

Original Research

Relationships among burnout, job dissatisfaction, psychosocial work conditions and minor mental disorders of precarious employment in Taiwan

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Abstract

Background: Precarious employment is a major determinant of mental health outcomes. The COVID-19 pandemic and development of digital economic platforms have enhanced the ratio of precarious employment relationship. The aim of this study was to explore the relationships among burnout, job dissatisfaction, psychosocial work conditions and minor mental disorders of precarious employment.

Methods: A cross-sectional study was conducted, using the questionnaire from a national survey of employees in 2013. Minor mental disorder was measured using the five-item brief symptom rating scale (BSRS-5). 1909 males and 1499 females, with a total of 3408 non-standard employees aged 20 to 65, including short-term and temporary precarious employment, have been analyzed. Also obtained were participants' sex, age, type of industry, status of shift work, job dissatisfaction, burnout as well as psychosocial work conditions. **Results:** The prevalence of minor mental disorders among precarious work condition in man and women were 16.08% and 19.35%, respectively. When we adjusted age and status of shift work, associations between minor mental disorders and female, job dissatisfaction, increased scores in burnout, and high psychological demand of work was noticed. When we further categorized by sex, it was found that job dissatisfaction and increased scores in burnout were significantly related with an increased risk for minor mental disorders in both male and female workers. The odds of minor mental disorders was significantly related with an increased scores in psychological demand of work among female precarious workers. **Conclusions:** This research study provides directions for future researches.

Keywords: job dissatisfaction; minor mental disorders; precarious employment; psychosocial work conditions

1. Introduction

Mental health is a health issue which draws worldwide attention, and anxiety, anger, depression, self-abasement and insomnia are common mental health problems [1,2]. To ensure sustainable economic growth, employment relationships of an emerging market undergoing industrialization often transfer from traditional full-time employment to a precarious form [3–6]. Technology progress along with the rapid development of digital economic platforms such as Uber, Foodpanda and Lyft, and the COVID-19 pandemic which damages the global economy, all enhance the ratio of precarious employment relationship [7–10]. Precarious employment relationship has been proved to be the social determination factor of mental health [4,11,12]. Hence, the mental health conditions of these types of employees deserve more attention.

Precarious employment relationship is also named as temporary work, non-standard, irregular, part-time, or contingency work, but there is no internationally accepted def-

inition [13–15]. It usually contains three features: employment insecurity, income inadequacy, and lack of protection and rights [5,16]. Previous research studies have utilized different dimensions like temporariness, disempowerment, vulnerability, wages, exercise of rights and unpredictable working times on measurement [17–19]. Research study has also used the concept of evaluation based on single-item questions like job secured or not or types of employment [20].

The mental health conditions of employees are an issue of paramount importance to health researchers. Previous studies focused on the correlation between precarious employment and health outcomes [11,14,21,22]. On top of that, research studies also revolved around comparing the differences in mental health aspect among factors like psychological distress, depression and suicide attempts between stable and precarious employment, finding out that factors like sex, age, marital status and family income among precarious employees correlated with mental health conditions [23–28]. Rotating and graveyard shifts



are also associated with physical and mental health outcomes [29,30]. Previous studies also explored that personal burnout, individual work dissatisfaction and psychosocial work conditions in environmental aspects are connected with mental health [31–34]. On top of that, previous studies focused more on Western countries and other developed countries in East Asia [26,35–40]. So far, evidence of mental illness association among precarious employees in Chinese has been scarce.

Taiwan, which has a population of 23 million and is located in East Asia, has experienced a rapid economic transformation, from labour-intensive industries like textile, garment and toys industries to capital-intensive and technology-intensive ones like petrochemical and semiconductor industries. Since the 1990s, contending the global business competition and financial crisis, labor market flexibility in Taiwan has been considered to have a positive influence on economic growth. As a consequence, precarious employment is becoming more common [41]. Similar rapid economic growth is also occurring in other countries such as Argentina, Philippines, Portugal, and Turkey [42]. However, to our knowledge, few studies have explicitly investigated the mental health status of precarious employees in these countries based on nationwide data; neither have they significantly probed the correlations between mental health and personal burnout, individual work dissatisfaction and psychosocial work conditions in environmental aspects. Therefore, the results of this study may fill the gap in this field.

2. Subjects and methods

Previous researches revealed that precarious employment itself was a major social determination factor in mental health, whose relationship differed between different genders [4,11,12]. Women are more often employed in precarious occupations than their male counterparts since gender is the process through which cultural meanings and inequalities in power, privileges and authority come to be associated with sexual difference [43]. As a consequence, we collected precarious employees initially, then analyzed based on different genders. Factors such as personal burnout and psychosocial work conditions stayed the same with previous literature, scored by statistical software and divided into three groups based on the scores [44–46].

2.1 Study population

In this research, we used data from a nationwide survey performed in 2013 by the Institute of Occupational Safety and Health, Ministry of Labor, Taiwan. A two-stage random sampling process was designed to get a representative sample of the working population including employees, self-employed persons, and employers. Grouping for all villages and districts in Taiwan based on levels of urbanization were completed at the first stage, and we also drew random samples of villages and districts from each stratum

during this phase. Subsequently, random samples of households were drawn from chosen districts and villages at the second stage, well residents with jobs in these households were asked to participate in the questionnaire survey. After that, trained interviewers delivered the standardized self-administered questionnaire to the selected households; completed questionnaires were gathered and checked on-site by the same interviewer one week later. Various aspects including sex, age, status of shift work and job types of industry were assessed in the questionnaire. On top of that, assessments for burnout, psychosocial work conditions, job dissatisfaction and mental health were revealed.

A total of 28,677 subjects were sampled. Of these, 25,480 completed the questionnaire, for a response rate of 89%. Subjects of our analyses are restricted to precarious employees aged 20 to 65 years old except those who didn't answer any of the 5 items concerning minor mental disorders. At length, 1909 males and 1499 females were analyzed respectively. Since the survey where we extracted the data was conducted by the government and anonymous, without any personal information, the ethical review process was considered to be waived.

2.2 Precarious work

Information regarding types of employment was obtained by questionnaire and classified into four categories: (1) “Long-term employment, which can usually receive contract renewals”, (2) “Contract employment, contingent, short-term and seasonal contract”, (3) “Temporary employment, student part-time jobs, substitute shift and other non-long-term contingent employees without a clear employment period”, (4) “Others”. We classified (2) and (3) as precarious employment and incorporated them into this research analysis.

2.3 Job dissatisfaction and status of shift work

Job satisfaction was measured by a single question “In general, how is satisfied with current job?”, which has five possible answers ranging from “very good”, “good”, “moderate”, “poor” and “very poor”. In this study, responses were categorized as unsatisfactory (poor or very poor) versus satisfactory (very good, good, or moderate). Shifts were also collected for the week prior to the survey (fixed morning, afternoon, or evening only, but not extending to midnight; non-standard shifts included evening/night/rotating/unscheduled shifts). For analyses, the responses were dichotomized into fixed day and evening shifts (fixed morning, afternoon, or evening only, but not extending to midnight) vs. rotating and graveyard shifts (non-standard shifts included evening/night/rotating/unscheduled shifts).

2.4 Burnout

Burnout status was measured by the personal burnout subscale of the Chinese version of the Copenhagen Burnout Inventory (CBI), which allows conceptualization of physical and mental states of exhaustion and fatigue. Information on the detailed English and Chinese versions of the CBI can be found elsewhere [47,48]. In previous research, the five-item scale of personal burnout showed a high degree of internal consistency [44]. Burnout scores of respondents were obtained from the Chinese version of the CBI, asking “How often do you feel tired? How often are you physically exhausted? How often are you emotionally exhausted? How often do you think: I can’t take it anymore? How often do you feel weak and susceptible to illness?”. Responses were given on a 5-point scale, ranging from “always” (score 4), “often” (3), “sometimes” (2), “not often” (1), and “never” (0). The mean score was then calculated and normalized to a scale of 0 to 100. For the purpose of this analysis, we ranked and classified these scores into three categories (low, medium and high).

2.5 Psychosocial work conditions

Self-evaluation of psychological working condition was conducted by the Chinese version of the Job Content Questionnaire (C-JCQ) based on the job strain model proposed by Karasek, which postulated that a combination of high job demands and low control leads to high levels of work stress that jeopardize health outcomes [49,50]. Job demand scale is a 7-item instrument with the following questions: (1) My work requires me to work fast. (2) My work requires me to work hard. (3) My workloads are not excessive. (4) I have enough time to get the job done. (5) My work requires me to concentrate on job for long time. (6) I am very hectic at work. (7) There is insufficient manpower in my workplace. The job control scale consists of two subcomponents including decision authority dimension and skill discretion dimension. The former was assessed with the following questions: (1) My work allows me to make my own decision. (2) I don’t get to decide on how I would do my work. (3) On things that happen at work, my opinions are influential. And the latter was measured with the following questions: (1) My work requires me to learn new things. (2) There are a lot of repetitive tasks in my work. (3) My work requires me to be creative. (4) My work requires high level of skills. (5) I can do a variety of things on my job. (6) My work provides room to develop abilities. Each item of the inventory was rated in a four point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (4). Items on the reverse side of the statement are reverse coded. Detailed information about the psychometric properties of the C-JCQ has been published in other study [50]. For analyses, the scores of psychosocial work conditions were also calculated and standardized to the 0 to 100 range and divided into tertiles (low, medium and high).

2.6 Minor mental disorders

We used the five-item brief symptom rating scale (BSRS-5) to assess participants’ mental health status. It contains five items with different dimensions: (1) feeling tense or high-strung; (2) feeling depressed or in a low mood; (3) feeling easily annoyed or irritated; (4) feeling inferior to others; and (5) having trouble falling asleep in the past week. This scale derived from the 50 item brief symptom rating scale has been commonly used for screening psychological disorders, with excellent validity and reliability in Chinese populations [2,51,52]. The score for each item ranges from “not at all” (score 0), “a little bit” (1), “moderately” (2), “quite a bit” (3) and “extremely” (4). A threshold of 6 or more recognizes minor mental disorders such as anxiety and depression problems [2,53].

2.7 Statistical analysis

This study used SAS version 9.4 (SAS Institute, Cary, NC, USA) to process and analyze data. Descriptive statistics were presented as percentages, means, and standard deviations (SDs). The chi-square test was used for bivariate analysis. When we adjusted age and status of shift work, the associations of job dissatisfaction, burnout, psychosocial working conditions and the risk of minor mental disorders among unstable employees were studied by multivariate logistic regression models.

3. Results

A total of 3408 precarious employees were identified. The descriptive statistics of the sex, ages, type of industry, status of shift work, job dissatisfaction, burnout, psychosocial work conditions and minor mental disorders were displayed in Table 1. The prevalence of minor mental disorders in precarious work condition were 16.08% and 19.35% for men and women, respectively. Among the surveyed men, 1909 were in precarious employment relationship, and results indicated a mean of 29.45 for burnout (SD = 21.81), 52.18 for psychological demand of work (SD = 12.46) and 46.36 for psychological control of work (SD = 13.08). Among the women, 1499 were in precarious employment relationship, and results indicated a mean of 31.64 for burnout (SD = 21.82), 50.18 for psychological demand of work (SD = 13.54) and 45.25 for psychological control of work (SD = 13.91). Among the precarious employees, the percentages of rotating and graveyard shifts were 13.82% and 11.37% in men (n = 261 men) and women (n = 169) respectively, and those of job dissatisfaction were 15.41% and 11.01% in men (n = 294 men) and women (n = 165) respectively. For both men and women, respondents were predominantly aged between 50 and 65 years old, the percentages of which were 30.28% in men (n = 578) and 25.68% in women (n = 385).

We conducted a bivariate analysis and found that sex, age, status of shift work, burnout, job dissatisfaction and psychological demand of work were associated with minor

Table 1. Descriptive statistics of sex, age, type of industry, status of shift work, job satisfaction, burnout, psychological of work, and minor mental disorders of precarious employees.

| Variable | Total sample (N = 3408) | | Men (n = 1909) | | Women (n = 1499) | |
|--|-------------------------|---------------|----------------|---------------|------------------|---------------|
| | n | % | n | % | n | % |
| Minor mental disorders (Yes) | 597 | 17.51 | 307 | 16.08 | 290 | 19.35 |
| Age | | | | | | |
| 20–29 | 770 | 22.59 | 400 | 20.95 | 370 | 24.68 |
| 30–39 | 804 | 23.59 | 437 | 22.89 | 367 | 24.48 |
| 40–49 | 871 | 25.56 | 494 | 25.88 | 377 | 25.15 |
| 50–65 | 963 | 28.26 | 578 | 30.28 | 385 | 25.68 |
| χ^2 value | | 11.55** | | 11.23* | | 2.74 |
| Type of industry | | | | | | |
| Manufacturing | 150 | 4.4 | 89 | 4.66 | 61 | 4.07 |
| Construction | 565 | 16.58 | 322 | 16.87 | 243 | 16.21 |
| Service | 891 | 26.14 | 812 | 42.54 | 79 | 5.27 |
| Others | 1802 | 52.88 | 686 | 35.94 | 1116 | 74.45 |
| χ^2 value | | 2.51 | | 0.69 | | 4.27 |
| Status of shift work | | | | | | |
| Fixed day and evening shifts | 2946 | 87.26 | 1628 | 86.18 | 1,318 | 88.63 |
| Rotating and graveyard shifts | 430 | 12.74 | 261 | 13.82 | 169 | 11.37 |
| Missing value | 32 | | 20 | | 12 | |
| χ^2 value | | 9.16** | | 3 | | 7.76** |
| Job satisfaction | | | | | | |
| Dissatisfaction | 459 | 13.47 | 294 | 15.41 | 165 | 11.01 |
| Satisfaction | 2948 | 86.53 | 1614 | 84.59 | 1334 | 88.99 |
| Missing value | 1 | | 1 | | | |
| χ^2 value | | 180.34*** | | 109.46*** | | 78.30*** |
| Burnout: mean score (standard deviation) | | 30.41 (21.84) | | 29.45 (21.81) | 31.64 | 31.64 (21.82) |
| Low | 1038 | 30.48 | 626 | 32.83 | 412 | 27.48 |
| Medium | 1264 | 37.11 | 692 | 36.29 | 572 | 38.16 |
| High | 1104 | 32.41 | 589 | 30.89 | 515 | 34.36 |
| Missing value | 2 | | 2 | | | |
| χ^2 value | | 530.80*** | | 295.70*** | | 233.07*** |
| Psychological demand of work: mean score (standard deviation) | | 51.30 (12.98) | 52.18 | 52.18 (12.46) | 50.18 | 50.18 (13.54) |
| Low | 1163 | 34.35 | 572 | 30.17 | 591 | 39.66 |
| Medium | 910 | 26.88 | 514 | 27.11 | 396 | 26.58 |
| High | 1313 | 38.78 | 810 | 42.72 | 503 | 33.76 |
| Missing value | 22 | | 13 | | 9 | |
| χ^2 value | | 127.27*** | | 53.53*** | | 84.52*** |
| Psychological control of work: mean score (standard deviation) | | 45.87 (13.46) | | 46.36 (13.08) | | 45.25 (13.91) |
| Low | 1158 | 34.14 | 623 | 32.84 | 535 | 35.79 |
| Medium | 1117 | 32.93 | 606 | 31.95 | 511 | 34.18 |
| High | 1117 | 32.93 | 668 | 35.21 | 449 | 30.03 |
| Missing value | 16 | | 12 | | 4 | |
| χ^2 value | | 1.34 | | 2.79 | | 1.24 |

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

mental disorders. After categorized by sex, it was found that age, job dissatisfaction, burnout and psychological demand of work were associated with minor mental disorders in men. On the other hand, status of shift work, job dissatisfaction, burnout and psychological demand of work were

related with minor mental disorders in women.

We then included minor mental disorders in the multiple logistic regression model while adjusting for age and status of shift work. As the data shown in Table 2, we noticed the associations between minor mental disorders and

Table 2. Multiple logistic regression analysis of factors associated with minor mental disorders; adjusting age and status of shift work.

| Variable | Total (N = 3408) | | Men (n = 1909) | | Women (n = 1499) | |
|--------------------------------------|------------------|-------------------|----------------|------------------|------------------|------------------|
| | OR | (95% CI) | OR | (95% CI) | OR | (95% CI) |
| Sex | | | | | | |
| male | 1 | | | | | |
| female | 1.38 | (1.12, 1.69)** | | | | |
| Burnout | | | | | | |
| Low | 1 | | 1 | | 1 | |
| medium | 3.64 | (2.45, 5.42)*** | 3.17 | (1.89, 5.30)*** | 4.33 | (2.31, 8.14)*** |
| High | 14.95 | (10.22, 21.88)*** | 14.43 | (8.86, 23.51)*** | 16.07 | (8.71, 29.64)*** |
| Job satisfaction | | | | | | |
| Satisfaction | 1 | | 1 | | 1 | |
| Dissatisfaction | 2.94 | (2.30, 3.77)*** | 3.02 | (2.19, 4.16)*** | 2.88 | (1.94, 4.27)*** |
| Psychological demand of work | | | | | | |
| Low | 1 | | 1 | | 1 | |
| medium | 1.1 | (0.83, 1.48) | 1.06 | (0.70, 1.61) | 1.13 | (0.76, 1.70) |
| High | 1.76 | (1.37, 2.26)*** | 1.42 | (0.99, 2.04) | 2.22 | (1.56, 3.15)*** |
| Psychological control of work | | | | | | |
| High | 1 | | 1 | | 1 | |
| medium | 0.91 | (0.71, 1.16) | 0.77 | (0.54, 1.09) | 1.11 | (0.77, 1.59) |
| Low | 0.92 | (0.72, 1.18) | 0.93 | (0.66, 1.29) | 0.92 | (0.63, 1.33) |

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

female, job dissatisfaction, increased scores in burnout, and high psychological demand of work. When we further categorized by sex, we found that job dissatisfaction and increased scores in burnout were significantly related with an increased risk for minor mental disorders in both male and female workers. The odds of minor mental disorders was significantly related with an increased scores in psychological demand of work among female precarious workers. We also conducted collinearity diagnostics toward independent variables of three regression models, the variance inflation factor (VIF) of which were all under 2. Consequently, a potential for multicollinearity was little.

4. Discussion

The results of this study showed that the relationships among sex, burnout, job dissatisfaction, high psychological demand of work and mental health of workers in precarious conditions.

Our findings were consistent with several preceding articles which reported higher mental health risks for female precarious workers than for men [23,27,28]. Gender-stratified regression analyses showed that work dissatisfaction and high burnout were associated with the greatest risks for minor mental disorders both in male and female precarious workers after adjusting age and shift status. In female workers, psychological demand of work in high category were also associated with an increased risk of minor mental

disorders. Previous research studies showed that when the employed are dissatisfied with their work, it is more likely for them to feel unhappy or unfulfilled for long periods of working days [54,55]. Burnout is a work-related stress syndrome, and high psychological demand of work lacks relevant job resources. As a result, it is associated with mental health [31–34,55,56]. The possible reasons mentioned above still exists in precarious employees, which is consistent with our results. To the best of our knowledge, these results in precarious employees in East Asia Chinese population are original findings, which can also serve as reference for other emerging markets or developing countries.

Although increased scores in psychological demand of work isn't significantly related with minor mental disorders in male workers, we can still find that the higher scores in psychological demand of work are, the higher odds of minor mental disorders are. In addition, for both women and men, psychological control of work isn't related to minor mental disorders, which is probably because that the type of precarious work often belongs to flexible jobs without the power to make final decisions. Thus, the correlation between control dimension and minor mental disorders in Karasek's Job Strain model [49] may be limited in population of precarious employees.

Several study limitations were as follows. First, due to the cross-sectional nature of this study, the causal relationship between burnout, work dissatisfaction and psycho-

logical demand of work and minor mental disorders could not be determined. In addition, since it is expected that precarious worker with minor mental disorders is often associated with poor working conditions less favorable to most workers, the observed associations between sex, burnout, work dissatisfaction and psychological demand of work and minor mental disorders might be partially related to the effect of social choice. In other words, female precarious employees with poor mental health might have been selected for high psychological demand of work and unsatisfactory jobs. Subsequent studies should conduct longitudinal study designs that follow the career paths of precarious workers to confirm causal relationships between the measured variables and health outcomes.

Second, the self-evaluated nature of the survey, results of burnout, work dissatisfaction, psychosocial work conditions and minor mental disorders may have been affected by the subjective perceptions of respondents. In addition, individual differences in mental health vulnerability could be expected. For example, workers with poor mental health may have dropped out of unstable jobs, leading to selection bias among healthy workers. Thus, the prevalence of minor mental disorder among precarious work condition might have been underestimated. Longitudinal studies following workers' mental health outcomes and more objective measures would be needed in order to avoid the bias.

Third, due to the limitations of the survey questionnaire design, the events like marital status and house income that may have contributed to mental health were not adjusted. Therefore, this study may have overestimated the correlation between sex, work dissatisfaction, burnout and psychological demand of work and minor mental disorders among precarious workers. Odds ratio might be overestimated in situations where exposure factors had a higher prevalence. Future studies should measure more variables to capture different situation of precarious employees or adopt different analytical methods [57].

Finally, precarious work conditions could only be assessed by one item. Although there isn't an international standard definition of precarious employment, and previous studies also utilized single-item questions like job secured or not or types of employment as a means of measurement for precarious employment like this study did [20,36], it would be better to design a multiple dimension in Chinese Version scale with reliability and validity to measure this concept among Chinese population in future researches.

Despite the aforementioned limitations, the results of this article highlight the alarmingly high prevalence of mental health problems and mental health risks of working conditions among precarious employees.

5. Conclusions

It is particularly worth noticing that certain job characteristics, including higher burnout and job dissatisfaction were closely associated with poor mental health among pre-

carious workers. High psychological demand of work is also a risk factor for female precarious workers. Although precarious working conditions seems to be inevitable, effective clinical and social preventive measures should be considered by employers and occupational health authorities.

Author contributions

Study Design—CMH, CJC. Data Collection—TTP, PHC. Data Analysis—CMH, SC, CJC. Writing Original Draft—CMH, SC, AC, CJC. Manuscript Review and Editing—TTP, PHC, AC. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate

Not applicable.

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Conflict of interest

The authors declare no conflict of interest.

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