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QUANTITATIVE RESEARCH

Self-reported work conditions in Canada: examining changes between 2002 and 2012

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Abstract

Objectives To examine changes in self-reported work conditions over a 10-year time period in Canada, as measured using two comparable cross-sectional surveys conducted in 2002 and 2012.

Methods Population-based data were obtained from the Canadian Community Health Survey. Work conditions (psychosocial work conditions, work hours, work demands, job satisfaction) were measured using the same modules across survey cycles. Regression models provided estimates for trends in work conditions, adjusting for differences in socio-demographic and survey administration characteristics over time.

Results We observed changes in self-reported work conditions across cycles, including higher levels of co-worker/supervisor support and job security; lower levels of psychological demands; and increases in shorter/regular work hours over time. These findings were consistent in both the base and adjusted models. Although skill discretion, decision authority, and job satisfaction improved over time in our base models, these findings were attenuated towards the null in adjusted models. Respondents in 2012 had a greater odds of reporting a physically demanding work environment compared to 2002. Differential time trends were observed by geographic region.

Conclusions Our study found improvements in some self-reported measures of the psychosocial work environment in Canada over time. These changes were not accounted for by socio-demographic or survey administration differences across survey cycles. Despite these overall trends, absolute levels of some work conditions have not changed. Given the relevance of work conditions as a determinant of health, a continued focus on improving all aspects of the work environment should remain a public health priority to improve the health of working-aged Canadians.

Résumé

Objectifs Examiner les changements dans les conditions de travail autodéclarées au Canada sur une période de 10 ans, mesurées à l'aide de deux enquêtes transversales comparables menées en 2002 et en 2012.

Méthode Les données sur la population ont été tirées de l'Enquête sur la santé dans les collectivités canadiennes. Les conditions de travail (environnement psychosocial du travail, heures de travail, exigences du travail, satisfaction professionnelle) ont été mesurées à l'aide des mêmes modules d'un cycle à l'autre de l'enquête. Des modèles de régression ont fourni des estimations des tendances dans les conditions de travail en tenant compte des différences dans les caractéristiques sociodémographiques et les caractéristiques d'administration de l'enquête au fil du temps.

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Résultats Nous avons observé des changements d'un cycle à l'autre dans les conditions de travail autodéclarées, notamment des niveaux plus élevés de soutien des collègues et des superviseurs et de sécurité d'emploi; des niveaux moins élevés des exigences psychologiques; et des heures de travail plus courtes et plus régulières avec le temps. Ces constatations ressortent à la fois dans les modèles de base et les modèles ajustés. Mais bien que l'utilisation des compétences, la latitude décisionnelle et la satisfaction professionnelle s'améliorent au fil du temps dans nos modèles de base, ces constatations sont pratiquement annulées dans les modèles ajustés. Les répondants de 2012 étaient plus susceptibles de déclarer travailler dans un milieu physiquement exigeant que ceux de 2002. Des écarts dans les tendances temporelles sont observés selon la région géographique.
Conclusions L'étude fait état d'améliorations de certains indicateurs de l'environnement psychosocial du travail au Canada avec le temps selon les déclarations des répondants. Ces changements ne s'expliquent ni par les différences sociodémographiques, ni par les différences dans l'administration de l'enquête d'un cycle à l'autre. Malgré ces tendances générales, les niveaux absolus de certaines conditions de travail restent inchangés. Étant donné la pertinence des conditions de travail comme déterminant de la santé, l'amélioration de tous les aspects de l'environnement du travail devrait donc demeurer une priorité pour la santé publique afin d'améliorer la santé des Canadiennes et des Canadiens en âge de travailler.

Keywords Psychosocial work environment · Work exposures · Canada · Trends

Mots-clés Environnement psychosocial du travail · Exposition professionnelle · Canada · Tendances

Introduction

The psychosocial work environment is a determinant of worker health and well-being (Smith et al. 2008; Smith and LaMontagne 2015). Previous studies have established a link between the psychological/social characteristics of work (e.g., perceived job control, psychological demands, social support) and health outcomes such as cardiovascular disease (Nyberg et al. 2013) and mental health conditions (Stansfeld and Candy 2006; Theorell et al. 2015). Other related work conditions, including long work hours, physical work demands, and job satisfaction, also have been linked with health outcomes in previous studies (Stansfeld and Candy 2006; Kivimäki et al. 2015). Given the relevance of work conditions as a key determinant of health, the ongoing monitoring and surveillance of these conditions represent an important component of a preventive population health agenda (Smith et al. 2008; Mental Health Commission of Canada 2015; Dollard et al. 2007).

Population-based studies conducted over the past decade have observed varying patterns of changes in work conditions across settings and time periods. In Canada, the most recent estimates (Smith et al. 2011) found declines in decision authority, co-worker support, physical work demands, and job satisfaction across some provinces over the 1994 to 2005 period, as well as increases in non-standard work arrangements. Similar overall deteriorations also have been observed based on various reports from Taiwan (Cheng et al. 2013), France (Malard et al. 2014), and Denmark (Pejtersen and Kristensen 2009) over the 2001–2010, 2006–2010, and 1997–2005 periods, respectively. In contrast, estimates from European countries as a whole, derived from the cross-national European Working Conditions Survey (Malard et al. 2013), suggest that while some psychosocial work conditions (such as job insecurity, skill discretion, and decision latitude) had deteriorated over the 2005 to 2010 period, other conditions (such as working hours and work-life imbalance) had improved. Moreover, variations in the strength of trends were noted across regions, with more positive changes among some countries (e.g., Poland and Czech Republic) and more negative changes among others (e.g., Ireland, Croatia, France, and Latvia) (Malard et al. 2013).

In Canada, there are only a few sources of data that provide population-based estimates of the psychosocial work environment over time (Smith et al. 2008; Dollard et al. 2007). Examples include the Canadian Community Health Survey (CCHS) and the National Population Health Survey (NPHS). For these surveys, work conditions are measured using a modified version of the Job Content Questionnaire (JCQ) (Karasek et al. 1998), although the questions are typically included as optional content across provinces (Smith et al. 2008). However, in 2002 and 2012, Statistics Canada produced two thematic releases of the CCHS, each providing comprehensive examinations of the psychosocial work environment in Canada at the national level. To date, these data have been used to measure trends in mental health conditions over time (Patten et al. 2016), but have not been used to assess changes in work conditions.

Objectives

This study examined whether changes have occurred in working conditions between the 2002 to 2012 period in Canada, as measured using two comparable cross-sectional surveys. Specifically, we examined trends in four dimensions of the psychosocial work environment, including psychosocial work exposures, work hours, physical work demands, and job

satisfaction. We also examined whether time trends in work conditions were differential by geographic region and socio-demographic characteristics.

Methods

Sample

We conducted a secondary analysis of population-based health data from the 2002 and 2012 cycles of the CCHS (Statistics Canada 2013). In brief, the CCHS collects cross-sectional data on the Canadian population, aged 15 years and over, who were living in the ten provinces. Excluded from coverage (< 3% of the target population) were those who lived on reserves or other Aboriginal settlements, full-time members of the military, and the institutionalized population. Participation was on a voluntary basis, with household-level response rates of 87% and 80% for the 2002 and 2012 surveys, respectively.

The pooled CCHS 2002 and 2012 cycles contain a total of 62,097 respondents. In our study, we restricted the sample to individuals aged 15–74 years and who were employed prior to completing the survey ($n = 35,381$). Given our focus on psychosocial work conditions among a working population, we further restricted the sample to those who were not self-employed and those who usually worked 8+ h per week ($n = 28,766$). For analytic models, we excluded individuals who were missing data on covariates ($n = 218$), resulting in a final analytic sample of 28,548 respondents.

Psychosocial work conditions

The JCQ was designed to measure the social and psychological characteristics of jobs in terms of five scales: decision latitude, psychological demands, social support, physical demands, and job insecurity (Karasek et al. 1998). The first two of these scales are commonly used to measure the demand/control model of job strain development, whereby low levels of job control plus high levels of psychological demands lead to high job strain (Karasek et al. 1998). In the CCHS, psychosocial work conditions were measured based on a modified version of the JCQ with reduced number of items per subscale (Karasek et al. 1998). All items were asked in reference to the respondent's main job or business in the past 12 months. Items were scored by respondents based on a Likert-type scale, ranging from "Strongly agree" to "Strongly disagree." In the CCHS, there is also a question on job satisfaction, scored on a 4-point scale ("Very satisfied" to "Not at all satisfied"). A full list of items can be found in the CCHS User Guide (Statistics Canada 2013).

The JCQ and its derivatives have been used extensively for the surveillance and monitoring of the psychosocial work environment (Smith et al. 2008). Validity, reliability, and measurement properties of the original JCQ have been established in a variety of worker populations (Karasek et al. 1998). Less work has examined the psychometric properties of the abbreviated questionnaire used in Canadian population health surveys (Shannon et al. 2006; Brisson and Larocque 2001; Bielecky et al. 2017). As expected, reliability scores for some items (e.g., psychological demands) are lower, given the reduced number of items used to capture the broad subscale topics. However, recent work has confirmed the structural validity of the abbreviated job control and demand subscales between men and women in the Canadian national population (Bielecky et al. 2017).

Outcome measures

For subscales with only one item (physical demands, job security, and supervisor support), we collapsed responses to agree (strongly agree/agree) versus not agree (neither agree nor disagree, disagree, strongly disagree) to create a binary measure. For job satisfaction, we collapsed responses to "very satisfied" versus all other responses.

For the subscales with multiple items, we calculated a composite score by summing the 5-point responses. Skill discretion (based on three items) ranged from 3 to 15. Decision authority, psychological demands, and co-worker support (each consisting of two items) ranged from 2 to 10. For analytic purposes, composite scores were rescaled to a 1 to 10 range for comparability across subscales. Items worded on the positive scale were reverse scored so that higher scores would indicate a positive work environment (e.g., "agreeing" that they were free from conflicting demands). Summary scores were entered into the models as continuous variables.

Analyses

Descriptive analyses examined the distribution of study variables within each cycle. Linear and logistic regression models examined changes in work characteristics across survey cycles, comparing 2012 to the reference year of 2002. Base models were adjusted for broad geographic region of residence. Fully adjusted models accounted for geographic region, sex, age (grouped), highest education level, marital status, diagnosed chronic conditions (yes vs. no), interview method (phone, in-person/both), interview language (English, French/other), and immigration status (< 10 years since immigration, 10+ years, Canadian born).

For the final multivariable models, beta coefficients represent the mean increase or decrease in the level of continuous outcomes (e.g., skill discretion), comparing 2012 against the reference cycle of 2002, whereas odds ratios represent the change in odds of having each categorical outcome (e.g.,

reporting a physically demanding job vs. not) across cycles. Beta coefficients greater (or less) than "0" and odds ratios greater (or less) than "1" indicate an increasing (or decreasing) trend over time in work conditions.

We also examined whether changes in work conditions over time were differential by geographic region, socio-demographic characteristics (age groups, sex), or survey interview method. To do this, statistical interaction terms were included in the regression models to generate point estimates specific to each level of the hypothesized moderator variable.

Point estimates were derived using survey weights to be representative of the covered population. Given the complex stratification and clustering scheme of the CCHS, standard errors were adjusted using a bootstrap procedure with 500 replicate weights, per Statistics Canada methodology. Analyses were completed using SAS V9.4 (Cary, NC).

Ethical approval

Ethical approval for the secondary analysis of survey data was obtained from the University of Toronto Health Sciences Ethics Committee. Data were obtained from the record-level microdata files, accessed via Statistics Canada's Research Data Centre.

Results

Table 1 presents the distribution of socio-demographic variables, survey administration variables, and psychosocial work conditions across survey cycles for our study sample. The age distribution shifted towards older age groups over time. From 2002 to 2012, there was an increase in the proportion of respondents with higher educational attainment, as well as an increase in the proportion of immigrants. The proportion of respondents in the Atlantic region decreased slightly in the 2012 cycle, with a corresponding increase among the Prairie region. There were no statistically significant changes in the distribution of sex, marital status, interview method, or interview language across cycles.

Table 1 also presents the distribution and mean scores of psychosocial work conditions over the study period. From 2002 to 2012, there was an increase in the proportion of workers who reported having a secure job, having a helpful supervisor, and being very satisfied with their job. There was also a slight shift towards working 8–30 and 31–40 h per week, with a corresponding decrease in working 50+ h. There were no statistically significant changes in self-reported physical job demands over time. Finally, mean scores of skill discretion, decision authority, and co-worker support increased over time, with the largest increases observed for co-worker support and decision authority.

Table 2 presents linear regression estimates examining changes in continuous psychosocial work measures across survey cycles. We observed positive changes in psychological demands and co-worker support over time in our base and fully adjusted models. Positive increases for skill discretion and decision authority observed in our base models were attenuated to the null after adjustment.

Table 3 presents odds ratios for categorical psychosocial work measures and work hours across survey cycles. In our base and fully adjusted models, we observed greater odds of having a secure job and a helpful supervisor among respondents in 2012. There was also a decline in working 51+ h across survey cycles, and an increase in working 8–30 h. In contrast, respondents in 2012 had a greater odds of reporting a physically demanding work environment compared to respondents in 2002 in our adjusted models. Job satisfaction improved over time in the base models, but the estimate was attenuated towards the null in the fully adjusted models.

Figure 1 presents estimates for changes in work conditions over time across geographic regions. We observed statistically significant interactions between geographic region and time period for five out of the eight psychosocial work conditions examined. For *skill discretion*, QC and ON experienced opposite trends, with skill discretion becoming higher in QC over time (beta 0.17, 95% CI 0.01 to 0.34), but declining in ON (beta −0.14, 95% CI −0.23 to −0.05). For *decision authority* and *psychological demands*, only certain regions experienced statistically significant increases across survey cycles (e.g., BC, Prairies, Atlantic). For *job security*, most regions experienced statistically significant improvements over time, with the greatest increase among the Prairies. For *supervisor support*, all regions experienced statistically significant increases over time, with the greatest increase among QC. In contrast, there were similarly worsening trends in *physical demands*, similarly improving trends in *co-worker support*, and similarly null trends in *job satisfaction* across most regions.

There were also differential trends by interview language (for three out of eight outcomes). For age, sex, education, marital status, and chronic conditions, limited or no differences in trends over time were observed (results not presented but available upon request).

Discussion

The objective of this study was to examine whether changes have occurred in various dimensions of work over a 10-year period in Canada using data from the most comprehensive examination of the psychosocial work environment at the national level. Overall, we observed improvements in some aspects of the psychosocial work environment across the 2002 and 2012 surveys. In our base and fully adjusted models, we

Table 1 Distribution of selected socio-demographic variables, survey administration variables, and psychosocial work conditions across survey cycles, Canadian Community Health Survey, 2002 to 2012. Percentages and means are weighted to account for sampling design. Pooled N = 28,548

	CCHS 2002	CCHS 2012
Socio-demographic and survey administration	% (95% CI)	% (95% CI)
Geographic region		
BC	12.2 (11.7, 12.7)	12.6 (12.0, 13.2)
Prairies (AB, SK, MB)	16.7 (16.3, 17.1)	18.1 (17.5, 18.7)
ON	40.0 (39.4, 40.6)	39.5 (38.5, 40.5)
QC	23.8 (23.1, 24.4)	23.1 (22.2, 24.0)
Atlantic (NB, NS, PE, NL)	7.3 (7.1, 7.5)	6.7 (6.5, 7.0)
Age group (years)		
15–24	18.0 (17.6, 18.5)	16.2 (15.6, 16.8)
25–34	21.6 (20.8, 22.4)	21.5 (20.4, 22.7)
35–44	28.4 (27.5, 29.2)	22.3 (21.1, 23.5)
45–54	22.5 (21.7, 23.3)	24.1 (22.9, 25.3)
55–74	9.5 (8.9, 10.1)	15.9 (14.9, 17.0)
Sex		
Male	52.4 (51.8, 53.1)	51.1 (50.1, 52.1)
Female	47.6 (46.9, 48.2)	48.9 (47.9, 49.9)
Education of respondent		
1. Less than secondary	15.9 (15.1, 16.8)	10.0 (9.0, 11.0)
2. Secondary to some post-secondary	29.6 (28.6, 30.6)	23.2 (21.9, 24.5)
3. Trade, college, or university cert./dip. below bachelor's	34.8 (33.7, 35.8)	40.3 (38.7, 41.9)
4. Bachelor's or university deg./cert. above bachelor's	19.7 (18.8, 20.7)	26.5 (25.0, 28.0)
Immigrant status		
< 10 years	5.9 (5.2 ,6.5)	6.8 (6.0, 7.6)
≥10 years	14.6 (13.7, 15.5)	16.7 (15.3, 18.2)
Canadian-born	79.5 (78.5, 80.5)	76.4 (74.8, 78.0)
Interview method		
Person/both	82.7 (81.8, 83.7)	81.1 (79.7, 82.6)
Phone	17.3 (16.3, 18.2)	18.9 (17.4, 20.3)
Interview language		
English	75.9 (75.2, 76.7)	77.0 (75.8, 78.1)
French/other	24.1 (23.3, 24.8)	23.0 (21.9, 24.2)
Psychosocial work conditions (categorical)		
Physically demanding job (agree vs. neither/disagree)	43.2 (42.0, 44.3)	44.8 (43.2, 46.3)
Secure job (agree vs. neither/disagree)	78.5 (77.6, 79.4)	82.7 (81.4, 84.0)
Helpful supervisor (agree vs. neither/disagree)	68.9 (67.8, 70.0)	76.9 (75.4, 78.3)
Satisfied with job (very satisfied vs. others)	46.7 (45.5, 47.8)	49.4 (47.8, 51.0)
Total usual work hours:	–	–
8–30 h	18.2 (17.4, 19.0)	18.6 (17.5, 19.7)
31–40 h	47.2 (46.1, 48.4)	48.9 (47.4, 50.4)
41–50 h	21.9 (21.0, 22.8)	21.6 (20.3, 22.9)
50+ h	12.7 (11.9, 13.4)	10.9 (9.9, 12.0)
Psychosocial work conditions (higher = positive)	Mean (95% CI)	Mean (95% CI)
Skill discretion (1 to 10)	6.49 (6.45, 6.53)	6.58 (6.53, 6.63)
Decision authority (1 to 10)	6.91 (6.86, 6.95)	7.05 (6.99, 7.11)
Psychological demands (1 to 10)	4.82 (4.78, 4.87)	4.92 (4.86, 4.98)
Co-worker support (1 to 10)	7.03 (6.99, 7.06)	7.29 (7.23, 7.35)

British Columbia; Prairies (Alberta, Saskatchewan, Manitoba); Ontario; Quebec; Atlantic (New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland)

Table 2 Linear regression coefficients (95% confidence intervals) for changes in psychosocial work conditions across survey cycles, Canadian Community Health Survey, 2002 to 2012. Estimates greater than "0" indicate increasing trend over time. Weighted estimates with bootstrapped standard errors

Psychosocial work conditions	Model 1 2012 (vs. 2002)	Model 2 2012 (vs. 2002)
Skill discretion (1 to 10; higher = positive)	*0.096* (*0.032*, *0.161*)	− 0.037 (− 0.096, 0.022)
Decision authority (1 to 10; higher = positive)	*0.143* (*0.069*, *0.217*)	0.067 (− 0.006, 0.140)
Psychological demands (1 to 10; higher = positive)	*0.103* (*0.030*, *0.175*)	*0.117* (*0.044*, *0.191*)
Co-worker support (1 to 10; higher = positive)	*0.258* (*0.190*, *0.327*)	*0.227* (*0.158*, *0.296*)

Model 1 adjusted for geographic region. Model 2 adjusted for geographic region, sex, age, education, marital status, chronic conditions, interview method, interview language, and immigrant status. Estimates with 95% CIs excluding a "null" difference (indicating statistical significance) are in italics

found decreases in psychological demands, increases in co-worker and supervisor support, and increases in job security. There were also decreases in the prevalence of working longer hours, and increases in working shorter hours. However, we found no changes in skill discretion, decision authority, or job satisfaction over time and increases in physical demands over time in our adjusted models. Finally, exploratory analyses revealed differences in time trends according to geographic region and interview language, with skill discretion trending towards opposite directions in Ontario and Quebec between 2002 and 2012.

Although recent data on Canadian trends are limited, our results showing improvements in some aspects of the psychosocial work environment are consistent with positive changes observed elsewhere (Malard et al. 2013) during the same time period. In Europe, for example, analyses based on the cross-national European Working Conditions Survey covering the period 2005 to 2010 (Malard et al. 2013) suggest that work conditions such as working hours, work-life imbalance and job effort had improved overall, with changes in some countries (e.g., Poland and Czech Republic) being more positive than the overall European average. However, the authors also observed overall declines in other conditions such as skill discretion, decision authority, and job security over time.

Our findings of a decline in longer working hours and an increase in shorter hours between 2002 and 2012 are consistent with global changes in the level and distribution of work hours observed during the same time period (Malard et al. 2013; Eurofound 2016; Usalcas 2008). Across European countries, overall working time quality (defined as an index of long working hours, atypical work times, and discretion over working time arrangements) had improved between 2005 and 2015 (Malard et al. 2013; Eurofound 2016). Several factors have been proposed to account for this de-polarization of work hours in Canada and other countries (Usalcas 2008), including shifts towards demographics groups that prefer flexible working arrangements, an emphasis on work-life balance, and growth of industries/occupations with lower average hours.

Between 2002 and 2012, we also observed overall improvements in other work conditions (i.e., skill discretion, decision authority, and job satisfaction) in our base models, although these trends were no longer statistically significant after accounting for compositional changes across survey cycles. Over the study period, there was a greater proportion of the workforce among the older age groups, as well as an increase in the proportion of individuals with higher levels of education. Older age and higher education, in particular, were

Table 3 Odds ratios (95% confidence intervals) for changes in psychosocial work conditions and work hours across survey cycles, Canadian Community Health Survey, 2002 to 2012. Estimates greater than "1" indicate increasing trend over time. Weighted estimates with bootstrapped standard errors

Psychosocial work conditions	Model 1 2012 (vs. 2002)	Model 2 2012 (vs. 2002)
Physically demanding job (agree vs. neither/disagree)	1.07 (0.99, 1.15)	*1.25* (*1.15*, *1.36*)
Secure job (agree vs. neither/disagree)	*1.30* (*1.18*, *1.44*)	*1.31* (*1.18*, *1.45*)
Helpful supervisor (agree vs. neither/disagree)	*1.50* (*1.36*, *1.65*)	*1.51* (*1.37*, *1.66*)
Satisfied with job (very satisfied vs. others)	*1.12* (*1.03*, *1.21*)	1.09 (1.00, 1.18)
Work hours (8–30 h vs. others)	1.03 (0.94, 1.13)	*1.13* (*1.01*, *1.25*)
Work hours (31–40 h vs. others)	1.07 (1.00, 1.16)	1.04 (0.96, 1.13)
Work hours (41–50 h vs. others)	0.98 (0.89, 1.07)	0.98 (0.89, 1.08)
Work hours (51+ h vs. others)	*0.84* (*0.74*, *0.95*)	*0.82* (*0.72*, *0.93*)

Model 1 adjusted for geographic region. Model 2 adjusted for geographic region, sex, age, education, marital status, chronic conditions, interview method, interview language, and immigrant status. Estimates with 95% CIs excluding a "null" difference (indicating statistical significance) are in italics

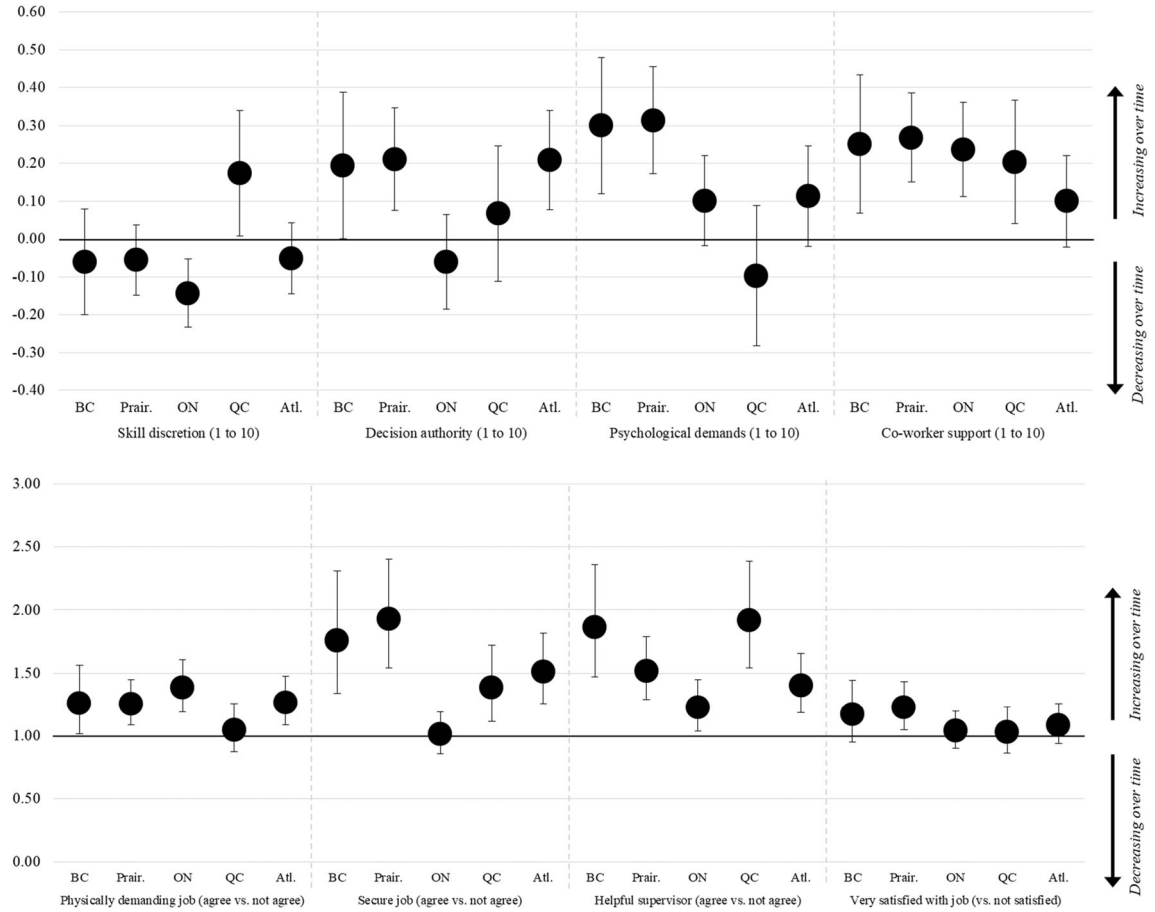

Fig. 1 Linear regression coefficients (top panel) and odds ratios (bottom panel), with 95% confidence intervals, for changes in psychosocial work conditions across survey cycles, specific to each geographic region. Canadian Community Health Survey, 2002 to 2012. All models adjusted for sex, age, education, marital status, chronic conditions, interview method, interview language, and immigrant status. British Columbia; Prairies (Alberta, Saskatchewan, Manitoba); Ontario; Quebec; Atlantic (New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland)

strongly associated with higher levels of skill discretion and decision authority in our adjusted models. Thus, adjustment for these and other factors resulted in attenuation of the observed time trends in our final models. Other studies have also reported stable trends in psychosocial work conditions (Health and Safety Executive 2012; Burr et al. 2003), particularly after accounting for underlying labour market changes over time (Burr et al. 2003). In the UK, a report by the Health and Safety Executive (Health and Safety Executive 2012) found that psychosocial work conditions did not change significantly over the 2004 to 2010 period, based on national-level estimates from a cross-sectional household survey. In Denmark, Burr and colleagues (Burr et al. 2003) examined cross-sectional data from the Danish Work Environment Cohort Study and found that levels of job control did not change significantly over the 1990 to 2000 period after accounting for differences in the distribution of occupations over time.

We note that time trends in some work conditions may be associated with co-occurring changes in the work and social context over time, including changes to the macroeconomic environment. For example, over the course of our study period, the Canadian economy was impacted by the global economic crisis of 2007/2008 (Zmitrowicz and Khan 2014), which resulted in net losses of approximately 400,000 jobs and peak unemployment rates of 8.7% during the recession period. Studies from other regions (Cheng et al. 2013; Pejtersen and Kristensen 2009) have observed that some psychosocial work conditions deteriorated during the recession period, including increases in psychological and physical job demands and decreases in job control, social support, and job security (Torá et al. 2015; Houdmont et al. 2012). Cheng and colleagues (Cheng et al. 2013), using four waves of population-based cross-sectional data, found that overall work conditions were deteriorating in Taiwan over the 2001 to 2010 period, with increases in non-standard work hours and work shifts, increases in physical demands, and decreases in job control. Another study, based on data from the Spanish Working Conditions Survey (Torá et al. 2015), found that

the prevalence of psychological/physical job demands and job insecurity increased among Spanish workers in the period following the recession. In our study, although there were no deteriorations in job security between the two time points, we did observe an increase in the prevalence of physical demands over time. Additional waves of data may be necessary to detect the underlying pattern of change within the intervening time period.

Finally, we observed differences in time trends by geographic region, with statistically significant differences in province-specific trends for five out of eight psychosocial work conditions. The majority of province-specific trends were in the same direction as the marginal trends (with observed differences due to the magnitude of change). However, we did observe opposite trends for skill discretion, with Quebec increasing over time and Ontario decreasing over time. Together, these findings highlight the potential importance of examining additional factors relating to contextual differences in the socio-economic, cultural, policy, and work environment across geographic regions.

Strengths

We used data from the most comprehensive examination of the psychosocial work environment at the national level. Work conditions included in our study were measured consistently and comparably across survey cycles, with identical question wording and respondent populations. We also obtained access to a variety of socio-demographic, economic, and survey administration characteristics at the individual level, which we used to account for changes in the demographic and labour market environment across cycles.

Limitations

Our findings should also be interpreted in light of potential limitations. In Canada, only a few surveillance studies have examined psychosocial work conditions at the population level over time (Smith et al. 2008). As such, our study was only able to measure work conditions across two cross-sectional time points. There may be other measured or unmeasured factors that could account for the observed time trends in our study. Despite our usage of comparable work exposure measures with identical question wording across cycles, there may also be differences in item responses associated with other survey administration factors or changes to perceptions over time. As well, the psychosocial work exposures measured in the CCHS were based on a modified version of the JCQ. It is likely that this abbreviated measure of the JCQ does not capture all important dimensions of the psychosocial work environment, both because of its abbreviated form, but also because it was developed in a different labour market context (e.g., men and manufacturing occupations) to that which many workers find themselves in, in the current Canadian labour market.

Conclusions

Our study found improvements in some self-reported measures of the psychosocial work environment in Canada between the 2002 and 2012 period, as measured via two comparable cross-sectional surveys. Improvements occurred with respect to psychological demands, co-worker and supervisor support, and job security, although no changes were observed for skill discretion, decision authority, and job satisfaction in our adjusted models. These findings suggest that psychosocial working conditions are not deteriorating in Canada, and have even improved for some conditions. This could be viewed as an encouraging development for the Canadian workforce in light of reported declines in some work conditions in earlier decades (Smith et al. 2011).

On the other hand, the lack of comprehensive improvement across psychosocial work conditions over the study period represents a public health opportunity to improve overall working conditions in Canada. As noted in the introduction, the psychosocial work environment is a determinant of worker health and well-being (Smith et al. 2008; Smith and LaMontagne 2015). Robust associations have been observed between psychosocial work conditions and a variety of health outcomes (Nyberg et al. 2013; Stansfeld and Candy 2006; Theorell et al. 2015; Kivimäki et al. 2015), such as cardiovascular disease and mental health conditions. Mental health conditions, in particular, are among the leading causes of disability in Canada (Pearson et al. 2013; Vos et al. 2017; Jorm et al. 2017), with approximately 11.3% of the population having a lifetime major depressive episode in 2012 (Pearson et al. 2013). Moreover, depressive episodes were estimated to cost the Canadian economy over $32 billion annually due to lost productivity in the workplace (The Conference Board of Canada 2016). Accordingly, given the importance of work conditions as a social determinant of health, more activity and effort should be directed to improving the psychosocial work environment (in addition to the physical work environment) to protect the health of Canadians.

Taken together, the lack of comprehensive improvement in the psychosocial work environment over time, combined with the sustained burden of conditions such as depression in Canada in recent decades (Patten et al. 2016; Pearson et al. 2013; Jorm et al. 2017), underscores the importance of ongoing surveillance of working conditions as a component of a preventive population health agenda (Smith et al. 2008; Mental Health Commission of Canada 2015; Dollard et al. 2007). Future surveillance initiatives should

continue the collection of validated measures of psychosocial work exposures and health outcomes across a population-based sample, so that we can better understand the links between the two dimensions.

Compliance with ethical standards

Ethical approval for the secondary analysis of survey data was obtained from the University of Toronto Health Sciences Ethics Committee. Data were obtained from the record-level microdata files, accessed via Statistics Canada's Research Data Centre.

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