Health effects of re-employment

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In comparison to the large amount of work which has been done in the field of unemployment and health, fewer studies have specifically looked at the health effects of re-employment. Unemployment and re-employment are closely interlinked and studies investigating the health effects of unemployment have often, albeit indirectly, also considered re-employment. For example in longitudinal studies investigating mortality due to unemployment individuals might have returned to work during the follow up period. Hence the unemployed group would have consisted of a mix of unemployed and re-employed individuals which cannot be differentiated in the outcomes as unemployment status was only measured at one point in time. Other studies have looked at the health effects of short and long term unemployment, indicating risk levels for those re-employed, which might be similar to the short term unemployment group. The majority of studies on re-employment and health assessed the mental health status before and after re-employment, thus only being able to measure the short term effects of re-employment. A key issue in the research of re-employment and health is that of health selection, individuals with better psychological and physical health might have a higher probability of re-employment.

Re-employment and mental health and limiting long term illness

Three meta analyses on the effects of unemployment on health reported improvements in mental health after re-employment (Murphy and Athanasou 1999, McKee-Ryan et al 2005, Paul and Moser 2009). Most interestingly all three studies found higher improvements in mental health after re-employment compared to the decline in mental health when becoming unemployed. Murphy and Athanasou (1999) and McKee-Ryan et al. (2005) reported bigger effect sizes for improvements in mental health status after being re-employed (d=0.54 and d=-0.89 respectively) compared to the effect sizes for decrease in mental health status after unemployment (d=0.36 and d=-057 respectively). Paul and Moser (2009) found a reduction in distress of an effect size of d=-0.35 after re-employment compared to an increase in distress of d=0.19 after unemployment. The increased effect size after re-employment was explained by the effect of feeling better when tested repeatedly. When adjusting for this, the effect size became more similar with d=-0.29 for the re-employed and d=0.25 for the unemployed (Paul and Moser 2009).

In contrast to the improvements in mental health after re-employment reported in these meta-analyses, two UK studies with long follow up periods suggested that unemployment at any stage in life might have negative effects on health later in life. Bartley and Plewis (2002) analysed the long term effects of employment status on limiting long term illness (LLTI) in England over a 20 year period using data from the 1971, 1981 and 1991 censuses. After adjusting for social class and age, unemployment at either of the censuses in 1971 or 1981 was associated with a 1.68 fold increased risk of LLTI in 1991 (1.88 age adjusted only) compared to those who were employed at both censuses. However the results of this study are difficult to interpret with regards to re-employment as it did not investigate this specifically and was not able to adjust for length of unemployment and further spells of unemployment in between censuses. In an analysis of British household panel survey data from 1991-1998 Thomas et al. (2005) looked at mental wellbeing after each transition from employment into unemployment and vice versa. They reported a

0.87 (95% CI 0.69-1.08) and a 0.79 (95% CI 0.64-0.97) reduced risk of psychological distress after re-employment in men and women respectively. One explanation for an increased risk of mental health problems after re-employment, compared to those who stayed in employment during the whole time period, could lie in the type of job people return to after unemployment. Insecure work situation and low job satisfaction have been linked with increased stress, depression and worse mental health status (Ferrie et al. 2005, Laszlo et al. 2010, Sverke et al. 2002) and Halvorsen (1998) reported no significant increase in mental health status for those returning to insecure work compared to the unemployed.

Mortality and re-employment

Most studies on unemployment and mortality categorized employment status as a dichotomous variable (employed / unemployed). Only one study reported results for re-employment and mortality (Martikainen and Valkonen 1996) and one study for different duration of unemployment and mortality (Martikainen 1990). Martikainen (1990) reported the mortality from all causes to increase with the duration of unemployment, even after adjusting for six possible confounders (age, socioeconomic status, education, marital status, use of reimbursable medicines and number of sick allowance days). Unemployment of <=3 month, 4-6 month, 7-11 month and 12 month were associated with 1.4, 1.8, 2.4 and 2.8 fold increased risks of mortality respectively. Health selection might play some role in the increased risk with longer time period, but should have been controlled for after adjusting for the six confounders. In a second study Martikainen and Valkonen (1996) reported mortality rates to be 60% higher in the re-employed compared to those who stayed employed for the whole study period. In comparison the rate for the unemployed was only 20% higher than for the re-employed. After two years of re-employment the mortality rate decreased to 45%.

Type of employment and increased mortality

Information on mortality by type of employment is of relevance as some people being re-employed might return to a less stable work environment. Studies on type of employment and mortality reported increased mortality for those in temporary and insecure employment compared to people in permanent employment. Natti et al (2009) reported a 1.96 fold higher risk of mortality for people in unsatisfactory temporary employment and a 2.59 fold increased risk for those in temporary employment on an involuntary basis. In comparison Kivimaki et al. (2002) reported a mortality risk of 1.2 to 1.6 for those in temporary employment. The comparable lower risk reported by Kivimaki et al (2002) can be explained by this study not distinguishing between perception of unemployment and whether it was involuntary or not.

Temporality and health selection

Temporality of mortality due to unemployment, change in mental health status during prolonged unemployment and health selection are important factors when considering re-employment. In their meta-analysis Paul and Moser (2009) found mental health status to decline with prolonged unemployment most significantly during the first nine months of unemployment. This was explained by the negative

health effects of unemployment and health selection. People with worse health status and higher levels of mental health problems were found to be less likely to be re-employed and as a consequence more likely to suffer from long term unemployment.

Compared to mental health, temporality of unemployment and mortality is more difficult to establish due to smaller numbers of cases. The results of the study by Martikainen (1990), described above, show that mortality increases with prolonged unemployment. One re-occurring issue in studies on unemployment and mortality is that of health selection. To adjust for health selection some studies have excluded deaths during the first few years after unemployment (often the first 5 years) (Fox et al 1982). However a recent UK analysis of the 1991 census showed that the mortality risk in the unemployed remained stable regardless of the length of wear off period, suggesting that there was no or only limited health related selection for unemployment (Clemens et al. 2009).

Quantification of the effects of re-employment on mental health and LLTI

Based on the findings above we distinguished two scenarios to quantify the impact of re-employment on mental health: Scenario 1 is based on the results of the meta-analyses on unemployment and mental health (Murphy and Athanasou 1999, McKee-Ryan et al 2005, Paul and Moser 2009), which suggest that the re-employed return to a similar risk as before unemployment. Scenario 2 is based on a UK study, which reported 13% and 21% decreased risk of mental health problems after re-employment in men and women respectively (Thomas et al. 2005).

We did not include LLTI in our main calculations as we did not identify any studies on the effect re-employment on LLTI. However the study by Bartley and Plewis (2001) suggested that any spell of unemployment will result in a higher risk of LLTI later in life. In a separate analysis we estimated the effect of re-employment on LLTI assuming the effect size was similar to that of mental health reported by Thomas et al. (2005). These calculations relied on the same methodology as scenario 2.

Calculations
Scenario 1

If the re-employed returned to the same risk as before unemployment, the effect of re-employment would be a reversal of the estimated effects of unemployment on health. The effects of unemployment on mental health were calculated in the report on “unemployment and health” and are also part of the calculations in scenario 2, Scenario 2 uses slightly different assumptions compared to the report on “unemployment and health”; these are outlined below.

Scenario2

To estimate the effect of re-employment on mental health, we firstly calculated the impact of unemployment on mental health. For consistency and in contrast to the report on “unemployment and health”, we used the values from the same study as

for the effect of re-employment on health (Thomas et al. 2005). Thomas et al. (2005) reported an increased risk of mental health problems after unemployment of 2.05 (1.71-2.47) for men and 1.72 (1.39-2.12) for women. From these calculations we then calculated the impact of a 1% reduction in unemployment on mental health applying the values by Thomas et al. (2005) of a 0.87 (95% CI 0.69-1.08) and a 0.79 (95% CI 0.64-0.97) reduced risk of psychological distress after re-employment in men and women respectively. Prevalence of mental health problems in the general population of the 16-64 year olds in Wirral were estimated from national data by adjusting this with local population data (Singleton et al. 2001).

Current levels of mental health problems among the unemployed (*N*) were calculated using the formula $N = P_e * RR_u * N_u$ where P_e is the percentage of people with mental health problems in the reference population, RR the increased risk in the unemployed and N_u the number of unemployed. Prevalence in the re-employed was calculated as $0.87*P_u$ for men and $0.79*P_u$ for women, where P_u is the prevalence of mental health problems among the unemployed. The reduction in mental health problems after re-employed was then calculated as the difference between the prevalence of mental health problems in the unemployed and re-employed.

Calculation of mortality due to re-employment

The expected decrease in mortality due to re-employment was calculated using the formula for the potential impact fraction (PIF), defining the decreased level of unemployment due to re-employment as a counterfactual scenario (Murray et al. 2003).

$$PIF = \frac{\sum_{i=1}^{n} P_i \quad RR_i - \sum_{i=1}^{n} P_i' \quad RR_i}{\sum_{i=1}^{n} P_i \quad RR_i}$$

P_i = current exposure level for category i,
RR_i=Relative risk of mortality for exposure category i and
P'_i = counterfactual exposure level for category i

Exposure data on current unemployment was taken from the office for national statistics (ONS), labour market statistics (ONS 2011). Counterfactual scenarios were defined as a 1% decrease in unemployment. Relative risk ratios for the calculation of mortality in the unemployed were taken from the study by Lundin et al. (2009) (RR = 1.57) and for the re-employed we adopted the findings by Martikainen and Valkonen (1996) of a 20% decrease in mortality in the re-employed compared to the unemployed. Mortality data for Wirral PCT for 2007-09 were obtained from ONS.

Results

From July 2009 till June 2010 11,800 people (8900 men and 2900 women) were unemployed in Wirral (ONS 2011). A one per cent reduction in the unemployment rate (measured per economically active population) would mean that 1,415 people (736 men and 679 women) returned to work.

Mental health problems and LLTI

The prevalence of mental health problems in the general population in Wirral was estimated to be 14.2% in men and 19.9% in women, 29.1% in unemployed men and 34.4% in unemployed women and 25.3% in re-employed men and 27.2% in re-employed women. If the re-employed returned to the same risk as the general population (scenario 1) a 1% reduction in the unemployment rate would result in 208 less people suffering mental health problems (110 men and 98 women) (table 1). If the re-employed remained at a higher risk of mental health problems, a 1% reduction in the unemployment rate would result in 77 less people suffering mental health problems (28 men and 49 women) (scenario 2). Applying the assumptions from scenario 2 to LLTI would mean that a 1% reduction in unemployment results in 70 less cases of LLTI.

Mortality

Based on the assumptions above, a one per cent reduction in unemployment would prevent 1.1 deaths (0.7 in men and 0.4 in women) in Wirral per year (table 1).

Table 1: Estimated reduction in morbidity and mortality after re-employment.

		Male	Female	Both
Mental health	**scenario1***	110.0	98.0	208
	scenario 2	28.0	49.0	77.0
Mortality		0.7	0.4	1.1
LLTI		28.0	42.0	70

***** results differ from report “unemployment and health” due to differing underlying assumptions.

Summary and conclusion

Based on the assumptions outlined above each 1% decrease in the unemployment rate would results in 77 to 206 less cases of mental health problems and 1.13 fewer deaths in Wirral PCT. Assuming that the effect size for LLTI was similar to that reported by Thomas et al. (2005) for mental health, each 1% reduction in unemployment would result in 70 less cases of LLTI. In comparison each 1% increase in unemployment might cause 3 extra deaths, 206 cases of mental health problems and 198 cases of LLTI. This would mean that even after re-employment a 1% increase in unemployment might result in 2 extra deaths, 131 people with mental health problems and 128 people suffering from LLTI. The numbers of people suffering mental health problems and LLTI for a 1% increase in unemployment are smaller compared to that in the report “unemployment and health” due to the differing underlying assumptions of the calculations. We used lower RRs for the calculation and calculated the reduction in unemployment as a rate per economically active people as opposed to the whole population aged 16-64.

The results need to be interpreted with some caution as the evidence on re-employment and health is limited. Compared to the large amount of work which has been carried out on unemployment and health considerably less studies have specifically looked at the effects of re-employment and health. The three meta-analyses reporting a reversal of mental health problems after re-employment (Murphy and Athanasou 1999, McKee-Ryan et al 2005, Paul and Moser 2009) are mainly based on the same longitudinal studies, hence the results are similar. The UK study used in the second scenario to calculate the impact of re-employment on mental health (Thomas et al. 2005) was not included in these meta-analyses. This study has a long follow up period of 8 years and differentiates between different types of employment transitions. A number of factors, such as length of unemployment, situation before re-employment, type of job and job security may influence the impact of re-employment on mental health. These could not be considered in this analysis. Health selection has also been found to play a role in re-employment with those with better mental health status being more likely to find a job again (Paul and Moser 2009).

The results of this study clearly show the importance of avoiding unemployment in the first place as the re-employed are likely to remain at a higher risk of mental health problems and mortality compared to those who stayed in permanent employment. After unemployment every effort should be undertaken to help people return to work as fast as possible as mental health status has been found to decline (Paula and Moser 2009) and mortality to increase (Martikainnen 1990) with prolonged unemployment. Special attention should be paid to those who suffer mental health problems already as they were found to be less likely to be re-employed. The quality of job people return is also important as part time work and insecure job situation have been shown to be equally harmful as or even worse than unemployment (Halvorsen 1998).

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