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Seeing an occupational health psychologist reduces sickness absence due to mental disorders: A quasi-experimental study

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ABSTRACT

Mental health problems are a major public health and work-life issue. We examined in a quasi-experimental design whether occupational health psychologist (OHP) appointment reduces subsequent sickness absence (SA) due to mental disorders among younger Finnish employees.

The present study was conducted among 18–39-year-old employees of the City of Helsinki using register data from the City of Helsinki and the Social Insurance Institution of Finland. We examined differences in SA days due to mental disorders (ICD-10, F-diagnosed sickness allowances) between those treated (at least one OHP appointment for work ability support) and the comparison group (no OHP appointment) during a one-year follow-up. The full sample ($n = 2286$, 84% women) consisted of employees with SA due to a diagnosed mental disorder during 2008–2017. To account for the systematic differences between the treatment and comparison groups, the included participants were matched according to age, sex, occupational class, education, previous SA, occupational health primary care visits and psychotropic medication. The weighted matched sample included 1351 participants. In the weighted matched sample, the mean of SA days due to mental disorders was 11.4 (95% CI, 6.4–16.5) for those treated ($n = 238$) and 20.2 (95% CI, 17.0–23.4) for the comparison group ($p < 0.01$) during the follow-up year. The corresponding figures in the full sample were (11.1, 6.7–15.4) days for those treated ($n = 288$) and (18.9, 16.7–21.1) days for the comparison group ($p < 0.01$). This quasi-experimental study suggests that seeing an OHP to support work ability reduces SA due to mental disorders.

1. Introduction

Mental health problems are a major public health and work-life issue. (Whiteford et al., 2013) Young adults are more likely to experience mental disorders than any other age group and for instance, the median age of onset for mood disorders is 30 years. (Kessler et al., 2005; Jones, 2013) In addition, work-related stress is highly common already among young employees, (Mauno et al., 2013) and in general every third European employee feels stressed during workdays. (Leka and Jain, 2010) Over time, prolonged stress and mild mental health problems may lead to more severe disorder, increased use of health care services and sickness absence (SA) from work. (Birnbaum et al., 2010) Reducing and

preventing SA is highly important target as SA poses a considerable economic burden to individuals, employers and the society. (OECD/European Union, 2018)

In Finland, law mandates every employer to provide preventive occupational health services to their employees. Thus, instead of treating illnesses, the focus is on early intervention on work-related health risks, and prevention of work disability. Typically, in Finland the same occupational health care that provides preventive services additionally provides purchased primary care services for their employees for treating also all non-work related illnesses. (Kela [Social Insurance Institution], 2019a, 2019b) In 2017, 94% of the Finnish workforce, covered by the occupational health care, were provided both the

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preventive as well as primary care services. (Kela [Social Insurance Institution], 2019a, 2019b) The primary care services are paid by the employer and partly subsidised by the Social Insurance Institution (SII). Occupational health services may be provided by employer's own units, private clinics or public sector health centres with specifically trained occupational health professionals, which include occupational health nurses, occupational health psychologists (OHP), occupational health physiotherapists, and occupational health physicians.

Frequent use of occupational health services is related to mental health problems (Reho et al., 2019) and frequent use is associated with increased SA rates due to mental disorders (Harkko et al., 2020) as well as disability retirement. (Reho et al., 2020) However, early intervention and support for work ability in the occupational health care may be useful preventing mental health problems arising or worsening, thus reducing the use of occupational health services and preventing work disability. (Sanderson and Andrews, 2006) In the Finnish occupational health care system, work ability support for the personnel may be offered, for instance, by providing appointments with OHP. The individual reasons behind the visits to OHP vary, and can include problems related to working conditions, work organisation or interpersonal relationships at work, or personal problems such as sleep and mood problems. Most employees likely benefit already from one or two visits but also more serious mental health problems such as anxiety or depression may be revealed, in which case the number of psychologist visits can be increased, and other treatments such as psychotropic medication and psychotherapy may be needed. (Depression, 2017; Joosen et al., 2015)

Occupational health psychologist appointments may reduce subsequent mental health problems, but the effectiveness is hard to discern by using observational data. Quasi-experiment offers an advanced statistical approach for examining observational data to better capture causality between the predictor and outcome than traditional statistical approaches. (Stuart, 2010) Comparing with the golden standard for causal inference i.e. randomized controlled trials, observational studies has some benefits e.g. reflecting real world better and being not as expensive. (Iacus et al., 2012) Furthermore, conducting a randomized controlled trial may be unpractical or in some cases even unethical. For instance, conducting this study as a randomized controlled trial would face ethical issues, yet we were able to conduct a quasi-experiment using available and comprehensive register data.

To our knowledge the effectiveness of OHP appointments on SA has not been previously studied using a quasi-experimental research design. We aimed to examine whether OHP appointment for work ability support can reduce SA due to mental disorders among 18–39-year-old Finnish employees with an existing mental disorder using register data. For the quasi-experiment, the treatment (OHP appointment) and comparison group were matched according to key sociodemographic, socioeconomic and health-related covariates derived from the registers.

2. Data and methods

2.1. Study population

The present study is part of the ongoing Helsinki Health Study examining employees of the City of Helsinki, which is the largest employer in Finland with approximately 40,000 employees. (Labelma et al., 2013) In this study, we used register data from the Occupational Health Helsinki, which provides comprehensive occupational health services for all employees of the City of Helsinki, to obtain data on the OHP appointment (i.e. the treatment), as well as on covariates such as primary care visits at the occupational health service. The City of Helsinki personnel register data were used to gather information on any cause SA from the first day and social- and work-related covariates. The Social Insurance Institution of Finland register data were used to gather information on sickness allowance i.e. the outcome (ICD-10, F-diagnosed SA) and prescribed reimbursed psychotropic medication

purchases as a covariate. Data were linked with pseudonymised personal identity codes.

The enrolment to the study followed the following eligibility and inclusion criteria: 1. The eligible participants were all the City of Helsinki employees with at least one year of consecutive employment during 2008–2017 (eligible participants $n = 61,959$). 2. Participants with ICD-10 F-diagnosed sickness allowance period (i.e. SA) ending during the employment period were included (eligible participants $n = 7867$). 3. Participants aged 18–39 years at the end of the SA period were included (eligible participants $n = 2726$). For analytic reasons, we applied the following exclusions to control for confounding. Preliminary analyses suggested that persons with extensively long F-diagnosed SA periods did not receive the OHP treatment and therefore we excluded the top 10% according to the SA length i.e. those with more than 57 SA days ($n = 275$). We further excluded those with OHP treatment prior to the treatment inclusion period ($n = 115$) and the follow-up ($n = 45$). Participants with missing information on their occupational position were excluded ($n = 5$). The final analytic sample ($n = 2286$, 84% women) consisted of 18–39 year-old City of Helsinki employees with F-diagnosed SA during 2008–2017 (Fig. 1).

2.2. Treatment

The treatment in this study was at least one OHP appointment. This service is provided by the occupational health service for the personnel. Usually self-referral is not possible, but an occupational health nurse or physician can refer a patient to OHP, if the patient has mental health problems for which supportive discussions or other type of involvement is considered effective. OHP may 1) conduct diagnostic tests or interviews needed in uncertain situations prior to doctor's diagnosis, 2) offer supportive discussions for short periods of time to resolve acute or emerging issues which are connected to the mental work ability, or 3) be involved in workplace level interventions to promote wellbeing or to resolve work climate issues. OHP's focus is mainly on promotion of work ability, and they do not offer e.g. long-term psychotherapy. The screening time for the treatment was ± 60 days from the end of the first SA period occurring in the eligibility period (referred later as the index SA period).

2.3. Outcome

The outcome was SA days (sickness allowance period >11 calendar days) due to mental disorders i.e. all F-diagnosed sickness allowance days in International Classification of Diseases (ICD-10). All Finnish residents are insured under the Health Insurance Act and the sickness allowance is paid as compensation for loss of income due to work disability. The compensation is paid to the employer in case the employer pays salary during the SA. Follow-up period was 365 calendar days from the end of index SA period.

2.4. Covariates

Age was categorised into three groups: 18–29, 30–34 and 35–39 year-olds. Gender was classified into women and men. Occupational class was classified according to the Statistics Finland and occupational classification of the City of Helsinki into four groups: managers and professionals (e.g. teachers and physicians), semi-professionals (e.g. registered nurses and technicians), routine non-manual (e.g. clerical work and child minders) and manual workers (e.g. transport and technical services). Education was classified into three levels: higher education (a master's or a doctoral degree), upper secondary (a bachelor's degree) and lower secondary (upper-secondary school, vocational school) or basic education (comprehensive school).

Health-related covariates were collected during the baseline period that ranged from 365 days before the end of the index SA period to the end of index SA period. Health-related covariates that are both known

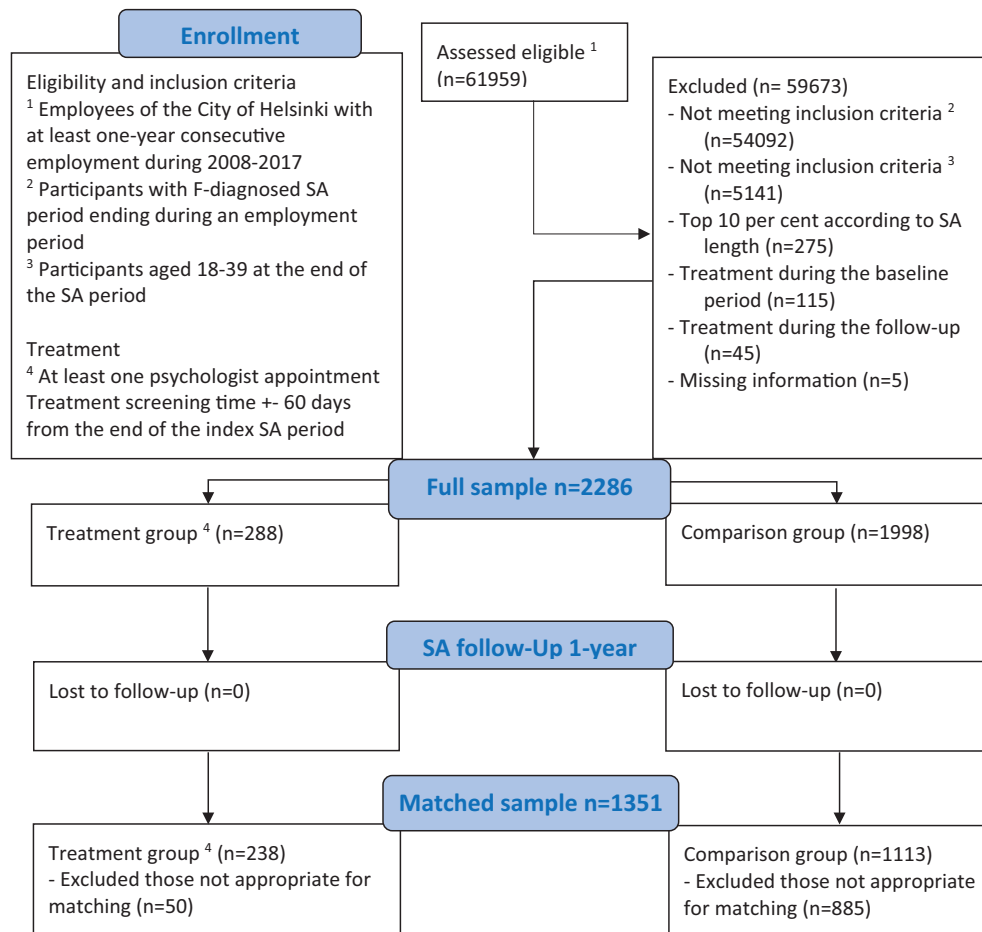


Fig. 1. Flow diagram of the quasi-experiment, the Helsinki Health Study 2008–2017.

risk factors for SA due to mental disorders and were statistically associated with the treatment in the preliminary analyses were included. The length of the index SA period (F-diagnosed) was classified into three equally sized groups: 1–5, 6–16 and 17–57 days. The number of occupational health primary care visits were classified into two groups: 0–2 and 3 or more. To assess the effect of psychotropic drug purchases, the drugs were divided into three groups, consisting of antidepressants (N06A), hypnotics and sedatives (N05B and N05C), and other psychotropic drugs (N05A, N06B, N06C). Out of psychotropic drugs only ‘other psychotropic drugs’ were associated with the treatment and was used in the matching procedure. For descriptive purposes, we will show the diagnosis of the index SA period. This variable was classified into three groups: Mood (affective) disorders, Neurotic, stress-related and somatoform disorders, and Other disorders. The most common diagnoses behind these broad categories were ‘F32 Major depressive disorder, single episode’ (39% of all cases), ‘F43 Reaction to severe stress, and adjustment disorders’ (23%), ‘F41 Other anxiety disorders’ (17%), ‘F51 Sleep disorders’ (8%), and ‘F33 Major depressive disorder, recurrent’. All other diagnosis groups were smaller than 2%.

2.5. Matching procedure

To account for the systematic differences between the treatment and comparison groups, the participants from the final full sample were matched according to the covariates. The covariates included: age, gender, occupational class, education, length of index SA period, occupational health primary care visits and psychotropic medication (‘Other psychotropic medication’). Matching was implemented with the Coarsened Exact Matching (CEM) statistical package. (Iacus et al., 2012)

The matching procedure, first, defined statistically the area of common support, which is defined to ensure sufficient overlap in the characteristics of treated and untreated participants for acceptable matches and, second, produced the analysing weights for the analysis. The area of common support refers to a one or multidimensional matrix of observations where the treated and untreated may be considered reasonably similar in their distribution of observed variables other than treatment variable. The assumption is that the treated and untreated groups are free of differences due to other observed variables. Altogether 935 (885 non-treated, 50 treated) participants were found not appropriate for matching due to the lack of common support. Matching balanced the groups almost identical on all covariates (Table 1, columns 3–4).

2.6. Statistical analyses

We used Wald test to calculate means and 95% confidence intervals (CIs) of SA days due to mental disorders among the treatment group and the comparison group during a one-year follow-up separately for the full sample and the matched sample. Stata 16 software was used for the analyses.

2.7. Ethics

The study follows the Helsinki Health Study protocol in line with the University of Helsinki’s guidelines and data legislation. The ethics committees of the Department of Public Health, the University of Helsinki and the health authorities of the City of Helsinki have approved the Helsinki Health Study. The City of Helsinki and the Social Insurance Institute Finland have given permission for data linkage.

Table 1
Descriptive characteristics among the treatment and comparison groups in the full and matched samples, the Helsinki Health Study 2008–2017.

	Full sample				Matched sample			
	Comparison group		Treatment group		Comparison group		Treatment group	
	n	%	n	%	n	%	n	%
Population, N	1998	(100.0)	288	(100.0)	1113	(100.0)	238	(100.0)
SA, days (SD)	18.9	(50.4)	11.1	(38.0)	20.2	(54.9)	11.4	(39.9)
Covariates								
Age								
18–29	739	(37.0)	87	(30.2)	360	(32.4)	77	(32.4)
30–34	616	(30.8)	96	(33.3)	365	(32.8)	78	(32.8)
35–39	643	(32.2)	105	(36.5)	388	(34.9)	83	(34.9)
Gender								
Men	338	(16.9)	20	(6.9)	47	(4.2)	10	(4.2)
Women	1660	(83.1)	268	(93.1)	1066	(95.8)	228	(95.8)
Education								
Higher education	244	(12.2)	63	(21.9)	239	(21.4)	51	(21.4)
Upper secondary	523	(26.2)	109	(37.8)	412	(37.0)	88	(37.0)
Basic education/lower secondary	1231	(61.6)	116	(40.3)	463	(41.6)	99	(41.6)
Occupational class								
Managers or professionals	253	(12.7)	64	(22.2)	215	(19.3)	46	(19.3)
Semi-professionals	481	(24.1)	88	(30.6)	360	(32.4)	77	(32.4)
Routine non-manual workers	992	(49.6)	118	(41.0)	486	(43.7)	104	(43.7)
Manual workers	272	(13.6)	18	(6.3)	51	(4.6)	11	(4.6)
Length of SA, days*								
1–5	690	(34.5)	78	(27.1)	327	(29.4)	70	(29.4)
6–16	668	(33.4)	93	(32.3)	381	(34.3)	79	(33.2)
17–57	640	(32.0)	117	(40.6)	404	(36.3)	89	(37.4)
Occupational health primary care visits, n*								
0–2	1714	(85.8)	213	(74.0)	903	(81.1)	193	(81.1)
3 or more	284	(14.2)	75	(26.0)	210	(18.9)	45	(18.9)
Antidepressants*								
No	1164	(58.3)	180	(62.5)	641	(57.6)	147	(61.8)
Yes	834	(41.7)	108	(37.5)	472	(42.4)	91	(38.2)
Hypnotics and sedatives*								
No	1605	(80.3)	236	(81.9)	895	(80.4)	194	(81.5)
Yes	393	(19.7)	52	(18.1)	218	(19.6)	44	(18.5)
Other psychotropic drugs*								
No	1801	(90.1)	275	(95.5)	1085	(97.5)	232	(97.5)
Yes	197	(9.9)	13	(4.5)	28	(2.5)	6	(2.5)
Diagnosis of index SA period								
Mood (affective) disorders	998	(49.9)	144	(50.0)	574	(51.6)	116	(48.7)
Neurotic, stress-related and somatoform disorders	805	(40.3)	117	(40.6)	436	(39.1)	100	(42.0)
Other disorders	195	(9.8)	27	(9.4)	103	(9.3)	22	(9.2)

SA, sickness absence.

SD, standard deviation.

* Collected during a baseline period that ranged from 365 days before the end of the index SA period to the end of index SA period.

3. Results

Of the full sample, 13% were referred to OHP (treatment group, n = 288). Women and 30–39-year-old employees were somewhat over-represented in the treatment group. Also higher occupational class and higher education tended to be more common in the treatment group. The treatment group also tended to have a higher rate of SA and primary care visits but lower rate of psychotropic drugs. In the weighted matched sample for the main analysis, those participants that were not appropriate for matching were excluded (n = 50 in the treatment group, n = 885 in the comparison group), yielding 238 participants in the treatment group and 1113 participants in the comparison group, matched almost

identical on all covariates (Table 1).

3.1. Mean sickness absence days in the matched and full samples

The main analysis showed that, in the weighted matched sample, the mean of SA days due to mental disorders were 11.4 (95% CI, 6.4–16.5) for those treated and 20.2 (95% CI, 17.0–23.4) for the comparison group (p < 0.01) during the follow-up year. The corresponding figures in the full sample were similar to the matched sample 11.1 (95% CI, 16.7–21.1) days for those treated and 18.9 (95% CI, 16.7–21.1) days for the comparison group (p < 0.01) (Table 2.).

Table 2
Subsequent sickness absence days due to mental disorders (means and 95 confidence intervals) between the treatment group and comparison group, the Helsinki Health Study 2008–2017.

	Full sample				Matched sample			
	Comparison group		Treatment group		Comparison group		Treatment group	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
SA days	18.9	(16.7–21.1)	11.1	(6.7–15.4)	20.2	(17.0–23.4)	11.4	(6.4–16.5)
Prob > F=	<0.01				<0.01			

SA, sickness absence.

4. Discussion

We used large-scale register data and a quasi-experimental study design to examine whether OHP appointment for work ability support can reduce SA due to mental disorders among young Finnish municipal employees. Our study showed that supporting work ability at an early stage by OHP visit might be useful in preventing subsequent SA due to mental disorders.

Overall, the findings of the present study are in line with previous studies. Systematic reviews and meta-analyses including randomized controlled trials have shown that individual psychological interventions such as cognitive behaviour therapy and problem solving therapy are effective in supporting return to work and reducing SA. (Salomonsson et al., 2018; Finnes et al., 2019) However, unlike in the present quasi-experimental study, the effect sizes have been small in previous randomized controlled trials (Salomonsson et al., 2018; Finnes et al., 2019) and further high-quality largescale intervention studies are needed. A recent Swedish study showed that a brief participative problem-solving intervention provided by the occupational health services prevented SA among those employees with common mental disorders or symptoms of stress. (van de Keus Poll et al., 2020) A Dutch early stage intervention targeted at employees with both high risk of SA and mild to severe depressive symptoms showed beneficial in reducing depressive symptoms and SA. (Lexis et al., 2011) A Finnish cognitive behaviour intervention lasting for four months as an early stage programme for employee mental wellbeing showed effective in improving various mental health measures among municipal employees. (Ojala et al., 2018) These kinds of programmes are highly encouraging and support intervention at early stage when only mild symptoms are evident. In addition to early intervention and clinical treatment for mental health problems, improving working conditions is highly important for employee mental wellbeing and reducing work disability. (Sanderson and Andrews, 2006) For instance, organizational level interventions aimed at reducing adverse psychosocial factors at work have shown potential in preventing mental health problems. (Bourbonnais et al., 2011)

The service offered by the occupational health care i.e. OHP appointment for work ability support, seems successful based on the results of this study. For more than every tenth of those with mental health related SA, the occupational health care offered such support. Since the number of subsequent SA days were nearly two-fold in the comparison group than in the treatment group during one-year follow-up, the economic impact of such difference is considerable. For instance, in the European Union it is estimated that the total cost of mental health problems are over 600 billion Euros per year, work disability being the major contributor to this sum. (OECD/European Union, 2018) Thus, offering OHP appointments at an early stage support for work ability to a larger proportion of the workforce might be able to provide significant economic savings in addition to improved work ability and lowered SA rates. Actually, the number of psychologists working in the occupational health services has been increasing over the last few years in Finland (Takala et al., 2019) corresponding with the development of mental disorders rising as the main cause of longer SA in Finland. (Kela [Social Insurance Institution], 2019a, 2019b)

4.1. Strengths and limitations

We used high quality and reliable longitudinal large-scale register data of 18–39-year-old female and male employees of the City of Helsinki, which is the largest employer in Finland with about 40,000 employees annually. (Lahelma et al., 2013) We used comprehensive information on the City of Helsinki personnel register as well as information on OHP visits gathered from the registers of Occupational Health Helsinki. Moreover, we used national registers of the Social Insurance Institution of Finland for comprehensive information on SAs related to mental diagnoses, which was measured as sickness allowances (F-diagnosed ICD-10) i.e. over 11 calendar days SA. The results derived from

large register data including under 40-year-old municipal employees from various occupations including both women and men allow cautious generalisation of the results outside the City of Helsinki employees and occupational health care setting.

In addition, the statistical method of analysing observational data, as a quasi-experiment is a strength as it better captures causal inference than traditional ways of analysing register and observational studies. (Stuart, 2010; Iacus et al., 2012) Although a quasi-experiment lacks randomization, the matching procedure makes the groups highly comparable with regards to the covariates. We were able to include several key covariates in this study including several sociodemographic variables and, especially we were able use reliable health-related covariates such as SA from the first day onward as well as occupational health primary care visits to account for the mental health-related differences between the two groups. Mental health-related covariates are highly important to match the groups according to the severity of the mental health symptoms. Nonetheless, unmeasured confounding may still cause bias, but unlikely in large extent.

Limitations include the fact that from our register data we cannot derive the exact reason why the employees were referred to an OHP in the first place. As noted before, there might be different reasons behind the referral. For instance, managers and professionals and the better educated were over-presented among the referred employees in the full sample. This may suggest that managers and professionals are referred to psychologists more often than those in lower occupational position in order to support their work tasks related to organizational issues as well as employee management and work ability support that they give for their staff. In relation to this, a randomized controlled trial showed that even a short mental health training for managers improved their communication with their staff suffering from stress or mental health problems; also resulting in reduced SA. (Milligan-Saville et al., 2017) Women were over-represented in the treatment group. Generally, in Finland approximately 75% of the municipal employees are women, which is the case among the City of Helsinki employees as well. As the eligible participants were those with mental health related SA, it further increased the proportion of women in the sample as women have more SA than men due to mental disorders. (Harkko et al., 2020; Kela [Social Insurance Institution], 2019a, 2019b; Kaltenbrunner Bernitz et al., 2013) Women typically also seek help for mental health problems earlier and more often than men. (Liddon et al., 2018) Furthermore, those with more severe mental health problems are outside of the scope of this kind of OHP support for work ability as they probably would not benefit from it. To avoid confounding, we excluded those with very long SA as they did not receive the OHP treatment according to the preliminary analyses. Yet, as this is a non-randomized study, we cannot entirely rule out the possible bias related to selection of treatment e.g. according to better education and female gender. Higher educated women were over-represented among the treated. Personal preferences and willingness to seek treatment may be different, but it is not feasible to control this in a quasi-experimental study.

5. Conclusions

This quasi-experimental study suggests that seeing an occupational health psychologist to support work ability may be useful for reducing subsequent mental health related sickness absence among young municipal employees. Sickness absence due to mental disorders being a major work-life problem in many countries these results are highly topical and encouraging, highlighting the importance to focus on early support for work ability and for reducing subsequent mental health problems at work places and in general.

Declaratin of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence

the work reported in this paper.

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