

Precarious Work and Poor Occupational Health: A Cross-sectional Study in Luxembourg

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Abstract

Background

In the literature, an increase in precarious work in Luxembourg as well as in other countries, has been associated to poor health. Therefore, the Occupational Health Physicians of the “Service de Santé au Travail Multisectoriel” (STM), considering the comfortable financial situation during unemployment in Luxembourg, compared the health and lifestyle data of precarious workers to those with stable work.

Methods

This cross-sectional study involved 1472 workers (910 in stable and 562 in precarious work), who were examined at the STM in 2019. Lifestyle and health were self-reported by the workers. The qualitative variables (frequencies and percentage) related to demographic, health, lifestyle and employment factors were analyzed in each group. Pearson’s chi-square test was used to compare both groups and multivariate logistic regression to evaluate the associations between health issues (cardiovascular, mental health, musculoskeletal disorders [MSD]) and employment contract type.

Results

Regarding lifestyle, there were significant differences in age, tobacco smoking, type of work, and mental health disorders between the two groups. Precarious workers had a higher prevalence of poor health in the entire sample. As for mental health disorders, the prevalence was significantly higher in precarious than in stable work (8.5% vs 4.1%, $p < 0.0001$). The difference was not significant in both groups for cardiovascular (6.9% vs 5.8%) and musculoskeletal (15.1% vs 13.7%) disorders. Multivariate logistic regression for the total sample revealed a positive association of precarious work and poor health. The odds ratios were 2.36 (CI: 1.50-3.73) for mental health 1.37 (CI: 0.87-2.17) for cardiovascular, and 1.04 (CI: 0.76-1.43) for musculoskeletal disorders. The association was significant only for mental health disorders. The results by gender showed up a higher risk for mental disorders for women in precarious work (OR=3.41, CI: 1.43-7.82) than for men (OR= 2.99, CI: 1.33-6.74). Men in precarious work had a positive association for cardio-vascular disorders (OR =1.84, CI: 1.03-3.29), and women a negative one (OR= 0.88, CI: 0.40-1.95).

Conclusions

Our study revealed an association between precarious work and poor health. For mental health, this association was significant for both genders, but particularly so for women. Cardiovascular disorders were positively significantly associated only for men.

Introduction

Over the last few decades, there have been several epidemiologic studies [1–5] on the impact of precarious work on the health of the working population. They have showed a negative impact of

precarious work on health. Workers with precarious work have an unstable labor contract, which is perceived as job insecurity comparable to a situation like unemployment. There is overwhelming evidence that unemployment is strongly associated with mortality and morbidity, harmful lifestyles and reduced quality of life. The experience of job insecurity has been associated with ill health [6]. In Luxembourg, as in other western countries, the labor market has changed, with increases in precarious work and unemployment. In this epidemiological study, the “Service de Santé au Travail Multisectoriel” (STM), as a public occupational health service in Luxembourg, wanted to highlight the consequences of precarious work on health. The STM realizes regular medical assessments of workers in all sectors except banking, industry and hospitals, but also on unemployed people reentering the labor market. The frequency of this exam is based on professional risk and offered every year to every five years depending on the risk assessment of the companies. The aim was to analyze the impact on physical and mental health of all workers with precarious work while undergoing medical assessment at the STM, considering the importance of work in daily life, the resources each individual has for coping (such as personality, social support, financial resources, ability to structure daily life during unemployment), the cognitive appraisal of job loss and the coping strategies. Individuals are likely to fare better during unemployment if they have a higher sense of self-worth, perceived control and optimism, less financial strain, a less negative appraisal of being unemployed, and if they do not identify strongly with work [2]. Occupational health physicians aware of these impacts wanted to have objective data on the health and lifestyle of precarious workers as far as the situation in Luxembourg is concerned. A person was considered to be in poor health if he or she presented symptoms and signs related to cardio-vascular, musculoskeletal and mental health disorders.

An individual, living in Luxembourg, who is involuntarily unemployed, can apply for monetary compensation (for up to 24 months) if he or she is aged over 16 years, has worked for at least 6 months, and is able to work in the general labor market. The “ADministration de l’EMploi” (ADEM) has developed various proposals in order to reintegrate unemployed people into the labor market. First, companies receive financial incentives (such as reduced social security fees and the opportunity to offer temporary contracts to unemployed individuals) if they hire unemployed people. Second, the ADEM supports employment reintegration measures, such as specific vocational training for people who have been unemployed for > 12 months. Individuals who undergo this training are offered temporary work contracts with the training company for a maximum of 24 months in order to improve their chances of being hired in the general labor market afterwards. As being unemployed is financially less challenging in Luxembourg than in neighboring countries, the effects on the health of precarious workers might also be less. Thus, the aim of this study was to compare health and lifestyle issues for precarious workers as opposed to those in stable work.

Methods

1.1 Design and study subjects

A cross-sectional study was conducted on the workers examined at the STM in 2019 by analyzing the medical records in its database. We discarded records with missing data and after double blinded randomized sampling of the 49773 targeted workers, a sample of 1472 workers was obtained (910 stable workers and 562 precarious workers). The STM had respected the good practices for data collection required by the law related to the Occupational Health Services and the requirements of the General Data Protection Regulation (GDPR). The data used were those that had been recorded at the medical examination stating labor working capacity and they were secondary extracted for statistical reasons.

Health and lifestyle factors (at the time of the medical examination) were self-reported by the workers to the occupational health physicians. The reported variables were categorized into three groups: demographic factors (age, gender, and BMI), health and lifestyle factors (cardiovascular disorders, mental health disorders, musculoskeletal disorders [MSD], and tobacco smoking), and employment factors (employment contract type [precarious or stable work] and type of work [physical work, mental work or mixed]).

1.2 Demographic factors

Demographic factors comprised age, gender, and body mass index (BMI). Age was calculated in years at the time of the medical examination. Nurses measured height and body weight and the BMI was calculated automatically in RAMSES, a tailor-made medical database of the STM.

1.3 Health and lifestyle factors

We considered high hypertension (>150/90 mmHg) and heart attacks for cardio-vascular disorders, anxiety, stress, sleep disorders, and depressive symptoms for mental health disorders and backache and muscular complaints for MSD.

For lifestyle factors, we only included tobacco smoking. We excluded alcohol and drug consumption, because they are often underreported by workers during occupational health examinations. We divided smokers into four categories: non-smokers, former smokers, light smokers (equivalent to 1–10 cigarettes per day), and heavy smokers (equivalent to >10 cigarettes per day).

1.4 Employment factors

Regarding the dependent variable (employment contract type), we defined precarious workers as those who, after a period of unemployment, obtained a temporary job contract in a private company in any sector, except banks, industries and hospitals, or a limited job contract in those companies offering vocational training. The reference group included workers with stable working contracts. In 2013, experts divided the type of work in the STM database into three categories [7]: physically demanding, mentally demanding, and mixed work.

1.5 Statistical analysis

The dependent variable was employment contract type. The demographic, health and lifestyle, and employment factors are presented as frequencies (and percentages) in each group (precarious and stable groups). To compare precarious and stable work, univariate analyses of demographic factors (age, gender, and BMI), health and lifestyle factors (cardiovascular disorders, mental health disorders, MSD, and tobacco smoking), and an employment factor (type of work) were conducted using Pearson's chi-square test.

Additionally, logistic regression was used to assess the associations of health issues (cardiovascular disorders, mental health disorders, MSD) with precarious work based on odds ratios (ORs) and 95% confidence intervals (CIs). These analyses were adjusted for age, gender, BMI, tobacco smoking, and type of work. Additionally, we analyzed the relations between health issues and precarious work stratified by gender.

The statistical analyses were performed using IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY, USA. A $p < 0.05$ was considered statistically significant.

Results

The study sample comprised 1472 individuals, with 910 in stable work and 562 in precarious work. There were twice as many men as women in both the stable and precarious groups, with no significant difference in gender (p -value = 0.453). Likewise, there was no significant difference in BMI between the groups (p -value = 0.326), and in both, almost 50% of the participants had a BMI < 25 kg/m².

In both groups we have significant differences in age, smoking habits and type of work (Table 1). The highest percentage were workers under 30 years of age (42% in precarious versus 29% in stable work) and 55% were under 40. In stable work the smallest group comprised people over 50 (17.4%) and in precarious work those from 31 to 40 years of age (14.9%). In both groups, about 60% were light smokers and about 20% were heavy smokers. Most of the workers had mixed work (57.7% in stable work vs 38.3% in precarious work) and the percentage of physically demanding work is lower for those in stable work (20.7% vs 38.4%).

In both groups, less than 10% had cardiovascular disorders and about 15% had MSD (Table 1). For mental health disorders, there are significant differences between stable and precarious workers (4.1% vs 8.5%, p -value = 0.000).

We used multivariate logistic regression to assess the associations between health issues and employment contract type. The first column of Table 2 shows the crude ORs and the third column shows the OR adjusted for age, gender, BMI, tobacco smoking, and type of work.

Regarding the entire sample, cardiovascular disorders, mental health disorders and MSD were positively associated with precarious work. The association was significant only for mental health (p-value = 0.000), for the crude ORs and for the ORs adjusted for age, BMI, tobacco smoking and type of work. Precarious workers had a 2.363-fold increased risk of having mental health disorders.

Precarious workers had a 1.372-fold increased risk of having cardio-vascular disorders and a 1.041-fold increased risk of having MSDs, but these associations were not significant. For men with precarious work, we have statistically significant associations for cardio-vascular diseases (p-value = 0.041) and for mental health (p-value = 0.010). Women with cardio-vascular disorders were negatively associated with precarious work, while mental health disorders and MSD were positively associated, with a significant association only for mental health (p-value = 0.04). Women had a 3.416-fold increased risk for mental health disorders in precarious work, while for men it was a 2.058-fold risk.

Discussion

In this study, we compared the lifestyle and health issues of workers in precarious work to those in stable work. The key findings were that precarious workers have significantly higher mental health disorders than those in stable work. There was a gender difference, with women having more mental health disorders than men. Cardio-vascular disorders were significantly positively associated with precarious work for men and negatively associated for women. BMI does not show any difference, but smoking habit does present a significant difference, with a higher percentage of people smoking more than 10 cigarettes per day among precarious workers.

Regarding BMI, Zagozdón et al. [8], in a study on unemployment and health, found a significant association between being overweight and being unemployed, employing multivariate analysis. The finding that there was no difference in BMI in our study could be potentially explained by the financial resources available during precarious work. This agrees with the results of McLeod et al. [9], who found that there are good reasons for thinking that some of the variations in inequality in population health found across countries are linked to the institutional structures of the political economy. Norte et al. [10] showed that, among all socio-economic factors studied (employment, unemployment and homemakers) there was a clear association between the employment situation and the prevalence of overweight and obesity. On the other hand, we confirm the results of Zagozdón et al. [8] on cardio-vascular risk factors for smoking habits, with a higher percentage of people smoking more than 10 cigarettes a day. Although smoking constitutes a cardiovascular risk, analyzing the adjusted OR, there was no significant association between cardiovascular disorders and precarious work overall, although there is one among men. These results somehow match those of Virtanen et al. [11], who reported a modest association between job insecurity and incident cardiovascular disorders, partly attributable to the lower socioeconomic status and the increased risk factors among people with job insecurity. The results of Slopen et al. [12] reporting that job insecurity was not associated with incident cardiovascular diseases, though job insecurity was significantly associated (in a cross-sectional analysis) with risk factors such as

tobacco smoking, physical inactivity, hypertension, hypercholesterolemia, and BMI in univariate analyses are in agreement with our overall results and those for women, but not for men.

For MSDs, Benavides et al. [13] reported that fatigue, backache, and muscular pain were positively correlated with precarious work, which is confirmed in our study, but the association wasn't significant.

Several studies had showed an association between mental health and precarious work, as in our study. Indeed, we found that mental health disorders were consistently significantly associated with precarious work; even after stratification by gender, with a higher OR for women, which is concordant with the findings of Strandh et al. [14] who described the same gender difference in unemployed individuals in Sweden. Their OR were adjusted for the socioeconomic situation of the household, which was not included in our study. Also, Zagozdon et al. [8] found a positive association between mental ill health and unemployment, with a higher OR for women, but non-significant. Andreeva et al. [14], revealed that women are in a more precarious position than men because women are more often in temporary or part-time work with higher job insecurity. On the other hand, Olesen et al. [13] concluded that poor mental health was both a consequence of and a risk factor for unemployment, with equal strength for both associations, over and above the simultaneous association observed between these two factors. In our paper, the OR for mental health disorders was higher in women in precarious work (some of whom had previously been unemployed) than in men in precarious work, but we cannot know whether the mental health disorders were a cause or an effect of previous unemployment as the type of study is cross-sectional.

Strength And Limitations

The strength of this study is that all those individuals who have been unemployed and are applying for a precarious work contract are examined at the STM, so that the data on precarious work are national data. Unemployed workers receive 80% of their former income for 24 months. Our study is the first in Luxembourg comparing precarious work to stable work, considering this great financial advantage. Nevertheless, some limitations have to be considered. First, the data on health and lifestyle are self-reported and could be biased. It is likely that precarious workers are more willing to report their difficulties, while stable workers might underreport health issues because they are afraid of the consequences this may have on the assessment of their ability to work by the occupational health physician. Furthermore, the occupational health physicians do not examine people on sick leave, which could influence the proportion of individuals with poor health issues. Another limitation is the exclusion of three activity sectors for stable work: industries, banks, and hospitals.

In our study, we cannot state whether poor health was the cause of unemployment or if unemployment was conducive to poor health. Therefore, a longitudinal study with health data gathered from the moment of job loss until reemployment would be necessary.

Conclusions

Precarious workers have been found in our study to have significantly more mental health disorders than workers with normal working contracts, and the impact of precarious work is higher for women than for men. Regarding cardio-vascular complaints and MSDs, precarious workers have an increased risk, but with a significant association only for cardio-vascular diseases in men.

A longitudinal study should be conducted in order to define whether poor health issues are a cause or a consequence of unemployment or precarious work.

Abbreviations

ADEM

Administration de l'Emploi (Agency for employment)

BMI

body mass index

CI

confidence interval

GDPR

General Data Protection Regulation

MSD

musculoskeletal disorders

OR

odds ratio

STM

Service de Santé au Travail Multisectoriel

Declarations

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Authors' contributions

NM led the design and conceptualization of the study and the acquisition of the work data. JWS and PCT performed the statistical analysis and the interpretation of the results.

All authors contributed to the writing and revision of the manuscript, and read and approved the submitted version.

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Availability of data and materials

The data has been provided by the STM, a public Occupational Health Service. The corresponding authors are in possession of the original data used in this research. Upon reasonable request, the corresponding author will make the datasets available.

Ethics and consent

The Occupational Health Services in Luxembourg (including STM) aim to analyze the health status of the working population as stipulated by law on Occupational Health Services in 1994. Our collected data are according to good practices in occupational health, therefore is no obligation to have a signed informal consent, being the medical exam mandatory at STM for all workers. Consequently, no submission of the data collection to the National Ethics Committee is required in this case. Nevertheless, the Occupational Health Service has to inform verbally the workers that their data can be used for scientific analysis and publication as well as about their right to refuse to be included in scientific research data as required by the GDPR (Regulation (EU) 2016/679). The STM informs each worker in advance of their examination about their rights. In the case of a worker denying to use of his clinical data for research, this would have been recorded in the medical file by the physician. The collected data were kept confidential in compliance to established Human Subject Protection guidelines.

Consent for publication

Not applicable

Competing interests

The authors declare no potential conflict of interest with respect to the research, authorship, and/or publication of this paper.

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References

1. Sverke M, Gallagher DG, Hellgren J. Alternative work arrangements. In: Isaksson K, Hogstedt C, Eriksson C, Theorell T, editors. *Health Effects of the New Labour Market*. Boston: Springer; 2002. pp. 145–67.
2. Wanberg CR. The individual experience of unemployment. *Annu Rev Psychol*. 2012;63:369–96.
3. Artazcoz L, Benach J, Borrell C, Cortes I. Unemployment and mental health: understanding the interactions among gender, family roles, and social class. *Am J Public Health*. 2004;94:82–8.
4. Campos-Serna J, Ronda-Perez E, Moen BE, Artazcoz L, Benavides FG. Welfare state regimes and gender inequalities in the exposure to work-related psychosocial hazards. *International Journal of Occupational Environmental Health*. 2013;19:179–95.
5. Carlier BE, Schuring M, Lötters FJ, Bakker B, Borgers N, Burdorf A. The influence of re-employment on quality of life and self-rated health, a longitudinal study among unemployed persons in the Netherlands. *BMC Public Health*. 2013;13:503. doi:10.1186/1471-2458-13-503.
6. Benach J, Benavides FG, Platt S, et al. The health-damaging potential of new types of flexible employment: a challenge for public health researchers. *Am J Public Health*. 2000;90:no 8, p. 1316.
7. El Fassi M, Bocquet V, Majery N, Lair ML, Couffignal S, Mairiaux P. Work ability assessment in a worker population: comparison and determinants of Work Ability Index and Work Ability score. *BMC Public Health*. 2013;13:305.
8. Zagodzón P, Parszuto J, Wrotkowska M, Dydjow-Bendek D. Effect of unemployment on cardiovascular risk factors and mental health. *Occup Med (Lond)*. 2014;64:436–41. doi:10.1093/occmed/kqu044.
9. McLeod CB, Hall PA, Siddiqi A, Hertzman C. How society shapes the health gradient: work-related health inequalities in a comparative perspective. *Annu Rev Public Health*. 2012;33:59–73.
10. Norte A, Sospedra I, Ortiz-Moncada R. Influence of economic crisis on dietary quality and obesity rates. *Int J Food Sci Nutr*. 2019;70(2):232–9.
11. Virtanen M, Nyberg ST, Batty GD, Jokela M, Heikkilä K, Fransson EI, et al. Perceived job insecurity as risk factor for incident coronary heart disease: systematic review and meta-analysis. *BMJ*. 2013; 347: f4746 doi: 10.1136/bmj. f4746.
12. Slopen N, Glynn RJ, Buring JE, Lewis TT, Williams DR, Albert MA. Job strain, job insecurity and incident of cardiovascular disease in the Women’s Health Study: results from a 10-year prospective study. *PloS One*. 2012;7:e40512. doi:10.1371/journal.pone.0040512.
13. Benavides FG, Benach J, Diez-Roux AV, Roman C. How do types of employment relate to health indicators? Findings from the Second European Survey on Working Conditions. *Journal of Epidemiological Community Health*. 2000;54:494–501.

14. Strandh M, Hammarström A, Nilsson K, Nordenmark M, Russel H. Unemployment, gender and mental health: the role of the gender regime. *Sociol Health Illn.* 2013;35:649–65.
15. Olesen SC, Butterworth P, Leach LS, Kelaher M, Pirkis J. Mental health affects future employment as job loss affects mental health: findings from a longitudinal population study. *BMC Psychiatry.* 2013;13:144. doi:10.1186/1471-244X-13-144.
16. Andreeva E, Magnusson Hanson L, Westerlund H, Theorell T, Brenner MH. Depressive symptoms as a cause and effect of job loss in men and women: evidence in the context of organizational downsizing from the Swedish Longitudinal Occupational Survey of Health. *BMC Public Health.* 2015;15:1045. doi:10.1186/s12889-015-2377-y.

Tables

Table 1. Characteristics of the participants

	Group		p-value
	Stable work (n=910)	Precarious work (n=562)	
Age groups	n (%)	n (%)	0.000*
<30	264 (29.0%)	238 (42.3%)	
31–40	246 (27.0%)	84 (14.9%)	
41–50	242 (26.6%)	119 (21.2%)	
>50	158 (17.4%)	121 (21.5%)	
Gender			0.453
Female	312 (34.3%)	182 (32.4%)	
Male	598 (65.7%)	380 (67.6%)	
BMI (kg/m²)			0.326
<25	427 (46.9%)	276 (49.1%)	
25–30	319 (35.1%)	176 (31.3%)	
>30	164 (18.0%)	110 (19.6%)	
Tobacco smoking			0.014*
Non-smoker	65 (7.1%)	55 (9.8%)	
Former smoker	110 (12.1%)	52 (9.3%)	
1–10 cigarettes	581 (63.8%)	334 (59.4%)	
>10 cigarettes	154 (16.9%)	121 (21.5%)	
Type of work			0.000*
Physically demanding	188 (20.7%)	216 (38.4%)	
Mentally demanding	197 (21.6%)	131 (23.3%)	
Mixed	525 (57.7%)	215 (38.3%)	
Cardiovascular disorders			0.390
Yes	53 (5.8%)	39 (6.9%)	
No	857 (94.2%)	53 (93.1%)	
Mental health disorders			0.000*
Yes	37 (4.1%)	48 (8.5%)	

No	873 (95.9%)	514 (91.5%)	
Musculoskeletal disorders (MSD)			0.459
Yes	125 (13.7%)	85 (15.1%)	
No	785 (86.3%)	477 (84.9%)	

*p<0.05 (based on Pearson's chi square test)

Table 2. Associations of health issues with precarious work

	OR (95% CI)	p-value	Adjusted OR† (95% CI)	p-value
Whole sample				
Cardiovascular disorders	1.166 (0.757–1.798)	0.486	1.372 (0.869–2.168)	0.175
Mental health disorders	2.186 (1.394–3.430)	0.001*	2.363 (1.497–3.730)	0.000*
Musculoskeletal disorders (MSD)	1.003 (0.738–1.365)	0.983	1.041 (0.757–1.431)	0.804
Men				
Cardiovascular disorders	1.737 (0.998–3.022)	0.051	1.837 (1.026–3.290)	0.041*
Mental health disorders	1.942 (1.125–3.355)	0.017*	2.058 (1.185–3.575)	0.010*
Musculoskeletal disorders (MSD)	1.001 (0.695–1.442)	0.996	1.027 (0.704–1.499)	0.889
Women				
Cardiovascular disorders	0.609 (0.288–1.291)	0.196	0.881 (0.397–1.953)	0.755
Mental health disorders	2.994(1.330-6.740)	0.008*	3.416(1.492-7.823)	0.004*
Musculoskeletal disorders (MSD)	0.997 (0.556–1.785)	0.991	1.062 (0.584–1.930)	0.845

†Adjusted for age, gender, BMI, tobacco smoking and type of work (or age, BMI, tobacco smoking and type of work for the stratified analyses by gender)

*p<0.05 (based on logistic regression)