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Performance-related Pay and Objective Measures of Health After Correcting for Sample Selection

Julia Allan, **Nicole Andelic**, Keith Bender, Daniel Powell, Ioannis Theodossiou

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Performance-related pay (PRP)

Variable pay depending on worker's performance

Widespread use in the labour force (10-40% of workers in Europe and US)

Associated with higher productivity (Lazear, 2000) but also...

1. Accidents and injuries: e.g. truckers (Williamson et al., 2009) and shoe manufacturers (Freeman & Kleiner, 2005)
2. Constant low-grade stress and substitution effect: Poor cardiovascular and mental health (Bender & Theodossiou, 2014) and increased drinking and drug use (Artz et al, 2020)
3. Income uncertainty: Higher variable pay than fixed or time-based pay. Long-term stress can compromise the immune system (McEwen, 1998)



Limitations

Confounding variables causing both self-sorting into PRP and poorer health outcomes

- Workers select into PRP and this selection process is not independent of health
- Example: Risk tolerance

Lack of physiological measures of health

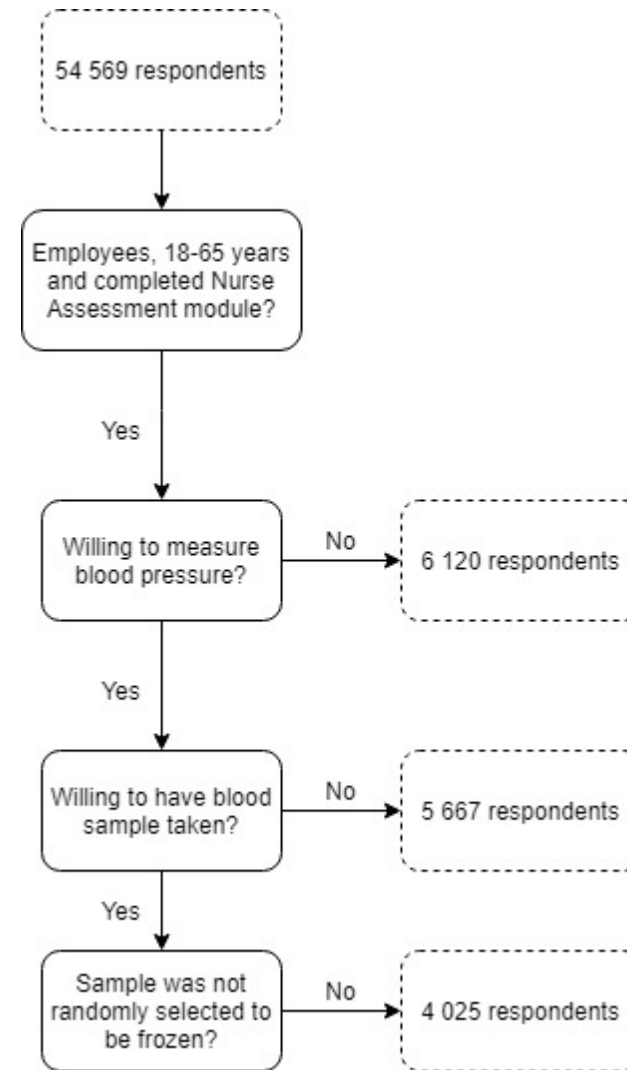
- Those with poor mental health are likely to rate physical health as worse
- Allan et al (2021) – but experimental limitations

We can address these issues by 1) statistically correcting for self-selection by using instruments and 2) examining health markers as well as self-reported health

Data from Wave 2

PRP is only asked every other wave (wave 2, 4, 6, 8) in the UKHLS survey

Nurse assessment took place in Wave 2 and Wave 3 of the UKHLS survey, but only on a subset of the sample.



Health measures of interest

- 1) Self-report (**higher value = better health**)
 - 1) GHQ (general health, 0-36)
 - 2) General health (1-5)
 - 3) Activity limitation due to physical health (1-100 quality of life measure)
 - 4) Activity limitation due to mental health (1-100 quality of life measure)
- 2) Blood pressure (**higher value = worse health**)
 - 1) Systolic bp
 - 2) Diastolic bp
 - 3) High (BP > 140/90 mmHg) vs low-normal BP
- 3) Inflammatory markers (**higher value = worse health**)
 - 1) (log of) c-reactive protein
 - 2) Fibrinogen

Simple comparison of PRP and fixed salary employees

Significant ($p < .05$) differences in self-reported general health, physical health, c-reactive protein and fibrinogen suggesting that PRP workers have **better** health.

- No difference in GHQ, mental health or blood pressure.

Is this not the **opposite** of what we expected?

- Characteristics of the PRP sample
- Self-selection – workers with poor health drop out of sample

Endogenous treatment models

Regressions estimated for each health outcome

Covariates include:

- Sociodemographics: Log of monthly net income (/1000), manual work, broad occupation category, age, age squared, gender, education level, marital status, ethnicity, hours worked per week and country of residence in the UK
- Health covariates: BMI, ever a smoker and taking prescribed medication
- Instruments: Firm size and % share of PRP workers

Results

	Self-reported GHQ-12	Self-reported general health	Self-reported mental health	Self-reported physical health	Systolic blood pressure	Diastolic blood pressure	Blood pressure > 140/90 mmHg	(log of) C-reactive protein	Fibrinogen
	<i>n=6100</i>	<i>n=6100</i>	<i>n=6100</i>	<i>n=6100</i>	<i>n=5648</i>	<i>n=5648</i>	<i>n=5648</i>	<i>n=4013</i>	<i>n=4013</i>
PRP	-6.91*** (0.27)	-0.01 (0.06)	-11.27*** (0.58)	2.48*** (0.83)	15.10*** (1.29)	-0.29 (1.41)	0.002 (0.05)	-0.09 (0.06)	0.57*** (0.18)

PRP is a significant predictor of **worse** GHQ-12, activity limitation due to mental health, higher blood pressure and higher fibrinogen

Also a significant predictor of **less** activity limitation due to physical health

No significant effect on general health, diastolic blood pressure, likelihood of clinically high blood pressure or c-reactive protein

Results – broken down into subsamples

	Self-reported GHQ-12	Self-reported general health	Self-reported mental health	Self-reported physical health	Systolic blood pressure	Diastolic blood pressure	Blood pressure > 140/90 mmHg	(log of) C-reactive protein	Fibrinogen
Full sample	-6.91*** (0.27)	-0.01 (0.06)	-11.27*** (0.58)	2.48*** (0.83)	15.10*** (1.29)	-0.29 (1.41)	0.002 (0.05)	-0.09 (0.06)	0.57*** (0.18)
Male	-6.75*** (0.29)	-0.01 (0.04)	-11.24*** (0.74)	3.36*** (0.52)	12.73*** (4.49)	0.17 (2.81)	0.04 (0.07)	0.73*** (0.06)	0.65*** (0.18)
Female	-6.87*** (0.65)	-0.02 (0.05)	-10.50*** (1.27)	1.23 (1.34)	15.90*** (1.47)	-0.87 (1.59)	-0.03 (0.05)	-0.12* (0.05)	-0.12 (0.06)
Manual	-2.64*** (0.75)	-0.02 (0.06)	3.76 (2.05)	2.52*** (0.48)	-3.75 (2.35)	-0.50 (2.69)	-0.02 (0.26)	-0.37 (0.20)	0.66*** (0.06)
Non-manual	0.07 (0.75)	-0.01 (0.05)	-0.77 (1.24)	2.15** (0.91)	14.59*** (1.93)	-0.55 (1.45)	0.01 (0.02)	-0.13*** (0.03)	-0.03 (0.07)

Note: Standard errors in brackets. Regressions include all previously mentioned covariates but are omitted here for brevity. Full results are available upon request from author.

Effect of PRP on less activity limitation driven by male workers

- Sample has few people with severe mobility issues?
- Severe health conditions due to PRP work are only visible over time?

Women in PRP and non-manual workers have slightly lower levels of c-reactive protein

- Workplace flexibility?

Conclusion

Some evidence for PRP workers suffering from worse mental health and biomarkers related to chronic stress

- Some exceptions: Male workers better quality of life re. physical health and female/non-manual workers lower c-reactive protein

Limitations

- Broad measure of PRP
- No further information about risk preference or personality traits

Findings suggest that use of PRP can have widespread detrimental effects on the employed population



Thank you!

nicole.anelic@abdn.ac.uk

<https://www.abdn.ac.uk/business/research/PRPH.php>