

Institutionen för klinisk neurovetenskap
Avdelningen för försäkringsmedicin

Forskningsprojekt

Sjukfrånvaromönster vid multipel skleros; MS

Sedan flera år driver vi ett tvärvetenskapligt forskningsprojekt om MS och sjukfrånvaro.

Idag har cirka 18 000 personer i Sverige sjukdomen multipel skleros (MS). MS är den vanligaste degenerativa neurologiska sjukdomen bland unga vuxna och debuterar oftast i 20 till 40-årsåldern, åldrar då aktiviteten på arbetsmarknaden vanligen är hög. För många innebär sjukdomen en efter hand betydande, men varierande, funktionsnedsättning med en reducerad arbetsförmåga som följd. MS är en synnerligen heterogen sjukdom och kan påverka individer i olika grad och på olika sätt samt ha ett vitt skiftande förlopp. Dock är kunskapen om sjukfrånvaromönster vid MS högst begränsad.

Det övergripande *syftet* med projektet är att, för personer med MS a) kartlägga mönster av sjukfrånvaro och sjuk- eller aktivitetsersättning, b) identifiera riskfaktorer för sjukfrånvaro respektive sjuk- eller aktivitetsersättning c) samt få ökad kunskap om livs- och arbetssituation för att få kunskapsunderlag för interventioner. Flera olika delstudier görs utifrån dessa frågeställningar.

Projektgrupp

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Publikationer

Doktorsavhandling

1. Murley C. Work disability, economic situation, and societal costs of multiple sclerosis in Sweden. Karolinska Institutet, Division of Insurance Medicine 2022.
2. Wiberg M. Development of income following sickness absence from the workplace or long-term unemployment, and among individuals with Multiple Sclerosis. Karolinska Institutet, Division of Insurance Medicine 2017.

Artiklar i internationella vetenskapliga tidskrifter

1. Tinghög P, Wiberg M, Glaser A, Kjeldgård L, Hillert J, Alexanderson K. High prevalence of sickness absence and disability pension among multiple sclerosis patients; a nationwide population-based study. *Multiple Sclerosis Journal* 2013; 19(14): 1923-1930.
2. Tinghög P, Björkenstam C, Carstensen J, Jansson C, Glaser A, Hillert J, Alexanderson K. Co-morbidities increase the risk of disability pension among MS patients: A population-based nationwide cohort study. *BMC Neurology*. 2014; 14:117.
3. Brenner P, Alexanderson K, Björkenstam C, Hillert J, Jokinen J, Mittendorfer-Rutz E, Tinghög P. Psychiatric diagnoses, medication and risk for disability pension in multiple sclerosis patients; a population-based register study. *PLOS ONE* 2014; 9(8): e104165.
4. Wiberg M, Friberg E, Stenbeck M, Alexanderson K, Norlund A, Hillert J, Tinghög P. Sources and level of income among individuals with multiple sclerosis compared to the general population: A nationwide population-based study. *Multiple Sclerosis Journal* 2015; 21(13):1730-1741.
5. Björkenstam, C., Alexanderson, K., Wiberg, M., Hillert, J., & Tinghög, P. (2015). Heterogeneity of sickness absence and disability pension trajectories among individuals with MS. *Multiple Sclerosis Journal* 2015; 1:1-11.
6. Björkenstam C, Tinghög P, Brenner P, Mittendorfer-Rutz E, Hillert J, Jokinen J, Alexanderson K. Is disability pension a risk indicator for future need of psychiatric healthcare or suicidal behavior among MS patients- a nationwide register study in Sweden? *BMC Psychiatry*. 2015;15(1):286.
7. Kavaliunas A, Wiberg P, Tinghög P, Glaser A, Gyllensten H, Alexanderson K, Hillert J. Earnings and financial compensation from social security systems correlate strongly with disability for multiple sclerosis patients. *PLoS One*. 2015; 10(12):e0145435.
8. Brenner P, Mittendorfer-Rutz E, Jokinen J, Alexanderson K, Hillert J, Tinghög P. Prescribed psychiatric medication among multiple sclerosis patients before and after disability pension; a register study with matched controls. *Social Psychiatry and Psychiatric Epidemiology*. 2016;51(7):1047-54. DOI 10.1007/s00127-016-1234-3.
9. Chruzander C, Ytterberg C, Widén Holmqvist L, Alexanderson K, Tinghög P, Hillert J, Johansson S. Longitudinal changes in sickness absence and disability pension, and associations between disability pension and disease-specific and contextual factors and functioning, in people with multiple sclerosis. *Journal of the Neurological Sciences*. 2016;367:319-25.

10. Ernstsson O, Gyllensten H, Alexanderson K, Tinghög P, Friberg E, Norlund A. Cost of Illness of Multiple Sclerosis - A systematic review. *Plos One*. 2016(7)11: e0159129.
11. Gyllensten H, Wiberg M, Alexanderson K, Hillert J, Tinghög P. How does work disability of patients with MS develop before and after diagnosis? A nationwide cohort study with a reference group. *BMJ Open* 2016;6: e012731 (<http://dx.doi.org/10.1136/bmjopen-2016-012731>).
12. Kavaliunas A, Manouchehrinia A, Danylaite Karrenbauer V, Gyllensten H, Glaser A, Alexanderson K, Jan Hillert J. Income in Multiple Sclerosis Patients with Different Disease Phenotypes. *PLoS ONE*. 2017. 12(1): e0169460. DOI: 10.1371/journal.pone.0169460.
13. Ernstsson O, Tinghög P, Alexanderson K, Hillert J, Burström K. The external validity of mapping MSIS-29 on EQ-5D among individuals with multiple sclerosis in Sweden. *MDM Policy & Practice*. 2017;2(1):1-9. doi: 10.1177/2381468317692806.
14. Kavaliunas A, Danylaite Karrenbauer V, Gyllensten H, Manouchehrinia A, Glaser A, Olsson T, Alexanderson K, Hillert J. Cognitive function is a major determinant of income among multiple sclerosis patients in Sweden acting independently from physical disability. *Multiple Sclerosis Journal*. 2017. DOI: 10.1007/s10198-017-0894-6.
15. Gyllensten H, Wiberg M, Alexanderson K, Norlund A, Friberg E, Hillert J, Ernstsson O, Tinghög P. Costs of illness of multiple sclerosis in Sweden: a population-based register study of people of working age. *Eur J Health Econ*. 2018. 19(3):435-446. DOI: 10.1007/s10198-017-0894-6
16. Gyllensten H, Wiberg M, Alexanderson K, Friberg E, Hillert J, Tinghög P. Comparing costs of illness of multiple sclerosis in three different years: A population-based study. *Multiple Sclerosis Journal*. 2018. 24(4):520-528. DOI: 10.1177/1352458517702549.
17. Murley C, Mogard O, Wiberg M, Alexanderson K, Karampampa K, Friberg E, Tinghög P. Trajectories of disposable income among people of working ages diagnosed with multiple sclerosis: a nationwide register-based cohort study in Sweden 7 years before to 4 years after diagnosis with a population-based reference group. *BMJ Open*. 2018. 8(5): e020392. DOI: 10.1136/bmjopen-2017-020392.
18. Gyllensten H, Kavaliunas A, Alexanderson K, Hillert J, Tinghög P, Friberg E. Costs and quality of life by disability among people with multiple sclerosis: a register-based study in Sweden. *Multiple Sclerosis Journal – Experimental, Translational and Clinical*. 2018. 4(3): 2055217318783352.
19. Murley C, Yang F, Gyllensten H, Alexanderson K, Friberg E. Disposable income trajectories of working-aged individuals with diagnosed multiple sclerosis. *Acta Neurologica Scandinavica*. 2018. 138(6) 400-499. DOI: 10.1111/ane.13001.
20. Kavaliunas A, Tinghög P, Friberg E, Olsson T, Alexanderson A, Hillert J, Danylaite Karrenbauer V. Cognitive function predicts work disability among multiple sclerosis patients. *Multiple Sclerosis Journal – Experimental, Translational and Clinical*. 2019. doi:10.1177/2055217318822134
21. Gyllensten H, Kavaliunas A, Murley C, Alexanderson K, Hillert J, Tinghög P, Friberg F. Costs of illness progression for different multiple sclerosis phenotypes: A population-based study in Sweden. *Multiple Sclerosis Journal – Experimental, Translational and Clinical*. 2019. <https://doi.org/10.1177/2055217319858383>.
22. Wiberg M, Murley C, Tinghög P, Alexanderson K, Palmer E, Hillert J, Stenbeck M, Friberg E. Earnings among people with multiple sclerosis compared to references, in

- total and by educational level and type of occupation: a population-based cohort study at different points in time. *BMJ Open*. 2019. <http://dx.doi.org/10.1136/bmjopen-2018-024836>.
23. Karampampa K, Gyllensten H, Yang F, Murley C, Friberg E, Hillert J, Alexanderson K. Healthcare, sickness absence, and disability pension cost trajectories in the first five years after diagnosis with Multiple Sclerosis: a prospective register-based cohort study in Sweden. *PharmacoEconomics Open*. 2019. <https://doi.org/10.1007/s41669-019-0150-3>.
 24. Murley C, Friberg E, Hillert J, Alexanderson K, Yang F. Validation of multiple sclerosis diagnoses in the Swedish National Patient Register. *European Journal of Epidemiology*. 2019. doi.org/10.1007/s10654-019-00558-7
 25. Karampampa K, Gyllensten H, Yang F, Murley C, Friberg E, Hillert J, Alexanderson K. Healthcare, sickness absence, and disability pension cost trajectories in the first five years after diagnosis with Multiple Sclerosis: a prospective register-based cohort study in Sweden *PharmacoEconomics – Open* 2020;4(1):91-103
 26. Buetepage, G, Esawi A, Alexanderson K, Friberg E, Murley C, Hillert J, Karampampa K Cost-of-illness trajectories among people with multiple sclerosis by co-morbidity: a register-based prospective study in Sweden *Multiple Sclerosis Journal: Experimental, Translational and Clinical* 2020 23;6(4):2055217320968597.
 27. Murley C, Karampampa K, Alexanderson K, Hillert J, Friberg E. Diagnosis-specific sickness absence and disability pension before and after multiple sclerosis diagnosis: An 8-year nationwide longitudinal cohort study with matched references. *Mult Scler Relat Disord*. 2020 Jul;42:102077
 28. Murley C, Tinghög P, Karampampa K, Hillert J, Alexanderson K, Friberg E Types of working-life sequences among people recently diagnosed with multiple sclerosis in Sweden: a nationwide register-based cohort study. *British Medical Journal Open*. 2020;10(12):e039228.
 29. McKay K, Friberg E, Razaz N, Alexanderson K, Hillert J. Long-term socioeconomic outcomes associated with pediatric-onset multiple sclerosis: A nationwide prospective register-based study. *JAMA Neurology* 2021 Apr 1;78(4):478-482.
 30. Murley C, Tinghög P, Alexanderson K, Hillert J, Friberg E, Karampampa K. Cost-of illness progression before and after diagnosis of multiple sclerosis: a nationwide register-based cohort study in Sweden of people newly diagnosed with multiple sclerosis and a population-based matched reference group. *Pharmacoeconomics*. 2021 Jul;39(7):835-851.
 31. Bosma A, Murley C, Aspling J, Hillert J, Schaafsma F, Anema J, Boot C.RL, Alexanderson K, Machado A, Friberg E, Trajectories of sickness absence and disability pension days among people with multiple sclerosis by type of occupation. *Multiple Sclerosis Journal* 2021 Oct 6;13524585211048759.
 32. Karampampa K, Gyllensten H, Murley C, Alexanderson K, Kavaliunas A, Olsson T, Manouchehrinia A, Hillert J, Friberg E. Early vs. late treatment initiation in multiple sclerosis and its impact on cost of illness: a register-based prospective cohort study in Sweden. *Mult Scler J Exp Transl Clin* . 2022 Apr 24;8(2):20552173221092411.

1. Tingshög P, Hillert P, Kjeldgård L, Wiberg M, Glaser A, Alexanderson K. Stor brist på kunskap om sjukfrånvaro bland personer med MS. *Neurologi i Sverige* 2013; Nr 4: 24-7.
2. Wiberg M, Friberg E, Tingshög P, Alexanderson K. Inkomstkällor för patienter med MS. *BESTPRACTICE, Multipel Skleros* 2015;12:26-30.
3. Gyllensten H, Alexanderson K, Hillert J, Tingshög P. Mönster i sjukfrånvaron före och efter MS diagnos. *BESTPRACTICE, Multipel Skleros*. 2017;5(18);14-16.

Abstracts accepterade för publicering vid vetenskapliga konferenser, urval

1. Tingshög P, Kjeldgård L, Hillert J, Alexanderson K. Sickness absence and disability pension among Multiple Sclerosis patients in Sweden. 28th Congress of the European Committee of Treatment and Research in Multiple Sclerosis (ECTRIMS); Lyon, France, 10-13 October 2012.
2. Tingshög P, Kjeldgård L, Hillert J, Alexanderson K. Sickness absence and disability pension among Multiple Sclerosis patients in Sweden. *European Journal of Public Health*, 22 suppl. 2, p.215. 5th European Public Health (EPH) Conference; Malta, 7-11 November 2012.
3. Tingshög P, Carstensen J, Glaser A, Hillert J, Alexanderson K. Influence of co-morbidity on MS patients' risk for disability pension: a prospective, register-based cohort study. 29th Congress of the European Committee of Treatment and Research in Multiple Sclerosis (ECTRIMS); Copenhagen, Denmark, 2-5 October 2013.
4. Tingshög P, Carstensen J, Glaser A, Hillert J, Alexanderson K. Influence of co-morbidity on MS patients' risk for disability pension. *European Journal of Public Health* 23, suppl. 2, p 45. 6th European Public Health (EPH) Conference; Brussels, Belgium, 13-16 November 2013.
5. Brenner P, Alexanderson K, Björkenstam C, Hillert J, Jokinen J, Mittendorfer-Rutz E, Tingshög P. Psychiatric diagnoses, medication and risk for disability pension in multiple sclerosis patients; a population-based register study. 2014 Joint ACTRIMS-ECTRIMS Meeting; Boston, USA, 10-13 September 2014.
6. Tingshög P, Alexanderson K, Wiberg M, Hillert J, Björkenstam C. How do MS patients' sickness absence and disability pension trajectories develop over time? A nationwide cohort study of 3 543 MS patients. 2014 Joint ACTRIMS-ECTRIMS Meeting; Boston, USA, 10-13 September 2014.
7. Wiberg M, Friberg E, Stenbeck M, Alexanderson K, Norlund A, Hillert J, Tingshög P. Sources and level of income among individuals with multiple sclerosis compared to others: A nationwide population-based study. 2014 Joint ACTRIMS-ECTRIMS Meeting; Boston, USA, 10-13 September 2014.
8. Tingshög P, Alexanderson K, Wiberg M, Hillert J, Björkenstam C. How do multiple sclerosis patients' sickness absence and disability pension level change over time? 7th European Public Health (EPH) Conference; Glasgow, UK, 19-22 November 2014.
9. Brenner P, Mittendorfer-Rutz E, Jokinen J, Alexanderson K, Hillert J, Tingshög P. Psychiatric drug prescription among multiple sclerosis patients before and after disability pension; a register study with matched controls. 23rd European Congress of Psychiatry; Vienna, Austria, 28-31 March 2015.
10. Danylaite Karrenbauer V, Brenner P, Hillert J, Tingshög P. Swedish MS register based study: the Symbol Digit Modalities Test as a predictor of work disability. American Academy of Neurology, 67th Annual Meeting; Washington DC, USA, 18-25 April 2015.

11. Kavaliunas A, Wiberg M, Tinghög P, Glaser A, Alexanderson K, Hillert J. Earnings and financial compensation from social security systems correlate strongly with disability for multiple sclerosis patients. 18th European Health Forum Gastein; Gastein Valley, Austria, 29 September – 2 October 2015
12. Wiberg M, Friberg E, Palmer E, Tinghög P, Alexanderson K, Stenbeck M. Earnings among multiple sclerosis patients compared to individuals without MS, in total and for different educational levels and types of occupations - a longitudinal population-based cohort study. 31st Congress of the European Committee of Treatment and Research in Multiple Sclerosis (ECTRIMS); Spain, 7-10 October, 2015.
13. Ernstsson O, Tinghög P, Alexanderson K, Hillert J, Burström K. Health-related quality of life in individuals with multiple sclerosis and an external validation of a method to map MSIS-29 on EQ-5D. 31st Congress of the European Committee of Treatment and Research in Multiple Sclerosis (ECTRIMS); Barcelona, Spain, 7-10 October, 2015.
14. Kavaliunas A, Wiberg M, Tinghög P, Glaser A, Alexanderson K, Hillert J. Earnings and financial compensation from social security systems correlate strongly with disability for multiple sclerosis patients. 31st Congress of the European Committee of Treatment and Research in Multiple Sclerosis (ECTRIMS); Barcelona, Spain, 7-10 October, 2015.
15. Gyllensten H, Wiberg M, Tinghög P, Norlund A, Friberg E, Ernstsson O, Alexanderson K. Costs of illness of multiple sclerosis in Sweden – a population-based register study. 31st Congress of the European Committee of Treatment and Research in Multiple Sclerosis (ECTRIMS); Barcelona, Spain, 7-10 October, 2015.
16. Fink K, Tinghög P, Wiberg A, Glaser A, Hillert J, Alexanderson K. Does multiple sclerosis influence women's fertility? 31st Congress of the European Committee of Treatment and Research in Multiple Sclerosis (ECTRIMS); Barcelona, Spain, 7-10 October, 2015.
17. Ernstsson O, Gyllensten H, Alexanderson K, Tinghög P, Friberg E, Norlund A. Cost of Illness of Multiple Sclerosis - A systematic review. 8th European Public Health (EPH) Conference; Milan, Italy, 14-17 October, 2015
18. Gyllensten H, Wiberg M, Tinghög P, Norlund A, Friberg E, Ernstsson O, Alexanderson K. Costs of illness of multiple sclerosis in Sweden – a population-based register study. 18th Annual European Congress of the International Society for Pharmacoeconomic and Outcomes Research (ISPOR); Milan, Italy, 7-11 November, 2015.
19. Kavaliunas A, Danylaite Karrenbauer V, Gyllensten H, Manouchehrinia A, Glaser A, Alexanderson K, Hillert J. Income and cognitive impairment among multiple sclerosis patients. 32nd Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); London, The United Kingdom, 14-17 September 2016.
20. Kavaliunas A, Manouchehrinia A, Danylaite Karrenbauer V, Gyllensten H, Glaser A, Alexanderson K, Hillert J. Income among multiple sclerosis patients with different disease phenotypes. 32nd Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); London, The United Kingdom, 14-17 September 2016.
21. Gyllensten H, Wiberg M, Alexanderson K, Friberg E, Hillert J, Tinghög P. Comparing indirect costs of multiple sclerosis in three different years: A population-based study. 9th European Public Health (EPH) Conference; Vienna, Austria, 2016.

22. Gyllensten H. Costs of illness of multiple sclerosis (MS) in Sweden: What can we learn from national registers? Sjätte nationella hälsoekonomiska konferensen, Svensk Hälsoekonomisk Förening (SHEA); Linköping, Sweden, 14-15 March 2017.
23. Gyllensten H, Friberg E, Kavaliunas A, Hillert J, Alexanderson K, Tinghög P. Costs and disability among multiple sclerosis patients: A Swedish register-based study. 10th European Public Health (EPH) Conference; Stockholm, Sweden, 1-4 November 2017.
24. Murley C, Mogard O, Wiberg M, Alexanderson K, Karampampa K, Tinghög P. Disposable Income of people with Multiple Sclerosis over time: A nationwide registry study in Sweden. 10th European Public Health (EPH) Conference; Stockholm, Sweden, 1-4 November 2017.
25. Gyllensten H, Kavaliunas A, Hillert J, Alexanderson K, Tinghög P, Friberg E. Costs of illness progression for different multiple sclerosis phenotypes. 20th Annual European Congress of the International Society for Pharmacoeconomic and Outcomes Research (ISPOR); Glasgow, Scotland, 4-9 November 2017.
26. Kavaliunas A, Tinghög P, Friberg E, Olsson T, Alexanderson A, Hillert J, Danylaite Karrenbauer V. Cognitive function predicts work disability among multiple sclerosis patients. 7th JointECTRIMS-ACTRIMS Meeting; Paris, France, 25-28 October, 2017.
27. Karampampa K, Gyllensten H, Yang F, Murley C, Friberg E, Hillert J, Alexanderson K. Cost progression regarding healthcare, sickness absence, and disability pension among people newly diagnosed with MS: a register-based longitudinal study in Sweden estimating cost trajectories in four cohorts of incident cases over time. 34th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); Berlin, Germany, 10-12 October 2018.
28. Murley C, Yang F, Gyllensten H, Alexanderson K, Friberg E. Disposable income trajectories of working-aged people with a multiple sclerosis diagnosis: a Swedish register-based cohort study. 34th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); Berlin, Germany, 10-12 October 2018.
29. Kavaliunas A, Manouchehrinia A, Gyllensten H, Alexanderson K, Hillert J. Impact of early treatment initiation on personal income of multiple sclerosis patients. 34th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); Berlin, Germany, 10-12 October 2018.
30. Karampampa K, Gyllensten H, Yang F, Murley C, Friberg E, Hillert J, Alexanderson K. Healthcare, sickness absence, and disability pension cost trajectories in five years following MS diagnosis: register-based prospective cohort studies in Sweden. 21st European congress of the International Society for Pharmacoeconomic and Outcomes Research (ISPOR); Barcelona, Spain, 10-14 November 2018.
31. Murley C, Friberg E, Hillert J, Alexanderson K, Yang F. Validation of the multiple sclerosis diagnosis codes of patients aged 16-64 years recorded in the Swedish National Patient Register in 2001-2013 by two sequential register-based case-definition algorithms. 35th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); Stockholm, Sweden, 11-13 September 2019.
32. Murley C, Karampampa K, Hillert J, Alexanderson K, Friberg E. Diagnosis-specific sickness absence and disability pension in the years before and after multiple sclerosis diagnosis: an 8-year nationwide cohort study with a matched reference group. 35th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); Stockholm, Sweden, 11-13 September 2019.

33. Karampampa K, Gyllensten H, Murley C, Kavaliunas A, Alexanderson K, Manouchehrinia A, Hillert J, Olsson T, Friberg E. Disability and cost of illness trajectories among people with MS initiating early vs late with disease modifying MS therapies: a register-based study in Sweden. 35th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); Stockholm, Sweden, 11-13 September 2019.
34. Bütepage G, Esawi A, Alexanderson K, Friberg E, Murley C, Hillert J, Karampampa K. Cost trajectories of healthcare, sickness absence, and disability pension among newly diagnosed people with MS: A register-based longitudinal study in Sweden analysing the cost of illness trajectories of MS by comorbidity groups. 35th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS); Stockholm, Sweden, 11-13 September 2019.
35. Karampampa K, Gyllensten H, Friberg E, Kavaliunas A, Hillert J, Olsson T, Alexanderson K. Cost-of-illness trajectories among newly diagnosed MS patients treated with interferon, glatiramer acetate, or natalizumab: healthcare, sickness absence, and disability pension costs in Sweden. *ISPOR 2019*.
36. Wiberg M, Murley C, Tinghög P, Alexanderson K, Palmer E, Hillert J, Stenbeck M, Friberg E. Earnings among people with multiple sclerosis in Sweden, by education and occupation. 12th European Public Health (EPH) Conference; Marseille, France, 20-23 November 2019.