SAFETY CLIMATE AMONG NURSES AT HOSPITAL SELAYANG

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ABSTRACT

Safety climate is defined as employees' shared perceptions regarding safety within their work organization. This study attempted to investigate safety climate among nurses in Hospital Selayang as well as demographic factors. There were five independent variables taken from demographic information: age, marital status, working department, work position and year of service. A total of 175 sets of questionnaires were distributed among nurses from four departments. Quantitative data was analyzed using SPSS software version 22. The result shows nurses' safety climate is quite high with an overall mean score of 5.478 (7- Likert scales from strongly disagree to strongly agree), means the average answer of respondents is in between slightly agree and agree. On the other hand, there were no significant differences between safety climate with age, marital status, working department, work position and year of service. Therefore, if the hospital wishes to improve the safety climate among their nurses, they need to include all nurses without focusing on certain categories in order to improve their safety climate. Based on the research findings it is recommended that there is a need for a well-structured continuing education programme for all nurses that aim to increase their competence to enable them to provide high quality and clinically safe care.

Keywords: Safety Climate, Nurse, Age, Marital Status, Working Department, Work Position, Years of Service

ABSTRAK

Iklim keselamatan ditakrifkan sebagai persepsi pekerja terhadap keselamatan dalam organisasi di tempat kerja mereka. Kajian ini merupakan usaha untuk menyelidik iklim keselamatan di kalangan jururawat di Hospital Selayang serta faktor-faktor demografik. Terdapat lima pembolehubah bebas yang diambil dari maklumat demografik iaitu umur, status perkahwinan, jabatan, kedudukan dan tahun perkhidmatan. Sebanyak 175 set soal selidik diedarkan di kalangan jururawat dari empat jabatan. Data kuantitatif dianalisis menggunakan perisian SPSS versi 22. Hasil analisis menunjukkan iklim keselamatan jururawat adalah agak tinggi dengan skor purata keseluruhan 5.478 (skala 7 pengukuran nilai: dari sangat tidak setuju dengan sangat setuju), bermakna purata jawapan responden adalah di antara sedikit bersetuju dan bersetuju. Sebaliknya, tiada perbezaan yang signifikan di antara iklim keselamatan dengan faktor umur, status perkahwinan, jabatan, jawatan dan tahun perkhidmatan. Oleh itu, jika hospital ingin memperbaiki iklim keselamatan di kalangan jururawat mereka, mereka perlu melibatkan semua jururawat tanpa memberi tumpuan kepada kategori tertentu dalam mempertingkatkan iklim keselamatan di kalangan mereka. Berdasarkan penemuan penyelidikan, disarankan agar mewujudkan program pendidikan berterusan berstruktur yang baik untuk semua jururawat yang bertujuan untuk meningkatkan kecekapan mereka untuk membolehkan mereka menyediakan penjagaan yang berkualiti tinggi dan klinikal yang selamat.

Kata kunci: Iklim Keselamatan, Jururawat, Status Perkahwinan, Jabatan, Jawatan, Bilangan Tahun Perkhidmatan

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LIST OF ABBREVIATIONS AND SYMBOLS

Short Forms	Descriptions
ANOVA	Analysis of Variance
CEO	Chief Executive Officer
CST	Climate Survey Tool
DOSH	Department of Occupational Safety and Health
HSE	Health and Safety Executive
O&G	Obstetrics and Gynaecology
NIOSH	National Institute of Occupational Safety and Health
NOSACQ-50	Nordic Safety Climate Questionnaire
SPSS	Statistical Package for Social Sciences
US DOL	United State Department of Labour
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Safety climate is defined as employees' shared perceptions regarding safety within their work organization (Gershon et al., 2009). The theory of safety climate was initiated by Zohar in 1980. He defines safety climate as "employees' perceptions about the relative importance of safe conduct in their occupational behavior" (Zohar, 1980).

Safety climate measurements are a broadly used element of improvement initiatives. It has been proven to be an effective tool in the identification of precursors to accident occurrence, which results effectively decreased accident rates. Furthermore, safety climate has provided proactive information about safety problems and offers guidance to management in the development of specific safety programs (Cohen et al., 1986).

In healthcare organizations, researchers have concentrated much more on patient safety climate than personnel safety climate (Singer, Lin & Falwell, 2009; Almutairi et al., 2013). There are limited studies that have addressed safety climate among health care providers, probably, because of powerful laws that support patient rights and surveillance of this issue (Gershon et al., 2000; Smith et al., 2013). However, hospitals are reported to be the dangerous places for their workers. According to the report from US DOL (2005), hospitals have a higher incidence rate for nonfatal occupational injuries (7.5) than does the construction industry (6.2), manufacturing (5.6) and trade, transportation and utilities (5.6).

Hospital nurses have one of the highest rates of work-related injuries in the United States and other developed countries. In particular, back injuries and needlestick have been identified as top safety concerns (American Nurses Association, 2003; Castro, 2006). As an example, according to data from the WHO, 35.7 million healthcare workers in the world are exposed to the risk of needlestick injuries, meanwhile, various literature data show that nurses experienced needlestick injuries more frequently than other healthcare workers (Sulsky et al., 2006). As a result of accidents and injuries, organizations should start giving more attention to organizational and management impact on safety climate among nurses.

1.2 Problem Statement

A key to maintaining a positive safety climate is having a tool that is able to; indicate the state of the prevailing safety climate at any point in time, identify aspects of the safety management system that need improvement and that can be used to monitor the effectiveness of interventions applied. A number of such safety climate measures have been developed and tested in other industries (Cooper & Philips, 2004).

A gap in the literature exists regarding which factors predict and influence nurses' perception of their climate relative to safety. With nurses constituting the bulk of the healthcare workforce, these factors must be elucidated and addressed in order to create environments that promote safety behaviors. Safety climate itself is a complex phenomenon that is not clearly understood. Besides, the dimensions of safety climate in healthcare organizations are not the same, where the researchers concluded that safety climate is affected by work area as well as disciplines. This

study attempted to move toward greater clarity in understanding safety climate by exploring the major dimensions of a safety climate, and how those dimensions might be operationalized.

Operationalized dimensions were then examined relative to nurses' perceptions of safety climate. Gaining expert insight into the concepts within safety culture, as well as operationalizing these concepts by using measures commonly available in hospitals, has potential to take the science of safety climate one step closer to the understanding of this phenomenon. Understanding the contributors to the formation of a safety climate could inform the potential interventions to improve that safety climate, and therefore the broader culture of safety. Previous studies reported that the demographic factors as age, marital status, education, work position, experience, working department, employment and habits have influenced workers' safety perceptions. These findings make sense, since safety climate measures tend to investigate employees perceptions, which is indirectly lead to theoretical and conceptual difference from employees' personal characteristics.

1.3 Research Questions

This study pursues the relevant answers to the following questions:

i. What is the overall level of safety climate among nurses at Hospital Selayang?
ii. Is there any significant difference in safety climate mean among nurses age?
iii. Is there any significant difference in safety climate mean among nurses marital status?
iv. Is there any significant difference in safety climate mean among nurses working department?

v. Is there any significant difference in safety climate mean among nurses work position?

vi. Is there any significant difference in safety climate mean among nurses' years of service?

1.4 Research Objectives

The following objectives are expected to be achieved for this study:

i. To evaluate the overall level of safety climate among nurses at Hospital Selayang

ii. To calculate the significant difference in safety climate mean among nurses' age

iii. To determine the significant difference in safety climate mean among nurses' marital status

iv. To measure a significant difference in safety climate mean among nurses' working department

v. To determine the significant difference in safety climate mean among nurses' work position

vi. To examine the significant difference in safety climate mean among nurses' years of service

1.5 Scope of the Study

The study focus on the significant difference in safety climate mean among nurse's gender, race, marital status, work position, working department as well as their year of service. Respondents for the study were nurses at Hospital Selayang.

1.6 Limitation of the Study

This study includes a small sample size which only targeting one selected hospital with only four working departments. Besides, the period of conducting the study is limited.

1.7 Significance of the Study

The assessment of the safety climate can be used as benchmark to evaluate the safety in the workplace. The questionnaire believed to be able to analyse the perception of nurses toward safety. The study is carried out to assess the level of safety climate among nurses and to what extent demographic factors can impact their safety perception. Indirectly, the study may increase their awareness towards occupational safety and health.

1.8 Organization of the Thesis

The first part of this chapter is the background of the study which consists the definition of safety climate, the research problem under study exists and the objectives addressed in this thesis. In chapter two, this study provides an overview of safety climate, an explanation of the dimension, the instrument as well as the impact

of demographic factors in safety climate. Chapter 3 describes the key components of performance analysis method. Chapter 4 and 5 discuss the results of the simulations and offers recommendations for improvements.

1.9 Chapter Summary

This chapter begins with background of the study then followed by problem statement, the list of research questions as well as the objectives of this study. Besides, this chapter also consist of discussion on the scope and limitation of the study. Significance of the study and organization of the thesis were also covered.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The term ‘safety climate’ probably was first used by Zohar in 1980, when he was studying industrial organization. He used to measure safety climate of production workers in 20 Israeli companies and he found eight safety climate dimensions. Since that, safety climate scales have been developed in various industries and researchers have examined the associations between the safety climate and actual accident occurrences and workers’ safety-oriented behavior (Cheyne et al., 1998; Griffin et al., 2000).

The theory of positive safety climate-safe behavior-accidents prevention path was studied several times (Neal et al., 2000; DeJoy et al., 2004; Olsen et al., 2010). As a result, they found the high correlations between the safety climate and the ranking of organizational safety. Safety climate overcomes many of the limitations of traditional safety measures, such as reporting biases and after the fact of measurement. Ojanen et al. (1988) recommended that safety performance should be measured on several levels, such as safety attitudes, in order to determine the real safety level of an organization. They claimed that measuring safety climate can indicate changes in organizational safety behavior, therefore, it can be used for evaluating safety programs. When building a safety system of organizations is being considered, the safety climate proposed by Zohar could be one of the useful tools to improve the safety system of organizations (Varonen et al., 2000; Zohar, 2000).

2.2 Safety Climate

2.2.1 Definitions of Safety Climate

The concept of safety climate was initiated by Zohar in 1980. In his study, he defined the climate as perceptions that employees share about their work environment. Therefore, he described the safety climate as a shared employee perception about the relative importance of safe conduct in their occupational behavior. After that, numerous researchers revised and altered the definition of safety climate which corresponding to their findings. However, the essential nature of the safety climate remained unchanged which is safety climate reflected employees' perception of an organization's safety efforts.

In 1982, Glennon claimed that safety climate is employees' perceptions of the many characteristics of their organization which have a direct impact on their behavior to reduce danger in their workplace. Meanwhile, Brown and Holmes (1986) refer safety climate as a set of perceptions or beliefs held by an individual or group about a particular entity. Furthermore, organizational safety climate was defined as individual perceptions of safety-related policies, practices, and procedures that affect personal well-being at work (James & James, 1989; Abdullah et al., 2009). On the other hand, Niskanen (1994) not only described the employees' perception of the organization's characteristics but also explained the antecedents that affect their perception. Which he believes that safety climate refers to a set of attributes that can be perceived about particular work organizations and which may be induced by the policies and practices that those organizations impose upon their workers and supervisors.

Similarly to Zohar (1980), Byrom and Corbridge (1997) also pointed out that safety climate as shared employee perceptions of how safety management is being operationalized in the workplace, at a particular moment in time. Diaz and Cabrera (1997) explained that safety climate is a set of molar perceptions, shared by individuals with their work environment, which are valid as references for guiding behavior in the execution of tasks during day-to-day eventualities. In addition, several studies such as Dedobbeleer and Beland (1991); Coyle, Sleeman, and Adams (1995); Williamson et al. (1997); Cooper (1998); Gershon et al. (2009) portrayed that the safety climate was focused on the members' perception, attitude or belief regarding safety issues in the organization. These issues are related to the working environment or the organizational characteristics. Besides, Neal and Griffin (2002) deemed safety climate as perceptions of policies, procedures, and practices relating to safety in the workplace.

Throughout the years, Zohar also revised his definition to reflect the dimensions which described by other researchers. As a result, he described safety climate as conceptualized employees' perceptions pertaining to safety practices, policies, and procedures as well as the relative importance of safe conduct at work (Zohar, 1980, 2000, 2002, 2003). Specifically, his most recent definition defined safety climate as employee perception of the priority an organization (or direct supervisor) placed on safety (Zohar & Luria, 2005).

In the conceptual definition; Wu, Liu, and Lu (2007) believes safety climate means employees' perceptions of safety culture in the organization; and the perceptions, which are influenced by the organizational factors and individual factors, eventually affect employees' safety behaviors.

2.2.2 Dimensions of Safety Climate

Initially, Zohar (1980) identified eight dimensions of safety climate, which consisted of the importance of management's attitude toward safety, status of safety officer, status of safety committee, safety training programs, effects of safe conduct on promotion, effects of safe conduct on social status, effects of required work pace on safety, as well as level of risk at the workplace. However, the dimensions of safety climate in the follow-up studies were less comprehensive. Where Brown and Holmes in 1986 found only three dimensions, whereas they used the reduced version of Zohar's (1980) measure. They identified the dimension of employee perception of management concern, employee perception of how active management responds, and employee physical risk perception.

Additionally, the study by Dedobbeleer and Beland (1991) only included two dimensions of people and behavior, such as management's commitment to safety and worker's involvement in safety activities. On the other hand, Cox and Cox (1991) suggested that dimensions of safety climate are consisting of personal skepticism, individual responsibility, work environment, safety arrangements, and personal immunity. Several studies like Niskanen, 1994; Hayes et al., 1998; Felknor et al., 2000; and Griffin and Neal, 2000, they have obtained a wide range of factor solutions, incorporating constructs such as individual attitudes towards safety, safety communication, safety equipment, and the safety of physical work environment.

Nevertheless, Cooper (1995) identified dimensions of safety climate more than Zohar (1980), where he considered eleven dimensions including management commitment, management actions, personal safety commitment, perceived risk levels, effects of work pace, belief about accident causation, effects of job induced

stress, safety communication, emergency procedures, safety training, and role of safety representatives. In 1995, Coyle et al. considered there were six dimensions of safety climate similar to other studies, such as maintenance and management issues; company the policy, training, and management issues, work environment, policy or procedure, and personal authority, besides, one new dimension which is accountability.

In Budworth (1997) study, he believes safety system as one of the dimensions, in addition to management commitment, supervisor support, safety systems, safety attitudes, safety representatives. Meanwhile, Williamson et al. (1997) described a little bit different from other authors, where he deemed personal motivation for safe behavior, positive safety practice, risk justification, fatalism and optimism as a dimension of safety climate. Despite Cox and Cheyne (2000) identified management commitment, the priority of safety, communication, supportive environment, involvement in safety, personal priorities and need for safety, personal appreciation of risk, work environment as a dimension which is similar to previous studies, they also found a new dimension which is safety rules.

Even though there are too many dimensions found in the studies previously, researchers still continuously explore the best dimensions of safety climate which suitable to their nature of research. Cheyne et al. (2002) findings stated that communication, individual responsibility, safety standards and goals, personal involvement and physical work environment as a dimension of safety climate, and he also identified workplace hazards as one of them. Next, Salminen and Seppala (2005) who believes there were four dimensions in safety climate, which including organizational responsibility, workers' concern about safety, workers' indifference in regards to safety, and the level of safety actions. Zohar and Luria (2005) found three

dimensions based on perceptions of safety supervisory practices: active safety practices, proactive safety practices, and declarative practices.

Meanwhile, the dimensions included in the study by Huang et al. (2006) were management commitment, return-to-work policies, post-injury administration, as well as safety training. Besides, Wu et al. (2007) considered five dimensions on the safety climate scale: CEOs' safety commitment and action, managers' safety commitment and action, employees' safety commitment, perceived risk, and emergency response. Hsu et al. (2007) managed to categorized the dimension into four levels, organizational level which included top management commitment, reward system, reporting system, and resource allocation; management level such as safety training, safety activities, safety management; team level like communication, coordination, cooperation in a work team; individual level which is safety performance such as safety awareness, safety attitude and safety behavior.

Marsh et al. (1995) identified that management commitment has a high impact on all aspects of intervention. Besides, management commitment demonstrates positive and supportive safety attitudes (Hsu et al., 2007). Meanwhile, safety training has shown significant effects in increasing safety performance in prior research (Cohen & Jensen, 1984; Reber & Wallin, 1984; Cooper & Phillips, 2004). Pransky et al. (2001), emphasis on work policy may not only reduce negative disability outcomes in the long term but also serve as a good indicator to the employees that safety is a priority in the company.

Lin and Mills (2001) found that clear policy statements and safety training played an important role in reducing the accident rate. Consequently, effective management commitment, adequate safety training facilitates and clear safety policy

more accountable for safety in their workplace. Zohar and Luria (2005) performed an exploratory factor analysis and found three dimensions based on perceptions of safety supervisory practices: active safety practices, proactive safety practices, and declarative practices.

2.2.3 Instruments and Measurement of Safety Climate

The basic concept of safety behavior consists of: identifying behaviors that impact safety; defining these behaviors so that the reliably can be measured; development of system to measure these behaviors in order to produce a 'safety climate'; which is able to provide feedback to employee on the behavior status; and to encourage the good progress (Sulzer-Azaroff & Austin, 2000). One way of measuring these behaviors and attitudes is through the use of safety climate instruments. In the other word, safety climate instruments are designed to measure the responses to items relating to attitudes about safety.

A number of different instruments exist for the purpose of measuring safety climate in various industries worldwide. These instruments exist in many forms and are used in many industries climate (Cox & Cox, 1991; Dedobbeleer & Beland, 1991; Niskanen, 1994; Budworth, 1997; Williamson et al., 1997; Hayes et al., 1998; Clarke, 1999; Brown et al., 2000; Mearns et al., 2001; Carder & Ragan, 2003). Instruments were developed to determine response item selection such as roundtable discussions, interviewing the sample population, or using sections from existing surveys (Niskanen, 1994; Hayes et al., 1998; Clarke, 1999). Most of the studies adapted and used an instrument developed from the previous study.

The vast majority of safety climate researchers follow the Zohar's (1980) tradition instrument by measuring safety climate using worker perception surveys (Schwatka et al., 2016). The second most common source was the HSE of United Kingdom's safety climate questionnaire (Davies et al., 2001) or the CST (HSE, 1997). The CST was subsequently renamed the SCT and modified (Sugden et al., 2009). The SCT was adapted for use on the London Olympic construction site (Healey & Sugden, 2012).

On the other hand, Dedobbeleer and Beland (1991) in an effort to replicate Zohar's (1980) safety climate factor model, where they developed and tested a survey in the United State construction industry; this same instrument was used in three subsequent United State studies (Gillen et al., 2002 ; Arcury et al., 2012 ; Sparer et al., 2013). Besides, Mohamed (2002) developed and tested a survey in the Australian construction industry, which Teo and Feng (2011) later used in Singapore. There are numbers of authors adapted from the Safety Climate Assessment tool developed by Flin, Mearns, and Burns (2004) from the University of Aberdeen. Kines et al. (2011) first developed and tested the Nordic Safety Climate Questionnaire in the construction industries of several Nordic countries, and then tested it in other industries.

A modified version of Zohar and Luria's (2005) organizational level safety climate scale is one of the best instruments; the questionnaire was intended to identify perceptions on the implications of safety climate dimensions towards their OHS performance and found it to have a single factor. The previous study showed a one-factor structure and correlated to organizational safety climate, formalized procedures, safety behavior, and time pressure. Impact on Industry: This validation of the one-factor structure of the Zohar and Luria (2005) scale could strengthen and

spread this scale and measure group safety climate more effectively. Meanwhile Schwatka et al. (2016) reported in her research there are five researchers have adapted safety climate surveys from Zohar (2000); four from Neal et al. (2000); three each from Geller (1990) and the NIOSH (Dejoy et al., 1995); and two from Burt et al. (1998). However, when reviewing the reported questionnaires of safety climate, items in safety climate instrument were most likely required to be responded on a five Likert Scale which strongly disagrees, disagree, neither disagree nor agree (neutral), agree, and strongly agree.

Based on theory, the best instrument measuring safety climate should capture perceptions of conditions contributing to individual motivation, as well as conditions influential to relational aspects of occupational safety. Zohar (2008) suggested the safety climate instrument should include the items assessing the top management's committed priorities on safety, by referring to the situations that present competing for operational demands involving safety such as safety versus speed, flow, schedules as well as profitability. The NOSACQ-50 was found to be a reliable instrument for measuring safety climate, and valid for predicting safety motivation, perceived safety level, and self-rated safety behavior. The NOSACQ-50 was developed by a team of Nordic occupational safety researchers based on organizational and safety climate theory, psychological theory, previous empirical research, empirical results acquired through international studies, and a continuous development process (Pete et al., 2010). In the healthcare sector, the studies by Flin, Burns, and Mearns (2004) are the most frequent references for other authors in measuring safety climate.

2.3 Demographic Factors

Significant influence has been determined for demographic factors as personal characteristics as age, gender, race, marital status, work position, working department and working experience in the industry, and any other personal information. Hinze (1997) claimed these demographic factors can influence safety climate and consequently influence individual safety behavior. The NIOSH studies demonstrated that safety climate was an important predictor of adherence to safe work practices, explaining far more variance than demographic or other individual factors (Hahn et al. 2008). Nonetheless, the empirical justification for using personal demographics as a validation technique is required if safety climate research is to progress (Cooper & Phillips, 2004).

2.3.1 Age and Safety Climate

Holden, Watts, and Walker (2009) indicated that the 'younger age group' had the lowest safety climate scores among four US Air Force ambulatory care facilities, and the sample included physicians, nurse practitioners, physician assistants, registered nurses, pharmacists, and technicians. Besides, Choudhry et al. (2009) also found positive effects upon perceptions of older workers, but there is little impact upon those who are in the youngest age. However, Almutairi et al. (2013) claimed there is no significant difference between the age groups and the perception of safety climate.

2.3.2 Marital Status and Safety Climate

Amiri et al. (2015) reported that there was no significant association between marital status and perception of safety climate. Nevertheless, several studies found that there were significant differences between marital status and safety climate. Married people seem to focus more on rules and regulations in the workplace compared to single workers, therefore there is a positive relationship is between safety climate and married workers (Fang et al. 2006; Gyekye and Salminen 2009; Zhou et al. 2008). Choudhry et al. (2009) also found positive effects upon perceptions of married worker, and compared to those who are single. Same with Masood and Choudhry (2012), who indicated marriage relationship, binds the worker to provide the social responsibility which is also strongly associated with their own perception as well as their life.

2.3.3 Working Department and Safety Climate

Tarling (2016) found that there was a statistically significant difference in the safety climate where the operating theatre group reported lower safety climate compared with ward areas and the operating theatre focus group also reported negative perceptions. Besides, the findings of Tarling et al. (2017) also indicated there was a lower safety climate in operating theatres compared with ward areas. Both critical care and operating theatre groups also scored lower than medical ward areas, though this was close to but not statistically different. However, these results are consistent with results from other countries and may indicate that there is a fundamental difference in safety climate in different clinical settings and it has been suggested that these differences are associated with the severity or complexity of the

patient condition, high patient turnover or the technological complexity of the care delivered (Singer et al., 2009).

2.3.4 Work Position and Safety Climate

Lee (1998) reported that there were significant differences in safety climate scores at by organizational level which the higher level of the organization had the higher safety climate score.

2.3.5 Year of Service and Safety Climate

The study of Gyekye et al. (2010) and Soh et al. (2017) claimed that the association between safety climate and work experience was significant, where they claimed that nurses who had worked longer at a hospital were more likely to have poorer perceptions of hospital management. However, Masood and Choudhry (2012) claimed that the more mature in the later stage of their service life stipulated with experience which helps them to address safety aspect and inspect the hazardous situations. On the other hand, Almutairi et al. (2013) and Amiri et al. (2015) reported that there was no statistical difference in safety perception regarding the length of experience categories, and these finding revealed that there is no effect of the subjects' experiences on their perception of safety climate.

2.4 Conclusion

The multiple definitions in the previous literature have been determined to a large extent of understanding toward safety climate. In the other words, it becomes easier to understand the view that safety climate exists at a point in time.

Empirically, safety climate refers to employees' perceptions of safety in the organization; and the perceptions, which are influenced by the organizational factors and individual factors, eventually affect employees' safety behaviors. For a better understanding of the holistic concept of safety climate, the first step is to explore the level of safety climate in various industries. The instrument proposed for measuring safety climate in this study is a modified version of Zohar and Luria's (2005).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the research methodology used in the study is described. This chapter provides the discussion on research framework, hypotheses, research design, operational definition, and measurement of variables. Besides, this chapter also consist of the description on population, sampling, data collection as well as techniques of data analysis. The research methodology is very important as it describes the plans and method need to be taken to produce an appropriate research.

3.2 Research Framework

The research study tests a theoretical framework addressing the dimensions of safety climate among nurses in Hospital Selayang. The dimensions refer to safety in terms of procedure suitability and information flow, managerial safety practices and the priority of safety. Recently, safety measures used in hazardous work environments were based on 'leading indicators' such as safety audits or measurements of safety climate can be noticed, compared to previous which mostly based on purely retrospective data such as fatalities, lost time accident rates and incidents (Flin, Mearns, O'Connor & Bryden, 2000).

The importance of measuring indicators by using safety perception surveys, which is measuring safety climate, is stressed by several researchers such as Cooper and Philips, 2003 as well as Silva et.al, 2004. Gyekye and Salminen (2009) share this point of view and name the following advantages of measuring safety climate. In

addition to the arguments presented by Gyekye and Salminen (2009), they consider a safety climate survey is able to focus on safety efforts to improve problematic areas, which may also improve other functions of a company, especially productivity. Besides, they state that a safety climate survey a valuable tool for identifying trends in an organization's safety performance as well as establishing external benchmarks.

Reports of safety climate have begun to emerge in healthcare organization recently and these reports have reviewed the dimensions of safety climates such as communication and reporting, focusing on health care workers (Colla et al., 2005). However, the division of occupational roles differs greatly among occupations such as physicians and nurses, which may produce a discrepancy of perceptions concerning patient safety.

3.3 Research Hypotheses

3.3.1 Hypothesis 1

The 'younger age group' had the lowest safety climate scores among four US Air Force ambulatory care facilities, and the sample included physicians, nurse practitioners, physician assistants, registered nurses, pharmacists, and technicians. (Holden, Watts, & Walker, 2009) Therefore:

HA 1: Younger nurses will engage in lower levels of safety climate than elder nurses.

3.3.2 Hypothesis 2

Marriage relationship binds the worker to provide the social responsibility which is also strongly associated with their own perception as well as their life (Masood & Choudhry, 2012). Therefore:

HA 2: Married nurses will engage in lower levels of safety climate than single nurses.

3.3.3 Hypothesis 3

Results from other countries and may indicate that there is a fundamental difference in safety climate in different clinical settings and it has been suggested that these differences are associated with the severity or complexity of the patient condition, high patient turnover or the technological complexity of the care delivered (Singer et al., 2009). Therefore:

HA 3: Busy department such as emergency department will engage in lower levels of safety climate than other departments.

3.3.4 Hypothesis 4

There were significant differences in safety climate scores at by organizational level which the higher level of the organization had the higher safety climate score (Lee, 1998). Therefore:

HA 4: Higher position nurses will engage in higher levels of safety climate than lower position nurses.

3.3.5 Hypothesis 5

The more mature in the later stage of their service life stipulated with experience which helps them to address safety aspect and inspect the hazardous situations (Masood & Choudhry, 2012).

HA 5: Experienced nurses will engage in higher levels of safety climate than inexperienced nurses.

3.4 Research Design

The research design of this study is a hypothesis testing cross-sectional survey. For this study, all nurses employed by the hospitals were identified from personnel records. Using a simple random method, a group of nurses was selected from different hospital working departments from a list of names obtained from the hospital administration.

3.5 Operational Definition

The operational definition for safety climate as following:

i) Safety climate was defined as individual perceptions of safety-related policies, practices, and procedures that affect personal well-being at work (James & James, 1989).

ii) Demographic was defined as socioeconomic characteristics of a population expressed statistically, such as age, sex, education level, income level, marital status, occupation (working department, work position), religion, birth rate, death rate, average size of a family, as well as average age at marriage (Masood & Choudhry, 2012).

3.6 Measurement of Variables

There are various sets of the questionnaire in measuring safety climate. Since the study deal with nurses who are very busy with their own task. The study

preferred to use a modified version of Zohar and Luria's (2005) because there are only 6 items (questions) of safety climate to be completed (Fugas et al., 2012) (see Appendix A). In the questionnaire, the response categories ranged from totally disagree to totally agree on a 7-point Likert scale (Table 3.1). High scores, assigned to the endpoint of each scale, were associated with safer perceptions. This scale contains a one-factor structure of general organizational safety climate.

Table 3.1
7-point Likert Scale

Scale	Point
Strongly Disagree	1
Disagree	2
Slightly Disagree	3
Neutral	4
Slightly Agree	5
Agree	6
Strongly Agree	7

3.7 Ethical Consideration

The conducting of research requires not only expertise and knowledge, but also honesty and integrity. This is done to recognize and protect the rights of human subjects. Thus, this research was registered to National Medical Research Registry, Ministry of Health Malaysia. Written permission to conduct the research study was obtained from the Medical Research & Ethics Committee, Ministry of Health Malaysia as well as Director of Hospital Selayang (see Appendix B and C).

3.8 Population

By using sample size calculator Raosoft®, for 311 population of nurses from 4 departments, approximately 175 nurses, were selected to be the samples of the study. Furthermore, the number has been double checked with Krejcie and Morgan (1970) table (Table 3.2). Nurses, who are permanent staff with more than one-year work experience in province hospitals, were considered the study population. 175 nurses from several departments included females and males as well as day and night duty staff members.

Table 3.2

Sample size determination based on population (Krejcie and Morgan, 1970)

Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*

3.9 Sampling

By using proportionate stratified random sampling, each individual is chosen entirely by chance and each member of the population has an equal chance of being included in the sample. The sample size of each department in this technique is proportionate to the population size of the stratum when viewed against the entire population. This means that each department has the same sampling fraction. Table 3.3 shows the percentage and number of respondents from each department.

Table 3.3
Distribution of sample

Department	Percentage	Number of respondent
Medical	28.6	50
O&G	25.7	45
Surgical	23.4	41
Urology	22.3	39

3.10 Data Collection

This study involves a quantitative measure to determine the data collected. There are approximately 18 nurses involved per day and the data collected within 10 working days. With the help of unit managers (matron or sister in charge), the questionnaire was distributed to the departments. They allowed their nurses to participate in the study during the visiting hours when most patients were occupied. The venues used were usually the nurses' tea lounge, meeting room, nurses' station and consultation rooms. Approximately 15 to 20 minutes were given to complete the questionnaire. The researcher was available to give clarity when needed as well as assist in answering the questionnaire. The participants are not allowed to take the questionnaires away with them or to instruct someone else to answer on their behalf.

Completed and spoilt questionnaires were placed in a sealed box and taken away at the end of each session.

3.11 Techniques of Data Analysis

The collected data from the respondents were analyzed with SPSS for Windows® version 22. The results present the descriptive statistics in the form of graphs, cross tabulations and other figures for the qualitative data that was collected. Inferential techniques included the use of correlations and chi-square test values; which were interpreted using the p-values. Values of significance were $p<0.05$ or 95% confidence level. After that, confirmatory factor analysis was performed and Cronbach's coefficient alpha was calculated.

3.12 Conclusion

This chapter begins with an introduction then describes the research design of the study. Permission of the study was obtained from the Medical Research & Ethics Committee, Ministry of Health Malaysia as well as Director of Hospital Selayang. Population and sample study is also mentioned before discussing the research methodology used to conduct this research. The data that were collected are then analyzed and discussed.

CHAPTER FOUR

RESEARCH FINDINGS

4.1 Introduction

The study was an attempt to know the level of safety climate among nurses at Hospital Selayang. As stated in the previous chapter, the study selected a sample of 175 (n=175) respondents who work as a nurse at Hospital Selayang. On this representative sample, a survey was carried out to find out the extent of safety climate level as well as the significant differences between safety climate and demographic factors of nurses such as age, marital status, working department, work position and years of service. The result of the analysis performed on data that had been collected and were analyzed using SPSS Version 22. The results obtained were put through statistical analysis and are presented in this present chapter.

4.2 Reliability Analysis

Reliability is a degree to which an assessment tool produces stable and consistent results if the measurements are repeated a number of times. In other words, reliability is the overall consistency of a measure and Cronbach's alpha is a common way of measuring the strength of that consistency. It is most commonly used to determine if the scale is reliable when the questionnaire has multiple Likert questions that form a scale. In order to understand whether the questions (items) in the questionnaire are all reliably measure the same latent variable. A rule of thumb for interpreting Cronbach's alpha for Likert scale questions as in Table 4.1 (Hair et al., 2011)

Table 4.1
Rule of thumb about Cronbach's alpha.

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.7$	Good
$0.7 > \alpha \geq 0.6$	Acceptable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Table 4.2 (a) below shows the reliability test for the study, where the value of Cronbach's alpha is 0.712 which is in the range of $0.9 > \alpha \geq 0.7$ for a total of 6 questions /items (see Table 4.2(b)) in the questionnaire given. Therefore, the instrument that used in the study is considered as a good in internal consistency and it can be concluded that all the items in this study are consistent and reliable.

Table 4.2 (a)
Reliability Statistics

Cronbach's Alpha	No. of Items
0.712	6

Table 4.2 (b)
List of the item in the questionnaire

No.	Item
1	My Hospital provides all the equipment needed to do the job safely.
2	My Hospital quickly corrects any safety hazard even if it is costly.
3	My Hospital considers a person's safety behavior when there are promotions.
4	My Hospital invests a lot of time and money in safety training for workers.
5	My Hospital listens carefully to workers' ideas about improving safety.
6	My Hospital gives safety personnel the power they need to do their job.

4.3 Normality Analysis

Normality tests are used to determine if a data set is in a standard normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. A normal distribution has a bell-shaped density curve described by its mean and standard deviation. It is important to understand whether the sample collected falls within an appropriate range and its skewness and kurtosis.

4.3.1 Skewness and Kurtosis

Skewness is a measure of the asymmetry of the distribution of a variable, in which the curve appears distorted or skewed either to the left or to the right. The skewness value can be positive or negative, or even undefined. If skewness is zero, the data are perfectly symmetrical and it is quite impossible for real-world data. The values for skewness between -2 and +2 are considered acceptable (Trochim & Donnelly, 2006; Field, 2000 & 2009; Gravetter & Wallnau, 2014).

Meanwhile, kurtosis is a measure of the 'peakedness' of a distribution. In another word, kurtosis is the height and sharpness of the central peak, relative to that of a standard bell curve. The values for asymmetry and kurtosis between -2 and +2 are considered acceptable in order to prove normal distribution (George & Mallery, 2010). Table 4.3 shows the skewness and kurtosis value for the study.

Table 4.3
Normality test – Skewness and Kurtosis

N	Valid	175
	Missing	0
Skewness		-.455
Std. Error of Skewness		.184
Kurtosis		-.225
Std. Error of Kurtosis		.365

The skewness value for the study is -0.455 and this value is between -2 and 2, which indicate these variables are normal. The kurtosis values are in the range of -2 to 2, therefore, this variable is in the normal range of distribution.

4.3.2 Kolmogorov-Smirnov and Shapiro-Wilk

The Kolmogorov-Smirnov test and the Shapiro-Wilk's W test are also specific methods for testing normality which determine whether the underlying distribution is normal. Both tests are sensitive to outliers and are influenced by sample size. The Shapiro-Wilk Test is more appropriate for small sample sizes (< 50 samples), but can also handle sample sizes as large as 2000. For this reason, the study used both Kolmogorov-Smirnov and Shapiro-Wilk test as a numerical means of assessing normality.

Table 4.4
Normality test - Kolmogorov-Smirnov and Shapiro-Wilk

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
MeanSC	.129	175	.000	.957	175	.000

a. Lilliefors Significance Correction

Table 4.4 presents the results from two well-known tests of normality. The Sig. value for both tests is below 0.05, it is shown that the data significantly deviate from a normal distribution.

4.4 Descriptive Analysis

Generally, descriptive statistics are used to describe and understand the basic features of the data, which provide simple summaries of the sample and measures in

the study. Table 4.5 below shows a summary of the descriptive analysis for this study.

Table 4.5
Demographic Profile of the Respondents

Variable			Frequency	Percent	Valid Percent	Cumulative Percent
Age	Valid	20-25	36	20.6	20.6	20.6
		26-30	44	25.1	25.1	45.7
		31-35	47	26.9	26.9	72.6
		36-40	27	15.4	15.4	88.0
		41-45	14	8.0	8.0	96.0
		46-50	7	4.0	4.0	100.0
		Total	175	100.0	100.0	
Gender	Valid	Male	6	3.4	3.4	3.4
		Female	169	96.6	96.6	100.0
		Total	175	100.0	100.0	
Race	Valid	Malay	163	93.1	93.1	93.1
		Chinese	3	1.7	1.7	94.9
		Indian	5	2.9	2.9	97.7
		Others	4	2.3	2.3	100.0
		Total	175	100.0	100.0	
Marital Status	Valid	Single	48	27.4	27.4	27.4
		Married	127	72.6	72.6	100.0
		Total	175	100.0	100.0	
Working Department	Valid	Medical	50	28.6	28.6	28.6
		O&G	45	25.7	25.7	54.3
		Surgical	41	23.4	23.4	77.7
		Urology	39	22.3	22.3	100.0
		Total	175	100.0	100.0	
Work Position	Valid	Matron	5	2.9	2.9	2.9
		Sister	14	8.0	8.0	10.9
		Staff Nurse	134	76.6	76.6	87.4
		JM	22	12.6	12.6	100.0
		Total	175	100.0	100.0	
Year of Service	Valid	0-5	74	42.3	42.3	42.3
		6-10	41	23.4	23.4	65.7
		11-15	29	16.6	16.6	82.3
		16-30	31	17.7	17.7	100.0
		Total	175	100.0	100.0	

4.4.1 Age

In this study, most of the respondents are from the age group 31-35 years, with 47 respondents (26.9%), followed by the age group of 26-30years, with 44 respondents representing 25.1% of the study. Besides, a total of 36 respondents from the age group 20-25 years (20.6%), and 27 respondents from the age group 36-40 years (15.4%). The minority of the respondents are from the age groups, 41-45 years and 46-50 years with 14 and 7 respondents, representing 8% and 7%, respectively. Figure 4.1 shows the respondent's age distribution.

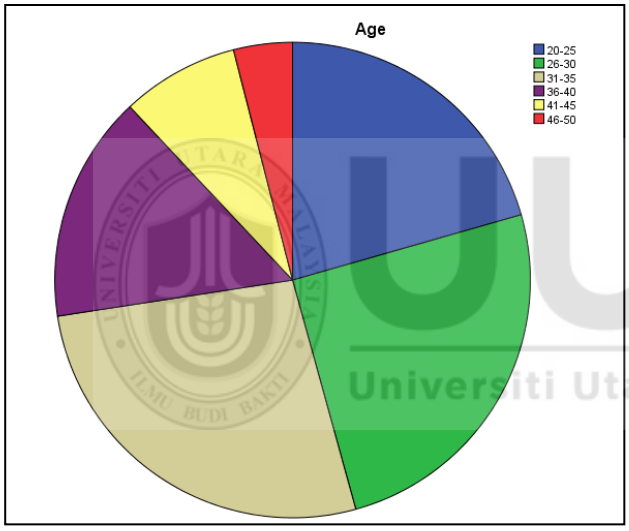

Figure 4.1
Distribution of Respondent by Age Group

4.4.2 Gender

In this study, the vast majority of respondents are female with the total of 169 (96.6%), meanwhile male respondents just representing 3.4% of the study (Figure 4.2). The percentage shows a vast difference between the female respondents and the male respondents.

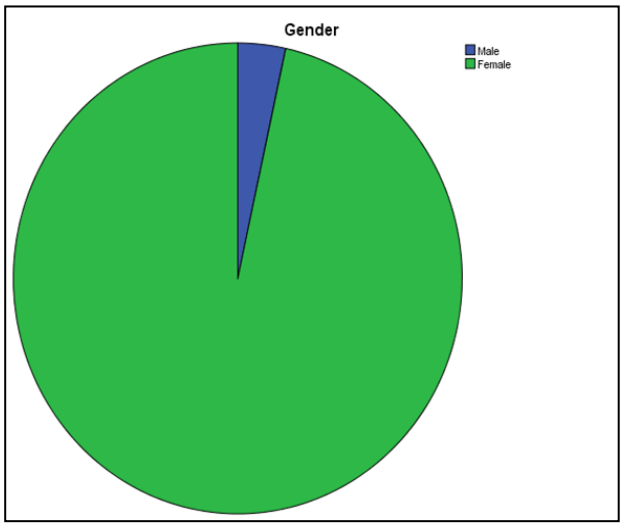

Figure 4.2
Distribution of Respondent by Gender Group

4.4.3 Race

There are four race groups: Malay, Chinese, Indian and others. Malay respondents comprise the majority of respondents, contributing about 93.1% (n=163). The Indian, Chinese and 'Others' race groups are the minority with 2.9% (n=5), 1.7% (n=3), and 2.3% (n=4), respectively. Figure 4.3 presents the percentage of the race groups.

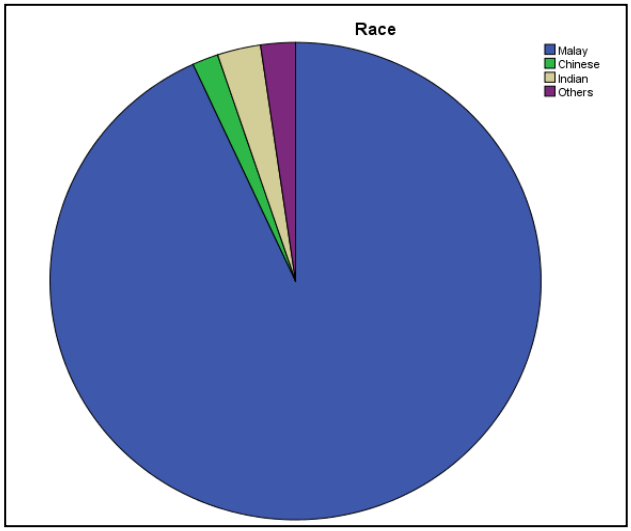

Figure 4.3
Distribution of Respondent by Race Group

4.4.4 Marital Status

The majority of the respondents are married, with 72.6% (n=127). Meanwhile, the single respondents just 27.4% (n=48) of the study (Figure 4.4). The percentage shows that the married group is the majority of the respondent.

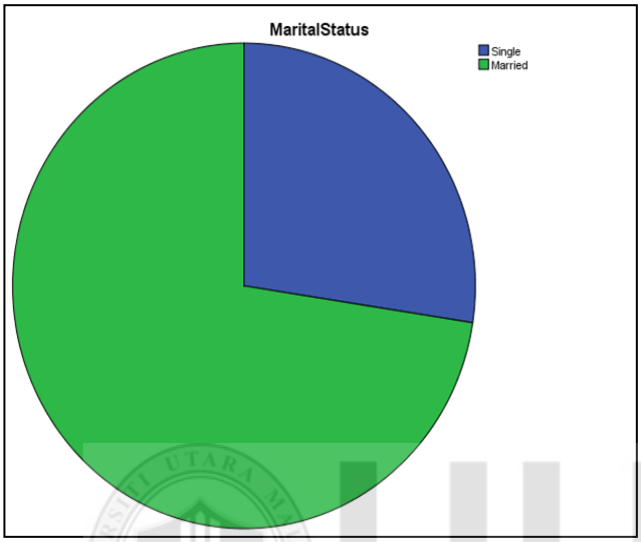

Figure 4.4
Distribution of Respondent by Marital Status Category

4.4.5 Working Department

As mentioned in the previous chapter, for the distribution of respondents among the working departments is according to proportionate stratified random sampling. This means that each department has the same sampling fraction. As a result, the number of respondents in the department is quite the same. There are 50 respondents from Medical Department, 45 respondents who are under O&G Department, 41 respondents from Surgical Department and 39 respondents from Urology Department, which represents 28.6%, 23.4%, and 33.3%, respectively. Figure 4.5 shows the distribution of respondents in the department.

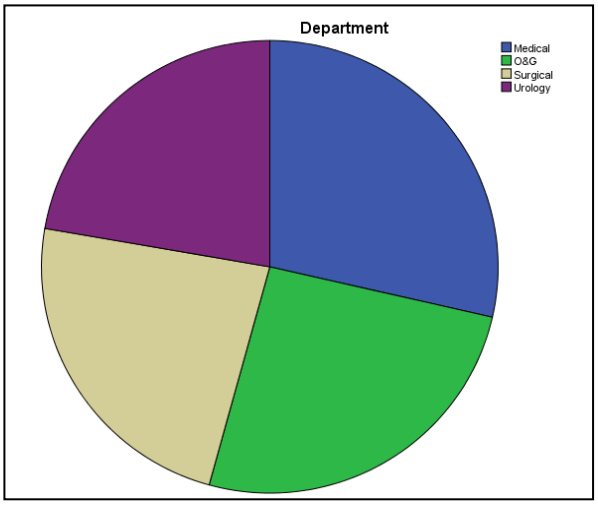

Figure 4.5
Distribution of Respondent by Working Department Category

4.4.6 Work Position

The majority of the respondents are in a position of staff nurse, with 76.6% (n=134) of the study. The minority of the respondents are JM, sister, and matron with 22, 14, 5 respondents or 12.6%, 8.0%, 2.9%, respectively. Figure 4.6 presents the percentage of respondents' work position.

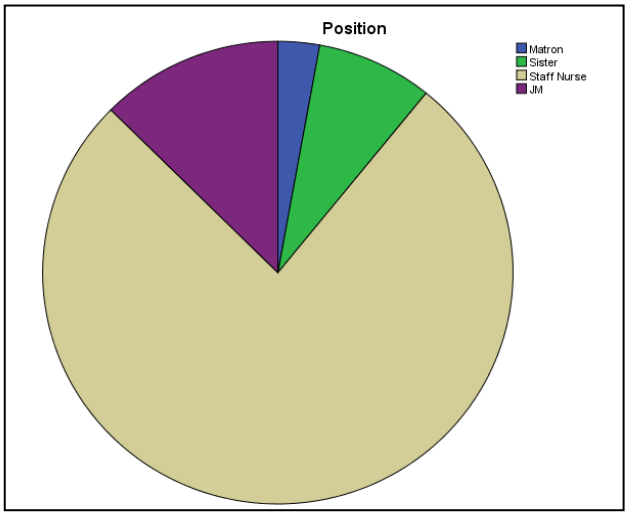

Figure 4.6
Distribution of Respondent by Work Position Category

4.4.7 Year of Service

Respondents who have 5 or less than 5 years of service are the majority of the study, with 73 respondents (42.3%) having this family. About 41 respondents or 23.4% are in a range of 6-10 years of service. The minority of the respondents have 16-30 and 11-15 years of service, being 29, 31 respondents or 17.7%, 16.6%, respectively. Figure 4.7 shows the percentage of the respondents according to a year of service.

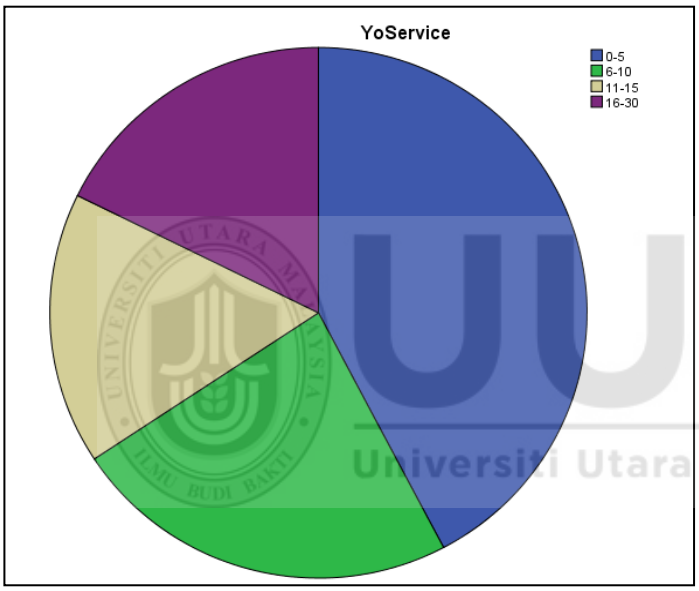

Figure 4.7
Distribution of Respondent by Year of Service Category

4.4.8 Level of Safety Climate

For analysis of the overall level of safety climate among the nurses in Hospital Selayang, the study used the basic descriptive statistics to measure the value of standard deviation to know how much the members of a group differ from its mean. As well as, the value of mean, minimum, and maximum for determining which answer from the Likert scale that they choose. Table 4.6 shows the detail.

Table 4.6
Safety Climate

	N	Minimum	Maximum	Mean	Std. Deviation
MeanSC	175	3.67	7.00	5.4781	.71452
Valid N (listwise)	175				

From the above table (Table 4.6), the mean value is 5.478, which the finding shows the average answer of respondents is in between slightly agree and agree. The minimum value is 3.67, that means the minimum scale they choose is between slightly disagree and neutral. Besides, the maximum scale they choose strongly agrees with the maximum value is 7.00. Meanwhile, the standard deviation value is 0.71452. Hence, it can be concluded that the level of safety climate among nurses at Hospital Selayang is quite high.

4.5 Inferential Analysis

Inferential analysis is used to generalize the results obtained from a probability of sample back to the population from which the sample was drawn. In order to answer the research questions stated in chapter 1, t-test (to examine two groups) and ANOVA (to examine more than two groups) were used to evaluate the correlation between the variables. Several assumptions need to be compiled including that the samples are random and from independent observation. As per the previous tests, the samples are reliable and valid.

4.5.1 Age and Safety Climate

HA 1: Younger nurses will engage in lower levels of safety climate than older nurses.

Table 4.7(a)
Age Status: ANOVA Statistics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.121	5	1.024	2.068	.072
Within Groups	83.712	169	.495		
Total	88.833	174			

This correlation was tested via ANOVA (Table 4.7(a)) where the F value shows greater than 0.05, and significance level for equal variances assumed is also greater than 0.05, there are no significant differences of safety climate mean between the groups of age. In other words, between the groups of age, they have almost similar perceptions about safety.

Table 4.7(b)
Mean Ranks for Age Group

Age	Mean	N	Std. Deviation
20-25	5.3472	36	.78414
26-30	5.3295	44	.74491
31-35	5.5567	47	.68918
36-40	5.7160	27	.54658
41-45	5.3333	14	.69798
46-50	5.9286	7	.62994
Total	5.4781	175	.71452

The summary for the matrix for correlation of these six variables is presented in table 4.7(b) which is most of them answered between slightly agree and agree for each group of age. Despite, the age group of 46-50 years old show slightly higher mean than other but the number of respondents in this group is the lowest. Hence, HA 1 is unaccepted.

4.5.2 Marital Status and Safety Climate

HA 2: Married nurses will engage in lower levels of safety climate than single nurses.

Table 4.8(a)
Marital Status: Group Statistics

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
MeanSC	Equal variances assumed	.102	.750	.130	173	.896	.01583	.12141	-.22380	.25546
	Equal variances not assumed			.129	83.321	.897	.01583	.12245	-.22770	.25936

Table 4.8(b)
Mean Ranks for Marital Status Category

	MaritalStatus	N	Mean	Std. Deviation	Std. Error Mean
MeanSC	Single	48	5.4896	.72641	.10485
	Married	127	5.4738	.71283	.06325

This correlation was tested via t-test where the findings from Table 4.8(a) shows there is no statistically significant difference between both single individuals and married individuals, reveals that the significant values are greater than 0.05 (F = 0.130, Sig, = 0.750 and Sig. 2-tailed=0.096). The results show that there is no difference between the marital status of the nurses tested for safety climate. Both perceptions towards safety are equally the same (see Table 4.8(b)), where the mean values for both are 5.4896 to 5.4738 (between slightly agree and agree). Therefore, HA 2 is unaccepted.

4.5.3 Working Departments and Safety Climate

HA 3: Busy department will engage in lower levels of safety climate than other departments.

Table 4.9(a)
Working Department Status: ANOVA Statistics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.640	3	.213	.413	.744
Within Groups	88.193	171	.516		
Total	88.833	174			

This correlation was tested via ANOVA (Table 4.9(a)) where the F value shows more than 0.05, and significance level for equal variances assumed is also more than 0.05, there are no significant differences of safety climate means among the working departments. This finding shows that although departments busy or not, they have almost similar perceptions towards safety.

Table 4.9(b)
Mean Ranks for Working Department Category

Department	Mean	N	Std. Deviation
Medical	5.4733	50	.70499
O&G	5.5593	45	.74971
Surgical	5.4837	41	.72725
Urology	5.3846	39	.68735
Total	5.4781	175	.71452

The summary for the matrix for correlation of these four variables is presented in Table 4.9(b) which is most of them answered between slightly agree and agree for each group of the working department. Therefore, HA 3 is unaccepted.

4.5.4 Work Position and Safety Climate

HA 4: Higher position nurses will engage in higher levels of safety climate than lower position nurses.

Table 4.10(a)
Work Position Status: ANOVA Statistics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.709	3	.903	1.793	.150
Within Groups	86.123	171	.504		
Total	88.833	174			

This correlation was tested via ANOVA (Table 4.10(a)) where the F value shows higher than 0.05, and the significance level for equal variances assumed is also higher than 0.05. From this finding, there is no significant difference of safety climate means between the work positions of a nurse. Hence, the study can conclude that they have almost similar perceptions towards safety in their workplace.

Table 4.10(b)
Mean Ranks for Work Position Category

Position	Mean	N	Std. Deviation
Matron	5.8000	5	.66039
Sister	5.7857	14	.58990
Staff Nurse	5.4142	134	.69240
JM	5.5985	22	.87538
Total	5.4781	175	.71452

The summary for the matrix for correlation of these four variables is presented in Table 4.10(b). Although, the matron group shows a higher mean than other position but all groups of work position answered between slightly agree and agree. Thus, HA 4 is unaccepted.

4.5.5 Year of Service and Safety Climate

HA 5: Experienced nurses will engage in higher levels of safety climate than inexperienced nurses.

Table 4.11(a)
Year of Service Status: ANOVA Statistics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.070	3	.690	1.360	.257
Within Groups	86.763	171	.507		
Total	88.833	174			

This correlation was tested via ANOVA (Table 4.11(a)) where the F value shows greater than 0.05, and the significance level for equal variances assumed is also greater than 0.05. This finding shows, there are no significant differences of safety climate means between group years of service where they have almost similar perceptions of safety at their workplace.

Table 4.11(b)
Mean Ranks for Year of Service Category

Year of Service	Mean	N	Std. Deviation
0-5	5.3806	74	.75223
6-10	5.4390	41	.77796
11-15	5.6379	29	.60269
16-30	5.6129	31	.60765
Total	5.4781	175	.71452

The summary for the matrix for correlation of these four variables is presented in Table 4.11(b) which is most of them answered between slightly agree and agree for each group of age. Hence, HA 5 is unaccepted.

4.6 Chapter Summary

In this chapter, the data collected through questionnaire were analyzed. Firstly, reliability and is conducted to test either the instrument that used in this study reliable or not. Then, the normality analysis is conducted to test the distribution of the data. Descriptive analysis is conducted to summarize the sample and measures in the study. Next, the t-test and ANOVA are also conducted in the inferential analysis section to test the relationship between independent and dependent variables. Findings of the research will further discuss in Chapter 5.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter presents a discussion which highlights the findings based on the objectives of the study. Besides, a brief review of research questions, the discussion of findings and the study's prediction including interpretation to provide a rational explanation, are also discussed in this chapter. Subsequently, the study comes out with some recommendations based on the finding for future studies who may be interested to investigate the study in similar areas.

5.2 Discussion

Analysis of the data indicates that the nurses' safety climate is close to positive with an overall mean score of 5.478 (7 Likert scales from strongly disagree to strongly agree), means the average answer of respondents is in between slightly agree and agree. From this mean score, there is ambivalence and no strong agreement regarding the safety of the workplace among the surveyed nurses. Workplace safety for nurse refers to the working environment and all factors that impact the safety, health, and well-being by minimizing the risk of physical or psychological harm such as safe patient handling and mobility practices, and reasonable patient care assignments, shift duration, and meal break practices (Zolot, 2017).

There are many studies of safety climate have been done with different variables and they found similar findings as well as variant findings in terms of the overall mean of safety climate (Sexton et al., 2006, McBride-Henry & Foureur, 2006,

Thomas et al., 2005, Taylor, 2004). However, these previous studies deal with different populations which included a multidisciplinary sample and conducted in different circumstances, whereas the study was undertaken by nurses from four departments in Hospital Selayang. As an example, Soh et al. (2017) reported that nurse perceptions of safety climate appeared higher than international data. Whereas, Almutairi et al. (2013) found the nurses' perception of clinical safety climate is close to positive with a mean score of 3.9 (near to 4 of 5 point scale).

Demographic factors as age, marital status, work position, working department, working experience, and other personal information have influenced workers' safety perceptions. Hinze (1997) said that these demographic factors can influence safety climate and consequently influence individual safety behavior. However, some studies claimed the association between safety climate and demographic factors was not significant (Amiri et al., 2015). These phenomena happened may be due to differing in the workplace, working conditions, and cultural differences. Even though the effect of demographic factors on safety climate differs in various conducted studies, but its effect on the workplace atmosphere cannot be ignored.

5.2.1 Age and Safety Climate

There was no statistical difference in the perception of safety climate across the age groups (significance level 0.072 (>0.05)). Nevertheless, the assessment of the mean ranks for the groups indicates that the group aged 46-50 had the highest level of safety perception, while the group aged 26 to 30 years had the lowest level of safety perception. This finding similar to Almutairi et al. (2013) which found there is no significant difference between the age groups and years of experience of nurses

and the perception of safety climate. However, it differs from some studies which found there are significant differences between the age group of participants. As an example, Holden, Watts, and Walker (2009) reported that the 'younger age group' had the lowest safety climate scores among four US Air Force ambulatory care facilities, and the sample included physicians, nurse practitioners, physician assistants, registered nurses, pharmacists, and technicians. Almutairi et al. (2013) claimed this contradiction could be related to the heterogeneous of their sample; meanwhile, the study is homogeneous for registered nurses.

In addition, Andersen et al. (2011) indicated that the effect of age on judgment and job stressors or false expectations was higher among younger workers in Danish Industries' employees. Same with Amiri et al. (2015) which revealed that among oil industry's workers, the association between age and safety climate was significant. The context of this study might contribute to this difference, as the distribution of the participants was significantly different for each group of age.

The study did not discuss further the association between gender and safety climate due to a huge difference of participant number between male (3.4%) and female (96.6%) nurses in the study. Similar to Blegen et al. (2004) finding, the female nurses were 93% of the study populations. This circumstance happened because of nurse profession normally dominated by the female. But in other studies, there is a significant finding between gender and perception of safety climate. They claimed that female workers expressed more positive towards the perceptions of workplace safety, they also were more compliant with safety procedures and had a lower accident frequency rate compared to the male worker (Gyekye & Salminen, 2011).

5.2.2 Marital Status and Safety Climate

According to the finding of the study, there is no significant difference between marital status and safety climate (significance level 0.102 (>0.05)). Amiri et al. (2015) also reported that there was no significant association between marital status and perception of safety climate. On the other hand, there are some previous studies identified a positive relationship is between safety climate and marital status of the workers (Fang et al. 2006; Gyekye & Salminen 2009; Zhou et al. 2008). They claimed that married people seem to focus more on rules and regulations in the workplace compared to single workers. Marriage relationship binds the worker to provide the social responsibility which is also strongly associated with their own perception as well as their life (Masood & Choudhry, 2012).

5.2.3 Working Department and Safety Climate

Same with other variables, the study discovers between nurse working departments, there is no significant difference in safety climate as well (significance level 0.413 (>0.05)). The four departments which include medical, obstetrics and gynecology (O&G), surgical and urology give almost the same value of the mean. However, O&G department had the highest level of the mean rank, might be because they are dealing with pregnant women and babies, thus they quite sensitive towards the safety perceptions.

The findings of Tarling et al. (2017) indicated there was a lower safety climate in operating theatres compared with ward areas. Both critical care and operating theatre groups also scored lower than medical ward areas, though this was close to but not statistically different. However, these results are consistent with

results from other countries and may indicate that there is a fundamental difference in safety climate in different clinical settings and it has been suggested that these differences are associated with the severity or complexity of the patient condition, high patient turnover or the technological complexity of the care delivered (Singer et al., 2009).

5.2.4 Work Position and Safety Climate

For nurse work position, the study discovers that it is no significant differences in safety climate (significance level 1.793 (>0.05)). In Malaysia, the highest position in nurse hierarchy is a matron, followed by a sister, staff nurse and 'Jururawat Masyarakat' (JM). Although there is no significant difference between nurse work position and safety climate, the mean rank of work position groups show that matron had the highest level of safety climate (mean=5.8000), meanwhile, the group of staff nurse had the lowest level (mean=5.4142). From the previous study, Lee (1998) found significant differences in safety climate scores at by organizational level which the higher level of the organization had the higher safety climate score.

5.2.5 Year of Service and Safety Climate

Between safety climate and nurses' years of service, there is also no significant difference with 1.360 of the significant level (>0.05). Nevertheless, in the mean rank, group of 11 to 15 years and 16 to 30 years are higher than the 6 to 10 years and 0 to 5 years. This circumstance shows that the more mature in the later stage of their service life stipulated with experience which helps them to address safety aspect and inspect the hazardous situations (Masood & Choudhry, 2012). Besides, Almutairi et al. (2013) and Amiri et al. (2015) also indicated that there was

no statistical difference in safety perception regarding the length of experience categories, and these finding revealed that there is no effect of the subjects' experiences on their perception of safety climate.

On the other hand, the study of Gyekye et al. (2010) and Soh et al. (2017) found that the association between safety climate and work experience was significant, where they claimed that nurses who had worked longer at a hospital were more likely to have poorer perceptions of hospital management.

5.3 Impact of Research Findings

The study gives a substantial view of safety climate among the nurses at Hospital Selayang. The target group also represents nurses from 4 working departments with different level of work position. The findings of the study indicate that safety climate is a principal indicator for an organization. A constructive safety climate is beneficial towards assisting the nurse to get better implementations on safety at work by dropping the risk taking behaviour among them. From the study, it found that nurses have to improve their perception toward safety in their workplace which includes working procedures, safety policies and daily practices.

5.4 Recommendation

5.4.1 Recommendation to the Organization

The study suggests that there is a need for a well-structured continuing education programme for all nurses that aim to increase their competence to enable them to provide high quality and clinically safe care. Specifically, education is the

tool to enhance the sense of empowerment for the nurses' perception. In addition, such an educational programme should utilize and employ the best adult learning methods to ensure participation, comprehension, and understanding. Hence, the safety climate of nurses could be improved.

5.4.2 Recommendation of Future Study

This study has certainly faced some limitation in terms of the number of respondents, number of working department involved, as well as with the limitation of time frame. The use of self-administered questionnaire by the matron was also another limitation, as respondents are likely to be influenced by intentional distortions and misinformation. Notwithstanding the above mentioned limitation, the current study contributes to the growing body of research that has found nurses' organizational demographic factors to be an important variable for investigation of safety climate as well as into safety management policies.

5.5 Conclusion

The results clearly demonstrate that the nurses in Hospital Selayang had a positive perception of safety climate when referred to the mean value of the safety climate's level. However, the study revealed there are no significant differences between demographic factors (age, marital status, work position, working department and years of service) and safety climate. No research with similar findings was evident and published studies on safety climate. Therefore, if the hospital wishes to improve the safety climate among their nurses, they need to include all nurses without focusing on certain categories. Workplace safety climate is influenced by

various factors and safety management participation in safety programs will have a positive role in shaping a positive safety climate. More studies in workplaces with different conditions and comparing the results will be useful in this context (Amiri et al., 2015).

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APPENDIX A

SAFETY CLIMATE AMONG NURSES IN HOSPITAL SELAYANG

Dear Respondent,

My name is Nor Ashikin binti Jinah, currently doing Master programme in Occupational Safety and Health Management in Universiti Utara Malaysia (UUM). I am conducting a survey which entitled as mentioned above**.** The objective of this survey is to assess safety climate in Hospital Selayang among the nurses. For the research purpose, I need 160 of nurses to participate in my research, in order to get a clear overview of the nurse population in certain department at Hospital Selayang.

Attached is a set of questionnaires that is taken from previous established research about a safety climate in workplace. Please take few minutes to respond to the questions and you just need to choose one point of response (according to the scale given) for each question. Your answers will be very helpful to conduct my research. There are no follow-up or any other procedure require after you answered this survey. Appreciate your sincere and honest answers in order to make this survey very successful.

All the information and the answers that obtained from this survey will be handled and kept in a strictly confidential manner in according with applicable laws and/or regulations. **The information and the answers only be used for research academic purpose.**

Many thanks for your co-operation and participation in carrying out this survey. Please contact me via email norashikinjinah@gmail.com or my direct mobile number 013-6290407, if you need any information about safety climate in the workplace. Thank you.

Yours sincerely,
Nor Ashikin Jinah

DEMOGRAPHIC INFORMATION

1. Age 20-25 ☐ 26-30 ☐ 31-35 ☐ 36-40 ☐ 41-45 ☐ 46-50 ☐ ≥51 ☐

2. Gender Male ☐ Female ☐

3. Race Malay ☐ Chinese ☐ Indian ☐ Other, please state: _____

4. Marital status Single ☐ Married ☐

3. Department Medical ☐ O&G ☐ Surgical ☐ Urology ☐

4. Ward |___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|___|

5. Position Matron ☐ Sister ☐ Staff Nurse ☐ JM ☐ Other, please state: _____

6. Years of service 0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ ≥31 ☐

Think about the safety of your workplace in Hospital Selayang. Circle your response according to the scale below (**choose only one point of response for each question**).

*Fikirkan tentang keselamatan tempat kerja anda di Hospital Selayang. Bulatkan respon anda berdasarkan skala di bawah (**pilih satu respon sahaja untuk setiap soalan**).*

Strongly disagree *Sangat tidak setuju*	Disagree *Tidak setuju*	Slighty disagree *Sedikit tidak bersetuju*	Neutral *Berkecuali / natural*	Slighty agree *Sedikit bersetuju*	Agree *Setuju*	Strongly agree *Sangat setuju*
1	2	3	4	5	6	7

	Organizational safety climate ***Iklim keselamatan organisasi***							
My organization (Hospital) … *Organisasi (Hospital) saya …*								
1	provides all the equipment needed to do the job safely. *menyediakan semua peralatan yang diperlukan bagi menjalankan tugas dengan selamat.*	1	2	3	4	5	6	7
2	quickly corrects any safety hazard even if it is costly. *segera membuat pembetulan jika terdapat bahaya keselamatan walaupun memerlukan kos yang tinggi.*	1	2	3	4	5	6	7
3	considers a person's safety behavior when there are promotions. *mengambil kira tingkah laku keselamatan setiap individu sewaktu kenaikan pangkat.*	1	2	3	4	5	6	7
4	invests a lot of time and money in safety training for workers. *melaburkan masa dan wang yang banyak dalam menjalankan latihan keselamatan kepada pekerja.*	1	2	3	4	5	6	7
5	listens carefully to workers' ideas about improving safety. *mendengar dengan baik segala idea daripada pekerja dalam meningkatkan tahap keselamatan.*	1	2	3	4	5	6	7
6	gives safety personnel the power they need to do their job. *memberi kuasa yang diperlukan oleh anggota keselamatan untuk menjalankan tugas mereka.*	1	2	3	4	5	6	7

If you wish to elaborate on some of your answers, or if you have any comments regarding this research, you are welcome to write them here.

Jika anda ingin menghuraikan beberapa jawapan anda, atau jika anda mempunyai sebarang komen tentang penyelidikan ini, anda dialu-alukan untuk menuliskannya di sini.

Comments / Komen:

_____

_____

_____

☺ **Thank you for filling in the survey.**

☺ ***Terima kasih kerana mengisi soalselidik ini.***

APPENDIX B

JAWATANKUASA ETIKA & PENYELIDIKAN PERUBATAN
(Medical Research & Ethics Committee)
KEMENTERIAN KESIHATAN MALAYSIA
d/a Institut Pengurusan Kesihatan
Jalan Rumah Sakit, Bangsar
59000 Kuala Lumpur

Tel.: 03-2287 4032/2282 0491/2282 9085
03-2282 9082/2282 1402/2282 1449
Faks: 03-2282 0015

Ruj.Kami:KKM/NIHSEC/ P17-1744 (6)
Tarikh: 17 November-2017

Nor Ashikin Binti Jinah
Universiti Utara Malaysia (UUM)

Dato'/ Tuan/ Puan,

SURAT KELULUSAN ETIKA: NMRR-17-2287-37619 (IIR)
SAFETY CLIMATE AMONG NURSES IN HOSPITAL SELAYANG

Lokasi kajian:
HOSPITAL SELAYANG

Dengan hormatnya perkara di atas adalah dirujuk.

2. Jawatankuasa Etika & Penyelidikan Perubatan (JEPP), Kementerian Kesihatan Malaysia (KKM) tiada halangan, dari segi etika, ke atas pelaksanaan kajian tersebut. JEPP mengambil maklum bahawa kajian tersebut hanya melibatkan pengumpulan data melalui:

i. **Borang soal selidik**

3. Segala rekod dan data subjek adalah **SULIT** dan hanya digunakan untuk tujuan kajian ini dan semua isu serta prosedur mengenai *data confidentiality* mesti dipatuhi.

4. Kebenaran daripada Pegawai Kesihatan Daerah/ Pengarah Hospital dan Ketua-Ketua Jabatan atau pegawai yang bertanggungjawab disetiap lokasi kajian di mana kajian akan dijalankan mesti diperolehi sebelum kajian dijalankan. YBhg. Dato' / Tuan / Puan perlu akur dan mematuhi keputusan tersebut. Sila rujuk kepada garis panduan Institut Kesihatan Negara mengenai penyelidikan di Institusi dan fasiliti Kementerian Kesihatan Malaysia (Pindaan 01/2015) serta lampiran *Appendix* 5 untuk templet surat memohon kebenaran tersebut.

5. Adalah dimaklumkan bahawa kelulusan ini adalah sah sehingga **16-November-2018**. YBhg. Dato'/ Tuan/ Puan perlu menghantar dokumen-dokumen seperti berikut selepas mendapat kelulusan etika. Borang-borang berkaitan boleh dimuat turun daripada laman web Jawatakuasa Etika & Penyelidikan Perubatan (JEPP) (http://www.nih.gov.my/mrec).

i. ***Continuing Review Form*** selewat-lewatnya dalam tempoh 1 bulan (30 hari) sebelum tamat tempoh kelulusan ini bagi memperbaharui kelulusan etika.

ii. ***Study Final Report*** pada penghujung kajian.

iii. Mendapat kelulusan etika sekiranya terdapat pindaan keatas sebarang dokumen kajian/ lokasi kajian/ penyelidik.

6. Sila ambil maklum bahawa sebarang urusan surat-menyurat berkaitan dengan penyelidikan ini haruslah dinyatakan nombor rujukan surat ini untuk melicinkan urusan yang berkaitan.

Sekian terima kasih.

BERKHIDMAT UNTUK NEGARA

Saya yang menurut perintah,

.....

DATIN DR NORIAH BINTI BIDIN
Naib Pengerusi
Jawatankuasa Etika & Penyelidikan Perubatan
Kementerian Kesihatan Malaysia
mrecsec@nih.gov.my
03-2282 9085

s.k.: HRRC Hospital Selayang

AA/Approval2017/MRECshare

APPENDIX C

HOSPITAL SELAYANG
LEBUHRAYA SELAYANG KEPONG
68100 BATU CAVES,
SELANGOR DARUL EHSAN.
No.Tel : 03-6126 3333
No.Faks : 03-61377097
Laman Web : http://hselayang.moh.gov.my

Ruj. Kami: Bil (192) dlm HS/ CRC 184.Jld 4

Tarikh: 29 January 2018

Nor Ashikin Jinah ,
Master of Science Occupational Safety
and Health Management,
Universiti Utara Malaysia

Puan,

PERMOHONAN KEBENARAN PENGGUNAAN HOSPITAL SELAYANG UNTUK MENJALANKAN PENYELIDIKAN
Dengan hormatnya perkara di atas adalah dirujuk.

2. Pihak Pusat Penyelidikan Klinikal (CRC) telah menerima satu kertas kerja kajian, surat kelulusan dari Jawatankuasa Etika Penyelidikan dan Perubatan (JEPP) KKM serta surat permohonan penggunaan Hospital Selayang untuk menjalankan penyelidikan "Safety Climate among Nurses in Hospital Selayang"

3. Sehubungan dengan itu pihak kami tiada mempunyai sebarang halangan ke atas perlaksanaan kajian ini memandangkan kajian ini telah dipersetujui oleh Matron Noriah binti Che Mat , Ketua Penyelia Jururawat Hospital Selayang dan telah didaftarkan secara online di *National Medical Research Register* (www.nmrr.gov.my) bagi memenuhi garis panduan penyelidikan Kementerian Kesihatan Malaysia (KKM) berdasarkan surat pekeliling Ketua Pengarah Kesihatan Malaysia Bil.9/2007 bertarikh 5 Sept 2008 dengan rujukan (1) dlm KKM/NIHSEC/03/0301-01 serta TELAH mendapat kelulusan daripada Jawatankuasa Etika Penyelidikan dan Perubatan (JEPP) Kementerian Kesihatan Malaysia.

4. Salinan surat kebenaran menjalankan kajian dari Jawatankuasa Etika & Penyelidikan Perubatan dan surat permohonan kebenaran penggunaan fasiliti di Hospital Selayang untuk menjalankan penyelidikan yang telah lengkap telah dikemukakan ke Pusat Penyelidikan Klinikal (CRC). Dan sekiranya penyelidikan puan memerlukan akses kepada data-data pesakit, puan harus melengkapkan borang Akses Powerchart di Pusat Penyelidikan Klinikal (CRC) dan mengepilkannya bersama-sama dengan kedua-dua surat yang disebut di atas untuk dikemukakan ke CRC .

5. Bagi sebarang pertanyaan, sila hubungi Dr Tay Ju Fan (sambungan 4314) atau email: jufan@moh.gov.my

Sekian terima kasih.

BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

DR. MUHAMMAD YUSOF SIBERT
MBBS (MAHE), MHA (Australia), PG Dip Derm (Sing), CMIA (NIOSH)
Timbalan Pengarah (Perubatan) 1
Hospital Selayang
MMC No : 35438

(DR. HAJJAH SITI ZALEHA BINTI MOHD SALLEH)
MMC No : 24881
Pengarah
Hospital Selayang
s.k

Ketua Jabatan Urologi, Hospital Selayang
Ketua Jabatan Perubatan Am, Hospital Selayang
Ketua Jabatan Pembedahan Am, Hospital Selayang
Ketua Jabatan Obstetrik & Ginekologi, Hospital Selayang
Ketua Pusat Penyelidikan Klinikal, Hospital Selayang

Hospital RakanBayi

Certified to MS ISO 9001:2008
Certification No: AR4313