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RESEARCH ARTICLE

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The role of nonstandard and precarious jobs in the well-being of disabled workers during workforce reintegration

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Abstract

Background: Nonstandard employment arrangements are becoming increasingly common and could provide needed flexibility for workers living with disabilities. However, these arrangements may indicate precarious employment, that is, employment characterized by instability, powerlessness, and limited worker rights and benefits. Little is known about the role of nonstandard and precarious jobs in the well-being of disabled persons during workforce reintegration after permanent impairment from work-related injuries or illnesses.

Methods: We used linked survey and administrative data for a sample of 442 Washington State workers who recently returned to work and received a workers' compensation permanent partial disability award after permanent impairment from a work-related injury. Multivariable logistic regression models were used to examine associations between nonstandard employment and outcomes related to worker well-being and sustained employment. We also examined associations between a multidimensional measure of precarious employment and these outcomes. Secondarily, qualitative content analysis methods were used to code worker suggestions on how workplaces could support sustained return to work (RTW).

Results: Workers in: (1) nonstandard jobs (compared with full-time, permanent jobs), and (2) precarious jobs (compared with less precarious jobs) had higher adjusted odds of low expectations for sustained RTW. Additionally, workers in precarious jobs had higher odds of reporting fair or poor health and unmet need for disability accommodation. Workers in nonstandard and precarious jobs frequently reported wanting safer and adequately staffed workplaces to ensure safety and maintain sustained employment.

Conclusions: Ensuring safe, secure employment for disabled workers could play an important role in their well-being and sustained RTW.

KEYWORDS

disabled persons, nonstandard employment, occupational injuries, precarious employment, return to work

1 | BACKGROUND

More than 1 in 10 working-age persons in the United States lives with a severe disability.[1] Workplace injuries are a common cause of disability among adults in the United States.[2] Every year, approximately 300,000 US workers incur serious work injuries that result in permanent impairment, such as vision or hearing loss, amputation, or spinal impairment. Workers who experience work-related permanent impairment receive monetary assistance (e.g., permanent partial disability [PPD] award and temporary wage replacement) and medical benefits through a workers' compensation (WC) claim. This assistance may help to ease financial strain on the path to workforce reintegration.[3] However, after WC claim closure, many workers with permanent impairment (which we describe broadly as work-related disabilities) face difficulties with sustained employment.[4,5]

Persons with disabilities—including those with work-related disabilities—may often face hiring discrimination, workforce exclusion,[6,7] and other social disadvantages that influence their health and well-being.[8] Various studies have focused on identifying modifiable factors in the return-to-work (RTW) process to help workers with work-related disabilities stay healthy and employed.[9–13] Solutions include providing assistive technologies[14] and modifying psychosocial factors, such as co-worker and supervisor support.[15] However, despite the growing prevalence of nonstandard work arrangements and precarious employment in the occupational health and safety discourse,[16–18] few studies have investigated the role of nonstandard and precarious jobs in the RTW process.[19,20]

Nonstandard work arrangements have become increasingly common in the United States and globally.[21] Nonstandard work arrangements are typically defined in contrast to normative job expectations in contemporary labor markets, namely, full-time, permanent, and regularly scheduled work arrangements with a single employer.[22] Common nonstandard work arrangements include part-time, staffing agency, and independent contractor jobs.[18,22] The flexibility, part-time nature, and ease of entry into some nonstandard jobs may offer RTW opportunities for persons with disabilities.[23,24] However, nonstandard jobs are generally associated with decreased job security, lower wage and benefit levels, and worse working conditions,[18,25] raising questions about their benefit and link to the construct of precarious employment.

While nonstandard work arrangements are typically defined solely by the contractual aspects of a job, precarious employment is a multidimensional construct characterized by job insecurity, a lack of worker protections, and social and economic vulnerability.[26–28] Employment in a nonstandard job is a common indicator of precarious employment[29]; however, unidimensional indicators of contract type generally fail to capture the many other aspects of employment relationships that affect a worker's experience in a job (e.g., worker–employer power relations, workplace rights, job security).[26,28] Multidimensional approaches to defining precarious employment broaden the view of how employment affects health and well-being and better identify workers burdened by precarious employment. Indeed, epidemiologic studies have identified differing associations with health outcomes when using unidimensional measures of nonstandard employment compared with multidimensional measures of precarious employment.[29]

Evidence suggests that precarious employment has also become a more common experience in recent decades.[30] The growth of both nonstandard and precarious jobs is believed to reflect overarching global, political, and economic forces, including declining unionization, financialization (e.g., the rise of shareholder power), globalization, and the rise of digital technologies and the gig economy.[22] Concerningly, these changes may exacerbate job insecurity and health and safety risks for workers.[18,31] These jobs can be financially and psychologically stressful,[32,33] as well as physically hazardous due to worse access to job accommodation, shorter job tenure, and less safe work environments.[16,17] While little in known about the role of nonstandard and precarious jobs in the lives of people with work-related disabilities, it is known that people with disabilities are generally overrepresented in both nonstandard and precarious jobs.[23,34,35] Therefore, there is a critical need for more research on the role of nonstandard and precarious jobs in the well-being of disabled persons, including those with work-related disabilities.

Workers with disabilities report similar employment-related preferences to people without disabilities[36]—but are twice as likely to be unemployed.[37] While the literature is not specific to workers with work-related disabilities, some studies suggests that workers with disabilities may prefer the flexibility offered by nonstandard jobs,[24] especially workers with health limitations or other concerns that make it difficult to sustain full-time employment.[24,35,38] However, workers with disabilities may be disproportionately employed in nonstandard and precarious jobs due to limited job options.[23] Therefore, concerns abound that nonstandard and precarious jobs could undermine the documented health and economic benefits of employment[39] by placing people with disabilities at high risk of financially unsustainable, unsafe, and stressful working conditions.[40] These may be important considerations for healthy and sustained employment for people returning to work after experiencing a work-related disability.

A limited literature outside the United States, not specific to persons with work-related disabilities, suggests that nonstandard and precarious jobs are worse for persons with disabilities. A British study identified that nonstandard employment was associated with poorer health and transitions to economic inactivity among intellectually disabled workers.[40] Canada-based studies linked nonstandard jobs to lower life satisfaction and more limited access to disability accommodation among disabled workers.[41,42] The challenges of nonstandard and precarious jobs may be exacerbated for disabled workers in the United States due to a more limited social safety net and fewer universal workplace protections.[43] Yet, to our knowledge, no US-based studies have explicitly examined the role of nonstandard and precarious jobs in health, financial, and workplace experiences among workers with disabilities, particularly for those who have recently re-entered the workforce after a work-related disability.

Using a representative survey of disabled workers on their experiences of workplace reintegration after receiving a WC PPD

award in Washington State (WA), we examined (1) factors associated with nonstandard work arrangements and (2) the health and financial implications of such work arrangements. We repeated these analyses among disabled workers using a multidimensional measure of precarious employment. Secondarily, we summarized open-ended survey responses to describe suggestions for promoting sustained employment and preventing reinjury from disabled workers engaged in nonstandard and precarious jobs.

2 | METHODS

2.1 | Data sources and study population

This study was a secondary analysis of an exploratory survey on work reintegration in the first year after a workplace injury. The survey gathered retrospective information from a representative cohort of WA workers with permanent impairment and a PPD award. WA defines impairment as permanent anatomic or functional abnormality or loss of function after maximum medical improvement has been achieved.[44] Workers may be rated with regard to the degree of impairment for a PPD award if treatment has been completed and the worker is still able to work, but has suffered a permanent loss of function.[45] The parent study's overall adjusted response rate was 53.8%, using the standard Response Rate 4 formula published by the American Association for Public Opinion Research.[46] No evidence of substantial response bias was identified.[5] Detailed information on the data, response rate calculations, and research methods for the parent study are published elsewhere.[5]

Two data sources were linked for the parent study: (1) the worker survey and (2) administrative data from the WA Department of Labor and Industries (L&I). WA has a single-payer WC system known as the State Fund. L&I performs an insurer's functions for State Fund claims and administers the state WC system for both State Fund and self-insured employers. Together, the State Fund (accounting for about 70% of employers) and self-insured employers (accounting for about 30% of employers) cover all workers specified by WA's Industrial Insurance Act.[47] L&I provided WC claims data and contact information. Variables included claim descriptors (e.g., State Fund or self-insured coverage), sociodemographic information (e.g., sex, age, county of residence), employment information at the time of the pertinent injury, and permanent disability information (e.g., PPD status and dates, impairment percentages).

The worker survey was developed by researchers in collaboration with L&I experts and stakeholders. The Survey Research Division of the Social Development Research Group, an interdisciplinary research team based in the University of Washington School of Social Work, provided expert consultation and computer-assisted telephone interviewing. L&I identified 2541 workers who were potentially eligible for the survey and whose claims closed with a PPD award from January through April 2018. Interviews for 599 workers who agreed to participate were conducted between February and April 2019 (approximately a year after claim closure), of which 582 were completed. For this analysis, we limited the sample to workers who: (1) did not report self-employment, (2) were employed at the time of the interview, and (3) had complete data on key covariates. The final sample for the quantitative analysis consisted of 442 workers (shown in Figure 1). We used qualitative methods to inductively code responses from an open-ended survey question on suggestions for sustained RTW for 50 workers in nonstandard and precarious jobs who were in the final quantitative sample. This secondary analysis was approved by the University of Washington Institutional Review Board.

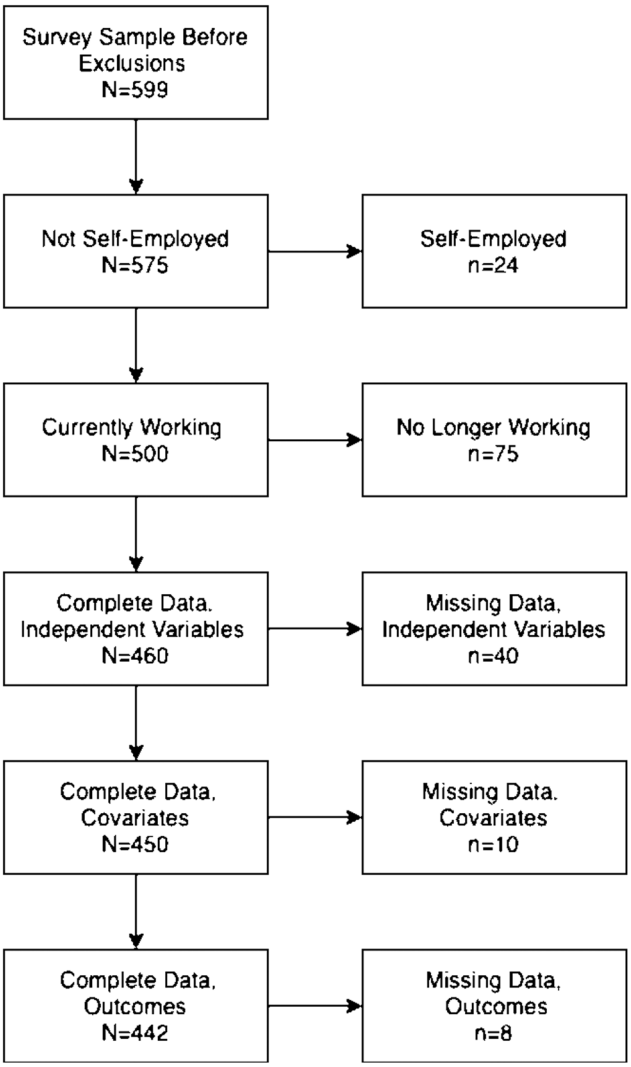

FIGURE 1 Inclusion criteria

2.2 | Measures

2.2.1 | Defining nonstandard and precarious jobs

We examined employment in nonstandard and precarious jobs as exposures in this study. Employment in a nonstandard job was defined as working in a temporary, part-time, or seasonal employment

arrangement instead of a full-time, permanent employment arrangement at the time of the interview. As the survey was not originally developed to measure precarious employment, we developed an exploratory measure of precarious employment by summing several indicators. Precarious employment has been conceptualized and operationalized in various ways.[48] Measures of precarious employment often include both objective and subjective indicators, including those relating to drivers of precarious employment, the employment relationship itself, or outcomes/correlates downstream of precarious employment.[49] In this study, we followed recent guidance within the occupational health literature that measurement of precarious employment should occur at the level of the worker–employer relationship.[50] Specifically, we defined precarious employment as a multidimensional measure of jobs characterized by five dimensions: (1) job insecurity, (2) individualized (as opposed to collective) bargaining relations, (3) limited workplace rights and social protection, (4) powerlessness to exercise rights and vulnerability to hazards, and (5) low wages and economic deprivation.[22,48]

We identified six indicators suitable for constructing a precarious employment measure, representing four of these five conceptual dimensions. The first precarious employment dimension, job insecurity, was operationalized by two indicators: (1) whether the worker reported being employed in a nonstandard work arrangement (vs. a full-time, permanent employment arrangement) and (2) whether the worker reported they strongly disagree or somewhat disagree (vs. somewhat agree or strongly agree) with the statement, "My job security is good." For the second dimension, bargaining relations were operationalized by the worker's union membership status. Union representation can serve to regulate power dynamics between workers and management and facilitate the improvement of working and employment conditions.[51,52] A worker reporting no union membership indicated more precarious employment. For the third dimension, employment that provides limited workplace rights and social protections was operationalized by whether the worker reported having employer-provided health insurance. For the fourth dimension, powerlessness to exercise rights and vulnerability to hazards was operationalized by two indicators: (1) whether the worker reported not being comfortable reporting either an occupational injury or an unsafe work environment, and (2) the worker's response to validated safety climate instruments developed to measure safety culture at the organizational and supervisory level.[53] For safety climate, workers were considered to be less protected from workplace hazards if their score on either the organizational or supervisory scale was one or more standard deviations below the means for the reference worker population. The reference worker population was based on the safety climate instrument validation study ($N = 29{,}179$ workers at $N = 46$ companies).[53] We did not include low wages or economic deprivation as an indicator in the precarity score because we were unable to identify suitable measures in the survey. To calculate the precarious employment score, we summed these six binary indicators. Workers with three or more indicators of precarious employment were considered to be employed in a precarious job; workers with fewer than three indicators were considered to be employed in a less precarious job. This cut-off represents greater than one standard deviation above the mean count of precarity indicators in our study sample (mean [*SD*]: 1.4, [1.2]).

2.2.2 | Outcomes

We examined three outcomes related to (1) worker health, (2) financial strain, and (3) work-related experiences that could influence sustained employment. All outcomes were dichotomized for ease of interpretation. We examined three health-related outcomes: (1) poor self-rated health (poor or fair vs. good, very good, or excellent) at the time of the interview, (2) poor sleep quality in the past 7 days, and (3) reinjury resulting in at least one missed workday in the job held when interviewed. We assessed poor sleep quality using the Patient-Reported Outcomes Measurement Information System (PROMIS) sleep disturbance short-scale. Scores were standardized to a relevant reference population of adults,[54] and workers had high sleep disturbance (poor sleep quality) if their score was one standard deviation or more above average.

Financial strain was defined by workers stating they often or sometimes worried their total income would not be enough to meet their expenses and bills, along with an affirmative response to at least one of the following situations: (1) they had been contacted by a collection agency because of unpaid bills in the past 3 months, or (2) they had been at risk of losing their housing because of unpaid or underpaid rent or mortgage payments in the past 3 months. These economic risk questions were drawn from a previous study of injured workers in WA.[55]

We assessed two work-related experiences related to sustained employment. First, unmet need for job accommodation was defined by workers expressing that they needed disability accommodation but did not receive it (vs. needing and receiving accommodation, or not needing accommodation). Second, low expectations for sustained RTW were defined by workers being very or somewhat uncertain they would still be employed 6 months after their interview. A worker's expectations surrounding RTW is known to be an important indicator of future employment status.[56]

2.2.3 | Covariates

Covariates conceptualized as confounders fell into three categories: (1) sociodemographic characteristics, (2) injury and health-related characteristics, and (3) employment/work-related characteristics. Sociodemographic characteristics included age (categorized into 18–34, 35–44, 45–54, and 55 or older), sex (male or female), educational attainment (high school diploma/GED or less, some college, 4-year college or greater), race/ethnicity (Hispanic/Latino, White, Black/African American, Asian or Native Hawaiian/Pacific Islander [NHPI], or multiple/other). Each worker was assigned a six-level 2013 National Center for Health Statistics Urban–Rural

Classification Scheme for Counties rurality designation: large central metropolitan (akin to inner cities), large fringe metropolitan (akin to suburban areas), medium metropolitan, small metropolitan, micropolitan, and noncore.[57] Nonmetropolitan counties (micropolitan and noncore) were combined due to data sparsity in these categories for nonstandard workers. Injury and health-related characteristics included impairment rating and self-reported health at claim closure. Impairment rating was dichotomized into whether the worker had a 10% or higher whole body impairment rating, based on a published methodology.[5] Self-reported health at claim closure was categorized (excellent, very good, good, fair, and poor). Employment/work-related characteristics were comprised of covariates specific to this population of injured workers. These characteristics included the type of WC coverage (self-insured vs. State Fund), whether workers had more than one job since their WC claim closed, or returned to work with an employer other than the employer of injury. We also adjusted for whether workers changed their occupation after their injury, which could be related to their transition into precarious or nonstandard employment, as well as their physical and emotional well-being. Characteristics such as the workers' highest level of educational attainment, race/ethnicity, self-reported health at claim closure, and employment and system characteristics were self-reported and sourced from survey data. All other covariates were sourced from the linked WC administrative claims data.

2.3 | Analytical approach

2.3.1 | Quantitative analysis

We first described the sample characteristics and the prevalences of the outcomes for the overall sample and by the non-mutually exclusive nonstandard and precarious job categorizations. Then, we used unadjusted and adjusted logistic regression models with robust standard errors to examine associations between employment in nonstandard and precarious jobs (analyzed as separate predictors), and worker health, financial stability, and sustainable employment outcomes. We adjusted for the same set of covariates representing sociodemographic characteristics, injury and health-related characteristics, and employment/work-related characteristics in each analysis. Due to multicollinearity in sleep quality models,[58] race/ethnicity was collapsed into a three-category variable (Hispanic/Latino, White, all other races). We used Stata version 15.1 to perform all quantitative analyses.[59]

2.3.2 | Qualitative analysis

For the secondary aim examining workers' suggestions for promoting sustained employment and preventing reinjury, we examined data from a subsample of nonstandard and/or precarious workers with valid open-ended responses. We used Dedoose version 8.3.35[60] and qualitative content analysis methods to inductively code responses to the open-ended telephone survey question, "If you could suggest one change to the structure, environment, or culture of your current workplace (your job at the time of the interview) that would help you to continue working or prevent reinjury, what would it be?" Trained interviewers recorded workers' responses verbatim or in summary. Following a content analysis approach,[61] two coders (A. T. E. and J. M. S.) independently coded approximately one-third of total responses. Responses that were vague or unclear, where the worker reported no change, don't know, no suggestion, or did not respond, were flagged for exclusion, as they were not considered codable responses for the question. For remaining responses, given the nature of the interview question, we did not approach these data with expectations, and codes were developed inductively. As responses were often detailed and multifaceted, responses were allowed assignment to more than one code. We then compared our code assignments and came to consensus on an initial coding scheme and codebook. The remaining responses were independently coded using this schema. Discordant codes between coders were reviewed, and consensus on final codes was reached. Codes were further grouped for improved interpretability where appropriate. Codes were tabulated to identify the most frequent suggestions for promoting sustained RTW among workers in nonstandard and precarious jobs. Code percentages do not sum to 100% since workers could offer more than one distinct workplace suggestion.

3 | RESULTS

3.1 | Descriptive quantitative findings

Table 1 shows that approximately 12% of the 442 workers in the study sample were employed in a job, and 16% were in a precarious job. Of workers employed in nonstandard work arrangements ($n = 54$), 63% were identified to be working in precarious jobs, as well. Of workers employed in full-time, permanent jobs ($n = 388$), around 10% were in precarious jobs.

In the overall sample, the mean age was 49 years (*SD*: 11), and 32% of workers were female. Most workers resided in more urban counties classified as large central metropolitan or large fringe metropolitan. One out of four workers reported their health at claim closure to be fair or poor, and over 20% of workers had a whole body impairment of 10% or higher. Concerning employer and WC characteristics, one out of four workers were not employed by their pre-injury employer, and over a quarter of workers reported doing a different type of work than they had before the injury/illness. Furthermore, 19% of workers were working in a job different than their first job after RTW.

Workers employed in nonstandard and full-time, permanent employment arrangements are compared in Table 1. Compared with workers in full-time, permanent employment arrangements, workers in nonstandard jobs tended to be younger, female, non-White, have higher levels of educational attainment, and live in more urban counties. Regarding health and impairment characteristics, nonstandard workers tended to report worse self-rated health and more severe impairment

TABLE 1 Descriptive characteristics of disabled workers in nonstandard and precarious employment ($N = 442$)

	Overall ($N = 442$)		Nonstandard ($n = 54$)		Full-time permanent ($n = 388$)		Precarious ($n = 72$)		Less precarious ($n = 370$)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Sociodemographic characteristics										
Age (years) in categories										
18–34	59	13	11	20	48	12	14	20	45	12
35–44	97	22	11	20	86	22	16	20	81	22
45–54	120	27	12	22	108	28	14	22	106	29
≥55	166	38	20	37	146	38	28	39	138	38
Female	141	32	27	50	114	29	30	42	111	30
Educational attainment										
High school diploma/GED or less	127	29	10	19	117	30	17	24	110	30
Some college	224	51	28	52	196	51	37	51	187	51
4-year college or greater	91	21	16	30	75	19	18	25	73	20
Race/ethnicity										
Hispanic/Latino	19	4	4	7	15	4	3	4	16	4
White	363	82	39	72	324	84	59	82	304	82
Black/African American	13	3	4	7	9	2	3	4	10	3
Asian or NHPI	25	6	4	7	21	5	4	6	21	6
Multiple/other	22	5	3	6	19	5	3	4	19	5
Rurality (residence)[a]										
Large central metropolitan	84	19	13	24	71	18	15	2	69	19
Large fringe metropolitan	153	35	18	33	135	35	19	26	134	36
Medium metropolitan	97	23	8	15	89	23	19	26	78	22
Small metropolitan	48	11	7	13	41	11	7	10	41	11
Nonmetropolitan	60	14	8	15	52	13	12	17	48	13
Impairment and health characteristics										
Health at claim closure										
Excellent	53	12	4	7	49	13	4	6	49	13
Very good	110	25	15	28	95	24	15	21	95	26
Good	169	38	17	31	152	39	32	44	137	37
Fair	90	20	15	28	75	19	16	22	74	20
Poor	20	5	3	6	17	4	5	7	15	4
Whole body impairment ≥10%	98	22	13	24	85	22	14	20	84	23
Employment and system characteristics										
No longer employed by pre-injury employer	114	26	26	48	88	23	36	50	78	21
Changed type of work post-injury/illness	124	28	25	46	99	26	34	47	90	24
Self-insured WC employer	171	39	21	39	150	39	16	22	155	42
Reported more than one job in last year	85	19	22	41	63	16	26	36	59	16

Abbreviations: NHPI, Native Hawaiian/Pacific Islander; WC, workers' compensation.

[a]Rurality defined by the 2013 Urban–Rural Classification Scheme for Counties.

TABLE 2 Prevalence of outcomes ($N = 442$)

	Overall ($n = 442$)		Nonstandard ($n = 54$)		Full-time permanent ($n = 388$)		Precarious ($n = 72$)		Less precarious ($n = 370$)	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Fair/poor self-rated health	106	24	15	28	91	23	25	35	81	22
Reinjury	57	13	5	9	52	13	9	13	48	13
Poor sleep quality	98	22	14	26	84	22	24	33	74	20
Unmet need for accommodation	52	12	11	21	41	11	18	25	34	9
Financial strain	58	15	14	26	54	14	18	25	50	14
Low expectations for sustained RTW	105	15	54	30	51	13	22	31	45	12

Abbreviation: RTW, return to work.

(i.e., higher prevalence of 10% or greater whole body impairment). Workers in nonstandard jobs had a higher prevalence than those in full-time, permanent employment arrangements of reporting (1) more than one job since their WC claim closed, (2) doing a different type of work than before the injury that caused their impairment, and (3) not returning to work with the pre-injury employer. Workers in precarious jobs had similar characteristics to those employed in nonstandard jobs (Table 1). As shown in Table 2, workers in nonstandard and precarious jobs had higher proportions of poor self-reported health, poor sleep quality, unmet need for accommodation, financial strain, and low RTW expectations compared with those in full-time, permanent, and less precarious jobs, respectively.

3.1.1 | Outcomes associated with nonstandard and precarious jobs

Unadjusted and adjusted logistic regression models examining outcomes associated with nonstandard and precarious jobs are presented in Table 3. Nonstandard jobs, as compared to full-time permanent jobs, were associated with a threefold higher odds of low expectations for sustained RTW (adjusted odds ratio [AOR]: 3.18; 95% confidence interval [CI]: 1.55–6.53). This was the only statistically significant association between nonstandard jobs and the outcomes assessed. In adjusted models, precarious employment was significantly associated with fair/poor self-rated health (AOR: 2.35; 95% CI: 1.21–4.53), unmet need for job accommodation (AOR: 3.90; 95% CI: 1.89–8.07), and low expectations for sustained RTW (AOR: 3.13; 95% CI: 1.65–5.92) as compared to less precarious employment. No statistically significant associations were observed between precarious employment and financial strain or poor sleep quality in adjusted models.

3.1.2 | Worker suggestions

Of the 92 workers in the quantitative analyses in nonstandard and/or precarious jobs, 42 offered responses that were not considered valid and codable. The subsample analyzed in the qualitative analysis ($n = 50$) with codable responses had similar sociodemographic and health characteristics to the broader group of workers in nonstandard jobs described in Table 1. Of workers in this subsample, 52% were employed in nonstandard jobs, 80% were in precarious jobs, and 32% were in both nonstandard and precarious jobs. Workers employed in nonstandard and/or precarious jobs at the time of their interview had various suggestions for ways workplaces could support disabled workers' sustained employment and physical wellbeing. Frequent suggestions (≥10% of responses) are summarized in Figure 2.

The most frequent suggestions emphasized the importance of reasonable staffing and task distribution (20% of workers) as well as safety precautions and safer workplaces (20% of workers). With respect to safety precautions and safe workplaces, workers reported that various aspects of their current workplaces could be safer. They specifically described the need to improve unsafe equipment (including dangerous equipment related to their initial injury that was not addressed), trip hazards, inadequate facilities, and cleanliness issues within their workplaces. Concerning staffing and task distribution, many workers described that their workplaces were understaffed or could be staffed in safer ways, such as having more people on the same shift. Some workers commented on the drivers of understaffing in their workplaces, such as poor management and turnover, as well as the negative consequences of understaffing on their well-being. For instance, one worker specifically described that understaffing led to overtime for workers in their firm and connected this to an increased risk of injury.

Other frequent suggestions pertained to safety climate (12%), social support in the workplace (12%), RTW issues (10%), and ergonomics and rest breaks (10%). Safety climate was alluded to by workers in several ways. One worker described perceived attitudes of management (e.g., finances viewed as more important to top managers than implementing safety protocols). Other workers described the need for better communication regarding job safety and hazards, as well as better accountability systems to ensure safety. One worker specifically described that their company put workers in

TABLE 3 Associations between nonstandard and precarious jobs and outcomes among disabled workers ($N = 442$)

	Nonstandard: part-time, temporary, seasonal employment						Precarious: ≥3 indicators of precarious employment					
	OR	95% CI	*p* value	AOR	95% CI	*p* value	OR	95% CI	*p* value	AOR	95% CI	*p* value
Fair/poor self-rated health	1.26	0.66–2.38	0.487	1.08	0.50–2.35	0.838	1.90	1.10–3.27	0.021	2.35	1.21–4.53	0.011
Reinjury	0.66	0.25–1.73	0.398	0.85	0.30–2.37	0.758	0.96	0.45–2.05	0.913	1.41	0.59–3.40	0.441
Poor sleep quality	1.27	0.66–2.44	0.480	1.20	0.58–2.48	0.615	2.00	1.15–3.47	0.014	1.88	0.99–3.60	0.055
Unmet need for accommodation	2.17	1.04–4.52	0.040	1.62	0.75–3.50	0.216	3.29	1.74–6.25	<0.001	3.90	1.89–8.07	<0.001
Financial strain	2.16	1.10–4.25	0.025	1.55	0.71–3.38	0.272	2.13	1.16–3.93	0.015	1.71	0.83–3.53	0.144
Low expectations for sustained RTW	2.78	1.45–5.36	0.002	3.18	1.55–6.53	0.002	3.18	1.76–5.74	<0.001	3.13	1.65–5.9	<0.001

Note: Results of quantitative analyses are presented as odd ratios (OR) and adjusted odds ratios (AOR). Adjusted models include the following covariates: age (in categories), sex, educational attainment, race/ethnicity, rurality, health at claim closure, whole body impairment ≥10%, changed from pre-injury employer, changed from pre-injury work/occupation, self-insured workers' compensation employer, and more than one job since claim closure. Reference population for nonstandard is full-time permanent; reference population for precarious is less precarious.

unsafe situations without providing personal protective equipment or safety training. Workers mentioned support from management as generally important, and social support as being valuable in the RTW process. For example, one worker mentioned how important it was to feel supported by managers and co-workers upon RTW. Several other workers described their wish for more support in the RTW process, and one worker wished their employer was more empathetic and supportive of time off for needed health care.

Other RTW-specific suggestions included manager training related to managing injured employees as to educate them to avoid asking their injured employees to perform unsafe tasks. Finally, workers noted the need for job accommodations (e.g., a stool to elevate one's leg), ergonomics, and rest breaks. For ergonomics and rest breaks, workers stated the importance of supports that would be helpful, including comfortable chairs, resting opportunities, and less repetitive work. Less frequent worker suggestions (<10% each) included workplace health promotion efforts, addressing high demands and job strain, providing safety training, effective communication, ensuring safe equipment, fair (non-discriminatory) treatment, enhancing healthcare access or receipt, and improving rights and/or pay.

4 | DISCUSSION

We found that disabled workers in nonstandard and precarious jobs reported a higher prevalence of challenges—including poor health, financial strain, poor sleep, and limited job accommodations after workforce reintegration—than their counterparts with full-time, permanent and less precarious jobs. Additionally, one in three workers in nonstandard and precarious jobs held low expectations for their sustained employment. Using adjusted multivariable logistic regression models, we identified that both nonstandard and precarious jobs were associated with low expectations for sustained RTW. We also identified that precarious employment (compared with less precarious employment) was associated with an unmet need for job accommodation and fair/poor health. This association between precarious employment and poor health for disabled workers is consistent with previous research linking precarious employment to poorer self-rated health for a wide variety of worker populations.[26] Unlike a study not specific to disabled workers,[62] we did not identify statistically significant associations between nonstandard or precarious jobs and sleep disturbance. This may be due to our definition of precarious employment, which may not fully capture facets of precarious employment (e.g., subjective experiences of insecurity) that may be most strongly associated with poor sleep.[62] Overall, this study extends the literature on implications of nonstandard and precarious employment beyond general worker populations to workers returning to work after a work-related disability.

Our finding that nonstandard and precarious jobs were associated with low sustained RTW expectations is concerning given the large body of evidence suggesting that disabled workers'

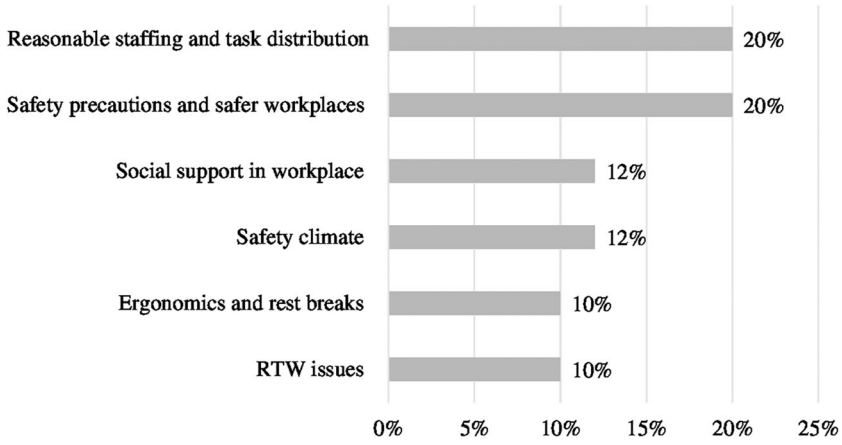

FIGURE 2 Frequent suggestions for promoting sustained return to work (RTW), workers in nonstandard and precarious jobs

expectations predict their future employment.[56] Although sustained RTW expectations have been underexplored, these findings raise concerns that nonstandard and precarious jobs tend to facilitate transitions out of the workforce entirely, instead of being stepping-stones to more secure employment arrangements. Indeed, prior studies identified that more precarious employment arrangements were associated with lower job satisfaction[63] and stress.[36] Other studies detailed how aspects of nonstandard and precarious jobs could lead workers to believe these jobs to be unsustainable in the long-term.[38]

Compared with workers in less precarious jobs, workers in precarious jobs had a higher odds of unmet need for accommodation. According to Shuey and Jovic, workers in precarious jobs may be more likely to underreport disabilities and disability-related accommodation needs due to their perceived expendability and concerns about discrimination.[42] Additionally, workers in precarious jobs had a higher odds of reporting fair or poor health (even after adjusting for health at claim closure) than workers in less precarious jobs. This is unsurprising given that precarious jobs are often laden with psychologically and physically stressful conditions that could lead to declines in health status.[26]

In this study, we examined the same set of outcomes in relation to two measures of employment: employment in a nonstandard work arrangement—frequently used as a unidimensional measure of precarious employment—and a multidimensional measure of precarious employment. Our finding that these two measures had different associations with outcomes was not surprising. While examining nonstandard work arrangements is common in the literature, these jobs tend to be heterogeneous in character with little consensus on how to categorize and define them (e.g., contractor jobs include both flexible contract work tailored toward high-skilled workers as well as low-paid gig work).[18] Furthermore, these nonstandard work arrangements may not capture important aspects of precarious employment, such as unbalanced worker–employer power dynamics central to the precarious employment construct. We developed a multidimensional measure to more thoroughly capture precarious employment experiences than a measure of nonstandard work arrangement can provide. Accordingly, we observed an incomplete overlap between workers in nonstandard and precarious jobs in the study.

Finally, to contribute to a fuller understanding of ways in which disabled workers in nonstandard and precarious jobs suggest their workplaces could be improved, we used qualitative content analysis methods to code open-ended suggestions. The most frequent suggestions were related to the need for enhanced improved staffing and task distribution, safety precautions, a safety-promoting workplace culture, and social support. Suggestions, particularly those related to safety, were unsurprising given workers' prior experiences with work-related injury or illness. It was concerning, however, that many workers in nonstandard and precarious jobs referred to continued safety challenges in their current workplaces, considering their elevated risk of reinjury.[64] Furthermore, issues of inadequate staffing reported by workers align with cost-cutting measures characteristic of industries that increasingly rely on more precarious workforces.[65] While many of these workplace conditions are modifiable through policy changes, others are arguably outside of the typical realm of RTW interventions. Specifically, staffing levels are inherently structured by employer incentives to maintain a safe and satisfied workforce and workers' ability to communicate needs to managers and advocate for improved workplace conditions.[66] Nonetheless, worker suggestions could guide prioritization of WC system-level improvements to assist disabled workers as they reintegrate into the workforce.

4.1 | Strengths and limitations

This study is the first, to our knowledge, to investigate the role of nonstandard and precarious jobs in RTW-related outcomes among US persons with disabilities. We leveraged a representative WA survey of workers who returned to work after a work-related permanent impairment to explore the influence of nonstandard and precarious jobs in multiple worker-reported outcomes. The outcomes we assessed, related to worker health, financial well-being, and sustained employment, offer a detailed picture of overall well-being upon RTW. Additionally, this study was uniquely able to

supplement primary findings with suggestions from workers in nonstandard and/or precarious jobs for promoting their sustained well-being and employment.

This study had several limitations related to internal validity and generalizability. Exposure to a nonstandard and precarious job may not predate all outcomes we assessed due to the survey's cross-sectional nature, despite our efforts to assess temporally relevant outcomes. Longitudinal research could be particularly valuable in disentangling the role of nonstandard and precarious jobs in the trajectories of disabled workers before, during, and after RTW. Also, while all covariates we adjusted for predate the outcomes assessed, we could not evaluate and adjust for the duration of worker exposure to a nonstandard or precarious job upon RTW. Length of exposure may be a particularly important confounder of the relationship between employment type and the reinjury outcome. Finally, our measure of precarious employment is exploratory. We developed the precarious employment measure using several available proxy indicators as the parent study was not developed specifically to measure this construct. As we could not incorporate some important aspects of the precarious employment construct, such as inadequacy of wages, our strategy is not fully aligned with the latest recommendations for measuring precarious employment.[67]

Due to survey eligibility criteria, findings from this study may not be generalizable to workers with disabilities not acquired at work or to workers with disabilities acquired at work who did not qualify for, apply for, or receive WC benefits. For example, many workers (e.g., migrant farmworkers, domestic workers) may be excluded from WC coverage.[68] Also, our analysis is limited to wage earners; however, many self-employed workers are engaged in work arrangements that are typically defined as nonstandard (e.g., independent contractors). Self-employed workers are a heterogeneous group, and recent evidence suggests that some of these workers are in very precarious arrangements.[69] Finally, not all surveyed workers in nonstandard and precarious jobs had valid open-ended responses available for the secondary analysis of workplace suggestions. Despite similarities in descriptive characteristics, it is unclear whether our subsample of workers with valid open-ended responses is representative of broader samples of workers in nonstandard and precarious jobs.

4.2 | Conclusion

This study is among the first to examine the role of nonstandard and precarious employment for disabled workers during the RTW process.[19] It complements a larger body of research identifying the potential negative influence of nonstandard and precarious employment among populations of workers without disabilities. Our findings highlight how nonstandard and precarious employment may pose unique risks to the wellbeing of disabled workers. These workers may experience added social vulnerabilities due to marginalization (e.g., fewer job opportunities due to discrimination, less empowered to demand improved conditions), in addition to heightened physical vulnerabilities which could amplify workplace safety concerns and stressors. Our finding that workers in nonstandard and precarious jobs (compared with full-time permanent, and less precarious jobs) were more likely to report low expectations for sustained RTW suggest that these jobs may be particularly taxing for workers reentering the workforce after sustaining a work-related disability. We also identified that safety concerns and staffing issues were frequently mentioned as areas of concern by disabled workers in nonstandard and precarious jobs. As nonstandard and precarious jobs become increasingly common, these findings could inform federal and state vocational rehabilitation and transitional RTW efforts to help disabled workers with transitions into safe and secure employment. Additional research is needed to understand the long-term health and employment repercussions of nonstandard and precarious jobs during workforce reintegration. Such research could help clarify disabled workers' employment expectations, their decisions to enter nonstandard and precarious jobs, and their health and safety experiences within these jobs.

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CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

DISCLOSURE BY AJIM EDITOR OF RECORD

John D. Meyer declares that he has no conflict of interest in the review and publication decision regarding this article.

AUTHOR CONTRIBUTIONS

Jeanne M. Sears designed the parent study; Amy T. Edmonds and Jeanne M. Sears designed the study. Amy T. Edmonds performed all quantitative analyses and took the lead in writing the manuscript with contributions from Jeanne M. Sears. Amy T. Edmonds and Jeanne M. Sears performed all coding for the content analysis. Allyson O'Connor and Trevor Peckham contributed to the methods, interpretation of findings, and writing.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are not available for data sharing due to privacy and third-party restrictions.

ETHICS APPROVAL AND INFORMED CONSENT

The parent study and secondary analysis of data were both approved by the University of Washington Institutional Review Board. Specifically, all procedures followed were in accordance with the ethical standards of the University of Washington Institutional

Review Board and the 1964 Helsinki Declaration and its later amendments. All survey participants provided their informed consent before their inclusion in the study.

DISCLAIMER

The opinions and conclusions expressed are solely those of the authors and do not represent the opinions or policy of SSA, NIOSH, or any other agency of the Federal Government.

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SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.

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