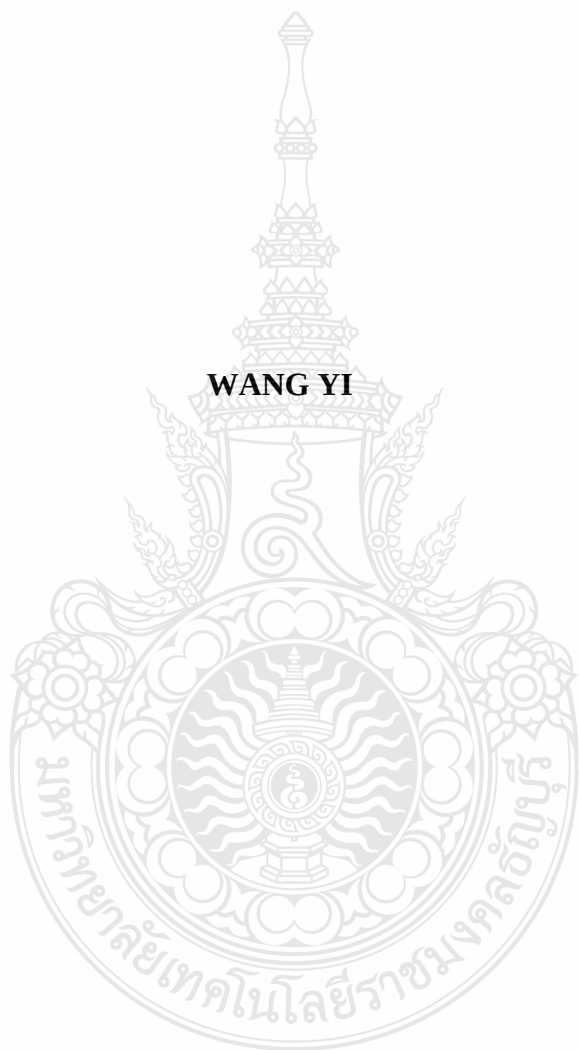


INFLUENCE OF QUALITY OF WORK LIFE ON NURSES' JOB SATISFACTION

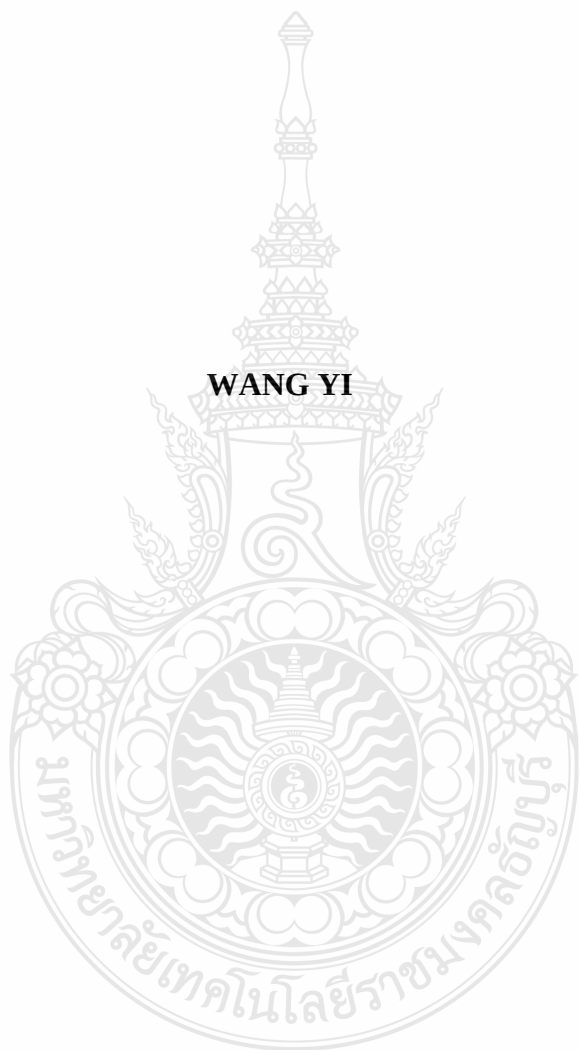
WANG YI



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ADMINISTRATION PROGRAM IN MANAGEMENT
FACULTY OF BUSINESS ADMINISTRATION
RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI
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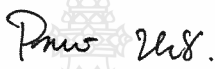
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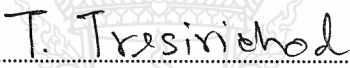


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Independent Study Title Influence of Quality of Work Life on Nurses' Job Satisfaction
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Program Business Administration (Management)
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Academic Year 2024

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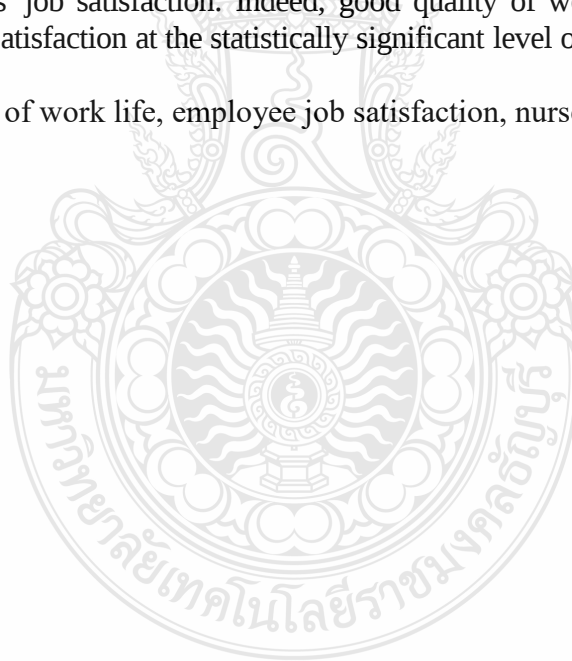
ABSTRACT

This independent study aimed to investigate: 1) demographic factors affecting nurses' job satisfaction and 2) quality of work life affecting nurses' job satisfaction.

The population of this study consisted of nurses working in three large tertiary hospitals in Shanghai, China, from which 405 nurses were selected using simple random sampling. The research instrument used for collecting data was a questionnaire, which was tested for reliability and validity. Statistical analysis of the data was performed using descriptive statistical analysis, t-test, and F-test while the relationship between the three variables was determined by correlation analysis and regression analysis.

The study found that: 1) different demographic characteristics among nurses have an impact on employee job satisfaction, and 2) the quality of work life plays a key role in the evaluation of nurses' job satisfaction. Indeed, good quality of work life can significantly improve employee satisfaction at the statistically significant level of .05.

Keywords: quality of work life, employee job satisfaction, nurse



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Wang Yi



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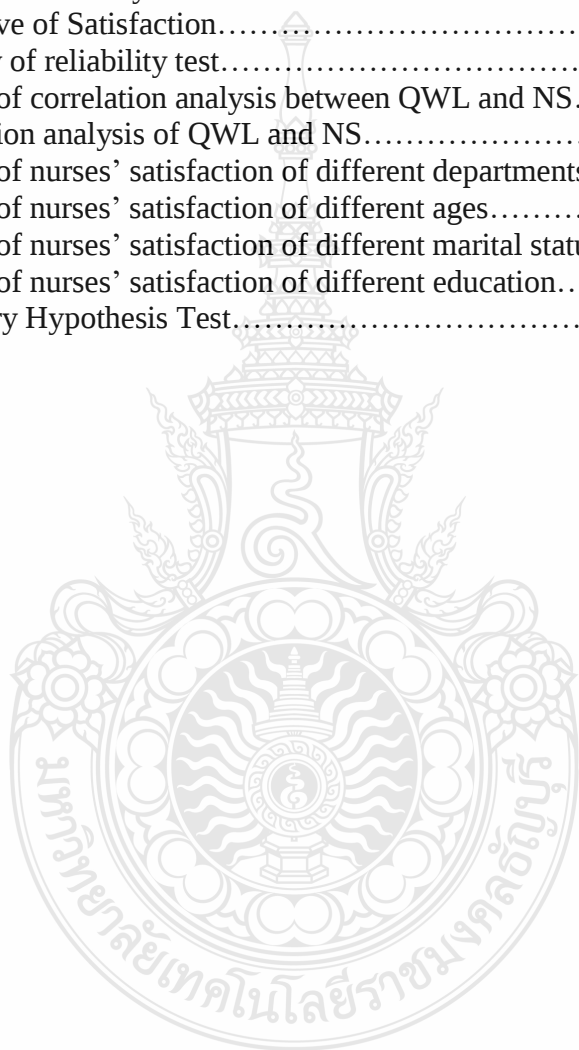
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CHAPTER 1

INTRODUCTION

Chapter 1 gives an overview about the relevant aspects about this thesis and why this research should be have done.

1.1 Background and Statement of Problem

With the rapid development of artificial intelligence, it has been applied to various industries, and the medical industry has also begun to gradually apply it. Among them, the invention of the infusion robot has also brought expectations to nursing workers and has become a concern for managers in China's nursing and medical industries.

Medical staffs have heavy workloads and face high occupational exposure, which has always been a concern for medical workers and a problem of concern in the medical community, especially for workers in the nursing industry. Since nursing staff need to do a lot of nursing operations and need to have close contact with patients during the operations, they have a heavy workload and a high risk of infection.

In the research medical robots are based on robotics technology and integrate medicine, biology (Liu wen et al.,2023). It is a medical device that integrates information systems, control systems, mechanical systems and imaging systems. Robotics has now developed into a multi-disciplinary field that integrates computers, images, machinery, materials, electronics, bionics and control (Kwoh YS et al., 1988). It is widely used in the fields of industry, military, agriculture, construction and medicine. After the birth of industrial robots, some scholars considered introducing robotics into medical surgery. The first surgical robot appeared in neurosurgery in 1985. The robot was used as a clinical biopsy auxiliary device. With the assistance of the robot, the doctor's treatment operation was more precise. The invention of the infusion robot uses more accurate images to display the patient's blood vessels. In foreign countries, many robots are used in clinical practice, while in China, the use of intelligent machines in clinical nursing is still relatively small. Therefore, in China, the use of infusion robots in clinical nursing is worth looking forward.

According to the World Health Organization, more than 200 medical personnel are infected with infectious diseases every year due to work-related reasons (Li Yinglan,2023). Due to the special nature of their work, medical personnel have to complete a large amount of diagnosis and treatment work every day. When providing diagnosis and treatment or nursing work to patients, they will inevitably come into contact with the patient's blood, body fluids, secretions, etc., which increases the risk of contracting blood-borne infectious diseases.

In the event of occupational exposure, the mental and physical health of edical staff may be seriously damaged.

In medical work, most of the nurses' work requires direct contact with patients and has a very high risk of occupational exposure. The research and development of infusion robots can solve this problem very well. First, infusion robots can reduce direct clinical contact between nurses and patients, reduce occupational exposure, provide a safer working, and thus improve nurses' satisfaction. Secondly, the application and clinical application of infusion robots have changed the content of nursing work, which can

improve nursing work efficiency, alleviate the problem of heavy workload, reduce nursing infusion errors, improve the quality of nursing work, thereby reducing work anxiety, and improve the quality of work life from multiple aspects, thereby improving nurses' satisfaction.

The demand for the application of infusion robots in the nursing industry is pointed out. In this case, the use of infusion robots in nursing clinical work to improve nurse satisfaction has far-reaching significance for the nursing industry in my country, other countries and even the world, and has attracted the attention of nursing industry management workers.

Problem Statement:

At present, although artificial intelligence is widely used in the medical field in my country, it is rarely used in the clinical work of nurses in the nursing industry. In my opinion, for the clinical work of nurses, the use of infusion robots to assist nurses can improve nurses' satisfaction and have far-reaching significance for the development of the nursing industry and even the medical industry in China.

1.2 Purpose of the Study

Judging from the development of AI artificial intelligence applied in clinical work in recent years, nurse satisfaction has gradually become an issue worthy of attention. In order to understand the current status of nurse satisfaction after the clinical use of infusion robots, achieve the purpose of promoting the positive development of my country's nursing industry.

1. Study the impact of influencing factors of demography on nurses' satisfaction is analyzed.
2. Study the impact of influencing factors of quality of work life on nurses' satisfaction is analyzed.

1.3 Research Questions and Hypotheses

The Research question is what factors that affecting to nurses' satisfaction. And what is the relationship between these factors and nurses' satisfaction ?

This article explores the key factors that influence nurses' satisfaction. Study demographic characteristics and quality of work life on nurses' satisfaction ,Study what is the relationship.

Variable hypothesis as follows:

- 1) Relationship between nurses with different demographic characteristics and nurses' satisfaction

Hypothesis 1.1: Nurses with different department has impact on nurses' satisfaction

Hypothesis 1.2: Nurses with different age has impact on nurses' satisfaction

Hypothesis 1.3: Nurses with different marital status has impact on nurses' satisfaction

Hypothesis 1.4: Nurses with different education level has impact on nurses' satisfaction

- 2) Relationship between quality of work life and nurses' satisfaction

Hypothesis 2: Quality of work life has impact on nurses' satisfaction

1.4 Conceptual Framework

This research is based on the conceptual framework specified below:

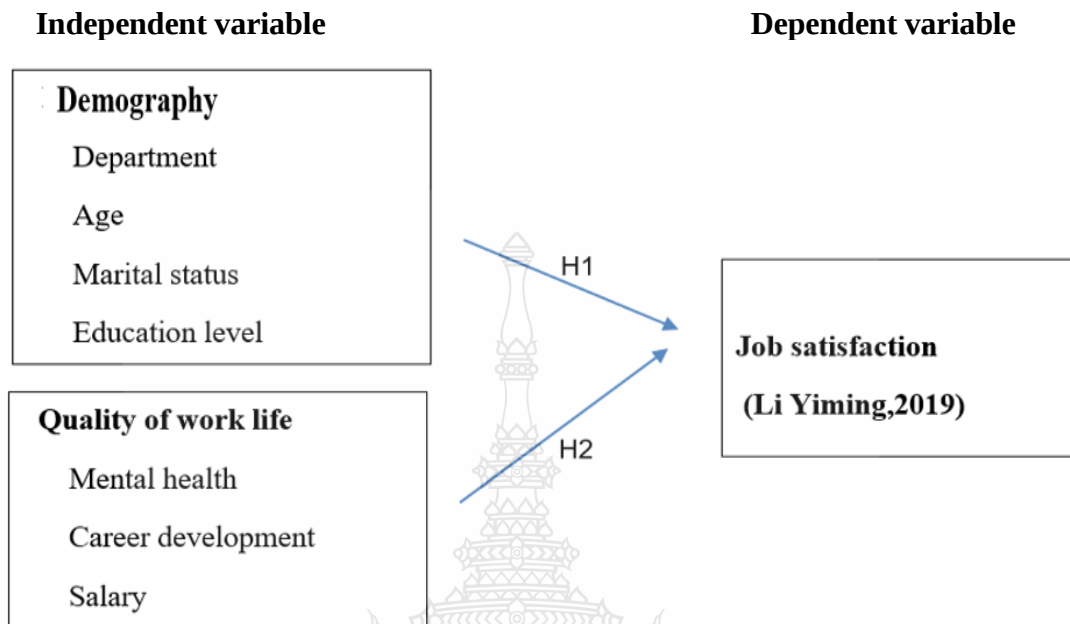


Figure 1.1 Farmework

1.5 Significance of the Study

This Research significance the development of AI artificial intelligence has changed the traditional way of working, benefited hospital workers, and improved the satisfaction of medical staff. Its widespread use in the hospital field has promoted the development of the medical industry. The use of artificial intelligence products in clinical practice at home and abroad is in a period of rapid development. In China, hospitals are also paying more attention to artificial intelligence products and services, and have conducted more in-depth research and use. However, there are relatively few artificial intelligence products used in nursing clinical work, and attention needs to be improved.

Therefore, it is of great significance to study the use of infusion robots in nursing clinics in China and understand the factors affecting the improvement of nurse satisfaction. First, theoretically studying the factors affecting nurse satisfaction is conducive to accurately investigating and improving nurse satisfaction. Secondly, in practice, studying the factors affecting nurse satisfaction is conducive to nursing managers truly focusing on nurses, enabling the nursing industry to develop better and promoting the development of my country's medical industry.

1.6 Definitions

1.6.1 Definition of Demography

Demography is a methodological discipline that describes the state of population phenomena, their changing processes, and the collection, classification, and reflection of their quantitative relationships with socio-economic development. It reveals the nature, laws, and development trends of population phenomena through quantitative

representation. This study used the measurement dimensions, department, age, marital status and education level.

1.6.2 Definition of quality of work life:

The concept of nurses' quality of work life was first proposed by Brooks BA et al. It refers to the degree to which nurses meet their own needs through long-term nursing work, focusing on the subjective experience of their personal mental and physical state. Klatt, Murdick and Schuster (1985) have identified eleven dimensions of QWL in the year. They are: pay, occupational stress, organizational health programs, alternative work schedule, participate management and control of work, recognition, superior-subordinate relations, grievance procedure, adequacy of resources, seniority and merit in promotion and development and employment on permanent basis

Mirsepasi, (2006), having examined the different views and observed that QWL is explained by the following factors: (i) Fair and proper payment for good performance (ii) Safe and secure work situation, (iii) The possibility of learning and using new skills, (iv) Establishing social integration in the organization, (v) Keeping individual rights, (vi) Equilibrium in job divisions and unemployment and (vii) Creating work and organizational commitment.

According to Casio (1998) quality of work life comprises both the mental and objective aspects of work life. The objective ones emphasize the circumstances and procedures relating to promotion policies, participatory supervision, and safe working conditions, whereas the subjective relate to supervision, communication, leadership etc. He identified 8 factors that determine quality of work life as given under. Communication, employee involvement, desire and motivation to work, job security, career progress, solving problems, salary, and pride of a job.

In summary, combined with the research topic, the quality of work life measurement dimensions used in this study are: mental health, career development, and salary. Mental health means that all aspects of the mind and mental activities are in a good or normal state. Career development is the process of acquiring and applying knowledge, skills and experience in a person's career to improve his or her job satisfaction. Salary is the money paid by employers to employees, which is the result of equal exchange of labor.

1.6.3 Definition of employee satisfaction:

Job satisfaction refers to employees. That subjective attitude of general satisfaction or dissatisfaction with one's own work (Li Yiming, 2019). The term job satisfaction was first seen in Hoppock's book "Job Satisfaction" published in 1935. Hoppock pointed out in the book that job satisfaction is essentially an inner emotional reaction or subjective attitude of employees to the work environment, that is, the psychological feeling of employees' satisfaction with the work environment in both physiological and psychological aspects. The theoretical support for employee job satisfaction mainly includes Maslow's hierarchy of needs theory, Herzberg's two-factor theory, Vroom's expectancy theory, Adams' equity theory.

In Liu and Pan's (2012) study, in summary: Maslow AH, 1943 (published in 1943, in the book "The Theory of Encouragement for People"), published in 1954, "The Nature of Encouragement" A detailed explanation of the book. The five levels of human demand are as follows: Physiological needs, safety needs, personal needs, respectable demands, ego-realistic needs, and the last seven levels. Intellectual demand and aesthetic demand are the following.

Herzberg F.'s internal factors, the work's own angle, and the sexual problems of the personnel involved. At the end of the 20th century, in the late 1950s, a small factory enterprise in the beautiful country's stronghold area, the company's accounting team carried out a large-scale study, and other problems were investigated. Time special work ``will'', ``if you have a special intention at the time'', ``what is the cause of your intention or unwillingness'', etc. After conducting a comprehensive analysis of the materials, other people's impressions of the employee may be due to unintentional factors; the former may be caused by the external work environment; Comprehensive analysis of the combination of factors that will result in the progression of the process, complete analysis of the ``encouragement-health factor" theory, and a simplified explanation of the two factors.

Expectancy Theory was published in 1964 by Vroom VH, published in 1964. It is a comprehensive consideration of human effort and the ultimate reward that can be achieved, and a theory of fairness that encourages the selection of appropriate actions. Adams J Posted by Yu in 1967 in his existing work ``Quantitative Effects on Quantitative Effects on Inequitable Rewards." This theory is also called social comparison, and the social comparison that exists between people and people, and the trends that exist in the near future.

In this study, comprehensive research, used measurement dimensions: work itself, work situation, work foreground, worker approval, worker perception.



CHAPTER 2

LITERATURE REVIEWS

The objective of this chapter is to review the literature relevant to this study and with theories regarding this topic. This chapter is divided into the following four sections:

Part 1: Clinical use and research of infusion robots and related research.

Part 2: Concepts and theories related to "Demography", and related research.

Part 3: Concepts and theories related to "Quality of work life", and related research.

Part 4: Concepts and theories related to "Satisfaction", and related research.

2.1 Clinical use and research of infusion robots

2.1.1 Application and development status

Foreign countries developed **intelligent** infusion pumps earlier, such as Japan, the United States, and Germany in the 1980s. At the end of the 1980s, the infusion pump was developed. Most of the popular products on the market are foreign products with various types and relatively good performance. Such as Japan's JMS Co., Ltd., the United States IMED Company and Germany's Braun Company.

In China, the development of infusion pumps started relatively late, mostly in the mid-1990s. Some domestic infusion pumps, such as Beijing Kelifeng Hi-Tech, Shenzhen Comfort, etc. But in general, the types are relative. There are few studies on intelligent infusion devices in China. With the development of science and technology and the continuous improvement of people's living standards, both patients and medical staff need. An intelligent, efficient and easy-to-use infusion device. The intelligent infusion assistance robot is a new type of device for infusion of patients.

2.1.2 Related research

In the study of Dong Lili, Sun Jianhua, Huo Liangsheng, Wang Yanqing and others (2021), in current clinical work, the failure rate of venous puncture is as high as 20%. How to improve the success rate of one-time puncture and avoid the discomfort caused by repeated puncture to patients with blood diseases is the focus of attention of patients, their families and medical staff. At present, ultrasound-assisted puncture has been proven to be an effective venous puncture guidance technology. As an automated puncture device based on ultrasound and other medical imaging guidance, the automatic venous puncture robot has the advantages of good repeatability and high precision. In Dong Lili's study, the automatic venous puncture robot was applied to the venous puncture of patients with blood diseases, making venous puncture convenient, effective and reliable. It can avoid the disadvantages of mistakenly entering the artery, puncturing the blood vessel or accidentally injuring the surrounding tissue during puncture, and improve the success rate of one-time puncture, reduce the number of punctures and the occurrence of catheterization complications. It is an intelligent medical robot developed for this purpose.

In summary, this study believes that the use of obstetric infusion robots can reduce the risk of occupational exposure, provide safety protection for nurses and reduce their worries; accurate infusion can reduce nursing errors and bring a good experience to patients and nurses; optimize the content of nursing work, avoid the tension caused by nurses' operations, reduce repetitive labor, and improve work efficiency. Change the clinical work style of nurses.

2.2 Demography

2.2.1 Concepts and theories

Demography is a general scientific term for studying the regularity and quantitative relationship of population development, the relationship between population and social economy, and its application. Demography is a comprehensive social science. It includes population theory, demography, and a series of branch disciplines. Population theory is an important part of demography, and it is closely related to other disciplines of demography. The formation and development of demography has a long historical process, and it is still developing.

2.2.2 Related research

In the study by Lu Yang (2016), the job satisfaction level of clinical nurses with different demographic characteristics was compared. The job satisfaction and the level of each dimension of clinical nurses with different demographic characteristics were compared. The results showed that the total scores and the eight dimensions of clinical job satisfaction of nurses of different ages were statistically significant. Bonferroni pairwise comparison analysis showed that the total scores and the eight dimensions of nurses aged 20 to 25 were significantly higher than those of other age groups. There was no statistically significant difference in the total scores and the scores of each dimension of job satisfaction of nurses of different genders and employment natures. The scores of nurses with different job positions in the two dimensions of scheduling and welfare benefits were statistically different. After Bonferroni pairwise comparison, the clinical job satisfaction scores of head nurses and teaching teachers were significantly higher than those of nurses. There were significant differences in the scores of career opportunities and welfare benefits among nurses with different educational backgrounds. Among them, the scores of welfare benefits of nurses with bachelor's degree or above were significantly higher than those of nurses with junior college and technical secondary school. In terms of career opportunities, the scores of nurses with junior college degree or above were the highest, followed by those with bachelor's degree or above, and the lowest among nurses with technical secondary school. There were significant differences in the total scores of job satisfaction and the scores of the six dimensions such as relationship with colleagues among nurses with different professional titles. In terms of scheduling and work-family balance, the scores of nurses were significantly lower than those of nurses and supervisors; in terms of relationship with colleagues, control and responsibility, interaction opportunities, career opportunities and total scores, the scores of nurses were significantly higher than those of nurses. The total scores, praise and recognition scores of nurses in the critical care department were significantly lower than those in the non-critical care department, and the differences were statistically significant. See Table 1 for details. The total scores of clinical job satisfaction and the scores of the six dimensions such as work-family balance and colleague relationship of nurses with different working years were negatively correlated.

2.3 Quality of work life

2.3.1 Concepts and theories

Medical workers have become a high-risk group for occupational stress. Due to the particularity of their profession, the current work and emotional state of medical staff is worrying, such as increased job dissatisfaction and severe psychological

burnout. Being in a state of stress for a long time will have a negative impact on the physical and mental health, service quality, and doctor-patient relationship of medical staff, and even cause diseases and medical disputes. For the work of nursing staff, improving the quality of their work and life and enhancing nurses' job satisfaction is an issue worthy of attention, which can be measured from aspects such as mental health, career development, and salary.

Mental health: The use of infusion robots can infuse more accurately, reduce nursing errors, improve nursing quality, increase nurses' confidence in their work, and reduce tension and worries about operational errors. Improve nurse-patient satisfaction, which also makes nurses more satisfied with their work. In the infusion work of nurses, the specific operations and projects performed every day at the job post are a repetitive task. There are too many tasks and strict requirements for nurses' puncture techniques, which may have an adverse effect on the physical and mental development of employees, and employees will feel too much work pressure.

Career development: The "three-step paradigm" theory proposed by Parsons in 1909 made the most outstanding contribution to the career planning theory at that time. In the first 50 years of the 20th century, this theory has always been of great guiding significance to the development of career planning. The design of the three-step paradigm is: the first step is to have a clear understanding of oneself, such as personal intelligence, ability, interest, resources, limitations and other characteristics; the second step is to have a certain understanding of the needs and success conditions, such as strengths, weaknesses, competition, opportunities and job-related prospects; the third step is to make correct inferences in the relationship between the above two sets of facts.

Salary: The remuneration system is a system formulated by the enterprise to give employees remuneration standards. Remuneration design and management are a very important part of human resource management. It takes the complexity, proficiency, labor intensity and responsibility of employees' labor as the benchmark and pays labor remuneration according to the actual labor quota, working hours or labor consumption completed by employees. In practice, the core of the remuneration system is the wage system.

The formulation of the remuneration system will consider fairness, competitiveness, incentives, economy and legality, among which fairness and rationality are particularly important. In the salary survey of medical staff, most medical staff are not satisfied with their salary. They think that the workload is too heavy and the salary is too low. This will directly affect their source of income and their living standards. Because more work and less pay will also produce a sense of work slackness, affecting the quality of work. Therefore, salary is also an important part of the quality of nurses' work and life.

2.3.2 Related research

In Al-Abdallah AM's study (2019), occupational fatigue refers to employees being in work tasks and environments for a long time, resulting in excessive physical fatigue, long-term emotional tension or lack of sleep, which leads to loyalty, loss of individual will, physical decline, emotional disorders or reduced work efficiency, affecting the quality of work life.

In the Nursing Journal, Indonesian scholars Gede Juanamasta(2023) estimated that institutional factors in the workplace that support or hinder the provision of high-quality nursing care are referred to as the "work environment". Previous studies have

found that a good work environment can provide a good atmosphere for nurses and motivate nurses to do a good job. In Lake ET's study (2019), Healthcare organizations need to prioritize creating a supportive and empowering work environment to promote the well-being of their nursing staff and ultimately improve patient outcomes. An unfavorable work environment can have a negative impact on nursing staff and patient care. It can lead to increased stress, burnout, and nursing dissatisfaction, which in turn undermines their ability to provide quality care. This negative environment has led to high turnover rates for nurses, a shortage of experienced professionals, and an overburdening of healthcare systems.

Qiu Yuexiu's research mentioned (2024) that according to the World Health Organization, more than 200 medical staff are infected with infectious diseases every year due to work. Due to the special nature of their work, medical staff have to complete a large amount of diagnosis and treatment work every day. When providing diagnosis and treatment or nursing work to patients, they will inevitably come in contact with the patient's blood, body fluids, secretions, etc., thereby increasing the risk of contracting blood-borne infectious diseases. In the case of occupational exposure, the mental and physical health of medical staff may be seriously damaged.

Providing nurses with safety protection at work is an important part of relieving stress for nurses and helping them achieve mental health. Occupational exposure of medical staff refers to occupational exposure that damages health or endangers life when medical staff are exposed to toxic or harmful substances or infectious pathogens during diagnosis, treatment and nursing activities. In Wang Xingli's study (2023), the Occupational Health Institute of the Chinese Center for Disease Control and Prevention conducted a systematic survey in 2009. The results showed that among the doctors, nurses and medical technicians surveyed, a total of 4,113 people were exposed to blood-borne pathogens within one year. Medical staff who suffered three or more acupuncture or other sharp instrument injuries within one year accounted for 58.87% of the total. The number of medical staff surveyed medical staff are a high-risk group for blood-borne occupational exposure.

In Li Wei's study (2023), it was mentioned that many domestic studies showed that nursing staff are the most high-risky group for occupational exposure in medical institutions, followed by doctors. Without the safety of medical staff, there is no safety for patients. The "National Nursing Development Plan 2021-2025" points out that it is necessary to "effectively prevent and reduce the hazards that nurses may suffer in the occupational environment, and effectively maintain and protect the legitimate rights and interests of nurses."

In Xiong Siqi's study (2023) excessive workload can cause nurses to be constantly busy and tense. The study found that the more total working hours per week, the higher the level of occupational fatigue of nurses. As working hours increase, nurses' attention gradually decreases, which can easily lead to adverse events such as patient falls, needlestick injuries, nosocomial infections, and medication errors, which in turn have a negative impact on turnover rate, work performance, and satisfaction. At the same time, the nursing managers among the research subjects also found that this situation is not conducive to clinical nurses staying in clinical work.

In Chen Yan's study (2017) nurses have high incidence of fatigue, anxiety, and burnout, which has an adverse impact on the physical and mental health and nursing

safety of nurses, and nurse fatigue, anxiety, and burnout are significantly related. Managers and individuals should pay attention to nurses' emotions.

In Xu Qiang's (2006) study, Career development theory is the product of the comprehensive effects of sociology, psychology, education, economics, and management. Although there has always been some controversy over the definition of "career" itself, the traditional career view that originated and served the traditional industrial economy era believes that a career is a process of continuous evolution of an individual's job position in one or a few organizations. This evolution process is linear and constantly rising. The traditional career view and the career development theory developed under this career view are deeply influenced by the static external environment and hierarchical organizational structure. The implicit psychological contract of this career view is that the organization provides employees with long-term and stable jobs in exchange for employees' loyalty to the organization. The organization is responsible for the career development of individuals, arranges the development and planning of employees' careers, and cultivates and develops special personal abilities required by the organization according to the needs of specific work.

In Xu Qiang's (2006) research, nine factors, including opportunity, challenge, work significance, job stability, motivation level, sense of achievement, work environment, and acquisition of new knowledge and skills, were evaluated to determine their importance in choosing a career. The survey results showed that development opportunities, work environment, and acquisition of new knowledge and skills ranked first in the career development of knowledge workers, while job stability was considered the least important factor.

In Deng Yuqing's (2024) study found that the professional identity of clinical nurses was positively correlated with job satisfaction. The higher the professional identity of clinical nurses, the higher their job satisfaction. This is consistent with the research results of RenZ et al, indicating that the professional identity of nurses has a positive effect on job satisfaction. The professional identity of clinical nurses is negatively correlated with job burnout. The higher the professional identity of clinical nurses, the lower their job burnout. This is consistent with the research of Zhang T et al. Therefore, nursing managers should carry out theoretical and practical education related to nursing professional identity from multiple levels and dimensions such as society, community, family, and individuals, so as to improve nurses' job satisfaction and reduce job burnout.

Yu Qianqian (2016) found that the sense of pay fairness has a strong positive predictive effect on physician job satisfaction, which is consistent with Ma Xinjian's finding that the sense of distributive fairness has a positive predictive effect on job satisfaction. The sense of pay fairness has a strong negative predictive effect on physician turnover tendency, which is consistent with Chen Pei's conclusion that employees' motivation to leave the organization is greatly reduced when they feel that the distribution is fair, and Zhang Xining's conclusion that "poor pay fairness" affects the stability of the medical team and reduces their work enthusiasm. "Our work is high-risk, the workload is heavy, the practice environment is poor, the pay is low, and it is too unfair" has become the voice of most physicians.

In Du Linzhi's research (2004), in economics, money is only regarded as a tool for exchanging goods. But its significance in real life is more than that. Some studies have pointed out that money is a motivation that can be used to attract and retain talents

and motivate people's work enthusiasm. Money is a reference framework for people's lives and a standard for personal evaluation. People's concept of money affects their work attitude and behavior of income satisfaction.

In kejianglin (2018) 'study, Married people are older, and the expectations from their families and society increase their pressure, making them more likely to be dissatisfied. Especially for employees with elderly parents and young children, they have more expenses in education, medical care, housing, etc., and they have heavier pressure in life. If they feel that they cannot get financial relief even if they work hard, they will find it difficult to work with peace of mind. At the same time, family problems will also affect work efficiency and mood.

In summary, reducing occupational exposure risks can more effectively protect the physical health of nurses, provide safety for nurses, and reduce nurses' concerns about occupational exposure risks. Reducing nursing errors and improving nursing quality can increase nurses' confidence in their work, reduce occupational fatigue, and play a positive role in nurses' mental health.

In summary, the application of infusion robots can help nurses acquire new knowledge and skills in terms of personal skills; enhance nurses' sense of achievement and participation in technological innovation; and provide nurses with more technical training and more attention in terms of training and support. These strengthen nurses' professional identity and thus improve the quality of their work and life.

In summary, a fair and reasonable salary level is also an important part of nurses' quality of life and work. The use of infusion robots can optimize work content, improve work efficiency, and enhance nurses' satisfaction with the reasonableness of salary levels.

2.4 Employee Satisfaction

2.4.1 Concepts and theories

Job satisfaction can be defined as the satisfaction that comes from the members of an organization. A positive emotional state of evaluation of work or work experience. Satisfaction is a special type of attitude that organizational members have towards their work, that is, an emotional response to their work. At present, the shortage of nursing staff worldwide has become a serious problem faced by most countries. The biggest reason for the shortage of nursing staff is the low job satisfaction of nurses. Hospitals have to provide medical and health services to patients from different regions with serious illnesses. Therefore, hospital nurses There are many crises and challenges in daily work. Not only is the workload overloaded, but the diversity, complexity and urgency of the work. This makes the nurses exhausted. This causes them to become frustrated at work, even suffer mental breakdowns, and ultimately become dissatisfied with their jobs.

The hierarchy of needs theory created by psychologist Maslow believes that people have needs ranging from low-level physiological needs to safety needs, love and belonging needs, self-esteem needs, and the highest needs of self-realization. According to this theory, to improve employees' job satisfaction, we must understand

their needs and try to meet their needs. Only when the needs of employees are met can they achieve higher job satisfaction and better sustainable development of the nursing industry and promote the progress of China's medical industry.

2.4.2 Related research

In May 2022, the National Health Commission issued the "National Nursing Development Plan 2021-2025", which mentioned in its main tasks the need to continue to deepen quality nursing, strengthen nursing humanistic care, and effectively improve patients' satisfaction with medical services.

In Zhang Xueni's study (2017) the relationship between nurses' weekly working hours, stressors and job satisfaction. From the research results, it can be seen that the longer the nurses work per week, the higher the level of stressors and the lower the job satisfaction. Nursing is a special profession. Not only do they face long-term shift work, but they also often encounter sudden changes in patients' conditions and have to work overtime. The general data of this survey show that there are 264 nurses who work equal to or more 40 hours, accounting for 80.36% of the total number of surveyed people, indicating that overtime work is the norm for nurses. The problem of nurses working overtime exists both at home and abroad. As the working hours are extended, the stress level of nurses increases and their job satisfaction decreases. This will not only affect nursing safety, but also affect the physical and mental health of nurses.

Zhao Ting's study (2021) showed that hospitals should start to improve nurses' average daily working hours, work pressure, salary level, doctor-patient relationship, working environment and other occupation-related factors to improve nurses' job satisfaction. Internal and external forces should work together to solve the current problem of low job satisfaction among nurses in China and achieve a virtuous cycle of "nurses working comfortably and patients receiving medical treatment with peace of mind".

In Li Yuan's study (2023), indicating that the nurses in this study had a good overall evaluation of the work environment. The highest score was the foundation of high-quality nursing services, and the lowest score was the medical-nursing cooperative relationship. This result is consistent with the study of Tei-Tominaga and Sato, indicating that the maintenance of the medical-nursing relationship in the nursing work environment needs to be strengthened. Hospital managers should pay attention to creating a good atmosphere of medical-nursing cooperation. Both medical and nursing staff should fully understand each other, uphold the common goal of serving patients, and build a harmonious and healthy working environment.

In the study of Ye Qiuxian and Ye Shuxian (2023), the measurement model and structural model were evaluated by partial least squares. The reliability and validity analysis were carried out in the first stage. The path coefficient and significance of the structural model were verified in the second stage. In the measurement model, Cronbach's alpha values were all greater than 0.7, and the combined reliability values CR were all greater than 0.8, which means that each dimension has reliability. This study meets the standards recommended by the Institute of Statistics. The factor loading is greater than 0.6, and the average variance extraction AVE value is greater than 0.5, which means that each dimension has convergent validity. The square root of the AVE value is close to the correlation coefficient of each dimension, which means that each dimension has discriminant validity. In addition, the explanatory power R^2 of work performance, organizational commitment and turnover intention are 0.867, 0.865 and 0.89 respectively, which means that the exogenous variables have a high explanatory power for the

endogenous variables, proving that the choice of exogenous variables is better. The influence of exogenous variables on endogenous variables F_2 is greater than 0.02, which proves that the influence of exogenous variables on endogenous variables is good. It is reliably proved that the higher the employee satisfaction, the lower the turnover rate; on the contrary, the lower the satisfaction, the higher the turnover rate.

Improving the adequacy of human and material resources has a promoting effect on the job satisfaction of clinical nurses. The results of the analysis show that the adequacy of human and material resources in the nursing work environment has a positive predictive effect on their job satisfaction. Specifically, for every level increase in the nurse's score on the adequacy of human and material resources, the probability of being satisfied with the job will increase by 1.724 times. This result is consistent with many previous studies at home and abroad. Adequate human and material resources can reduce the workload and psychological pressure of clinical nurses, relieve occupational stress, and also help create a positive work experience, thereby enhancing job satisfaction and optimizing the quality of nursing services. The results of this study suggest that managers should pay attention to the rational allocation of human and material resources in the medical and health practice environment, ensure the adequacy of personnel and material reserves, and improve the job satisfaction of clinical nurses.

In Li Congyi's research (2024), medical work is a special service work with frequent and close contact. As a group of people with special characteristics, medical staff not only provide high-quality medical services to patients, but also shoulder the important task of saving lives and promoting health. Therefore, medical staff need to have good qualities and a high sense of responsibility. However, at present, most medical staff only have great work pressure, but also work overload, which makes their living habits irregular and also poses a great threat to their own health.

In Xu Gang's study (2014), some scholars have studied the differences and connections between job satisfaction and quality of work life. Mosharaf (1999) took nurses as research subjects and found that there is a significant positive correlation between the quality of work life and job satisfaction; Sigry (2001) studied the quality of work life based on demand theory and spillover effects and proposed that the quality of work life There is a significant correlation with job satisfaction; CHAN (2007) conducted an empirical study on a sample of Shanghai enterprises and believed that the quality of work life is positively related to job satisfaction.

Subjective well-being is a comprehensive evaluation of life satisfaction and individual emotional state based on self-set standards. Medical staff are in long-term contact with patients, which brings them different degrees of physical, psychological and social burdens, resulting in a generally poor sense of well-being. Mental health and subjective well-being determine a person's psychological state, thinking, memory, language expression and ability to deal with events, which will affect people's work ability. Long-term stressful work will lead to adverse psychological performance of medical staff. In the long run, it may reduce the service quality and job satisfaction of medical staff. This situation will also be reflected in doctor-patient communication in different forms, increasing the incidence of medical disputes. Therefore, improving their service quality and job satisfaction is currently one of the key points and difficulties of hospital human resource management.

In study by Tamam, M. B., Soetjipto, B. E., & Murwani, F. D. (2024), based on research in the field, the results obtained are: Quality of work life, Work Environment and Religiosity has a significant positive effect on OCB through Job Satisfaction.

In study by Abiodun, A., & Ogunola, A. (2022), both work-life and work life balance qualities were also found to jointly influence the job satisfaction of these bank employees.

In study by Mohammadi, H., & Shahrabi, M. A. (2013), the results of survey have confirmed that there were some meaningful relationships between the quality of work life on job satisfaction in both organizations.es.

To sum up, as nursing managers, we should pay attention to this. In view of the current situation of nurses' work in my country, to improve nurses' satisfaction, the use of infusion robots in clinical practice can better solve this problem.



CHAPTER 3

RESEARCH METHODOLOGY

Chapter 3 explains how the research process was conducted. In order to study the factors that influence nurses' satisfaction. In this paper, a simple random sampling method is used to randomly survey nurses in three large tertiary hospitals in Shanghai, China.

Based on the results of the questionnaire, the following research is conducted:

- 3.1 Sequences of Research
- 3.2 Population and Sampling Technique
- 3.3 Instrumentation
- 3.3 Verification and Test Reliability of Questionnaire
- 3.4 Data Collection
- 3.5 Data Analysis

3.1 Sequences of Research

The research for this Independent Study will be according to the following schedule:

- Define research topic
- Pre-data collection
- Define research question
- Literature review
- Complete first three chapters
- Prepare consumer survey
- Implement survey
- Evaluate survey data
- Complete chapter four and five

3.2 Population and Sampling Technique

As one of the leading cities in China, Shanghai has a high-level medical service system and leading medical science and technology. Compared with other cities, it uses artificial intelligence technology more widely and is at the forefront of scientific and technological innovation. Many of its hospitals are well-known throughout China and even the world in the medical field. There are more than 40 large-scale tertiary hospitals with strong comprehensive strength in the city, with up to 1,000 medical staff in each hospital, of which nurses account for up to 50%. Based on the above situation, the samples of this study are selected as follows:

1. Population: The total number of nurses in Shanghai is 111,300.(Form the data of Shanghai district official 2023, the data from China's Baidu.)
2. Three large tertiary hospitals in Shanghai, China (Shanghai Sixth People's Hospital, Shanghai Huashan Hospital and Shanghai Xinhua Hospital)
3. The sample of this research is calculated by using Taro Yamane (1973) formula with 95% confidence level. (According 111,300 nurses from the data of (Shanghai Municipal Health Commission district official report 2023, the data from China's Baidu.)

The calculation formula of Taro Yamane is presented as follows:

Where :

N = number of people in the population

Substitute numbers in formula:

[illegible]

After calculated the sample size by substituting the numbers into the Yamane formula, the numbers of sample are 399.968. In order to obtain reliable of data, researcher has increased sample size to 405.

3.3 Instrumentation

1) The first part of the questionnaire is the demographic information of the respondents. The first part is questions about demographic characteristics, including department, age, marital status, and education level. For this part, a checklist of questions is used.

3) The third part of the questionnaire mainly measures the issues related to nurses' satisfaction after using the infusion robot, including 5 questions. For this part, a five-point Likert scale and questionnaire survey were used. Respondents were asked to rate from "1 person disagrees" to "5 people completely agree" using checklist questions.

3.4 Verification and Test Reliability of Questionnaire

This study uses a questionnaire to test the accuracy and reliability of the study.

1. Validity: Design a questionnaire to ensure that each question and answer option is valid and can achieve the purpose of the study.

2. Reliability: Before conducting a large number of questionnaires, use the Try- out method to randomly survey 30 people in places with a large flow of nurses in a hospital in Shang Hai. First, analyze the 30 survey results to ensure that the collected data can reach Anticipated research value.

3.5 Collected data.

The questionnaire was uploaded using the Sojump platform, and the hospital management and department head nurses were asked to assist in distributing the questionnaires through WeChat or QQ online by simple random sampling. Data collection was conducted in September 2024. Complete and valid questionnaire survey results were selected as data collection for further analysis.

3.6 Data analysis

The purpose of data analysis is to concentrate and improve the information hidden in a large amount of seemingly disorganized data, so as to find the inherent laws of the research objects.

The data of this study will be analyzed by computer through package software (SPSS: Statistical Package for Social Sciences) as follows:

1. The demographic background information of the respondents will be analyzed and presented using descriptive statistics in the form of Frequency and Percentage.

2. The results collected by the questionnaire will be analyzed by the following methods: scale reliability analysis, correlation analysis, regression analysis and ANOVA analysis. Analyze the linear relationship between variables based on the results of the questionnaire. Correlation analysis is to determine the closeness between variables and the direction of correlation through several statistics describing the correlation. For the existence of a linear relationship between variables, the Pearson correlation coefficient is generally used to test. This article mainly analyzes after using the infusion robot, whether there are significant correlations between Demography and the quality of work life have effect on nurses 'satisfaction

At the same time, through the correlation analysis, the hypotheses proposed earlier are tested.

3. The scoring of the questionnaire will be analyzed by using five -points

The five-point Likert scales are as follows:

Totally agree 5 points

Basically agree 4 points General 3 points

Disagree 2 points

Strongly disagree 1 point

Researchers used the criteria to scale rating of class interval of Best (1970) to interpret the Mean score of nurses' satisfaction.

Class interval = Maximum – Minimum/class number

1. = 1.00 -1.80 means Strongly Disagree

2. = 1.81-2.60 means Disagree

3. = 2.61-3.40 means General

4. = 3.41-4.20 means Basically agree

5. = 4.21-5.00 means Totally agree

3.7 Item-Objective Congruence (IOC) analysis

IOC is the process of scoring individual projects according to the extent to which they agree or disagree with specific goals outlined by the test developer. Therefore, experts evaluate each item by giving a rating:

1 means explicitly measuring the goal

-1 means not explicitly measuring

0 indicates that the goal is not clear

After the experts scored the projects, the results were calculated to create an IOC index for each project on each target. The project Goal Consistency Index (IOC) proposed by Rovinelli & Hambleton (1977) is a quantitative method to measure the judgment of content experts on a project. To assess the fit between the test items and the specification sheet (Rovinelli, R. J., & Hambleton, R. K., 1977, pp. 49-60).

If its value is between 0.67 and 1.00, it is considered as part of the instrument. Subsequently, if the value falls below 0.67, the item should be restated or removed from the tool.

The project-goal alignment (IOC) index is calculated as follows:

$$IOC = \sum R / N$$

R = sum of expert ratings N = number of experts.

Expert evaluation process

In this study, we formed a panel of 3 experts in the field of management and organizational management to evaluate the questionnaire items. The experts were selected based on their wealth of knowledge and experience in their respective fields.

The evaluation process includes the following steps:

Preparation of assessment materials: A complete set of questionnaire items as well as the objectives they are designed to measure is prepared and made available to the experts. These include clear instructions on how to rate each item according to its alignment with the specified objectives.

Rating process: Each expert independently reviewed and rated each questionnaire item using a scale of 1, 0, and -1. This process ensures an objective and comprehensive assessment of each project.

Collection and aggregation of ratings: The ratings of all experts are collected and aggregated. For each item, the sum of ratings $\sum R$ is calculated.

Calculation of the IOC index: Using the summary score, the IOC index of each project was calculated using the above formula. This provides a clear measure of how well each project fits into the specified objectives.

Interpretation of IOC results The IOC index for each project is explained as follows:

Items with IOC values between 0.67 and 1.00 were considered to be a good fit for the target and were retained in the questionnaire.

Projects with IOC values below 0.67 were identified as problematic and required further review. These items were either rephrased to better align with the objectives or removed from the questionnaire to ensure the overall quality and validity of the instrument.



CHAPTER 4

RESEARCH RESULTS

Chapter 4 deals with the evaluation and interpreting of the research results by using statistical methods.

4.1 Demographic Data

According to the results of questionnaire, the respondent's department, age, Marital status and education level are presented in the following table.

Table 4.1 Frequently table of department

Department	Frequency	Percentage (%)
Emergency	39	9.6%
Critical care	56	13.8%
Medicine	117	28.9%
Surgery	163	40.2%
Other	30	7.4%
Total	405	100%

From Table 4.1, it can be found that there are 405 respondents, the most of whom are surgery, with 163 people, accounting for 40.2%. Next is medicine, with 117 people, accounting for 28.9%. Next is critical care, with 56 people, accounting for 13.8%. And there are 39 people from emergency, accounting for 9.6%. The least number are those other department, with 30 people, accounting for 7.4%.

Table 4.2 Frequently table of age

Age	Frequency	Percentage (%)
25 years and below	47	11.6%
26-35	173	42.7%
36-45	116	28.6%
46 years and above	69	17.0%
Total	405	100%

From Table 4.2, it can be found that there are 405 respondents, the most of whom are between 26 and 35 years old, with 173 people, accounting for 42.7%. Next is between 36 and 45 years old, with 106 people, accounting for 28.6%. And there are 69 people between the ages of 46 years old and higher, accounting for 17.0%. The least number are those below 25 years old, with 47 people, accounting for 11.6%.

Table 4.3 Frequently table of marital status

Marital status	Frequency	Percentage (%)
Single	121	29.9%
Married	284	70.1%
Total	405	100%

According to Table 4.3, there were 405 respondents, most of whom were married, accounting for 284 or 70.1% of the total, and unmarried, accounting for 121 or 29.9% of the total.

Table 4.4 Frequently table of education

Education	Frequency	Percentage (%)
College degree or below	76	18.8%
Undergraduate degree	209	51.6%
Master degree or above	120	29.3%
Total	405	100%

According to Table 4.4, there are a total of 405 respondents, the most of whom have undergraduate degree, with 209, accounting for 51.6%, followed by master degree or above, with 120, accounting for 29.3%, and the least is a 76 people with college degree or below, 18.8%.

4.2 Descriptive Statistics of Variables

Based on the results of the questionnaire survey, the following table lists the descriptive statistical results of the respondents' various question results.

Table 4.5 Descriptive of Mental Health

Mental Health	Completely Agree Uncertain Disagree Completely					Mean	SD.
	agree		disagree				
P2Q1 I get more security at work	160	131	69	20	25	3.941	1,148
P2Q2 I reduce anxiety at work	27	18	74	156	130	3.849	1,123
P2Q3 I relieve tension during nursing operations	138	152	71	22	22	3.894	1.102
P2Q4 I improve happiness in work and life	138	150	84	19	16	3.916	1.04

Table 4.5 shows that respondents get more security at work. 160 people agreed with this view, accounting for 39.5%, the highest percentage. The mean value is 3.941 and the standard deviation is 1.148. There are 156 people disagreed reduce anxiety at work, accounting for 38.5%, the highest proportion. The mean value is 3.849 and the standard deviation is 1.123. There are 138 people relieve tension during nursing operations, accounting for 34.1%, with a mean of 3.8694 and a standard deviation of 1.102. A total of 150 people (37.0%) said they improve happiness in work and life. The mean value is 3.916 and the standard deviation is 1.04. This indicates that the majority of respondents consider mental health is good.

Table 4.6 Descriptive of Career development

Career Development	Completely Agree Uncertain Disagree Completely					Mean	SD.
	agree				disagree		
P2Q5 It makes me get more occupational development opportunities	146	147	62	26	24	3.901	1.139
P2Q6 It makes me learn new knowledge and acquire new skills at work	143	142	78	21	21	3.901	1.101
P2Q7 It makes me feel professional Achievement	128	142	71	35	29	3.753	1.193
P2Q8 It makes me feel professional Participation	120	147	81	35	22	3.760	1.130
P2Q9 It makes me feel the meaning of work	140	146	69	27	23	3.872	1.132
P2Q10 It makes me increase training	134	154	62	33	22	3.852	1.131

Table 4.6 shows that respondents get more occupational development opportunities. 147 people agreed with this view, accounting for 36.3%, the highest percentage. The mean value is 3.901 and the standard deviation is 1.139. There are 143 people completely agree learning new knowledge and acquiring new skills at work, accounting for 35.3%, the highest proportion. The mean value is 3.901 and the standard deviation is 1.101. There are 142 people feel professional achievement, accounting for 35.1%, with a mean of 3.753 and a standard deviation of 1.193. A total of 147 people (36.3%) said they feel professional participation. The mean value is 3.760 and the standard deviation is 1.130. A total of 146 people (36.0%) said they feel the meaning of work. The mean value is 3.872 and the standard deviation is 1.132. A total of 154 people (38.0%) said they increased training. The mean value is 3.852 and the standard deviation is 1.131. This indicates that the majority of respondents are satisfied with their career development.

Table 4.7 Descriptive of Salary

Salary	Completely Agree Uncertain Disagree Completely					Mean	SD.
	agree		disagree				
P2Q11 I think that matches the intensity							
of work content with salary	124	130	74	38	39	3.647	1.269
P2Q12 I think that matches the							
workload with salary	99	142	78	35	51	3.501	1.293
P2Q13 I think that responsibilities							
match salary	121	122	82	41	39	3.605	1.273
P2Q14 I think that satisfied with							
the current salary	140	112	66	48	39	3.657	1.318
P2Q15 I think that fairness of salary	120	134	71	42	38	3.632	1.265

Table 4.7 shows that respondents thought that match the intensity of work content with salary. 130 people agreed with this view, accounting for 32.1%, the highest percentage. The mean value is 3.647 and the standard deviation is 1.269. There are 142 people thought that match the workload with salary, accounting for 35.1%, the highest proportion. The mean value is 3.501 and the standard deviation is 1.293. There are 122 people thought that responsibility match salary, accounting for 30.1%, with a mean of 3.605 and a standard deviation of 1.273. A total of 140 people (34.6%) said they are satisfied with the current salary. The mean value is 3.657 and the standard deviation is 1.318. A total of 134 people (33.1%) said they thought the fairness of salary. The mean value is 3.632 and the standard deviation is 1.265. This indicates that the majority of respondents are satisfied with their salary.

Table 4.8 Descriptive of Satisfaction

Satisfaction	Completely Agree Uncertain Disagree Completely					Mean	SD.
	agree				disagree		
P3Q1 I am satisfied with the current work situation	123	140	92	19	31	3.753	1.162
P3Q2 I am willing to do this job for a long time	132	140	75	27	31	3.778	1.192
P2Q3 I am satisfied with the use of new technology	146	136	62	30	31	3.830	1.214
P2Q4 I am satisfied with development prospects	127	153	71	25	29	3.800	1.159
P2Q5 I feel the joy of emotion while working	139	139	62	41	24	3.810	1.184

Table 4.8 shows that respondents are satisfied with the current work situation. 140 people agreed with this view, accounting for 34.6%, the highest percentage. The mean value is 3.753 and the standard deviation is 1.162. There are 140 people thought willing to do this job for a long time, accounting for 34.6%, the highest proportion. The mean value is 3.778 and the standard deviation is 1.192. There are 146 people are satisfied with the use of new technology accounting for 36.0%, with a mean of 3.830 and a standard deviation of 1.214. A total of 153 people (37.8%) said they are satisfied with development prospects. The mean value is 3.800 and the standard deviation is 1.159. A total of 139 people (34.3%) said they feel the joy of emotion while working. The mean value is 3.810 and the standard deviation is 1.184. This indicates that the majority of respondents are satisfied with their job.

4.3 Reliability Analysis

In order to ensure a high degree of consistency in the components of the test items, I used reliability analysis in the study. Reliability analysis is mainly to examine the results of the internal consistency test of each factor.

The reliability coefficient of the total table should be above 0.8, and it is acceptable between 0.7 and 0.8. The reliability coefficient of the subscale is preferably above 0.7, and 0.6 to 0.7 is also acceptable.

Table 4.9 Summary of reliability test

Factor	Cronbach's Alpha
Quality of work life (QWL)	0.891
Nurses' satisfaction (NS)	0.865

It can be seen from Table 4.9 that all coefficients are greater than 0.6, indicating that the reliability of this group of data is acceptable. Each measurement question item proposed by the scale can describe the independent variables and has high reliability. Therefore, each measurement item of the above five measurement variables meets the requirements and is retained.

4.4 Linearity Testing

This part of the hypothesis testing mainly uses correlation and regression analysis. Correlation analysis is a statistical method used to evaluate the strength of relationship between two quantitative variables. A high correlation means that two or more variables have a strong relationship with each other, while a weak correlation means that the variables are hardly related. In statistics, regression analysis refers to a statistical analysis method that determines the quantitative relationship between two or more variables.

Relationship between quality of work life and nurses' satisfaction

H5 : Quality of work life has impact on nurses' satisfaction

Table 4.10 Results of correlation analysis between QWL and NS

QWL	NS
Pearson Correlation	0.595**
Sig.(2-tailed)	< 0.001

The results show that the Pearson correlation coefficient between quality of work life and nurses' satisfaction is greater than or equal to 0.3 and less than or equal to 0.7, indicating that there is a positive correlation and a moderate correlation, which means that there is a certain linear relationship between the two variables. A two-tailed significance value (Sig. value) less than 0.001 indicates a very high statistical significance of the correlation. This means that the correlation between the variables can hardly be due to randomness, and the correlation is significant and statistically significant.

Table 4.11 Regression analysis of QWL and NS

	Unstandardized Coefficients		Standardized Coefficients		Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta	t		Lower Bound	Upper Bound
(constant)	0.885	0.199	-	4.44	0.000	0.493	1.277
QWL	0.769	0.052	0.595	14.864	0.000	0.667	0.871

Dependent Variable: Nurses 'Satisfaction

Independent Variable: Quality of work life

R=0.595a

R²=0.354

Adjusted R²=0.353

Std. Error of Estimate=0.76638

F Change=220.951

Sig. F Chance=0.000^b

It can be seen from the regression results in Table 4.11 that the equation obtained from the regression of the impact of quality of work life on nurses' satisfaction meets the requirements of F test and T test (Sig. T value and Sig. F value are both less than 0.05). This shows that the established regression equation between quality of work life and nurses' satisfaction meets the test requirements.

In addition, it can be seen that the adjusted R-square is 0.353, indicating that the regression equation can explain 35.3% of the total variation; the Sig. value of 0.001 indicates that the overall regression is significant.

From regression analysis, we can get the standard regression equation:

Nurses' satisfaction = 0.595 *Quality of work life

This validates the previous assumption H2.

4.5 ANOVA Testing

Relationship between nurses with different demographic characteristics and satisfaction.

1.Take nurses' department as a grouping variable, and their satisfaction as a dependent variable for a one-way ANOVA.

H1.1: Nurses with different department has impact on nurses' satisfaction

Table 4.12 Results of nurses' satisfaction of different department

95% Confidence Interval for							
Mean							
Std. Upper							
Department	N	Mean	Deviation	Lower Bound	Bound	Minium	Maximum
1	39	3.6769	1.02044	3.3461	4.0077	1.4	4.8
2	56	3.6964	0.99086	3.4311	3.9618	1.4	4.8
3	117	3.7761	1.01783	3.5897	3.9624	1.2	5
4	163	3.8564	0.88625	3.7194	3.9935	1.4	4.8
5	30	3.8600	0.90233	3.5231	4.1964	1.4	4.8
Total	405	3.7941	0.95241	3.7010	3.8871	1.2	5.0
ANOVA							
		Sum of Squares	df	Mean Square	F	Sig.	
Between Groups		1.872	4	0.468	0.513	0.726	
Within Groups		364.594	400	0.911			
Total		366.466	404				

In table 4.12, the number 1 represents the department Emergency, 2 represents Critical care, 3 represents Medicine, 4 represents Surgery, 5 represents other department. According to the analysis results in Table 4.9, $F=0.513$, $P=0.726 > 0.05$, indicating that nurses of different department have no significant differences in satisfaction.

Therefore, H1.1 is not accepted.

2. Take nurses' age as a grouping variable, and their satisfaction as a dependent variable for a one-way ANOVA.

H1.2: Nurses with different age has impact on nurses' satisfaction

Table 4.13 Results of nurses' satisfaction of different age

95% Confidence Interval for							
				Mean			
		Std.		Upper			
Age	N	Mean	Deviation	Lower Bound	Bound	Minium	Maximum
1	47	3.4596	1.15865	3.1194	3.7998	1.4	4.8
2	173	3.7630	0.90452	3.6273	3.8987	1.2	4.8
3	116	3.6983	0.98458	3.5172	3.8794	1.4	4.8
4	69	4.2609	0.67502	4.0987	4.4230	1.2	5.0
Total	405	3.7941	0.95241	3.7010	3.8871	1.2	5.0
ANOVA		Sum of Squares		df	Mean Square	F	Sig.
Between Groups		21.525		3	7.175	8.341	0
Within Groups		344.94		401	0.860		
Total		366.466		404			

In table 4.13, the number 1 represents the age 25 years and below, 2 represents 26-35, 3 represents 36-45, 4 represents 46 years and above. According to the analysis results in Table 4.10, $F=8.341$, $P=0.00 < 0.05$, indicating that nurses of different age have significant differences in satisfaction.

Therefore, H1.2 is accepted.

3. Take the respondents as a grouping variable and make an independent sample t-test for their satisfaction as a dependent variable.

H1.3: Nurses with different marital status has impact on nurses' satisfaction

Table 4.14 Results of nurses' satisfaction of different marital status

Group Statistics							
NS	Marital status	N	Mean	Std.Deviation	Std.Error	Mean	
	Single	121	3.8694	0.92977	0.08452		
	Married	284	3.7620	0.96172	0.05707		
Independent Samples Test							
Leneve's Test for Equality of Variances				t-test Equality of Means			
NS	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std.Error Difference
Equal variances assumed	0.443	0.506	1.039	403	0.299	0.10745	0.10339
Equal variances not assumed			1.054	223.742	0.293	0.10745	0.10119

As can be seen from Table 4.14, Leven's test score is $F=0.443$ (greater than 0.05). Therefore, the variances of nurses of different marital status are the same, indicating that the data is suitable for testing and analysis of variance.

The Independent Samples Test result sig two-tailed value is 0.29 (greater than 0.05), indicating that nurses of different marital status don't have different satisfaction. The average satisfaction of single is $3.8694 > 3.7620$ (The average satisfaction of married).

Therefore, H1.3 is not accepted.

4. Take nurses' education as a grouping variable, and their satisfaction as a dependent variable for a one-way ANOVA.

H1.4: Nurses with different education has impact on nurses' satisfaction

Table 4.15 Results of nurses' satisfaction of different education

95% Confidence Interval for							
Mean							
		Std.		Upper			
Education	N	Mean	Deviation	Lower Bound	Bound	Minium	Maximum
1	76	3.6553	1.00802	3.4249	3.8856	1.4	4.6
2	209	3.7378	0.96345	3.6064	3.8692	1.2	4.8
3	120	3.9800	0.87405	3.8220	4.1380	1.4	5.0
Total	405	3.7941	0.95241	3.7010	3.8871	1.2	5.0
ANOVA		Sum of Squares		df	Mean Square	F	Sig.
Between Groups		6.2740		2	3.137	3.501	0.031
Within Groups		360.191		402	0.896		
Total		366,466		404			

In table 4.15, the number 1 represents the education College degree or below, 2 represents Undergraduate degree, 3 represents Master degree or above. According to the analysis results in Table 4.15, $F=3.501$, $P=0.031 < 0.05$, indicating that nurses of different education have significant differences in satisfaction.

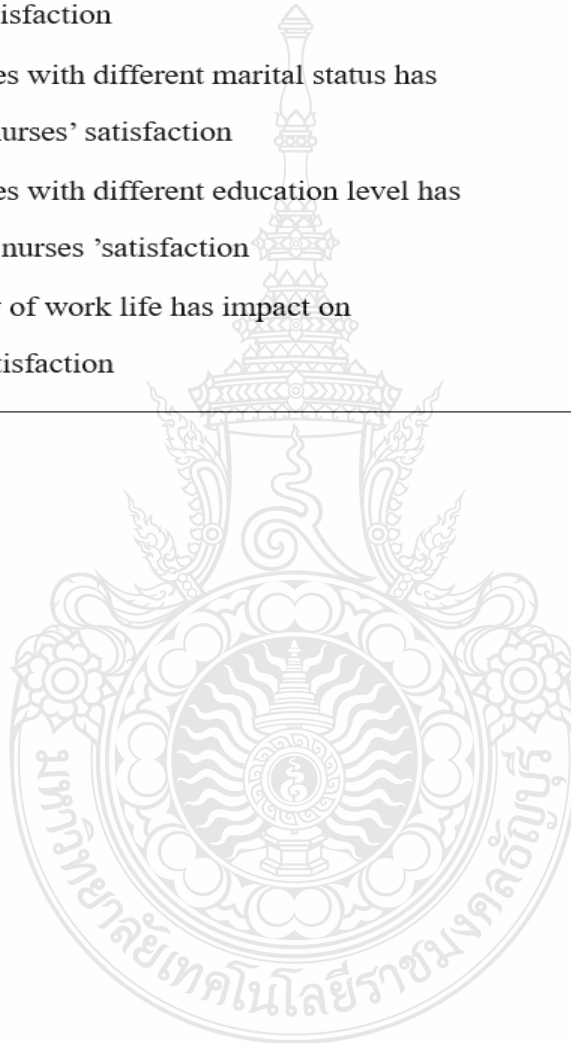
Therefore, H1.4 is accepted.

4.6 Summary Hypothesis Test

Based on the above analysis, the hypothetical test results in this paper are as follows.

Table 4.16 Summary Hypothesis Test

Hypothesis	Accept	Reject
H1.1: Nurses with different department has impact on nurses' satisfaction		√
H1.2: Nurses with different age has impact on nurses' satisfaction	√	
H1.3: Nurses with different marital status has impact on nurses' satisfaction		√
H1.4: Nurses with different education level has impact on nurses' satisfaction	√	
H2. Quality of work life has impact on nurses' satisfaction	√	



CHAPTER 5

DISCUSSION AND RECOMMENDATION

Chapter 5 gives a summarization of the results of the research and gives recommendations for further research in the field.

5.1 Analysis of research results

This paper takes nurses from three large tertiary hospitals in Shanghai as the research subjects to explore whether nurses with different demographic characteristics and the quality of work life affect their job satisfaction. In terms of measuring the model relationship, data were mainly obtained through questionnaire surveys for empirical analysis, factor analysis, correlation analysis, regression analysis and difference analysis were conducted through SPSS statistical analysis software, and the following conclusions were drawn:

Through the analysis of 405 respondents, the Department of Surgery has the largest number of people, accounting for 40.2%, and other departments have the smallest number, accounting for 7.4%; in terms of age, the 26-35 group has the largest number, accounting for 42.7%; the education level is bachelor's degree. Mainly, accounting for 51.6%; in terms of marital status, 70.1% of the respondents were married. This data provides the basis for subsequent analysis.

The significant impact of nurses' quality of work life on satisfaction was confirmed, and this result means that the higher the quality of nurses' work life, the higher the satisfaction. The work characteristics of the medical industry determine the arduous daily work of nurses, especially in the nursing industry. The mental health of nurses at work and the improvement of career development and salary will help to increase the enthusiasm of nurses and help stabilize the nursing industry. development.

According to the results of the hypothesis test, the impact of nurses with different demographic characteristics and the quality of work life on employee job satisfaction has also been verified, supporting the H1 and H2 hypotheses.

In summary, the data analysis in this study shows that nurses with different demographic characteristics have an impact on employee job satisfaction. The quality of work life plays a key role in the evaluation of nurses' satisfaction. Good quality of life work can significantly improve employee satisfaction. These results provide strong support for the management adjustment of the nursing industry and provide valuable reference for promoting the development and progress of my country's nursing industry from the theoretical and practical levels

5.2 Discussion

This study analyzes and verifies in detail the impact of nurses with different demographic characteristics and the quality of work life on nurse satisfaction and draws some important conclusions through empirical research on relevant data.

First, in the demographic part, nurses in different departments will not show a significant impact on satisfaction, and nurses with different marital status will not show a significant impact on satisfaction. Nurses of different ages and education levels have a significant impact on satisfaction. In summary, it is believed that nurses with different demographic characteristics have an impact on satisfaction. This result is consistent with

the results of many previous studies such as Li Congyi (2024) and Lu Yang (2016), the job satisfaction and the level of each dimension of clinical nurses with different demographic characteristics were different. Secondly, the quality of work life has an impact on nurses' satisfaction, showing a significant positive correlation, that is, as the quality of nurses' working life improves, satisfaction will increase. This result is consistent with the results of many previous studies such as Tamam, M. B., Soetjipto, B. E., & Murwani, F. D. (2024). Quality of work life, Work Environment and Religiosity has a significant positive effect on OCB through Job Satisfaction. Abiodun, A., & Ogunola, A. (2022), both work-life and work life balance qualities were also found to jointly influence the job satisfaction of these bank employees. And Mohammadi, H., & Shahrabi, M. A. (2013), there were some meaningful relationships between the quality of work life on job satisfaction in both organizations.

Combining the above two main findings, this study found that nurses with different demographic characteristics have an impact on satisfaction. The quality of work life has a significant impact on nurses' satisfaction, and a good quality of work life can significantly improve nurses' satisfaction. Therefore, with the rapid development of artificial intelligence and AI technology, the application of robots in the nursing industry, in the process of improving nurses' satisfaction, managers in the nursing industry need to pay attention to these two important factors, try to meet nurses' needs and expectations for the quality of work life, and mobilize nurse workers' confidence in their work. Provide a stable foundation for the nursing team, promote better development of the nursing industry, and promote better development of the medical industry.

5.3 Research limitations

Although this study has obtained hypothesis, there are still many problems. For example, the samples of this survey mainly come from Shaanxi Province. Although the sample ratio was retained during the sample extraction process, there are still some deficiencies. Due to insufficient representativeness and improper sampling methods, the research results lack universality. In addition, this article mainly uses questionnaire surveys and lacks empirical research. The persuasiveness of the research results needs to be improved.

5.4 Implication for Practice and Future Research

5.4.1 Implication for Practice

This study still has some deficiencies. Subsequent research can improve the reliability of data by expanding the sample size. Demographic data can also be collected as detailed as possible, and variables irrelevant to the research results can be controlled as much as possible. At the same time, it is necessary to add empirical research and adopt experimental design to conduct experimental research to further expand the research content.

5.4.2 Future Research

In addition, there are very few domestic studies on the relationship between nurses' satisfaction after using infusion robots. In addition to nurse practitioners in Shanghai hospitals, other regions can also further expand the research. It is also possible to explore more factors that affect nurses' satisfaction.

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APPENDIX



APPENDIX I
The Result of Index of Consistency (IOC) of Questionnaire Form



This list of experts who reviewed the instrument used for collecting data

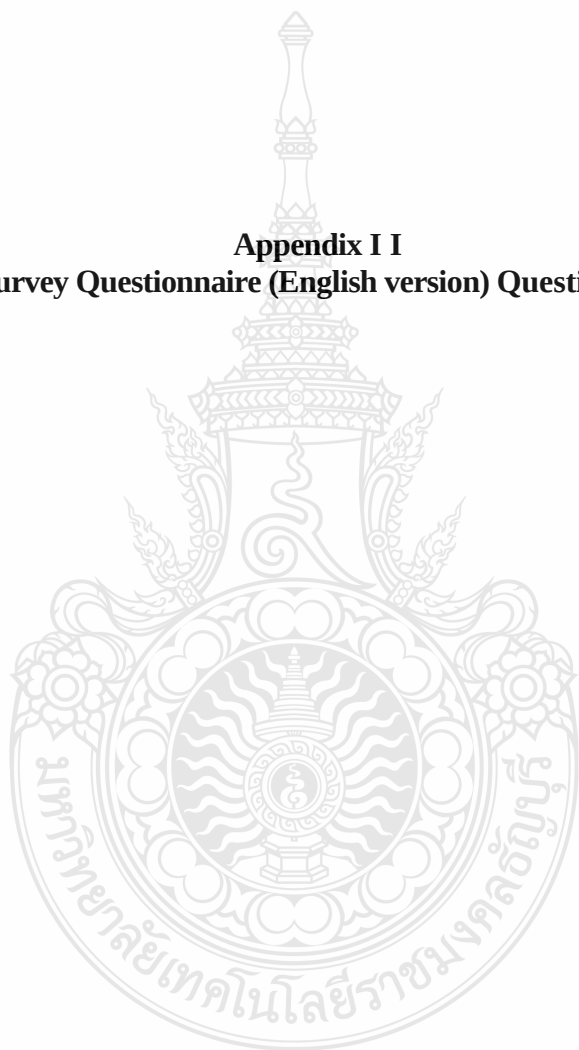
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Appendix I I
A Survey Questionnaire (English version) Questionnaire



Dear Sirs and Madams:

Hello! Thank you for filling out this questionnaire. This survey is a purely academic study. There is no right or wrong answer.

Please answer based on your actual feelings. We guarantee that your answers will be kept completely confidential. Your cooperation and support,

It is crucial to the successful completion of this study. It is estimated to take 5 minutes to complete all the items. Please be patient and tick the boxes.

Sincerely thank you for your support!

First part (This study only included female nurses)

1. Your department

- ☐Emergency
☐Critical care
☐Internal medicine
☐Surgery
☐Other

2. Your age:

- ☐25 years and below ☐26-35 ☐36-45 ☐46 years and above

3. Marital status:

- ☐single ☐married

4. Education:

- ☐College degree or below ☐Undergraduate degree ☐Master degree or above

Second part

Quality of work and life (Clinical application of infusion robot)

Regarding the impact of using robots in nursing clinics on the quality of your work and life, please select the option that best represents your opinion based on your actual feelings

	List	Totally agree	agree	Unsure	Disagree	Totally disagree
1	I get more security at work					
2	I reduce anxiety at work					
3	I relieve tension during nursing operations					
4	I improve happiness in work and life					
5	It makes me get more occupational development opportunities					
6	It makes me learn new knowledge and acquire new skills at work					
7	It makes me feel professional achievement					
8	It makes me feel professional participation					

9	It makes me feel the meaning of work					
10	It makes me increase training					
11	I think that matches the intensity of work content with salary					
12	I think that matches the workload with salary					
13	I think that responsibilities match salary					
14	I think that satisfied with the current salary					
15	I think that the fairness of salary					

Third part

Job Satisfaction (Clinical application of infusion robot)

The following is your job satisfaction. Please select the option that best represents your opinion based on your actual feelings.

	List	Totally agree	agree	Unsure	Disagree	Totally disagree
1	I am satisfied with the current work situation					
2	I am willing to do this job for a long time					
3	I am satisfied with the use of new technology					
4	I am satisfied with development prospects					
5	I feel the joy of emotion while working					

Appendix I I I
Survey Questionnaire (Chinese version)



附录B调查问卷（中文版）调查问卷

亲爱的女士们：

你好！感谢您填写这份调查问卷。这项调查是一项纯粹的学术研究。没有对的答案或错的答案。

请根据你的实际感受来回答。我们保证您的回答将被完全保密。你的合作和支持，这是成功完成这项研究的关键。估计完成所有的项目需要5分钟。请耐心等待，按选。衷心感谢您的支持！

第一部分（本研究仅包括女护士）

1.您的部门

- ☐ 急诊
☐ 重症监护
☐ 内科
☐ 外科
☐ 其它

2.您的年龄：

- ☐ 25岁及以下 ☐ 26-35 ☐ 36-45 ☐ 46岁及以上

3.婚姻状况：

- ☐ 未婚 ☐ 已婚

4.教育

- ☐ 学士学位或以下 ☐ 本科学位 ☐ 硕士学位或以上

第二部分

工作质量和生活质量（临床应用输液机器人）

关于在护理临床使用机器人对您的工作和生活质量的影響，请根据您的实际情况选择最能代表您的意见的选项

	清单	完全同意	同意	不确定	不同意	完全不同意
1	工作中我得到了更多的安全感					
2	我减少了在工作中的焦虑					
3	我在护理操作中缓解了紧张感					

4	我在工作和生活中的幸福感提高了					
5	它让我得到了更多职业发展机会					
6	它让我学习新的东西 在工作中获得知识和技能					
7	这让我感到自己有了专业上的成就					
8	这让我感受到专业上的参与感					
9	这让我感受到了工作的意义					
10	这让我增加了培训					
11	我认为这符合工作内容的强度与工资的关系					
12	我认为这与工作量和工资相符					
13	我认为责任与工资相匹配					
14	我认为我对目前的薪水很满意					
15	我认为工资更有公平性					

第三部分

工作满意度（临床应用输液机器人）

以下是你的工作满意程度。请根据你的实际感受，选择最能代表你身份的选项

	清单	完全同意	同意	不确定	不同意	完全不同意
1	我对目前的工作情况很满意					
2	我更愿意一直从事这份工作。					
3	我对新技术的使用感到满意					
4	我对工作发展前景感到满意					
5	我在工作时感到了心情愉悦					



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This independent study consists of research materials conducted at Faculty of Business Administration, Rajamangala University of Technology Thanyaburi and hence the copyright owner. I hereby certify that the independent study does not contain any forms of plagiarism.

..... *Wang Yi*.....
(Miss Wang Yi)

