

Associations between occupational stress and demographic characteristics in petroleum workers in the Xinjiang arid desert

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Abstract

Owing to the transformation of the biomedical model of health, more and more professionals pay close attention to the occupational social psychological factors, such as occupational stress. Due to the socioeconomic impact of occupational stress and the petroleum workers stationed in the unique environment in Xinjiang, a cross-sectional study was carried out between May and December 2016 to investigate the relationship between occupational stress and demographic characteristics. A total of 1480 workers were selected. Occupational stress was evaluated with the Occupational Stress Inventory-Revised Edition. The findings of the present study revealed that the values of the Occupational Roles Questionnaire results ($t=9.266$, $P<.001$) and Personal Strain Questionnaire results ($t=21.381$, $P<.001$) were found to be higher than the national normal. Personal Resources Questionnaire values ($t=-17.575$, $P<.001$) were found to be lower than the national normal in petroleum workers stationed in the arid desert, and suggested a strong correlation between occupational stress and demographic characteristics. These data provide evidence that different demographic characteristics are associated with different occupational stress levels in petroleum workers stationed in the arid desert.

Abbreviations: ORQ = Occupational Role Questionnaire, OSI-R = Occupational Stress Inventory-Revised Edition, PRQ = Personal Resources Questionnaire, PSQ = Personal Strain Questionnaire.

Keywords: arid desert, demographic characteristics, occupational stress, petroleum workers

1. Introduction

Stress is defined as an environmental stimulus that affects individuals and can provoke physical and psychological reactions.^[1] Stress in the workplace is called occupational stress. It occurs because of objective demand and subjective reaction imbalance in certain professional conditions.^[2–4] Due to the transition of focus from traditional biomedical model to biopsychosocial model, occupational stress has become a new harmful occupational factor that influences the health of the body and mind similar to the traditional physical, chemical, and biological occupational harmful factors, and can directly or

indirectly threaten the workers' health and ability to work.^[5] It has recently become a persistent global problem and thus of increased interest for researchers.^[6–9]

Adequate tension in the workplace can stimulate the workers' enthusiasm. However, chronic stress may inflict damage on all aspects of workers' physiology and psychology.^[10,11] Compared to occupational stress, ordinary occupational hazard factors (physical, chemical, and biological), will not lead to specific occupational diseases, but will inflict damage in the form of nonspecific worker's health issues. In mild cases, occupational stress can result in suboptimal health and cause job burnout^[12,13] among other symptoms. Severe cases may lead to depression,^[14] death,^[15] and other serious diseases.^[16–18] In addition, occupational stress can cause absenteeism, high employee turnover, and low productivity.^[19–22] These consequences will further lead to low quality of life, job dissatisfaction, impaired judgment,^[23] decreased work ability, difficulties in social relationships,^[24,25] and even accidents.^[26]

Petroleum workers' demographic characteristics include gender, age group, educational level, marital status, monthly family income, length of employment, type of work, professional title, shift, and smoking and drinking status. Although the study of different demographic characteristics in relation to occupational stress has made some progress, it is hampered by similarity of the research studies, small sample numbers, choice of research methods, limitations related to decoupling of other potential influential factors, and inconsistent conclusions put forth by the researchers.^[27–32]

Petroleum workers working in the Xinjiang Field Petroleum Administration belong to a unique category of professionals. Because their task is very difficult, they work long hours and shift work every 6 months. They work in desert areas far from cities, where the weather is harsh, with windy, dry, hot summers and

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very cold winters. Some studies have reported that the monotonous lifestyle of arid deserts and other harsh environments can have an impact on people’s mental and physical health.^[33–37]

It is thus necessary to carry out the occupational stress investigation for the desert petroleum workers in order to identify necessary prevention work in different demographic populations, and eventually improve the quality of working conditions in the petroleum industry. In this study, we conducted a cross-sectional study of petroleum workers in Xinjiang to investigate the relationship between occupational stress and demographic characteristics.

2. Methods

2.1. Participants

This cross-sectional study was performed between May and December 2016. Study subjects were employed for at least one year of both sexes who worked at the Xinjiang Petroleum Administration Bureau of China National Petroleum Corporation in Karamay City, Xinjiang Province, China. A total of 1480 subjects were recruited using a 3-stage stratified sampling method. Finally, based on the Chinese Standard Industrial Classification of the nature of the companies, 740 participants from large companies and 350 from small companies were selected in operating areas, 240 participants from large companies and 150 from small companies were selected in production factories, 130 participants from large companies and 60 from small companies were selected in exploration and development companies. The type of work the participants engaged in included oil transportation, oil extraction, stoker hot note work, geophysical prospecting, and testing, among others. Written informed consent was obtained from all participants. The general characteristics noted for each participant were gender, age ($\leq 30 / > 30$ years), ethnicity (Han/Minority), educational level (Associate’s degree or below/Bachelor’s degree or higher), marital status (unmarried/married), monthly family income ($\leq 3000 / > 3000$), and so on.

2.2. Occupational Stress Inventory-Revised Edition (OSI-R)

The Occupational Stress Inventory Revised Edition (OSI-R)^[38] was translated into Chinese to measure occupational stress. This method has been approved for its reliability and validity, and is widely used in different occupational populations throughout China^[39,40]. The OSI-R consists of Occupational Role Questionnaire (ORQ), Personal Strain Questionnaire (PSQ), and Personal Resources Questionnaire (PRQ), they were used to evaluate occupational stress level, personal strain level and coping resources respectively. Subjects responded to each item on a 5-point Likert scale ranging from 1 (never) to 5 (always). Raw scores for ORQ were converted to T scores (mean \pm SD, 50 \pm 10), based on the general population of China. T scores ≥ 70 , between 60 and 69, and ≤ 59 , indicated high, moderate, and low levels of job strain, respectively.^[41]

2.3. Questionnaire quality control

Prior to administration of the questionnaires, the purpose of the survey, its content, and significance were thoroughly explained to the researchers conducting the experiment. They were also instructed on how they should administer the questionnaires to obtain executive leadership and related health personnel’s

cooperation and ensure that the participants cooperated well and completed each questionnaire item truthfully and accurately. All questionnaires were handed out and retrieved in the activity center. The questionnaires were completed anonymously within 15 minutes.

2.4. Statistical analysis

The survey results were independently entered into the database by 2 researchers and a consistency test was conducted. SPSS for Windows v.17.0 software (SPSS Inc., Chicago, IL) was used for data processing and statistical analysis. The student’s *t*-test test was used to analyze the distribution of general characteristics among different subscales of occupation stress. The χ^2 test was used to analyze the distribution of general characteristics among different occupation stress level. The tests were 2 tailed and the significance level was set at $P < .05$.

3. Results

3.1. Occupational stress variables in the petroleum workers

The total scores obtained from the petroleum workers’ ORQ ($t = 9.266, P < .001$) and PSQ ($t = 21.381, P < .001$) were found to be higher than the national normal. PRQ values ($t = -17.575, P < .001$) were found to be lower than the national normal (Table 1).

The comparison of each of the components of occupational stress, including the degree of role insufficiency ($t = 5.396, P < .001$), role ambiguity ($t = 18.267, P < .001$), role boundary ($t = 12.344, P < .001$), physical environment ($t = 27.601, P < .001$), vocational strain reaction ($t = 30.731, P < .001$), psychological strain reaction ($t = 11.855, P < .001$), physical strain reaction ($t = 19.234, P < .001$), and rational coping ($t = 27.62, P < .001$), showed values that were significantly higher in the petroleum workers than the national normal (Table 1).

Table 1
Assessment results for the total score and each component of occupational stress ($\bar{x} \pm s$).

| Variables | Petroleum workers | Reference range of China | t | P |
|----------------------------------|--------------------|--------------------------|---------|-------|
| Occupational roles questionnaire | 168.04 \pm 27.32 | 162.89 \pm 27.04 | 9.266 | <.001 |
| Role overload | 25.92 \pm 6.98 | 28.45 \pm 5.81 | -15.974 | <.001 |
| Role insufficiency | 31.98 \pm 7.76 | 30.26 \pm 6.89 | 5.396 | <.001 |
| Role ambiguity | 30.96 \pm 8.06 | 28.21 \pm 10.55 | 18.267 | <.001 |
| Role boundary | 26.59 \pm 6.64 | 24.83 \pm 5.13 | 12.344 | <.001 |
| Responsibility | 24.75 \pm 6.71 | 24.68 \pm 6.34 | 1.254 | .212 |
| Physical environment | 29.60 \pm 7.89 | 25.93 \pm 7.36 | 27.601 | <.001 |
| Personal strain questionnaire | 101.33 \pm 19.05 | 91.01 \pm 17.19 | 21.381 | <.001 |
| Vocational strain | 23.90 \pm 6.35 | 19.97 \pm 5.13 | 30.731 | <.001 |
| Psychological strain | 25.75 \pm 6.96 | 23.69 \pm 5.95 | 11.855 | <.001 |
| Interpersonal strain | 25.93 \pm 6.15 | 25.38 \pm 4.39 | -1.624 | .133 |
| Physical strain | 24.96 \pm 6.37 | 21.97 \pm 5.45 | 19.234 | <.001 |
| Personal resources questionnaire | 118.13 \pm 23.84 | 129.23 \pm 17.73 | -17.575 | <.001 |
| Recreation | 26.48 \pm 7.02 | 27.41 \pm 5.45 | -5.783 | <.001 |
| Self-care | 27.77 \pm 26.90 | 29.54 \pm 5.74 | -4.987 | <.001 |
| Social support | 30.42 \pm 8.59 | 36.62 \pm 6.52 | -19.384 | <.001 |
| Rational coping | 28.38 \pm 7.75 | 23.66 \pm 5.96 | 27.62 | <.001 |

Table 2
Association between subscales of occupation stress and demographic characteristics ($\bar{x} \pm s$).

| Variables | n | Occupational roles | | | Personal strain | | | Personal resources | | | |
|-----------------------|-----------------------------|--------------------|----------------|--------|-----------------|----------------|--------|--------------------|----------------|-------|------|
| | | $\bar{x} \pm s$ | t | P | $\bar{x} \pm s$ | t | P | $\bar{x} \pm s$ | t | P | |
| Gender | Male | 745 | 176.90 ± 30.58 | 41.517 | <.001 | 105.27 ± 21.05 | 20.004 | .000 | 118.11 ± 23.96 | 2.358 | .125 |
| | Female | 635 | 166.60 ± 28.39 | | | 100.24 ± 20.56 | | | 120.08 ± 23.33 | | |
| Age group, years | ≤30 | 199 | 175.11 ± 28.12 | 2.235 | .135 | 106.22 ± 20.46 | 5.661 | .017 | 119.66 ± 22.24 | 0.173 | .678 |
| | >30 | 1181 | 171.67 ± 31.32 | | | 102.40 ± 21.01 | | | 119.91 ± 23.92 | | |
| Ethnicity | Han | 1107 | 172.50 ± 29.86 | 0.706 | .401 | 102.70 ± 21.14 | 0.804 | .370 | 119.17 ± 23.43 | 0.229 | .632 |
| | Minority | 273 | 170.79 ± 30.69 | | | 103.97 ± 20.25 | | | 118.40 ± 24.73 | | |
| Educational level | Associate's degree or below | 563 | 169.28 ± 32.02 | 8.835 | .003 | 100.69 ± 21.81 | 11.135 | .001 | 117.33 ± 24.53 | 4.829 | .028 |
| | Bachelor's degree or higher | 817 | 174.15 ± 28.42 | | | 104.51 ± 20.23 | | | 120.18 ± 23.02 | | |
| Marital status | Single | 121 | 175.11 ± 28.36 | 1.276 | .259 | 105.10 ± 21.85 | 1.387 | .239 | 121.27 ± 25.18 | 1.203 | .273 |
| | Married | 1259 | 171.88 ± 30.18 | | | 102.75 ± 20.88 | | | 118.80 ± 23.53 | | |
| Monthly family income | ≤3000 | 309 | 173.04 ± 30.27 | 0.336 | .562 | 102.28 ± 20.31 | 0.419 | .518 | 118.48 ± 23.27 | 0.208 | .648 |
| | >3000 | 1071 | 171.91 ± 29.96 | | | 103.15 ± 21.16 | | | 119.17 ± 23.81 | | |
| Working years | ≤15 | 412 | 175.69 ± 28.63 | 8.132 | .004 | 105.22 ± 20.62 | 6.874 | .009 | 119.27 ± 23.58 | 0.065 | .798 |
| | >15 | 968 | 170.66 ± 30.49 | | | 101.99 ± 21.05 | | | 118.91 ± 23.74 | | |
| Type of work | Oil transportation | 548 | 172.2 ± 30.53 | 1.711 | .163 | 103.69 ± 21.09 | 1.326 | .264 | 120.33 ± 22.42 | 4.366 | .005 |
| | Extract oil | 405 | 173.69 ± 30.96 | | | 101.46 ± 22.15 | | | 120.56 ± 24.93 | | |
| | Stoker hot note work | 427 | 170.67 ± 28.43 | | | 103.42 ± 19.58 | | | 115.87 ± 23.80 | | |
| Professional title | Primary and secondary | 776 | 173.65 ± 28.72 | 5.627 | .018 | 102.57 ± 20.37 | 0.603 | .438 | 119.86 ± 22.75 | 2.251 | .143 |
| | Vice-senior and Senior | 604 | 169.99 ± 31.52 | | | 103.45 ± 21.72 | | | 117.93 ± 24.80 | | |
| Shift | No | 599 | 172.69 ± 29.43 | 0.321 | .571 | 102.61 ± 20.51 | 0.282 | .595 | 120.55 ± 22.36 | 4.459 | .035 |
| | Yes | 781 | 171.76 ± 30.49 | | | 103.22 ± 21.32 | | | 117.84 ± 24.60 | | |
| Smoking | Yes | 445 | 177.71 ± 30.64 | 22.808 | <.001 | 104.40 ± 21.14 | 3.124 | .077 | 117.87 ± 24.28 | 1.543 | .214 |
| | No | 935 | 169.52 ± 29.38 | | | 102.27 ± 20.86 | | | 119.56 ± 23.39 | | |
| Drinking | Yes | 624 | 175.7 ± 28.63 | 15.981 | <.001 | 104.75 ± 20.22 | 8.422 | .004 | 118.93 ± 22.68 | 0.016 | .900 |
| | No | 756 | 169.24 ± 30.85 | | | 101.47 ± 21.47 | | | 119.09 ± 24.49 | | |

The degree of role overload ($t = -15.974, P < .034$), recreation ($t = -5.783, P < .001$), self-care ($t = -4.987, P < .001$), and social support ($t = -19.384, P < .001$), were all significantly lower in the petroleum workers than the national normal (Table 1).

3.2. Association between subscales of occupational stress and demographic characteristics

Comparison of 3 subscales of occupational stress scores in different demographic characteristics that included occupational roles ($t = 8.835, P = .003$), personal strain ($t = 11.135, P = .001$), and personal resources ($t = 4.829, P = .028$), showed that the values were significantly higher in individuals with a bachelor's degree or higher level of education, than in those with an Associate's degree or lower level of education. A statistically significant difference was found between groups of different genders 160 ($t = 41.517, P < .001, t = 20.004, P < .001$), working age ($t = 8.132, P = .004, t = 6.874, 161 P = .009$), and alcohol consumption ($t = 15.981, P < .001, t = 8.422, P = .004$) with regard to occupational roles and personal strain. Male scores were higher than female, individuals with shorter working years scored higher than those with longer working history, and those who drank were more likely to score higher than those who did not. The degree of personal strain ($t = 5.661, P = .017$) was significantly lower in >30 age group than in the ≤30 age group. With regard to personal resources, a statistically significant difference was found in subjects performing different types of work ($t = 4.366, P = .005$) and working different shifts ($t = 4.459, P = .035$). The degree of occupational roles ($t = 5.661, P = .017$) was significantly higher in the primary and secondary groups, than in the vice-senior and senior groups ($t = 5.627, P = .018$).

The degree of occupational roles ($t = 5.661, P = .017$) was significantly higher in the smoking group, than the nonsmoking group ($t = 22.808, P < .001$). There were no statistically significant differences among other variables, which included ethnicity, working years, and marital status ($P > .05$) (Table 2).

3.3. Occupation stress level is associated with demographic characteristics

The results of this study show a statistically significant difference in occupational stress levels in terms of gender ($\chi^2 = 12.358, P = .002$), education level ($\chi^2 = 14.075, P = .001$), working years ($\chi^2 = 6.352, P = .042$), type of work ($\chi^2 = 10.000, P = .040$), professional title ($\chi^2 = 13.881, P = .001$), smoking ($\chi^2 = 7.779, P = .020$), and drinking ($\chi^2 = 15.563, P < .001$) (Table 3).

4. Discussion

This study investigated the relationship between occupational stress and demographic characteristics in petroleum workers in the Xinjiang arid desert. With the transformation of traditional biomedical model of health to biopsychosocial model, more and more professionals pay closer attention to the occupational social psychological factors. Occupational stress damages physical and mental health, sometimes in nonspecific manner, and may threaten occupational health and working ability.

The current research study found that male occupational role and personal strain scores were higher than female, which is consistent with the results of Ning et al.^[42] Males tend to take responsibility for the whole family, while also maintaining their own careers, making their jobs more challenging. In comparison,

Table 3

Association between occupational stress level and demographic characteristics.

| Variables | | Occupation stress level | | | χ^2 | P |
|-----------------------|-----------------------------|-------------------------|--------------|--------------|----------|-------|
| | | Low | Moderate | High | | |
| Gender | Male | 36 (2.61%) | 166 (12.03%) | 543 (39.35%) | 12.358 | .002 |
| | Female | 40 (2.90%) | 188 (13.62%) | 407 (29.49%) | | |
| Age group, years | ≤30 | 7 (0.51%) | 42 (3.94%) | 150 (10.87%) | 4.988 | .083 |
| | >30 | 69 (5.00%) | 312 (22.61%) | 800 (57.97%) | | |
| Ethnicity | Han | 58 (4.20%) | 281 (20.36%) | 768 (55.65%) | 1.120 | .571 |
| | Minority | 18 (1.30%) | 73 (5.29%) | 182 (13.19%) | | |
| Educational level | Associate's degree or below | 38 (2.75%) | 169 (12.25%) | 356 (25.80%) | 14.075 | .001 |
| | Bachelor's degree or higher | 38 (2.75%) | 185 (13.41%) | 817 (59.20%) | | |
| Marital status | Single | 5 (3.85%) | 24 (1.74%) | 92 (6.67%) | 3.202 | .202 |
| | Married | 71 (5.14%) | 330 (23.91%) | 858 (62.17%) | | |
| Professional title | Primary and secondary | 5 (3.85%) | 24 (1.74%) | 92 (6.67%) | 3.202 | .202 |
| | Vice-senior and Senior | 71 (5.14%) | 330 (23.91%) | 858 (62.17%) | | |
| Monthly family income | ≤3000 | 17 (1.23%) | 77 (5.58%) | 215 (15.58%) | 0.115 | .944 |
| | >3000 | 59 (4.28%) | 277 (20.07%) | 735 (53.26%) | | |
| Working years | ≤15 | 16 (1.16%) | 94 (6.81%) | 302 (21.89%) | 6.352 | .042 |
| | >15 | 60 (4.35%) | 260 (18.84%) | 648 (49.96%) | | |
| Type of work | Oil transportation | 36 (2.61%) | 121 (8.77%) | 391 (28.33%) | 10.000 | .040 |
| | Extract oil | 14 (1.01%) | 114 (8.26%) | 277 (20.07%) | | |
| | Stoker hot note work | 26 (1.89%) | 119 (8.62%) | 282 (20.43%) | | |
| Professional title | Primary and secondary | 28 (2.03%) | 193 (13.99%) | 555 (40.22%) | 13.881 | .001 |
| | Vice-senior and Senior | 48 (3.48%) | 161 (11.67%) | 395 (28.62%) | | |
| Shift | No | 32 (2.32%) | 146 (10.58%) | 421 (30.51%) | 1.047 | .593 |
| | Yes | 44 (3.19%) | 208 (15.07%) | 529 (38.33%) | | |
| Smoking | Yes | 18 (1.30%) | 99 (7.17%) | 328 (23.77%) | 7.779 | .020 |
| | No | 58 (4.20%) | 255 (18.48%) | 622 (45.07%) | | |
| Drinking | Yes | 23 (1.67%) | 140 (19.14%) | 461 (33.41%) | 15.563 | <.001 |
| | No | 53 (3.84%) | 214 (15.51%) | 489 (35.43%) | | |

female workers are more likely to get help and social support from others. Lack of support resources for males is more likely to cause psychological stress.

Significant differences were found between the >30 age and ≤30 age groups with regard to personal strain. The lower the age group, the higher is the individual nervous response. This was perhaps due to the novelty of the job and lifestyle for the younger workers, who are still trying to figure out the work-life balance without success.

Our results also revealed a statistically significant difference between individuals with an Associate's degree or lower education levels and those with a Bachelor's degree or higher education levels, with regard to occupational roles, personal strain, and personal resources. This is because people with high levels of education have higher self-requirements and higher expectations of society. When their work does not meet the individual expectations, it will lead to a decrease in satisfaction with one's work and increase the pressure associated with their job.

Significant differences were found between the groups of subjects who have worked >15 and ≤15 years with regard to occupational roles and personal strain. This finding is consistent with the results of Guan et al.^[43] This suggests that workers with long employment history can better adapt to the working environment, as they have good mentality, strong comprehensive ability, strong job satisfaction, allowing them to be able to deal with all kinds of stressful situations. The workers who have worked for a shorter amount of time, lack work experience, and therefore must improve their ability to perform necessary work tasks. Due to their aspirations for achievement, the necessity to perform tedious tasks, and fierce competition, they are more likely to feel the occupational stress. This finding is not consistent

with the results of Lian et al,^[44] which may be attributed to the differences in study subjects and work type.

A statistically significant difference was also observed in the different type of work with regard to personal resources. Oil production workers have better coping abilities than oil extraction and Stoker hot note workers. This is most likely due to the different kinds of work involved, the modes of labor employed, as well as the differences in organizational levels and worker roles.

The participants' shift proved to be a statistically significant variable in the personal resources category. This may be because of a decrease in social policy exchange opportunities, which reduces the ability to adapt to various social roles and the time to communicate with family and friends, thus diminishing the ability to cope with tension. Long-term irregular shift operation not only affects the physical health of workers, but can also reduce work efficiency and cause higher absenteeism, increasing workers' occupational stress problems.

The difference in professional title was statistically significant with regard to occupational roles. The people with primary and secondary professional titles had higher occupational roles scores. This is likely because individuals with primary and secondary professional titles have more burdensome jobs, while vice-senior and senior workers were more familiar with the nature of their long work tenure. This finding is consistent with the results of Sliskovic and Maslic.^[45]

A number of studies^[46,47] have found that stress in the workplace is associated with unhealthy behavior in employees, that smokers are more likely to have occupational stress than nonsmokers, and that occupational stress is associated with an increase in alcohol consumption. The results of this study are consistent with domestic and international studies,^[48] which

believe that smoking or alcohol-drinking workers score higher on occupational stress. Petroleum workers often work overtime and night shifts in order to complete their performance goals and relieve stress by smoking and drinking alcohol, which is bound to have an impact on health in the long run.

The petroleum workers' scores in occupational roles and personal strain categories were found to be higher than the national normal, while personal resources scores were lower. This finding may be related to poor working environment, such as bad weather, dust, noise, presence of crude oil, and they often work overtime and night shifts, and spend an excessive amount of time and energy completing their performance goals, they also lack the time to find relief from the competitive pressures they face, and the absence of proper monitoring maybe another reason which can easily cause fatigue and burnout, thus increasing occupational stress levels. These factors may also increase the risk of workplace accidents.

The differences in degrees of occupational stress in different groups in terms of gender, level of education, working years, type of work, job title, smoking and drinking, were statistically significant, indicating that desert petroleum workers have different job intensity. In particular, they are not only affected by poor human ergonomics, physical and chemical factors, but also by harsh natural conditions, and the monotony of everyday life. It thus appears that the distribution of labor mode, work demand, and coping resources is unbalanced among workers, resulting in different degrees of tension.

There were some limitations to the present study. The study only focused on the relationship between demographic characteristics and occupational stress whereas other variables are not considered. Second, the cross-sectional design prevented us to explore other causes of occupational stress. In future, we plan to analyze the relationship between other variables and occupational stress and undertake a cohort study to investigate the casual relationship. This will provide more evidence for the importance of understanding stress in these petroleum workers.

5. Conclusions

In conclusion, the results of this study revealed that different demographic characteristics are associated with different occupational stress levels in petroleum workers stationed in the arid desert. Male occupational role and personal strain scores were higher than female. The lower the age group, the higher is the individual nervous response. Associate's degree or lower education levels and those with a Bachelor's degree or higher education levels were different with regard to occupational roles, personal strain, and personal resources. Occupational roles and personal strain are also difference in different working years, different type of work with regard to personal resources are difference. The difference in professional title was statistically significant with regard to occupational roles. This suggested a strong correlation between occupational stress and demographic characteristics. Recommendations were made to strengthen health knowledge propaganda and educational training, increase the humanistic care and psychological counseling, popularize knowledge of mental health issues of the workers, alleviate their mental tension and pressure, and build mental health security.

Author contributions

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