Original Article

A cross-sectional study on nurse turnover intention and influencing factors in Jiangsu Province, China

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ABSTRACT

Background: Nurses' turnover has been a major concern globally, which is strongly influenced by nurses' intent to leave. However, only a few large sample studies on the predictive factors associated with nurses' turnover intention were conducted in Jiangsu Province. This study mainly aims to examine the level and factors that influence nurses to leave their work in Jiangsu Province of Eastern China.

Methods: A cross-sectional survey of 1978 nurses was conducted at 48 hospitals in 14 key cities throughout Jiangsu Province. The turnover intention in nurses was measured by the scale of intent to leave the profession. The work environment of nurses was measured by the Chinese version of the Practice Environment Scale. A multiple linear regression model was applied to analyse the factors associated with turnover intention.

Results: The resignation rate of nurses in the hospitals of Jiangsu Province ranged from 0.64% to 12.71% in 2016.The mean scores were 15.50 ± 3.44 for turnover intention, and 3.06 ± 0.51 for work environment. Involvement in hospital affairs, resource adequacy, age, professional title, year(s) working, employment type and education level were the predictors of nurse intent to leave($P < 0.05$).

Conclusion: The work environment of nurses in hospitals must be improved in staffing and resource and nurses' involvement in hospital affairs. The current study corroborates that nurses have high turnover intention. Thus, effective measures are needed to improve nurse accomplishment, professional status, participation in hospital affairs and career planning to reduce their turnover intention.

1. Introduction

The shortage of nurses has become a worldwide issue for several years [1]. In the United States, the anticipation that a shortage of 260,000 registered nurses by the year 2025 will occur has been reported [2,3]. Despite the upsurge in the number of registered nurses over the past few years, China remains to have difficulties in recruiting nurses, which is exacerbated by high nurse turnover rates [4].

Nursing turnover leads to increased recruitment and training costs for the concerned hospitals and is a waste of nursing educational resource [5,6]. Meanwhile, it may indirectly increase the workload, stress and burnout of remaining nurses, which instigates the turnover intention, thereby creating a vicious cycle [4]. Researchers and administrators recognise the importance of mitigating the rate of resignation amongst nurses. Hence, positive strategies are necessitated to reduce turnover and address the shortage of nurse shortages effectively.

Turnover intention refers to a psychological and behavioural tendency wherein employees intend to leave their current organisation or profession. Moreover, it has been an excellent factor to predict the actual turnover behaviour amongst nurses [7]. Many work-related factors are associated with turnover intention, including the work environment and job embeddedness [8], whilst some concern personal aspects, such as work experience, psychological capital and work—family conflict [8].

Looking into the factors that affect nurse turnover intention can help hospital managers take preventive measures and dispel potential problems in clinical nursing works that might cause nurse turnover [9—12]. A recent cross-sectional study in 10 European countries has highlighted the importance of the country-to-

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country and region-to-region assessments of factors influencing the intent to leave [13]. Hospital administrators must take targeted measures according to different conditions. Therefore, identifying the factors that affect nurse turnover intention in different provinces of China is necessary.

Currently, certain large sample studies have been implemented in several provinces of China [14], but only few delve into the factors that predict nurse turnover intention and causes of resignation in Jiangsu Province. Given that Jiangsu Province is a large province, its government has clarified its goal of establishing a strong health-care system. Human resources in such health-care system would be the key factor in determining their performance. The nurses' turnover imposes severe restriction on the health-care system. Exploring the factors associated with turnover intention is important in improving the quality of health-care services and to be well supported by the government. The factors that influence the intent to leave must be identified and explained for appropriate managerial policy considerations.

This study conducted an investigation amongst nurses in Jiangsu Province. Furthermore, it aimed to analyse the resignation rate of 1978 nurses in 48 hospitals and their intention to leave, as well as the factors that influence such intentions. The results of the study would be helpful for health-care policymakers to understand the situation of nurse turnover and other related factors and can serve as references for the government to formulate nursing workforce retention policies. Our study in Jiangsu Province can also serve as a representative sample of nursing in Eastern China.

The objectives of our study are as follows: (1) to report the turnover rate of nurses in Jiangsu Province, China in 2016; (2) to report the work environment and turnover intention amongst nurses in Jiangsu Province and (3) to analyse the factors related to turnover intention and explore the association between work environment and turnover intention amongst nurses.

2. Methods

2.1. Design

Our cross-sectional survey included 1978 nurses working at 22 s- and 26 third-grade hospitals. The hospitals are located in 14 cities within Jiangsu Province.

2.2. Participants

2.2.1. Hospitals

The list of all hospitals in Jiangsu Province was provided by the Department of Health, representing all geographic regions throughout the province wherein stratified sampling was used. The province was divided into three regions (northern, middle and southern), and the hospitals were stratified on the basis of levels (secondary or tertiary), in which 22 s- and 26 third-grade hospitals from three regions were randomly selected. Three clinical departments in each hospital were chosen.

2.2.2. Clinical departments

The clinical department from each surveyed hospital was included for two conditions: (1) the number of registered nurses in the department should be more than ten; and (2) more than 50% of the nurses in the clinical department should be tenured for three years or so.

2.2.3. Clinical nurses

2.2.3.1. *Inclusion criteria.* Employed licensed nurses were recruited using a cluster sampling strategy. Registered clinical nurses, who worked or volunteered in the sampled department for one year or

so, were surveyed for this study.

2.2.3.2. *Exclusion criteria.* Nurses who were unemployed, such as those on maternity or sick leave; those in training or on refresher courses and those who were not permanently employed by the hospital, as well as those who were training in a different hospital at the time of the investigation, were excluded.

2.3. Data collection

2.3.1. Hospital questionnaire

The self-designed hospital questionnaire was used to collect data on hospital characteristics, including hospital size, hospital level, teaching status and the total number of registered nurses and resigned nurses from January to December in 2016. Each hospital's nursing staff in the nursing department was asked to fill out the questionnaire.

2.3.2. Nurse questionnaire

The data, including hospital, unit, age, sex, marital status, education level, working years, number of children, employment way, professional title and job duty, were collected using the self-designed nurse questionnaire. The questionnaire also included the measures of work environment and turnover intention.

The *Chinese version of the Practice Environment Scale* (C-PES) is a 31-item scale, which evaluated the administrator's management ability and leadership, doctor—nurse collaboration, nursing quality, resource adequacy and involvement in hospital affairs [15]. The items were scored from 1 to 4, and the total scores ranged from 31 to 124. The scale indicated statements, such as 'The doctors have a good working relationship with the nurses in the department', with the answers 'totally disagree' marked as 1 point and 'totally agree' marked as 4. High scores show high recognition of the nurse's roles and a positive perception of the working environment. The scale had a composite Cronbach's α of 0.91 and a five dimensional Cronbach's α ranging from 0.67 to 0.79, whilst the content validity of C-PES was 0.94 [15].

The *Turnover Inteniton Questionniare(TIQ)* was translated and revised by Lee Ginyuan and Lee Donyon [16] to evaluate the nurses' turnover intention. The scale consisted of 6 single-choice questions asking directly the respondents' intention to leave. Each response was scored 1, 2, 3 or 4. The high scores indicated a high intention level to leave the profession. For instance, 'Have you ever considered to resign?' and the answers 'frequently', 'occasionally', 'seldom' and 'never' would be marked as 4, 3, 2 and 1, respectively. The score of 4 indicated most intention to leave. The total score of turnover intention was divided into four levels: lower ≤ 6, low > 6 and ≤ 12, high > 12 and ≤ 18, higher> 18. Cronbach's α was 0.77, and the content validity was 0.76 [16].

Questionnaires were delivered by the research staff to every nurse in the selected departments. The nurses completed the questionnaires and returned them in a sealed envelope, dropped in a sealed box on the unit or through e-mail to the appointed mailbox within one week.

2.4. Data analysis

All data were statistically analysed using SPSS software, v.20.0 (SPSS, version 20.0, Chicago, IL, United States), and $P < 0.05$ was considered statistically significant. Count data (characteristics of surveyed hospitals, resigned nurses in 2016 and surveyed nurses) were presented as frequencies (percentage). Measurement data (work environment and turnover intention scores) were presented as *Mean $\pm$ SD* (in normal or approximately normal distributions). The comparison of work environment and turnover intention

between secondary and tertiary hospitals were examined using the independent sample test. The one-way analysis of variance and Kruskal−Wallis test were carried out on the demographic characteristics in relation to C-PES and turnover intention at first, and the multivariate analysis was conducted on those significant yet different variables. Pearson correlation coefficients were calculated to analyse the relationship between work environment and turnover intention amongst nurses. Multiple linear regressions were used to analyse the impact factors associated with turnover intention.

3. Results

3.1. Characteristics and turnover rate of sampled hospitals in 2016

This study investigated the nurse turnover rate in Jiangsu Province in 2016, including 22 secondary hospitals (45.8%) and 26 tertiary hospitals (54.2%). In total, 598 nurses resigned from the sampled hospitals in 2016, 27.6% of them were from secondary hospitals, and 72.4% were from tertiary hospitals. The mean turnover rate was 2.74% (ranged from 0.68% to 12.71%) in secondary hospitals and 1.83% (ranged from 0.64% to 5.58%) in tertiary hospitals. Few tertiary hospitals (3.8%) had a turnover rate of more than 5%. Amongst all the resigned nurses, 90.5% were contract laborers, 78.1% were at the age of 20−29, half of which worked less than 3 years and 60.2% had an associate degree. After resignation, most of them (66.2%) continued to pursue other occupations related to nursing.

3.2. Demographic characteristics of surveyed nurses

A total of 2000 questionnaires were collected, of which 22 were excluded due to incomplete filling and missing information. A total of 1978 (98.9%) valid questionnaires were available for statistical analysis. The characteristics of the surveyed nurses in secondary and tertiary hospitals were compared in Table 1. The largest proportion of the respondents in secondary (61.4%) and tertiary (55.6%) hospitals was in the 20−29 age group, and most of the participants were female. The majority of the respondents in secondary hospitals received an associate degree (53.2%), whilst most of those in tertiary hospitals obtained a bachelor's degree (68.7%). Most respondents in secondary hospitals had primary professional title (40.8%), which were compared with the participants in tertiary hospitals with medium professional title (41.6%). Most of the respondents were contract laborers.

3.3. Work environment and turnover intention of surveyed nurses

Table 2 shows the degree of work environment and turnover intention of all the respondents. The *mean* and the *SD* of the scores were calculated. The nurse work environment (3.06 ± 0.51) contained the following five dimensions: manager's ability and leadership (3.12 ± 0.56), doctor−nurse collaboration (3.16 ± 0.59), nursing quality (3.23 ± 0.48), resource adequacy (2.79 ± 0.70) and involvement in hospital affairs (2.93 ± 0.59). The turnover intention value was 15.50 ± 3.44 and it was at a high level. Resource adequacy in tertiary hospitals (2.81 ± 0.71) was better than that in secondary hospitals (2.73 ± 0.68), mainly reflected in equipment, time and opportunities and staff adequacy, and the difference was statistically significant ($P < 0.05$).

3.4. Effect of demographic characteristics on nurse work environment and turnover intention

Table 3 shows the univariate analysis of C-PES and turnover intention scores in relation to demographic characteristics. Nurses who were in the 30−39 year group (2.99 ± 0.50), working 6−9years (2.98 ± 0.47), obtained a secondary technical certificate (2.94 ± 0.48), received a professional title as a primary nurse (3.01 ± 0.49), had an experience as a teaching nurse (2.98 ± 0.52) and assigned in emergency and ICU departments (2.99 ± 0.48) had significantly lower satisfaction with their work environment than the other respondents ($P < 0.05$). Nurses who were under 20 years old (16.83 ± 4.26), working 6−9 years (16.07 ± 3.09), received a professional title as a primary nurse (16.03 ± 3.23), had an experience as a clinical nurse (15.66 ± 3.44), employed as contract (15.88 ± 3.40) and assigned in emergency and ICU departments (15.80 ± 3.20) had significantly higher turnover intention than the other respondents ($P < 0.05$).

3.5. Relations amongst nurse work environment and turnover intention

Table 4 exhibits the correlations between C-PES and turnover intention. C-PES had a strong negative correlation with turnover intention ($P < 0.01$). The following C-PES variables showed strong negative correlations with turnover intention ($P < 0.01$): managers' ability and leadership, doctor−nurse collaboration, nursing quality, resource adequacy and involvement in hospital affairs.

3.6. Influencing factors of nurse turnover intention

Table 5 depicts the multiple linear regression of impact factors associated with turnover intention. Variables that predicted turnover intention (in descending order of standardised estimate) included involvement in hospital affairs, resource adequacy, age, professional title, working years, mode of employment and education level. Involvement in hospital affairs ($\beta = -0.257$, $P < 0.01$), resource adequacy ($\beta = -0.185$, $P < 0.01$), age ($\beta = -0.142$, $P < 0.01$), professional title($\beta = -0.118$, $P < 0.01$) and mode of employment($\beta = -0.086$, $P < 0.01$) negatively predicted nurse intention to leave, which meant lower involvement in hospital affairs, resource insufficient, younger age, lower professional title and contract labor tended to higher turnover intention. Working years ($\beta = 0.103$, $P < 0.01$) and education level ($\beta = 0.056$, $P < 0.05$) could positively predict nurse intention to leave (see Table 6).

4. Discussion

This study analysed the current situation of nursing human resources in Jiangsu Province. A large sample of nurses employed at 48 hospitals was surveyed. The findings affirmed that half of the nurses were dissatisfied with their work environments and had turnover intention. Multiple linear regression analysis identified involvement in hospital affairs, resource adequacy, age, professional title, mode of employment, working years and education level as the common reasons for why nurses leave.

4.1. Turnover rate and demographic characteristics of resigned nurses

The data confirmed that the nurse turnover rate in the hospitals in Jiangsu Province was at the range of 0.64−12.71% (mean < 5%), which was less than the general level of hospitals in China and other countries [17]. The possible reasons could be that health-care managers have attached importance on nurse resignation over the past years, thereby increasing the turnover rate and the adverse effects of leaving in hospital outcomes. Positive measures has been taken to urge nurses to stay in many hospitals (i.e. implementing fair remuneration, making career planning,

Table 1
Demographic characteristics of surveyed nurses [n(%)].

Variables		Secondary hospital (n = 500)	Tertiary hospital (n = 1478)
Gender	Female	495(99.0)	1436(97.2)
	Male	5(1.0)	42(2.8)
Age(Years)	<20	1(0.2)	5(0.3)
	20—29	307(61.4)	822(55.6)
	30—39	149(29.8)	473(32.0)
	40—49	36(7.2)	165(11.2)
	≥50	7(1.4)	13(0.9)
Working experience (Years)	<3	147(29.4)	389(26.3)
	3—5	79(15.8)	263(17.8)
	6—9	140(28.0)	349(23.6)
	≥10	134(26.8)	477(32.3)
Educational level	Secondary technical certificate	24(4.8)	10(0.7)
	Associate degree	266(53.2)	433(29.3)
	Bachelor's degree	210(42.0)	1016(68.7)
	Master's degree		19(1.3)
Professional title	Nurse	204(40.8)	433(29.3)
	Primary Nurse	197(39.4)	615(41.6)
	Nurse-in-charge	78(15.6)	326(22.1)
	Co-chief superintendent nurse	21(4.2)	100(6.8)
	Chief superintendent nurse	0(0)	4(0.3)
Marital status	Married	335(67.0)	970(65.6)
	Others	165(33.0)	508(34.4)
Number of children	One or more	301(60.2)	835(56.5)
	None	199(39.8)	643(43.5)
Position	Staff nurse	411(82.2)	1250(84.6)
	Teaching nurse	31(6.2)	78(5.3)
	Head nurse	58(11.6)	150(10.1)
Employment type	Formal	150(30.0)	454(30.7)
	Contract	350(70.0)	1024(69.3)
Department	Medicine	112(22.4)	312(21.1)
	Surgery	78(15.6)	224(15.2)
	Emergency and ICU	123(24.6)	493(33.4)
	Obstetrics and Gynecology	85(17.0)	215(14.5)
	Pediatrics	52(10.4)	186(12.6)
	Others	50(10.0)	48(3.2)

Table 2
Mean work environment and turnover intention scores amongst nurses(Mean ± SD).

Variables	Total (n = 1978)	Secondary hospital (n = 500)	Tertiary hospital (n = 1478)	t	P
C-PES	3.06 ± 0.51	3.04 ± 0.48	3.07 ± 0.52	−1.186	0.236
Managers' ability and leadership	3.12 ± 0.56	3.10 ± 0.53	3.13 ± 0.57	−0.834	0.405
Doctor-nurse collaboration	3.16 ± 0.59	3.17 ± 0.58	3.16 ± 0.59	0.421	0.674
Nursing quality	3.23 ± 0.48	3.22 ± 0.46	3.24 ± 0.49	−0.826	0.409
Resource adequacy	2.79 ± 0.70	2.73 ± 0.68	2.81 ± 0.71	−2.310	0.021
Involvement in hospital affairs	2.93 ± 0.59	2.91 ± 0.56	2.94 ± 0.59	−1.153	0.249
Turnover intention	15.50 ± 3.44	15.52 ± 3.47	15.49 ± 3.42	0.143	0.886

Note: C-PES:Chinese version of the Practice Environment Scale.

conducting performance evaluation and increasing the number of nurses [18,19]). The mean turnover rate in secondary hospitals was higher than that in tertiary hospitals as nurses were provided with good work environment, income and career development in tertiary hospitals [20]. The study, which is in agreement with previously published studies, proved that most of the resigned nurses were young new nurses possibly because they had no clear career planning and were stressed by the frequent night shifts [21]. In addition, new nurses have a strong sense of disparity in remuneration and welfare [22]. Nurses with associate degree were made up of half of the resigned nurses. One reason is that the number of nurses in the educational level as associate degree is relatively large. Another possible reason is that, nurses with associate degree may not receive as much attention as the nurses with bachelor's or master's degrees in the hospital, and they may have different values due to different training objectives. This study also confirmed that the turnover status is serious amongst contract nurses. With more younger contract nurses being employed in hospitals in China,

providing fair treatment and more support for contract nurses, such as giving the same salary and equal opportunities for career development, it must be emphasised to the managers that these are important in order to retain contract labor nurses. The similar findings have also been noted in other Chinese literature [23]. Most of the resigned nurses still intended to choose the occupations related to nursing due to familiarity of work and interest in the profession. Consequently, corrective measures to withhold the young new nurses, nurses with associate degree or contract labor through fair treatment, skill management, career planning and learning could effectively aid to reduce the percentage of turnover.

4.2. Turnover intention and influencing factors

4.2.1. Demographic characteristics

The study validated that 50.2% and 4.9% of the nurses had a strong or a very strong turnover intention, respectively. Univariate analysis illustrated that department is an important factor for work

Table 3
Univariate analysis of work environment and turnover intention scores in relation to demographic characteristics($n = 1978$).

Variables	C-PES	Turnover intention
Age(Years)		
<20	3.62 ± 0.48	16.83 ± 4.26
20—29	3.10 ± 0.51	15.83 ± 3.44
30—39	2.99 ± 0.50	15.55 ± 3.26
40—49	3.09 ± 0.51	13.73 ± 3.26
≥50	3.04 ± 0.48	12.80 ± 3.86
F	7.211	20.116
P	<0.001	<0.001
Working experience (Years)		
< 3	3.23 ± 0.54	15.65 ± 3.58
3—5	3.07 ± 0.52	15.85 ± 3.39
6—9	2.98 ± 0.47	16.07 ± 3.09
≥10	3.05 ± 0.52	14.72 ± 3.47
F	10.206	17.088
P	<0.001	<0.001
Educational level		
Secondary technical certificate	2.94 ± 0.48	15.15 ± 3.60
Associate degree	3.11 ± 0.51	15.59 ± 3.58
Bachelor's degree	3.04 ± 0.50	15.46 ± 3.36
Master's degree	3.11 ± 0.55	15.58 ± 3.08
F	3.492	0.316
P	0.015	0.813
Professional title		
Nurse	3.15 ± 0.52	15.70 ± 3.58
Primary Nurse	3.01 ± 0.49	16.03 ± 3.23
Nurse-in-charge	3.03 ± 0.51	14.63 ± 3.33
Co-chief superintendent nurse	3.09 ± 0.55	13.85 ± 3.36
Chief superintendent nurse	3.09 ± 0.18	14.50 ± 3.51
F	6.962	19.604
P	<0.001	<0.001
Marital status		
Married	3.04 ± 0.50	15.30 ± 3.39
Others	3.10 ± 0.52	15.90 ± 3.49
F	6.193	13.567
P	0.013	<0.001
Number of children		
One or more	3.05 ± 0.51	15.14 ± 3.44
None	3.08 ± 0.51	15.98 ± 3.38
F	1.670	29.166
P	0.196	<0.001
Position		
Staff nurse	3.06 ± 0.51	15.66 ± 3.44
Teaching nurse	2.98 ± 0.52	15.06 ± 3.46
Head nurse	3.18 ± 0.46	14.43 ± 3.22
F	7.137	13.055
P	0.001	<0.001
Employment type		
Regular	3.05 ± 0.50	14.64 ± 3.36
Contract	3.07 ± 0.51	15.88 ± 3.40
F	1.302	55.813
P	0.254	<0.001
Department		
Medicine	3.06 ± 0.52	15.67 ± 3.45
Surgery	3.12 ± 0.55	15.53 ± 3.72
Emergency and ICU	2.99 ± 0.48	15.80 ± 3.20
Obstetrics and Gynecology	3.11 ± 0.52	15.02 ± 3.53
Pediatrics	3.09 ± 0.53	15.41 ± 3.39
Others	3.12 ± 0.48	14.51 ± 3.42
F	5.361	3.988
P	<0.001	0.001

Note: C-PES:Chinese version of the Practice Environment Scale; TI:turnover intention.

Table 4
Correlations between work environment and turnover intention (r).

Variable	Turnover intention
C-PES	−0.440
Managers' ability and leadership	−0.390
Doctor-nurse collaboration	−0.357
Nursing quality	−0.378
Resource adequacy	−0.406
Involvement in hospital affairs	−0.428

Note:$P < 0.01$; C-PES: Chinese version of the Practice Environment Scale.

Table 5
Multiple linear regression of impact factors associated with turnover intention.

Variables	B	SE	β	t	P
Constant	24.724	0.670	—	36.926	<0.001
Involvement in hospital affairs	−0.167	0.027	−0.257	−6.107	<0.001
Resource adequacy	−0.227	0.039	−0.185	−5.825	<0.001
Age	−0.678	0.173	−0.142	−3.914	<0.001
Professional title	−0.456	0.156	−0.118	−2.918	0.004
Year(s) working	0.300	0.112	0.103	2.671	0.008
Employment type	−0.640	0.197	−0.086	−3.251	0.001
Education level	0.357	0.146	0.056	2.453	0.014

Note:$F=46.349$, $R^2=0.262$,$P<0.001$.

turnover intention [26—28]. Emergency and ICU nurses bear relatively higher stress due to patient's changeable and critical condition, which require competent and dependable nurses [29,30]. Apart from this, unfavorable factors, such as noise population, nursing work overload, frequent night shifts, work-family conflict and tensed nurse-patient relationships, amongst others, create a strong sense of burnout and high intention of turnover. Another survey verified that nurses in emergency and ICU departments, who are subjected to strenuous work and family stress, consequently leave their profession [31]. Nursing managers must arrange work shifts properly according to the individual's characteristics and work ability, standardise the system to improve work efficiency and reduce the intensity of work of nurses in emergency and ICU departments. Giving attention and respect to nurses for their hard work also helps in enhancing their job satisfaction and reducing their intent to leave.

The results are in line with several studies that turnover intention was significantly correlated with nurse's age, professional title, mode of employment, working years and education level [32]. Younger nurses under the age of 29 years old, who constituted the major age group of the current study, had a strong turnover intention. Moreover, younger nurses are usually inexperience and lack effective communication skills that do not meet the requirements of clinical work, leading to increased worry about mistakes in their work and greater stress [33]. As manifested, the ability to resist pressure and coping mechanism are poor. With more years at work, nurses gain additional experiences and opportunities for self-realization and enjoy decision-making power in their work; thus, their turnover intention decreased. The results in this study also affirmed that the professional title of nurse had a significantly stronger turnover intention ($P < 0.01$) than other professional title because of lesser experience, not placed in a good position and low salary. The findings were consistent with other domestic studies [34]. Contract nurses have stronger intent to leave than formal nurses. Contract nurses tend to lack the sense of belonging in the hospital, and the salary, promotion, and career development opportunities were also different between contract and formal nurses [35,36]. Nurses' turnover intention in different grades of hospital were also analysed, indicating that no statistically significant difference emerged in turnover intention between

environment, burnout and turnover intention. Nurses working in the emergency and ICU departments had a low satisfaction level with work environment, high cynicism, low self-efficacy and strong turnover intention. This result is consistent with the findings of other studies [24,25], suggesting that the work stress of professional nurses in the emergency or ICU departments is usually higher than that in other departments, which could lead to stronger

Table 6
Assignment method of independent variables.

Independent variable	Assignment method
Age(years)	$<20 = 1, 20-29 = 2, 30-39 = 3, 40-49 = 4, \geq 50 = 5$
Year(s) working	$<3 = 1, 3-5 = 2, 6-9 = 3, \geq 10 = 4$
Employment type	Contract $= 0$, Regular $= 1$
Professional title	Nurse $= 1$, Primary Nurse $= 2$, Nurse-in-charge $= 3$, Co-chief superintendent nurse $= 4$, Chief superintendent nurse $= 5$
Education level	Secondary technical certificate $= 1$, Associate degree $= 2$, Bachelor's degree $= 3$, Master's degree $= 4$

secondary and tertiary hospitals, which was inconsistent with the prior studies [4]. One reason is that nurses, whether in secondary or tertiary hospitals, pay more attention to the balance of their work instead of others. Hospitals with different grades are gradually promoting the new policy of 'equal pay for equal work' to improve nurse satisfaction.

4.2.2. Work environment

The results corroborated that involvement in hospital affairs is one of the factors of nurses' turnover intention. Nurses were satisfied with work environment, especially with the managers' ability and leadership, doctor–nurse collaboration and nursing quality but were dissatisfied with the resources and involvement in hospital affairs. In the traditional concept, doctors are the main series of hospitals and incessantly ignored the opinions or suggestions of the nurses in the decision-making of hospital affairs, and the nurses have few opportunities to participate in hospital management. In addition, some managers still think that nursing is an occupation that carries out doctors' order and does not require technical skills, which leads to few opportunities for career development and promotion of nurses. Similar findings were obtained in a survey that examined registered nurses views on their participation in hospital affairs in Shanghai, China, in which one-third of nurses is reported having no opportunities for career development and promotion and could not participate in hospital affairs [37]. Nurses with active participation in hospital affairs presented low levels of emotional exhaustion and turnover intention, high personal accomplishment and low depersonalization level. Involvement in hospital affairs is an important way for the individuals to meet their own needs of achievement and self-actualization [38] which, in turn, would make the nurses pleased with their job [39]. Therefore, hospital managers should provide additional opportunities for nurses to participate in hospital affairs.

4.3. Limitations

A limitation of the study is its cross-sectional design. We investigated 48 hospitals in Jiangsu Province, covering most regions of the province, but our sample was limited to secondary and tertiary hospitals. Consequently, the sample might not be a representative in community or township hospitals. In addition, qualitative research should be conducted to gain a deep understanding of nurses. Motivation theory could serve as a framework to conduct interventions to decrease nurse turnover intention and increase their retention rate.

5. Conclusion

This study indicates that turnover intention amongst nurses is related to multiple factors including involvement in hospital affairs, resource adequacy, age, professional title, working years, mode of employment and education level. From this, it appears that few opportunities to be involved in hospital affairs lead to great intentions of turnover. In sum, the present report substantiates the role of participation in hospital affairs as the major factors towards the intent to leave affecting nurses' turnover.

In conclusion, effective measures should be taken to improve nurse accomplishment, professional status, participation in hospital affairs and career planning to reduce their turnover intention and to prevent nurses from resigning.

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Conflict of interest

None declared.

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Ethics approval and consent to participate

The study protocol was approved by the Institutional Ethical Committee for the clinical research of Zhongda Hospital, Affiliated to Southeast University (2016ZDSYLL088-P01, Nanjing, Jiangsu, China). The informed consent was obtained from all the individual participants included in the study.

Authors' contributions

Hongying Chen and Guohong Li contributed to the study design, data collection, analysis and drafting of the manuscript. Xiaoyan Wang, Mengting Li, Tiantian Zhang and Lei Lyu contributed to the study design, data collection, analysis and critical revision of the manuscript for important intellectual content. All authors read and approved the final manuscript.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.ijnss.2018.09.012.

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