Determinants of transition from partial to full disability pension: a register study from Finland

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Abstract

Aims

This study explored the rate of transition from partial to full disability pension (DP) and aimed to determine whether age, gender, education, employment status, employment sector, pension type and medical cause of disability were associated with transition to full DP during a four-year follow-up.

Methods

We used register data including a 70% random sample of partial disability pensioners aged 20–58 at the time that their partial DP started in 2010 or 2011 (N=5,277). Competing risk analysis was used to estimate sub-hazard ratios and their 95% CI for full DP.

Results

One-third of partial disability pensioners transitioned to full DP during the four-year-follow-up. Over half (52%) continued on partial DP and 15% were in some other state. Men, older people, those with low education levels, those whose pension was granted until further notice, and those whose pension was due to mental disorders (MD) proceeded to full DP more often than others. The sub-hazard ratio for full DP was 1.62 (95% CI, 1.43-1.83) among partial disability pensioners with MD and 1.15 (95% CI, 1.02-1.28) among partial disability pensioners with other diseases compared to those whose pension was granted due to musculoskeletal diseases (MSD).

Conclusions

Partial DP is a relatively stable state and moving to full DP relatively rare. However, male gender, older age, low education level, a pension granted until further notice, and partial DP due to MD are important risk factors for full DP. The risk factors for ending up on full DP varies by diagnosis and pension type.

Keywords: partial disability pension, full disability pension, mental disorders, musculoskeletal diseases, temporary pension

Introduction

The large number of disability pensioners is a great concern in many countries [1]. In addition, the low employment rate of people with chronic illnesses and reduced work ability constitutes a major social and economic burden. Several countries, including most Nordic welfare states, offer full disability benefits for those who are unable to work, but also partial benefits for those with reduced work capacity [1]. Partial disability benefits are a way of helping people stay in work. In Finland, they account for almost one-third of all granted disability pensions (DPs) [2], and the majority of those receiving partial DPs continue to work part-time [3]. Working while receiving a pension lengthens working careers and often has a positive effect on social and economic well-being [1].

National regulations on partial disability benefits vary widely. In Finland, a partial DP is paid if the individual's work ability is reduced by at least 40% for more than one year. The assessment of work ability is made by an insurance physician and based on diagnosed medical conditions. Social factors such as age, previous work history, education and place of residence are also considered. An extensive medical statement ('Medical Statement B') is required and must be attached to the disability pension application. A full DP is granted if the individual's work ability is reduced by at least 60% [4]. Partial disability pensioners can move to full DP if their work ability deteriorates to the extent that they meet the relevant criteria. The 40% and 60% thresholds formally determine whether a partial or full DP is granted.

In practice, many factors may be associated with the transition from partial to full DP. A number of earlier studies [5-12] have explored the risk factors for early exit from working life on DP. Factors such as poor health [5,6], older age [7,8], low socio-economic status and low educational level [7-10], unemployment [11,12] and working in the public sector [13] have been found to be associated with a

higher risk of DP. In addition, the risk factors for DP vary to some extent by cause of disability [8,9] and according to whether the DP is granted for a temporary period or until further notice [14]. Similar factors may also be related to the transition from partial to full DP.

Partial disability pensioners are known to differ from full disability pensioners in many ways [3]. Partial DPs are more common among women than men. Over half of all partial disability pensioners are over 55 [3]. Health often deteriorates with age and older partial disability pensioners may be at particularly high risk of transitioning to full DP. In addition, assessments of work ability for people over age 60 apply less rigorous standards than for younger age groups [4], creating the potential for easier access to a full DP. Partial disability pensioners are also better educated than full disability pensioners [3]. Low education is a strong risk factor for DP [10] and thus partial disability pensioners with a low education may be at higher risk of full DP. Furthermore, disability pensioners with pensions granted until further notice may have a higher risk of later moving to full DP than those whose pensions are granted for a temporary period. This is because a partial DP is granted for a temporary period if it is expected that the claimant's work ability will be restored [4].

A previous Finnish study [15] examined labour market transitions among partially disabled public sector employees and found that each year, an average of 10% of partial DP recipients transferred to full DP. Only two per cent returned to full-time work during the follow-up period. The risk of full DP was higher among partial disability pensioners with a chronic somatic disease. The risk of moving to full DP was also higher among partial disability pensioners of lower socio-economic position. Around one in four employees in Finland work in the public sector [16] where the occupational structure and working conditions differ in many respects from those in the private sector. The results may therefore not be directly generalizable to all employees. Public sector employees have a relatively high risk of partial DP,

and retirement on DP has been found to be high in many typical public sector occupations, such as nurses and other health care workers [13,17].

Postponing retirement age and lengthening working careers have recently emerged as important social policy goals in many countries. However, large numbers of working-age people are continuing to leave the labour market too early due to health problems or disability [18,19]. Partial disability pension is intended for persons who have reduced work ability but who nonetheless are still able to continue at work. However, knowledge about the stability of partial DP is relatively scarce, and the same goes for the determinants of transition from partial to full DP. This Finnish four-year follow-up study aimed to explore i) the rate of transition from partial to full DP and ii) whether age, gender, education, pension type (pension granted for a temporary period or until further notice), employment status, employer sector and medical cause of disability were associated with transition from partial to full DP.

Methods

Derived from Finnish Centre for Pensions and Statistics Finland registers, the data comprised a 70% random sample of partial disability pensioners whose pension started in 2010 or 2011 when they were aged 20–58 (N=5,277). The upper age limit was chosen to exclude those who would transition to old-age pension when they reached 63 years of age (N=2,166). Data from the registers were linked using personal identification numbers. All data was pseudonymized and handled in accordance with the EU's General Data Protection Regulation (GDPR).

The follow-up period was four years from the onset of partial DP. During the follow-up, partial disability pensioners could continue on a partial DP, move to a full DP or an old-age pension, die or become employed or unemployed. In Finland a DP is converted into an old-age pension at the age of eligibility for old-age retirement, which is typically 63 years. However, some public sector employees have the

right to an old-age pension before age 63 [20]. The data thus include some disability pensioners who reached retirement age during the four-year follow-up period.

Exposures

Age at the onset of partial disability pension was classified into four categories: 20–39, 40–49, 50–54 and 55–58 years.

Highest educational level attained was classified into four groups: primary school (up to 9 years' education), secondary education (up to 12 years' education), lower tertiary education (up to 15 years' education) and higher tertiary education (16+ years' education).

Employment status was classified as employed or not employed at baseline. Information on employment sector was classified into private sector and public sector. For employed partial disability pensioners, employment sector at baseline was used . For partial disability pensioners who were not employed, the most recent information on employment sector was used.

Diagnoses of health conditions leading to partial DP were categorized according to the International Classification of Diseases (ICD-10) using the following diagnostic groups: mental and behavioural disorders (MD) (F00-F99), musculoskeletal diseases (MSD) (M00-M99) and other diseases.

Pension type was divided into partial DP until further notice and temporary partial DP.

Statistical methods

Transition from partial to full DP was examined using competing risk regression analysis based on Fine and Gray's proportional sub-hazard model. The competing risk method is a useful tool when an individual can face more than one type of event. It takes into account events that can hinder or change the possibility of observing the event of interest [21]. These events are called competing risks. In our analysis the event of interest was full DP. Death, old-age retirement, returning to employment or unemployment were used as competing events. The exposures were age, gender, education, employment sector and information on employment, pension type and diagnosis. We estimated sub-hazard ratios (SHR) and their 95% confidence intervals (95% CI) for full disability retirement due to all causes. We also ran separate models for diagnosis and pension type. The analyses were conducted using Stata 14.2.

Results

Almost half of the partial disability pensioners were aged 55–58 when their partial DP started, and two-thirds of them were women (Table 1). Almost one-third, 28% had a lower or higher tertiary level education. Over half of the partial disability pensioners came from the private sector and almost half from the public sector. Four-fifths or 82% were employed at baseline. Almost half, 49% had retired due to MSD, 22% due to MD and 29% due to other diseases. By type of pension, 68% received a DP granted until further notice. However, the characteristics of the partial disability pensioners varied by cause of disability and according to pension type.

Table 2 shows that during the four-year follow-up, 33% of the partial disability pensioners moved to full DP and 52% continued on partial DP. Overall, 9% moved to employment, 3% to unemployment and a small fraction moved to an old-age pension or died. There were also diagnosis-specific differences in moving to full DP. By the end of the four-year follow-up, 37% of those with partial DP due to MD and

32% with MSD had moved to full DP. Furthermore, partial disability pensioners whose pension was granted until further notice moved to full DP more often (37%) than those with a temporary pension (26%).

Table 3 presents the sub-hazard ratios for transition from partial to full DP. The unadjusted models show that older age, male gender, low education level, public sector employment, MD and a pension granted until further notice were associated with a higher risk of full DP. In the fully adjusted model, the risk of transition to full DP was highest in the oldest age group (SHR=1.87; 95% CI 1.44-2.44). Furthermore, women had a slightly lower risk of full DP than men (SHR=0.87; 95% CI 0.78-0.97). Partial disability pensioners with a higher tertiary level education had a 0.73-fold lower risk (95% CI 0.58-0.92) of full DP than those with primary education. The sub-hazard ratio for full DP was 1.62 (95% CI 1.43-1.83) among those receiving partial DP due to MD and 1.15 (95% CI, 1.02-1.28) among partial disability pensioners with other diseases compared to MSD. In addition, partial DP granted until further notice was associated with a higher risk of moving to full DP (SHR=1.29; 95 % CI 1.14-1.45). However, being employed at baseline and employment in the private or public sector were not associated with moving to full DP.

Table 4 presents the competing risk models separately for pensions categorized by diagnosis and pension type. As the adjustment had only a modest effect on most variables in the full sample (Table 3), only the adjusted results are shown. Older age, lower education level and DP granted until further notice were associated with a higher risk of full DP due to MSD. Only higher age and male gender were associated with full DP due to MD. A low education level and pension granted until further notice were associated with a higher risk of full DP due to other diseases.

Higher age, lower education level and partial DP due to MD were associated with a higher risk of full DP among those whose partial disability pension had been granted until further notice (Table 4). Among

partial disability pensioners with a temporary pension, higher age, male gender and MD were associated with a higher risk of full DP. Employment sector or employment at baseline were not associated with retirement on a full DP in any subgroup.

Discussion

Our results showed that 33% of partial disability pensioners moved to full DP during the four-year follow-up period. The risk of full DP was highest among those aged 55–58 at baseline, among men, among those with a low education level, and those with a pension granted until further notice. In addition, those receiving a partial DP due to MD moved to full DP more often than those retiring with MSD or other diseases. Educational differences in the partial to full DP transition were especially pronounced among those with a partial disability pension due to MSD and among those whose pension was granted until further notice. In contrast, educational differences in the transition to full DP were not found among those receiving a partial DP due to MD or those whose with a temporary pension.

Our results are relatively similar to previous studies concerning socio-economic and educational differences in DP in general [7,8]. People with low socio-economic status have a higher risk of DP than those with a higher socio-economic status. Earlier findings suggest that socio-economic differences in DP are widest among those who have retired due to MSD and less pronounced among those who have retired due to MD [7,8,22,23]. One reason for this probably lies in working conditions [24,25]. People with low education levels work relatively often in physically demanding jobs and therefore may move more often to full DP than those with higher education levels. Unfortunately, we were not able to directly analyse this mechanism because our data included no information on working conditions.

Our study found that transition from partial to full DP was most common among those receiving a partial DP due to MD. A previous Finnish study among public sector employees [15] found that the risk of full DP was higher among partial disability pensioners with chronic somatic diseases. Information on the diagnosis of partial DP was not available, but the presence of chronic diseases was determined based on purchases of prescription medicines for certain conditions [15]. However, chronic somatic diseases are also common among those with MD [26,27]. Overall, there may be many reasons why transition to full DP was more common among those with MD. It is possible that work ability among partial disability pensioners who have retired due to MD deteriorates more rapidly than among other partial disability pensioners. Furthermore, persons with poor mental health may more often face difficulties coping in the labour market [28], which makes them more vulnerable to moving to full DP. Additionally, working conditions may be associated with the employment of those receiving DP due to MD. One previous study found that low job control and computer work are risk factors for DP due to MD [25].

Partial disability pensioners with temporary pensions moved to full DP less often than those with pensions granted until further notice. This is likely to reflect the fact that temporary pensions are granted based on the assumption that work ability can be restored through treatment or rehabilitation and that people are expected to return to the labour market. In practice, it is not easy to estimate the future development of partial disability pensioners' work ability. Sometimes work ability is restored and people can return to full-time work. However, partial disability pensioners with MD and a temporary pension moved to full DP more often than those with MSD or other diseases. These results are in line with previous studies which show that MD is often associated with long-term disability [29,30] and that disability pensioners with MD and temporary pensions relatively rarely return to work [14].

Strengths and limitations of the study

Our data on granted DPs and disability diagnoses came from reliable registers with no missing information, including exact start and end dates for partial and full DPs, the medical causes of partial DP, and pension type. We were able to control for many individual-level characteristics but did not have access to information about working conditions, for instance. In addition, it would have been interesting to explore company-level factors because there is good reason to assume that employers have an important role in enabling working while receiving a partial DP.

Conclusions

There are many previous studies concerning predictors of DP. However, little is known about how often partial disability pensioners move to full DP and which factors are associated with transition to full DP. Our results show that 33% of partial disability pensioners moved to full DP during the four-year follow-up period and about half of them continued to receive partial DP. Overall, receipt of a partial DP seems to be a relatively stable state and moving to full disability retirement is quite rare. Partial DP can be seen to extend the working careers of those with lowered work ability, whereas full DP means a permanent exit from working life.

Our study also showed that many individual-level characteristics are important determinants of full DP among partial disability pensioners, even though these determinants seemed to vary by cause of disability and according to whether the pension was granted until further notice or for a temporary period. Older age and low education level are risk factors for DP in general, but they are also risk factors for transitioning to full DP from partial DP. Unemployment history and employment sector were not associated with transition to full disability pension.

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Table 1. Characteristics of partial disability pensioners, %.

			Diagnosis			Pension type	
		All (n=5277)	Musculoskeletal diseases (n=2588)	Mental disorders (n=1140)	Other diseases (n=1549)	Granted until futher notice (n=3563)	Temporary pension (n=1714)
Age	20-39	7	2	13	9	2	15
	40-49	20	14	28	24	12	36
	50-54	29	28	31	30	29	30
	55-58	44	55	29	37	56	19
Gender	Men	33	31	28	41	35	30
	Women	67	69	72	59	65	70
Education	Primary	20	23	13	19	22	16
	Secondary	52	58	45	46	54	49
	Lower tertiary	22	16	30	26	20	28
	Higher tertiary	6	3	11	8	5	8
Employment sector	Private	53	53	49	54	52	54
	Public	47	47	51	46	48	46
Employed at baseline	Yes	82	81	82	83	82	81
	No	18	19	18	17	18	19
Diagnosis	Musculoskeletal diseases	49				55	37
	Mental disorders	22				14	38
	Other diseases	29				31	25
Pension type	Until further notice	68	76	43	72		
	Temporary	32	24	57	28		

Table 2. Probability of transition from partial DP to full DP and to other states during follow-up, %.

		Continued on partial DP	Moved to full DP	Moved to employment	Moved to unemployment	Moved to old age pension	Died
	All (n=5277)	52	33	9	3	1	1
Diagnosis	MSD (n=2588)	56	32	7	3	1	1
	MD (n=1140)	41	37	16	5	1	0
	Other diseases (n=1549)	53	33	8	3	1	3
Pension type	Until further notice (n=3563)	57	37	2	1	1	1
	Temporary (n=1714)	40	26	24	9	0	1

Table 3. Sub-hazard ratios (SHR) and 95% confidence intervals (95% CI) for transition from partial DP to full DP, crude and adjusted models.

		Unadjusted		Adjusted	
		SHR	95 % CI	SHR	95% CI
Age	20-39	1.00		1.00	
	40-49	1.13	0.87-1.46	1.13	0.87-1.48
	50-54	1.35	1.06-1.72	1.32	1.02-1.72
	55-58	1.91	1.52-2.41	1.87	1.44-2.44
Gender	Men	1.00		1.00	
	Women	0.84	0.76-0.93	0.87	0.78-0.97
Education	Primary	1.00		1.00	
	Secondary	0.85	0.76-0.96	0.89	0.79-1.00
	Lower tertiary	0.73	0.64-0.85	0.77	0.66-0.89
	Higher tertiary	0.72	0.57-0.90	0.73	0.58-0.92
Employment sector	Private	1.00		1.00	
	Public	1.11	1.01-1.22	0.93	0.84-1.04
Employed at baseline	Yes	1.00		1.00	
	No	0.96	0.85-1.09	1.03	0.91-1.18
Diagnosis	Musculoskeletal diseases	1.00		1.00	
	Mental disorders	1.22	1.09-1.38	1.62	1.43-1.83
	Other diseases	1.03	0.92-1.13	1.15	1.02-1.28
Pension type	Temporary	1.00		1.00	
	Until further notice	1.46	1.31-1.63	1.29	1.14-1.45

Table 4. Sub-hazard ratios (SHR) and 95% confidence intervals (95% CI) for transition from partial DP to full DP by diagnosis and pension type, fully adjusted models.

		Diagnosis						Pension type			
		Musc. diseases n=2588		Mental disorders n=1140		Other diseases n=1549		Until further notice n=3563		Temporary n=1714	
		SHR	95% CI	SHR	95% CI	SHR	95% CI	SHR	95% CI	SHR	95% CI
Age	20-39	1.00		1.00		1.00		1.00		1.00	
	40-49	0.97	0.49-1.93	1.55	1.03-2.35	0.91	0.60-1.38	0.95	0.60-1.52	1.19	0.86-1.66
	50-54	1.31	0.68-2.54	1.80	1.19-2.71	1.07	0.71-1.61	1.10	0.70-1.72	1.44	1.03-2.01
	55-58	2.15	1.10-4.17	2.17	1.42-3.28	1.37	0.92-2.04	1.56	1.00-2.43	2.06	1.46-2.89
Gender	Men	1.00		1.00		1.00		1.00		1.00	
	Women	0.87	0.74-1.01	0.72	0.58-0.89	1.00	0.82-1.22	0.92	0.82-1.05	0.72	0.58-0.90
Education	Primary	1.00		1.00		1.00		1.00		1.00	
	Secondary	0.86	0.73-1.00	1.11	0.83-1.51	0.78	0.63-0.99	0.86	0.76-0.99	0.97	0.74-1.27
	Lower tertiary	0.72	0.58-0.91	0.90	0.64-1.25	0.74	0.57-0.97	0.74	0.62-0.88	0.84	0.62-1.14
	Higher tertiary	0.54	0.31-0.93	0.95	0.63-1.44	0.71	0.48-1.06	0.61	0.46-0.82	1.01	0.66-1.54
Employment sector	Private	1.00		1.00		1.00		1.00		1.00	
	Public	0.98	0.84-1.14	0.82	0.66-1.01	0.96	0.79-1.17	0.90	0.79-1.01	1.04	0.83-1.30
Employed at baseline	Yes	1.00		1,00		1.00		1.00		1.00	
	No	1.05	0.87-1.27	1.12	0.88-1.45	0.96	0.74-1.23	1.02	0.88-1.18	1.07	0.84-1.40
Diagnosis	MSD							1.00		1.00	
	MD							1.57	1.34-1.83	1.73	1.38-2.17
	Other diseases							1.15	1.01-1.30	1.18	0.91-1.51
Pension type	Temporary	1.00		1.00		1.00					
	Until further notice	1.24	1.01-1.52	1.21	0.98-1.48	1.39	1.09-1.75				