32 194) and women (n = 30 175) aged 20–66 years without DP at baseline. The upper age limit was set at 66 years as retirement pension is available to everyone at the age of 67 in Norway.

Disability pension

Information on later uptake of DP up to 1995 was obtained from the National Insurance Administration database. The eligibility criteria for granting DP in Norway were established by law in 1967. The pension is intended to secure the income of people who have had their earning ability permanently impaired by at least 50% due to illness or disease, injury, or disability. In addition, five conditions must be met: the applicant must have been a member of the national insurance programme for at least 3 years (everybody who is a resident in Norway is a member); the applicant must be between 16 and 67 years; the illness or disease, injury or disability must be the main cause for impaired earning ability (excludes primary social causes); the applicant must have undergone appropriate medical treatment and rehabilitation in order to improve his/her earning ability; and the earning ability must be impaired long-term and by at least 50%. These medical criteria have been essentially unchanged since 1967. However, there was a slight tightening of the criteria in 1991, emphasizing that medical conditions should be the 'main reason' for the disability, explicitly excluding social problems as a cause. For all practical purposes DP has been a one-way event, usually lasting until retirement pension age at 67 or death.

Socioeconomic status and other variables

All independent variables in this study were taken from the HUNT-Study questionnaire, except civil status which was taken from the national register in the survey summons file. Methodological studies have shown the high validity of health questions in the survey.[23]

Socioeconomic status was measured by two different approaches. In the first approach people were classified based on their position in the labour market.[24] Standard occupational class codes were not available in HUNT, but due to the similarity between the occupational classification in HUNT and the Erikson, Goldthorpe and Portocarero (EGP) scheme, an approximation was possible with a reclassification. A comparison between this method and a standard method has shown the applicability of this procedure.[25] However, for women the EGP scheme based on own occupation is a less reliable measure of SES.[26] Thus, additional analyses using a social class grouping based on husband's occupation were applied. Women living alone were still classified according to own occupation.

In the second approach the population was stratified according to the highest *education level* achieved. Education level serves as a proxy for SES and is probably the best measure for SES among women in this setting.[27,28] Since education level can provide a gradient scale for both genders and serve as a one-dimensional measure of SES, we used education level as a proxy for SES in the multivariate Cox regression analyses for both genders.

Any long-standing health problem was monitored by asking 'Do you suffer from any long-standing limiting somatic or psychiatric illness, disease, or disability?' The answer categories were 'yes' and 'no'. This variable is used in many international studies[27] and corresponds closely to the main eligibility criteria for DP in Norway.

Employment status was reclassified into the following categories: employed (full or part time), unemployed, homemaker, other (student, unclassified and other pensions than DP).

The other variables originally had four to seven answer categories in the health survey questionnaire. Citations to validation studies or to theoretical context for these variables are given below. In the analyses these variables were classified as follows:

Occupational risk factors:[16,29,30]
low job control (little or no ability to plan own work versus considerable or full ability to plan own work),
high physical demands (often or always worn out versus seldom or never worn out),
high demands in concentration and attention (often or always worn out versus seldom or never worn out),
low job satisfaction (less than good satisfaction versus good to very good satisfaction).

Psychosocial risk factors:[31,32]
separated or divorced (separated or divorced versus unmarried, married or widow/er),
loneliness (often or very often lonely versus some times or less often lonely),
low subjective well-being (extremely, very or fairly dissatisfied with life versus 'yes and no', fairly, very, or extremely satisfied).

Health perception:[33]
perceived health less than good (perceived health less than good versus good or very good).

Health-elated lifestyle factors:[34–36]
lack of physical exercise (physical exercise less than once a week versus once a week or more),
smoking (current smoker versus not current smoker),
high alcohol consumption (have drunk excessively versus may have or have not drunk excessively).

Follow-up and endpoints

Each participant contributed person-years from the year of study entry (The HUNT Study 1984–1986) until the year of being granted DP (n = 7322), reaching 67 years (n = 6057), death (n = 1195) or emigration (n = 368) before these events, or the end of follow-up on 31 December 1994 (n = 47 427). Median follow-up time was 9.7 years (mean, 8.7 years). Every citizen in Norway is given a unique 'national identity number' of 11 digits at the time of birth, which contains information on birth date and gender. This identity number enabled individual linkage between collected information in the HUNT Study, the register of DP at the National Insurance Administration and the register of deaths at Statistics Norway which were used to determine vital status (alive, emigrated, dead).

Statistics

When comparing the incidence of DP in the study county with the total country, age adjustment by direct standardization was applied. The Cox proportional hazards model[37] was used to calculate age- and multivariate-adjusted relative risk estimates (hazard ratio with 95% CI) of receiving DP according to SES and educational level, using the highest class and level as reference. In the final model the data-set was stratified by gender and age (20–49 years and 50–66 years) due to the interaction and exponential increasing effect of age on risk of receiving a DP.[38] We considered all variables in the HUNT Study, which was not originally designed for these analyses, as potential determinants of DP. The variables in the final model (Table 4) were selected by empirical and statistical approaches. First, all variables were tested individually as independent variables, then possible interactions and confounding were explored. In the final stratified model education level and age were entered into the model, then all other variables were selected by forward likelihood-ratio statistics. The multivariate relative risks (hazard ratios)(mRR) should be interpreted as the risk of receiving a DP for people exposed, adjusted for all variables in the model. All statistical analyses were performed using the statistical software SPSS for Windows version 10.0.

Results

Figure 1 shows the incidence of DP per 1000 person-years at risk in the study county compared to the total country 1974–1998. The incidence rates of the study county followed the national rates closely. The incidence varied considerably with an overall increasing trend.

Table 1 presents the crude cumulative incidence rate per 1000 person-years at risk (IR) of receiving a DP in different socioeconomic groups for men and women aged 20–49 and 50–66 years. The classification was based on own occupation. The number of DP received during the follow-up period, the aggregated number of person-years in the groups and the age-standardized relative risk (hazard ratio) are shown. For men and for women aged 20–49 years the hazard ratio of receiving a DP increased significantly with decreasing socioeconomic status. The hazard ratios were higher for people aged 20–49 years compared to people aged 50–66 years. In Table 2 married women were classified according to their husband's occupational class. Compared to the results in Table 1, the hazard ratios of receiving a DP were somewhat higher for women aged 20–49 years, and definitely higher for women aged 50–66 years when using this classification.

In Table 3 the occupational groups are replaced by education level. The Table shows that the hazard ratio between people with different education level was very high in the 20–49 years age group, 6.35 for men and 6.95 for women. For men aged 50–66 years the hazard ratio was 2.48, while for women aged 50–66 years no significant differences were found.

Table 4 presents the result from a multivariate Cox-regression analysis and shows the relative risk of receiving a DP by education level and other determinants. The material is stratified by gender and age. The relative risk of receiving a DP increased proportionally with decreasing education level for all groups, except for women aged 50–66 years, after controlling for the other variables shown in the Table. The education gradient was highest in the youngest age strata, and highest for young women. Any long-standing health problem reported at baseline, a variable closely corresponding to the eligibility criteria for DP, increased the risk in both genders and both age strata as expected. Perceived health 'less than good' was also found to be a strong independent predictor for DP. Low job control increased the risk of receiving a DP in all groups from 29% to 40%. Manual work was also found to increase the risk in all groups. Unemployment at baseline seemed to increase the risk of receiving a DP among young men only. Among the psychosocial risk factors, separation/divorce seemed to increase the risk for young women, loneliness for young men, and subjective general dissatisfaction for all men. Among the health-related lifestyle factors, smoking increased the risk of receiving a DP in all four strata, physical inactivity increased the risk for people aged 50–66 years. Self-reported excessive alcohol consumption was not entered into the model for any of the groups by the forward likelihood-ratio statistic method.

Table 5 presents the crude hazard ratio of receiving a DP according to education level successively adjusted for age, any long-standing health problem, occupational factors, psychosocial factors, health perception and lifestyle factors. A large attenuation of the hazard ratio after inclusion of an explanatory variable indicates the importance of this variable for the exposed group. An increasing hazard ratio, as observed for women aged 50–66 years when controlling for any long-standing health problem and occupational factors, implies that the factor controlled for was more prevalent in the groups with high education.

Discussion

The incidence of DP varied considerably in this Norwegian population during the follow-up, but followed the national trend towards an overall increase. Low education level,

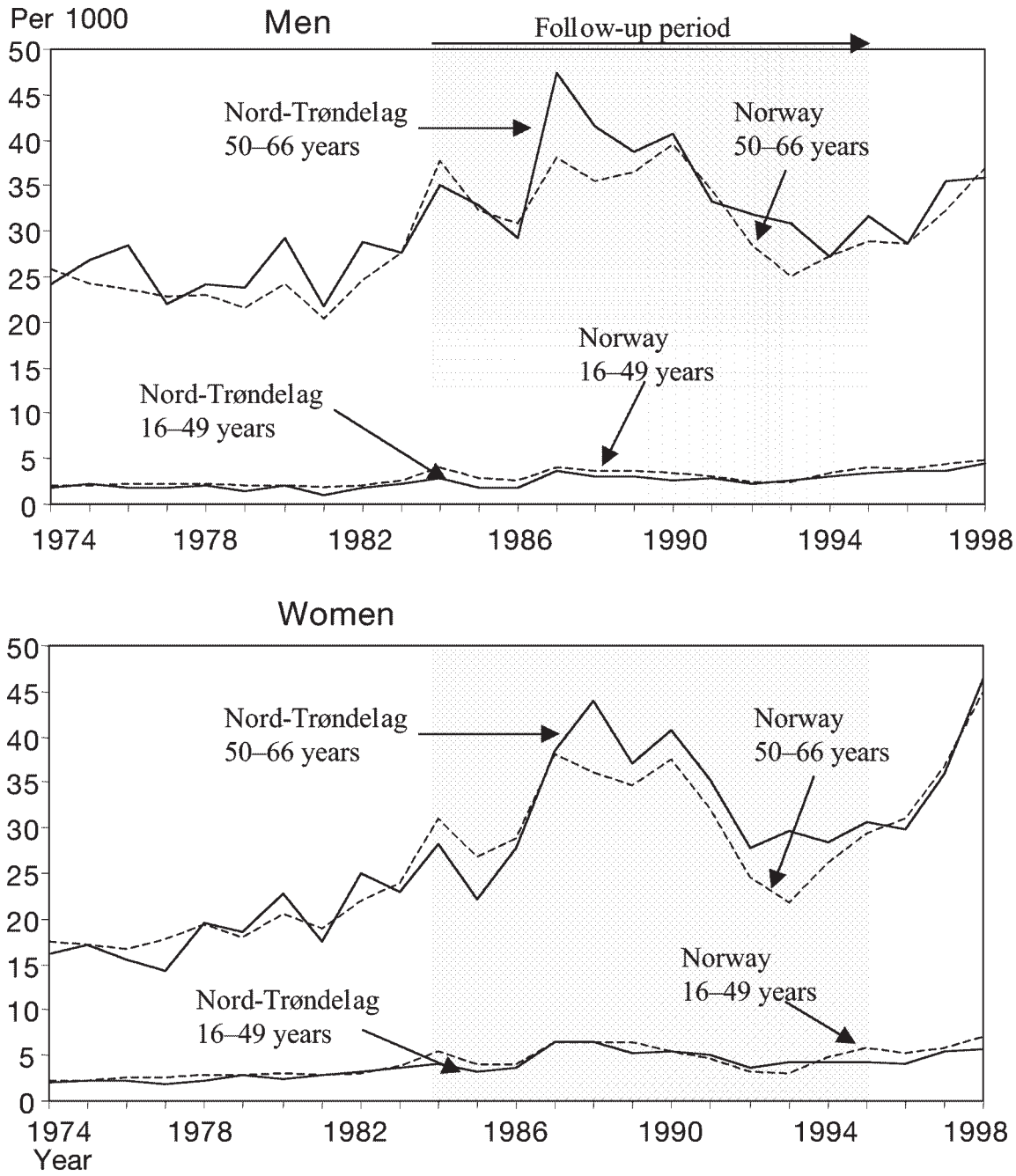

Figure 1 Incidence[a] of disability pension by sex and age in the county Nord-Trøndelag compared to the total country (Norway)—1974–1998

[a] Age-adjusted by direct standardization—standard population—Norway—1 January 1995, 16–66 years.

physically demanding work, low job control, self-perceived health 'less than good', and long-standing health problems strongly influenced the risk of receiving a DP.

The strength of this study is that it covers a total Norwegian population of over 60 000 people with participation rates at 85% among men and 90% among women. Use of the National Insurance Administrations register data ensured complete data on DP in the follow-up. However, the participation rate varied, 65% for men aged 20–24 years being the lowest. A comprehensive non-responder study was performed after HUNT I.[39] The low participation in the youngest age groups was explained by people being too busy, not interested, or studying outside the county. In that study there was no significant selection according to morbidity, and there was no consistent association between non-response and education level in the age groups selected for this study.

The relatively high proportion of people who could not be allocated to a social class, reflects missing data on occupation

Table 1 Incidence rate and age-adjusted relative risk (hazard ratio) of receiving a disability pension (DP) in the study population according to Erikson Goldthorpe Portocarero (EGP) social class scheme based on own occupation for both genders, the Nord-Trøndelag Health Study (The HUNT Study, 1984–86), 10 years follow-up

		Men 20–49 years					**Women 20–49 years**				
EGP social class scheme		No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI	No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI
Higher administrators and professionals	(I)	35	17 148	2.04	1.00		25	3903	6.40	1.00	
Lower administrators and professionals	(II)	21	17 122	1.23	0.72	(0.42–1.24)	118	27 927	4.23	0.79	(0.51–1.21)
Routine non-manual workers	(III)	39	13 218	2.95	2.24	(1.42–3.54)	332	27 927	6.27	1.22	(0.81–1.84)
Self-employed, farmers and fishermen	(IV)	200	40 767	4.91	2.64	(1.85–3.79)	150	15 842	9.47	1.51	(0.99–2.30)
Skilled manual workers	(V+VI)	111	32 538	3.41	2.46	(1.68–3.59)	30	4292	6.99	1.68	(0.98–2.85)
Unskilled manual workers	(VII)	148	26 655	5.55	4.42	(3.05–6.40)	263	21 367	12.31	2.24	(1.56–3.53)
Unclassified		420					745				
		Men 50–66 years					**Women 50–66 years**				
		No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI	No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI
Higher administrators and professionals	(I)	166	6530	25.42	1.00		56	1142	49.04	1.00	
Lower administrators and professionals	(II)	99	3006	32.94	1.38	(1.07–1.76)	146	3582	40.76	0.86	(0.63–1.17)
Routine non-manual workers	(III)	120	3042	39.45	1.49	(1.18–1.89)	406	10 548	38.49	0.79	(0.60–1.04)
Self-employed, farmers and fishermen	(IV)	736	15 241	48.29	1.92	(1.62–2.27)	217	5742	37.79	0.78	(0.57–1.03)
Skilled manual workers	(V+VI)	480	7396	64.90	2.59	(2.17–3.09)	31	634	48.86	1.00	(0.65–1.55)
Unskilled manual workers	(VII)	456	6696	68.10	2.70	(2.26–3.23)	365	6981	52.29	1.07	(0.81–1.42)
Unclassified		591					816				

[a] Age adjusted.

and education level for participants not returning the second questionnaire by mail after the initial screening day. Analyses have shown that there was no significant selection according to health among non-responders according to these variables.

Global morbidity and health measures from the HUNT database recorded at baseline were preferred in this study; Compared to medical diagnostic data, these variables are much more comprehensive and presumably better suited for this total population study. Data from the National Insurance Administration comprised medical diagnoses applied when DP was granted, but these data were not recorded at baseline.

In a 10-year follow-up period, the impact of the exposure variables may decrease over time. To check this hypothesis we performed analyses splitting up the material for people granted DP into three equal time periods after the initial survey. For the main independent variable, education level, there was no consistent pattern of losing explanatory power over time. For unemployment reported at baseline, for example, a condition that may easily change, there was no consistent pattern of losing explanatory power either. These sub-analyses indicate that the variables selected in the Cox proportional hazards model kept their predictive power for the entire study period.

The methods applied in this study are more frequently used when studying associations between exposure and disease. The use of the term 'risk factor' may then be appropriate. When DP is the outcome, the endpoint is undesirable for society on both human and economic grounds, but may be wanted or necessary for the individual. In this study we therefore primarily use the word 'determinant' about the exposure variables. Use of the term determinant may also be looked upon as a precaution, since we studied associations rather than causal relationships.

The incidence of DP has varied considerably in Norway since the early 1980s.[6] The variations reflect the strong influence of non-medical determinants of disability, which to a large extent may be associated with conditions in the labour market. No rapid changes in morbidity can explain these variations in a developed country. Thus, the increasing use of psychiatric/musculoskeletal diagnoses observed in disability statistics may account for a high degree of medicalization of processes leading to early retirement from work.

The social gradient in risk of receiving a DP was higher for people below 50 years compared to older people. This reflects great problems for young people with less education in the labour market, and a strong and maybe increasing health-related selection out of work in these cohorts affecting people with low SES.[21] The overall age distribution of the 7322 people receiving a DP was very skewed. Receiving a DP was much more frequent among older people, and with increasing age it becomes more evenly distributed according to SES. The striking

Table 2 Age-adjusted relative risk (hazard ratio) of receiving a DP among women according to Erikson Goldthorpe Portocarero (EGP) social class scheme based on husband's occupation, the Nord-Trøndelag Health Study (The HUNT Study, 1984–1986), 10 years follow-up

		Women 20–49 years	
Husband's social class, EGP social class scheme		Hazard ratio[a]	95% CI
Higher administrators and professionals	(I)	1.00	
Lower administrators and professionals	(II)	1.11	(0.83–1.48)
Routine non-manual workers	(III)	1.85	(1.43–2.40)
Self-employed–farmers and fishermen	(IV)	1.50	(1.18–1.91)
Skilled manual workers	(V+VI)	1.68	(1.30–2.18)
Unskilled manual workers	(VII)	2.39	(1.85–3.06)
		Women 50–66 years	
Higher administrators and professionals	(I)	1.00	
Lower administrators and professionals	(II)	1.26	(0.98–1.63)
Routine non-manual workers	(III)	1.52	(1.24–1.88)
Self-employed, farmers and fishermen	(IV)	1.18	(0.98–1.44)
Skilled manual workers	(V+VI)	1.31	(1.06–1.63)
Unskilled manual workers	(VII)	1.61	(1.32–1.98)

[a] Age adjusted.

difference between women over and below 50 years (Table 5), may partly be due to legislation. DP has rarely been granted to homemakers without a personal income, and homemakers were more prevalent among older women with low education. Further, a weak association between job demands and older women was found. This result suggests that occupational risk factors were more evenly distributed according to SES among women over 50 years compared to other groups.

All determinants were measured at the individual level, and might lead to better understanding of the processes leading to disability. This might result in more specific intervention strategies for preventing subjects at 'high risk' becoming disabled; intervening at intra-personal, inter-personal and organizational levels in health and rehabilitation.[40] This would involve interventions dealing with education, job control and self-perceived health, particularly in younger people. 'High-risk' interventions are important, have been frequently applied and often proposed in the struggle against increasing DP rates in many countries.[41,42] However, the efficacy of the type of interventions that have been tried has been disappointing.[41] This may be because they failed to target the correct risk factors/determinants. Or, they failed to understand and work with the contextual factors which may be far more important in determining unemployment and DP receipt than individual level factors.[21,43–45]

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Table 3 Incidence rate and age-adjusted relative risk (hazard ratio) of receiving a DP in the study population according to educational level, the Nord-Trøndelag Health Study (The HUNT Study, 1984–1986), 10 years follow-up

	Men 20–49 years					Women 20–49 years				
Educational level	No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI	No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI
High school or university	32	25 733	1.24	1.00		44	20 590	2.14	1.00	
Secondary, upper level (≤12 years)	184	74 282	2.48	2.60	(1.78–3.79)	347	73 126	4.75	2.61	(1.91–3.58)
Secondary, lower level (≤9 years)	211	37 477	5.63	4.49	(3.09–6.51)	527	45 038	11.70	4.68	(3.44–6.37)
Elementary, (0–7 years)	158	12 151	13.00	6.35	(4.32–9.32)	251	9241	27.16	6.95	(5.02–9.63)
Unclassified	389					494				
	Men 50–66 years					**Women 50–66 years**				
	No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI	No. granted DP	Person-years	Incidence rate 1000/year	Hazard ratio[a]	95% CI
High school or university	103	4227	24.37	1.00		72	1890	38.09	1.00	
Secondary, upper level (≤12 years)	431	11 563	37.27	1.48	(1.19–1.83)	238	7912	30.08	0.78	(0.60–1.02)
Secondary, lower level (≤9 years)	310	6768	45.80	1.91	(1.53–2.39)	336	9711	34.60	0.90	(0.70–1.17)
Elementary, (0–7 years)	1232	19 036	64.72	2.48	(2.02–3.03)	929	23 767	39.09	1.01	(0.79–1.29)
Unclassified	572					462				

[a] Age adjusted.

Table 4 Relative risk (hazard ratio) of receiving a DP according to educational level—any long-standing health problem—employment status—risk factors in working life—psychosocial risk factors—perceived health and lifestyle factors—the Nord-Trøndelag Health Study (The HUNT Study 1984–1986),10 years follow-up

	Men 20–49 years		Men 50–66 years		Women 20–49 years		Women 50–66 years	
Determinants	mHR[a]	95% CI	mHR[a]	95% CI	mHR[a]	95% CI	mHR[a]	95% CI
Educational level								
High school, university (level 4)	1.00		1.00		1.00		1.00	
Secondary, upper level (level 3)	1.96	(1.23–3.12)	1.30	(1.02–1.66)	2.49	(1.69–3.67)	1.05	(0.74–1.48)
Secondary, lower level (level 2)	2.71	(1.69–4.33)	1.47	(1.13–1.90)	3.70	(2.51–5.44)	1.16	(0.82–1.63)
Elementary, 7 years school (level 1)	2.91	(1.79–4.76)	1.66	(1.31–2.10)	4.77	(3.16–7.22)	1.31	(0.94–1.83)
Any long-standing health problem								
No	1.00		1.00		1.00		1.00	
Yes	2.88	(2.27–3.65)	1.71	(1.52–1.93)	3.12	(2.63–3.70)	1.54	(1.31–1.81)
Employment status								
Employed, full or part time	1.00		1.00		1.00		1.00	
Unemployed	2.19	(1.13–4.26)	1.15	(0.75–1.78)	1.16	(0.84–1.61)	1.07	(0.77–1.49)
Homemaker	1.13	(0.16–8.05)	0.73	(0.23–2.26)	1.00	(0.83–1.20)	0.42	(0.34–0.51)
Other—unclassified	8.03	(4.58–14.09)	2.95	(1.96–4.43)	3.50	(2.18–5.62)	0.79	(0.47–1.35)
Occupational risk factors								
High job control	1.00		1.00		1.00		1.00	
Low job control	1.40	(1.00–1.94)	1.34	(1.13–1.59)	1.29	(1.04–1.60)	1.31	(1.09–1.59)
Low physical demands	1.00		1.00		1.00		1.00	
High physical demands	1.55	(1.23–1.93)	1.42	(1.26–1.61)	1.53	(1.31–1.78)	1.40	(1.19–1.66)
Low demands in concentration and attention	1.00		1.00		1.00		1.00	
High demands in concentration and attention	***		1.11	(0.99–1.25)	***		1.33	(1.13–1.57)
High job satisfaction	1.00		1.00		1.00		1.00	
Low job satisfaction	***		1.16	(0.94–1.44)	***		1.33	(0.94–1.89)
Psychosocial risk factors								
Not reported marriage breakdown	1.00		1.00		1.00		1.00	
Separated or divorced	***		***		1.80	(1.41–2.30)	***	
No loneliness	1.00		1.00		1.00		1.00	
Loneliness	1.80	(1.29–2.53)	***		***		***	
Subjective well-being—satisfied	1.00		1.00		1.00		1.00	
Dissatisfied	1.33	(1.03–1.72)	1.29	(1.13–1.48)	1.18	(0.98–1.43)	1.05	(0.87–1.26)
Self-perceived general health								
Good, very good	1.00		1.00		1.00		1.00	
Fair and bad	1.94	(1.50–2.51)	1.87	(1.65–2.12)	1.91	(1.59–2.30)	1.81	(1.53–2.13)
Health-related lifestyle factors								
Active physical exercise in leisure time	1.00		1.00		1.00		1.00	
Inactive	***		1.12	(1.01–1.24)	***		1.18	(1.03–1.35)
Not current smoker	1.00		1.00		1.00		1.00	
Current smoker	1.23	(1.00–1.51)	1.27	(1.15–1.42)	1.41	(1.22–1.63)	1.25	(1.08–1.43)

[a] Age-adjusted multivariate relative risk (hazard ratio) adjusted for all variables presented in the Table.

*** Not significant/not entered in the model by forward likelihood-ratio statistics.

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Table 5 Relative risk (hazard ratio [HR]) of receiving a DP according to educational level (10 years follow-up)—successively adjusted for age—any long-standing health problem—occupational factors—psychosocial factors—health perception and lifestyle factors—the Nord-Trøndelag Health Study (The HUNT Study 1984–1986). Confidence intervals for model 2 and model 7 shown in Tables 3 and 4, respectively

	Men 20–49 years				**Women 20–49 years**			
	Educational level[b]				Educational level[b]			
HR[a]	4	3	2	1	4	3	2	1
Model 1; crude HR	1.00	2.00	4.56	10.57	1.00	2.22	5.53	12.99
Model 2; model 1 + age	1.00	2.60	4.49	6.35	1.00	2.61	4.68	6.95
Model 3; model 2 + any long-standing health problem	1.00	2.43	3.66	4.24	1.00	2.82	4.89	6.27
Model 4; model 3 + occupational factors	1.00	1.96	2.85	3.22	1.00	2.68	4.32	5.55
Model 5; model 4 + psychosocial factors	1.00	2.00	2.88	3.18	1.00	2.70	4.27	5.57
Model 6; model 5 + health perception	1.00	2.00	2.82	3.03	1.00	2.67	4.06	5.29
Model 7; model 6 + lifestyle factors	1.00	1.96	2.71	2.91	1.00	2.49	3.70	4.77
	Men 50–66 years				**Women 50–66 years**			
	Educational level[b]				Educational level[b]			
	4	3	2	1	4	3	2	1
Model 1; crude HR	1.00	1.55	1.92	2.77	1.00	0.79	0.91	1.05
Model 2; model 1 + age	1.00	1.48	1.91	2.48	1.00	0.78	0.90	1.01
Model 3; model 2 + any long-standing health problem	1.00	1.52	1.98	2.27	1.00	0.99	1.10	1.22
Model 4; model 3 + occupational factors	1.00	1.41	1.68	1.89	1.00	1.10	1.22	1.45
Model 5; model 4 + psychosocial factors	1.00	1.39	1.65	1.85	1.00	1.10	1.24	1.46
Model 6; model 5 + health perception	1.00	1.33	1.52	1.71	1.00	1.08	1.22	1.41
Model 7; model 6 + lifestyle factors	1.00	1.30	1.47	1.66	1.00	1.05	1.16	1.31

[a] Subjects may vary because of missing data.

[b] Educational level 4: high school, university; level 3: secondary, upper level; level 2: secondary, lower level; level 1: elementary, 7 years school.

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