

# **Assessing the Relationship between Risk Management and Safety Climate in Healthcare Organizations**

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## ABSTRACT

Adverse event have become prevalent in medical centers around the globe. The increased number of injuries has resulted to criticisms. In the 21<sup>st</sup> century researchers and practitioners are striving hard to identify the cause and possible solutions. Most democratic and rich nations have implemented measures regarding medical risk, quality and patient safety management. In sum the aim of this thesis is to facilitate an integrative approach towards monitoring and reporting of risks and raising awareness of patient safety issues. Patient safety can be improved by enhancing safety climate and risk management culture in healthcare organizations. Encouraging healthcare managers to adopt collaborative learning could foster safety climates. We identified different predictors for overall safety climate perception. First, women have higher tendency to adopt safety culture than men. Nurse and doctors practice safety culture more than other healthcare staffs. Blame culture diminishes safety culture which in turn eliminates safety climate. Our results highlight the importance of capturing the impact of different management levels, especially in large hospitals, and differences between professional groups in order to design interventions accordingly. Based on our findings we suggest that medical should adopt managerial patient safety initiatives like education, training and collaborations between team members, risk management approaches that diminished blame culture and attempts to identify, prioritized and manage the associated risk.

**Keywords:** Safety climate; Blame culture; North Cyprus, Adverse event, risk management.

## ÖZ

Tıp merkezlerinde olumsuz gelişmeler, dünya çapında yaygın hale gelmiştir. Artan yaralanma sayısı eleştirilere neden olmuştur. 21. Yüzyılda arařtırmacılar ve uygulamacılar nedenleri ve olası çözümleri belirlemek için çok çalıřmıřlardır. En demokratik ve zengin ülkelerin tıbbi risk, kalite ve hasta güvenliđi yönetimine iliřkin tedbirleri hayata geçirilmiřtir. Özetle, bu tezin amacı, izleme, risk raporlama ve hasta güvenliđi konularında bilinçlenme yönünde bütüncül bir yaklařımı kolaylařtırmaktır. Hasta güvenliđi ve risk yönetimi sađlık kuruluşlarında güvenlik ortamının iyileřtirilmesi ile geliřtirilebilir. İřbirlikçi öğrenme benimsenerek, sađlık yöneticileri bu yönde ılımlı bir şekilde teřvik edilebilir. Biz farklı belirliyecileri tespit etmeye odaklandık. İlk olarak, kadınların güvenlik kültürünü benimsemeye erkeklerden daha yüksek eğilimi var. Hemřire ve doktorlar, diđer sađlık personeline göre daha pratik bir güvenlik kültürü uygulamaktadırlar. Suçlama kültürü güvenlik kültürü olgusunu ortadan kaldıracaktır. Bizim sonuçlarımız deđiřik yönetim kademelerinde etkilerin önemini vurgulamaktadır. Özellikle büyük hastaneler ve buna göre müdahaleleri tasarlamak için profesyonel gruplar arasındaki farklılıklar. Bizim bulgularımıza dayanarak, tıp eğitimi gibi yönetsel hasta güvenliđi gerektiren alanlarda hasta güvenliđinin benimsenmesi ön görölmektedir. Risk yönetimi bu azalmıř suçlama kültürü yaklařımları ve iliřkili riskleri tanımlamak, öncelik ve yönetmek için çalıřır.

**Anahtar Kelimeler:** Emniyet iklimi; Suçlama kültürü, Kuzey Kıbrıs, olumsuz gelişme, risk yönetimi.

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*To my dear mom and dad,  
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# Chapter 1

## INTRODUCTION

This chapter presents an overview of our research aim and philosophy, the contribution of the study to the practitioners and researchers. Brief Information about other chapters are presented here as well.

During the last decades, the quality of medical care as well as patient safety was ignored in most countries around the globe. The 21<sup>st</sup> century has brought many criticisms due to the prevalence of democracy, the increased freedom of speech and emphasis of equality and value of life. In most developed countries improving the quality of healthcare services are the major priorities for politicians (Weingard et al., 2000). However, in the third world countries the deficiencies in patient safety and healthcare quality is still obvious considering the significant rate of injuries and mortality associated with medical flaws (Kohn et al., 1999). Therefore, the need to improve quality and to reduce adverse effects exists; but safety and quality improvement approaches are likely to present challenges. For example in the UK, clinical governance was created as a part of a wider scheme for developing national standard, guidelines, inspections and monitoring avenue. In other word this approach was a kind of risk management. For instance Roland et al., (2001) revealed that clinical governance levy a “duty of quality” on all NHS centers and incorporates clinical, organizational and managerial strategies to embellish quality of

healthcare. Douglas (2009) defined risk management (RM) as the systematic recognition and/or identification, assessment, and prioritization of risks in an organization. The International Organization for Standardization (ISO) defined RM as negative or positive effect of uncertainty. RM consists of both economical and practical coordinated utilization of resources to control, monitor or minimize the likelihood of unwanted events or to maximize opportunities. Williams et al., (2006) in their influential risk and quality management studies highlighted 3 types of risk that are applicable to healthcare organization. These kinds of risks will be reviewed in the following paragraphs.

The first one is the anticipated risks, which are risks that healthcare centers predicted their occurrence, they are clear and not caused by chance and can be manageable. A clear distinction is essential especially the size and effect of the risk. Healthcare organization need to have prior knowledge and subsequent solution particularly with the aid of statistical approach. Second, are the unpredicted types of risks, which are difficult to manage and are caused by probability of chance? They cannot be tracked down by statistical methods. Tending towards the unpredictability of this type of risks, RM can teach quality the importance of clear prioritization. Thirdly, is the type of risk that results from increasing unpredictability and uncertainty in operational environments, such as medical centers? One of the drawbacks in respect of this type of risk is that quality can be of little help (Williams et al., 2006). Notwithstanding, the best theories and systems can be devised to handle risk, the essence is that in a sporadic world, flaw and failures are doomed to take place. Hence, quality and RM should accept this fact and healthcare management together with individuals should be able to cope with such situations. Risks can results from uncertainty in all areas of our lives; this study aligned

itself only to the risks that arise from adverse events in medical facilities. The inauguration of RM and securing its continuous effectiveness depends on the number of efforts exhibited by the management, particularly in terms of resource allocation as well as strategic and tactical planning (Howard and Felton, 2013). In order to evaluate the effectiveness of RM programs, managers must assess and examine the organization in respect to their effective risk culture. The intangibility of medical services and adverse effects has led to the development of agile RM in most healthcare organization. Marks, (2013) stated that resources allocation for RM has always been difficult in the healthcare environment, because RM is a non-profit activity that requires continuous professional evaluation and expenses absorption. He pointed out that, apart from sufficient resources allocation and budget; the numbers of skilled and experienced employees are needed to sustainable RM. However, risk managers must zoom in their efforts to better RM, by educating their personnel on RM's role, communicate RM activities, measuring RM activities, and embracing organization wide RM approach.

Healthcare provider's denial acceptance of fault in case of high level adverse event in their service is due to their need to maintain self-image and fixed set of conscious ideas which is in line with cognitive dissonance theory. Their primary identity is to provide treatment that may heal people, as such they hardly accept that their service causes harm to patients even if they actually cause the harm. Thus, denying the evidence in order to reducing dissonance, such that care providers tend to be conscientious in their service provision and struggles to maintain balance between system responsibility and individual. Consequently the empirical study conducted by (Lateen et al., 1979) demonstrated that, individual will exert low effort relative to real performance when

their contribution in a group is not identified. Hence “social loafing” or avoidance of effort occurs. It is common in team-work where inputs of specific group members are not easily verified. For example speaking-out, reporting others’ errors or error discovery increases the chances of work group’s conflict, less trust and less communication; which in turn generate mega errors. In 2002 (Hyde and Thomas, 2002) noted that accepting responsibility for hazardous act causes guilt and shame as well as other psychological mechanisms.

Patient safety (PS) is an emerging issue among various academicians, the public as well as healthcare professionals. The current methodologies employed to improve PS have failed to produce a relevant outcomes. Kohn et al., (2000) noted that around 45,000 to 98,000 Americans lost their lives each year medical errors that be prevented. Additionally Baker et al., (2004) noted that each year approximately 7.5% of patients admitted in Canada experience adverse event out of which majority are preventable. The American and Canadian government implemented new reporting systems, measures, regulations and improved technologies (Mwachofi et al., 2011) to help tackle the existing problem. Perhaps, this development had nominal impact because organizational factors like proper RM analysis and evaluations were ignored (Kaissi, 2006). Although only few research have attempted to examined patient safety from risk and quality management perspective. Hence, the creation of systematic healthcare RM in medical organization may enhance PS. This extent literature has described on several factors that appear to influence PS and RM outcomes. Hence, the need to investigate PS and RM in various medical settings to develop productive measures is obvious.

There are also different views regarding the components safety-culture. (Aspden et al., 2004, p. 174) defined safety culture as joint sequence of human and organizational characteristics relying upon joint values and beliefs, which continuously seek to reduce patient injury that may occur in the process of care delivery. While Hellings et al. (2007) suggested that safety culture has four critical components: justice or fairness; flexibility; learning and systematic reporting. Studies concerning the relationship between safety climate and healthcare centers remains sparse and incoherent (Christine et al, 2009), especially from risk and quality management point of view. Some scholars had investigated the relationship between PS and healthcare organization behaviors and norms in respect to risk perception. For example Cooper, (2003) stated that safety climate is the fundamental feature of PS and employees' perceptions concerning special issue of the PS. While Kalisch et al, (2007) argued that patient safety climate is the increased patient satisfaction. Further, a catholic understanding of the links between safety climate and organizational RM attitudes, will allow hospitals and/or governments to intervene at the appropriate areas and time. Improving PS has emerged as first priority in hospitals and clinics atmosphere (Christine et al, 2009). Higher levels of safety climate have been related to greater degree of reporting adverse events (Cohen et al., 2004) along with quality and risk management. This thesis attempts to address elusive factors in organizational theory, by examining the interplay between PSC, RM and quality in healthcare organizations in Northern Cyprus.

## **1.1 Thesis Structure**

This study comprise of five (5) divisions. The description of the thesis and development of the subject is in chapter one. Previous research and findings regarding quality, RM and PSC are discussed in the second chapter. The third chapter demonstrates the methodology used in the study. For example, measures and sampling technique used, procedures employed during data collection. The fourth chapter demonstrates data analysis and outcomes of the study. Discussion of the research outcome, industrial and administrative implications, conclusions, limitations and future research direction are presented in chapter five.



## Chapter 2

### THEORITICAL BACKGROUND

Managing risks is of course nothing new. During the 1970s risk prevention and management related activities in medical sector were informal and even decentralized due to negligence. Risk, safety and quality managers were more interested in the physical environment and security. While risk associated with patients were assumed to be the work of doctors and nurses (Kuhn and Youngberg, 2002). The number of malpractice increases sharply given the growing number of the world population and greater awareness of medical cure. The malpractice claims were against nurses, doctors and the hospital itself, considering this practitioner and advocates concluded that there is need for RM and thus, the idea was nominated and RM emerges as a profession (Kuhn and Youngberg, 2002).

About the time, the American Hospital Association (AHA) force most medical centers to enforce RM programs as the remedy for medical flaws (Kuhn and Youngberg, 2002). In one of their briefing in 1977 AHA clearly stated that RM is the science that enforces the recognition, assessment/evaluation and insured treatment (Kuhn and Youngberg, 2002). Recently, AHA together with American Society for Healthcare Risk Management (ASHRM) leadership is campaigning for zero risk in healthcare organization. Thus, PS improvement is the prioritized objectives of modern healthcare RM movement.

Historically, when adverse event occur in healthcare organizations the most common acknowledgement was to criticize the person (Woodhouse et al., 2004). In terms of medical mistakes, human error is one of the most cited reasons (Pelletier, 2001). Previously seminars and meetings in healthcare organizations focus on individuals and RM in an attempt to improve patient safety and reduce errors. But in 2011 the Institute of Medicine prepare a report based on error reduction and improving PS, highlighting that the entire system should also be queried rather than just the individual (Institute of Medicine, 2001). Barry et al., (2002) argued that majority adverse events and errors stem from a complex chain of events that collectively contribute to the cause. He stated that in order to prevent similar mistakes from occurring, hospitals should try to trace and fix the chain of events that lead to a particular.

Among the most critical elements affecting safety of patient is to increase the awareness of safety culture that is RM, contrary to blame culture which ignores individuals learning potentials in case of work related errors (Odwazny et al., 2005). In support (Mwachofi et al., 2011) pointed out that penalizing individuals that is in-line with blame culture has failed to ignite vibrant PS outcomes; rather it leads to inadequate safety considerations for example de-motivate employees, increase fear and anxiety of the healthcare workforce. PS and RM advocates error handling methodologies; because mankind's are not perfect and everyone is susceptible to mistake. RM measures are those that enhance precautions and quick response to error before resulting to injuries in patients, by diminish fear or reprisals for reporting mistakes.

However, the propensity of making mistake can be reduced by adopting proactive and preventive measures. Hence, employees should be inspired to figure out and disclose identified errors, but in general safety, quality and risk management should to be prioritized. Basically, RM in organizations is govern by experience and intuition, however the millennium legal, political and financial breakthrough and challenge has shaped the way RM are administered in complex organizations like medical centers in the developed world. There are different approaches to manage risk ranging from “doing nothing at all” to striving to nullify the effect of the risk (Williams et al., 2006). The three steps of risk management include.

1. Risk recognition – is correlated with the actual evaluation and identification of risk.

The identification involves a bottom-down and total understanding of the risk at hand and the potential benefit or harm that the event may cause. Risk recognition is a two-dimensional construct consisting of;

- Formation of risk context, which briefly explain and describes the type of risk at hand.
- The second construct is the risk identification that deals with the detailed description of the established context of unpredicted events that may cause harm or benefits and their related igniters.

2. Risk prioritization – after risk have been clearly recognized, then there is need to have an in-depth understanding in respect of the level of the risk; to provide a framework of management in a professional way. It has two steps.

- This first is risk analysis, which is based on likelihood and consequence. Likelihood depends on the probability of occurrence and the frequency of

activity. The consequence can be measured in various ways, for instance the effect on outcome e.t.c

- The second is risk evaluation - After an analysis has been undertaken, risks are evaluated against an appropriate risk-acceptance criterion to give be ranked; it also involves the assessment of risk either qualitatively or quantitatively methodology, this provides assistance in terms of risk profile generation of the healthcare organization. In addition it provide support for categorizing and in providing detailed explanation of the risk complexity faced, particularly the risk capacity and appetite of the organization.

3. Risk management - is the management of the risks which have been recognized and ranked. Then next is arise the question of how to tackle and handle this set of risks at hand. EFQM (2005) elaborated four (4) T's by which risk can be managed, namely;

- Terminate – simply means the act of stopping the activities associated with a particular risk.
- Treat – simply demonstrate the act of taking an active measure to manage the potential consequence of adverse events.
- Tolerate – simply means the process of accepting the risk for instance, that chemo-graphic treatment may result to death e.t.c.
- Transfer – highlights an alternative escape window, in other words it is the act of transferring risk to another entity typically an insurance firm or the patient; through contract and signed agreement.

Patient Safety climate (PSC) is in line with safety culture and safety outcomes, PSC encourage working climate that promotes safety culture which affects medical outcomes and patient satisfactions. For example Singer et al. (2007) stated that improved safety climate promotes a safety culture which may result to positive patient safety outcomes. Similarly (Hoffman & Mark, 2006 and Vogus & Sutcliffe, 2007) conducted a survey and they found out that there is a positive relationship between safety climate and outcomes; but the generalizability of their studies is limited to self-reported measures and small representative sample size (Goh et al., 2013 and Rosen et al., 2010).

Additionally Colla et al. (2005) conduct a comprehensive study on PSC; they said that procedures, policies, leadership, staffing, communication and reporting are the common themes used in all nine studies. Subsequently, Odwazny et al. (2005) noted that acculturation of a PSC resulted in better decisions, better adverse event reporting and overall improvements in care. Singer et al., (2007) studies asserted that PSC is a multidimensional construct with factors such as, learning, unit safety norms, blame fears and engagement of senior manager. The literature suggests that in healthcare environment the effectiveness medical outcomes rely on employee and the organization which in turn relies on of PSC and RM practice by the organization. Suggesting that patient safety climate and RM have impact on job outcomes and serve as safety performance indicators. Three years ago Sorra et al., (2010) conducted a nation-wide patient-safety study, the agency for healthcare research and quality give emphasis to twelve areas including:

- (1) Non-penalize response to mistakes;
- (2) Error communication and feedback;
- (3) Employing;
- (4) Across units teamwork;
- (5) Management support for patient safety;
- (6) Communication openness;
- (7) learning-process in organization;
- (8) Within units teamwork
- (9) Frequency of event;
- (10) Supervisor actions/expectations in promoting safety;
- (11) Transitions/ handoffs; and
- (12) General patient-safety perceptions (Sorra et al., 2010).

Institute of Medicine (2000) reported that the ultimate medical flaws is not necessarily related to incompetent or bad personnel's instead it is related to good caring people who make honest mistakes while on duty in a complex and complicated environment. In addition, Johnston (2002) stated that human errors are inevitable, but implementing PS cultures and redesigning the work environment can help to prevent and improve patient safety and at the same time assist health care management to detect medical flaws and. The extent theoretical script has talked about types of patient safety climate; now we would like to explore the causes and factors enacting medical errors. Barry et al., (2002) argued that internal and external factors are the main causes of medical errors. Such that of these internal factors are associated to worn-out or depressed employees, scheduling errors and shortage of staffs. And external factors are linked to environment catastrophe

usually outside the control of healthcare management; for example suicide bombing, terrorism, earthquake or plane crash such that immediate medical attention is needed by injured patient, anxiety might lead to misconduct or carelessness of duty. Organizational RM provides reasonable explanation on the causes of medical errors (Scott et al., 2003). Based on the assumption of attribution theories “individuals are the primers of medical flaws, particularly the group-think ideology meaning those who make mistakes are not from our group. This psychology obstructs the pursuit for evidence in investigating the main flaw generator. Given this, unit’s RM may likely fabricate individual awareness regarding PSC. These variations across units are primarily driven by local leadership behavior, which directly or indirectly influences the climate for learning and safety (Edmondson, 2004). As mentioned above Edmondson’s study distinguished units based on related leader behavior. Consequently, Senge et al., (1994) proposed feedback loops to explain unpredictable effects that are the limitation of the simple linear model; his proposals were grounded to systems theory. This feedback loops are essential reference point for organization, in order to have matured quality and RM systems. Similarly, Hollnagel (2004) proposed “systemic accident model” arguing that the model is appropriate for complex systems especially when errors are “emerging phenomena” and are the outcome of accumulation of situations rather than the unpreventable impact of a chain of courses. Practically, a framework of cause and effect is required to suit the question and to design answers; ISO Guide (2009) advocates that RM managers should use cause-root effect to tackle risk and quality related issues. Linear models are sufficient for constructing simple cause and effect change plans, hence some errors can be explain using simple linear cause-effect assumptions. Those errors that cannot be explained using linear model can be explain by multiple cause effect assumptions, in

which feedback loops and system affects the operation. In these situations basic or complicated modus theories are required to clarify the nature of the events causing flaws to surface. Similarly, systems hypothesis may be necessary to create adequate successful resolutions to certain adjustments. Introducing sophisticated cause and effect ideas in hospitals and clinics is troublesome due to the prevalence of sociological and the psychological factors stated earlier. This illustrate the power of attribution of humans that is attribution theory; it shows the difficulties initiating root cause approaches that would be used by employees in healthcare organizations; to achieve advanced causes analysis and better prevention ways. It also highlights that highly compounded model of cause and effect may provide better scientific justification, but in real life they are difficult to implement due to their complex nature.

Errors and risk can be eliminated or reduce in healthcare organizations from total quality management (TQM) perspectives. Using total quality management various approaches can be employed to reduce the likelihood of medical flaws, prevent medical flaws and also reduce the unwanted impact of the flaws. In other words these processes are also referred to as risk management that eventually turns to safety climate initiatives which include possible methodologies for patient safety. In addition, RM and quality efforts are the central constructs that determine success in healthcare organization. Recently, medical administrators have identified that poor-quality care may likely affect organization root, and negligence may lead to incomplete and ineffective solutions. Previous research has demonstrates a set of RM related initiatives that may likely decrease adverse events and flaws impacts. They appear to reduce the likelihood of medical flaws and/or decrease the magnitude of the effects of medical errors for example



- Training and educating staffs,
- System re-design,
- Open discussion about errors,
- Partnership with stakeholders and
- Database Statistical analysis of error data. (McFadden et al. , 2004, 2006).

Nevertheless, successful implementation of total quality management requires the collaboration of different groups and unit functions responsible for quality maintenance including the employees, medical suppliers, customers and hospital executives (Flynn and Saladin, 2001; McFadden et al., 2006). Training employees is one of the essential element of total quality management systems (McFadden et al., 2006) correspondingly, workers in a health care system must receive sufficient training and education in error prevention techniques, to enable them carry out their duties with caution (Huq and Martin, 2000). This would enhance patient safety climate culture, for instance (Doolan and Bates, 2002) stated that medication errors can be reduce through the use of computerized medication order-entry system. Thus this can be achieved in health care organizations; if employees are well trained to use this kind of systems then the level of medication errors will be partially eliminated. Complementary, reporting information systems can be used to reduce medical errors (McFadden et al., 2006). Progressive training programs regarding health care risk management can enhance employee's perception of patient safety and also decrease malpractice lawsuits.

The prime element of total quality management is system redesign, which can be minimal or broader scale in the organizational system. Broader system redesign may comprise of process re-engineering of major health and clinical support processes. For example standardization of dose and prescription; with the implementation of computerized ordering and drug delivery process (Leape, 1996). Thus, results to overall improvements in the quality of health care. The aim here is to construct a new system without the previous mistakes or eliminating the potentials of error making. The minimal system redesign emphasizes on the implementation of computerized appointments; and medical history systems for nurses and doctors; order-entry system for ordering medications. Thus, the level of adverse effect and medication flaws will decline (Bates et al., 1998).

Open discussion of medical flaws and quality related problems with employees may reduce the medical flaws. Edmondson, (1996, 1999) noted that focus groups, mentorships and other techniques may foster open discussions about errors. He stated that they are found to be effective in reducing errors. For example, unit leader or a staff may be selected from a unit to attend risks identifying and goals defining seminars. The aim is to create an atmosphere in which knowledge and work intelligences are distributed freely; health care workers can freely talk about medical errors and their cause with their peers and unit leaders.

In health care organizations stakeholders include patients, administrators, trustee's doctors, or nurses. Perhaps, establishing partnership with stakeholders tend to generate better solutions that would lead to improvement in the organization. These people work

collectively; they know the limitations and capabilities of each other as well as daily processes (McFadden et al., 2006). In addition (Bushell and Shelest, 2002) claimed that establishing alliance with patients and families for example appointing previous sick person or present and along with families members to serve as of PS board members or family advisory councils; has proven useful in upgrading healthcare course of actions.

Statistical methods are alternative approach to prevent medical errors and a pathway for the development of high PSC health centers. (Becher and Chassin, 2001; (McFadden et al., 2006) pointed out that continuous data collection and statistical analysis of errors can lead to successful prevention of errors. Simple data collection is not enough, but with the implementation of quantitative techniques to analyze and understand the sources of medical flaws. Carey, (2003) stated that control charts can be use as a simple error technique for quantitative data analysis. Complex and comprehensive data can analyze with the aid of sophisticated statistical modeling techniques. These types of techniques measures complex relationships and interactions that occur between variables associated to aes-culapian flaws. For example, using a hierarchical regression or correlation analysis can pinpoint specific interaction, effect or mediation of certain factors that may increase the likelihood of medical mistakes. In health organization context these variables may include the level of training received, time of day e.g. night or daytime; machine failure; shortage of staffs and level of staff education. In such cases a single factor alone cannot provide relevant or reliable result, because it may depend on other factors and may be affected by other factors.

The PSC initiatives discussed above have constructive effect in weakening the possibilities and consequences of medical flaws. Nevertheless, the positive benefits of these initiatives can be experienced only if implemented within a hospital. Some researchers have identified possible barriers of the implementation of these initiatives. One, internal barriers include inadequate resources like staff, money equipment's and infrastructure; inadequate support from the hospital administrators; lack of know-how and partial understanding of errors (Leape, 1996; Becher and Chassin, 2001). Amplifying those barriers can originate from the health care organization itself. Secondly, external barriers are barriers that originated from to the external environment; for example reportage of medical errors by media firms is assumed to be another external barrier. In managed health care organization profit motives may reduce the level of resource provision, to allocate to errors reduction. External barriers tend to affect error reduction strategies and posses huge threat to medical malpractice e.g. performance below standard or injuries, so they can represent significant deterrents to reporting of errors (Becher and Chassin, 2001; McFadden et al., 2006) thus hindering patient safety climate initiatives. Literatures concerning the importance's of organizational risk management and patient safety culture has shown that most of the empirical studies are based on secondary data (Goh et al., 2013; Rivard et al., 2006), case studies (Odwasny et al., 2005) and surveys (Hoffman and Mark, 2006). Perhaps, this indicate a gap in the literature and the current study strives to fill in the gap using primary data rather than secondary. We believed that doing this will enhance and provide more meaningful results.

## **Chapter 3**

### **METHODOLOGY**

This chapter presents the research design adopted in this study, sampling technique, data gathering procedures and analysis. The research is quantitative in nature; this approach was employed to better understand the phenomenon at hand. The aim is to acquire an in-depth perception and knowledge risk management, quality and patient safety climate in healthcare organizations. To assess whether, prioritization of risk management can affect patient safety and quality in a positive way. Clinic management can benefit from this outcome as the basis of intervention approaches to improve safety climate.

#### **3.1 Sampling**

The study used stratified sampling technique. Stratified sample is a sampling methodology that divides non-overlapping strata or units into groups based on certain demographic variables for example gender, education, type of organization, culture e.t.c (Neville and Sidney, 2001). The groups are divided into strata popularly known as stratum. Perhaps, in order to obtain estimates of known precision for certain subdivisions of the target population; each stratum is treated separately as an independent entity.

#### **3.2 Data Collection**

Data was gathered from a stratified random sample of 80 health workers from each hospital, totaling 160. (Rosen et al., 2010; Singer et al., 2005, 2007) stated that patient-

safety-climate in health care organizations (PSCHO) survey variables are reliable and valid for measuring PSC in clinics and hospitals. Hence PSCHO was used to measure safety climate and Zamutto and Krakower (1991) surveys scales were used to measure hospital risk and quality management respectively. The measures were back translated to Turkish by two lingual experts.

A pilot survey was conducted using twenty (20) people; discrepancies were identified between the two questionnaires and necessary corrections were made. The research was conducted in Turkish language because majority of the population speaks Turkish, and it is the national and official Language in Northern Cyprus. During the survey some of the respondents were allowed to take the questionnaire home, to fill it at their convenient time to enhance the reception rate, quality of data and reliable result (Bronner and Kuijlen 2007). At last they were contacted to take the question sheets back and only 149 usable question sheets were used for analysis; because eleven (11) of them were discarded due to missing data's; hence 93 percent response rate was observed.

### **3.3 Questionnaire Design**

The study question sheets consist of five (5) sections with sixty eight (68) questions in total. First section contains nineteen (19) questions concerning patient safety climate (Rosen et al., 2010; Singer et al., 2005, 2007). Section two consist of seventeen questions (17) to assess quality of the health care system (Zamutto and Krakower, 1991). The third section measures the healthcare organization risk management with twenty one (21) questions (Zamutto and Krakower 1991); the fourth section contain four (4) general questions concerning risk management culture, patient safety culture and climate as well as satisfaction. In all the four sections the items were measured using five point scales

ranging from 5 = strongly disagree to 1 = strongly agree. The fifth section comprise of seven (7) demographic questions like area of specialty, age, tenure e.t.c. Five questions were measured with dichotomous responses and the remaining two were measured using five point scales. The items were not subjected to factor analysis since they are well established scales used in many studies. We conducted a reliability analysis on the items and cronbach's alpha was above the cut-off point (Nunnally, 1978) specified that above 0.70 signifies good construct.

### **3.4 Analytic Methods**

Frequency analysis was carried out to generate biographies of the respondents based on three demographic items. For example the hospitals employees desire to change the current organizational risk and quality management culture, the level of willingness to work in the same organization if time was to be reset. And in respect to overall work satisfaction. Independent t-test: We conducted an independent sample t-test to examine if there are any differences between the male and female employees in both hospitals. Further, to determine the difference between Lefkosa and Magusa hospitals regarding the adoption of patient safety climate and type of organizational risk and quality management. 95% confidence level and p- value is less than 0.10. One way ANOVA: The analysis of variance was used to determine whether the means of the three or more groups differs. In our study we want to examine if there are differences in responses based on occupation (Doctor, Nurse, Technician, Secretary and others). At 5% significance level, does the answers to the question differs according to their occupation.

## Chapter 4

### RESULTS AND FINDINGS

This chapter provides the outcome and findings of this empirical study, SPSS version 18.0 was used in the analysis. The characteristics of the participants were identified using frequency analysis; differences between the two hospitals and gender were reported using independent sample t-test. Lastly, in order to determine the difference between professions, we used ANOVA to generate the results. The sample consists of 69.8% female and 29.5% male. 55% of the staffs had worked for more than ten years, 14.9% had worked for seven to eight years while 16% worked between four to eight years. Regarding profession 25.7% of the respondents are physicians, 61.5% were nurses and midwives' and 8.1% were doctors. The rest consist of technicians and secretaries.

As stated earlier the result from our reliability analysis was above the cut-off point, the value of alpha was significant suggesting that the construct used were good (see table 1).

Table 1: Statistics of Reliability

Cronbach's Alpha	N of Items
.935	61



Table 2: Structural change desires

		Frequency	Percent	Valid Percent
Valid	1 Yes	132	88,6	88,6
	2 No	14	9,4	9,4
	99	3	2,0	2,0
	Total	149	100,0	100,0

Table 2 present the structural change desires and it shows the ratio of those employees who are not comfortable with the risk and quality management as well as patient safety climate practiced. The question “If you had authority, would you like to make any structural change?”. Based on the responses above (table 2), 88.6% of the employees want change and reform to take place in their current organizations.

Table 3: Current position and condition satisfaction

		Frequency	Percent	Valid Percent
Valid	1 Yes	26	17,4	17,4
	2 No	122	81,9	81,9
	99	1	,7	,7
	Total	149	100,0	100,0

Table 3 present current position and condition satisfaction of the healthcare employees and it shows the ratio of employees who were satisfied with their current positions and working conditions in both hospitals. They were asked the following question “If you were given the chance of being born again, would you like to choose the same position with the same conditions?”. Based on the responses above (table 3), 81.9% of the employees were not satisfied with there present work position and condition. If they had the chance, they would choose to work in a different organization, profession or

position. This highlights that the healthcare staffs from both hospitals want a different approach of management, even that of RM and quality. Based on our initial assumption, we assumed that there is no differences between male and female respondents. Hence we proposed the following propositions. If there are different approach to safety climate, risk and quality management between male and female in both hospitals. Secondly, we investigated whether there is different approach to safety climate, risk and quality management between Gazimagusa and Lefkosa hospital. Thirdly, which occupation that is more aligned to risk, safety and quality management.

Construct abbreviations

Patient safety climate = PSC

Quality system = QS.

Organizational risk management culture = ORMC

General questions = GQ

We found out that both hospitals exhibit similar or the same level of safety climate and possess quality system or approach to medical care. The organizational risk management culture of Gazimagusa hospital scores a higher mean than Lefkosa, indicating that the hospital in Gazimagusa advocates patient safety culture and climate more rather than blame culture. Given the result below (see table 4); we concluded that there are differences between male and female in respect to patient safety climate. Female staffs tends to possess or promote safety climate in their organizations.

Table 4: Independent sample test

		t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
					Lower	Upper
PSC2	Equal variances assumed	1,168	146	,245	-1,972	7,671
	Equal variances not assumed	1,790	105,66	,076	-,307	6,006
PSC8	Equal variances assumed	1,549	146	,124	-1,452	11,971
	Equal variances not assumed	2,378	104,58	,019	,874	9,645
PSC11	Equal variances assumed	-1,940	146	,054	-,769	,007
	Equal variances not assumed	-2,041	91,217	,044	-,752	-,010
PSC19	Equal variances assumed	2,248	146	,026	,059	,915
	Equal variances not assumed	2,265	82,424	,026	,059	,914
QS1	Equal variances assumed	2,142	146	,034	,037	,929
	Equal variances not assumed	2,159	82,433	,034	,038	,929
QS2	Equal variances assumed	2,631	146	,009	,149	1,049
	Equal variances not assumed	2,498	72,521	,015	,121	1,077
QS9	Equal variances assumed	-2,556	146	,012	-9,005	-1,151
	Equal variances not assumed	-1,660	43,126	,104	-11,246	1,090
QS12	Equal variances assumed	1,779	146	,077	-,040	,753
	Equal variances not assumed	1,883	92,460	,063	-,020	,733
ORMC3	Equal variances assumed	-2,239	146	,027	-8,374	-,521
	Equal variances not assumed	-1,453	43,089	,154	-10,621	1,726
GQ1	Equal variances assumed	1,712	146	,089	-,898	12,506
	Equal variances not assumed	2,632	103,78	,010	1,432	10,177
GQ2	Equal variances assumed	1,231	146	,220	-1,818	7,816
	Equal variances not assumed	1,889	104,85	,062	-,150	6,148
GQ3	Equal variances assumed	1,322	146	,188	-1,835	9,257
	Equal variances not assumed	2,029	104,98	,045	,084	7,337
GQ4	Equal variances assumed	1,224	146	,223	-1,827	7,769
	Equal variances not assumed	1,875	105,56	,063	-,170	6,112

Table 5: ANOVA's result for patient safety climate and quality

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
PSC17	Between Groups	1883,277	5	376,655	7,399	,000
	Within Groups	7279,945	143	50,909		
	Total	9163,221	148			
QS6	Between Groups	10814,802	5	2162,96	18,875	,000
	Within Groups	16386,768	143	114,593		
	Total	27201,570	148			
QS7	Between Groups	9180,974	5	1836,19	1367,06	,000
	Within Groups	192,073	143	1,343		
	Total	9373,047	148			
QS8	Between Groups	9264,391	5	1852,87	1217,38	,000
	Within Groups	217,649	143	1,522		
	Total	9482,040	148			
QS9	Between Groups	9311,341	5	1862,26	14,536	,000
	Within Groups	18320,082	143	128,112		
	Total	27631,423	148			
QS10	Between Groups	9254,625	5	1850,92	14,504	,000
	Within Groups	18248,422	143	127,611		
	Total	27503,047	148			
QS11	Between Groups	9150,176	5	1830,03	14,433	,000
	Within Groups	18131,153	143	126,791		
	Total	27281,329	148			
QS12	Between Groups	9170,153	5	1834,03	1439,36	,000
	Within Groups	182,210	143	1,274		
	Total	9352,362	148			
QS13	Between Groups	9180,528	5	1836,10	14,406	,000
	Within Groups	18225,633	143	127,452		
	Total	27406,161	148			
QS14	Between Groups	9102,000	5	1820,40	1387,83	,000
	Within Groups	187,571	143	1,312		
	Total	9289,570	148			
QS15	Between Groups	9103,983	5	1820,79	1649,16	,000
	Within Groups	157,882	143	1,104		
	Total	9261,866	148			
QS16	Between Groups	9085,003	5	1817,00	28,016	,000
	Within Groups	9274,406	143	64,856		
	Total	18359,409	148			
QS17	Between Groups	9312,486	5	1862,49	29,471	,000
	Within Groups	9037,353	143	63,198		
	Total	18349,839	148			

Table 6: ANOVAs result for organization risk management culture I

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
ORMC1	Between Groups	9026,746	5	1805,34	1770,78	,000
	Within Groups	145,791	143	1,020		
	Total	9172,537	148			
ORMC2	Between Groups	9140,237	5	1828,04	28,243	,000
	Within Groups	9255,628	143	64,725		
	Total	18395,866	148			
ORMC3	Between Groups	10187,991	5	2037,59	16,944	,000
	Within Groups	17196,895	143	120,258		
	Total	27384,886	148			
ORMC4	Between Groups	9123,524	5	1824,70	28,179	,000
	Within Groups	9259,791	143	64,754		
	Total	18383,315	148			
ORMC5	Between Groups	10670,390	5	2134,07	11,937	,000
	Within Groups	25564,402	143	178,772		
	Total	36234,792	148			
ORMC6	Between Groups	9206,022	5	1841,20	1973,69	,000
	Within Groups	133,401	143	,933		
	Total	9339,423	148			
ORMC7	Between Groups	9145,873	5	1829,17	28,245	,000
	Within Groups	9260,798	143	64,761		
	Total	18406,671	148			
ORMC8	Between Groups	10862,071	5	2172,41	41,354	,000
	Within Groups	7512,064	143	52,532		
	Total	18374,134	148			
ORMC9	Between Groups	9201,334	5	1840,26	1980,60	,000
	Within Groups	132,867	143	,929		
	Total	9334,201	148			
ORMC10	Between Groups	8965,343	5	1793,06	7,145	,000
	Within Groups	35885,489	143	250,947		
	Total	44850,832	148			
ORMC11	Between Groups	9396,174	5	1879,23	29,770	,000
	Within Groups	9026,765	143	63,124		
	Total	18422,940	148			

Table 7: ANOVAs result for organization risk management culture II

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
ORMC12	Between Groups	10245,013	5	2049,00	17,090	,000
	Within Groups	17145,161	143	119,896		
	Total	27390,174	148			
ORMC13	Between Groups	9145,236	5	1829,04	28,093	,000
	Within Groups	9310,334	143	65,107		
	Total	18455,570	148			
ORMC14	Between Groups	9181,563	5	1836,31	1329,68	,000
	Within Groups	197,484	143	1,381		
	Total	9379,047	148			
ORMC15	Between Groups	9184,174	5	1836,83	1535,40	,000
	Within Groups	171,074	143	1,196		
	Total	9355,248	148			
ORMC16	Between Groups	9121,810	5	1824,36	28,099	,000
	Within Groups	9284,378	143	64,926		
	Total	18406,188	148			
ORMC17	Between Groups	9238,210	5	1847,64	14,501	,000
	Within Groups	18220,837	143	127,418		
	Total	27459,047	148			
ORMC18	Between Groups	10720,750	5	2144,15	18,371	,000
	Within Groups	16690,203	143	116,715		
	Total	27410,953	148			
ORMC19	Between Groups	9036,726	5	1807,34	9,599	,000
	Within Groups	26924,683	143	188,284		
	Total	35961,409	148			
ORMC20	Between Groups	9181,940	5	1836,38	7,346	,000
	Within Groups	35749,953	143	250,000		
	Total	44931,893	148			
ORMC21	Between Groups	9123,980	5	1824,79	28,054	,000
	Within Groups	9301,510	143	65,046		
	Total	18425,490	148			

Table 8: ANOVAs result for general questions

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
GQ1	Between Groups	10334,571	5	2066,91	5,795	,000
	Within Groups	51007,590	143	356,696		
	Total	61342,161	148			
GQ2	Between Groups	9302,107	5	1860,42	10,027	,000
	Within Groups	26533,249	143	185,547		
	Total	35835,356	148			
GQ3	Between Groups	9515,712	5	1903,14	7,752	,000
	Within Groups	35107,697	143	245,508		
	Total	44623,409	148			
GQ4	Between Groups	9166,532	5	1833,30	9,937	,000
	Within Groups	26382,595	143	184,494		
	Total	35549,128	148			

As stated in the methodology section, we conducted one-way ANOVA test, the aim of this test is to test more than two (2) variables at a time which cannot be done with t-test. The test was to see which category of employees posses more PSC than others, The test was conducted on all the question sets. Based on the ANOVA result presented in the tables above (5, 6, 7 and 8), we concluded that there are differences regarding occupations. In our findings F values was significant ( $p < .001$ ). Nurses and doctors were more kin to manage risk, safety and quality affairs in both hospitals better than physicians and administrative staffs. They posses more safety and risk management culture than their counterparts.

## Chapter 5

### DISCUSSIONS AND CONCLUSIONS

In spite of the widely accepted RM techniques and models, RM is still a buzzword and no one can deny the fact that RM is not easy. RM cannot be managed by specialist or top executives alone in healthcare centers, considering that risk are in every corner and unpredicted in most medical facilities. Therefore, all parties involved in medical operation must be fully committed and aware of potential as well as the consequences of risk. In order to have fully committed employees, hospital management must create an interactive RM systems. These systems should encourage open discussion without fear of retribution, total quality management system, documenting previous mistakes and learning from it and lastly educating staffs.

Prioritization of risks is the key aspect of RM due to the ranking of potential risk and its effect, hence analyzing faults and eliminating causes may seems more easier. The objectives of classic risk and quality management is to reduce variation in routine situations. Grabowski and Roberts (1999) proposed four factors can could assist RM which are in line with our findings.

- *Fluidity in workplace* structure, especially in healthcare organizational is essential. For example if crisis should happen, there would be crisis management team to respond immediately. Fluid structures allows employee empowerments



which in turn supports accurate and rapid information flow, that serves as another key aspect of risk management.

- *Communication* creates a clear blueprint by adding sense to what might happen or that is currently happening or what has happened and its impact as well as possible brainstorming techniques to provide solution to the event.
- Third, collaboration or cohesive cultures, that include the propensity to learn from mistakes and to exchange best practice is key.
- Lastly, trust must exist between the parties in the organization, Mayer et al., (1995) stated that trust is the willingness of an individual to become dependent on others with the expectation that they will fulfil the expected action, without monitoring or controlling them. In the absence of trust, commitment cannot be visible; invisibility of commitment automatically leads to greater risk.

Risk management and communication is a complicated cross-disciplinary academic field. One of the drawbacks of risk communication is the ability to properly reach the intended audience, explain the risk in a comprehensive manner considering the audience values and norms to risk and also to anticipate their prospective response in respect of the communicated risk (Fischer and Ferlie, 2013). So, quality can also learn something from the risk management approaches, especially regarding the importance of clear prioritization. Safety climate in combination with certain sociological and psychological theory can provide a comprehension of the holdback in acknowledging the problem as well as the confusion and ambiguity experienced utilizing contemporary safety apparatus or methods and their application in hospitals and clinics. Understanding this can assist managers to invent a sustainable and effective safety measures; on the other

hand guides scholars in developing a comprehensive and reliable organizational safety theory. Various industries and sectors are using safety climate surveys in conjunction with RM techniques, to enhance quality and decrease adverse events. Healthcare procedures are becoming more and more complex and the probability of making mistakes are increasing; considering the research outcome from various nations like Canada and U.S suggesting that there is need for increase safety in healthcare organization because most of the injuries and deaths are preventable.

Based on our findings, the healthcare staffs are unhappy with their jobs and the current management or authority in the organization; they want structural reforms. Organization change as mentioned earlier is difficult and slow. Although we did not consider the effect of management style but one reason might be the blame cultural practice in oriental societies like Northern Cyprus. Secondly, RM approaches and high power distance may influence information sharing and cohesive teamwork. But proper implementation of learning culture in respect to RM procedures can promote safety climate. Another interesting finding is that women working in healthcare organizations posses more safety culture than men. Overall there safety climate is positively related to tenure and direct contact with patient. For example nurses tends to posses more safety culture than administrative staffs, this finding has positive support from bothe t-test and ANOVA. Although, there safety climate receives positive ratings. One reason maybe tendency of people despises social biases, related to attribution theory. In addition support and information sharing by group leaders and within team members increases the perceived importances of patient safety. Our result is in line with (Grabowski and Roberts, 1999) study and (Flin et al., 2000) study which noted that the importance of

management support for safety climate is critical in determining the workers perception of safety climate. Similar to the RM approach specified above.

Further, healthcare employees perceive higher level of patient safety when they have experience team members across units and a unit-level management that promotes patient safety. Our findings illustrates that variation exist regarding the perception of safety climate based on occupation; nurses and doctors have higher patient safety culture than physicians and management staffs. This result should be evaluated with caution because of the imbalance in our sample. The outcome of this thesis extends the existing theoretical framework on safety climates and risk management. We pointed out the importances of RM culture and its influence on safety climate perception. Indicating that its plays a role and shape workforce cognition and practice. Taken together developmental and constructive implementation of RM cultures are important and robust construct in health care organizations, thus their subsequent implementation could enhance safety culture which promotes safety climates and reduce adverse events.

To better understand how to enhance safety climates in hospitals, the issue must be approached with pragmatic organizational and management perspective. In order to have a successful and appropriate safety culture that fits the organizational RM culture and approach. It is necessary to construct and develop previous errors learning emphasis within the organization, teamwork and collaboration between professionals in the healthcare facility. In addition focusing on management processes and not just medics can contribute to patient safety and safety climate. Gohet al., (2013) suggested that a comprehensive empirical study to test the relational strengths among these variables in

the conceptual framework would add further insight and knowledge to understanding how to improve patient care and safety in healthcare institutions. As for hospital administrators who advocates change, these theories present an exciting opportunities for them to accomplish their goals. Education can be use as one of the ways to increase the awareness of patient safety initiatives and to make personnel and line-staffs to recognize the significance PSI's. Further, another way to achieve this is through seminars, conferences and research efforts. Managerial approaches promoting the instrumentation of PSI's can also take the form of reducing or eliminating barriers that have the tendency to stop the enforcement of the PSIs. McFadden et al., (2006). Consistent with prior research (Kaissi, 2007). We found out that strong group culture is highly correlated with strong safety climate and culture. Cohesive group culture is described by reciprocal respect, which may boost the psychological safety interventions required to surface safety dispute into open air discussion (Edmondson, 1999).

### **5.1 Limitations and future research directions**

The research has certain limitations, for example data was collected through a cross-sectional design; this type of research design is susceptible to potential common method bias. As such future researchers are advised to evaluate these causal claims by using a longitudinal design approach. The health care employees provided the data used in this study; however patient safety climate, quality, organizational risk management culture reflects an organizational phenomenon. Future studies should standardize the variables by conducting inter-rater agreement analysis. Our findings are limited to Northern Cyprus only; hence the results may not be widely generalizable to other countries and cultural contexts. In addition we did not evaluate the type of management and

organizational justices practiced; they may have impact on the employee's job satisfaction and thus hinders safety climate and increase deviant behaviors. Future study should consider this.

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