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THE ASSOCIATION BETWEEN ORGANIZATIONAL CULTURE AND INDIVIDUAL FACTORS ON MEDICAL PRACTICE

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THE ASSOCIATION BETWEEN ORGANIZATIONAL CULTURE AND INDIVIDUAL FACTORS ON MEDICAL PRACTICE

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

THE ASSOCIATION BETWEEN ORGANIZATIONAL CULTURE AND INDIVIDUAL FACTORS ON MEDICAL PRACTICE

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The aim of the present research was to investigate the relationships between patient safety culture within hospitals and individual factors on medical practice among physicians. A total of 240 physicians from ten different hospitals completed the Medical Practice Questionnaire, Hospital Survey on Patient Safety Culture, Maslach Burnout Inventory and Eysenck Personality Questionnaire Revised- Abbreviated Form. In order to assess frequency and types of medical errors, Medical Practice Questionnaire was developed by the author. Factor analysis of this Questionnaire demonstrated the existence of four subscales named as Patient Management/Information Delivery Errors, Execution Errors, Procedure Related errors and One Source Errors. ANOVA results revealed that males conduct more Procedure Related Errors than females. In support of the hypothesis, a number of differences observed on patient safety culture between types of institutions that public hospitals received lower scores on most of the safety dimensions. Regression analysis results revealed that personality dimensions and burnout levels were significantly related to types and frequency of errors. Considering significant predictors, while the extravert participants were found to report more Patient Management/Information Delivery, Execution and Procedure Related errors, Neurotics were found to report lower levels of errors on these three dimensions.

Regression analysis of burnout levels showed that depersonalization were also associated with these three error dimensions.The level of depersonalization were found to increase the frequency of Patient Management/Information Delivery, Execution and Procedure Related Errors. The research findings however, did not support the assertion in a manner that safety culture dimensions were not found to have main effects on types of errors. The limitations of the current research and implications for further research were discussed.

Keywords: Medical Error, Patient Safety, Personality, Burnout

ÖZ

TIBBI UYGULAMA ÜZERİNDE KURUMSAL KÜLTÜR VE BİREYSEL FAKTÖRLER ARASI İLİŞKİ

Saraç, Çakıl
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Bu çalışmanın amacı, tıbbi uygulamalar üzerinde, hasta güvenliği kültürü ve hekimler arası bireysel faktörleri incelemektir. On farklı hastaneden toplam 240 hekim Tıbbi Uygulama Ölçeği, Hasta Güvenliği Kültürü üzerine Hastane Anketi, Masclach Tükenmişlik Ölçeği ve Eysenck Kişilik Anketi-gözden Geçirilmiş Kısaltılmış Formu'nu (EKA-GGK) doldurdu. Tıbbi Uyglama Ölçeği, tıbbi hataların sıklığını ve çeşitlerini değerlendirmek amacıyla yazar tarafından geliştirilmiştir. Yapılan faktör analizi bu ölçeğin dört alt boyuttan oluştuğunu göstermiştir, bunlar; Hasta Yönetimi/Bilgi Aktarımı Hataları, Uygulama Hataları, Prosedürle İlgili Hatalar ve Tek Kaynak Hatalarıdır. Yapılan ANOVA sonuçları, erkeklerin kadınlara göre daha fazla Prosedürle ilgili Hatalar yaptığını ortaya koymuştur. Hasta güvenliği kültürü üzerinde kurumlar arası fark bulunmuştur ve kamu hastaneleri bir çok güvenlik alt boyutunda düşük puanlar elde etmiştir. Regresyon analizi sonuçlarına göre, kişilik boyutları ve tükenmişlik düzeyleri yapılan hata çeşitleri ve sıklıklarını anlamlı olarak etkilemiştir. Bu anlamlı çıkan faktörler göz önüne alındığında, dışa dönük katılımcılar daha fazla Hasta Yönetimi/Bilgi Aktarımı Hataları, Uygulama Hataları, Prosedürle İlgili Hatalar rapor ederken, nörotizm boyunta yüksek olanlar bu üç kategoride daha az hata rapor etmişlerdir. Regresyon analizleri, duyarsızlaşma tükenmişlik alt boyutunun da bu üç hata tipiyle ilşkili olduğunu göstermiştir.

Duyarsızlaşma boyutunun, Hasta Yönetimi/Bilgi Aktarımı, Uygulama ve Prosedürle İlgili Hata sıklıklarını arttırdığı bulunmuştur. Ancak araştırma sonuçları, hasta güvenliği kültürü boyutlarının tahmin edildiği gibi hata türleri ve sıklıkları üzerinde etkisi olmadığını göstermiştir. Bu araştırmanın sınırlılıkları tartışılarak ileriki araştırmalar için doğurguları ele alınmıştır.

Anahtar Kelimeler: Tıbbi Hata, Hasta Güvenliği, Kişilik, Tükenmişlik

To my beautiful family
and
my adorable little niece Deniz....

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CHAPTER I

1. INTRODUCTION

The Institute of Medicine Report (Kohn LT, Corrigan & Donaldson, 2000) stated that ‘‘The national costs of preventable adverse events (medical errors resulting in injury) are estimated to be between $17 billion and $29 billion, of which health care costs represent over one-half’’. Such a statement immediately captured attention by both helathcare workers and the public. Since then, reserachers put great interest in studying medical errors or one would say adverse events and the underlying conditions beneath them at both organizational and individual levels. The related characteristics of medical practice has been recently subject to many studies in Western countries especially in USA, Canada, Australia and United Kingdom for nearly two decades. Unfortunately, not much research has been done on this issue in Turkey since, there is even no incident reporting system exists within hospitals. In this respect, this study investigated the factors related to medical errors. The association of some demographic variables and some psychological variables namely working hours, degree of burnout (emotional exhaustion, depersonalization, personal accomplishment), personality (neuroticism, extraversion, psychoticism) and safety climate with 12 different dimension (Teamwork within units, Supervisor/Manager expectations & actions promoting patient safety, Management support for patient safety, Organizational learning-continous improvements, overall percepcitions about patient safety, Feedback and communication about error, Communication openness, Frequency of events reported, Teamwork across units, Staffing, Handoffs &Transitions, Nonpunitive Response to error) were studied in order to assess the relationship to frequency and types of medical errors.

1.1. The concept of Human Error

Most of the researchers adopted the definition of error as it was used in Institute of Medicine Report (Kohn LT, Corrigan & Donaldson, 2000) which is ‘the failure of a

planned action to be completed as intended or the use of a wrong plan to achieve an aim'. Researches have investigated the concept of error in many ways. In 'Human Error', James Reason (1990) provided a theoretical framework in order to explain 'Human Error' and integrated the body of work done on the concept.

Reason (1990), identified three main error types according to the stages in conceiving and carrying out an action sequence. In this categorization, errors that occur in planning stage are called *mistakes,* in storage stage are called *lapses* and finally in execution stage are called *slips.*

Lapses involve failure of the memory in carrying out a plan (picking up the coat to go out while the phone rings. However, after answering the phone, going out without the coat), in the execution stage, slips occur when the actions deviate from what is planned (intending to close the window as it is cold but closing the cupboard door instead) whereas mistakes involve choosing an inadequate plan to achieve the identified plan (using half-inch wrench to turn three quarter-inch bolt). According to Reason (1990), in slips and lapses, actions do not occur as they are planned. However; in mistakes the chosen plan is inadequate itself.

Reason (2000) distinguishes two approaches in studying Human Error in which each of the approaches has their own causation attributions and as a result their own error management models.

The ''Person approach'' focuses on individual errors and causation of errors scrutinizes mental processes such as forgetfulness. This view is accused of putting all the blame on the individuals' shoulders. Not also from the medical domain, but also for other high risk industries, Reason (2000) does not believe in the argument that adopting the person approach will be helpful in building safer health institutions and high risk industries.

On the other hand, holders of the system approach mainly concentrates on the conditions in which individuals work and try to prevent errors and minimize their effects (Reason, 2000). In the beginning, they accept that errors can occur everywhere and rather than blaming the individual, they discuss the conditions of workplace. Although person approach prefers to ask 'Who?', system approach asks 'Why?'.

From the ''System approach'' perspective, Reason (2000) formulates a Swiss Cheese Model for the system accidents. Each high technology organization has defenses and barriers in its system which takes their parts to protect the system from potential victims. In a perfect organization, each layer is expected to be perfect. However, in the reality, they retain many holes in them. Holes in one layer do not have to lead to a bad outcome but penetrating through multiple defense layers can result in an adverse outcome.

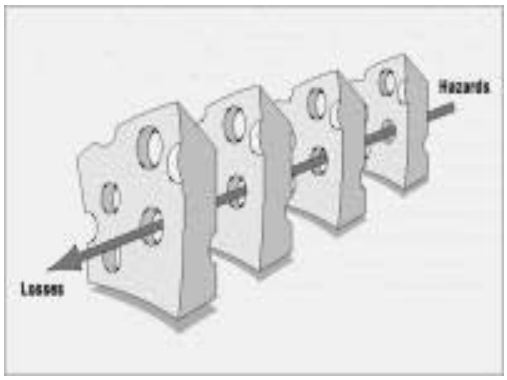


Figure 1. The Swiss cheese model of how defenses, barriers, and safeguards may be penetrated by an accident trajectory

Reason (2000) describes two reasons for the causation of the errors (holes in each layer): Active errors and latent conditions. While active errors are errors of the individual who has a direct contact with system, the latent conditions can be regarded as system flaws (Reason, 1990). Latent conditions lie in the system and may arise from the decisions of high decision makers or managers. Latent conditions can either lead to work conditions which can provoke errors such as time pressure,

fatigue or may cause long lasting holes in defense layers such as unworkable procedures. Most significantly, not only these latent conditions can remain in the system until an error occurs and create a great potential for future adverse events but also they can be identified before an error or an accident occurs in the system which can be beneficial in error prevention (Reason, 1990).

1.1.1 Medical Errors

In most of the studies investigating medical errors, the definition of error was chosen from the IOM Report mentioned above. In one study (Chaudry, Olofiboba, Krumholz, 2003) that was conducted in order to identify the types, frequency and consequences of errors that can be detected by attending hospitalist physicians and by other providers, again this definition was used in order to encompass all errors, regardless of their actual outcome. However, some studies prefer to employ the term 'adverse events' instead of error.

1.1.2 Medical Error Studies

Institute of Medicine Report (IOM) which created a great public attention (Kohn LT, Corrigan & Donaldson, 2000) stated that between 44.000 and 98.000 hospitalized patients die each year in Unites States as a result of preventable medical errors. However, after the estimation of such statistics, numbers of studies have been conducted in order to assess the accuracy of these large numbers because the IOM committee was not clear about calculating the number of deaths due to preventable errors.

IOM Report was mainly based on two studies, one was done in New York in 1984 (Brennan, Leape, Laird, et. al, 1991) and the other in Utah and Colorado in 1992 (Thomas, Studdert, Burstin, et al. 2000).

Harvard Medical Practice Study (Brennan, Leape, Laird, 1991) was based on the non-psychiatric hospital discharges in New York in 1984. It was not the first to mention adverse events in the health care system but after the release of IOM Report, which was based on its estimates, it became a classic study. At the first stage, trained nurses and medical record analysts searched the medical records for at least one criterion for an increased risk for an adverse event. In the next step, if the record was positive, physicians independently reviewed the record for evidence of an adverse event and negligence and on a 6 point scale they rated their confidence. If the level of confidence was at least 4, the event was in fact an adverse event.

In that study, adverse events were defined as ‘‘injury caused by medical management (rather than the underlying disease) and that prolonged hospitalization, produced disability at the time of discharge, or both’’ and negligence as ‘‘care that fell below the standard expected of physicians in their community’’. After the occurrence of an adverse event, they determined the disability and looked for the evidence of negligence and again estimated the level of confidence. Events with ≥4 confidence level were regarded to be due to negligence.

In the study, incidence rates of adverse events were found to be 3,7% and 27,6% of these adverse events were due to negligence. Negligence frequency was compared between patients who had adverse events. It was estimated that it was less frequent in patients whose adverse events resulted in disabilities lasting less than one month than the patients who had more severe adverse events.

Methods adopted in Utah Colorado study were similar to methods in New York study. Investigators have found that frequency of adverse events were 2, 9% in each state and the proportions of adverse events due to negligence were 32, 6% in Utah and 27, 5 % in Colorado.

These two classic studies briefly searched for adverse events. The methods that were adopted were based on nurses’ and physicians’ subjective judgments on hospital

records whether an adverse event had occurred. In their article, Sox and Woloshin (2000) have argued about the accuracy of these estimated numbers. They mentioned that both of the studies seemed unlikely to miscount the frequency of adverse events, in contrast they could be underestimating the results for two reasons; both of them were based only on hospitalized patients and their medical records.

IOM Report calculated that the implied number by Utah-Colorado Study was 44,000 deaths which were due to medical errors while it was 98,000 suggested by the Harvard study. However, according to Harrington (2000) neither of them were medical error studies. Their aim was only to investigate incidences of adverse events and negligence in hospitalized patients. Sox and Woloshin (2000) also underlined the same point by adding that both of the original studies did not define 'preventable adverse events'.

In a later published article, reanalysis were done for the original studies. In 1993, the two original authors of Harvard Medical Practice Study (Leape et al., 1993) classified the adverse events as preventable (69,6%), potentially preventable (6,0%) and not preventable (24,4%) by reviewing the summaries of adverse events in the study. The interrater reliability was not measured by the authors claiming that it was unnecessary since it was found to be good in a similar unpublished study. In 1999 (Thomas, Studdert, et. al., 1999), reanalysis of the Utah-Colorado study, it was found that approximately half of the adverse events were preventable by the same method used by New York study in 1999 and the interrater reliability was found excellent. However, it was criticized that the judgments were based only on the summaries of the adverse events not the medical record itself (Sox, Woloshin 2000).
Again in the article by the author of the one of the above mentioned studies (Brennan, 2000), one concern was expressed about the IOM Report statements. According to Brennan, defining preventability is not that easy in a way that can be influenced by other factors (e.g. expenditures) and the agreement of the preventability of an adverse event among the investigators in the study may not reflect an average physician's view.

In the line with Harrington's (2005) assertion that neither of the studies were medical error studies, Brennan (2000) also underlined that neither of them included judgments about adverse events that were the results of medical errors by adding that such judgments can not be made reliably.

Debates have been going on after the release of IOM report in many ways. Other than pointing the difficulty of measuring error, the results have gained a great attention by the media and public. However, the primary message of the report was overshadowed that broad changes should be done in the health care system (Harrington, 2005). The report called for more systematic approaches in order to reduce the adverse events (Kohn, Corringhan, Donaldson, 2000). Although, the authors of the report were arguing against the system failures rather than blaming the individual, they were accused of the impression that was created in the media that health care providers were not doing much by the usage of the term 'error' (Harrington, 2005, Brennan, 2000). There is no clear distinction between an adverse event and an error as mentioned earlier. IOM report makes this distinction on the basis of preventability where as physicians may not reach to an agreement if the outcome was preventable. Harrington (2005) gives an example to clarify his statement; '' if a physician delays in diagnosing cancer and the patient dies, it may be difficult to decide whether the death is due to the delay or the cancer''.

Number of other studies conducted with similar strategies in Australia and Canada. While Canadian sample had a rate of 7, 5% (Wilson, Runciman, Gibberd, et. al, 1995), Australian investigators (Baker, Norton, Flintoft, Blais, Brown & Etchells, 2004) found that 16,6% of the hospital admissions (over 14000 admissions in total) were associated with adverse events, which was a much higher estimate than the New York and Utah-Colorado studies. Later, a comparison has been made between Utah-Colorado and Australia study in order to understand the differences between two studies. After the comparisons, main differences were found to remain in methodology and in their aims (Thomas, Studdert, Runciman, Webb, Sexton, Wilson, et. al.).

On the way of reducing medical errors, IOM Report called for two ways of reporting systems: mandatory and voluntary reporting. While mandatory reporting is for the errors, which caused deaths and serious injuries; voluntary reporting is for other mistakes, such as near misses. They also differ in their aims; system in which reporting is mandatory includes public disclosure and aims to put the responsibility on health care providers for their errors including certain penalties whereas voluntary reporting aims to capture systemic errors before they occur. These two distinct systems held a great place in the literature.

Firstly, debates have raised questions whether the reporting should be mandatory or voluntary in a way that involves public disclosure. Harrington (2005) argued for a mandatory system but against the penalties given to individuals as a consequence for their errors and also the public disclosure. He underlines the importance of confidentiality as Brennan does. Brennan (2000) claims that without confidentiality, the accuracy of voluntary reporting would be doubtful and with public disclosure the rates of the lawsuits in medical care would increase which would also lower the interest of voluntary reporting. According to him, after the great attention on health care system with IOM Report, only if mandatory reporting is brought as a solution, it is an evidence of a failure. The fear of malpractice litigations would lead the physicians to go underreporting of adverse events due to medical care which would be a great barrier on the way of error prevention. Underreporting is also mentioned by others. It was stated that in an environment that is full of expectations about health care providers to be all error free creates their reluctance to error reporting which can result in inaccurate error measures (Weingart, Wilson, Gibberd, 2000, Pietra, Shyavitz, Smith, Auerbach, 2000).

There are other interesting studies which adopted different methodologies. One used the observation method to assess the rates of adverse events (Andrews, Stocking, Krizek, Lancet, 1997). They defined an adverse events as ‘‘situations in which an inappropriate decision was made when, at the time, an appropriate alternative could have been chosen’’.

The trained observers attended many hospital settings and recorded all the adverse events that were discussed during these settings. Other than the methodology, the difference of the study from the above mentioned researches is that they included adverse events which did not result in any harm. Because they defended that if the considering event had repeated, it could harm that patient or another patient. In a total of 1047 patient sample, 480 (45, 8%) adverse events were identified, serious adverse event rate was 17,7%. Later they grouped the causes of the adverse events in three categories and found that 37, 8% of the adverse events caused by an individual, 15,6% had interactive causes and 9,8% were due to administrative decisions.

Houstan and Allt (1999) investigated the changes in psychological state and the tendency to make errors of subjects between at the end of junior house officer year (time I) and eight weeks later (time II) at the beginning of their senior house officer year. Results revealed that although they continue experiencing some kind of distress at the beginning of their senior house officer year, a decrease of everyday error and medical error rate was found when compared with two different time intervals. A significant difference of this study was the use of self-report measure of medical error frequency.

1.2. Safety Culture

Although the concept of safety culture has started to be studied after the Chernobyl disaster in 1986 (Pidegon, 1991), safety culture that manifest itself through organizational attitudes, processes or actions is not that new (Ostrom, Wilhelmsen, Kaplan, 1993). More than the last two decades, concern over hazardous technologies created a great opportunity for safety studies (Reason, 1998). Unfortunately there is no universally accepted definition of safety culture and even debates have been going on between the preference of adopting the term culture or climate. Both of the terms have been defined in different ways by different authors.

In his review Guldenmund (2000) gave a brief summary on the developments of the terms in the literature. Mainly, conceptual and methodological issues have been discussed. For example, Glick (1985) argues that while the concept of climate is stemmed from social psychology, culture is rooted in anthropology, in which Bridge (as cited in Sorensen) warns about the oversimplification of usage of borrowed terms from other fields in a manner that the concept can lose much of its' meaning when compared to the field where it belongs. After certain definitions of the two terms, Gundenmund (2000) refers safety climate as attitudes towards safety in an organization or putting the other way its' members's attitudes makes up safety climate whereas safety culture is strong dogmas underlying these attitudes that climate expresses itself through culture. Another distinction appears methodologically; while self-administered questionnaires are used to assess safety climate, which has a similarity with attitude measurements, interviews and observations are used to measure safety culture (Guldenmund, 2000).

Uniqueness of each organizational culture makes it harder to explain what constitutes a good safety culture. Although there can be many factors influencing the culture of safety within an organization, some should be in common. Pidegon (1991) mentions the positive attitudes of employees towards safety and their readiness to improve safety in an organization such as seeking information, addressing safety concerns or asking for help in risky or erroneous situations and management also rewarding each individual giving attention to safety performance. A good safety culture would involve not only correcting the mistakes, but also learning from each incident and addressing the problems throughout the wholesystem. These efforts altogether makes the process a teamwork which captures all groups from bottom to top.

James Reason (1998) describes ideal culture of safety as an 'engine' that drives the system away from system hazards regardless of the individual factors which is not easy to accomplish in the real world. However, it is also a worthful goal that efforts should be put on to sustain. According to him, culture of safety can be gained only

with a great knowledge of technical, human and environmental factors within the system even in the absence of bad outcomes.

1.2.1 Patient Safety

After the release of IOM Report, other than safety studies in high hazardous organizations, the concept has come to interest also in heathcare system. The whole health care industry soon started to give this issue a high priority and started to look for the ways to prevent erors (Al- Assaf, Bumpus, Carter, Dixon, 2003).

IOM Report refers Patient safety as ‘‘prevention of iatrogenic injury - that is, injuries caused by medical management as opposed to the patient’s underlying disease process’’ (Kohn LT, Corrigan & Donaldson, 2000). Even though safety studies had started to be conducted more than a decade , no real attention was put on improvements of patient safety before the release of the IOM Report (Al- Assaf, Bumpus, Carter, Dixon, 2003).

Although error prevention approaches were borrowed from other industries, the application of the same methods to healthcare industry was not that easy (Gaba, 2001). As being one of the most people oriented business, it should be accepted that human error would be inevitable with so much human involvement as in it. This places the reliability on individuals. On the other hand, healtcare system as a whole holds a great complexity; meaning different disciplines working together interdependently as a system (Al-Assaf, Bumpus, Carter, Dixon, 2003). The system dynamically increases in its complexity and with the growing technology, new challenges are faced with to cope with, it becomes harder to keep up with the new knowledge in maintaining the safety (Ralston, Larson, 2005).

In a comparasion of medical care and aviation, Helmreich (2000) claimed that there is no standardized investigation in medical care and that the system flaws do receive publicity. Whereas in aviation, errors are highly visible, this resulted in standardized

documentation. In aviation, approaches such as team focused management and feedbacks in the organization are one of the ways in dealing with errors. Borrowing such an engineering approach to health care system was also criticized by due its tons of small modifications in the system and claiming its effectiveness (Leape, Berwick, Bates, 2002).

In the literature, safety performance was found to be influenced by high safety climate which can be differing in their organizational level or departments as a fact of nature of the work or conditions. (Zohar, 2000).

In patient safety literature, incident reporting and system level analysis are the main highlighted topics. Measurement of patient safety mostly relies on surveys, which differ in their characteristics, dimensions and usages in the studies. Most of the instruments were found to be measuring the attitudes of subjects on patient safety. The common dimensions covered by these surveys involve 'leadership, policies and procedures, staffing, communication, and reporting' (Colla, Bracken, Kinney & Weeks, 2007).

Briefly, most of the studies emphasized; incident reporting, system approach and reducing the individual blame with disscussions in maintaining patient safety. As mentioned earlier, Reason (1998) pointed out that it was not an easy goal to achieve but worth trying.

1.2.2. Barriers to Patient Safety

There are some critical elements that disscussed on the way of patient safety. For example Larson (2002) defines five main steps to create a safer system; leadership and culture (leaders that names safety a priority) , useage of internal surveillance (investigating the deviations in the system), incident reporting (only if it is based on system approach rather than blame. It should be maintained in a blame free evironment with continous feedbacks and should encourage the individuals to

report near misses), external surveillance (self assessment- Could this adverse event happen here?), acknowledgement of inevitability of hazards and risks (not all risks are inevitable but each can be viewed as a challenge or opportunity to reduce them, acceptance of adverse events as unavoidable, prevents moving ahead).

In a later published article, other than these above mentioned elements, Ralston and Larson (2005) point a shift of care towards teamwork from relying on individual performance by providing care around an effective teamwork and designing training programs that places safety in the system, not on the individual.

In establishing and creating the continuality of patient safety Institute of Medicine declares three significant actions to be taken in the long run such as; designing systems to prevent adverse events, making system errors more visible and reducing the harm when faced with an adverse event (Kohn, Corrigan & Donaldson, 2000).

Improving patient safety within an organization requires some standards for evaluation the system both within and between. Agency of Healthcare Research and Quality has developed Patient Safety Indicators (PSI) which are the measures of adverse events that patients experience in the healthcare and that can be prevented by the improvements in the system. They mainly focus on potentially preventable iatrogenic injuries or complications for patients. PSIs provide a perspective about the quality of care within a hospital but mostly focus on patient safety aspects and is also a way to maintain external surveillance and comparability between organizations.

Such a progess in the healthcare industry may point out great improvements after the IOM report. However, there have been debates going on whether or not the system reached its' desired goals. In a personal interview conducted with Lucian Leape (Buerhaus, 2004), he answered the question whether the health care industry became safer. All the efforts and actions to improve the quality of patient care can not be denied. However, unless setting it as a priority or designing safety programs are

ignored it can not be a reality. This includes leaderships at the national and organizational level, creating nonpunitive environments, designing educational systems with role models that practice system approach and teamwork in their everyday lives. Commitment should be both at national and organizational levels.

There are not enough and sufficient faculty to create a safety cirriculum in medical schools, lack of leadership in the system, physicians' denial of the extent of the problem, their preferences to ignore the rates of the adverse events or no active actions taken by them still remain as the most significant barriers to patient safety.

'Culture of blame' is defined as one of the barrier in the system. Investigating the attitudes of medical staff toward medical errors by interviews, blame was found as one of the inhibiting factors of incident reporting including external (press, public, litigation) and internal (great openness can lead to questioning individual competence) elements while other indicators such as the perception of inevitability of human error regardless of the ability makes physicians to conclude reporting as pointless – justification for not reporting- and evaluating bureaucratic procedures as non medical work or filling forms as waste of time discourages them to engage in reporting procedures (Waring, 2005).

In the literature, the link between culture of blame and fundamental attribution error is commonly mentioned. Fundamental attribution error (Ross, 1977) is the tendency of underestimating the situational factors while overestimating the influence of individual factors on the behaviors of others. In the blame culture in contrast to system approach, investigation of the causes of errors overestimates the contribution of individual factors and ignores the situational factors. Such a perspective uses individuals as scapegoats in the system. However, there is another bias in interpretation of errors or accidents named defensive attribution bias, mostly used by workers. It is described as the tendency of attributing the cause to external factors when personal or situational similarity is anticipated with the victim of an accident. According to this bias, anyone who is investigating an accident will be more likely

to attribute the cause primarily to external factors if any situational similarity is perceived and use this bias as a self-protective mechanism (see Burger (1981) for a review). Within a systematic study (Hofmann, Setzer, 1992), it was predicted that while supervisors would attribute the cause mostly on individual factors, workers would blame the external factors. The results supported the hypothesis and it was found that supervisors significantly relied on internal attributions about worker accidents and even though workers were informed indicating that the individual was the real cause of the accident, they were still unwilling to make internal attributions where open safety communication was not encouraged which showed the importance of organizational factors on attribution process. The study gives a great picture of differentiated perspectives within an organization that needs to be taken into account for further safety researches.

1.3. Individual Factors - Burnout

It was Freudenberger (1974), a clinical psychologist that used the term 'burnout' for the first time in human services settings. After Freudberger, the main described picture of burnout has not much changed. The most repeated features of the term can be listed as; exhaustion, frustration, anger, cynicism and failure (Maslach, Goldberg, 1998). After Freudenberger, Maslach developed a different conceptualization of burnout. However, there was a difference between two models of burnout in which Freudenberger was emphasizing the psychology of individual whereas Maslach theorized her model around a social psychological perspective that focused on both individual and environmental factors (Söderfeldt & Söderfeldt, Warg, 1995).

It was the beginning of 1980s that a standardized and accepted instrument in oder to asses burnout in a wide range of human service workers was developed, called Maslach Burnout Inventory (Maslach, Jackson, 1981). In their model, they defined burnout with three dimensions. First and the most central component, ; *emotional exhaustion* involves lack of energy and a feeling of used up. This component can be regarded as the prior stage of high arousal and caused by high psychological and

emotional demands on people (Jackson, Schwab, Schuler, 1986) which refers to basic stress dimension of burnout. Work overload and personal conflict at work can be defined as the major sources of exaustion (Maslach, Goldberg, 1998). Second component is called *depersonalization,* a negative response and treatment of clients as objects such as calling them object labels (e.g., the kidney in room 609). Workers can involve in detached acts or feelings towards clients or organization (Jackson, Schwab, Schuler, 1986). These detached acts may be used as a self-protective mechanism. However, the risk of this mechanism is ending up at dehumanization. This component of burnout is called interpersonal dimension (Maslach, Goldberg, 1998). A correlation was also found between depersonalization and absenteeism at work (Maslach, Jackson, 1981). Last component of burnout is feelings of *low personal accomplishment* which reflects a tendency of negative evaluations of oneself. People high on this dimension shows a decline in job competence, feeling of dissatisfaction with their accomplishments at work (Maslach, 1982) and inability to face with the demands of job. This component is the self-evaluation dimension of burnout (Maslach, Goldberg, 1998).

A sequential progression process has been conceptualized for the ocuurance of three components of burnout in a manner that emotional exaustion occurs first and as an emotional buffer between job and individual demands depersonalization develops with a recognition of the initial job expectations and recent attitudes towards work, workers feel the sense of inadequcay in their job performance and the ability to relate to others (Maslach, Goldberg, 1998). Studies have also showed support for this model (Leiter, Maslach, 1988).

Despite the comman use of term burnout, there was not a standart definition of it and people used it with different meanings which led to communication problems (Maslach, Goldberg, 1998). Because the consequences of burnout can be very serious for workers, the development of MBI was based on a need to assess the degree and various aspects of burnout, Maslach and Jackson (1981) administered the items to a sample of 605 individuals from a wide range of health and service

occupations. The scale was emerged from interviews and surveys conducted on workers from these occupations (Maslach, Leiter, Jackson, 1997). Three subscales were emerged, composed of 22 items with a high reliability and validity. It is not designed to measure the presence or absence of burnout whereas it estimates the degree of burnout on a continuum. Scores, high on emotional exhaustion and depersonalization subscales but low on personal accomplishment subcale gives a high degree of burnout level (Maslach, Leiter, 1988). Although, initially the instrument was designed to assess the level of burnout in human service organizations, later the modifications were made inorder to estimate it in other settings.

Situational factors rather than individual ones give more predictive picture of burnout. Characteristics of job environment such as the imblance between high work demands and insufficient devices to meet those demands, their continuing existence and the conflict between demands and values makes the indidivual more tensed or exausted. Maslach and Leiter (1997) defines six important mismatches; work overload, lack of control, insufficient reward, breakdown in community, absence of fairness and conflicting values. In order to cope with considering circumstances, people distance themselves from clients, collagues or managers. With a lack of control over work creates the sense of ineffectiveness. There is another significant aspect of job environment which is the cultural context involving political, economical and social factors. Although it manifest itself on an individual level, these altogether makes the concept as a product of the situational context. The burnout experience consists of the conceptualation of self and others in a context of complex social relationships and briefly the model draws a link between the job environment and the individual (Maslach, Goldberg, 1998).

Risk management studies are highly involved in safety prformance programs which do not compass the consequencess of psychological stressors. Maybe it is because the implacations are seen minor when compared to hazards or maybe that the response to burnout is not that immediate, the consequences of it is not taken

seriously and the risks are underestimated. The common assumption is that it happen to others because they can be evaluated as less strong. Such an ignorance in the continuum leads to decrease in the performance and productivity and an increase in the costs. People admitting or feeling a burnout experience is judged as complainers or non survivors and victims of weakness. Such an assumption as focusing on the individual and ignoring the context, brings us to a dispositional attribution and make the solution to change the job. Even it is considered as an individual problem, she/he can change her/his behavior not the social environment. However, as discussed earlier, the concept has been developed within a situational context. Denying can be dangerous with less support seeking and can cause the one to sacrifice her/his physical and mental health (Maslach, Leiter, 1997).

1.3.1 Burnout Studies

Maslach and Leiter (1988) examined burnout and orgnizational commitment with regard to interpersonal contacts of hospital personell. Contacts are differentiated as pleasant and unpleasent and the personel divided into two categories as coworkers and supervisors. Emotional exhaustion and depersonalization were found to be positively correlated with unpleasant supervisor contact, personal accomplishment had a positive correlation with pleasant coworker contact. Subjects who scored higher on depersonalization subscale reported more unpleasant contacts with supervisors whereas less pleasant contacts with coworkers. It may be that their impersonel treatment of patients may be perceived and evaluated pooly by their supervisors. Results also showed that high level of burnout leads to reduced organizational commitment.

In a study that investigated the relationship between work conditions and burnout in healthcare workers at two different measurement times , firstly it was found that good work conditions were assessed as a necessity for providing good care and three years after the new implementation care policy the burnout or the risk of burnout increased significantly. The study was also claimed as picturing the

discrepancy between work demands and resources in Sweden healthcare system (Lövgren, Rasmussen, Engström, 2002).

Patient involvement and their satisfaction which involves both cognitive and affective experience with care has a great importance in creating good health care. Nurses are the health providers that engage in the most direct contact with patients not only by physical care but also by maintaining emotional support which gives them a key role in good health care. Leiter, Harvie and Frizzell (1998) have found that patients in units where nurses evaluated their work meaningful were more satisfied with their hospital stay when compared to patients in units that nursing staff felt exhaustion and expressed the ideas of quitting work. These results also indicates that it is important to ensure patient satisfaction within a supportive environment and with the prevention of brnout among healthcare providers. Surgery is also one of the practices that stress is inherent (Campbell, Sonnad, Eckhauser, Campbell, Greenfield, 2001). They examined the prevelance of burnout in surgeons from different specializations in United States. Thirty two percent of the surgeons were found to show high levels of emotional exhaustion, thirteen percent were high on depersonalization dimension and four percent showed low levels of personal accomplishment. Younger surgeons and majority of orthopedists indicated higher levels of burnout than older and other specialized surgeons.

A similar study investigated the degree of burnout in U. K. doctors in a three year longitudinal study. They have found that scores on emotional exhaustion dimenson were higher in the second measurement time, depersonalization scores remained unchanged and lower for personal accomplishment. In causality analysis, emotional exhaustion and stress showed reciprocal causation that stress made respondents more emtionally exhausted and emotional exhaustion made them more stressed. Other components also indicated an effect on stress. For example while low personal accomplishment increases stress, maybe through a self protective process, depersonalization decreased the level of stress (McManus, Winder, Gordon, 2002).

Among Dutch medical specialists job satisfaction and job stress were found to be the significant indicators of emotional exhaustion whereas depersonalization and personal accomplishment had less predictive value. Although general burnout scores were below the avarege for Dutch health care proffessions, when stress was high and job satisfaction was low, the amount of emotional exhaustion increased (Visser, Smets, Oort, Haes, 2003). The burnout levels of different occupational gropus have been also investigated. Specifically people from social service occupations indicated higher levels of burnout than other occupation groups (Matthews, 1990).

Medical students are one of the valuable agents for the future quality of medicine and therefore the concern of the well being of medical academy staff has also captured attention. In one study, most of the respondents of the study (academic staff of medicine) were found to be complaining about ignorance of their job expectations within the organization, their decreasing productivity, contrubitions that they used to have and an increased frequency of leaving work thoughts (Schindler, Novack, Cohen, Yager, Wang, Schaheen, 2006).

Burnout has been also investigated in team-level analysis. They examined the concept in psychosocial rehabilitation teams and it's effects on patient satisfaction. A significant relationship was found between team burnout and patient satisfaction where emtional exaustion had the clearest relationship to client satisfaction. Although personal accomplishment was also found to be related to patients'views about staff, depersonalization had no relation to patient safety (Garman, Corrigan, Morris, 2002).

In 2005, with the help of Turkish Medical Association (TTB) the burnout levels of 1754 doctors were assessed in a study. No significant diffrence were found between men and women on emaotional exaustion dimension whereas men felt more depersonalized than women and women scored lower on personal accomplishment subscale than men. Considering marital status, single doctors were the least beneficial participants that they were more depersonalized and felt less personal

accomplishment than married and divorced respondents. Also as the age increases depersonalization scores showed a decrease.

1.4. Individual Factors - Personality and Medical Profession

Today, it became more evident that people are expected to do more with less people in organizational settings (Sparks, Fragher & Cooper, 2001). Medicine is one of the most stressful occupation and by the nature of their work, doctors experience more emotional pressure than any other work group and the mental or physical health of patients are affected not only by doctors' individual skills but also by the medical team as a group (Clark, 2000).

In the literature, one of the studied individual factors is personality with different occupations. There are different personality inventories used in order to assess different personality types of physicians (Borges, Savickas, 2002). The differences among them become clearer after graduation and after the entry to distinct work settings with varying aspects. Borges and Savickas (2002) reviewed the literature and interpreted the results of personality studies among different medical specialties around Five Factor Model. While anesthesiologist were characterized as higher on Extraversion and Openness to Experience and lower on neuroticism, agreeableness, and conscientiousness, internists were interpreted as lower on extraversion because of their lesser focus on social interaction by the Big-Five factors. Although few studies were found on the personality of pediatricians, the findings were corresponded as higher neuroticism and extraversion dimensions of personality. Again with translating studies about surgeons' personality, the authors concluded that both at the beginning and developing of their career surgeons can be described by extraversionity. Most of the researches investigated personality types between different speciality groups rather than within groups. However, more variation exists within groups than between groups. The interaction between personality types and work environment should be discussed in order to take a clearer picture.

Medical students were also examined in terms of personality with a comparison of other academic field students (Lievens, Coetsier, De Fruyt, De Maeseneer , 2002). No significant differentiating personality pattern found for medical students. However within group results showed a heterogenity of personality patterns among medical students. Auhtors concluded that personality assessment is not useful in student selection rather it should be used to guide or counsel the students through their academic career.

Other than physicians, the personality types of other health care workers such as nurses were also studied with relation to burnout. Neuroticism was significantly related to all three dimensions of burnout. After controlling for age, organization and role stressors, nurses high on extraversion were found to feel more personal accomplishment. Greater emotional exhaustion and depersonalization and less personal accomplishment were predicted by higher neuroticism (Zellars, Perrewe, 2001).

Although these mentioned studies used Big Five Model to examine personality types of health staff, not much research was found to be conducted with Eysenck's personality questionnaire on physicians. Eysenck's conceptualization of personality gained great attention in the literature and was used to investigate various variables in relation to personality.

1.4.1 Eysenck's Personality Model

Before Eysenck added a third dimension to his personality model, it originally had two main dimensions called introversion-extraversion and stability-neuroticism. The third and new dimension was normality-psychoticism (Eysenck&Eysenck, 1985). Eysenck Personality Inventory and The Maudsley Personality Inventory were developed to measure the two main dimensions but later on Eysenck Personality Questionnaire and the Revised Eysenck Personality Questionnaire were developed to measure the all three dimensions; extraversion, neuroticism and

psychoticism (Francis, Jackson,2004). He claimed that these three supertraits were essential in understanding the individual differences in personality (Sato, 2005).

In Eysenck's personality model, extraverts seek a higher arousal level than introverts whereas introverts become more aroused than stable individiuals which makes them to avoid high stimulating situations. Extraverted individuals are defined as impulsive, they don't control their feelings and are highly social, easy going, dominant, have many friends, like to party and instead of being alone they prefer to be with others. These aspects help them to raise their arousal level. However, neurotics are anxious, mostly moody, overreactive, tense, and frequently depressed. Eysenck calls a high scored individual on this dimension a worrier. They are mostly preoccupied in thoughts that things may go wrong and can be considered as having a low self-esteem. The third dimension, psychoticism refers to impersonal, cold, hostile, unemotional, unfriendly, antisocial and lack of insight feelings. People who are high on psychoticism are also insensitive to others (Eysenck & Eysenck, 1975).

After, Eysenck's personality model, researchers developed questionnaires to measure these there dimensions. However, the improvement attempts caused the scales to reach a great length. The questionnaires needed lot more time to adminster. Later, a short form of EPQR was developed (EPQR-S) which contained the measures of three dimensions of personality and the Lie scale with 12 items for each subscale (Eysenck, Barrett, 1985).

Francis, Brown and Philipchalk (1992) argued that it was still too long to use when the researchers have a limited amount of time so they developed an abbreviated form of EPQR-S in which each dimension of personality and the lie scale contained 6 items (EPQR-A). They adminstered EPQR-S to 685 undergraduate students in Canada, England and Australia. 6 items with highest item-to total correlations were selected for each dimension. Internal consistenies were found to be satisfactory for extraversion (0.74-0.84), for neuroticism (0.70-0.77) and for lie subscles (0.59-0.65). However, for psychoticism it was found to be unsatisfactory (0.33-0.52).

They also investigated the concurrent validity of the new scale by examining the relations with original EPQ subscales and the correlations ranged between 0.84-0.90 but the correlation for psychoticism subscale were again low (0.44-0.52).

As in EPQ, gender differences were also found for EPQR-A. In one study that examined psychometric properties of EPQR-A, addition to the finding of the unidimensionality of EPQR-A, while males were discovered to score higher on psychoticism dimension, females to score higher on both neuroticism and lie subscales. The signiticant gender differences were found on neuroticism, psychoticism and lie factors. However, no significant results were found for extraversion dimension (Forrest, Lewin, Shevlin, 2000**).** Later Shevlin, Bailey and Adamson (2002) investigated whether the differences were due to biological sex or to sex-role orientation. It was found that sex had only significant effect on extraversion while sex-role orientation was significantly associated with all three dimensions of personality. The results revealed that respondents who scored higher on femininity scored higher on neuroticism and those scored higher on masculinity scored higher on extraversion and psychoticism. It was claimed that previously found differences on Neuroticism and Psychoticism were due to sex-roles rather than biological differences.

Eysenck's three dimensions of personality was also used to investigate traffic accidents. Although Eysenck (1965) asserted that people with high extraversion and neuroticism scores would have more accidents, the results are mixed on this issue. It was found that countries higher on extraversion scores had higher rates of traffic fatalities when compared to other countries with lower scores on extraversion (Lajunen, 2001).

1.5. Aims of the Study

Although, in Turkey, there are studies that examine the burnout levels of physicians and nurses, no studies were found examining personality factors and the medical errors committed by health care staff, since there is no incident reporting system in the hospitals. The present study aims to explore the association of types and frequencies of medical errors with the organizational factors and individual factors which include Eysenck's personality dimensions and Maslach's burnout levels. Therefore, the study assesses the association of medical errors with safety climate, personality dimensions and burnout levels.

The study hypotheses are as follows;

- There will be a significant differences on Safety Climates between different types of institutions
- There will be significant differences on frequency of errors between physicians working at different hospital settings
- Physicians who experience higher levels of burnout will more frequently report medical errors.
- Individual factors namely personality dimensions are expected not to have a significant effect on medical errors.
- Safety Climate dimensions are expected to have main effects on types and frequency of errors.

CHAPTER II

METHOD

2.1. Sample

Two hundred and forty physicians from ten different hospitals in Ankara and İstanbul have participated in the study. Thirty-five percent of the sample (n=83) was female and 65% (n=157) as male. The mean age of the participants was 38.6 (SD=9.8) with a range of 22-66. The majority of the participants were married (70.4%), while 24.2% were single, 2.9% were divorced,1.7% were engaged and 0.4% were widowed. Most of the sample were public hospital workers (40,4%), which followed by teaching hospital workers (34.2%) and private hospital workers (24.6%). Only 0.8% of the physicians were employed in private clinics. While 43.6% of the participants reported having no child, 56.7% of them reported having a child in which 26.3% of them had only one child whereas 27.9% had two children. No participants reported having more than three children (2.1%). The mean age of the children was 10,50 (SD=10,50) with a range of 0,50- 37.Majority of the subjects did not have any salary other than their proffesion (82.9%). More than half of the sample were (55.8%) working on night shifts and again more than half of them (56.7%) worked on weekend shifts.

Table 1. Socio- demographic Characteristics of the Sample

		N	Perct(%)	Mean	S.d.	Range
Age				38.6		22-66
Sex	Female	83	34.6			
	Male	157	65.4			
Marital Status	Married	169	70.4			
	Single	58	24.2			
	Divorced	7	2.9			
	Engaged	4	1.7			
	Widowed	1	0.4			
	Missing	1	0.4			
Having children	YES	136	56.7			
	NO	104	43.3			
Institution	Public hosp.	97	40.4			
	Private hosp.	59	24.6			
	Teaching hosp.	82	34.2			
	Private clinic	2	0.8			
Branch	Pulmonology	8	3.33			
	Family Practice	7	2.92			
	Gyneacology and Obstetrics	14	5.83			
	Internal Medicine	13	5.42			
	Radiology	4	1.67			
	Urology	16	6.67			
	Throat Nose and Laryngology	16	6.67			
	Neurology	3	1.25			
	Pediatrics	16	6.67			
	General Surgery	37	15.42			
	Anesthesiology	21	8.75			
	Plastic and Reconstructive Surgery	3	1.25			
	Neurosurgery	15	6.25			
	Emergency Surgery	18	7.5			
	Psychiatrics	5	2.08			
	Pathology	2	0.83			
	Ophthalmology	2	0.83			
	Orthopaedics	7	2.92			
	Radiation Oncology	1	0.42			

Table 1: Continued

	Cardiothoracic Surgery	9	3.75			
	Physical Medicine and Rehabilitation	2	0.83			
	Dermatology	13	5.42			
	Public Health	2	0.83			
Night Shift	Missing YES	16 134	6.67 55.8			
	NO	104	43.3			
	Missing	2	0.8			
Weekend Shift	YES	136	56.7			
	NO	101	42.1			
	Missing	3	1.3			

2.2 Measures

Data were collected by questionnaires consisting of two parts. The first was consisted of socio-demographic information form which was prepared by the investigator in order to collect information about socio-demographic characteristics of the sample. It includes questions such as gender, age, marital status, having a child, profession, place of occupation, working hours, night shift, weekend shift and time spend in scientific activities (literature reviewing, attending professional meetings, etc.).

The second part of the questionnaire consisted of four scales. These scales were Medical Practice Questionnaire (MPQ) assessing the frequency and types of medical errors in medical practice, the Hospital Survey on Patient Safety Culture (HSPSC) measuring the patient safety in hospitals, Eysenck Personality Questionnaire Revised/Abbreviated Form (EPQR-A) to measure personality on three dimensions (neuroticism, extraversion, psychoticism) including a subscale of lie and Maslach Burnout Inventory (MBI) with three subscales namely; emotional exhaustion, depersonalization and personal accomplishment to assess the amount of burnout.

2.2.1 Medical Practice Questionnaire

2.2.1.1 Development of the Medical Practice Questionnaire

The scale was developed by the author of this thesis. The aim of the questionnaire is to assess the frequency and the types of medical errors conducted by physicians. Since there is no incident reporting system in the healthcare system, in Turkey and no adopted instrument for this purpose for Turkish sample, it was aimed to develop a new instrument.

Firstly, 6 types of error categories defined by the use of literature namely diagnostic, theraupeutic, drug, procedure related, prevention and fall. Then each category was subdivided into two categories whether it was a violation or not. 10 physicians with at least ten years experience in their profession were interviewed and asked to give two examples for each category. However, the differences considering violations could not have been made clearly and it was then decided to exculde the category from the list. Final item pool then evaluated by a pshysician in order to assess the suitability and clearity of each expression.

Total pool of 30 items were then adminstered to 240 physicians with different branches from ten different hospitals both state and private in Ankara and Istanbul. Participants were contacted with one physician from their hospital, filled the form in hospital settings and voluntarily participated.

2.2.1.2 Validity of MPQ

2.2.1.2.1 Exploratory Factor Analysis

To assess the structure of MPQ, factor analysis with principle axis factoring was performed on 30 items (N = 240). The correlations among components were mostly less than .30, thus varimax rotation was used. After the extraction, 8 components were found having eigenvalues higher than 1, and a screen plot suggested 5 factor

structure. In order to accurately determine the number of components, parallel analysis was conducted and it suggested a four factor solution. Considering both screen plot, parallel analysis results and literature it was decided to make this analysis limited to four factors with excluding three items with large number of missing values. The four-factor solution for 27 items accounted for 46.34% of the total variance.

In selecting items for the final scale, item-total correlations, the pattern of loadings were examined. A minimum factor loading of .30 was used as a guideline for considering an item to be part of a factor. Later, two items with no loadings on none of the factors and one item with high cross loadings on more than one factor were further excluded from the final list of items. The final MPQ, along with the factor loadings is shown in Table 2.

Table 2. Factor Loadings of MPQ: PAF (Varimax)

Cronbach Alphas, Explained Variances, Factor Loadings for Four Subfactors of MPQ

Items	**Factor Loadings**			
	1	**2**	**3**	**4**
Factor 1: Patient Managemet/Information Delivery Errors (α= .88, explained variance= 14.16%)				
12. I have given insufficient information when informing the patient.	**.84**			
13. I have given insufficient information when informing the patient's relatives.	**.85**			
14. I have given inadequate information to the patient about the examination.	**.64**			
15. I have not discussed the prognosis with the patient/ patient's relatives in detail.	**.61**	.35		
16. I have given insufficient information to the patient/patient's relatives about the therapeutic process.	**.57**	.34		
28. I have misinformed the other personnel who take care of the patient.	**.44**	.40		

Table 2: Continued

Factor 2: Execution Errors (α= .82, explained variance = 14.15%)				
3. I have made a wrong diagnosis as a result of short consultation (physical examination).		**.36**	.32	
6. By not giving priority to a emergency patient, I caused delays.		**.41**	.34	
17. I have suffered from the complications as a result of not giving sufficient information to the patient/ patient's relatives about the therapeutic process.	.33	**.53**		
19. I have not obeyed the antiseptic rules.		**.35**		
20. I have lead to wrong practices because of wrong shortenings (e.g. mixing milligram with microgram).		**.60**		
21. I have failed in the patient follow ups which have led to different complications in despite of correct diagnosis and therapeutic processes.		**.48**		
22. I have misinterpreted the radiological and biochemical tests.		**.65**		
23. I have shared some information with the patient/patient's relatives early, before it got certain.		**.50**		
24. I have made a mistake when deciding medication doses.		**.52**		
30. I have ended the treatment earlier than it should have been ended.		**.52**		
Factor 3: Procedure Related Errors (α= .84, explained variance = 11.17 %,)	**1**	**2**	**3**	**4**
7. I've caused missing and inadequate evaluations because of not asking for detailed and specific information on the examination survey/sheet.			**.61**	
8. I have asked for wrong tests.			**.57**	
9. I have overlooked while taking case history.			**.65**	
10. I have skipped asking for the operations that the patient had, related to his/her illness conserned.			**.74**	
11. I have skipped asking for the operations that the patient had not related to his/her concerning illness.			**.62**	
25. I have delayed ending the treatment.		.40	**.50**	

Table 2: Continued

Factor 4: One Source Errors (α= .89, explained variance = 6.26 %)	
1. Only by using the information given by the patient, without asking for any further examination, I have made a diagnosis.	**.82**
2. Only by using the information given by the patient, without asking for any further examination, I have started the treatment.	**.93**

As can be seen on the Table 2, Factor 1 was identified as 'Patient Management/ Information Delivery Errors' and included 6 items (e.g. ''I have given insufficient information while informing the patient"). This factor explains 14.16% of the total variance. Factor 2 was identified as 'Execution Errors' and comprised 10 items explaining 14.15% of the total variance (e.g. "I have not obeyed the antiseptic rules"). Factor 3 reflected 'Procedure Related Errors' and comprised 6 items accounting for 11,77% of the total variance (e.g. "I have skipped asking for the operations that the patient had, related to his/her concerning illness.''). Finally Factor 4 was identified as 'One Source Errors' and comprised 6 items explaining 6.26% of the variance (e.g. ''Only by using the information given by the patient, without asking for any further examination, I have diagnosed'').

2.2.2. Hospital Survey on Patient Safety Culture

The Hospital Survey on Patient Safety Culture (HSPSC) was developed by Agency for Healthcare Research and Quality (AHRQ) in 2004. It assesses hospital staff opinions about patient safety issues, medical error, and event reporting. The survey (see Appendix E) consists of 42 items inorder to assess 12 areas of patient safety culture which are communication openness, feedback and communication about error, frequency of events reported, handoffs and transitions, management support for patient safety, nonpunitive response to error, organizational learning/continuous improvement, overall perceptions of patient safety, staffing, supervisor/manager expectations and actions promoting safety, teamwork across units, teamwork within units.

Each item answer are coded on a 5 point scale with some subscales ranges from ‘‘never’’ to ‘‘always’’ and others from ‘‘strongly disagree’’ to ‘‘strongly agree’’

Using back translation techniques, the scale was independently translated into Turkish by two bilingual graduate students and later re- translated to English in which necessary revisions were made. The final decision was taken by choosing the best translation for each item.

Reliability was tested for each of the dimension of the HSPSC after reversing the necessary items. While high scores on Organizational Learning-Continuous Improvement, Overall Perceptions of Patient Safety, Feedback and Communication About Error, Communication Openness, Frequency of Events Reported, Teamwork within units, Staffing and Nonpunitive Response to Error indicates a high levels of safety, higher scores on Supervisor/Manager Expectations & Actions Promting Patient Safety, Management Support for Patient Safety, Teamwork Across Units and Handoffs & Transitions indicated a lower levels of safety within a health care organization.

In the present study, the alpha values were .79 for Teamwork within units (items: A1, A3, A4, A11), .64 for Supervisor/Manager Expectations & Actions Promting Patient Safety (items: B1, B2, B3, B4), .80 for Management Support for Patient Safety (items: F1, F8, F9), .61 for Organizational Learning-Continuous Improvement (items: A6, A9, A13), .64 for Overall Perceptions of Patient Safety (items: A10, A15, A17, A18), .74 for Feedback and Communication About Error (items: C1, C3, C5), .68 for Communication Openness (items: C2, C4, C6), .92 for Frequency of Events Reported (items: D1, D2, D3), .73 for Teamwork Across Units (items: F2, F4, F6, F10), .57 for Staffing (items: A2, A5, A7, A14), .69 for Handoffs & Transitions (items: F3, F5, F7, F11) and .71 for Nonpunitive Response to Error dimensions (items: A8, A12, A16). Coding is reversed for some items.

2.2.3. Maslach Burnout Inventory (MBI)

The Maslach Burnout Inventory is a 22-item instrument and was originally developed by Maslach & Jackson (1986) to assess the various aspects of burnout by three components: emotional exhaustion, depersonalization and personal accomplishment. It was 7-point scale and respondents were scored both for intensity and frequency on each dimension. Emotional exhaustion subscale includes nine items (items 1, 2, 3, 6, 8, 13, 14, 16, 20), depersonalization subscale includes five items (items 5, 10, 11, 15, 22) and personal accomplishment contains eigth items (items 4, 7, 9, 12, 17, 18, 19, 21). High scores on emotional exhaustion and depersonalization subscales and low scores on personal accomplishment subscale reflect a high degree of burnout.

Ergin (1992) translated and adapted the scale to Turkish culture. The reliability and validity study was carried on 297 nurses and 255 doctors. The 7-point scale was converted to 5-point scale (0=never; 4=always). Internal reliability (Cronbah Alpha) was rated .83 for emotional exhaustion, .65 for depersonalization, .72 for personal accomplishment and test-retest reliability rated .83 for emotional exhaustion, .72 for depersonalization and .67 for personal accomplishment. Results showed a moderate level of effect of social desirability on burnout.

In the present study, the alpha values were .86 for emotional exhaustion, .71 for depersonalization and .73 for lack of personal accomplishment and .80 for total burnout scale.

2.2.4. Eysenck Personality Questionnaire Revised-Abbreviated Form (EPQR-A)

EPQR-A is a 24 item measurement and was developed by Francis et al. (1992) by adinistering Eysenck Personality Questionnaire (EPQ) and Eysenck Personality Questionnaire Revised-Short Form (EPQR-S) to 685 undergraduate students in England, Canada and Australia. The scale measures three dimensions of personality (extraversion, neuroticism, psychoticism) and contains a lie subscale. Satisfactory

levels of internal reliability have been found for 3 subscales (Extraversion: 0.74–0.84, Neuroticism: 0.70–0.77, and Lie score : 0.59–0.65). However, low levels have been found for the Psychoticism Scale (0.33–0.52). The concurrent validity was assessed by examining the associations between EPQ and EPQR-S subscales.Correlations for the measures of extraversion, Neuroticism and the Lie scale ranged between 0.84 and 0.90. However, low correlations were found between the Psychoticism Scales (0.44–0.52).

The adaptation study was conducted by Karancı, Dirik and Yorulmaz (2007) on a sample of 756 students from four different universities. Similar to the original scale, four factor solution was found. Kuder-Richardson alpha coefficients were found to be .78 for Extraversion, .65 for neuroticism, .42 for psychoticism and .64 for lie subscales. The test-retest reliabilities were found to be .84, .82, .69 and .69 respectively. The scores for each factor were calculated by adding up the scale items under each personality dimension. Each subscale includes 6 items with Extraversion (2, 4, 13, 15, 20, 23), Neuroticism (1, 9, 11, 14, 18, 21), Psychoticism (3, 6, 8, 12, 16, 22) and Lie scale (5, 7, 10, 17, 19, 24). In the present study, the alpha values were .83 for extraversion, .75 for neuroticism, and .29 for psychoticism subscale.

CHAPTER 3

RESULTS

3.1. Data Screening and Analysis

In the current study data obtained from 240 physicians from ten different hospitals in Ankara and İstanbul.

Prior to analysis, all data were examined through various programs of Statistical Package for Social Sciences (SPSS) for the accuracy of data. Z scores for all variables were computed for all variables were computed and no case found to have extremely low or high z scores.

Before the main analysis, factor analysis and reliability analysis were conducted for Medical Practice Questionnaire (MPQ). Reliability analysis was also conducted for Hospital Survey on Patient Safety Culture (HSPSC), Maslach Burnout Inventory (MBI) and EPQR-A. Finally predictors of Medical Errors were examined through simple Linear Regression Analysis.

3.2. Correlation Coefficients among the Variables Used in Regression Analysis

Correlation coefficients were computed between major variables to be included in regression. Table 3, 4 and 5 shows the correlation coefficients. The results of the analysis revealed that the different error types scores were significantly correlated with most of the other variables. When intercorrelations were between subscales of Medical Practice questionnaire (MPQ) are taken into account, dimensions of the scale were significantly and positively correlated with eachother, except for patient management errors and one source errors. Moreover, the neurtoticism and

extraversion subscales of EPQ-R were also significantly correlated with MPQ subscales except for One source errors. While neurtoticism was positively correlated, extraversion was found to be negatively correlated with MPQ subscales.Maslach Burnout Inventory dimensions were also found to be significantly and positively correlated with MPQ dimensions. Only Personal Accomplishment dimension was significantly and negatively correlated with Procedure and Patient management errors.

When HSPSC subscales and MPQ dimensions were examined, correlations were seemed to have a few and weak correlations. It was only Overall Safety dimension that had significant and negative correlation with all MPQ subscales.

Demographic variables namely; gender and age also found to have a few and weak correlations with MPQ subscales. While gender had a positive statistically significant correlation with only Procedure and One source errors, age was significantly and positively correlated only with One source errors.

Table 3. Inter-correlations among Medical Practice Qestionnaire Subscales

	PMID	**EXTN**	**PRD**	**OS**
PMID	-			
EXTN	.63**	-		
PRCD	.63**	.59**	-	
OS	.19**	.12	.13*	-

*Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

PMID: Patient Management/Information Delivery Errors, EXTN: Executiom Errors

PRD: Procedure Related Errors,OS: One Source Errors

Table 4. Correlations among MPQ subscales and demographic variables, MBI levels and EPQR-A dimensions

	PMID	EXTN	PRD	OS
Gender (1:Male, 2:Female)	.72	.83	.17**	-.17*
Age	-.09	-.10	-.12	-.25**
Institution	-.06	-.08	-.01	-.23**
EE	.31**	.32**	.19**	.14*
DP	.33**	.36**	.24**	.16*
PA	-.14*	-.09	-.15*	-.11
Neuroticisn	-.18**	-.25**	-.25**	-.08
Extaversion	.26**	.15*	.22**	-.02
Psychoticism	-.03	-.08	-.08	.01

*Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

PMID: Patient Management/Information Delivery Errors, EXTN: Executiom Errors PRD: Procedure Related Errors, OS: One Source Errors, EE: Emotional Exhaustion, DP: Depersonalization, PA: Personal Accomplishment

Table 5. Correlations among MPQ and HSPSC dimensions

	PMID	EXTN	PRD	OS
Tw/nU	-.09	.01	-.10	-.06
SME	.05	.09	.06	.13*
MSPS	.24**	.16*	.13	.06
OLCI	-.16*	-.07	-.14*	-.07
OPPS	.23**	-.29**	-.17**	-.18**
FC	-.18**	-.10	.02**	-.05
CO	-.13*	-.13	-.08**	-.04
FER	-.12	-.55	-.13*	.03*
Tb/Wu	.27**	.12	.15*	.02
ST	-.12	-.11	-.07	-.05
HT	.18**	.21**	.19**	.03
NPRE	-.06	-.11	-.12	-.15*

*Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

PMID: Patient Management/Information Delivery Errors, EXTN: Executiom Errors, PRD: Procedure Related Errors, OS: One Source Errors

Tw/nU: Teamwork within units, SME: Supervisior/manager expectations and actions promoting safety, MSPS: Management support for patient safety, OLCI: Organizational learning and continuous Improvement, OPPS: Overall perceptions of patient safety, FC: Feedback and communication about error, CO: Communication openness, FER: frequency of events reported, Tb/wU: Teamwork across units, ST: Staffing, HT: Handoffs and transitions, NPRE: Non punitive response to error

3.3. Gender Differences on Medical Practice Questionnaire

To assess the possible gender differences on Medical Practice Questionnaire, Independent Samples t- test was employed by considering 4 subscales of MPQ. As can be seen in table 6, the findings indicated that men (M = 2.08, SD = .68) reported more Procedure Related Errors than women (M = 1.85, SD = .54), (t (237) = -2.87, $p < .01$).

Gender difference was also significant on One Source Errors in a manner that men (M = 2.76, SD = 1.27) caused less One Source Errors than women (M = 3.25, SD = 1.58), (t (237) = 2.41, $p < .05$).

Although slight differences found between men and women on Execution and Patient Management/Information Delivery Errors, these differences were not significant.

Table 6. Results of independent sample t-test

	Males		**Females**				
	Mean	S.D.	Mean	S.D.	t-score	df	Sig.
PMID	2.23	0.86	2.11	0.78	-1.118	237	.265
EXTN	1.68	0.49	1.60	0.41	-1.226	237	.203
PRD	2.08	0.68	1.85	0.55	-2.873	237	.005
OS	2.76	1.26	3.25	1.58	2.409	237	.017

PMID: Patient Management/Information Delivery Errors, EXTN: Executiom Errors
PRD: Procedure Related Errors, OS: One Source Errors

3.4. Institution Differences on Medical Practice Questionnaire

In order to examine the institutional differences on Medical Practice Questionnaire subscales, a series of one way ANOVAs was conducted ANOVA was conducted with the types of institution (Institution: Private Hospital, University Hospital, Public Hospital) as independent variable and Error types (Error: Patient

Management/Information Delivery, Execution, Procedure Related, One Source Errors) as dependent variable.

3.4.1. Differences for Patient Management/Information Delivery Errors

The results yielded a significant main effect of the type of the institution on patient management/ information delivery errors F (2, 234) = 3.246, $p < .05$. However, Tukey HSD post-hoc comparison at .05 level revealed that none of the institutions significantly differ from each other.

3.4.2. Differences for Exection Errors

The type of the institution did not have any main effect on Execution errors F (2, 234) = 2.349, N.S.

3.4.3. Differences for Procedure Related Errors

The type of the institution did not have any main effect on Procedure Related errors errors F (2, 234) = .214, N.S.

3.4.4. Differences for One Source Errors

The results yielded a significant main effect of the type of the institution on one source errors F (2, 233) = 4.673, $p < .01$. According to this main effect, Tukey HSD post-hoc comparison at .05 level revealed that university hospitals (M= 2.58, Sd= 1.33) were significantly different from Private (M = 3.24, Sd=1.57) and public hospitals (M = 3.07, Sd=1.46). In other words, physicians working at university hospitals less frequently commited one source errors than physicians at two different hospitals.

Table 7. Means and Standard Deviations of Institutions on MPQ scores

	PMID		EXTN		PRD		OS	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
PRH	2.08	0.76	1.63	0.44	1.97	0.62	3.24	1.57
PBH	2.36	0.83	1.72	0.51	2.03	0.61	3.07	1.46
UH	2.07	0.86	1.57	0.43	1.99	0.70	2.57	1.13

PMID: Patient Management/Information Delivery Errors, EXTN: Executiom Errors PRD: Procedure Related Errors, OS: One Source Errors

PRH: Private Hospitals, PBH: Public Hospitals, UH: University Hospitals

3.5. Institutional Differences on HSPSC Dimensions

In order to examine the institutional differences on Hospital Survey on Patient Safety Culture subscales, series of Oneway ANOVAs were conducted with the type of institution as independent variable and Safety Culture dimensions as dependent variable. The main effects of types of institution were found on 9 dimensions of safety culture.

According to types of institution main effect on the Supervisior/Manager Expectations & Actions Promoting Patient Safety subscale $F(2, 234) = 8.70$, $p<.001$, Tukey HSD post-hoc comparison at .05 level revealed with lower scores indicating higher levels of safety, university hospitals (M= 2.60, Sd= 0.67) were significantly different from private (M = 3.08, Sd=0.73) and public hospitals (M = 2.90, Sd=0.76).

For the Management Support for Patient Safety dimension , $F(2, 234) = 22.22$, $p<.001$, lower scores pointed a higher level of safety and Tukey HSD post-hoc comparison at .05 level revealed that public hospitals (M= 3.41, Sd= 0.87) were significantly different from private (M = 2.58, Sd=0.83) and university hospitals (M = 2.75, Sd=0.81).

According to the Organizational Learning - Continuous Improvement subscale, $F(2, 230) = 5.43$, $p<.01$, Tukey HSD post-hoc comparison at .05 level showed that only private hospitals ($M= 3.41$, $Sd= 0.58$) were significantly different from public hospitals ($M = 3.03$, $Sd=0.71$).

For the Overall Perceptions of Patient Safety variable, $F(2, 229) = 9.65$, $p<.001$, according to Tukey HSD test, public hospitals ($M= 3.23$, $Sd= 0.69$) significantly received lower scores than private ($M = 3.68$, $Sd=0.63$) and university hospitals ($M = 3.57$, $Sd=0.69$).

Types of institution also had a main effect on Feedback and Communication About Error $F(2, 234) = 5.38$, $p<.01$ and after the Tukey HSD post-hoc comparisons, significant difference was found between public ($M= 2.93$, $Sd= 0.88$) and private hospitals ($M= 3.41$, $Sd= 0.85$).

The main effect on the Frequency of Events Reported $F(2, 231) = 10.41$, $p<.001$ with Tukey HSD post-hoc comparison test showed that all of the institutions differed from each other. Private hospitals ($M= 3.24$, $Sd= 1.08$) were found to score higher than public ($M= 2.33$, $Sd= 0.99$) and university hospitals ($M= 2.88$, $Sd= 1.16$).

For the Nonpunitive Response to error dimension, $F(2, 230) = 7.59$, $p<.001$, Tukey HSD results revealed that private hospitals ($M= 2.73$, $Sd= 0.72$) scored lower than Public ($M= 3.10$, $Sd= 0.83$) and university hospitals ($M= 3.26$, $Sd= 0.81$). In other words, public hospitals exhibited more punitive responses to error than two other hospitals.

Another main effect of institution was found on Teamwork Across Units $F(2, 234) = 11.58$, $p<.001$ with lower scores indicating a higher degree of safety. Post-hoc comparisons showed that public hospitals ($M= 3.26$, $Sd= 0.68$) scored higher than private ($M= 2.76$, $Sd= 0.68$) and university hospitals ($M= 2.88$, $Sd= 0.73$) on the considering dimension.

Finally, the institution type had a main effect on Handoffs and Transitions F (2, 233) = 3.83, p<.05 again with lower scores indicating a higher degree of safety. Tukey HSD post-hoc comparison at .05 level showed that only private hospitals (M= 2.66, Sd= 0.79) were significantly different from public hospitals (M = 2.96, Sd=0.53).

Table 8. Means and Standard Deviations of Institutions on HSPSC scores

	PRH		PBH		UH	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Tw/nU	3.44	0.76	3.37	0.89	3.50	0.82
SME	3.08	0.73	2.90	0.76	2.60	0.62
MSPS	2.58	0.83	3.41	0.87	2.75	0.81
OLCI	3.41	0.58	3.03	0.71	3.24	0.78
OPPS	3.68	0.63	3.23	0.69	3.57	0.69
FC	3.41	0.85	2.93	0.88	3.14	0.92
CO	3.24	0.80	2.96	0.85	3.07	0.87
FER	3.24	1.05	2.33	0.99	2.88	1.16
Tb/Wu	2.76	0.68	3.26	0.68	2.88	0.73
ST	3.01	0.86	2.82	0.76	2.90	0.67
HT	2.66	0.79	2.96	0.53	2.90	0.74
NPRE	2.73	0.72	3.10	0.83	3.26	0.81

PRH: Private Hospitals, PBH: Public Hospitals, UH: University Hospitals

Tw/nU: Teamwork within units, SME: Supervisor/manager expectations and actions promoting safety, MSPS: Management support for patient safety, OLCI: Organizational learning and continuous Improvement, OPPS: Overall perceptions of patient safety, FC: Feedback and communication about error, CO: Communication openness, FER: frequency of events reported, Tb/wU: Teamwork across units, ST: Staffing, HT: Handoffs and transitions, NPRE: Non punitive response to error

3.6. Regression Analysis: Prediction of MPQ scores from EPQR-A Personality Dimensions

Four separate Standard Regression Analyses were conducted in order to examine how well the different personality dimensions predicted different types of errors. Three dimensions of personality, neuroticism, extraversion and psychoticism were entered as predictors and four error categories (Patient Management/Information Delivery, Execution, Procedure Related and One Source) were dependent variables in all of these analysis.

3.6.1. Prediction of Patient Management/Information Delivery Errors from EPQR-A Personality Dimensions

In the first regression analysis, in order to predict PMID Errors from personality dimensions, PMID entered as criterion variable and three personality variables as predictors. Table 9 presents the results of this analysis.

Table 9. Standard multiple regression analyses predicting PMID scores from personality dimensions

Variables	β	T	P
Extraversion	**.24**	**3.80**	**.001**
Neuroticism	**-.15**	**-2.36**	**.05**
Psychoticism	**-.04**	**-.57**	**NS**

Among the set of predictors R^2=.90, (F (3,234) = 7.75, p<.001), PMID Error scores were predicted by neuroticism (β=-.15, p<.05) and extraversion (β=.24, p<.001).
However, psychoticism effect was not significant.

3.6.2. Prediction of Execution Errors from EPQR-A Personality Dimension

In the second regression analysis, in order to predict EXTN Errors from personality dimensions, EXTN entered as criterion variable and three personality variables as predictors. Table 10 presents the results of this analysis.

Table 10. Standard multiple regression analyses predicting EXTN scores from personality dimensions

Variables	β	T	P
Extraversion	**.13**	**2.04**	**.05**
Neuroticism	**-.22**	**-3.50**	**.001**
Psychoticism	**-.08**	**-1.26**	**NS**

Among the set of predictors R^2=.81, (F (3,234) = 6.90, p<.001), EXTN Error scores were predicted by neuroticism (β=-.32, p<.001) and extraversion (β=.18, p<.05). However, psychoticism effect was not significant.

3.6.3. Prediction of Procedure Related Errors from EPQR-A Personality Dimensions

In the third regression analysis, in order to predict PRD Errors from personality dimensions, PRD entered as criterion variable and three personality variables as predictors. Table11 presents the results of this analysis.

Table 11 Standard multiple regression analyses predicting PRD scores from personality dimensions

Variables	β	T	P
Extraversion	**.19**	**3.10**	**.01**
Neuroticism	**-.22**	**-3.48**	**.001**
Psychoticism	**-.07**	**-1.19**	**NS**

Among the set of predictors R^2=.10, (F (3,234) = 8.94, p<.001), PRD Error scores were predicted by neuroticism (β=-.22, p<.001) and extraversion (β=.19, p<.01). However, psychoticism effect was not significant.

3.6.4. Prediction of One Source Errors from EPQR-A Personality Dimensions

In the fourth regression analysis, in order to predict OS Errors from personality dimensions, OS entered as criterion variable and three personality variables as predictors. Table 12 presents the results of this analysis.

Table 12 Standard multiple regression analyses predicting OS scores from personality dimensions

Variables	β	T	P
Extraversion	**-.04**	**-0.53**	**NS**
Neuroticism	**-.09**	**-1.30**	**NS**
Psychoticism	**.02**	**0.28**	**NS**

Among the set of predictors R^2=.01, (F (3,234) = 0.61, N.S.), There was no significant effect found of any of the personality dimensions on OS Error scores. Personality dimensions, namely neuroticism, extraversion and psychotisicm did not predict the OS Errors.

3.7. Regression Analysis: Prediction of MPQ scores from MBI Dimensions

Four separate Standard Regression Analyses were conducted in order to assess how well the different Burnout dimensions predicted different types of errors. Three dimensions of burnout levels, emotional exhaustion, depersonalization and personal accomplishment were entered as predictors and four error categories (Patient Management/Information Delivery, Execution, Procedure Related and One Source) were dependent variables in all of these analysis.

3.7.1. Prediction of Patient Management/Information Delivery Errors from MBI dimensions

In the first regression analysis, in order to predict PMID Errors from Burnout levels, PMID entered as criterion variable and three burnout subscale variables as predictors. Table 13 presents the results of this analysis.

Table 13 Standard multiple regression analyses predicting PMID scores from burnout levels

Variables	β	T	P
EE	**.17**	**1.94**	**NS**
DP	**-.20**	**-2.34**	**.05**
PA	**-.10**	**-1.57**	**NS**

EE: Emotional Exhaustion, DP: Depersonalization

PA: Personal Accomplishment

Among the set of predictors R^2=.13, (F (3,234) = 11.79, p<.001), only depersonalization dimension scores (β=.20, p<.05) had a significant effect on PMID Error scores. The two other burnout dimensions emotional exhaustion and personal accomplishment effects were found to be non significant.

3.7.2. Prediction of Execution Errors from MBI dimensions

In the second regression analysis, in order to predict EXTN Errors from Burnout levels, EXTN entered as criterion variable and three burnout subscale variables as predictors. Table 14 presents the results of this analysis.

Table 14 Standard multiple regression analyses predicting EXTN scores from burnout levels

Variables	β	T	P
EE	**.13**	**1.56**	**NS**
DP	**.26**	**3.05**	**.01**
PA	**-.04**	**-0.68**	**NS**

EE: Emotional Exhaustion, DP: Depersonalization
PA: Personal Accomplishment

Among the set of predictors R^2=.14, (F (3,234) = 12.60, p<.001), only depersonalization dimension scores (β=.26, p<.01) had a significant effect on EXTN Error scores. The two other burnout dimensions emotional exhaustion and personal accomplishment effects were found to be non significant.

3.7.3. Prediction of Procedure Related Errors from MBI dimensions

In the third regression analysis, in order to predict PR Errors from Burnout levels, PR entered as criterion variable and three burnout subscale variables as predictors. Table 15 presents the results of this analysis.

Table 15 Standard multiple regression analyses predicting PRD scores from burnout levels

Variables	β	T	P
EE	**.06**	**0.65**	**NS**
DP	**.18**	**2.04**	**.05**
PA	**-.12**	**-1.91**	**NS**

EE: Emotional Exhaustion, DP: Depersonalization, PA: Personal Accomplishment

Among the set of predictors R^2=.07, (F (3,234) = 6.02, p<.001), only depersonalization dimension scores (β=.18, p<.05) had a significant effect on PR Error scores. The two other burnout dimensions emotional exhaustion and personal accomplishment effects were found to be non significant.

3.7.4. Prediction of One Source Errors from MBI dimensions

In the fourth regression analysis, in order to predict OS Errors from Burnout levels, OS entered as criterion variable and three burnout subscale variables as predictors. Table 16 presents the results of this analysis. Table 16 presents the results of this analysis.

Table 16 Standard multiple regression analyses predicting OS scores from burnout levels

Variables	β	T	P
EE	**.05**	**0.57**	**NS**
DP	**.12**	**1.30**	**NS**
PA	**-.09**	**-1.42**	**NS**

EE: Emotional Exhaustion, DP: Depersonalization

PA: Personal Accomplishment

Among the set of predictors R^2=.04, (F (3,234) = 2.98, p<.05), none of the burnout dimensions had a significant effect on OS error scores.

3.8. Regression Analysis: Prediction of MPQ scores from HSPSC dimensions

Four separate Standard Regression Analyses were conducted in order to assess how well the different Safety Culture dimensions predicted different types of errors. Twelve dimensions of HSPSC; communication openness, feedback and

communication about error, frequency of events reported, handoffs and transitions, management support for patient safety, nonpunitive response to error, organizational learning/continuous improvement, overall perceptions of patient safety, staffing, supervisor/manager expectations and actions promoting safety, teamwork across units, teamwork within units were entered as predictors and four error categories (Patient Management/Information Delivery, Execution, Procedure Related and One Source) were dependent variables in all of these analysis.

3.8.1. Prediction of Patient Management/ Information Delivery Errors from HSPSC dimensions

In the first regression analysis, in order to predict PMID Errors from HSPSC dimensions, PMID entered as criterion variable and twelve HSPSC subscales as predictors. Table 17 presents the results of this analysis.

Among the twelve dimensions of the predictor R^2=.04, (F12, 218) = 2.42, p<.01), none of the predictors had a significant effect on PMID Error scores. None of the dimensions of Patient Safety Culture predicted the frequency of PMID errors.

Table 17 Standard multiple regression analyses predicting PMID scores from HSPSC subscales

Variables	β	T	P
Tw/nU	0.93	1.54	NS
SME	-0.16	-1.96	NS
MSPS	0.11	1.17	NS
OLCI	-0.70	-0.83	NS
OPPS	-0.13	-1.37	NS
FC	-0.02	-0.99	NS
CO	0.08	0.85	NS
FER	0.02	0.32	NS
Tb/Wu	0.18	1.73	NS
ST	-0.05	-.65	NS
HT	0.01	0.11	NS
NPRE	-0.04	-0.54	NS

Tw/nU: Teamwork within units, SME: Supervisor/manager expectations and actions promoting safety, MSPS: Management support for patient safety, OLCI: Organizational learning and continuous Improvement, OPPS: Overall perceptions of patient safety, FC: Feedback and communication about error, CO: Communication openness, FER: frequency of events reported, Tb/wU: Teamwork across units, ST: Staffing, HT: Handoffs and transitions, NPRE: Non punitive response to error

3.8.2. Prediction of Execution Errors from HSPSC dimensions

In the second regression analysis, in order to predict EXTN Errors from HSPSC dimensions, EXTN entered as criterion variable and twelve HSPSC subscales as predictors. Table 18 presents the results of this analysis.

Among the twelve dimensions of the predictor R^2=.14, (F12, 218) = 2.97, p<.001), only overall perceptions of patient safety (β=-.37, p<.001) and teamwork within units (β=.10, p<.05) had a significant prediction value on Execution Errors. Other eleven dimensions were found to have no significant effect on EXTN Error scores.

Table 18 Standard multiple regression analyses predicting EXTN scores from HSPSC subscales

Variables	β	T	P
Tw/nU	0.18	2.20	.05
SME	-0.06	-0.82	NS
MSPS	0.09	0.99	NS
OLCI	0.02	0.26	NS
OPPS	-0.37	-3.97	.001
FC	-0.03	-0.31	NS
CO	0.03	0.32	NS
FER	0.04	0.52	NS
Tb/Wu	-0.13	-1.26	NS
ST	0.00	0.03	NS
HT	0.15	1.72	NS
NPRE	-0.06	-0.83	NS

Tw/nU: Teamwork within units, SME: Supervisor/manager expectations and actions promoting safety, MSPS: Management support for patient safety, OLCI: Organizational learning and continuous Improvement, OPPS: Overall perceptions of patient safety, FC: Feedback and communication about error, CO: Communication openness, FER: frequency of events reported, Tb/wU: Teamwork across units, ST: Staffing, HT: Handoffs and transitions, NPRE: Non punitive response to error.

3.8.3. Prediction of Procedure Related Errors from HSPSC dimensions

In the third regression analysis, in order to predict PRD Errors from safety culture dimensions, standard multiple regression was conducted. Safety Culture dimensions was entered as predictors and PRD scores as dependent variable.

Results revealed that none of the safety culture dimensions R^2=.07, (F12, 218) = 1.36, N.S.) had a significant predicted value on the PRD scores.

Table 19 Standard multiple regression analyses predicting PRD scores from HSPSC subscales

Variables	β	T	P
Tw/nU	0.05	0.55	NS
SME	-0.07	-0.87	NS
MSPS	-0.02	-0.20	NS
OLCI	-0.05	-0.57	NS
OPPS	-0.05	-0.49	NS
FC	-0.07	-0.76	NS
CO	-0.06	-0.59	NS
FER	-0.06	-0.79	NS
Tb/Wu	-0.05	-0.50	NS
ST	-0.007	-0.10	NS
HT	0.18	2.03	NS
NPRE	-0.06	-0.72	NS

Tw/nU: Teamwork within units, SME: Supervisor/manager expectations and actions promoting safety, MSPS: Management support for patient safety, OLCI: Organizational learning and continuous Improvement, OPPS: Overall perceptions of patient safety, FC: Feedback and communication about error, CO: Communication openness, FER: frequency of events reported, Tb/wU: Teamwork across units, ST: Staffing, HT: Handoffs and transitions, NPRE: Non punitive response to error

3.8.4. Prediction of One Source Errors from HSPSC dimensions

In order to predict OS scores from HSPSC dimensions, fourth standard multiple regression analysis was conducted. OS scores were entered as criterion variable and HSPSC dimensions as predictors.

It was found that all twelve dimensions of safety culture R^2=.08, (F12, 217) = 1.63, N.S.) had no effect on One Source Errors.

Table 20 Standard multiple regression analyses predicting OS scores from HSPSC subscales

Variables	β	T	P
Tw/nU	0.04	0.43	NS
SME	0.07	0.91	NS
MSPS	0.12	1.20	NS
OLCI	-0.00	-0.09	NS
OPPS	-0.21	-2.15	NS
FC	0.12	1.25	NS
CO	-0.00	-0.07	NS
FER	-0.11	-1.41	NS
Tb/Wu	-0.15	-1.39	NS
ST	0.02	0.25	NS
HT	-0.08	-0.90	NS
NPRE	-0.10	-1.26	NS

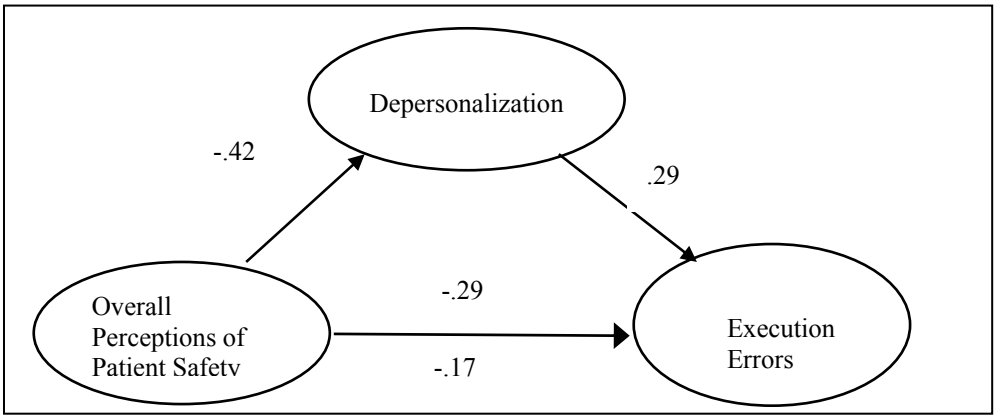
Tw/nU: Teamwork within units, SME: Supervisor/manager expectations and actions promoting safety, MSPS: Management support for patient safety, OLCI: Organizational learning and continuous Improvement, OPPS: Overall perceptions of patient safety, FC: Feedback and communication about error, CO: Communication openness, FER: frequency of events reported, Tb/wU: Teamwork across units, ST: Staffing, HT: Handoffs and transitions, NPRE: Non punitive response to error

3.9. The Mediator Role of Depersonalization between Overall Perceptions about Patient Safety and Execution Errors

In order to test the mediating effect of depersonalization between overall perceptions about patient safety and execution errors, hierarchical regression analysis was performed. In the first step, overall perceptions about patient safety and in the second step, depersonalization variables were entered while execution errors were entered as dependent variable.

It was found that Overall Perceptions about Patient Safety revealed a significant association with Execution errors, β= -.29, p<.001. After the inclusion of Depersonalization, the association between Overall Perceptions about Patient Safety and Execution errors remained significant, but weakened its power β= -.17, p<.01. Thus, Overall Perceptions about Patient Safety seems to have a main effect on Execution errors, but still this association is partially maintained by depersonalization burnout levels. Supporting this hypothesis, the association between Overall Perceptions about Patient Safety and Depersonalization (β= -.42, p<.001), and Depersonalization and Execution errors (β= .29, p<.001) was significant. Thus, the relationship between Overall Perceptions about Patient Safety and Execution errors is, at least partly maintained by the subjects' depersonalization levels. Sobel's test also indicated that the decrease in the beta value was significant (Z= -3.68, p<.001).

Table 21. Overall Perceptions about Patient Safety and Depersonalization predicting Execution errors.



DISCUSSION

The aim of the study was to explore the predictive value of demographic variables, some individual factors, namely, personality dimensions (EPQR-A, extraversion, neuroticism and psychoticism), burnout levels (Emotional exhaustion, Depersonalization and Personal accomplishment) and organizational factors, namely institution type and safety culture dimensions (communication openness, feedback and communication about error, frequency of events reported, handoffs and transitions, management support for patient safety, nonpunitive response to error, organizational learning/continuous improvement, overall perceptions of patient safety, staffing, supervisor/manager expectations and actions promoting safety, teamwork across units, teamwork within units) in predicting types and frequencies of medical error. In this chapter,the results of the analysis will be discussed. Subsequently, the importance and the limitations of the study and the possible implications of the findings will be discussed.

4.1. Psychometric Qualities of Assessment Devices

In the present study, scales were applied to assess the different factors related to medical errors commited by physicians. These scales included Medical Practice Questionnaire (MPQ), Hospital Survey on Patient Safety Culture (HSPSC), Maslach Burnout Inventory (MBI) and Eysenck Personality Questionnaire Revised-Abbreviated Form (EPQR-A). Two of the scales were adapted to Turkish, namely MBI and EPQR-A. However, HSPSC was used with it's translation to Turkish and MPQ was developed by the author and received high internal reliabilities for each subscale. On the other hand, last factor called One Source errors included only two items.

4.2. Gender Differences on Medical Errors

In order to examine the possible gender diffrences, different types and frequencies of medical errors were studied. Although gender differences were not expected, men and women were found to significantly differ in terms of Procedure Related and One Source errors. These differences can be explained by the finding found in the literature (Waring, 2004) that doctors evaluate procedural work as a nursing profession responsibility. Since nursing profession is a female dominat occupation, the difference that men execute procedure related errors more than women may be caused by the underlying gender stereotypes. Men skipping procedural work and reporting more procedure related errors may do so accordance to their underlying gender stereotypes with interpreting procedural work as women's work. In other words, such a stereotypical view may be discouraging them from paying attention to process driven work.

Gender differences were not found in execution and patient management/ information delivery errors. Again in the line with the literature (Waring, 2004), the underlying assumption that doctors interpret medical work as a reflective practice with special expertation, in which such an acknowledgement may let differences to disappear on executional characteristics of the occupation.

4.3. Differences Associated with the Types of Institution on Medical Errors

Differences between types of institutions on medical errors were only found in one source errors. Results revealed that private hospitals significantly execute higher levels of one source errors than university hospitals and university hospitals execute lower levels than public hospitals. This may be explained by the different practical procedures. High costs of diagnostic tests in private hospitals may lower their affordability, which in turn lead patients to request fewer numbers of examination tests from doctors. Such a cycle may cause physicians to diagnose and enter the treatment or therapy with less sources and may only with the information given by

the patient. The finding that physicians in public hospitals report more frequent one source errors than university hospitals may be explained by the intense load on the public hospitals in a manner that with more work needs to be done in less time may lead doctors reserve less time for each patient which in turn induce them to use less sources in patient care.

4.4. Institutional Differences for Hospital Survey on Patient Safety Culture and its Subscales

The present study hypothesized significant differences between institutions on safety culture. It was expected that private hospitals would score higher on safety culture dimensions than university hospitals and public hospitals and university hospitals higher than public hospitals. In the line with the hypothesis, significant differences appeared between groups on safety culture with slight disparities.

The first difference was found for Supervisor/Manager Expectations & Actions Promoting Patient Safety. Although private hospitals were expected to report more actions or expectations promoting patient safety by the supervisiors, university hospitals scored higher on this safety dimension than private and public hospitals. It may be that since being involved in an academic career, doctors at university hospitals may follow up the considering literature and advancements on the issue with endorsing more expectations about patient safety on their coworkers.

Second difference was found on Management Support for Patient Safety dimension. As it was hypothesized, public hospitals significantly differed from university and public hospitals. Results revealed that physicias in public hospitals received the least management support for patient safey than the physicians in university and private hospitals and university hospitals were also found to report lower levels of support than private hospitals. This result may be also explained by manageral staff that needs to deal with all other issues in public hospitals in less time or may be that necessary and required safety applications are not evaluated as essential and are not

given priority in the organization. However, new and faster accreditation actions in health care in private hospitals may cause them to build stronger systems considering patient safety with a more supportive managements. The same explanation may also be true for Feedback and Communication About Errors. It was found that private hospitals had more feedbacks considering changes and events in their units when compared to public hospitals.

When communication scores about errors were found to be low at public hospitals, the difference between public and private, university hospitals was also expected. Public hospitals also received lower safety grades on Teamwork Across Units when compared to private and university hospitals. Although there was no significant differences on Teamwork between Units, hospital staff may be facing less coordination with other hospital units.

All the differences are in the line with each other. As it was just explained, public hospitals lacked of coordination across units. Next difference was found on Handoffs & Transitions which includes items such as ‘‘Problems often occur in the exchange of information across hospital units’’. Each finding are found to explicitily support each other.

Another difference found in Organizational Learning— Continuous Improvement between public and private hospitals whereas university hospitals did not significantly differ from two other institutions. The finding that private hospitals give more priority to patient safety improvements with new arrangements may stem from the competitiveness of the private sector of health care, which inturn takes them one step front from the other institutions.

Again in the line with the hypothesis, public hospitals were found significantly differ from private and university hospitals on their overall patient safety perceptions. Physicians at public hospitals discovered to manifest less positive perceptions about patient safety within their organizations than physicians at private and university

hospitals. When items on this dimension such as ‘‘Patient safety is never sacrificed to get more work done’’are more closely examined this result supports the above mentioned explanation that public hospitals need to do more work done in less time. With great time limitations, public hospital workers may need to deal with more patients in less time, which in turn reflects lower levels and more negative evaluations of safety within an organization.

One expected result was on Frequency of Events Reported dimension. Since the new and fast accrediatation studies have begun in private hospitals as mentioned earlier, they report incidents more frequently than public hospitals. This finding is in the line with the literature that incident reporting is one of the most disscussed issues on patient safety and with being one of the major steps in patient safety, private hospitals are seem to have more concern about the new system. This result has a considerable value for future reserach. Nearly all of the adverse event studies in health care system as discussed earlier, explore the subject with medical records and with incident reporting systems in Turkey, the reseraches may gain a more valid and reliable characteristics.

Finally, Nonpunitive Response to Error dimension yielded interesting results that althogh private hospitals received higher scores on most of the safety dimensions, they were found to exercise more punitive reponse to errors. This finding may show that even with system improvements, they are still putting the blame on the individual’s shoulders and carry out a person approach with punitiveness. It can also be that competitive conditions may lead the management to exert more punitive environment on workers.

Analyses revealed significant and many differences considering patient safety between institutions. According to results, public hospitals do need major advencements in their systems especially in communication and reporting aspects. It is noteworthy to underline that evaluating these differences requires great atenttion with system analysis. This result may also be explained by the great time pressures and heavy loads on the institution. Happily, no serious disparities found between private and university

hospitals, which may show the new progresses being enforced by the two of these institutions.

4.5. Types and Frequencies of Medical Errors and Personality Factors

Although no differences were expected, the results of regression analysis revealed that there is a significant negative relationship between neuroticism and a positive relationship between extraversion and the frequency of medical errors on three factors (patient management/information delivery, execution and procedure related errors).

These findings may be explained in the light of the litearature. Recently, Wallace and Newman (1997) presented a new cognitive model considering neuroticism. For them neurotics, have an unsuccessful regulation of negative thoughts, which refered as dysregulation. They are more prone to ‘‘automatic orienting of attention’’ that their cognitive resources and attention are distracted from an ongoing process, which inturn both effects their behaviours and affects and also their work performance. With this cognitive model, Smillie, Yeo, Furnham and Jackson (2006) declares the possibility that with more cognitive processes directed toward a particular task, it can prevent the dysregulation. When neurotic workers are more occupied or busy they may improve their performance by less interfering with negative thoughts. Since the medical practice is highly intense and loaded, neurotic physicians’ less error frequency may be due to this resource allocation.

Another explanation may lie under the distinct characteristics of these two personality factors. The fact that extraversion is characterized by impulsiveness and being highly social may lead them towards careless acts and inturn cause them to report more frequent medical errors. On the other hand, as neurotics were called ‘‘worriers’’ by Eysenck (1975) and defined by the preoccupation in negative thoughts that things may go wrong, they can be more alert to their performances and execute less frequent medical errors.

4.6. Types and Frequencies of Medical Errors and Burnout

Depersonalization was found to be significantly and positively related to three factors (patient management/information delivery, execution and procedure related errors) of MPQ. However, emotional exhaustion was expected to have an effect on MPQ dimensions since, it was refered as the most central component of burnout (Jackson, Schwab, Schuler, 1986). It can be that physicians in this study may be using this component as a self protective mechanism against emotional exhaustion as explained in the literature (Maslach, Goldberg, 1998) and therefore report higher levels of depersonalization when compared to emotional exhaustion. It may be important to place emotional barriers in the system in order to lessen the effects of burnout levels on medical performance.

4.7. Types and Frequencies of Medical Errors and Safety Culture

Results of the regression analysis revealed that only a few dimensions of patient safety had a significant effect on execution errors. An interesting and unexpected result was that Teamwork within Units was positively related to execution errors. In other words, as Teamwork within a Unit increases, the frequency of Execution errors also increases. When the items on this dimension are more closely examined such as ‘‘When a lot of work needs to be done quickly, we work together as a team to get the work done’’, physicians in this study may have evaluated these judgements as diffusion of responsibility within a unit. The concept of diffusion of responsibility refers to ‘‘Feelings of less personal responsibility for actions of the group by group members than they experience for their own individual behavior’’ which mostly result in failed outcomes. In other words, as more they value teamwork as diffusion of responsibility, they may be reporting more execution errors.

An expected finding was that as Overall Perceptions about Patient Safety increases, the frequency of Execution errors were found to decrease. Since the importance of Patient safety was mentioned, such a finding was not unexpected.However, contradicting with

the hypothesis, only two of the Safety culture dimensions were found to be related to medical errors. According to the results, it was then hypothesized that safety culture dimensions may be mediated by the burnout levels. In the mediation analysis, it was emerged that the effect of Overall Perceptions of Patient safety on execution errors was partially mediated by the depersonalization levels of the subjects.

Importance of the Study

This study was conducted in order to assess the importance of patient safety issues in hospitals. For this reason, factors related to Medical Practice was examined. Understanding the underlying organizational and individual factors is really important in reducing medical errors. It is one of the first studies in Turkey that explored the concept with a broad perspective. As a result, in a country like Turkey which has been recently introduced to Patient Safety concept, to determine the possible consequences and reasons for adverse events would reduce the frequency of medical errors and improve the quality of care in the health care system.

The findings of this study will provide information to rule makers and managements within organizations. Knowing the importance of patient safety, the major differences between institutions and the psychological states of workers will able them to focus on effective solutions. The implications of this study are also very important in building safer systems both for patients and also for doctors.

Limitations of the present study

The main limitation of the study is that, because there was no medical records in hospitals, the medical errors were assessed through self-report measures. The results may be biased by social desirability in a manner that subjects may have reported executing less frequent errors.

Secondly, the population of the sample was not a random sample, which may raise a questionable generability. Therefore the findings should be generalize only to populations with similar characteristics.

Thirdly, although the frequencies and types of medical errors were assessed by MPQ, the experience of any serious injury was not asked to physicians. However, the realtionship between the behavior and the consequences of the behavior may have given a clearer picture on the predictive value of safety climate on medical errors.

Finally, MPQ was developed for the aims of this study and was used for the first time in Turkey. According to the factor analysis, the last and the forth factor called One Source Errors included only two items. For the future studies, more items should be added to this factor to measure One Source errors.

Suggestions for Future Research

Further effective research on patient safety and medical errors requires larger and representative samples. In the future, in order to understand patient safety within units should also be examined. Different professions can be taken into account.

With a developing of incident reporting systems in the institutions, the same concept can be studied by medical recors which may give a clearer picture. Another interesting research would be comparing different cultures considering patient safety. Since, Turkey is in the beginning of new arrangements, cultural comparisons can provide valuable findings.

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APPENDICES

Appendix A- Demographic Information Sheet

Bu ankette yer alan soru ve maddeler sağlık personelinin çalışma koşulları, karşılaşılan sorunlar ve ilgili konularda tutum ve davranışlarınız hakkındadır. Hiçbir maddenin tam olarak doğru veya yanlış cevabı yoktur. Burada, sizin gerçekten nasıl hissettiğiniz, ne düşündüğünüz ve ne yaptığınız önemlidir. Bu nedenle lütfen soruları sizi tam olarak yansıtacak şekilde, içtenlikle cevaplayınız. Eksik doldurulmuş anketleri araştırmada kullanmak mümkün değildir. Bu nedenle lütfen ankette hiçbir maddeyi cevapsız bırakmayınız. Ankete verdiğiniz tüm cevaplar saklı tutulacaktır. Sonuçlar genel olarak değerlendirilecek, kişi veya kurum bazında değerlendirme yapılmayacaktır. Bu nedenle anket üzerine isminizi yazmanıza gerek yoktur.

Değerli katkılarınızdan dolayı teşekkür ederiz.

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Y. Lisans Öğrencisi

Tez Danışmanı
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1. Cinsiyetiniz: Bayan □ Bay □

2. Yaşınız:_____

3. Medeni Durumunuz:
   Evli: □ Bekar: □ Boşanmış: □ Dul: □
   Nişanlı/Sözlü: □ Diğer: □

4. Evli iseniz;
   Eşinizin mesleği:
   Sağlık Personeli:□
   Diğer: □ _____ (Lütfen Belirtiniz)

5. Çalıştığınız Kurum:
   Özel Hastane: □ Kamu Kurumu: □ Muaynehane: □
   Tıp fakültesi: □ Özel Polikilinik: □ Diğer: □

6. Şu anda çalışmakta olduğunuz kurum kaçıncı iş yeriniz? _____

Uzman iseniz;

7. Uzmanlık alanınız: _____
8. Uzmanlıkta kaçıncı yılınız? _____

Pratisyen iseniz;

9. Çalıştığınız alan? _____
10. Pratisyen hekim olarak kaçıncı yılınız? _____

11. Göreviniz kapsamında gece nöbeti tutuyor musunuz? Evet □ Hayır □

12. Göreviniz kapsamında hafta sonu nöbeti tutuyor musunuz? Evet □ Hayır □

Appendix B- Medical Practice Questionnaire

Aşağıda yer alan sorular, doktorların meslek hayatlarında karşılaştıklarını bildirdikleri örneklerden oluşmaktadır. Ancak bazıları diğerlerinden daha sık ortaya çıkabilmektedir. Öğrenmek istediğimiz son 12 ayda sizin bu durumlarla ne sıklıkla karşılaştığınız. Lütfen aşağıdaki maddelerde size uygun olan sayıyı işaretleyin.

	Hiçbir zaman						Her zaman
1)Yalnızca hastanın verdiği bilgi veya yönlendirmesi ile ileri tetkik istemeden tanı koyduğum olmuştur.	1	2	3	4	5	6	7
2)Yalnızca hastanın verdiği bilgi veya yönlendirmesi ile ileri tetkik istemeden tedaviye başladığım olmuştur.	1	2	3	4	5	6	7
3)Hasta muayenesini yeterli sürede yapmadığım için yanlış tanı koyduğum olmuştur.	1	2	3	4	5	6	7
4) Önceden önlem almayarak yanlış ameliyat yaptığım olmuştur. (örn; sağda fıtığı olan hastaya yanlışlıkla sola fıtık ameliyatı yapmak)	1	2	3	4	5	6	7
5) Yanlış yoldan ilaç uyguladığım olmuştur (örn; damardan verilmemesi gereken ilacın uyarı yapılmaması nedeniyle hemşirenin damardan uygulaması).	1	2	3	4	5	6	7
6) Acil hastaya öncelik vermeyerek tedavide gecikmeye yol açtığım olmuştur.	1	2	3	4	5	6	7
7) Tetkik istem formunda belirtmediğim için yetersiz ve eksik değerlendirmeye sebep olduğum olmuştur.	1	2	3	4	5	6	7
8) Yanlış tetkikler istediğim olmuştur.	1	2	3	4	5	6	7
9) Anamnez alırken sormam gereken bazı soruları atladığım olmuştur.	1	2	3	4	5	6	7
10) Anamnez alırken geçirmekte olduğu hastalıkla ilgili geçirdiği önceki operasyonları sormayı atladığım olmuştur.	1	2	3	4	5	6	7
11) Anamnez alırken geçirmekte olduğu hastalıkla ilgisi olmayan geçirdiği önceki operasyonları sormayı atladığım olmuştur.	1	2	3	4	5	6	7
12) Hastayı bilgilendirirken yeterli bilgi vermediğim olmuştur.	1	2	3	4	5	6	7
13) Hasta yakınlarını bilgilendirirken yeterli bilgi vermediğim olmuştur.	1	2	3	4	5	6	7

14) Hastaya yapılacak muayene ile ilgili yeterli bilgi vermediğim olmuştur.	1	2	3	4	5	6	7
15) Hastalığın prognozunu hasta ve/veya yakınlarıyla detaylı olarak tartışmadığım olmuştur.	1	2	3	4	5	6	7
16) Tedavi süreci ile ilgili hasta ve/veya yakınlarıyla yeterli bilgi vermediğim olmuştur.	1	2	3	4	5	6	7
17) Hasta ve veya yakınlarına tedavi süreci ile ilgili yeterli bilgi vermediğim için komplikasyonlara neden olduğum olmuştur.	1	2	3	4	5	6	7
18) Hasta ve/ veya yakınlarına ilaç kullanımı ile ilgili yeterli bilgi vermediğim olmuştur.	1	2	3	4	5	6	7
19)Antiseptik kurallara uymadığım olmuştur.	1	2	3	4	5	6	7
20) Yanlış kısaltmalar sebebiyle, yanlış uygulamalara neden olduğum olmuştur (örn; mikrogram'la miligram karıştırmak).	1	2	3	4	5	6	7
21) Doğru tanı ve tedavi uygulamalarına rağmen farklı komplikasyon gösteren hasta takibinde yetersiz kaldığım olmuştur.	1	2	3	4	5	6	7
22) Tetkik ve filmleri yanlış yorumladığım olmuştur.	1	2	3	4	5	6	7
23) Sonuç kesinleşmeden bir veriyi hasta ve/veya yakınlarıyla gereğinden erken paylaştığım olmuştur.	1	2	3	4	5	6	7
24)İlaç dozu ayarlamalarında yanlışlık yaptığım olmuştur.	1	2	3	4	5	6	7
25) Hasta tedavisini gereken süreden uzun tuttuğum olmuştur.	1	2	3	4	5	6	7
26) Operasyon şartlarına uygun olmayan hastayı ameliyat ettiğim olmuştur.(örn; aspirin kullanan hastayı operasyona almak)	1	2	3	4	5	6	7
27)Ameliyat bölgesinde yabancı cisim bıraktığım olmuştur.	1	2	3	4	5	6	7
28) Hasta ile ilgilenen diğer görevlilere eksik bilgi verdiğim olmuştur.	1	2	3	4	5	6	7
29) Hastayı durumuna uygun olmayan serviste izlediğim olmuştur.	1	2	3	4	5	6	7
30) Hastanın tedavisini gereken zamandan erken kestiğim olmuştur.	1	2	3	4	5	6	7

Appendix C- Maslach Burnout Inventory

Aşağıda işle ilgili olarak yaşadıklarınıza ilişkin konular belirtilmiştir. Size uygun olan seçeneği işaretleyerek belirtiniz.

	Her zaman	Çoğu zaman	Bazen	Çoğu zaman	Hiçbir zaman
1. İşimden soğuduğumu hissediyorum.	1	2	3	4	5
2. İş dönüşü kendimi ruhen tükenmiş hissediyorum.	1	2	3	4	5
3. Sabah kalktığımda bir gün daha bu işi kaldıramayacağımı hissediyorum.	1	2	3	4	5
4. İşim gereği karşılaştığım insanların ne hissettiğini hemen anlarım.	1	2	3	4	5
5. İşim gereği karşılaştığım bazı kimselere sanki insan değillermiş gibi davrandığımı fark ediyorum.	1	2	3	4	5
6. Bütün gün insanlarla uğraşmak benim için gerçekten çok yıpratıcı.	1	2	3	4	5
7. İşim gereği karşılaştığım insanların sorunlarına en uygun çözüm yollarını bulurum.	1	2	3	4	5
8. Yaptığım işten yıldığımı hissediyorum.	1	2	3	4	5
9. Yaptığım iş sayesinde insanların yaşamına katkıda bulunduğuma inanıyorum.	1	2	3	4	5
10. Bu işte çalışmaya başladığımdan beri insanlara karşı sertleştim.	1	2	3	4	5
11. Bu işin beni giderek katılaştırmasından korkuyorum.	1	2	3	4	5
12. Çok şeyler yapabilecek güçteyim.	1	2	3	4	5
13. İşimin beni kısıtladığını hissediyorum.	1	2	3	4	5
14. İşimde çok fazla çalıştığımı hissediyorum.	1	2	3	4	5
15. İşim gereği karşılaştığım insanlara ne olduğu umurumda değil.	1	2	3	4	5
16. Doğrudan doğruya insanlarla çalışmak bende çok fazla stres yaratıyor.	1	2	3	4	5
17. İşim gereği karşılaştığım insanlarla aramda rahat bir hava yaratırım.	1	2	3	4	5
18. İnsanlarla yakın bir çalışmadan sonra kendimi canlanmış hissederim.	1	2	3	4	5
19. Bu işte birçok kayda değer başarı elde ettim.	1	2	3	4	5
20. Yolun sonuna geldiğimi hissediyorum.	1	2	3	4	5
21. İşimdeki duygusal sorunlara serinkanlılıkla yaklaşırım.	1	2	3	4	5
22. İşimin gereği karşılaştığım insanların bazı problemlerini sanki ben yaratmışım gibi davrandıklarını hissediyorum.	1	2	3	4	5

Appendix D- EPQR-A

Lütfen Aşağıdaki her bir soruyu ‘Evet’ ya da ‘Hayır’ı yuvarlak içine alarak cevaplayınız. Doğru veya yanlış cevap ve çeldirici soru yoktur. Hızlı cevaplayınız ve soruların tam anlamları ile ilgili çok uzun düşünmeyiniz.

1. Duygu durumuz sıklıkla mutlulukla mutsuzluk arasında değişir mi ?	Evet	Hayır
2. Konuşkan bir kişimisiniz ?	Evet	Hayır
3. Borçlu olmak sizi endişelendirir mi ?	Evet	Hayır
4. Oldukça canlı bir kişi misiniz ?	Evet	Hayır
5. Hiç sizin payınıza düşenden fazlasını alarak açgözlülük yaptığınız oldu mu ?	Evet	Hayır
6. Garip ya da tehlikeli etkileri olabilecek ilaçları kullanır mısınız ?	Evet	Hayır
7. Aslında kendi hatanız olduğunu bildiğiniz birşeyi yapmakla hiç başka biriniz suçladınız mı ?	Evet	Hayır
8. Kurallara uymak yerine kendi bildiğiniz yolda gitmeyi mi tercih edersiniz ?	Evet	Hayır
9. Sıklıkla kendinizi her şeyden bıkmış hisseder misiniz ?	Evet	Hayır
10. Hiç başkasına ait olan birşeyi (toplu iğne veya düğme bile olsa) aldınız mı ?	Evet	Hayır
11. Kendinizi sinirli bir kişi olarak tanımlar mısınız ?	Evet	Hayır
12. Evliliğin modası geçmiş ve kaldırılması gereken bir şey olduğunu düşünüyor musunuz ?	Evet	Hayır
13. Oldukça sıkıcı bir partiye kolaylıkla canlılık getirebilir misiniz ?	Evet	Hayır
14. Kaygılı bir kişi misiniz ?	Evet	Hayır
15. Sosyal ortamlarda geri planda kalma eğiliminiz var mıdır ?	Evet	Hayır
16. Yaptığınız bir işte hatalar olduğunu bilmeniz sizi endişelendirir mi ?	Evet	Hayır
17. Herhangi bir oyunda hiç hile yaptınız mı ?	Evet	Hayır
18. Sinirlerinizden şikayetçi misiniz ?	Evet	Hayır
19. Hiç başka birini kendi yararınıza kullandınız mı ?	Evet	Hayır
20. Başkalarıyla birlikte iken çoğunlukla sessiz misiniz ?	Evet	Hayır
21. Sık sık kendinizi yalnız hisseder misiniz ?	Evet	Hayır
22. Toplum kurallarına uymak, kendi bildiğinizi yapmaktan daha mı iyidir ?	Evet	Hayır
23. Diğer insanlar sizi çok canlı biri olarak düşünürler mi ?	Evet	Hayır
24. Başkasına önerdiğiniz şeyleri kendiniz her zaman uygular mısınız ?	Evet	Hayır

Appendix E- Hospital Survey On Patient Safety Culture

A)

Lütfen aşağıda çalıştığınız alan/servisle ilgili ifadelere ne derece katılıp katılmadığınızı belirtiniz. Size en uygun olanı işaretleyeniz.

Çalışmakta olduğunuz alan/servisi düşünerek cevaplayın…	Tamamen Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen Katılıyorum
1. Bu serviste insanlar birbirlerini desteklerler……	1	2	3	4	5
2. İş yüküyle başa çıkmak için yeterince personelimiz var….	1	2	3	4	5
3. Hızlı bir şekilde bitirilmesi gereken pek çok iş olduğunda, işi bitirmek için takım olarak beraber çalışırız……	1	2	3	4	5
4. Bu serviste, insanlar birbirlerine saygılı davranırlar……	1	2	3	4	5
5. Bu servisteki personel hasta bakımının yararına ters düşecek kadar fazla çalışmaktadır……	1	2	3	4	5
6. Hasta güvenliğini arttırmak için yoğun olarak bazı şeyler yapıyoruz……..	1	2	3	4	5
7. Hasta bakımının yararına ters düşecek kadar fazla geçici personel kullanıyoruz……	1	2	3	4	5
8. Çalışanlar, hatalarının kendilerine karşı tutulduğunu ‘bir kenara yazıldığını’ hissederler……	1	2	3	4	5
9. Burada, hatalar olumlu değişimlere yol açmıştır……	1	2	3	4	5
10. Burada, sadece şans eseri ciddi hatalar oluşmamaktadır	1	2	3	4	5
11. Bu serviste, bir alan çok yoğun olduğunda, diğerleri yardım ederler……	1	2	3	4	5
12. Bir olay rapor edildiğinde, problemin değil, kişinin kaydedildiği hissedilir……	1	2	3	4	5
13. Hasta güvenliğini geliştirecek değişiklikler yaptıktan sonra, etkinliğini değerlendiririz……	1	2	3	4	5
14. ‘Kriz modunda’ çalışırız, çok fazla şeyi, çok hızlı yapmaya çalışarak……	1	2	3	4	5
15. Daha fazla işi bitirmek adına, hasta güvenliğini asla özdençıkarmayız……	1	2	3	4	5
16. Çalışanlar, yaptıkları hataların, kişisel dosyalarında tutulduğundan endişe etmektedirler……	1	2	3	4	5
17. Bu serviste hasta güvenliği sorunlarımız var……	1	2	3	4	5
18. Prosedür ve sistemlerimiz, hata oluşumlarını önlemede yidir…….	1	2	3	4	5

B)
Lütfen aşağıda çalıştığınız süpervizör/yöneticiniz veya direkt olarak rapor verdiğiniz kişi ile ilgili bulunan ifadelere ne derece katılıp katılmadığınızı belirtiniz. Size en uygun olan seçeneği daire içine alarak işaretleyiniz.

	Tamamen Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Tamamen Katılmıyorum
1. Hasta güvenliği işlemlerine uygun bir iş yapıldığında süpervizörüm/yöneticim, beni takdir eder.	1	2	3	4	5
2. Süpervizörüm/yöneticim, hasta güvenliğini geliştirmek için, çalışanların önerilerini ciddi şekilde değerlendirir.	1	2	3	4	5
3. Ne zaman bir baskı durumu ortaya çıksa, süpervizörüm/yöneticim kestirme yollar kullanılması gerekse bile daha hızlı çalışmamızı ister.	1	2	3	4	5
4. Süpervizörüm/yöneticim, tekrar tekrar ortaya çıkan hasta güvenliği sorunlarını görmezden gelir.	1	2	3	4	5

C)
Aşağıda yer alan ifadeler çalıştığınız ortam/serviste ne sıklıkla ortaya çıkmaktadır? Size en uygun olanını yuvarlak içine alarak ifade edebilirsiniz.

Çalışmakta olduğunuz hastane bölüm/servisini düşünerek cevaplayın…	Hiçbir zaman	Nadiren	Bazen	Genellikle	Her zaman
1. Olay raporlarına dayanarak ortaya konan değişikliklerle ilgili olarak geri bildirim almaktayız.	1	2	3	4	5
2. Çalışanlar, hasta bakımını olumsuz etkileyecek bir şey gördüklerinde, bunu özgürce dile getirebilirler.	1	2	3	4	5
3. Bu serviste ortaya çıkan hatalarla ilgili bilgilendirilmekteyiz..	1	2	3	4	5
4. Personel, daha kıdemliler tarafından verilen kararları ve ortaya konan davranışları özgürce sorgulayabilmektedirler.	1	2	3	4	5
5. Bu serviste, hataların tekrar olmasını engellemek için gerekli yolları tartışırız.	1	2	3	4	5
6. Personel, doğru gözükmeyen bir durum olduğunda soru sormaktan korkmaktadırlar.	1	2	3	4	5

D)
Çalışmakta olduğunuz hastane ortamı/servisinde, aşağıda belirtilen hatalar ortaya çıktığında, ne sıklıkla rapor edilmektedir? Size en uygun olanını yuvarlak içine alarak ifade edebilirsiniz.

	Hiçbir zaman	Nadiren	Bazen	Genellikle	Her zaman
1. Bir hata yapıldığında, ancak hastayı etkilemeden ortaya çıkarılıp, düzeltildiğinde, ne sıklıkla rapor edilmektedir?	1	2	3	4	5
2. Bir hata yapıldığında, ancak hastaya herhangi bir potansiyel zararı olmadığı durumunda ne sıklıkla rapor edilmektedir?	1	2	3	4	5
3. Bir hata yapıldığında ve hastaya zarar verebileceği ancak vermediği durumunda ne sıklıkla rapor edilmektedir?	1	2	3	4	5

F)

Lütfen aşağıda çalıştığınız hastane ile ilgili bulunan ifadelere ne derece katılıp katılmadığınızı belirtiniz. Size en uygun olanını yuvarlak içine alarak ifade edebilirsiniz.

Çalışmakta olduğunuz hastaneyi düşünerek cevaplayın…	Tamamen Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Tamamen Katılmıyorum
1. Hastane yönetimi, hasta güvenliğini destekleyen bir iş ortamı sağlamaktadır.	1	2	3	4	5
2. Hastane birimleri birbirleri ile iyi bir şekilde koordine değildir.	1	2	3	4	5
3. Hastayı bir üniteden diğerine transfer ederken bazı şeyler gözden 'kaçıyor/ kaçırılıyor'.	1	2	3	4	5
4. Birlikte çalışması gereken hastane üniteleri arasında iyi bir işbirliği mevcuttur.	1	2	3	4	5
5. Önemli hasta bakımı bilgileri, nöbet değişimlerinde genellikle kaybolmaktadır.	1	2	3	4	5
6. Diğer hastane servisleri personeliyle çalışmak genellikle hoş olmamaktadır.	1	2	3	4	5
7. Sorunlar, sık sık hastane servisleri arasında gerçekleşen bilgi alışverişinde oluşmaktadır.	1	2	3	4	5
8. Hastane yönetiminin hal ve hareketleri, hasta güvenliğine en üst önceliğin verildiğini gösteriyor.	1	2	3	4	5
9. Hastane yönetimi, sadece ters bir durum oluştuktan sonra hasta güvenliği ile ilgilenir görünmektedir.	1	2	3	4	5
10. Hastane üniteleri, hastalara en iyi bakımı sağlamak için birlikte oldukça iyi çalışmaktadırlar.	1	2	3	4	5
11. Bu hastanede, nöbet değişimleri hastalar için sorunludur.	1	2	3	4	5