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Article

The impact of self-reported health and register-based prescription medicine purchases on re-employment chances: A prospective study

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ABSTRACT

In this paper, we investigate the influence of self-reported health and register-based prescription medicine purchases on re-employment chances, and whether these health indicators measure similar aspects of health in this analysis. Data came from a 2006 Danish unemployment survey among a random sample of unemployed individuals enriched with register data (2006–2008, $N=1806$). The survey participants all received unemployment benefits from the welfare system and had been unemployed for more than 20 weeks at the time of the interview in 2006. We combined these data with longitudinal register data on individual prescription medicine purchases for somatic illnesses and prescription medicine purchases for mental illnesses, information on re-employment and various socio-demographic variables. We conducted binary logistic regression analyses to investigate the impact of self-reported health and prescription medicine purchases measured in 2006 on re-employment chances in 2007 and 2008. Our analyses show that unemployed workers with poor self-reported health and workers who had prescription medicine purchases for mental illnesses were less likely to be re-employed in 2007 and 2008. Furthermore, the impact of both prescription medicine purchases for somatic illnesses and for mental illnesses increased when adding self-reported health to the model although prescription purchases for somatic illnesses became statistically insignificant. The impact of prescription medicine purchases for somatic illnesses was mediated by self-reported health, whilst prescription medicine purchases for mental illnesses was only partly mediated. Finally, SRH seemed a much stronger predictor than prescription medicines. From these results, we propose, when possible, the inclusion of both an indicator of self-reported health and an indicator of mental health in studies on re-employment.

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1. Introduction

Several studies have explored the influence of poor health on re-employment chances, and the majority of research finds poor health to be a negative determinant of re-employment (Carlier, Schuring, van Lenthe, & Burdorf, 2014; Claussen, Bjørndal, & Hjort, 1993; Claussen, 1999; Patterson, 1997; Schuring, Burdorf, Kunst, & Mackenbach, 2007; Schuring, Robroek, Otten, Arts, & Burdorf, 2013; Rosholm & Andersen, 2010; Van de Mheen, Stronks, Schrijvers, & Mackenbach, 1999). Throughout the literature on health determinants of re-employment, the majority of studies apply indicators of SRH of overall health (Carlier et al., 2014; Schuring et al., 2007, 2013; Van de Mheen et al., 1999) and some apply measures of certain aspects of health, such as mental health only (Claussen, 1993; Claussen et al., 1993; Kessler, Turner, & House,

1989; Patterson, 1997; Warr & Jackson, 1985). One argument for the usefulness of self-reports is that mortality studies have shown these indicators to have high predictive power for mortality and to give a complete picture of overall health even after adjustment for objective parameters of physical and mental symptoms (DeSalvo, Bloser, Reynolds, He, & Muntner, 2006; Idler & Benyamini, 1997). Although self-reports are highly useful, they may not capture all aspects of health. Therefore, a few studies on health determinants of labor market outcomes have introduced third-party indicators, such as medical records, which, compared with self-reports, find a lower share of health problems among individuals outside the labor force (Davies & Ware, 1981).

More infrequent are re-employment studies using third-party-evaluated indicators of individual health, such as medical diagnoses determined by doctor examination (Claussen, 1993; Claussen, 1999) or prescription medicines for mental illnesses prescribed by a general practitioner (Rosholm & Andersen, 2010). The scarcity of this research may be because third-party indicators of health require costly and time-consuming involvement of general practitioners, psychiatrists or psychologists to evaluate patient

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health or that individual register data containing this information are not accessible. Although this type of indicators is rarely used in re-employment studies, the few findings underline their relevance in re-employment studies. One study finds that medical diagnosis captures selection on health into re-employment better than psychometric tests (Claussen et al., 1993). Another study concludes that medicine purchases for mental illnesses significantly diminish re-employment chances (Rosholm & Andersen, 2010).

By combining two different types of health indicators, one based on self-reports, the other based on register data, in one dataset, our aim is that findings from our study will contribute to discussions within both the literature on the impact of health on re-employment chances and within the literature on the validity of different types of health indicators. To our knowledge, our study is the first to combine an indicator of SRH from survey data with prescription medicine purchases for somatic and mental illnesses taken from extensive Danish register data and added to the same individuals. These unique data allow our analysis of health determinants of re-employment to capture overall, somatic and mental aspects of health separately. In our study we investigate two research questions: 1) whether self-reported health (SRH) and register-based prescription medicine purchases (prescription medicine purchases) affect re-employment chances, and 2) whether SRH and prescription medicine purchases for somatic illnesses and prescription medicine purchases for mental illnesses measure different aspects of health on re-employment chances.

1.1. Institutional setting

The Danish health care system is universal, tax based, government run, and free of charge for all (Gupta, Kleijnans, & Larsen, 2015; Torfing, 1999; Vallgård, Krasnik, & Vrangbæk, 2001). Among other services, free health care includes consults with general practitioners, who are responsible for writing the prescriptions that are relevant in this study. Furthermore, prescription medicine purchases are partially reimbursed. If a person has yearly medical expenses of more than the equivalent of 148 USD, then 50–80% of the amount is reimbursed, and if a person is unemployed, he or she can apply for further reimbursement (Danish Ministry of Health, 2012). Therefore, individual health expenses are minor compared with, for example, those in the United States (Gupta et al., 2015). That the majority of Danes are able to purchase prescription medicine suggests that information on medicine purchases from Danish register data are useful indicators of health.

The Danish unemployment benefits system is similar to the Danish health care system. The unemployment benefits system is universal, tax based, and government run. Unemployed workers may receive unemployment benefits from the welfare system for an unlimited amount of time (Graversen & Jensen, 2010), however, they must meet certain criteria in order to receive the benefits: First, unemployed workers must attend mandatory active labor market programmes and meetings with a case worker at the local municipal job center. Second, they must be unable to financially support themselves in other ways; they must not be receiving unemployment insurance, have a fortune exceeding 10,000 DKK (appr. 1686 USD) or have possessions such as a house or a car equivalent to this amount. If an unemployment benefits applicant is married, the spouse must not earn more than twice the monthly benefits amount and cannot have possessions worth more than 20,000 DKK (Danish Ministry of Labor, 2006). The eligibility criteria for unemployment benefits are unlikely to have implications for this study's representativeness of sociodemographic characteristics such as age and gender. However, those who have fortunes, those married to a working spouse and those who have a private unemployment insurance may be underrepresented.

2. Data and methods

2.1. Design and study population

The data in this study come from a Danish survey of welfare claimants combined with extensive Danish administrative data on re-employment, prescription medicine purchases for somatic illnesses, prescription medicine purchases for mental illnesses, and the socio-demographic characteristics of age, sex, marital status, having children < 17 years old, country of origin, and years of paid work since 1980. The survey was conducted by SFI – The Danish National Centre for Social Research. Data were gathered by telephone (CATI) in May and June of 2006 from a random sample of unemployed welfare claimants who had all received unemployment benefits for a minimum of 20 weeks at the time of the interview (Bach & Petersen, 2007; Bach, 2009; Bach, 2012). Participation in the survey was voluntary.

The survey response rate was 45.5%, and a total of 1947 persons participated. Attrition was statistically significant and higher among immigrants from non-Western countries, persons living in the metropolitan area and men. For further details on the survey and attrition, see Bach and Petersen (2007). We matched the survey data with extensive Danish administrative data on an individual level from the years 2006–2008. Data were provided in anonymized form by Statistics Denmark and merged from several administrative registers by using civil registration numbers. Because these register data cover all Danish citizens residing in Denmark, there was no loss to follow up other than those due to death or emigration. In our data, we include the 1805 unemployed respondents for whom there is sufficient information from both the questionnaires and the register data.

2.2. Health indicators

SRH was measured at baseline in May and June 2006 with a single-item survey question regarding global SRH asking respondents to rate their overall health on a five-point scale ranging from “very good” (1), “good” (2) and “fair” (3) to “poor” (4) or “very poor” (5) (author's translation). Furthermore, we use a dichotomous indicator of SRH, thereby separating workers who are in good health (those who rated their health as “very good”, “good” or “fair”) from workers who are in poor health (those who rated their health “poor” or “very poor”). The distribution in the sample is reported in Table 1.

As register-based indicators of health we use two indicators, *prescription medicine purchases for somatic illnesses* and *prescription medicine purchases for mental illnesses*. We use indicators for both prescription medicine purchases for somatic and mental illnesses because previous studies suggest that they predict re-employment differently (Claussen et al., 1993; Claussen, 1999). These indicators include individual medicine purchases at baseline from the first six months of 2006 because all the respondents were unemployed during this period. Each indicator is a dummy variable that takes the value 1 if an individual makes a purchase of the relevant medicine within the first 6 months of 2006 and takes the value 0 otherwise.

The two prescription medicine indicators are measured by use of information on individual purchases of medicine from the Danish Register of Medicinal Product Statistics. Denmark has three large, continuously-updated medical registers: 1) hospital records, 2) the Social Security Register, and 3) the Prescription Drug Register. Hospital records measure only severe health issues, and the Social Security Register contains no information about diagnosis. We focus on the Prescription Drug Register because it a) provides a proxy for the outcome of an evaluation by a health professional (the prescription), b) gives indication of the type of illness (the

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