

Analysis of the 2012 Canadian Community Health Survey-Mental Health demonstrates employment insecurity to be associated with mental illness

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Abstract

A growing number of people depend on flexible employment, characterized by outsider employment and lower levels of job security. This study investigated whether there was a synergistic effect of employment status and job insecurity on mental disorders.

This study used data from the 2012 Canadian Community Health Survey-Mental Health (CCHS) of 13,722 Canada's labor force population aged 20 to 70. Data were collected from January to December, 2012, using computer-assisted personal interviewing. As combining employment status with perceived job insecurity, we formed five job categories: secure full-time, full-time insecure, part-time secure, part-time insecure employment, and unemployment.

Results showed that, regardless of employment status (full-time vs part-time), insecure employment was significantly associated with high risk of mental disorders. Furthermore, the odds ratios for insecure employment were similar to those for unemployment. Male workers who are full-time, but with insecure jobs, were more likely to experience mental disorders than female workers.

This study's findings imply that while perceived job insecurity may be a critical factor for developing mental health problems among workers, providing effective health care services can mitigate an excessive health risk for the most vulnerable employment, especially for insecure part-time employment and unemployment.

Abbreviations: CCHS = Canadian Community Health Survey, CHRA = Canadian Human Rights Act, PNCQ = Perceived Needs for Care Questionnaire, WHO-CIDI = World Health Organization Composite International Diagnostic Interview.

Keywords: employment status, help-seeking behaviors, job insecurity, mental health problems, unmet needs

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1. Introduction

Employment and work conditions have been shown to be key determinants of health and health disparities.^[1] In particular, flexible employment (outsider employment and job insecurity) is known as exerting a profound impact on the material and psychosocial conditions of working life.^[2] Foremost, labor market dualization poses a serious threat to population health, as it has generated a sharp division between outsider and insider employment arrangements.^[2,3] Outsider employment refers to forms of work that deviate from the standard employment model, and includes part-time, temporary, and casual jobs that do not guarantee permanence or benefits. Insider employment refers to the standard model of full-time, permanent employment that offers a comprehensive package of occupational benefits including health insurance, pension security, and disability income. Over the last few decades, however, new types of flexible employment such as part-time, contract, on-call, and home-based work have arisen significantly.^[2-4] The changing working pattern in flexible employment implies that epidemiological research cannot simply describe these jobs under the umbrella of “work precariousness.” It needs to pay attention to the ways in which the dimensions of flexible employment interweave and link health. Up-to-date, it is much less clear how flexible employment affects mental health and what are the roles played by two potential variables (i.e., job insecurity and outsider work).

Several studies have demonstrated that outsiders suffer from high levels of mental health problems.^[2,5] The authors contest

that while the detrimental health effects of outsider employment are real and indisputable, the health disparities in the labor market account for work conditions. Specifically, job insecurity, as a key feature of outsider work, may be a primary determinant of social and health disparities. The central significance of job insecurity is not only in the threat of unemployment, but also in the threat to the most important aspects of people's lives: livelihood, careers, status, and resources (e.g., materials, information), as well as identity at work.^[6] Due to unpredictable job maintenance and financial security, insecurely employed workers share with the unemployed a sense of powerlessness, which engenders enormous frustration and strain.^[6,7] Traditionally, job insecurity thought to be most prevalent among outsider jobs that typically involve temporary or part-time hours, low pay, and high physical demand.^[2,8] Thus, outsider workers with job insecurity can be placed at a high risk of mental health problems.

Since the 1970s, the labor market structure in most industrialized societies has been changed in a way to increase job insecurity even among those workers with middle and upper income, full time and professional occupations.^[9,10] Upper employment classes, differentiated by income and welfare, etc, may influence some degree of vulnerability to job insecurity and its impact on mental health.^[2] Compared to part-time, outsider workers, who are a marginalized segment of the labor market, however, the threat of unemployment is less likely to inflict mental damage to full-time, insider workers due to their better financial security and resources.^[2] Thus, there may be a diverse synergistic pattern in the associations between employment status, job insecurity, and mental health outcomes. However, to the best of our knowledge, which specifies the health disparity between outsider and insider employment in this link, is still very limited.

Furthermore, it is necessary to explore the roles of potentially attributable variables, such as help-seeking behaviors and unmet health care needs in explaining the flexible employment-related health inequalities. Stress and coping theories propose that poor health behaviors can be a deleterious strategy for coping with work-related stress, which would in turn lead to poor mental health.^[11–13] Alcohol consumption, in particular, has been linked to workplace stressors of outsiders such as occupational demands, shift work, repetitive duties, and/or work overload.^[12–14] Insecurely employed part-time workers are more likely to depend on smoking or alcohol as a way to cope with stress.^[13,14] In addition, research shows that only one in four Canadian workers feel comfortable discussing mental health problems with their employers.^[15] Outsider workers with job insecurity are less likely to seek adequate health care for mental health problems, mainly due to fear of layoffs as well as lack of extended health coverage.^[7,16] However, no systematic attempt to date investigate whether these behaviors or unmet needs contribute to the health disparity for flexible employees. The purpose of this quantitative meta-analysis study was to determine whether there exists a synergistic effect of employment status and job insecurity on mental disorders. In order to address these gaps in the literature, this study examined

1. the combined effects between employment status and job insecurity on mental disorders; and
2. purported mechanisms by which employment status and job insecurity affect mental health, involving in health behaviors, help-seeking behaviors, and unmet health care needs.

2. Methods and materials

2.1. Data source

Data for this study were derived from the 2012 Canadian Community Health Survey—Mental Health (CCHS), a nationally representative cross-sectional survey conducted by Statistics Canada.^[17] The CCHS was drawn from the entire Canadian population at least 15 years of age and living in the 10 provinces. Multi-stage cluster, random sampling procedure was used to select respondents; those residing in the Territories and geographically remote areas, on Indian reserves, or in institutions, as well as full-time members of the armed forces were excluded. Data were collected from January to December 2012, using computer-assisted personal interviewing. Out of an initial 36,433 eligible units, 29,088 households (80%) agreed to participate in the survey, and 25,113 participants completed the interview (final response rate = 69%). The final sample represents 28.3 million Canadians. In the present study, only the Canadian economically active population in age 20 to 74 was considered. Individuals with missing data on job status, smoking status, and drinking status were also excluded leading to a final count of 13,722. Along with the data, Statistics Canada also provides sampling weights to allow for valid inferences about the whole population and bootstrap weights for calculation of confidence intervals.

2.2. Measures

2.2.1. Mental disorders. We used the World Health Organization Composite International Diagnostic Interview 3.0 (WHO-CIDI) criteria to determine which respondents suffered from mental disorders in the past 12 months. Mental health disorders accounted for cases from 5 disorders: major depressive disorder, generalized anxiety disorder, bipolar disorder, alcohol use disorder, and other drug use disorder. A single binary variable was derived to indicate that the respondent met the criteria for a mood, anxiety, or substance use disorder in the year prior to the survey. Although not comprehensive, these disorders are the most prevalent in general population samples and are therefore suitable for identifying probable caseness in the workplace.

2.2.2. Employment status. The main independent variable was employment status, which was constructed into those with full time secure jobs, full time insecure jobs, part time secure jobs, part time insecure jobs, and unemployed. In order to combine to form employment status, first, a single-item questionnaire of job insecurity used to assess the extent to which the respondent's job was secure in the past year. This question was rated by a 5-point scale from strongly disagree to strongly agree. We dichotomized responses into two groups and designate "strongly disagree" and "disagree" as job insecurity and "strongly agree," "agree," and "neutral" as job security. Second, based on the questionnaire asking about the number of hours worked per week at the main job, we indicated full-time employment, if the respondents answered that they worked 30 hours or more. Otherwise, we determined as part-time employment. Third, we combined variables of job insecurity and employment status. Respondents with full-time jobs and job security were designated to full-time secure job category and those with full-time jobs and job insecurity as full-time insecure category. Similarly, we formed part-time secure and part-time insecure categories. Finally, unemployment is defined as respondent who did not have a job, had actively looked for work in the past 4 weeks.

2.2.3. Health behaviors, help-seeking behaviors, and unmet needs. Volume of alcohol consumption was calculated by multiplying the number of times alcohol was consumed during the past 12 months by the number of drinks consumed on one occasion. Evidence suggests these indicators, albeit correlated, represent distinct dimensions with independent effects on health.^[18] Respondents were classified as current smokers, former smokers, and never smokers.

A binary variable was constructed to indicate whether the respondent sought professional help for problems with emotions, mental health, and/or use of alcohol or drugs. Professional help in this context includes visits to psychiatrists, other physicians, psychologists, counsellors, nurses, or social workers. A companion binary variable will be derived to indicate assistance from non-professionals. This includes seeking advice or counsel from family members, friends, co-workers and supervisors. Unmet needs were assessed with the Perceived Needs for Care Questionnaire (PNCQ).^[19] A binary variable will be derived to indicate unmet needs for care, according to whether the respondent felt there was a time when they needed, but did not receive, mental health care.

2.2.4. Potential covariates. Demographic factors (age, sex, marital status, and immigrant status) and socioeconomic factors (education and income) were considered as potential covariates. Age was divided into three groups of 20 to 34, 35 to 54, and 55 to 74. However, chronological age (20 years or older) were used as continuous variables. Marital status had three categories: married (reference), widowed/separated/divorced, and single. Education level was split into “less than high school,” “high school diploma,” “college degree,” and “university degree or more (reference).” Immigration status was categorized as “yes” and “no.” Income was measured by 10 deciles, which were divided into 3 groups: low (deciles 1–3), average (deciles 4–7), and high (deciles 7–10, reference).

2.3. Statistical analysis

Descriptive statistics were calculated to understand the different characteristics among five employment categories (full-time secure, full-time insecure, part-time secure, part-time insecure, and unemployment). For the five samples, proportions for sociodemographic variables such as age, sex, marital status, education, and immigrant status were compared. Means and standard deviations were calculated for continuous variables such as age and alcohol consumption.

Hierarchical logistic regression analyses were performed to examine the combined effect of employment status and job insecurity on mental disorders. Variables were entered step-wise at each level. In model 1, the main independent variables were job status (five employment categories) and the control variables were age, sex, marital status, education, income, and immigrant status to assess differences in mental disorders among five employment categories (reduced model). In model 2, the reference model was re-examined in expanded models that included measures of alcohol consumption and smoking status. Finally, the model 2 was expanded to include help-seeking behaviors and unmet needs (full model). In these tests, while assessing the correlation between health behaviors, professional and non-professional help, and unmet needs on mental disorders, they allowed us to examine the significance of these variables in explaining the differences in mental health among five job

categories. Since the 2012 CCHS followed a complicated multi-stage survey design, sampling weights and bootstrap variance estimation procedures were applied to this study’s regression modelling.

Researchers will use the CCHS-Mental Health data from Statistics Canada. In general, the secondary analysis of existing data does not require ethical approval or institutional review board review.

3. Results

Table 1 shows the descriptive characteristics of this study sample by five employment status. The sample consisted of people with full-time secure jobs (71%), full-time insecure jobs (7%), part-time secure jobs (12.9%), part-time insecure jobs (2%), and unemployed (6%). The sample consisted of similar proportions of men (49.4%) and women (50.6%). Men were more likely than women to have full-time secure jobs (53.5% vs 46.5%), while women had more part-time secure or insecure jobs (71.4% vs 28.6%; 68.5% vs 31.5%, respectively). Immigrants accounted for approximately 17.6% of this sample and were relatively evenly distributed amongst all employment status. However, immigrants were more likely than non-immigrants to be unemployed. In comparison, married respondents had the highest rate of full-time secure jobs (59.3%), whereas single respondents had the highest unemployment rates. Respondents with a college or higher degree were more likely to have full-time secure or insecure jobs, but those with high school diploma or less education had more part-time insecure jobs or unemployment. In general, slightly <50% of respondents reported high annual earnings, while 20.7% reported having low annual income. In comparison, full-time workers (secure and insecure) were more likely to have highest annual income, but part-time workers and the unemployed had lower annual income.

Regarding the help-seeking behaviors, full-time secure workers were the least likely to have received professional help (10.5%) and non-professional help (16.8%) among all five employment groups. It is followed by part-time secure (13.8% for professional, 21.7% for non-professional), full-time insecure workers (16.2% for professional, 25.8% for non-professional), the unemployed (17.8% for professional, 26.6% for non-professional), and part-time insecure (19.3% for professional, 30.7% for non-professional). Compared to their secure counterparts, full-time insecure and part-time insecure workers reported a higher probability of having unmet needs (4.6% vs 10.1% and 6.8% vs 18.5%). In terms of mental disorders, a significantly higher prevalence rate was found among full-time insecure (17.8%) and part-time insecure respondents (18.5%) than full-time secure (9.4%) and part-time secure counterparts (10.9%). The unemployed group had the highest risk of having a mental illness (20.4%) and psychological distress.

Table 2 shows the results of the multiple logistic regression models for variations of mental disorders among five employment groups and the impacts of health and help-seeking behaviors (smoking, drinking, seeking help, and unmet needs) on this link. As shown in model 1, there was a negative association between age and mental disorders. Men, more than women, are more likely to have a risk of mental disorders. Not currently married and living with a lower income and non-immigrant status were associated with significantly higher odds of mental disorders than their counterparts. After controlling for demographic and socioeconomic variables, the odds of having

Table 1
Descriptive statistics among employment status and job insecurity in the Canadian labour force.

	Total N = 13722 N (%)	Full-time secure N = 9746 N (71%)	Full-time insecure N = 962 N (7%)	Part-time secure N = 1769 N (12.9%)	Part-time insecure N = 270 N (2%)	Unemployed N = 830 N (6%)
Sex						
Male	6776 (49.4)	5213 (53.5)	503 (52.3)	506 (28.6)	85 (31.5)	408 (49.2)
Female	6946 (50.6)	4533 (46.5)	459 (47.7)	1263 (71.4)	185 (68.5)	422 (50.8)
Immigrancy						
Yes	2419 (17.6)	1682 (17.3)	162 (16.8)	310 (17.5)	45 (16.7)	185 (22.3)
No	11303 (82.4)	8064 (82.7)	800 (83.2)	1459 (82.5)	225 (83.3)	645 (77.7)
Marital status						
Married/common law	7851 (57.2)	5775 (59.3)	485 (50.4)	1021 (57.7)	131 (48.5)	346 (41.7)
Widowed/separated /divorced	1898 (13.8)	1291 (13.2)	171 (17.8)	248 (14.0)	48 (17.8)	120 (14.5)
Single	3973 (29.0)	2680 (27.5)	306 (31.8)	500 (28.3)	91 (33.7)	364 (43.9)
education						
Less than high school	1213 (8.8)	803 (8.2)	78 (8.1)	184 (10.4)	25 (9.3)	108 (13.0)
High school diploma	3015 (22.0)	2051 (21.0)	181 (18.8)	463 (26.2)	65 (24.1)	222 (26.7)
Trade certificate/college degree	5904 (43.0)	4259 (43.7)	411 (42.7)	749 (42.3)	111 (41.1)	318 (38.3)
University degree or higher	3590 (26.2)	2633 (27.0)	292 (30.4)	373 (21.1)	69 (25.6)	182 (21.9)
Income						
Low	2845 (20.7)	1442 (14.8)	221 (23.0)	600 (33.9)	119 (44.1)	409 (49.3)
Average	4122 (30.0)	2919 (30.0)	304 (31.6)	552 (31.2)	78 (28.9)	225 (27.1)
High	6755 (49.2)	5385 (55.3)	437 (45.4)	617 (34.9)	73 (27.0)	196 (23.6)
Smoking status						
Never	4650 (33.9)	3239 (33.2)	295 (30.7)	702 (39.7)	89 (33.0)	268 (32.3)
Former	5545 (40.4)	3998 (41.0)	416 (43.2)	700 (39.6)	111 (41.1)	259 (31.2)
Current	3520 (25.7)	2505 (25.7)	250 (26.0)	366 (20.7)	70 (25.9)	302 (36.4)
Professional help						
Not received	12068 (87.9)	8724 (89.5)	806 (83.8)	1524 (86.2)	218 (80.7)	680 (81.9)
Received	1650 (12.0)	1020 (10.5)	156 (16.2)	245 (13.8)	52 (19.3)	148 (17.8)
non-professional help						
Not received	11106 (80.9)	8101 (83.1)	714 (74.2)	1385 (78.3)	187 (69.3)	606 (73.0)
Received	2603 (19.0)	1640 (16.8)	248 (25.8)	383 (21.7)	83 (30.7)	221 (26.6)
Unmet needs						
No	12900 (94.0)	9302 (95.4)	865 (89.9)	1648 (93.2)	220 (81.5)	730 (88.0)
Yes	822 (6.0)	444 (4.6)	97 (10.1)	121 (6.8)	50 (18.5)	100 (12.0)
Mental illness						
No	11860 (86.4)	8603 (88.3)	764 (79.4)	1520 (85.9)	210 (77.8)	647 (78.0)
Yes	1520 (11.1)	917 (9.4)	171 (17.8)	193 (10.9)	50 (18.5)	169 (20.4)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age	42.3 (0.1)	42.3 (0.2)	43.0 (0.6)	43.4 (0.6)	44.9 (1.5)	38.6 (0.7)
Alcohol consumption (litres)	204.0 (5.5)	217.2 (6.9)	193.5 (13.3)	155.6 (9.6)	172.9 (24.8)	163.1 (15.4)

SD = standard deviation.

mental disorders were higher for full-time insecure (OR 1.86, 95%CI: 1.35–2.55) and part-time insecure (OR 2.06, 95%CI: 1.30–3.27) employment and unemployment (OR 1.78, 95%CI: 1.32–2.41) than full-time secure employment. However, no significant differences in mental disorders were detected between full-time and part-time employment (model 1).

As shown in model 2, the volume of alcohol consumption was positively associated with mental disorders. Compared to never-smokers, current smokers had the highest risk of mental disorders (OR 1.83, 95%CI: 1.43–2.36) followed by former smokers (OR 1.40, 95%CI: 1.11–1.77). After additional adjustment for smoking and alcohol consumption, the odds in mental disorders among five employment groups were slightly increased. Model 3 shows that receiving any type of help, professional or non-professional, was positively associated with mental disorders (OR 4.29, 95%CI: 3.32–5.55; OR 3.04, 95%CI: 2.40–3.84, respectively). Unmet health care needs were significantly correlated to mental disorders (OR 3.54, 95%CI: 2.60–4.83). With the addition of help-seeking behaviors and unmet health

care needs, the differences in mental disorders among five employment categories were significantly diminished. In particular, the excessive risks of mental disorders among part-time insecure employment and unemployment were decreased.

4. Discussions

This study investigated whether there was a synergistic effect of employment status and job insecurity on mental disorders. This study also sought to identify the roles of health behaviors, help-seeking behaviors, and unmet health care needs on this relationship. In contrast with cumulative empirical evidence, this study based on a Canadian representative sample failed to find any combined effect between outsider employment and job insecurity on mental disorders and health disparities between full-time and part-time employment. Instead, insecure employment was associated with high risks of mental disorders. Previous research has indicated that flexible employment (outsider employment and job insecurity) are generally considered of as

Table 2**Logistic regression model assessing risk factors for mental disorders among employment status and job insecurity.**

Independent variables	Model 1		Model 2		Model 3	
	OR	95%CI	OR	95%CI	OR	95%CI
Intercept	0.12	0.07–0.21	0.08	0.05–0.14	0.06	0.03–0.12
Age	0.97	0.97–0.98	0.97	0.96–0.98	0.97	0.96–0.98
Sex (ref = male)						
Female	0.82	0.69–0.98	1.01	0.83–1.21	0.73	0.59–0.89
Immigrancy (ref = yes)						
No	2.20	1.70–2.83	1.80	1.39–2.33	1.41	1.06–1.87
Marital status (ref = married)						
Widowed/separated/divorced	1.58	1.11–2.23	1.54	1.07–2.22	1.25	0.89–1.75
Single	1.67	1.36–2.04	1.55	1.26–1.90	1.47	1.16–1.86
education (ref = university +)						
Less than high school	1.16	0.80–1.67	0.88	0.58–1.33	1.32	0.83–2.10
High school diploma	1.23	0.93–1.61	1.09	0.83–1.44	1.33	0.98–1.81
Trade certificate/college	1.21	0.95–1.55	1.11	0.86–1.43	1.35	1.02–1.78
Income (ref = high)						
Average	1.23	0.98–1.53	1.29	1.03–1.62	1.13	0.89–1.44
Low	1.64	1.28–2.11	1.71	1.31–2.22	1.49	1.14–1.95
Job status (ref = full-time secure)						
Full-time insecure	1.86	1.35–2.55	1.95	1.42–2.69	1.72	1.22–2.43
Part-time secure	1.12	0.84–1.49	1.24	0.93–1.66	1.13	0.81–1.56
Part-time insecure	2.06	1.30–3.27	2.18	1.39–3.40	1.61	0.96–2.69
Unemployed	1.78	1.32–2.41	1.84	1.36–2.50	1.28	0.86–1.90
Alcohol consumption (volume)			1.00	1.00–1.01	1.00	1.00–1.01
Smoking status (ref = never)						
Former			1.40	1.11–1.77	1.19	0.93–1.53
Current			1.83	1.43–2.36	1.67	1.25–2.21
Professional help (ref = not received)						
Received					4.29	3.32–5.55
Non-professional help (ref = not received)						
Received					3.04	2.40–3.84
Unmet needs (ref = no)						
Yes					3.54	2.60–4.83

95%CI: 95% confidence interval, OR = odds ratio.

being conducive to lower level of mental health.^[3] In the Canada's labor force population, however, job insecurity seemed to be a primary factor determining mental disorders, but part-time work itself did not. A theory proposes that if workers choose part-time work as a temporary stepping stone toward permanent employment, being a part-time worker neither pre-figures a sense of job insecurity, nor is it necessarily associated with poor health outcomes.^[20,21] This study's findings added research evidence suggesting that securely employed part-timer workers may enjoy the same levels of mental health as securely employed full-time workers. In contrast, insecurely employed full- and part-time workers seemed to share with the unemployed a sense of powerlessness, leading to enormous mental health problems.^[6,7]

In the same vein, this study's findings suggested that full-time workers with perceived job insecurity reported significantly poorer mental health than those with perceived job security. The odds ratio of mental disorders for those workers was even slightly higher than that for the unemployed. Previous research indicated that the adverse impact of job insecurity on health could be understood as the most serious problem for vulnerable segments including young workers, older workers, pregnant workers, workers with language disabilities or for whom English is not a first language.^[22] This result showed that job insecurity disproportionately afflicted such full-time occupations. This study's finding was in line with recent evidence illustrating that the fear of unemployment was also common among middle- and

even upper-income workers, such as research assistants, lecturers, nurses, and office staff.^[9,22] Making plans for the future might not be possible under insecure work conditions; even at middle- or upper-income levels, job insecurity leads to serious social repercussions and mental health problems.

In agreement with a large volume of evidence, this study's finding showed that current smoking and alcohol consumption were positively associated with mental disorders.^[2,23] After additionally controlling these health behaviors, the associations between insecure employment and mental disorders remained relatively unchanged. Perhaps, this result may partly reflect previous evidence suggesting that drinking and smoking behaviors were not related with job strain among precarious work.^[24] However, this result may be partly attributable to the failure of price-related health promotion policies among working population. In this study, the current smoking rate among five employment groups was much higher than 19.9% in Canadian national prevalence in 2011. The proportions of current smokers among employment categories ranged from 20.7% to 26.0%, with the exception of the highest proportion of smokers among unemployed people (36.4%). Despite high prices on cigarettes, cigarette smoking seems to service as a coping strategy for the stressful and uncontrollable unemployment status.^[25] Contrary to smoking, part-time workers and unemployed people were less likely to consume alcohol than full-time workers. This finding confirmed existing meta-analysis evidence using longitudinal

studies, indicating the negative association between unemployment and alcohol consumption.^[26] The likelihood of abstinence among part-time workers and unemployed could be related to their financial difficulty purchasing alcohol or tobacco.

In this study, professional and non-professional help-seeking behaviors and unmet health care needs were significantly associated with mental disorders. With the addition of these variables to the model, the associations between flexible employment (i.e., job insecurity) and mental health problems were virtually disappeared, with exemption of the high risk of mental disorders in insecure full-time employment. It may be partially attributable to high proportion of seeking professional and non-professional help among insecure part-time employment/unemployment, which is related to their poor mental health.^[27,28] Compared to secure full-time workers, insecure full- and part-time workers and unemployed were more likely to seek both professional and non-professional help. However, this result indicates that the burden of unmet needs was more acute in workers who suffer from perceived job insecurity or unemployment. This study found a synergistic effect of two relevant flexible employment on unmet health care needs (i.e., secure full-time (4%) and part-time (6.8%), insecure full-time (10.8%) and part-time (18.5%), unemployment (12%)). Despite the Canada's universal comprehensive health coverage, vulnerable workers appear to have insufficient supplemental health coverage and health care service. The unmet needs seem to substantially act as a mechanism by which employment inequality contributes to poor mental health.

This study has several limitations. First, The Canadian Community Health Survey-Mental Health (CCHS)-Mental Health surveys were conducted in 2002 and 2012. The 2012 CCHS-Mental Health is the most recent data. Although this is the most recent nationally representative survey data available, it is more than 8 years old. By employing the cross-sectional design of the 2012 CCHS, this study's results cannot determine the causal relationships between five employment groups and mental disorders. Furthermore, the study design cannot rule out the possibility of selection bias, which is known as the "healthy worker effect." People with poor mental health would move to insecure part-time jobs or unemployment. However, the "healthy worker effect" is unlikely to influence this study's findings, since the Canadian Human Rights Act (CHRA) prohibits employment discrimination for people with mental health disabilities or addiction. Existing evidence from a U.S. longitudinal study also suggests that there was less common mechanism of selection bias.^[29] Finally, single item of self-rated job insecurity can contain several potential sources of bias. However, subjective job insecurity refers to an individual's perception of threat to job continuity, and mirrors the discordance between the level of job security that an individual experiences and the level of one's preference.^[30–32] Despite this study's several limitations, this study's findings will contribute to a better understanding of the effect of dynamic flexible employment on mental health problems. Furthermore, the finding can be generalized to the Canadian population, since this study utilized the representative sample of the 2012 CCHS.

5. Conclusions

This study suggests that workers with perceived job insecurity, alongside with unemployed, are significantly associated with mental disorders, regardless of employment status (full-time vs

part-time). The impact of insecure employment on mental disorders was similar to that of unemployment. Results indicate that help-seeking behaviors and unmet health care needs to significantly explain the excessive risks of mental health problems among vulnerable workers with perceived job insecurity and unemployed people. These findings imply that subjective job insecurity, rather than part-time employment itself, seemed to be a strong predictor to determine poor mental health. Effective health care service can mitigate health inequality of job insecurity.

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