


# Career Development and Occupational Disease in Chinese Nurses: A Cross-Sectional Study

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## Abstract

**Background:** A high tendency of intention to leave has been noted for nurses in China. The nursing profession is currently unstable.

**Methods:** A sample of 51406 nurses from 311 hospitals in China who completed the self-administered questionnaire online was recruited via the China Nursing Association by email and phone using a simple random sampling method. The recruitment occurred between July 2016 and July 2017.

**Results:** The majority of the nurses had working experience  $\leq 20$  years and had to work on night shifts. A high percentage of nurses (71.8%) had insomnia, followed by 37.0% who developed varicose veins and 40.9% who experienced musculoskeletal-related disorders. The proportions of the nurses who developed gastrointestinal and urinary system diseases were 56.0% and 18.2%, respectively. Nearly half of the nurses did not have a clear goal for their future career development and intended to leave. Nurses with long working hours each week were positively associated with the development of occupational diseases. The prevalence of occupational diseases was independently associated with career development.

**Conclusions:** A high prevalence of occupational diseases was noted among nurses in China. The data indicated that 50% of the nurses were vague regarding their career planning. The data suggest that managers need to pay more attention and to prevent this problem. Appropriate interventions should also be provided.

## Keywords

career development, occupational disease, intention to leave, job satisfaction, nurse

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**What do We Already Know About This Topic?**

A high percentage of nurses have shown intention to leave their work. The nursing profession is extremely unstable.

**How Does Your Research Contribute to the Field?**

This was a cross-sectional survey including a large sample size, which could objectively and truly reflect the overall situation of the Chinese nurses.

**What Are Your Research's Implications for Theory, Practice, or Policy?**

The present study demonstrated a high prevalence of occupational diseases among nurses in China. The majority of nurses were vague regarding their career planning. The instability of public health workers should prompt managers to change the corresponding policies and practices.

**Introduction and Background**

The data from the Health Commission indicated that the number of registered nurses was more than 4.70 million in China in 2020.<sup>1</sup> An urgent need for hiring nurses has been noted for the public health system in China due to the rapid increase in the number of the elderly and the demand for physical health.<sup>2</sup> However, a huge shortage of nurses has been reported in China due to the low proportion of nurses in the total population. The reports have shown that the population of nurses accounts for nearly 5% of the total population in developed countries, while this proportion is less than 1% in China. The low proportion of nurses would lead to an extremely heavy workload. Previous studies have shown that nurses are associated with a high level of job burnout and turnover intention in China.<sup>3</sup> The increased rate of turnover and excessive work pressure result in an additional shortage of nurses, which will finally lead to work-related problems and the development of occupational diseases. Early reports indicated that 40.9 per 100000 male employees among 2021 cases developed occupational diseases in Poland in 2020.<sup>4</sup>

Occupational diseases that occur during work result in illnesses associated with the particular occupation or industry.<sup>5</sup> A variety of physical, biological, chemical, and psychological factors are present in the working environment or during the course of employment. These factors are responsible for causing the occurrence of occupational diseases.<sup>6</sup> The World Health Organization (WHO) estimated the work-related burden of disease and injury with the aid of experts. Evidence from data has suggested that occupational exposure to risk factors may cause osteoarthritis and other musculoskeletal diseases.<sup>7,8</sup> Previous research studies have shown that occupational diseases, which can be ascribed to inappropriate working conditions or a poor working environment, can be essentially prevented, suggesting that the control of the occupational hazards can decrease the incidence of work-related diseases and improve public health.<sup>9</sup> Due to the nature of nurses' clinical practice, occupational diseases have occurred frequently. It is common to find nurses who have suffered from a series of physical and psychological conditions associated with a heavy workload and serious stress. This group presents with a high incidence of occupational diseases. Nearly 50% of nurses demonstrated musculoskeletal-related

disorders in India.<sup>10</sup> A higher prevalence of sleep disorders was present in nurses working night shifts compared with that noted in the general population.<sup>11</sup> Early research studies indicated that occupational diseases in Chinese nurses have received considerable attention in recent years. It has been previously reported that 50% of brush nurses experience occupational-related injuries each year.<sup>12</sup> Work-related fatigue exists among first-line nurses in Wuhan province with the outbreak of COVID-19.<sup>13</sup> The working time period during the COVID-19 outbreak was positively associated with anxiety in nurses working in Wuhan.<sup>14</sup> It is worth noting that no related reports have been published on the rate of occupational diseases among nurses in China.

Occupational diseases may cause physical disorders and psychological changes on various levels, which can cause job dissatisfaction and subsequently affect the future career choices and career development of the nurses. An early study indicated a high prevalence of occupational stress, burnout, and job dissatisfaction among medical healthcare workers.<sup>15</sup> Occupational stress is highly associated with poor colleague relationships, which may increase the nurse turnover rate and cause changes in career choices.<sup>16</sup>

Based on this evidence, the control of occupational diseases among nurses in China and the increased vigilance about their job satisfaction may significantly affect their intention to leave and career development plans. To estimate the burden of work-related diseases attributable to occupational exposure and to ensure appropriate career development, a self-made questionnaire was used to obtain the nationwide state of nurses with the aid of the Chinese Nursing Association. Therefore, the present study aimed to investigate the career development, the incidence of occupational disease, and the job satisfaction of nurses in China and explore their potential associations.

**Methods****Study Design**

The present study was a cross-sectional study, which used a self-made questionnaire to collect information on the number of nurses and their occupation-associated conditions with the aid of the Chinese Nursing Association. A total of 51800 nurses from 311

cities in China were randomly selected using a simple random sampling method in China between July 2016 and July 2017. Finally, 51406 nurses were selected for the current research study according to the inclusion and exclusion criteria.

The present study was conducted using a simple random sampling method. The sample size was calculated using the following formula:  $N = (U\alpha\sigma/\delta)^2$ , where  $N$  was the required sample size and  $U\alpha$  the boundary value of  $U$  in a two-sided test.

For  $\alpha = .05$ ,  $U\alpha = 1.96$ ,  $\sigma = 1.09$ , and  $\delta = .015$ , an  $N$  of at least 20364 was required. The investigators of the present study recruited a total of 51406 nurses in order to reflect the situation of nurses in China more objectively and accurately. It was shown that 24% of nurses originated from West China, whereas 40% of participants originated from South China. (China was divided into east and west according to the borders of Inner Mongolia, Shanxi and Sichuan provinces. China was divided into north and south according to the borders of the Yangtze River.)

## Selection Criteria

The inclusion criteria were the following

1. Registered nurses, suggesting that all the nurses had the necessary certificate of being a nurse;
2. Working full-time in the clinic for at least 1 year;
3. Absence of chronic diseases or basic diseases prior to being a nurse;
4. Complete understanding of the current research and volunteering to participate in this survey.

The following exclusion criteria were used:

1. Refusing to participate;
2. Lack of medical qualifications in China;
3. Previous history of basic problems or diseases;
4. Limited working experience to reach the level required for the present study.

## Data Collection

Email communication was used to contact the managers in the hospitals, and research permission was obtained from each hospital. The hospital administrators contacted the nurses to participate in the study with their verbal informed consent. The professional online questionnaire platform was termed So-jump and was used in the research to collect the basic data and information of the nurses in China. Mobile phones or computers were used to answer online questions.

This questionnaire in the present research study was designed and determined by Professors of the Chinese Nursing Association and PLA General Hospital. Following the conduct of several expert meetings, the structure, content, and survey methods of the questionnaire were finalized. The scientific basis and rationality of our survey were ensured by senior Professors. The reliability and validity of the questionnaires met the necessary requirements.

The professional investigators were responsible for the implementation of the questionnaire. The surveys consisted of the four following parts:

**Part one:** Demographic data, including age, gender, working time period, and working hours each week.

**Part two:** This part was a self-administered questionnaire to evaluate occupational diseases. The question used was the following: "Did you get the following occupational diseases in your working environment?" The answers included insomnia, varicose veins, musculoskeletal-related disorders, gastrointestinal diseases, urinary system diseases, and others.

**Part three:** This part was used to evaluate the job satisfaction of the nurses.

The question used was the following: Were you satisfied with your job? The answer was as follows: very unsatisfied, unsatisfied, satisfied, very satisfied.

**Part four:** This part was used to evaluate the career development of the nurses.

The self-administered questions were the following:

- i. Did you have a clear goal for your future career development? The answer was yes or no.
- ii. Did your work unit provide you with training opportunities? The answer was yes or no.
- iii. Which of the following training did you undergo during your working experience? The answers were the following: professional qualification training, professional skills training, overseas training, specialist nurse training, nursing management training, other types of training, and never participated.
- iv. Did you work on night shifts? The answer was yes or no.
- v. Were you willing to continue to engage in the nursing profession in the future? The answer was yes, don't know, or no.

## Statistical Analysis

The excel spreadsheet was used to collect all data, and IBM SPSS (SPSS 23.0) software was applied for analysis. The variables including demographic characteristics, occupational disease, and career development were summarized using the percentage and frequency. Multiple logistic regression analysis was used to assess the factors associated with occupational disease, job satisfaction and career development. Odds ratio (OR) with 95% confidence interval (CI) were both presented in the results.  $P < .05$  was considered to indicate statistically significant differences.

## Results

### Demographic Characteristics

The majority (97.1%,  $n=49898$ ) of the nurses were female. The age was  $\leq 40$  years for 87.7% of the nurses ( $n=45046$ ). A total of 46377 out of 51406 nurses (90.1%) had to work  $\leq 55$

**Table 1.** The demographic characteristics of nurses in China (n = 51406).

Variables	Frequency	Percentage (%)
Age		
≤40	45046	87.63
≥41	6360	12.37
Gender		
Male	1508	2.93
Female	49898	97.07
Working time (year)		
≤20	45119	87.77
≥21	6287	12.23
Working hours each week		
≤55	46377	90.22
≥56	5029	9.78

hours per week, and 5029 (9.9%) had to work more than 55 hours per week. A total of 45119 (87.8%) nurses had less than 20 years of working experience, and only 6287 (12.2%) had more than 20 years of working experience. The demographic characteristics of the nurses are shown in [Table 1](#).

### Occupational Disease and Career Development

A total of 36897 out of 51406 nurses (71.78%) had insomnia and 19034 (37.03%) developed varicose veins. A total of 21039 (40.93%) developed musculoskeletal-related disorders, whereas 9342 (18.17%) and 28795 (56.01%) developed urinary and gastrointestinal system diseases, respectively. The data indicated that 25493 (49.59%) nurses were satisfied with their job, whereas 15315 nurses were unsatisfied (29.79%). Only 8297 nurses (16.14%) were quite satisfied with their job, and 2301 (4.48%) were very unsatisfied with their job. A total of 26911 nurses (52.35%) did not have a clear goal for their future career development. Nearly half of the nurses were not willing to do this type of job in the future (50.42%, n=25921). A total of 38137 nurses (74.18%) were forced to work on night shifts during their working hours. A total of 30173 nurses (58.70%) considered that their working unit had provided opportunities for them to obtain further training during their work process. A total of 23243 nurses (45.21%) obtained professional qualification training, and 29412 (57.22%) obtained professional skills training. A small number of nurses (1.45%, n=747) took advantage of the opportunities to work abroad and acquire additional medical-related experience. A total of 7864 nurses (15.30%) did not receive an opportunity to participate in training during their work.

The demographics of the occupational diseases and career development are shown in [Table 2](#).

### The Relationship Between the Occupational Disease and the Demographic Characteristics

The present study concluded that nurses with more hours spent in the hospital each week tended to develop a series of

occupational diseases, such as insomnia, varicose veins, musculoskeletal-related disorders, gastrointestinal diseases, and urinary system diseases (OR=1.49, 95%=1.39–1.60, P=.02; OR=1.33, 95%=1.26–1.41, P=.00; OR=1.33, 95%=1.25–1.41, P=.000; OR=1.58, 95%=1.48–1.68, P=.00; OR=1.69, 95%=1.58–1.81, P=.02). Young nurses were more likely to develop gastrointestinal diseases compared with those who had age ≥40 years (OR=.74, 95%=.65–.83, P=.00). Female nurses tended to develop varicose vein complications compared with male nurses (OR=1.28, 95%=1.14–1.42, P=.00). Nurses who worked on night shifts were more likely to suffer from occupational diseases. The decision to perform night shifts was significantly related with the incidence of occupational diseases (OR=.64, 95%=.61–.67, P=.00; OR=.76, 95%=.72–.79, P=.00; OR=.91, 95%=.96–1.06, P=.00; OR=.61, 95%=.58–.63, P=.00; OR=.70, 95%=.68–.74, P=.00). The relationship between the incidence of occupational diseases and the demographic characteristics is shown in [Table 3](#).

### The Relationship Between Job Satisfaction and the Incidence of Occupational Disease

Nurses with occupational diseases, such as musculoskeletal-related disorders and urinary-related diseases, were usually unsatisfied with their job. (OR=1.10, 95%=1.06–1.15, P=.00; OR=1.12, 95%=1.08–1.16, P=.00).

The relationship between job satisfaction and type of occupational disease is shown in [Table 4](#).

### Career Development Assessment by Multivariate Analysis

Nurses with additional years of working experience did not usually receive a clear goal in their career development (OR=.89, 95%=.84–.94, P=.00). Moreover, nurses suffering from various occupational diseases, such as insomnia, musculoskeletal-related disorders, gastrointestinal and urinary-related diseases tended to have unclear career development goals (OR=1.10, 95%=1.06–1.15, P=.00; OR=1.12, 95%=1.08–1.16, P=.00; OR=1.10, 95%=1.06–1.15, P=.000; OR=1.11, 95%=1.05–1.16, P=.00). In addition, the present study discovered that nurses who received training opportunities provided by their unit in their work intended to have a clear goal of their career (OR=3.21, 95%=1.09–3.36, P=.00). The more satisfied nurses were with their own work, the more likely they were to have a clear career development goal (OR=.46, 95%=.46–.51, P=.00; OR=.14, 95%=.13–.169, P=.00; OR=.04, 95%=.04–.05, P=.00). The present study demonstrated that nurses who were willing to continue to engage in the nursing profession in the future usually had clear career development. Positive correlations were noted between career development and intention to leave

**Table 2.** The demographics of occupational disease and career development in China (n=51406).

Variables	Frequency	Percentage (%)
Did you get the following occupational diseases in working experience?		
Insomnia	36897	71.78
Varicose veins	19034	37.03
Musculoskeletal-related disorders	21039	40.93
Gastrointestinal diseases	28795	56.01
Urinary system diseases	9342	18.17
Others	4923	9.58
None	3568	6.94
Did you have a clear goal for your future career development?		
Yes	24495	47.65
No	26911	52.35
Did your work unit provide you with training opportunities?		
Yes	21233	41.30
No	30173	58.70
Which of the following training did you undergo during your working experience?		
Professional qualification training	23243	45.21
Professional skills training	29412	57.22
Overseas training	747	1.45
Specialist nurse training	20165	39.23
Nursing management training	13293	25.86
Other types of training	538	1.05
Never participated	7864	15.30
Did you work on night shift?		
Yes	38137	74.18
No	13269	25.82
Were you willing to continue to engage in the nursing profession in the future?		
Yes	17606	34.25
Don't know	7879	15.33
No	25921	50.42
Job satisfaction		
Very unsatisfied	2301	4.48
Unsatisfied	15315	29.79
Satisfied	25493	49.59
Very satisfied	8297	16.14

**Table 3.** Predictors of occupational disease using logistic regression analysis.

Independent Variables	Insomnia		Varicose Veins		Musculoskeletal-Related Disorders		Gastrointestinal Diseases		Urinary System Diseases	
	OR (95% CI)	P Value	OR (95% CI)	P Value	OR (95% CI)	P Value	OR (95% CI)	P Value	OR (95% CI)	P Value
Age										
≤40	1.00	.57	1.00	.61	1.00	.00	1.00	.000	1.00	.14
≥41	.96 (.84–1.10)	.57	1.03 (.91–1.18)	.61	1.38 (1.22–1.56)	.00	.74 (.65–.83)	.00	.88 (.75–1.04)	.14
Gender										
Male	1.00	.21	1.00	.00	1.00	.90	1.00	.22	1.00	.05
Female	1.08 (.96–1.21)	.21	1.28 (1.14–1.42)	.00	.99 (.90–1.10)	.90	1.07 (.96–1.18)	.22	1.15 (1.00–1.31)	.05
Working time (year)										
≤20	1.00	.00	1.00	.63	1.00	.01	1.00	.22	1.00	.01
≥21	.78 (.68–.89)	.00	.97 (.85–1.10)	.63	1.19 (1.05–1.35)	.01	.93 (.82–1.05)	.22	.81 (.68–.96)	.01
Working hours each week										
≤55	1.00	.02	1.00	.00	1.00	.00	1.00	.00	1.00	.02
≥56	1.49 (1.39–1.60)	.02	1.33 (1.26–1.41)	.00	1.33 (1.25–1.41)	.00	1.58 (1.48–1.68)	.00	1.69 (1.58–1.81)	.02
Did you work on night shift?										
Yes	1.00	.00	1.00	.00	1.00	.000	1.00	.000	1.00	.00
No	.64 (.61–.67)	.00	.76 (.72–.79)	.00	.91 (.96–1.06)	.000	.61 (.58–.63)	.00	.70 (.68–.74)	.00

**Table 4.** The relationship between job satisfaction and occupational disease in China (n=51406).

Independent Variables	OR (95% CI)	P Value
Insomnia		.13
Yes	1.00	
No	.95 (.90–1.01)	.13
Varicose veins		.00
Yes	1.00	
No	.89 (.84–.94)	.00
Musculoskeletal-related disorders		.00
Yes	1.00	
No	1.10 (1.06–1.15)	.00
Gastrointestinal diseases		.79
Yes	1.00	
No	1.005 (.97–1.05)	.79
Urinary system diseases		.00
Yes	1.000	
No	1.12 (1.08–1.16)	.00

(OR=.76, 95%=.17–.82, P=.00; OR=4.50, 95%=4.32–4.69, P=.00).

Multivariate analysis was used to assess the career development of the Chinese nurses (Table 5).

## Discussion

In the present study, it was found that the working experience of nurses in China was generally less than 20 years. Various nurses developed multiple occupational diseases. Nurses with additional hours spent in the hospital each week tended to develop a series of occupational diseases, such as insomnia, varicose veins, musculoskeletal-related disorders, gastrointestinal diseases, and urinary system diseases. The data indicated that 52.3% of nurses did not have a clear goal for their future career development, and nearly 50% intended to leave. Nurses with long working hours each week were positively associated with the development of occupational diseases. Nurses with occupational diseases usually dissatisfied with their job. The prevalence of occupational diseases was independently associated with career development and intention to leave.

In the present study, the majority of the nurses examined were female, and the results obtained were similar to those of previous reports.<sup>15,16</sup> The proportion of female nurses was considerably higher than that reported in European countries and India.<sup>10,12</sup> It is important to note that 87.7% of nurses were  $\leq 40$  years old, and only 12.2% had working experience higher than 20 years. This indicated that the nursing staff in the front-line clinical work was generally young and did not have the necessary experience. It should be noted that the old and experienced nurses had left the nursing profession. This finding has to be taken into account by the hospital managers. The results also indicated that 90.1% of nurses had to work

$\leq 55$  hours per week, and 9.9% had to work more than 55 hours per week. According to item 36 of “Labor Law of the People’s Republic of China,” it is stated that the daily working hours of all laborers from different industries should not exceed eight hours.<sup>17</sup> Based on this evidence, it is deduced that their weekly working time period was 56 hours, according to the specific duties of each nurse. Since they usually had to work in the hospital every day, 55 h was set as the standard weekly working time period to evaluate the working intensity. According to the data of the present survey, it was found that a considerable number of nurses had a higher number of working hours per week than the standard number reported in the work schedule described in the Chinese labor law. This finding suggested that nurses with too long working time each week would face more professional pressure. Early studies have shown that the labor time period could aggravate the job burnout and reduce work efficiency. The increase in the shift length was significantly associated with job burnout and the intention to leave.<sup>15–17</sup>

Nurses who were exposed to risks of working pressure and long working time periods developed occupational injuries, disease- and work-related problems. These injuries could involve body organ dysfunction, decrease the quality of life and eventually affect career development. In the present study, it is worth noting that a large proportion of nurses developed work-related disorders. The percentage of nurses suffering from insomnia in our results was lower than that reported by Wuhan,<sup>18</sup> higher than that reported by Patel,<sup>19</sup> and similar to that reported by F-R and Lin P-C.<sup>20,21</sup> It was also found that female nurses exhibited a higher proportion of insomnia disorders than male nurses. These results were similar to those noted in the previous investigations.<sup>20</sup> The proportion of nurses who developed muscular disorders in our report was 40.9% which was lower than that noted in the studies performed in 2020.<sup>22</sup> Previous research studies suggested that occupations, which required prolonged standing during working hours, resulted in an increased risk of developing muscular disorders. The characteristics of the nursing profession include the need to stand for a long time, the transfer of patients from beds to stretchers, and this type of physical activity during their working hours, which may result in physical damage. In the present study, 37.0% of the nurses developed varicose veins. This incidence was higher than that reported previously.<sup>23,24</sup> It is worth noting that the proportion of nurses who developed gastrointestinal and urinary system diseases was high. This may be related to them not being able to eat and visit the restroom in time. The data of this survey indicated that a considerable number of nurses suffered from a variety of occupational-related diseases, which has to be addressed by hospital managers.

The results derived from multiple logistic regression analysis indicated that the years of working experience, the night shift, and the working hours per week were significantly

**Table 5.** The multivariate analysis of career development in China (n=51406).

Independent Variables	OR (95% CI)	P Value
Working hours each week		.13
≤55	1.00	
≥56	.95 (.90–1.01)	.13
Working time (year)		.00
≤20	1.00	
≥21	.89 (.84–.94)	.00
Insomnia		.00
Yes	1.00	
No	1.10 (1.06–1.15)	.00
Varicose veins		.79
Yes	1.00	
No	1.005 (.97–1.05)	.79
Musculoskeletal-related disorders		.00
Yes	1.000	
No	1.12 (1.08–1.16)	.00
Gastrointestinal diseases		.00
Yes	1.00	
No	1.10 (1.06–1.15)	.00
Urinary system Diseases (VS no disease)		.00
Yes	1.00	
No	1.11 (1.05–1.16)	.00
Did your work unit provide you with training opportunities?		.00
No	1.00	
Yes	3.21 (1.09–3.36)	.00
Job satisfaction		
Very satisfied	1.00	
Satisfied	.49 (.46–.51)	.00
Unsatisfied	.14 (.13–.15)	.00
Very unsatisfied	.04 (.04–.05)	.00
Were you willing to continue to engage in the nursing profession in the future?		
No	1.00	
Don't know	.76 (.17–.82)	.00
Yes	4.50 (4.32–4.69)	.00

associated with the incidence and type of occupational diseases among nurses. In the present study, nurses with more hours spent in the hospital each week tended to develop a series of occupational diseases. It is worth noting that the workload of the nurses was too heavy and the working hours were extremely higher than those of other occupations.<sup>24,25</sup> Excessive workload will result in mental stress, physical damage, long working hours, and eventually the development of multiple occupational diseases. These findings were noted in a high number of nurses.<sup>5,6</sup> Therefore, the incidence of occupational diseases may be more serious than that previously reported. Multiple occupational diseases can lead to the decline of physical functions and decreased working efficiency, which can affect their job satisfaction, the career planning and development of the nurses.

Career development and planning is the process of continuous and systematic planning of career and life.

Career development has a lifelong professional activity dedicated to the exploration, establishment, success, and achievement of a personal career. It is essential to maintain the stability of the professional group.<sup>15,26,27</sup> The present study revealed that 52.3% of the nurses did not have a clear goal for their future career development. Nurses, suffering from various occupational diseases usually did not demonstrate a clear goal in their career development. Therefore, the reduction in occupational risk factors and the decreased occurrence of occupational diseases are essential for maintaining career progression. It was also found that even when nurses were satisfied with their jobs, approximately 50% of them were not willing to do this type of job in the future. The more satisfied nurses were with their jobs, the more likely they were to have clear career development goals. The data also indicated that nurses who were willing to continue to



engage in the nursing profession in the future usually had a clear career development. A positive correlation was found between career development and intention to leave. Nurses who were more satisfied with their job were intended to have a clear career development. Therefore, managers should increase the job satisfaction of the nurses through various ways to improve their career development and reduce the proportion of intention to leave among them. Although nurses generally believed that hospitals had provided them with a series of professional training courses, some of them still felt confused about their career development and were not inclined to continue this type of job. Training opportunities were significantly related to career development. Nurses who received training opportunities provided by their unit tended to have a clear goal in their career. By professional training, the skills acquired by the nurses could be improved. Nurses who received high job confidence and satisfaction tended to continue work in their job, which could eventually lead to the stability of the nursing profession.

This national survey included a considerable number of nurses which could truly reflect the actual career development and incidence of occupational diseases of nurses in China. We clarified the importance of career development and reduction in the incidence of occupational diseases. Nursing managers need to pay more attention to the occurrence of occupational diseases and care about the physical and psychological status of the nurses. They also have to provide guidance regarding their prospective career plans, reduce their intention to leave, increase their job satisfaction and ensure the stability of the nursing profession.

### ***Policy Recommendation***

The health of the nursing staff was the basic element which could maintain the normal nursing work. According to the prevalence and influencing factors of occupational diseases among nurses, nursing managers must actively carry out series of programs such as health assessment, training, and prevention plans among nurses to reduce the occurrence of occupational diseases because occupational diseases would temporarily or permanently prevent them from continuing to engage in nursing work which resulted in increased turnover intentions, job dissatisfaction, and other problems among nurses. Nurse managers also need to provide vocational training and career development opportunities for nurses, as well as continuing education platforms and workplace support, which could affect their job satisfaction, turnover intentions and career development.

### ***Limitations***

This research was a national widespread study focus on the career development and occupational disease among Chinese nurses, there were several limitations existed in this study.

First, our survey was limited to a cross-sectional study. Second, factors such as: different departments, hospital level, and mental status of nurses were not taken into consideration in our research. Third, cross-sectional surveys should only be used as indicative studies to provide a basis for other follow-up studies. Finally, this study was conducted using a simple random sampling method. The collected samples were relatively scattered, making it difficult to organize investigations.

### **Conclusion**

The majority of the nurses in China were young; their working experience was generally less than 20 years. It was estimated that 74.2% of the nurses had to work on night shifts and face huge work pressure. In the present study, we supported the conclusion that nurses with more hours spent in the hospital each week intended to develop a series of occupational diseases, such as insomnia, varicose veins, musculoskeletal-related disorders, and gastrointestinal and urinary system diseases. A number of nurses developed multiple occupational diseases. Nurses who had night shifts were more likely to suffer from occupational diseases. The data indicated that 52.3% of nurses did not have a clear goal for their future career development and nearly half of the nurses intended to leave. The years of working experience, the training opportunities, the job satisfaction, and the occupational diseases were positively associated with the career development of the nurses in China. Our findings indicated that nursing managers need to pay more attention to work-related diseases. Certain interventions need to be performed to clarify the career development path of the nursing staff.

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### **Ethical Approval**

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## Supplemental Material

Supplemental material for this article is available online.

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