T.C.
REPUBLIC OF TURKEY
HACETTEPE UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES

INTERN DOCTORS' LIKELIHOOD OF SPEAKING UP FOR PATIENT SAFETY

Şenay SARMASOĞLU

Program of Medical Education
MASTER OF SCIENCE THESIS

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APPROVAL PAGE

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YAYIMLAMA VE FİKRİ MÜLKİYET HAKLARI BEYANI

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ETHICAL DECLARATION

In this thesis study, I declare that all the information and documents have been obtained in the base of the academic rules and all audio-visual and written information and results have been presented according to the rules of scientific ethics. I did not do any distortion in data set. In case of using other works, related studies have been fully cited in accordance with the scientific standards. I also declare that my thesis study is original except cited references. It was produced by myself in consultation with adviser Prof. Melih Elçin and Peter Dieckmann PhD written according to the rules of thesis writing of Hacettepe University Institute of Health Sciences.

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To patients and relatives harmed by medical errors…

ABSTRACT

SARMASOGLU, S. Intern Doctors' Likelihood of Speaking Up for Patient Safety, Hacettepe University Graduate School of Health Sciences, Department of Medical Education Master of Science Dissertation, Ankara, 2019. Communication breakdowns make significant contributions to medical errors and adverse events in health care. Speak up about patient safety creates a safe atmosphere which is vital to keeping patients safe, preventing errors, and improving the quality of care. Intern doctors are junior medical staff in healthcare institutions, and they experience difficulties in addressing situations that threaten patient safety. This study aims to explore intern doctors' likelihood of speak up for patient safety and identify factors that affect intern doctors' speak up decisions. A qualitative design was used in this study. Purposeful sampling was used as a sampling technique, and a sample of this study consists of nine intern doctors who were enrolled in the 6th Year regular Medical Doctor (MD) program at Hacettepe University Faculty of Medicine in 2017-2018 Spring Semester. Data was collected with face to face semi-structured interviews using semi-structured questions on June 2018. Thematic analysis was used to interpret the data. The results of the study revealed that intern doctors frequently witnessed medical errors during internship and they attempted to speak up at least once before. However, intern doctors are reluctant to speak up about issues that threaten patient safety. Individual, relationship, situational, decision making, consequence related and cultural barriers are preventing intern doctors to speak up. Further, the essential motivator behind the decision to speak up in circumstances that threaten patient safety is feeling empathy for the patient and their relatives. The hierarchical status of the person was decisive in their way of speaking. Interns are supportive and grateful to speak up, and superiors' reactions are often suppressive, sometimes punitive. In line with the results of the research, recommendations were offered at the institutional and national level to improve the records of medical errors, to make arrangements to increase intern doctors' speak up, and to internalize the safety culture of all health care team.

Key Words: Patient safety, speak up, voice behavior, medical student

ÖZET

SARMASOGLU, S. Tıp Fakültesi Son Sınıf Öğrencilerinin Hasta Güvenliğini Tehdit Eden Durumları Dillendirme Davranışlarının Tanımlanması, Hacettepe Üniversitesi, Sağlık Bilimleri Enstitüsü, Tıp Eğitimi Programı, Yüksek Lisans Tezi, Ankara, 2019. İletişim problemleri, sağlık hizmeti sunumunda yaşanan tıbbi hatalara ve olumsuz olaylara önemli katkılar sunmaktadır. Dillendirme ya da konuşma, hastaların güvende olması, tıbbi hataların önlenmesi ve bakımın kalitesinin artması için güvenli bir ortam yaratılması konusunda hayati öneme sahiptir. Bu çalışmanın amacı, intörn doktorların hasta güvenliğini tehdit eden durumları konuşmaya yönelik yaklaşımlarını araştırmak ve konuşma kararlarını etkileyen faktörleri açıklamaktır. Nitel araştırma deseni kullanılan araştırmada amaçlı örnekleme yöntemlerinden yararlanılmış ve araştırmanın örneklemini 2017-2018 öğretim yılında Hacettepe Üniversitesi Tıp Fakültesi'nde 6. Sınıfa kayıtlı dokuz intörn doktor oluşturmuştur. Veriler 2018 yılı Haziran ayında yarı yapılandırılmış görüşme sorularının kullanıldığı yüz yüze görüşmelerden elde edilmiştir. Verilerin analizinde tematik analiz kullanılmıştır. Araştırma sonuçları intörn doktorların çok fazla tıbbi hataya şahit oldukları ve en az bir kez konuşmaya çalıştıkları bulunmuştur. Bununla birlikte intern doktorların hasta güvenliğini tehdit eden durumları dillendirme konusunda isteksiz oldukları belirlenmiştir. Bireysel, ilişkisel, durumsal, karar verme ile ilgili, sonuç ile ilgili ve kültürel olmak üzere pek çok faktörün intörn doktorların hasta güvenliğini tehdit eden durumları dillendirmelerini engellediği bulunmuştur. Ayrıca intörn doktorların hasta güvenliğini tehdit eden durumları konuşmalarının en büyük motivatörlerinin hastaya ve hasta yakınına duyulan empati olduğu, intörnlerin konuşma yollarının karşılarındaki kişinin hiyerarşik konumdan etkilendiği, konuşma durumunda intörn doktorların birbirlerine karşı destekleyici ve minnettar, kıdemlilerin ise intern doktorlara karşı çoğunlukla baskılayıcı bazen de cezalandırıcı tepkilerde bulunduğu belirlenmiştir. Araştırma sonuçları doğrultusunda, tıbbi hata kayıtlarının iyileştirilmesine, hizmet içi eğitimlere, tıp fakültesi eğitimi programına ve güvenlik kültürünün geliştirilmesine yönelik önerilerde bulunulmuştur.

Anahtar Kelimeler: Hasta güvenliği, dillendirme, dile getirme, konuşma, tıp öğrencisi

CONTENTS

LIST OF SYMBOLS AND ABBREVIATIONS

CRM: Crew Resources Management

IOM: The Institute of Medicine

JCI: The Joint Commission International

TeamSTEPPS®: Team Strategies and Tools to Enhance Performance and Patient Safety

U.S.A: The United States of Amerika

WHO: The World Health Organization

FIGURES

TABLES

1. INTRODUCTION

1.1. Theoretical Approach

Communication and collaboration have a powerful impact on reducing errors and improving safety within an organization (1). Reflections of this information on health care organizations are considerably dramatic. Institute of Medicine (IOM) reported that communication problems partake more than 70% of medical errors in the United States (U.S.A.) in 1999 (2). Although there are different types of communication breakdowns, the failure to "speak up" is a vital communication problem for keeping patients safe and preventing errors (3).

Sharing ideas, information and opinions might consider to speak up. More specifically speak up can be defined as *"the raising of concerns by health care professionals for the benefit of patient safety and care quality upon recognizing or becoming aware of the risky or deficient actions of others within health care teams in a hospital environment."* (4, 5).

Healthcare professionals commonly encounter challenging situations that need to make decisions, whether speak up or not. Maxfield et al., (6) have classified especially tricky and also essential conversations for health care professionals in seven categories. These categories consist of broken the rules, mistakes, lack of support, incompetence, poor teamwork, disrespect, and micromanagement (6).

The prevalence of difficulties with speak up among health care professionals is notable. More than two-thirds of healthcare professional report witnessing incompetent practices, less than 1 out of 10 are like to share their concerns with their colleagues (4, 6). The reasons underlying the decision not to speak up draws the attention of health care researchers to get a deeper understanding of barriers impede patient safety. Richard, Pfeiffer, and Schwappach (7), categorized the decision whether one speaks up or not into individual factors, contextual factors, and organizational factors. In another research Raemer, Kolbe, Minehart, Rudolph, and Pian-Smith (8) examined the hurdles to speak up of anesthesiologist under four categories: climate, content, relational and self. In cases where patient safety is in danger, health care professionals are expected to take the initiative and speak up. However, studies mention have mentioned many factors that affect the speak up about

patient safety threats including the potential for perceived harm to patient, relationship- communication concerns, perceived efficacy of speak up, leadership, culture and workload, experiences (3, 9).

Researches show that high hierarchy in working environment make speak up particularly difficult (9, 10). Moreover, professionals lower on the hierarchy are generally hesitant to speak up or question the professional is who are higher hierarchical status (7). Even if a patient is at risk due to a medical error (9) findings show that barriers to speak up are involved, may differ across healthcare settings, and need to be measured if they are to be better understood (11).

When employees do not speak up about problems, organizations miss opportunities for improvement and learning (11). Interns as the front line healthcare professionals have valuable information about patient safety that organizations need to know to mitigate safety concerns and improve quality (11). Despite the underlying mechanisms of giving a decision whether to speak up or not are very complex and depend on individual, cultural variables; speak up the behavior of Turkish medical students remains unclear in healthcare literature.

1.2. Aim and Research Questions

This study aims to explore intern doctors' likelihood of speak up for patient safety and identify factors that affect intern doctors' speak up decisions. This research has been sought to answer the following questions:

- What is intern doctors' likelihood of speak up for patient safety?
- What are the factors that affect intern doctors' speak up?

2. THE LITERATURE REVIEW

The literature review that follows is structured around nine emerged topic areas. Two ways of thinking safety: Safety I and Safety II, patient safety, degree of harm related to medication errors, patient safety, and communication, seven crucial conversations for health care, patient safety and speak up, influencing factors of speak up, barriers for speak up, intervention for increasing speak up.

2.1. Two Ways of Thinking Safety: Safety I and Safety II

Hollnagel, Wears, and Braithwaite (12) provide two approaches to safety in "From Safety I to Safety II: A White Paper" and explain the need for transformation from Safety I to Safety II approaches comprehensively within the framework of changes in the health system and world. Paper explains that the Safety-I approach may treat many adverse events. However, there is a need to develop a new safety approach in order to understand how everyday actions achieve safety. In Safety-II approach the investigations focuses on understanding of how things usually go right (12). The foundation of Safety-I signifies two essential assumptions: systems are separated into their parts and systems, and their elements either function accurately or not. While writers agree on the assumption that causes predate consequences, they critique the assumption that the causes can always be found. Root cause analysis might be a valid example of telling the causality credo. One of the well known example of root cause analysis is the Swiss Cheese Model (12).

"Swiss Cheese" Model of Error Causation

According to James Reason's the Swiss Cheese Model of System, complex systems and working environments have many defensive layers that offer protection against the harmful consequences of errors (13). This model describes the conditions that must be realized in order to make the negative consequences of errors made visible by using Swiss Cheese. Although the cheese has a perforated structure, there is a cheese texture that prevents the gaps from creating a dangerous transition when the whole is taken into consideration. Therefore, according to the model, to reach a damaging dimension in this structure, it is necessary to cross the defense lines first. It

is explaining the fact that there multi-layers safety barriers in front of the adverse effects; the problem is explained as the combination of problem areas (holes in the cheese) in defense layers (See Figure 2.1.) (13, 14).
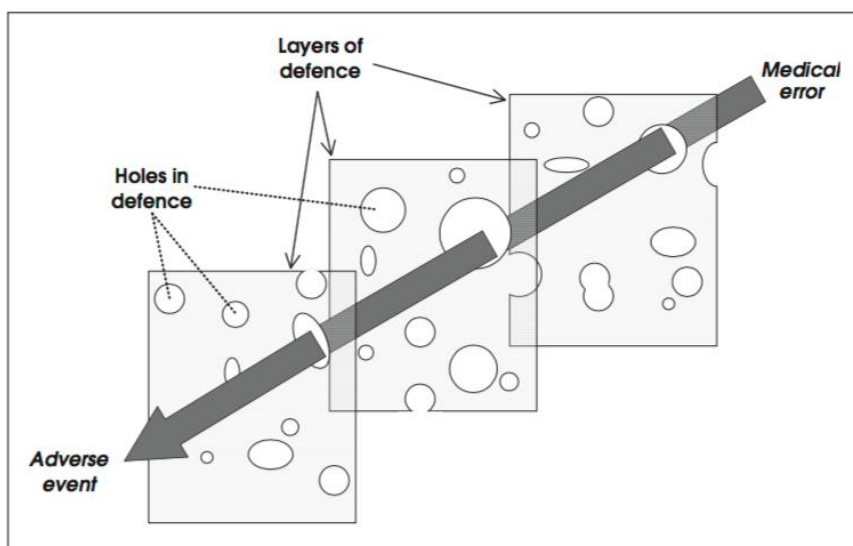
Figure 2.1. James Reason's "Swiss cheese" model of error causation. (13, 14).

Safety-II is *"based on the principle that performance adjustments are ubiquitous and that performance not only always is variable but that it must be so. The variability should, however, not be interpreted negatively, as in performance deviations, violations, and non-compliance. Since performance adjustments and performance variability constitute the foundation of Safety-II, it follows that the mechanisms cannot rely on causality and linear propagations of causes and effects"* (12).

2.2. Patient Safety

In the 21st century, health systems are required to be equipped to enable people to access services when they need them, and to receive timely, safe, effective, efficient, equal and equitable health services from a patient-oriented perspective. After nearly 2,500 years of Hippocrates' "Primum non nocere / do not harm" principle, health statistics show that preventing patients from harm and making them safe is one of the

most problematic issues to be addressed in the provision of health services on a global level.

According to the milestone report To Err is Human, medical errors could be responsible for almost 100,000 deaths per year in the U.S.A. (2). This report, with its dramatic consequences related to medical errors, has brought attention to patient safety not only in America but all around the world. However nearly 15 years after the publication of the report, medical errors were still common and from all causes led to as many as 400.000 deaths per year in 2013 (15) and medical errors were already the third leading cause of death in the U.S.A. hospitals behind cancer and heart disease in 2016 (16).

The World Health Organization (WHO) (17) European data show that healthcare-related adverse events and medical errors occur in almost every ten of hospitalizations. Developed Eurepan countries such as The United Kingdom, Spain, France, and Denmark have similar estimated adverse events about 10% of hospital admissions a year (17).

Unfortunately, there are no statistics related to medical errors in Turkey. However, it is possible to find assumptions in the "Patient Safety: Turkey and the World" report published by the Turkish Medical Association in 2008 (18). According to the assumptions in this report, 18,950 to 99,000 people died as a result of medical errors in Turkey (18). Although the assumptions point out to a wide range, even the lowest rate is substantial and vital.

The WHO declared that patient safety is a serious global public health concern in 2018 (19). In line with the fact that 1 in 300 chance of a patient being harmed during health care, 1 in 10 patients is harmed while receiving hospital care and patient harm is the 14th leading cause of morbidity and mortality across the world (19). Depending on the multi dimensional structure of health systems, every stage of health care delivery has a potential for patient harm due to medical errors. For instance, medical errors can occur at the diagnosis stage, at the treatment stage or other stages (18). However, some areas carry a much higher risk for patient safety. Joint Commission International (JCI) publishes International Patient Safety Objectives in order to ensure the safety of accredited organizations and to highlight areas where

they have particular difficulty in avoiding threats. Improving effective communication was one of the goals declared as International Patient Safety Goals in 2018 (20).

2.3. Degree of Harm Related to Medical Errors

Medical errors do not always harm the patient, and the outcomes of medical errors vary from no-harm errors to hazardous conditions. International Classification for Patient Safety Report (21) defined patient outcome as *"an impact upon a patient which is wholly or partially attributable to an incident"* and the degree of harm is as follows:

"• ***None*** *– patient outcome is not symptomatic or no symptoms detected, and no treatment is required.*

• ***Mild*** *– patient outcome is symptomatic, symptoms are mild, loss of function or harm is minimal or intermediate, but short term, and no or minimal intervention (e.g., other observation, investigation, review or minor treatment) is required.*

• ***Moderate*** *– patient outcome is symptomatic, requiring intervention (e.g., additional operative procedure; additional therapeutic treatment), an increased length of stay, or causing permanent or long term harm or loss of function.*

• ***Severe*** *– patient outcome is symptomatic, requiring life-saving intervention or major surgical/medical intervention, shortening life expectancy or causing major permanent or long term harm or loss of function*

• ***Death*** *– on balance of probabilities, death was caused or brought forward in the short term by the incident."*

No-harm errors (close calls, near misses, potential adverse events, warning events or good catches) are any event that could have had an adverse patient consequence (22, 23) and adverse event (harmful incidents) is an incident which resulted in harm to a patient (23).

2.4. Patient Safety and Communication

Communication problems partake to more than 70% of medical errors in the U.S.A., (2) and miscommunication is a significant contributor to up to 60% of adverse

events in healthcare (24). Avoidable patient harm (25) may result in health professionals' failure to communicate (26, 27). Greenberg et al. (28) identified that communication breakdowns resulting in harm to patients. Study results showed that analysis also showed that communication breakdowns were often occurring in the perioperative phase and residents mostly having difficulty to speak up to the senior surgeon of critical events. Vermeir et al. (29), reviewed a total of 69 articles and found out that poor communication could lead to many adverse outcomes. Sutcliffe, Lewton, and Rosenthal (30), conducted semi-structured interviews with 26 residents and residents reported a total of 70 mishap incidents. Aspects of "communication" and "patient management" were the two most commonly cited contributing factors.

2.5. Seven Crucial Conversation for Health Care

Maxfielt et al., (6) conducted a comprehensive research which is one of the ancestors of research that sheds light on the development of awareness and understanding of healthcare professionals' speak up behaviors in U.S.A. Mix method was used in this study including focus groups, interviews, and workplace observations, and collecting survey data from more than 1,700 healthcare professionals. This study identified the seven categories of conversations that are especially difficult and, at the same time, important for healthcare professionals:

"Broken Rules, taking shortcuts that could be dangerous to patients.

Mistakes, show poor clinical judgment when making assessments, doing triage, diagnosing, suggesting treatment, or getting help.

Lack of Support, reluctant to help, impatient, or refuse to answer their questions

Incompetence, clinical care providers have concerns about the competency of some nurses or other clinical care providers they work with.

Poor Teamwork, clinical-care providers have one or more teammate who gossips or is part of a clique that divides the team.

Disrespect, clinical-care providers work with some who are condescending, insulting, or rude. Who are verbally abusive—yell, shout, swear, or name call.

Micromanagement, nurses and other clinical care providers work with some number of people who abuse their authority—pull rank, bully, threaten, or force their point of view on them."

2.6. Patient Safety and Speak Up

One of the most critical communication failures that threatens patient safety is the hesitancy of health care professionals to speak up. Speak up is *"assertive communication in clinical situations that require (immediate) action through questions or statements of opinion or information with appropriate persistence until there is a clear resolution to prevent error or harm from reaching the patient"* (31-33). Speak up has also been defined as *"the raising of concerns by health care professionals for the benefit of patient safety and care quality upon recognizing or becoming aware of the risky or deficient actions of others within health care teams in a hospital environment"* (5). Speak up has positive outcomes for patients, for the healthcare organization, and healthcare providers. Rising concerns, discomfort, or suspicion creates a safe atmosphere which is vital to keeping patients safe, preventing errors, and improving quality of care (6).

2.6.1. Frequency of Speak up

The prevalence of difficulties with speak up is remarkable (6). Researches show that health professionals remain silent even if they are aware of a situation that threatens patient safety (34, 35- 38). In a study among healthcare professionals in labor and delivery showed minority of doctors, nurses and midwives reported their concerns about patient safety with the colleague (39). The results of the study conducted by Maxifield et al. (6) showed that many health care professionals had seen some of their colleagues cutting corners, making mistakes, and demonstrating serious incompetence. However, less than 10% are willing to share with their colleagues. A qualitative research with experienced nurses and doctors showed that oncology healthcare professionals frequently experience situations requiring speak up but that they occasionally remain silent (33). A similar result obtained from another research conducted in Switzerland by for investigating the oncology healthcare professionals' (nurses and doctors) likelihood of speak up about patient safety. Analyses showed that

nearly every second healthcare professional was confronted with potentially harmful errors and rule violations at least sometimes, whereas 70% of the respondents had chosen to remain silent at least once in the past (40). Schwappach and Richard (41) aimed to determine the frequencies of healthcare professionals speak up-related behaviors. Findings showed that between 62% and 80% of healthcare professionals reported at least one safety concern during the last four weeks. While withholding voice was reported by 19%–39% of healthcare professionals, speak up was reported by more than half of healthcare professionals (55%–76%). Schwappach et al. (42) analyzed speak up behavior and safety climate in Austria. Results indicated that more than 50% of health care professionals perceived concerns about patient safety within the last four weeks and observed a potential error or noticed rule violations. Between 16% and 42% of responders remained silent and between 96% and 98% responders did speak up concerns for safety.

Frequency of Speak up Across Junior Healthcare Professionals

Sharing concerns about patient safety with another healthcare professional in the health care team, is a common problem for healthcare professionals, regardless of the profession (37). However, according to the limited number of research in the literature, for students, interns and resident who are in a critical position in ensuring patient safety in the health care system, speak up is particularly challenging (34, 43) Samuel et al., (44) found that the of medical students were unwilling to speak up to senior staff regarding inappropriate hand hygiene practices. In the recent study, it was found that many medical (45) students had difficulty speak up about medical errors. In another study residents were unlikely to feel free to express their concerns to other members of the team about medical errors in patient care (43).

2.7. Influencing Factors of Speak Up

In the literature, there are many studies carried out to understand health care professionals' motivators to speak up or barriers that lead them to not speak up about patient safety or non-professional attitudes. Okuyama et al. (5) adapted Morrison's model of employee voice to healthcare professionals and provided a conceptual framework in their systematic review. In the Model of Health Care Professionals

Speak Up influencing factors of speak up have been assigned to the six categories (Figure 2.2.). A closer look at the categories will provide a more in-depth understanding of the influencing factors of speak up.

The predictions of the severity of the harm that may arise due to medical error and clarity of the clinical context are considered as the factors that will motive the speak up of health care professionals (***Motivation and clinical context)***. Powerful and visible hospital administrative support, interdisciplinary policy-making, effective teamwork, a good relationship between team members, and attitude of leaders/superiors are considered as essential contributors to speak-up behavior (***General contextual factors)***. It was stated that being satisfied with the working environment, feeling a responsibility towards the patient, defining responsibilities and roles, feeling safe, and having favorable speaking experiences had positive effects on speak up (***Individual factors)***. The possible reaction from an addressed person is an important factor in the decision to speak up of the health care professionals (***The perceived safety of speak up)***. Health care providers believe that nothing will change even if they speak up, affects their speak up decision negatively ***(Perceived efficacy of speak up)***. It was stated that nurses sometimes use different tactics such as collecting facts or selecting a person to speak up situations ***(Tactics and targets).***
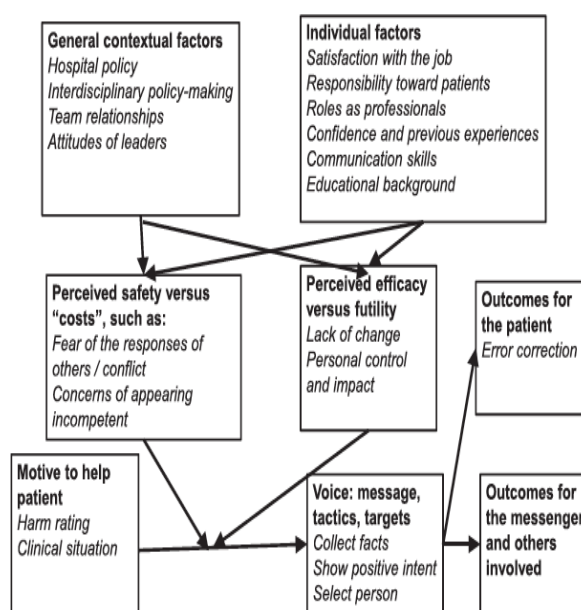

Figure 2.2. Model of health care professionals' speak up (5).

2.8. Barriers for Speak Up

Several factors may influence speak up about patient safety threats. The decision of whether healthcare professional speaks up or withholds his or her voice can be categorized into climate-related factors, contextual factors, relational factors and self factors (8):

"Repercussion expected, not an environmental norm and absence of a speak-up rubric have been reported to climate-related factors that are leading to not speak up.

Uncertainty about the issue, did not realize speak-up opportunity was happening, impaired situational awareness: Crisis or complexity, not considered a speak-up situation, uncertainty about the consequences of speak up, confidence dealing with consequences, more immediate action than speak up and routine not to speak up has been reported as contextual factors that hurdles to speak up.

Stereotypes of others on the team, familiarity with the individual, respect for experience, perceived hierarchy, respect for the territory, the value of a relationship, loss of professional respect, gender issue, futile to speak up have been reported as relational factors that are leading to not speak up.

Avoidance of potentially embarrassing situations, natural obedience, protection of physician autonomy, fear of being wrong, personal reputation and perception of limited responsibility have been reported as self factors that hurdle to speak up."

2.8.1. Barriers for Speak Up of Junior Healthcare Professionals

Medical students, intern doctors, and residents are junior medical staff in healthcare institutions, and they experience difficulties specific to their position in addressing situations that threaten patient safety. There are qualitative and quantitative study results in the literature about the barriers of speak up of the junior medical staff (See Appendix 1). In this section, the barriers in the literature have been compiled under six categories in order to make the subject clear and understandable: individual barriers, relationship barriers, consequence related barriers, decision making barriers,

situational barriers ve cultural barriers (See Table 2.1.).

Table 2.1. Barriers for Speak Up of Medical Students, Interns and Residents

	Barriers	*Resource*
Individual Bariers	Personal factors	(46- 48)
	Gender	(3, 49)
	Age	(49)
	Personality of junior & senior	(49)
	Lack of interpersonal skills	(50)
	Concerns already addressed assumption	(50)
	No harm done assumption	(50)
Relationship Bariers	Behaviour, communication of seniors	(51, 52, 53)
	Fear of jeopardising an ongoing relationship	(49, 50, 54)
	Intimidation	(50)
	Avoidance of conflict	(3, 49, 54)
	Concern for reputation	(54)
	Fear of embarrassment of self or others	(44, 49, 54)
	A strong desire to ' fit in with the team'	(55)
	Students' feeling of elitism	(30, 46- 48).
	No preexisting relationship	(49)
	Respect and trust	(49)
	Lack of team support	(49)
Consequence Related Bariers	Concern over being misjudged	(54)
	Fear of repercussions	(49, 55)
	Fear of punitive response	(30, 46- 48, 54).
	Concern for affecting future job assessments	(44)
	Concern over being negatively evaluated	(54)
Situational Bariers	*Barriers*	*Resource*
	Ambiquity-clarity	(49; 50)
	Perceived effect on patient	(49)
	Perceived effect on self	(49)
	Perceived effect of relationship	(49)
	Workload-related bariers	(50)
Decision Making Bariers	Lack of knowledge/ formal training	(49, 51)
	Lack of training in effective challenging techniques	(51)
	Fear of being wrong	(49- 50, 54)
	Loss of situational awarenes	(49)
	Lack of confidence	(49)
	Lack of experience	(49)
	Lack of communication skills	(49)
Cultural Bariers	National/ country culture	(52, 56)
	Power distance	(49)
	Professional culture: Medical hierarchical culture	(44, 48, 49, 50,54, 56)
	Organizational culture: inefficiency of speak up	(50)
	Department culture	(43)

2.9. Interventions for Increasing Speak Up

2.9.1. Crew Resources Management (CRM)

CRM training was adapted from aviation to healthcare teams for improving patient safety and preventing accidental harm within the systemic and constant approach. The concept of CRM originated in 1979 from National Aeronautics and Space Administration workshop based on the air traffic accidents can not be attributed only to technical problems, and that problems in "social and human factors" are the actual threats (57, 58).

Salas and colleagues defined CRM training as a *"a family of instructional strategies designed to improve teamwork in the cockpit by applying well-tested training tools (eg, performance measures, exercises, feedback mechanisms) and appropriate training methods (eg., simulators, lectures, videos) targeted at specific content (eg., teamwork knowledge, skills, and attitudes)"* (59). For instance, CRM training is mandatory for military flight crews since the early 1990s, and speak up is an important component of their training (60).

The first efforts to transfer CRM training from aviation to healthcare organizations were initiated in the 1980s (61). Since then, CRM training has been implemented in many healthcare disciplines. Recently Gross et al. (62) reviewed the literature ant showed that operating room teams and surgery, emergency medicine, intensive care unit staff, and anesthesiology came in contact most with a majority of the CRM interventions.

2.9.2. Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS®)

TeamSTEPPS® is one example of standardized curricula that addresses the impact of human factors on medical teams (63). TeamSTEPPS® has five key principles: Communication, Leadership, Situation Monitoring, and Mutual Support (63).

Communication: *A structured process by which information is clearly and accurately exchanged among team members.*

Leadership: Ability to maximize the activities of team members by ensuring that team actions are understood, changes in information are shared, and team members have the necessary resources.

Situation Monitoring: Process of actively scanning and assessing situational elements to gain information or understanding, or to maintain awareness to support team functioning. The situation monitoring process component is situational awareness and shared mental model.

Mutual Support: Ability to anticipate and support team members needs through accurate knowledge about their responsibilities and workload.

3. STUDY DESIGN AND METHODS

3.1. Study Design

Phenomenologic research methodology was used in this qualitative study[*]. Patton (64) explaines phenomenology as

> *"Phenomenology is a study based on the assumption that; there is an essence or essences to shared experience. These essences are the core meanings mutually understood through a phenomenon commonly experienced. The experiences of different people are bracketed, analyzed, and compared to identify the essences of the phenomenon, for example, the essence of loneliness, the essence of being a mother, or the essence of being a participant in a particular program. The assumption of essence, like the ethnographer' s assumption that culture exists and is important, becomes the defining characteristic of a purely phenomenological study."*

[*] COREQ (Consolidated Criteria for Reporting Qualitative Research) Checklist has been used as an quality assessment tool for this study (See Appendix 2)

3.2. Participants and Sample

The population of the study consist of intern doctors who were enrolled in the 6th year (last year) regular Medical Doctor (MD) program at Hacettepe University Faculty of Medicine in 2017-2018 Spring Semester. Hacettepe University Faculty of Medicine aims to *"provide a mission and a vision to individuals to become self-determined and self-motivated and to attain problem-solving capabilities based on knowledge and experiments"*. Physicians who graduated from Hacettepe University are expected to "*become hardworking and adhere to the principles of medicine, serve the best interests of their country and humanity with a sincere attitude, and to act responsibly towards their patients"*. Regular MD program and a dual degree MD/Ph.D. program are offered by Hacettepe University Faculty of Medicine in medical sciences in an undergraduate degree. Undergraduate program of Hacettepe University Faculty of Medicine has been accredied by Association for Evaluation and Accreditation of Medical Education Programs (65).

The regular MD program of Faculty of Medicine starts with core lessons with minimal clinical exposure during the first three years and continues with a mixture of clinical rounds and medical courses in the fourth and fifth years, and completes with full-year internship period in the sixth years. Internship in Hacettepe University Faculty of Medicine consist of Internal Medicine (2 months), Child Health and Diseases (2 months), Emergency Medicine (2 months), Public Health (2 months), Mental Health (1 month), Obstetrics and Gynecology (1 month), General Surgery (1 month) and Elective Internal/ Surgical Sciences (1 month). During this period, intern doctors prepare themselves for being doctor by taking responsibility under the supervision of faculty and experts (66).

Hacettepe University Faculty of Medicine students were selecting elective courses related to patient safety and interprofessional collaboration, starting in the 2014-2015 academic year. However, these courses covered only general subjects, such as safety culture and the main domains that threaten patient safety. Mandatory interprofessional collaboration and patient safety courses began to take place in the for 1 hour per week in the 2nd and 3rd grade Medicine faculty curriculum. Especially in the 3rd grade curriculum, the subject of patient safety is predominantly involved. Moreover, in the 3-day orientation training, the emphasis is given to patient safety; continuing educations are conducted to draw attention to specific issues throughout the internship period. Following the review of the sample education programs such as the WHO Patient Safety Curriculum Guide for Medical Schools (67) the original design was developed considering the needs and priorities of the institution.

Purposeful sampling was used as a sampling technique. Purposeful sampling, as a widely used qualitative design study sampling technique, allows the selection and identification of information-rich cases in order to use limited resources efficiently (64). Despite the invisibility of importance their contributions, intern doctors are especially experienced with the phenomenon of speak up regarding their crucial role in health care teams. The convenience and snowball sampling types of purposeful sampling were used to collect information from interns (68, 69). Intern doctors were invited to participate in the study via the announcements (See Appendix 3) which took place at the bulletin board at Hacettepe University Faculty of Medicine in May and June 2019 (convience sampling). Three intern doctors responded to this announcement

and we asked each of them to refer us to other intern doctors (snowball sampling). Since the researcher has no personal or professional relations that might have perceived as a potential threat by intern doctors, intern doctors were willing to engage in sharing their experiences and opinions. There were not any criteria for inclusion or exclusion for the study. Due to the qualitative nature of the study and to capture valuable and unique information about the intern doctors' speak up for patient safety, data was collected until the study has reached a saturation point to ensure that adequate and quality data collected to support the study. The study was completed with nine intern doctors' voluntary participation.

3.3. Data Collection

Intern doctors were invited to study by announcements or recommendations of the participant interns. They were informed about the aim of the study, method of the study, voluntary participation, and all intern doctors were given the right to refuse participation or withdraw at any time without any penalties even if they previously agreed to participate.

All interviews were held on June 2018. Interview schedules and places were arranged according to the intern doctors' working schedules and requests. Interviews were conducted in a Faculty of Medicine building and at the Hacettepe University Hospitals. Interviews were held in intern rooms, meeting rooms and cafeteria. No one else presented besides the participants and researcher in intern room and meeting rooms during interviews. And necessary measures were taken to ensure that all meetings could be conducted in a quiet environment without being disturbed.)

On the day of the interview, each participant received a further verbal explanation of the purpose of the study. Confidentiality was ensured with verbal and written consent obtained from participants (See Appendix 4). Before beginning to interview for the anonymity of the data, students were asked to determine a code or nickname. Students preferred to be called with their real names during interviews. However, numbers were used during the data interpretation process in an attempt to respect the wishes of the intern doctors and privacy.

One intern was the pilot sample of the study. The questions were tested in terms of intelligibility, applicability, and suitability, and researchers made the required

changes. Since there was no need to make significant changes in the questions after the pilot interview, the data obtained from the pilot interview were also included in the study results. The shortest interview lasted approximately 12 minutes, and the most extended interview lasted approximately 43 minutes. All interviews were conducted face-to-face by Şenay Sarmasoğlu in the Turkish language and audio recorded. Researcher took notes during and after the interviews. Şenay Sarmasoğlu has a Ph.D. degree in Fuldamentals of Nursing. She conducted two qualitative research before this study (See Curriculum Vitae).

3.3.1. Semi Structured Interviews

The data of the study was collected using semi-structured questions. At the beginning of the interviews introductionary questions (could you talk about yourself, how would patients describe you as an intern doctor, and what is your general assessment about your internship? What were your duties, roles, and responsibilities?) were asked. Semi-structured questions were developed to gather data according to the aim of the study coherent with the researches examined intern doctors' and residents' speak up behaviors and barriers about patient safety. (44, 52, 53). Semi-structured interview questions were as follows:

You see that:

- A senior doctor who will perform a surgery,
- A resident doctor who will intubate the patient in the emergency room,
- A doctor who is performing wound care in the ward,

Violates the principles of surgical asepsis.

1. Complete this story in accordance with your own possible decision. How would you behave?
2. How will your decision reflect on the patient? Can you explain it?
3. How will your decision reflect on you? Can you explain it?
4. What are the factors that lead you to end the story like this (speak up or keep silent)? Can you explain it?
5. Would you like to change your decision regarding speak up or keep silent after reviewing the possible consequences for the patient and you?

6. What would be the possible reaction of the doctor in this situation?

7. How difficult would it be for an intern/ for you to face such a situation? Can you rate the difficulty between 1 and 10? Why is it so difficult/easy?

8.

For interns who feel difficult to speak up	For interns who feel easy to speak up
Under which conditions would it be easier to talk?	Under which conditions would be more difficult to talk?

9. Why do you think those who oppositely complete the story? What are the factors that push them to speak up/ keep silent?

10. What is the possibility of experiencing such a situation for an intern?

11. Why could the doctors in the case violate the principles of surgical asepsis?

12. Have you ever experienced or witnessed such a situation? (when, where, how, what did you feel afterward? Would you like to behave differently?)

13. What can be done to make all interns speak up for patient safety in such situations?

3.4. Ethical Considerations

The ethical review and approval of the study was obtained from the Hacettepe University Ethical Commission (Number: 431.10-1393) (See Appendix 5).

Researchers followed the standards of the Declaration of Helsinki.

Students were informed verbally about the aim of the study, voluntarily and anonymous participation, as well as the data handling process. Written informed consent was obtained from students who accepted to be a part of this research, and they were informed that they could withdraw at any time. The students do not get any grades for participation.

Data were treated with informed confidentiality and were coded to ensure anonymity during the presentation of data. The study was carried out using non-invasive techniques. Interns were protected against psychological stress or discomfort,

anxiety, personal embarrassment, and indignity. Confidentiality of all data and records associated with this research study were maintained. After completing the data collection, it is not possible anymore to trace the back to a person, as their names were not recorded.

The data will be stored on secure drives, and only the study group will have access to the data. Audiorecorded data will be kept in a locked file for seven years after record and will be used only by the study group.

3.5. Data Analysis

Thematic analysis was used to interpret the data. The audiorecorded records were transcribed verbatim by the researcher simultaneously data collection process. Each interview was listened again and compared with the transcribed text in order to verify transcriptions. Transcriptions of all interviews were combined in the full qualitative data. The full qualitative data text was read over again to become familiar with the entire body of the data. The researcher took notes and wrote down early impressions on the text. Notes that taken by researcher during and after the interviews were added to the text as comments. After gaining a more profound perspective over interviews, the text was imported to Microsoft® Excel Electronic file for coding procedures. Interviewee number, questions, and answers were labeled.

Each segment of data that was relevant to or captured something interesting about the research questions was highlighted and coded with open coding. After gaining initial ideas about codes, researcher and adviser discussed the initial codes and developed codes together. All coding process was held by hand. Initial themes were generated from codes. Then codes and themes were organized under contexts. Contexts, themes, and codes were reviewed by comparing the Microsoft Excell file data. Researchers in the supervision of advisors defined final contexts, themes, subthemes, and codes. Thematic maps were used to demonstrate the codes, subthemes, and themes in a more constructed manner. Quotations were provided to explore intern doctors' experiences.

Limitations of the Study

This study was conducted with a relatively small sample of intern doctors who were enrolled in the 6th year regular medical doctor program at one university in Turkey. Therefore, there should be a limitation on the generalizability of the study results.

4. RESULTS

Nine intern doctors participated in the study. Intern doctors' were between 24 and 30 years of age. Three intern doctors were male, and six intern doctors were female. Eight intern doctors were born in Turkey, and one of the intern doctors was foreign-born.

Findings from analysis of the quantitative data were explained under seven contexts, related themes (See Figure 4.1.):

Context 1. Intern doctors' evaluations about their internship

Context 2. Causes of medical error (Themes: individual factors, organizational factors, theory & practice gap, and cultural factors)

Context 3. Decision of speak up

Context 4. Barriers to speak up (Themes: individual barriers, relationship barriers, situational barriers, consequence related barriers, decision making barriers, cultural barriers)

Context 5. Motivators of speak up (Themes: empathy for patient and relatives, empathy for the doctor, professional responsibility and moral- belief)

Context 6. How to speak up (Themes: direct communication, hierarchical pathway and speak up to authority)

Context 7. Reactions to speak up (Themes: supportive reactions, negligent reactions, suppressive reactions and punitive reactions)

Context 8. Solutions for silence (Themes: education, breaking prejudice, external control mechanism, empathy, safety culture, peer interactions and impossible)
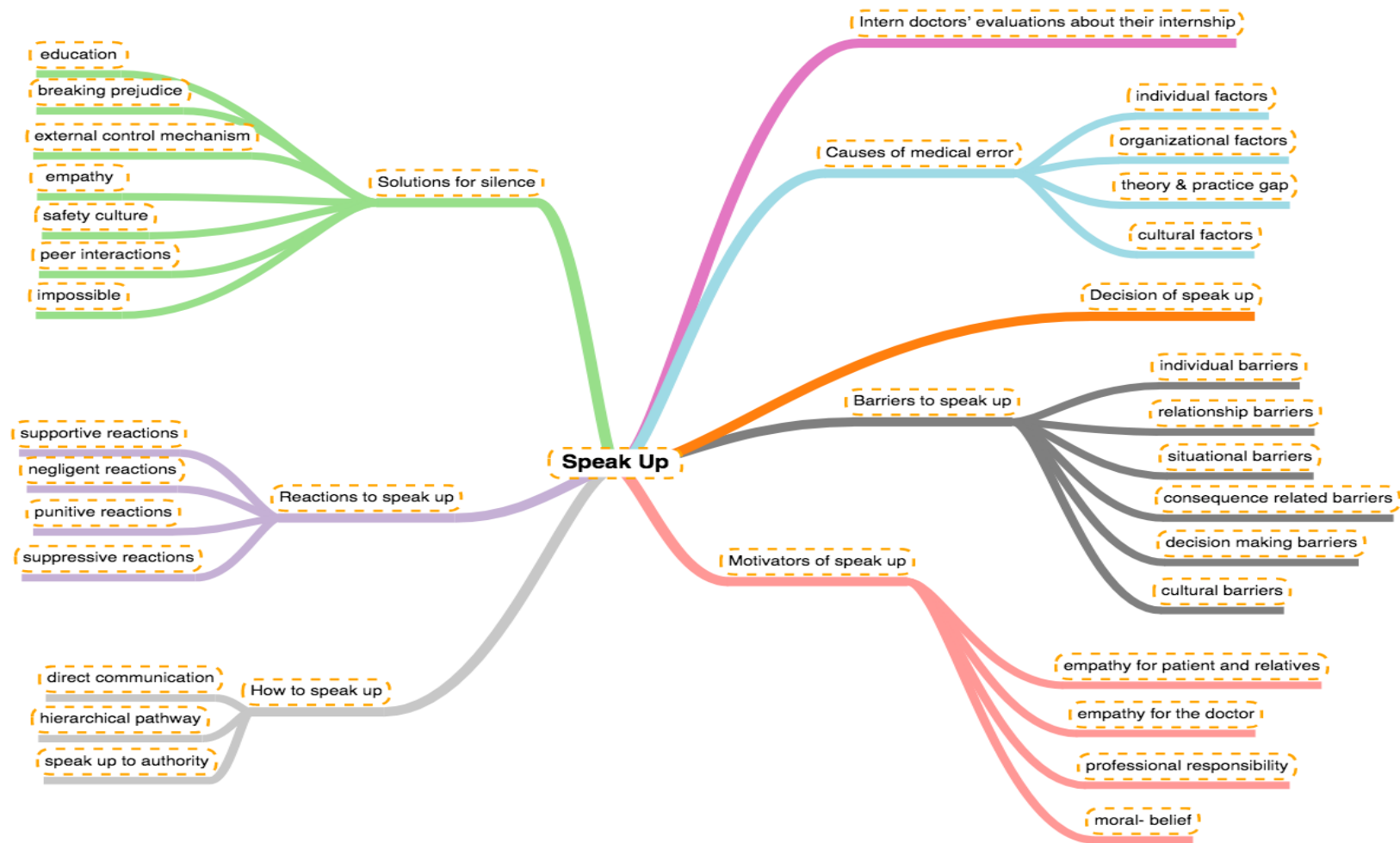
Figure 4.1. Mindmap of Intern Doctors' Speak Up

Context 1: Intern Doctors' Evaluations About Their Internship

Intern doctors stated that their expectations from the internship were to have an opportunity to integrate the theoretical knowledge into real patient care. However, when they evaluated the internship process, they conclude that most of their duties consisted of routine tasks such as doing secretarial work, taking blood and wound dressing, and they often did not feel like doctors. The internship generally did not meet the expectations of the intern doctors and also failed to achieve their desired gains:

"I will not lie. We were exposed to secretarial work, postal work such as bringing blood tubes to and from the lab. Well, it is a bad expression I know, how can I say interns are seen as cheap workforce in our school." (Intern 4)

"I thought we would learn more. In semester 4, I was saying that we are learning these things theoretically, but we do not see in practice. So I cannot learn. I had a very high expectation about the internship...but it has not happened. Maybe my expectations were too high." (Intern 6)

"Learning and integration are a bit more difficult because things are more like taking blood and wound dressing. I do not know what can be done to improve it, but sometimes there have been times when I said that I don't know what I'm doing. You're not a doctor in the internship ... you are somewhere in the middle of nowhere ..." (Intern 6)

"Overall, I was satisfied. It was going well, and I liked what I learned during my internship. I found the opportunity to make many applications, but when we are going to learn slowly, we are constantly doing paperwork, we are doing a chore, it just started to feel like we are just trying to fill it up. After that day, I am so bored; it's got to end, I really wanted it to end". (Intern 9)

Context 2. Causes of Medical Error

Figure 4.2. Shows intern doctors' perception of the cause of the medical error. Intern doctors mentioned that many factors might cause the medical error to threaten patient safety in healthcare settings.

Moreover, according to the intern doctors, the incidence of these harmful medical errors is very high, nearly high enough to be normalized. Findings from the intern doctors' perceptions about the cause of medical error analyzed under four themes: individual factors, theory & practice gap, organizational factors, and cultural factors. Individual factors were the most mentioned causes of medical errors by intern doctors. The second important factor was organizational factors such as working conditions and department culture.
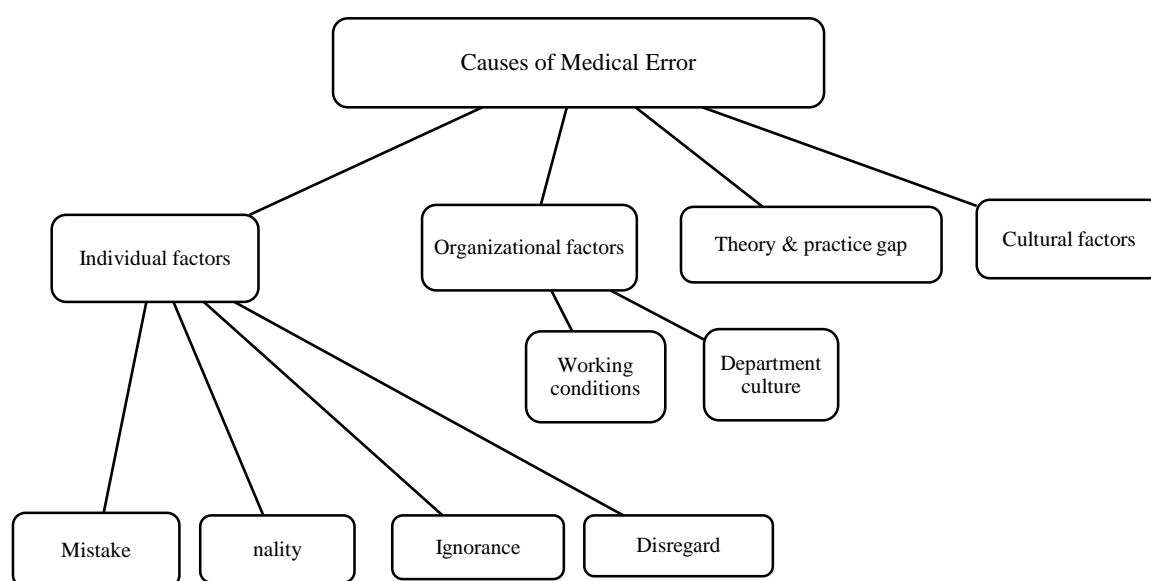
Figure 4.2. Thematic network diagram of the causes of medical errors.

Theme 2.1. Individual Factors

According to the intern doctors' perception, mistakes, personality, ignorance, disregard, are individual factors that might cause the medical error.

"I do not think they made such mistakes knowing. I think it's often overlooked." (Intern 8) - *Mistake*

"I think they were careless. However, I do not know what caused these errors. Because of their personalities? I've met very relaxed people. They do not care about anything." (Intern 2) - *Personality*

"If we do not know how to do something. When we first started, no one knew how to get a blood culture. It has been told, but ... yes, it has explained in the orientation, but you do not know exactly 100% of anything without practice. You ask someone who does. Come show me how we do it." (Intern 8) – *Ignorance*

"People may be ignoring it because the possibility of infection is low, very low." (Intern 6) – *Disregard*

Theme 2.2. Organizational Factors

Working conditions and department culture are organizational factors that might cause medical errors that intern doctors mentioned. Some of the intern doctors mentioned that the ratio of medical mistakes or patient safety threats is mostly related to the department culture. Some departments, like oncology, pediatrics, and internal medicine, pay more attention to not cause harm to a patient. However, surgical departments do not pay enough attention to such issues:

"working conditions, keeping watch for 36 hours, inserting a catheter in too many patients, taking blood from too many patients, dressing too many patients. All of them reduce the quality of the service we provide to the patient. I'm sure if we were working under optimal conditions, patient care or quality would be much better." (Intern 6) - *Working conditions*

"In pediatrics, for example, they pay much more attention to the asepsis. I do not know if it is a child or not. Doctors are paying attention. The nurses are paying attention. They warn you if you miss it. It depends on how much the senior person cares. In other words, if the senior person gives supreme importance, dictates says to be done, it is done. If not, it is up to the person. So it is entirely up to the person. It is up to the person's approach and perspective. (Intern 8) - *Department culture*

Theme 2.3. Theory& practice gap

Intern doctors mentioned that principles, methods, and the theory they learned during courses and practiced at the laboratory are quite different from real-life rules:

"For example, before intravenous catheterization, they say to wipe it only once. Sometimes I do it twice, and I do it two or three times. Sometimes when I could not catheterize the vein, I use the same cotton for another vessel. There is such a thing as perfection, and there is such a thing as real life. The practice is completely different ... the practice is always different. Maybe we need to make an extra effort to do it as it does in theory." (Intern 3) - *Theory& practice gap*

Theme 2.4. Cultural Factors

Some intern doctors brought a broader perspective, and they motioned national culture also has an essential effect on the attitudes towards safety issues:

"I think we, as a nation, are not people who do a job according to a book or rule. It is because of it." (Intern 6)

"Cultural features are also involved." (Intern 1)

"I might be more careful if the patient looks like a nice person. For example, if the patient looks like a rude person, I might not care so much. I saw this in myself, so I'm saying ... If the patient looks like a nice person, I'm more sensitive. However, I do not care about it if he/she is rude. I do what I need to protect myself, but the patient is less important for me." (Intern 3)

Context 3. The Decision of Speak Up

Almost all of the intern doctors assumed to decide to speak up in given cases. One of the interns assumed to remain silent because of the unpleasant real-life experience. According to the intern doctors, the frequency of violations of the principles of asepsis in the provision of health care is quite high. Concerning this, all the intern doctors have encountered such a situation many times and speak up at least once. However, they did not speak in all cases. Figure 4.3. shows some examples from intern doctors' speak up experiences. Almost all of the intern doctors were hesitant to speak up under any circumstance in the future.

"I'd speak up. In our university, we are given the confidence that we should speak up if we are sure of what we are doing." (Intern 1) - *Assumed decisions*

"All interns have certainly faced such a situation at least once. I've seen it many times ... These are very ordinary." (Intern 5) - Past decisions

"Yes, I mean, we usually try to speak up." (Intern 9) - *Past decisions*

"I cannot say 100% I will speak up under any circumstances. This would be an exaggeration." (Intern 8) – *Future assumptions*

- *"I cannot remember very well. I noticed that they skipped some of the steps of the procedure during the gynecology internship. I spoke up, and they did not react negatively." (Intern 1)*
- *"I experienced something like that during the General Surgery internship. One of the patients had an open wound. The resident intervened without wearing sterile gloves. His hands were not sterile, and he was touching inside the wound. I asked him -We have to be sterile, don't we? I could not get a satisfying answer… After that, I asked the senior doctor the same question to be sure about my observation. I was not sure about being sterile in the situation. The senior doctor said -yes, we have to be sterile." I did not talk anything about the resident to senior. I did not say anything to the resident too. He is my senior, after all. I could warn him, but I did not. I pretended nothing happened. I could feel less guilty by saying, but I didn't" (Intern 3)*
- *"Of course, I saw someone touching to patient's open wound without gloves, I mean with hands. I saw organ palpation with disposable gloves. I worried about the patient. The procedures which must be performed under operation theatre conditions or sterile conditions were performed in the patient bed. You know what you get used to them. Even if you say something, there is no solution." (Intern 5)*
- *"No one pays attention to wearing gloves. No, no attention at all…" (Intern 7)*
- *"You know before operation surgeon has to wash his/ her hands very carefully. I mean very, very detailed. One of the professors just put his hands underwater and then went to the operation theatre. Of course, I could not say anything. He is a professor. How am I supposed to say something? He is not the kind of person that we can communicate. I cannot say anything. I could not." (Intern 8)*
- *"We were in the emergency room. One of my friends ordered an anticoagulant. While a nurse was preparing the drug, he noticed that she was not using the appropriate syringe. So he asked -we should use xxx syringe for this drug, should not we? Then the nurse gave the syringe to my friend and said -If you know very well, doctor, do it yourself. (Intern 9)*

Figure 4.3. Intern doctors speak up experiences.

Context 4. Barriers to Speak Up

Intern doctors considered barriers from personal issues like individual features to more considerable scale barriers like cultural issues and brought a multidimensional perspective to barriers to speak up. Barriers were analyzed under six themes according to intern doctors' expressions: individual barriers, relationship barriers, situational barriers, consequence related barriers, decision making barriers, cultural barriers (See Figure 4.4.). Individual features and medical hierarchy were mentioned by most of the intern doctors.

Theme 4.1. Individual Barriers

The personality of juniors, disregard, no harm done assumption, trust others, and gender is individual barriers to speak up mentioned by intern doctors:

"It is also about personality. I am such a person in my social life." (Intern 6) - *Personality of juniors*

"It might be about personality. I know, I have friends who are withdrawn. They can not express their feelings and thoughts." (Intern 2) - *Personality of juniors*

"Sometimes, I don't care. There may not be hope for the patient. I made my own opinion. Let's go over a patient or case we follow, for a patient who comes to the emergency room, and I might not care if he is very old or has much illness. Somehow I can say that it does not matter." (Intern 2) – *Disregard*

"In the surgery department, one of the senior doctors washed his hands once before the operation. We reminded him to wash his hands two times, and he said that I wear sterile glows, this is the right way. I even wash my hand to give no offense to nurse. He has been performing the same operation for 30 years, and it means nothing happens to patients. After that, there is nothing to say. The doctor has established his principles regarding sterilization." (Intern 9) - *No harm done assumption*

"I do not know what could happen to the patient because of the sterile glow touch to watch. I think nothing happens." (Intern 5) - *No harm done assumption*

"I think sterilization is not extremely necessary, for example, for endotracheal intubation. I mean these minor breaches... maybe not minor but happens all times." (Intern 4)- *No harm done assumption*

"Let's imagine I am at the operation theatre and assisting a professor from the General Surgery Department. I have noticed that the professor had violated the surgical asepsis principles. I would think that there are residents and nurses in the theatre. If there were something wrong, they would raise their voices. If they are not speak up, it means, there is no violation to speak up about." (Intern 9) - *Trust others*

"One of the previous operations I was cold, and I brought a coat from outside to the operation theatre. Even though she was very far away from me, a nurse saw me and warned me to take off my coat. Nurses are so brave and speak up their concerns without hesitation." (Intern 3) - *Trust others*

"I think gender affects about to speak up. There are obsessive persons mostly consist of female interns; they speak up in any condition. Male interns do not prefer to speak up." (Intern 5) – *Gender*
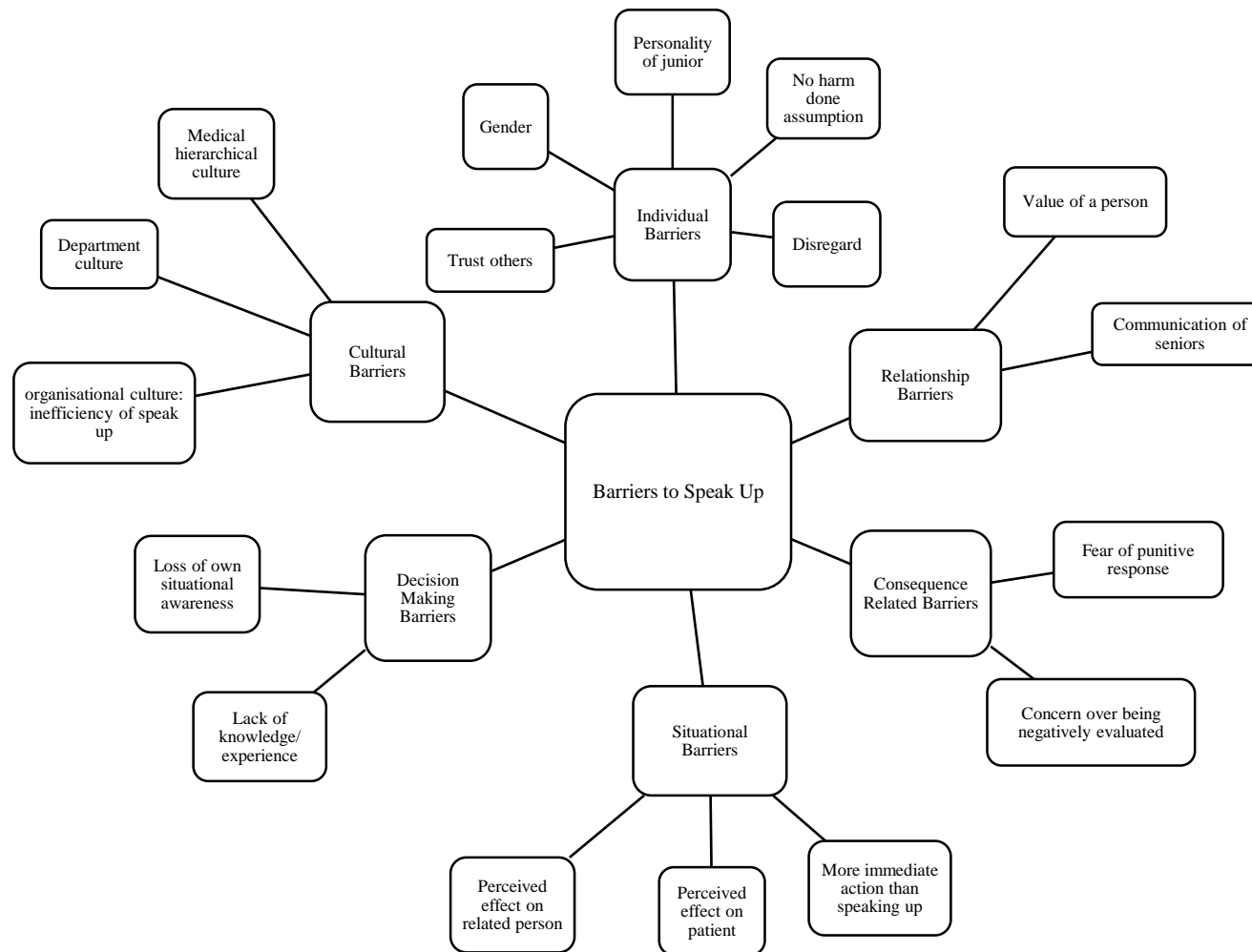
Figure 4.4. Thematic network diagram of barriers to speak up.

Theme 4.2. Relationship Barriers

Communication of seniors and the value of a person are relationship barriers for speak up mentioned by intern doctors:

"Even residents can not speak up. The senior doctor… He/she does not behave well at residents too... behaves too bad. Very bad… I know this is not a proper attitude but I do not want to have trouble with him." (Intern 8)- *Communication of seniors*

"Communication between the intern and the senior doctor is critical." (Intern 2) - *Communication of seniors*

"Loving someone very much, and do not want to break his/ her heart." (Intern 7) - *The value of a person*

Theme 4.3. Situational Barriers

More immediate action than speaking up, perceived effect on the patient, perceived effect on the related person are situational barriers for speak up mentioned by intern doctors:

"We should consider the cost- benefits. For example, in an urgent situation, the patient is intubating. I cannot say stop! You breached the aseptic principles." (Intern 3) - *More immediate action than speaking up*

"If the patient is in a complicated situation and probably cannot tolerate any delay, I will not speak up. It is about cost and benefit. Changing the gloves will not take so long I know, but the patient needs every second in emergencies." (Intern 8) - *More immediate action than speaking up*

"For me it depends on the procedure. If it is a lumbar puncture, I speak up, but if the procedure is wound care, I do not speak up." (Intern 7) - *Perceived effect on patient*

"It depends on the procedure. There is a difference between intubation and urinary catheterization." (Intern 6) - *Perceived effect on patient*

"Taking a blood sample from the femoral artery is different from tracheal aspiration." (Intern 8) - *Perceived effect on patient*

"It would be tough for me to speak up if I see a mistake resulted in the death of a patient." (Intern 8) - *Perceived effect on patient*

"If there are relatives of the patient in the room, I will not speak up. Speak up means put the senior in a dangerous position. We are all aware of the violence to health care professionals. The senior will damage greater than the possible harm to the patient; that is why I will not speak up." (Intern 9) - *Perceived effect on the related person*

"If there are relatives of patients in the environment, I think it is not time to talk. Because the patient can die, and the relatives of the patient can connect to this mistake. I do not want them to relate the patient's death to this mistake, even if it is so." (Intern 2)- *Perceived effect on the related person*

Theme 4.4. Consequence Related Barriers

Fear of punitive response and concern over being negatively evaluated are consequence related barriers for speak up mentioned by intern doctors:

"Mobbing is the number one barrier for me...No one wants to experience mobbing." (4) - *Fear of punitive response*

"It depends on the person I speak up. If I do not know him/her, I might hesitate to speak up because of fear of punitive response, but I give a chance and speak up." (Intern 5) - *Fear of punitive response*

"Sometimes, the responses of the seniors are too rigid and irrelevant. I do not speak up." (Intern 8) - *Fear of punitive response*

"Someone might ignore to speak up about mistakes because of the fear of the negative consequences like mobbing, punishment like assigning more challenging jobs for one month." (Intern 1) - *Fear of punitive response*

"Here, we learn from seniors how things work. Speak up may cause trouble in a relationship, and this trouble may cause the senior doctor to interfere with our learning process." (Intern 2) - *Fear of punitive response*

"I would not speak up even the patient undergoing surgery was my brother. He/she is a senior, and I am a junior. He/she is responsible for my exams and all evaluations." (Intern 8) - *Concern over being negatively evaluated*

"I do not want to cause any misunderstanding, especially at the beginning of the internship." (Intern 1) - *Concern over being negatively evaluated*

Theme 4.5. Decision Making Barriers

Lack of knowledge/ experience, loss of own situational awareness are decision making barriers to speak up mentioned by intern doctors:

"Someone might not have proper knowledge about the situation and might think if the senior doing the procedure in this way, maybe this is the right way to do." (Intern 4) - *Lack of knowledge/ experience*

"At the beginning of the internship, we are not very knowledgeable. We learn most of the things during the process." (Intern 6) - *Lack of knowledge/ experience*

"There are experience differences between the beginning and the end of the internship. We are getting more and more experienced." (Intern 8) - *Lack of knowledge/ experience*

"Do not notice the mistake in the situation might cause you to remain silent." (Intern 9) - *Loss of own situational awareness*

Theme 4.6. Cultural Barriers

Department culture, organisational culture: inefficiency of speak up and hierarchical medical culture, are cultural barriers to speak up mentioned by intern doctors:

"When I speak up in such situations they say "This is how we do here. This is the way we do it." I say okay and do not persist." (Intern 9) - *Department Culture*

"Let me tell you that in some departments, I do not think I will bring a benefit to anyone. From intern to a senior doctor, everyone behaves the same way. I think even I decided to speak up they will not consider my opinions and I prefer to keep silent." (Intern 5) - *Department Culture*

"The department I started internship was a terrible example for me. In the beginning, my friends and I tried to speak up several times, but then we realized that things are not working the way we thought, and we did not speak up anymore." (Intern 9) - *Department Culture*

"I spoke up many times previously, and I have always got a negative response." (5) - *Organizational culture: inefficiency of speak up*

"I spoke up many times previously, and nothing changes." (Intern 7) - *Organizational culture: inefficiency of speak up*

"Someone may think like he/ she is my senior, this is none of my business" (Intern 5) - *Medical Hierarchical Culture*

"I am not brave enough to tell my professor that he/ she is doing a mistake and should wash his/ her hands or he/ she should be careful about gloves." (Intern 8) - *Medical Hierarchical Culture*

"It is difficult because I have to speak up to senior. If a person is an intern, I will speak up directly. It would not be difficult to speak up to intern for me. Interns do not overreact. We know each other, we are friends we are at the same level of the hierarchy. He/she would agree with me." (Intern 2) - *Medical Hierarchical Culture*

Due to the depended nature of the factors that affect the decision to speak up or not, determinants of the difficulty of speak up also showed in Figure 4.5. Intern doctors perceived very difficult to speak up when the medical error consequences with mortal harm to patient, there are relatives of the patient in the environment, they are at the beginning of their internship period, the communication of the seniors are pathological, the punishment culture exists at the department, the person is unfamiliar, or professor and the patient has an urgent situation.

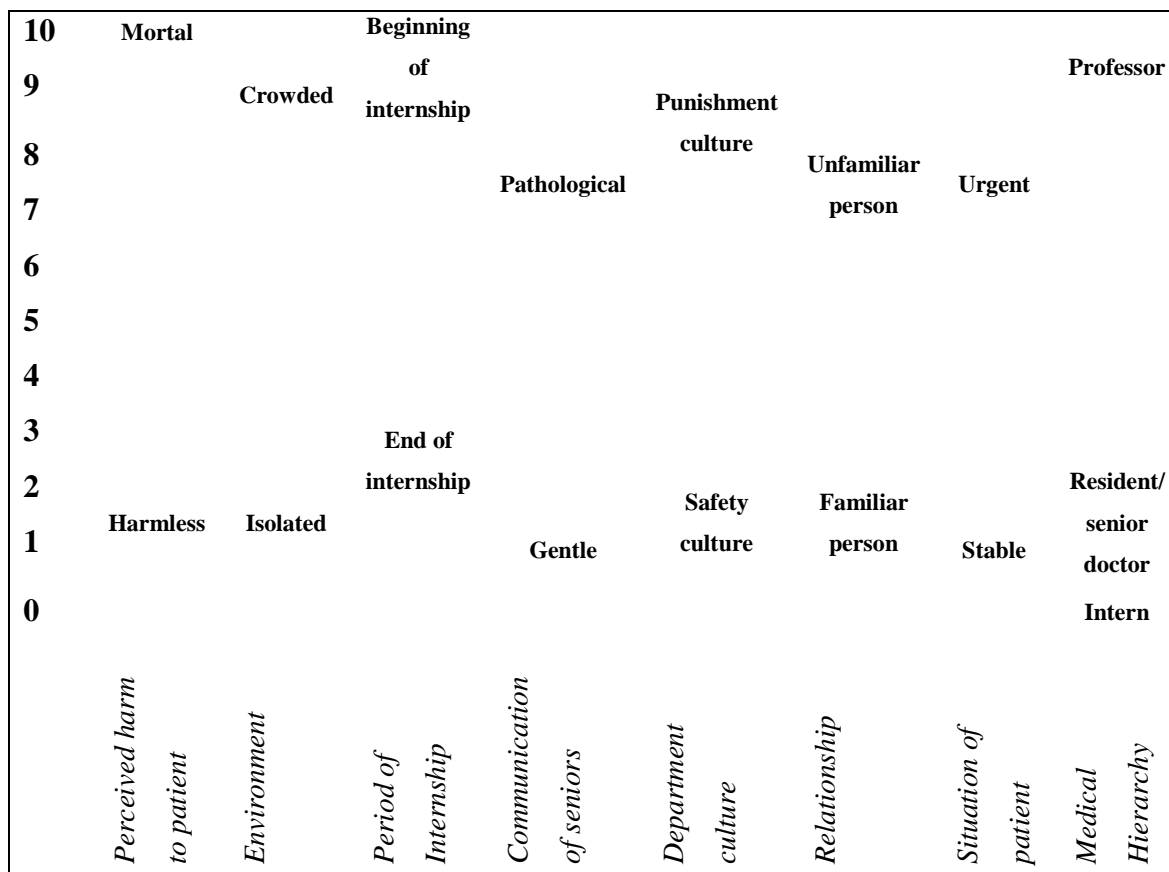**Figure 4.5.** Factors effecting the difficulty of speak up.

Context 5: Motivators of Speak Up

Figure 4.6. Shows Intern doctors' motivators to speak up. The essential motivators behind the decision to speak up in situations that threaten patient safety are feeling empathy for the patient and their relatives, feeling empathy for the doctor who made a mistake, professional responsibility and moral- belief.
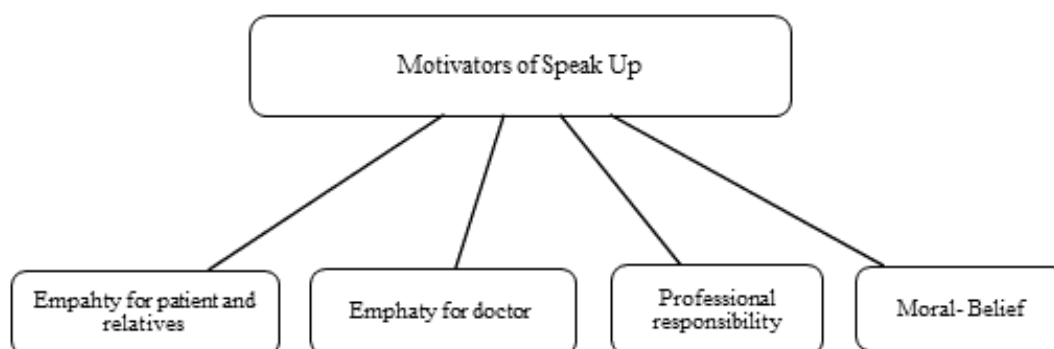
Figure 4.6. Thematic network diagram of motivators of speak up.

Intern doctors, with the awareness, that doctors are also human and can make mistakes stated that they would want to speak up when they made mistakes. Empathy with patients and their relatives is among the motivators that make it easier for intern doctors to decide to speak up. Intern doctors have stated that they know their professional responsibilities towards the patient and have decided to speak up with the awareness that they should not harm the patient. The moral values and beliefs of the inter doctors are the other motivators of their decision to speak up.

"Because we all can make mistakes. If the other health care professional knows the right thing, I'd prefer him/her to tell me." (Intern 4) – *Empathy for doctor*

"I do not think the doctor would be pleased with the patient's harm. He/she may not be aware of what he is doing so I would speak up" (Intern 1) - *Empathy for doctor*

"The patient who would be hurt is the relative of someone. He/ she could have been my relative. What it means for the patient's relatives should mean the same thing for us. (Intern 1) – *Empathy for patient*

"We need empathy ..... I usually try to underline it myself" (Intern 6) – *Empathy for patient*

"The first principle in medicine always first do no harm." (Intern 6) - *Professional responsibility*

"There is a rightful share (kul hakkı). I believe in the rightful share... Everything we do is about rightful share." (Intern 6) – *Moral -beliefs*

"In the end, my duty in the service will be over, and the important thing is to give me peace of mind." (Intern 7) - *Moral -beliefs*

Context 6. How to Speak Up

As shown in Figure 4.7. Intern doctors speak up path preferences analyzed under three themes: direct communication, hierarchical pathway, and speak up to authority.
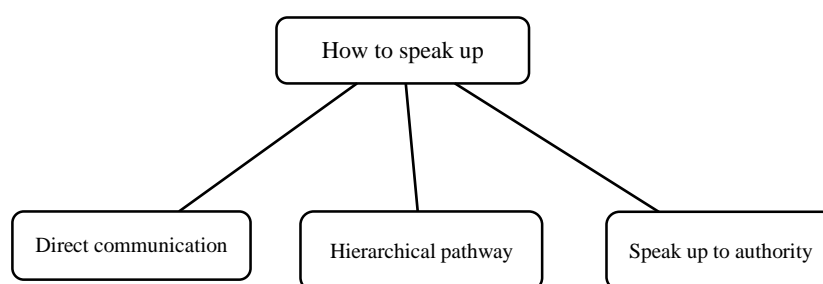
Figure 4.7. Thematic network diagram of how to speak up.

Most of the intern doctors mentioned that they would prefer to speak up directly to the related person. However, it is understood from intern doctors' statements that they shared their concerns only once and then did nothing. The hierarchical path was the way for some intern doctors who do not want to share their discomfort directly to the superior. This path is mostly preferred when the superior is a professor, or superior does not communicate well. Speak up to authority has been mentioned as a way to express intern doctors' feelings and thoughts regarding patient safety in repetitive situations by one intern doctor. Interns prefer to talk directly to authority or a person in charge of the solution of the problem, rather than talking to the related person in safety threat:

"I would say: "Brother or sister, you touched with your arm and broke the sterility" and wait for his/her reaction. I would not intervene anymore. (7)" - *Direct communication*

"When that happens, if there is a resident, I tell her/him first. If the assistant does not speak up, I do. However, usually I tell the resident, the resident

tells his/her senior, and the senior tells the professor. This is how the professor learns." (Intern 2) - *Hierarchical path*

"If this is a recurring situation, then I could speak up to resident or senior doctor in order to warn them." (3) - *Speak up to authority*

Context 7. Reactions to Speak Up

Figure 4.8. illustrates reactions to speak up. Intern doctors mentioned supportive reactions, negligent reactions, suppressive reactions, and punitive reactions/ mobbing as reactions of superiors to speak up situations.
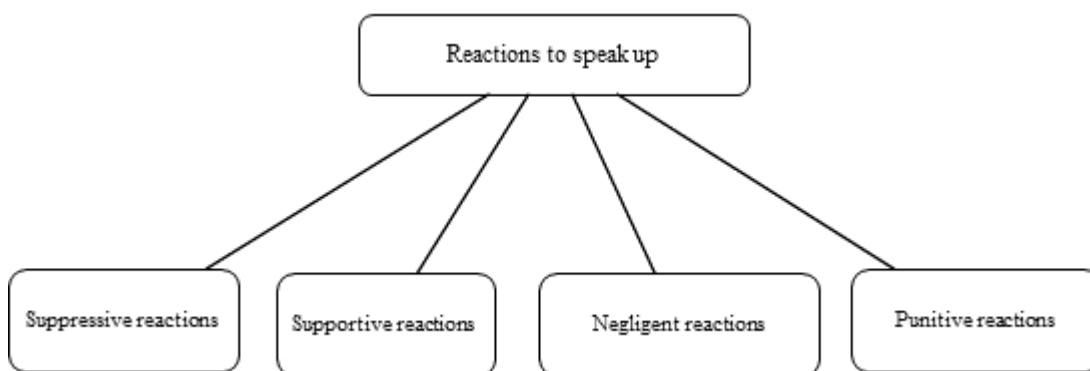
Figure 4.8. Thematic network diagram of possible reactions to speak up.

Intern doctors were agreed on the reaction of interns would be supportive and welcoming in case they speak up. However, according to intern doctors' expressions, suppressive reactions are the most likely consequences of speak up to superiors. Punitive reactions or mobbing, supportive reactions, and negligent reactions and are mentioned as other likely consequences of speak up to superiors by intern doctors:

"He/she might say "Mind your own business. Do not worry about me" (Intern 4) - *Suppressive reactions*

"He/ she might swear or fire." (Intern 2) - *Punitive reactions/mobbing*

"I can get a scolding" (Intern 8) - *Punitive reactions/mobbing*

"Senior might be happy because I speak up about his/her mistake. He/ she might probably say "Yes, you are right. Good for you. I was almost missing." (Intern 6) - *Supportive reactions*

"I think the senior/ professor might understand my reaction. The safety of the patient is important for all of us in situations like this." (Intern 1)- *Supportive reactions*

"He might say, "Come on, do not worry." (Intern 3)- *Negligent reactions*

Context 8. Solutions for Silence

Intern doctors were not able to produce many solutions for silence. Offered solutions were mostly related to the individual and hierarchical medical barriers. Solutions for silence context were analyzed under education, breaking prejudice, external control mechanism, empathy, safety culture, peer interactions, and impossible themes (See Figure 4.9.).

One intern doctor offered a solution for lack of knowledge barrier, and one intern was hopeless about solutions for silence. The solutions were mostly referred to as education and safety culture. Other solutions were focusing on breaking the prejudice, using external control mechanisms, promoting peer interactions, and improving empathy among intern doctors:

"Listening to real patients and their relatives good and bad experiences before internship might make a difference. Small group interactions, for example. The social aspect of medicine is underestimated in the education program." (Intern 1) – *Education- service user involvement*
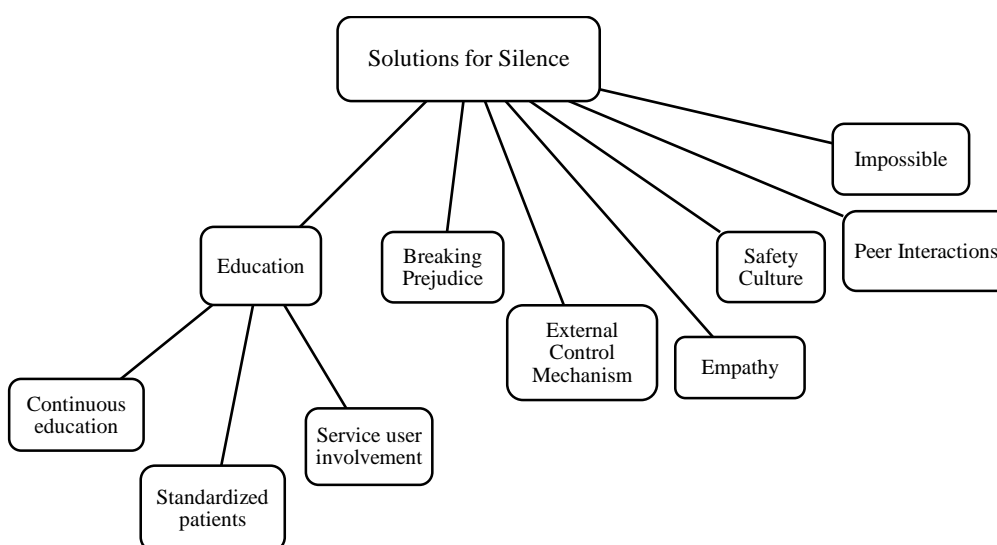

Figure 4.9. Thematic network diagram of intern doctors' solutions for silence.

"Standardized patient encounters might help the shy, silent intern doctors to overcome these problems. I was so shy at the beginning too. The first encounters were so fanny for me. I was acting, and the patient was acting. The standardized patient encounters were nonsense for me. My perception has changed; now, I think different. They prepared us for real patients. They are supporting. Standardized patient feedbacks made a far-reaching impact on my self-confidence. Such an encounter might be helpful for other interns too." (Intern 2) - *Education- standardized patients*

"First of all, I think that the rules, procedures, and principles might be explained through continuous educations. If someone does not know the right way of the procedure, he/ she can not make any comment on it. Continuous education must be mandatory for all health care professionals. There are continuous educations for sure, but they must be recurrent." (Intern 4) - *Education- continuous education*

"The organizational culture must be changed. The seniors might say to the personnel at the lower hierarchy: my friends, whenever you see I made a mistake, please warn me." (Intern 6) – *Safety culture*

"We fill in a written feedback form at the end of the internship. To be honest, I think the responsible persons do not care about our feedbacks. Interns encountered the same problems last year and will encounter next year… However, these written feedbacks might be useful, and we write the difficulties we encountered during internship" (Intern 9) – *Safety culture*

"The rules must be set by the seniors from the beginning. For example, a senior doctor might make a conversation like there is no judgment here; we have to speak up about everything. We have to work as a team for the patient. Yes, something like that." (Intern 9) - *Safety culture*

"I cannot see anything missing in our education. We are not that bad. Nevertheless, there is still the why question. I do not know… maybe the missing is empathy." (Intern 3) – *Empathy*

"We touch someone's life. Maybe patients are very usual for us, yet their health is significant for them. We should be more sensitive. We need to be aware

of what we mean for them. I think if we can vaccinate this idea to our colleagues, they will do their job more carefully and diligently." (Intern 1) - *Empathy*

"People who can supervise the mistakes can be employed. For example, in the newborn unit, there are people we do not know who controls us. They make observations and report violations as far as I know". (Intern 8) – *External control mechanism*

"We need to break the prejudices. Prejudices like a senior doctor might get angry with me or might not allow doing anything. We should express ourselves better to everyone from different hierarchical status. We should get rid of the prejudices, but I do not know-how. How can we handle this problem? Should we focus on the personality, or should we raise social awareness? I do not know." (Intern 4) - *Breaking prejudice*

"Peer interaction might be helpful. I can help other interns. On the other side, making changes totally up to the person." (Intern 2) – *Peer interaction*

"I will be honest. They decide not to speak up not because they do not know the consequences to the patient. They remain silent because they do not care. That is why it is impossible to make all interns speak up." (Intern 7) - *Impossible*

5. DISCUSSION

According to perceptions of intern doctors internship generally didn't meet the expectations and also failed to achieve their desired gains. The Report of the Internship in Medical Education Workshop, organized by Council of Higher Education to discuss internship education in Medical Faculties on January 10, 2018, included the results of the study conducted with the participation of 2078 intern doctors (response rate: 22%) from different universities at national level. The results of the study are in parallel with our findings about interns' unsatisfied evaluation of their internship process and also helps to understand underlying causes. The results of the study also showed that 66.8% of intern doctors stated that they did not have the opportunity to work within the framework of their duties and responsibilities. The rate of intern doctors who had to do a job of the staff in another occupational group was 91.3% (most frequently stated that the job of nurses and other staff). And only 9.8% of the participants stated that the targeted goals were achieved during internships (70). When the recent report of Internship in Medical Education Workshop analyzed it is seen that the experiences of intern doctors during internship are not limited to the university where the research is conducted, and that the experiences of interns can be generalized to the national dimension. Over and above it should be considered that the uncertainties about their duties and responsibilities during the internship process and the fact that they do not feel like doctors may have an effect on reducing their sensitivity to patient safety.

Intern doctors mentioned that incidence of medical error is very high at the healthcare settings. As stated in the To Err is Human (2), regional and country data and declarations of WHO (19, 21) and researches (16), the high incidence of medical errors threatens patient safety at a global level. In this respect, it is expected that intern doctors and residents who are at the integral part of health care services will have a high rate of observing medical errors. White et al. (71) carried out a cross-sectional survey with medical students, interns and residents to measure trainees' attitudes and experiences regarding medical error and error disclosure. Personal involvement with medical errors was common among the fourth-year students (78%) and the residents (98%). In another study Martinez et al. (72) conducted a research with residents and medical students. It was found that almost half of the residents and medical students (54%) had observed and also made a harmful medical error during training. Consistent

with the previous research results, findings of our study about Intern doctors' predictions about incidence of medical errors is very high. However, due to lack of data related with medical errors in Turkey, it is difficult to interpret "very high" incidence of medical errors and compare with literature.

Intern doctors brought a multidimensional perspective from individual context to national culture to the reasons underlying medical errors vary. However, they mostly mentioned individual factors (mistake, personality, ignorance, disregard) as causes of medical errors. Reason (13) conceptualize the contributors to medical error within two approaches: Human/person and system factors. The person approach focuses on the errors of individuals and the system approach centers on the working conditions and focuses to build defenses to prevent errors or reduce their effects (73). When the intern's responses are taken in line with the Reason's approach, the results showed that, the intern doctors not sufficient to develop an systematic approach to medical errors. Our results are consistent with the qualitative research findings conducted by Roh, Park and Kim (56) to examine changes in the perceptions, attitudes and the sense of individual and collective responsibility in incoming third year medical students after they received patient safety education. According to results, most students blamed individuals for errors and expressed a strong sense of individual responsibility before education and patient safety education effectively shifted students' attitudes towards systems-based thinking. While interpreting these results, we should take into account that the intern doctors who participated in our study almost completed their medical education and will start to work as a doctor in health systems within a month.

We found that some departments like internal medicine, oncology and pediatric pay more attention to not harm to patient. However, surgical departments do not pay enough attention to patient safety issues, surgical asepsis and hygiene in particular. Results of the study conducted with surgical and nonsurgical residents at 2 large academic medical centers in U.S.A. showed different results from our study (43). Martinez and Lehmann (43) found that similar proportions of surgical (65%) and nonsurgical residents (62%) reported having observed a harmful medical error. One of the interpretation of researchers' about this finding is surgical errors might be more tangible or apparent than medical errors. These differences recall the importance of

evaluating the functioning of the health system of the country in which the research was conducted. Despite the data problems, it is accepted that the rate of hospital acquired infection varies between 5-15% in Turkey and surgical site infections are among the most common health service related infections (74). According to National Health Service Related Infections Surveillance Network 2017 data, the overall surgical site infection rate is 0.72% and > 1.0 in 25 of the 60 operations followed in Turkey in 2017 (75). It is thought that the excessive violations of the rules of asepsis in surgical branches may be caused by differences in approach in postoperative care and differences in patient follow-up after discharge procedures in Turkey.

Safety-II approach emphasizes the importance of understanding of how things usually go right Hollnagel, Wears, and Braithwaite (12). In this context, exploring intern doctors' motivators of speak up might provide an opportunity to create an atmosphere for more students to speak up in challenging situations (12). Martinez et al. (3) found that speak up results in meaningful change and an anonymous reporting mechanism were the two most commonly reported facilitators to speak up of interns and residents. Unlike the results of his study, the most important motivators behind the intern doctors speak up were feeling empathy for patient and their relatives, feeling empathy for the doctor who made the mistake, professional responsibility and moral-belief in our study. When the results of the two studies are compared, it can be concluded that the interns in our study group do not have enough information regarding reporting systems more generally, the patient safety culture to motivate them about speak up or that these parameters are not motivators for them. In our study, the motivators of intern doctors had more affective foundations such as empathy, and professional responsibility. Empathy (76) and sense of responsibility are critical for the development of professionalism in medical students. With the findings of our study we took a step to understand the contributions of empathy and sense of professional responsibility to ensuring patient safety.

According to the results of this study, intern doctors have encountered violations of the principles of asepsis many times and speak up at least once. However, they are hesitant to speak up in the future. These results are consistent with those of previous studies illustrated that for students, interns and resident who are in a critical position in ensuring patient safety in the health care system, speak up is challenging

(34, 43, 76) and silence among junior healthcare professionals is respectable. In the recent study, Lee, Hahm, and Lee (45) examined undergraduate medical students' perceptions and intentions regarding patient safety during clinical clerkships in Korea and similar results were found with our study, that many students had difficulty speaking up about medical errors.

In our study, barriers to speaking up discussed under individual, relationship, situational, consequence related, decision making, and cultural barriers. Moreover, individual barriers and medical hierarchy were the most challenging barriers for interns. This result supports the findings that hierarchy is one of the significant barriers for junior health care professionals (44, 48- 50, 54, 65). Samuel et al., (44) assessed the willingness of medical students to speak up about poor hand hygiene practices among their colleagues and supervising doctors. A total of 83% medical students were willing to speak up to fellow students about inadequate hand hygiene; however, this number decreased in a stepwise fashion for those who were willing to do so to interns (30%), residents (16%), registrars (9%), and consultants (6%). The results of this study demonstrated the unwillingness of medical students to speak up to senior staff regarding inappropriate hand hygiene practices. When the studies on the barriers that prevent doctors from speaking in the literature and our results are examined together it might be concluded that the barriers have a complex and multidimensional pattern that needs to be deeply studied to be understood, with the potential to be influenced by many factors, from gender to contextual characteristics, from procedure to departmental culture.

Most of the intern doctors mentioned that they would prefer to speak up directly but once to the related person and then remain silent. Hierarchical path is mostly preferred when the superior is a professor or superior doesn't communicate well and speak up to an authority as a way to speak up in repetitive patient safety violations. In literature, a limited study of how intern doctors speak up was found. One of this studies was conducted by Kobayashi et al. (52) with residents in teaching hospitals in the U.S.A. and Japan to assess factors affecting residents' willingness to question or challenge their superiors. In this study one Japanese resident mentioned the importance of how to speak up as *''If we challenge others, we should pay the fullest attention to speak politely, be friendly and respect the others' position''.* Our study findings and

other study results demonstrates that speak up to seniors is definitely challenging for intern doctors. Implementing standardized curricula like TeamSTEPPS® in order to gain effective, appropriate communication skills might be a contributor to increase their knowledge and confidence of intern doctors in when and how to speak up. However, educating only those healthcare professional who are already in a relatively vulnerable group, such as intern, medical student, resident, in communication will not contribute sufficiently to the solution of the speak up difficulties. Since we treat speak up as a communication problem; the inclusion of individuals, such as seniors or professors who are difficult to reach or in a relatively powerful position, in communication education will be an important step in achieving language unity in patient safety and establishing safety culture.

Consistent with prior research, we found that while juniors react supportive, superiors show unpleasant reactions to junior health professional in speak up situations (43, 44, 50, 72). Samuel and Shuen (44) questioned medical students about how they perceived that medical staff might react to being reminded to perform hand hygiene. 44% medical student believed that medical students would be thankful and the majority thought 37% of interns, 51% of residents, 65% of registrars, and 68% of consultants would be annoyed or irritated. Martinez and colleagues (72) reported that medical students were more likely than interns or residents to believe that if they acknowledged making a medical error, they would be treated harshly. Martinez and Lehmann (43) found that surgical residents more frequently observed colleagues being treated harshly for errors than nonsurgical residents. Landgren and colleagues (50) showed that unpleasant reactions might generalizable to other health care professionals. In their research, several residents commented that if they challenged a nurse on what they believed to be a safety issue, they were concerned about passive aggression or nurses' refusal to work with them. Suppressive reactions, mobbing, being treat harshly, passive aggression and annoyed, irritated reactions are some examples of disruptive behavior which threaten working relationships, communication, patient safety and impedes speak up (4).

In our study intern doctors' solutions for silence were mostly referred to education and safety culture. Other offered solutions were focusing on breaking the prejudice, using external control mechanisms, promoting peer interactions and

improving empathy among intern doctors. The use of structured curriculum such as TeamSTEPPS®, simulations, creating safety culture inspired from CRM are becoming widespread in the solution for silence of medical students, interns doctors and residents. Martinez at al. (72) measured medical students, intern doctors and residents exposure to negative and positive role-modeling for responding to medical errors. According to the results of the study more frequent exposure to negative role modeling was independently associated with more negative attitudes regarding disclosure and an increased likelihood of nontransparent behavior in response to a harmful error. In contrast, positive role modeling and training on how to respond to errors were independently associated with more positive attitudes, but did not directly protect against nontransparent behavior. Pain- Smith an colleagues (54) conducted a study to determine whether a debriefing intervention that emphasizes joint responsibility for safety and the "two-challenge rule" using a conversational technique that is assertive and collaborative can improve the frequency and effectiveness with which residents "speak up" to superiors. It was found that the debriefing and instruction specifically improved the frequency and quality of challenges directed toward superordinate physicians, without improving resident challenges toward nurses. As it is understood from the literature, as researchers, we are in search of a method that will improve speak up behaviors of junior healthcare professionals to prevent errors that may arise from not speak up. The solutions offered by interns in our study should be considered as precious suggestions of junior healthcare professionals who were struggling with the problem and should be taken carefully into consideration in the process of finding solutions for silence and promoting speak up.

6. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

- The internship generally did not meet the expectations of the intern doctors and also failed to achieve their desired gains.

- According to the intern doctors, the incidence of the harmful medical error is very high, almost high enough to be normalized. Individual factors were the most mentioned causes of medical errors by intern doctors, and the second major factor was organizational factors such as working conditions and department culture.

- Intern doctors have encountered violations of the principles of asepsis many times and speak up at least once. However, they are hesitant to speak up in the future.

- Intern doctors considered barriers from individual issues to larger-scale barriers like cultural issues and brought a multidimensional perspective to barriers to speak up. However, individual features and medical hierarchy were the most challenging barriers for interns.

- The essential motivators behind the decision to speak up in situations that threaten patient safety are feeling empathy for the patient and their relatives, feeling empathy for the doctor who made a mistake, professional responsibility and moral- belief.

- Intern doctors prefer to speak up directly to the related person just once. Interns doctors speak up from junior to senior when they do not want to share their discomfort directly to the superior. This path is mostly preferred when the superior is a professor, or superior does not communicate well.

- Intern doctors were agreed on the reaction of the interns are supportive and welcoming to speak up. However, superiors' reactions are often suppressive, sometimes punitive.

- Education, breaking prejudice, external control mechanism, empathy, safety culture, and peer interactions are recommended solutions of interns for the silence of intern doctors.

RECOMMENDATIONS

- For intern and patient safety, it is suggested that the internship process, which has an essential place in the professionalization and professional acculturation process, should be organized as a more structured and guided learning process.

- In health institutions, effective communication and cooperation with interns are needed for ensuring patient safety.

- Properly keeping records of medical errors, event reports, and near-miss situations at an individual, institutional, and national levels will facilitate the identification of medical errors in our country.

- Patient Safety Course needs to be revised in order to enable medical students to develop a comprehensive overview (person and system approach) to patient safety and medical errors.

- It is suggested that all related key persons, leaders, decision-makers, institutions, and organizations should come together and insist on preparing and implementing action plans that can contribute to the elimination or mitigation of barriers that prevent barriers.

- Managers, authorized persons, and healthcare leaders should utilize strategies for improving safety culture at Hospitals.

- Junior healthcare professionals should be empowered to speak up or report safety and quality issues.

- Continuous educations should be planned for the healthcare team, with the participation of primarily senior staff, to internalize safety culture.

- Interprofessional team-based training should be included in orientation and continuing education curriculum at Hospitals.

- Courses that will improve the empathy of medical students should be included in the undergraduate curriculum.

- Courses that will improve the teamwork skills of medical students should be included in the undergraduate curriculum.

- Courses that will improve the communication skills of medical students, especially in challenging situations, should be included in undergraduate and also continuing education curriculum.

- Innovative teaching strategies such as simulation can be used in both undergraduate and continuing education curriculum.
- Hospital administration and leaders should consider integrating standardized curricula like TeamSTEPPS® to their health teams routine in order to improve collaboration and communication within their hospital.

It is recommended that further studies will be carried out,

- to show the effect of interns working conditions on patient safety and speak up.
- to understand the impact of national culture on medical errors further and speak up.
- to understand and evaluate the effectiveness of the interventions to facilitate intern doctors' speak up.
- to a gain deeper understanding of barriers to intern doctors' speak up.
- to understand how departments like internal medicine, pediatrics, and oncology maintain good practices for patient safety in their routines.
- to develop valid and reliable measurement tools to reveal speak up of intern doctors.

7. REFERENCES

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8. APPENDICES

Appendix 1. Literature about the barriers of speak up of the junior medical staff.

Author Year	Objective	Study Design	Country, Setting, Participants	Results Regarding Speak Up	Conclusion Regarding Speak Up
Landgren et al. (2016)	To examine the reasons reported by pediatric residents for not speaking up about safety events when they are observed in practice and to test a priori hypotheses of associations between categories of barriers to speaking up with perceptions of safety and teamwork culture.	Cross-sectional study, anonymous electronic survey	U.S.A., pediatric, medicine-pediatric, and pediatricneurology Residents (50 participation in 2013, 43 participation in 2014)	The most common reported barriers to speaking up were as follows: perceived personal safety of speaking up (consequences, intimidation, and hierarchy concerns), individual barriers (communication skills and confidence), perceived efficacy of speaking up (feeling powerless), and contextual factors (high workload).	Pediatric residents reported individual barriers, personal safety concerns, lack of efficacy, and contextual factors as reasons to not speak up about patient safety. Concerns about the safety of speaking up and the efficacy of speaking up were correlated with teamwork and safety culture, respectively.
Samuel R, Shuen A, Dendle C, Kotsanas D, et al. (2012)	To assess the willingness of medical students to speak up about poor hand hygiene practices among their colleagues and supervising doctors.	Cross-sectional study, anonymous survey	Australia, 209 medical students	The reasons why students would not speak up: reluctance to question senior staff (from 64% for interns to 74% for consultants), unwillingness to interrupt (from 28% to 12%), embarrassment (from 25% to 9%), 5% of students were concerned about how their actions might affect future job assessments.	The unwillingness of medical students to speak up to senior staff regarding inappropriate HH. The hierarchical culture within the healthcare setting must be addressed to ensure that an equal voice is given to all members of the treating team, so that the best outcomes in patient care are achieved.

Author Year	Objective	Study Design	Country, Setting, Participants	Results Regarding Speak Up	Conclusion Regarding Speak Up
Roh H, Park SJ, Kim T. (2015)	To examine changes in the perceptions and attitudes as well as the sense of individual and collective responsibility in medical students after they received patient safety education.	Pre-post test, questionaire	Republic of Korea, 103 third-year medical students	Before training, they showed good comprehension of the inevitability of error, but most students blamed individuals for errors and expressed a strong sense of individual responsibility. Due to the hierarchical culture, students described difficulties communicating with senior doctors after patient safety education.	Patient safety education effectively shifted students' attitudes towards systems-based thinking and increased their sense of collective responsibility. Strategies for improving superior-subordinate communication within a hierarchical culture should be added to the patient safety curriculum.
Martinez et al. (2017)	To compare interns' and residents' experiences, attitudes and factors associated with speaking up about traditional versus professionalism-related safety threats.	cross-sectional study, survey	U.S.A., 1800 medical and surgical interns and residents from Six US academic medical centres	Respondents more commonly observed unprofessional behaviour (75%) than traditional safety threats (49%); p<0.001, but reported speaking up about unprofessional behaviour less commonly (46%, vs 71% ; p<0.001). Respondents more commonly reported fear of conflict as a barrier to speaking up about unprofessional behaviour compared with traditional safety threats (58%, vs 42%; p<0.001). Respondents were also less likely to speak up to an attending physician in the professionalism vignette than the traditional safety vignette, even when they perceived high potential patient harm (20%, vs 71; p<0.001).	Interns and residents commonly observed unprofessional behaviour yet were less likely to speak up about it compared with traditional safety threats even when they perceived high potential patient harm.

Author Year	Objective	Study Design	Country, Setting, Participants	Results Regarding Speak Up	Conclusion Regarding Speak Up
Salazar, Minkoff, Bayya et al. (2014)	To determine if a surgeon's behaviors can encourage or discourage trainees from speaking up when they witness a surgical mistake.	A randomized clinical trial	U.S.A., 55 medical students	The students in the encouraged group were significantly more likely to speak up (23 of 28 [82%] vs 8 of 27 [30%]; p < 0.001). There was no statistically significant difference between the two groups in personality traits, student training level (p ¼ 1.0), or sex (p ¼ 0.53).	A discouraging environment decreases the frequency with which trainees speak up when witnessing a surgical error. The senior surgeon plays an important role in improving intraoperative communication between junior and senior clinicians and can enhance patient safety.
Beament and Mercer (2016)	To explore the concept of 'barriers to challenging seniors' for anaesthetic trainees, and proposes a conceptual framework.	Mixed method study	UK, 13 junior and 12 senior anaesthetic trainees	Junior anaesthetic trainees challenged erroneous decisions effectively, but trainees with an additional year of experience challenged more quickly and effectively, combining 'crisp-advocacy-inquiry challenge' with 'non-verbal cues'. Focus group analysis conceptualised a 'barrier network' with three main themes: concerns around relationships; decision-making; and risk/cost–benefit. Emotional maturity is an important protective layer around decisions to challenge.	Despite significant multifactorial barriers, systematic training in effective 'speaking up' could improve the confidence and ability of juniors to challenge erroneous decisions.

Author Year	Objective	Study Design	Country, Setting, Participants	Results Regarding Speak Up	Conclusion Regarding Speak Up
Martinez and Lehmann (2013)	Compare surgical and nonsurgical residents' exposure to role modeling for responding to medical errors and their attitudes about error disclosure	Cross-sectional study, electronic survey	U.S.A., 66 surgical, 187 non surgical residents, 2 large academic medical centers	Surgical residents were more likely than nonsurgical residents to believe they would be treated harshly by others if they acknowledged making a medical error (35% vs 12%; p < 0.001) and believe they have to compromise their own values when dealing with medical errors at their institution (11% vs 2%; p =0.008). Surgical residents were less likely than nonsurgical residents to feel free to express concerns to other members of the team about medical errors in patient care (70% vs 83%; p= 0.02).	The punitive response to error by senior members of the health care team might be an impediment to the transparent disclosure of errors among residents that might disproportionally affect surgical training programs.
Martinez et al. (2014)	To measure trainees' exposure to negative and positive role-modeling for responding to medical errors and to examine the association between that exposure and trainees' attitudes and behaviors regarding error disclosure.	Cross-sectional study, electronic questionnaires.	U.S.A., 134 residents and 119 interns at two large academic medical centers, 631 medical students from seven medical schools	Negative rolemodeling had the largest independent, negative effect (standardized effect estimate, −0.26, P < .001). Positive role-modeling had a positive effect on attitudes (standardized effect estimate, 0.26, P < .001). Exposure to negative role-modeling was independently associated with an increased likelihood of trainees' nontransparent behavior in response to an error (OR 1.37, 95% CI 1.15–1.64; P < .001).	Exposure to role-modeling predicts trainees' attitudes and behavior regarding the disclosure of harmful errors. Negative role models may be a significant impediment to disclosure among trainees.

Author Year	Objective	Study Design	Country, Setting, Participants	Results Regarding Speak Up	Conclusion Regarding Speak Up
Pian-Smith et al. (2008)	determine whether the conversational technique of pairing advocacy and inquiry could be learned by anesthesiology residents and applied to acute clinical situations where "speaking up" was indicated.	Post test, video rating	U.S.A., 36 anesthesia trainees	describe perceived barriers to action, including (1) assumed hierarchy, (2) fear of embarrassment of self or others, (3) concern over being misjudged, (4) fear of being wrong, (5) fear of retribution, (6) jeopardizing an on going relationship, (7) natural avoidance of conflict, and (8) concern for reputation. When these discussions involve the situation of a student challenging a teacher or a mentor, the related issues of (1) respect for the teacher/student relationship, (2) violation of a special trust, (3) high value placed on experience, and (4) concern over being negatively evaluated	This instructional intervention improves "speaking up" by residents to other physicians during simulated obstetric cases. Providing increased opportunities for resident learning, sharing responsibility for patient safety, and overcoming communication barriers within the medical hierarchy may improve teamwork and patient safety.
Friedmann et al. (2015)	To examined the effect of a consultant anaesthetist's interpersonal behaviour on trainees' ability to effectively challenge clearly incorrect clinical decisions.	Randomised trial, video rating	Canada, 44 second-year anaesthesia trainees	The highest median (Advocacy-Inquiry Score [range]) score was 3.0 (2.2–4.0 [1.0–5.0]) in the exclusive communication group, and 3.5 (3.0–4.5 [2.5–6.0]) in the inclusive communication group (p = 0.06).	The study did not show a significant effect of consultant behaviour on trainees' ability to challenge their superior. It did demonstrate trainees' inability to challenge their seniors effectively, resulting in critical communication gaps.

Author Year	Objective	Study Design	Country, Setting, Participants	Results Regarding Speak Up	Conclusion Regarding Speak Up
Kobayashi et al. (2006)	To identify perceived barriers to residents' questioning or challenging their seniors, to determine how these barriers affect decisions, and to assess how these barriers differ across cultures.	Cross-sectional study, written questionnaire	U.S.A. and Japan, 175 US and 65 Japanese residents	Residents' decisions to make a challenge were related to the relationships and perceived response of the superiors. There was no statistical difference between the US and Japanese residents in terms of the threshold for challenging their seniors.	There was no difference in the threshold for challenging seniors by the Japanese and US residents studied. Changes in organizational and professional culture may be as important, if not more so, than national culture to encourage ''speaking up''. Residents should be encouraged to overcome barriers to challenging, and training programs should foster improved relationships and communication between trainers and trainees

Appendix 2: QUREQ (Consolidted Criteria for Reeporting Qualitative Research) Checklist

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the inter view or focus group?	
Duration	21	What was the duration of the inter views or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.

Appendix 3. Copy of Announcement

<div style="background-color:#F5A800; border-radius:20px; padding:20px; text-align:center;">

Sevgili H.Ü. Tıp Fakültesi Son Sınıf Öğrencileri

</div>

Sizleri hasta güvenliğini geliştirmeye yardımcı olacak bir çalışmanın parçası olmaya davet ediyoruz.

Çalışma Özellikleri

Son Başvuru: 06.06.2018

Çalışma Tıp Fakültesi Tıp Eğitimi ve Bilişimi Anabilim Dalı yüksek lisans öğrencisi Şenay Sarmasoğlu ve danışmanı Prof. Dr. Melih Elçin tarafından planlanmıştır. Çalışma için sizinle sadece bir kez ortalama yarım saatlik bir görüşme yapacağız. Hasta güvenliğine verdiğiniz destek ve çalışmamıza gösterdiğiniz ilgiye teşekkür ederiz.

Detaylı Bilgi ve Çalışmaya Katılım için iletişim bilgileri:

e-posta: senay.sarmasoglu@hacettepe.edu.tr   Tel: 0505 851 81 63

Not. Çalışmanın etik açıdan uygunluğu H.Ü. Etik Komisyonu tarafından onanmıştır.

Appendix 4- Copy of Written Consent Form

Aydınlatılmış Onam Formu

Sevgili Öğrenci,

Bu çalışma tıp fakültesi son sınıf öğrencisinin hasta güvenliğini tehdit eden durumlar karşısında çekinmeden konuşmaya ne derece yatkın olduklarını ortaya çıkarmak ve konuşup konuşmamaya ilişkin kararlarını etkileyen faktörleri derinlemesine anlamak üzere planlanmıştır.

Sizi de bu araştırmaya katılmaya davet ediyoruz. Ancak araştırmaya katılım gönüllülük esasına dayalıdır. Bu bilgileri okuyup anladıktan sonra araştırmaya katılmak isterseniz formu imzalayınız. Ayrıca araştırmanın herhangi bir aşamasında onayınızı çekmek ya da araştırmadan ayrılmak hakkına da sahipsiniz. Bu uygulama sonucunda elde edilen veriler, kimliğiniz belirtilmeden tıp fakültesi öğrencilerine yönelik yeni ders programlarının geliştirilmesinde, tıp fakültesi öğrencilerinin dile getirme davranışlarını geliştirmelerine yönelik stratejilerin oluşturulmasında veya bilimsel nitelikte yayınlarda kullanılabilir. Görüşmeden elde edilecek ses kayıtlarınız ise araştırmada belirtilen amaçlarla kullanıldıktan sonra araştırmacı tarafından 7 yıl saklanacak ve ardından imha edilecektir. Veriler ve kayıtlar belirtilen amaçların dışında, kullanılmayacak ve başkalarına verilmeyecektir. Çalışmanın etik açıdan uygunluğu Hacettepe Üniversitesi Etik Komisyonu tarafından değerlendirilmiş ve komisyondan çalışmanın yapılabilmesi için onay alınmıştır. Bu formun imzalı bir kopyasını almayı lütfen unutmayınız. İşbirliğiniz için teşekkür ederim.

Araştırmacı Şenay SARMASOĞLU

Hacettepe Üniversitesi Hemşirelik Fakültesi Sıhhiye/Ankara 06100

Tel: 0 312 305 1580

Cep Tel: 0 505 851 81 63

E-mail: senay.sarmasoglu@hacettepe.edu.tr

Tez Danışmanı Prof. Dr. Melih ELÇİN

Hacettepe Üniversitesi Tıp Fakültesi Tıp Eğitimi ve Bilişimi Ad Sıhhiye/Ankara

Tel: 0 312 305 25 78

E-mail:melcin@hacettepe.edu.tr

Öğrencinin Beyanı:

Hacettepe Üniversitesi Tıp Fakültesi Tıp Eğitimi ve Bilişimi Anabilim Dalı yüksek lisans öğrencisi Sayın Şenay Sarmasoğlu tarafından bir araştırma yapılacağı belirtilerek bu araştırma ile ilgili yukarıdaki bilgiler bana aktarıldı. Bu bilgilerden sonra araştırmaya katılımcı olarak davet edildim. Eğer bu araştırmaya katılırsam araştırmacı ile aramızda kalması gereken bilgilerin gizliliğine bu araştırma sırasında da büyük bir özen ve saygı ile yaklaşılacağına inanıyorum. Araştırma sonuçlarının eğitim, gelişim ve bilimsel amaçlarla kullanımı sırasında kişisel bilgilerimin ihtimamla korunacağı konusunda bana yeterli güven verildi. Araştırmanın yürütülmesi esnasında herhangi bir neden göstermeden araştırmadan çekilebilirim. Ancak araştırmacıyı zor durumda bırakmamak için araştırmadan çekileceğimi önceden bildirmemin uygun olacağının bilincindeyim. Araştırma için yapılacak harcamalarla ilgili herhangi bir parasal sorumluluk altına girmiyorum. Bana da ayrı bir ödeme yapılmayacaktır.

Araştırma sırasında araştırma ile ilgili bir sorun ile karşılaştığımda herhangi bir saatte araştırmacı Şenay Sarmasoğlu'nu hangi telefon ve adresten arayabileceğimi biliyorum. Bu araştırmaya katılmak zorunda değilim ve katılmayabilirim. Araştırmaya katılmam konusunda zorlayıcı bir davranış ile karşılaşmış değilim. Bana yapılmış tüm açıklamaları anlamış bulunmaktayım. Kendi başıma belli bir düşünme süresi sonunda adı geçen bu araştırmada katılımcı olarak yer alma kararı aldım. Bu konuda yapılan daveti büyük bir memnuniyet ve gönüllük içerisinde kabul ediyorum. İmzalı bu formun bir kopyası bana verilecektir.

Öğrenci	**Görüşme Tanığı**
Adı, Soyadı:	Adı, Soyadı:
Adres:	Adres:
Tel:	Tel:
İmza:	İmza:

Görüşmeyi Yapan Araştırmacı
Adı, Soyadı: Şenay Sarmasoğlu
Adres: Hacettepe Üniversitesi Hemşirelik Fakültesi Sıhhiye/Ankara 06100   İmza:
Tel: 0 312 305 1580/ 0 505 851 81 63

Appendix 5: Copy of ethical committee approval that was obtained from Hacettepe University Non-Interventional Clinical Researches Ethics Board

T.C.
HACETTEPE ÜNİVERSİTESİ
Rektörlük

H.Ü.T.F. Evrak Girişi Yapıldı

Sayı : 35853172/ 431.10-1393

2 9 Mart 2018

TIP FAKÜLTESİ DEKANLIĞINA

Fakülteniz Tıp Eğitimi ve Bilişimi Anabilim Dalı öğretim üyesi **Prof. Dr. Melih ELÇİN** sorumluluğunda **Yrd. Doç. Dr. Şenay SARMASOĞLU** tarafından yürütülen **"Tıp Fakültesi Son Sınıf Öğrencilerinin Hasta Güvenliğini Tehdit Eden Durumları Dillendirme Davranışlarının Tanımlanması"** başlıklı tez çalışması, Üniversitemiz Senatosu Etik Komisyonunun **20 Mart 2018** tarihinde yapmış olduğu toplantıda incelenmiş olup, etik açıdan uygun bulunmuştur.

Bilgilerinizi ve gereğini rica ederim.

Prof. Dr. Rahime M. NOHUTCU
Rektör a.
Rektör Yardımcısı

Hacettepe Üniversitesi Rektörlük 06100 Sıhhiye-Ankara
Telefon: 0 (312) 305 3001 - 3002 • Faks: 0 (312) 311 9992
E-posta: yazimd@hacettepe.edu.tr • www.hacettepe.edu.tr

Ayrıntılı Bilgi için:
Yazı İşleri Müdürlüğü
0 (312) 305 1008

Appendix 6: Turnitin Rapport

INTERN DOCTORS' LIKELIHOOD OF SPEAKING UP FOR PATIENT SAFETY
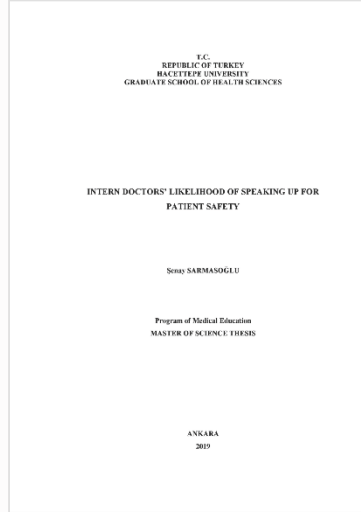
Appendix 7: Digital Receipt

turnitin

Dijital Makbuz

Bu makbuz ödevinizin Turnitin'e ulaştığını bildirmektedir. Gönderiminize dair bilgiler şöyledir:

Gönderinizin ilk sayfası aşağıda gönderilmektedir.

Gönderen:	Şenay Sarmasoğlu
Ödev başlığı:	INTERN DOCTORS' LIKELIHOOD O.
Gönderi Başlığı:	INTERN DOCTORS' LIKELIHOOD O.
Dosya adı:	TEZ_turnitin.docx
Dosya boyutu:	1.45M
Sayfa sayısı:	53
Kelime sayısı:	14,201
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Gönderim Tarihi:	25-Eyl-2019 12:39PM (UTC+0300)
Gönderim Numarası:	1179695208

T.C.
REPUBLIC OF TURKEY
HACETTEPE UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES

INTERN DOCTORS' LIKELIHOOD OF SPEAKING UP FOR
PATIENT SAFETY

Şenay SARMASOĞLU

Program of Medical Education
MASTER OF SCIENCE THESIS

ANKARA
2019

9. CURRICULUM VITAE

Name Surname: Şenay Sarmasoğlu

Date of Birth: 20 February 1984

Place of Birth: Kırcali- Bulgaria

Title: Assistant Professor

Education

Degree	Department	University	Date
Master	Medical Education	Hacettepe University	2016-…
PhD	Fundamentals of Nursing	Hacettepe University	2014
Master	Fundamentals of Nursing	Hacettepe University	2009
Undergraduate	Nursing	Hacettepe University	2007

Academic / Professional Experience

Institution	Department	Position	Dates
Hacettepe University	Faculty of Nursing Fundamentals of Nursing	Assistant Professor	11.05.2017-…
	Faculty of Nursing Fundamentals of Nursing	Research Assistant	12.07.2010-10.05.2017
	Faculty of Health Sciences Fundamentals of Nursing	Research Assistant	01.05.2009-12.07.2010
Bayındır Hospital	Emergency Room	Staff nurse	16.07.2007- 30.04.2009

Dissertations

Ph.D:

-Sarmasoglu, S. (2014). *"Hemşirelik Eğitiminde Standart Hasta Kullanımının Öğrencilerin Psikomotor Beceri Geliştirme Süreçlerine Etkisi"* Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü, Yayımlanmamış Doktora Tezi, (Advisor : Prof. Dr. L. Dinç; Co advisor: Prof. Dr. Melih Elçin) Ankara.

Master:

-Sarmasoglu, S. (2009). *"Hemşirelik Öğrencilerinin Kendi Kendine Öğrenmeye Hazıroluş Düzeylerinin Belirlenmesi"* Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü, Yayımlanmamış Yüksek Lisans Tezi, (Advisor : Prof. Dr. S. Görgülü) Ankara.

Certificates

-EUSIM Basic Simulation Instructor Course, 30. 08- 1.09. 2017, Denmark
-AHA BLS/ CPR and First Aid Instructor Course, 24.01.2019, Turkey

Publications (Last 3 years)

1. Rosenkrantz, O., Jensen, T. W., **Sarmasoglu, S**., Madsen, S., Eberhard, K., Ersbøll, A. K., & Dieckmann, P. (2019). Priming healthcare students on the importance of non-technical skills in healthcare: How to setup a medical escape room game experience. *Medical teacher*, 1-8.

2. Sarıkoc, G., **Sarmasoglu, S.,** Tuzer, H., Elcin, M., Burn, C.L. (2018) Intervention for Standardized Patients' Anxiety After "Receiving Bad News" Scenarios. Clinical Simulation in Nursing, 25, 28-35. ttps://doi.org/10.1016/j.ecns.2018.10.012

3. **Sarmasoğlu, Ş.,** Elçin, M., & Masiello, İ. (2018). Eğiticilerin Başarılı Mesleklerarası Eğitim Programlarına İlişkin Deneyimleri: Karolinska Enstitüsü Örneği. Journal of Hacettepe University Faculty of Nursing, 5(1).

4. **Sarmasoğlu, S.,** Yücel. Ç. Ve Tunçbilek, Z. (2017). Hemşirelik Eğitiminde Simülasyon Uygulamaları. Türkiye Klinikleri J Med Educ-Special Topics, 2(2):70-80.

5. **Sarmasoğlu, S.,** Dinç, L., Elçin, M., Tarakcıoglu Celik, G. H., ve Polonko, I. (2016). Succes of the First Gynecological Teaching Associate Program in Turkey. Clinical Simulation in Nursing, 12(8), 305-312. http://dx.doi.org/10.1016/j.ecns.2016.03.003.

6. **Sarmasoğlu, S**., Dinç, L., ve Elçin, M. Hemşirelik Öğrencilerinin Klinik Beceri Eğitimlerinde Kullanılan Standart Hasta ve Maketlere İlişkin Görüşleri. (2016). Hemşirelikte Eğitim ve Araştırma Dergisi,;13 (2): 107-115. doi:10.5222/HEAD.2016.107.

Abstracts ve Invited Speakers (Last 3 years)

1. **Sarmasoglu, S.,** Yucel, C., Elcin, M., Koc, G. Evaluation of nontechnical skills of novice nursing and medical students at interprofessional simulation settings. 2019 Annual Meeting of the Society in Europe for Simulation Applied to Medicine (SESAM), 12-14.06.2019, Glasgow, Scotland. (Oral Presentation)

2. Özata, K., **Sarmasoğlu, S**. Sağlık bilimleri alanında okuyan öğrencilerin mesleklerarası öğrenmeye hazırbulunuşluklarının belirlenmesi. 3. Uluslar arası Sağlık Bilimleri Kongresi, 29.11- 1.12.2018, Ankara, Turkey. (Oral Presentation)

3. Basit, G., Korkmaz, F., **Sarmasoğlu, S**. Nursing Students' Attitudes Toward Mobile Learning. 7. International Nursing Management Conference, 25-27 Ekim 2018, Bodrum, Turkey. (Oral Presentation)

4. **Sarmasoğlu, S.** Standart Hasta Örnekleri, VIII. Hemşirelik Esasları Çalıştayı (Beceri Öğretim Teknikleri ve Değerlendirme), 12-13.10.2018, Izmir, Turkey. (Invited Speaker)

5. **Sarmasoğlu, S.** Standardized Patient Workshop, 22.09.2017, Kopenhag, Denmark. (. (Invited workshop)

6. Sarıkoç, S., **Sarmasoğlu, S.,** Tüzer, H., Elçin, M. Layat Burn C. Use of the Relaxation Exercises for Standardized Patients After Portraying in Breaking Bad News Scenarios. 2017 Annual Meeting of the Society in Europe for Simulation Applied to Medicine (SESAM), 14-16.06.2017, Paris, France (Oral Presentation)

7. **Sarmasoğlu, S.** Standart Hasta Çalıştayı, 5-6.05.2017, Bursa, Turkey. (Davetli Çalıştay)

8. Sarıkoç, S., Tüzer, H., **Sarmasoğlu, S.,** Elçin, M. and McNaughton N. Standardized Patients' Experiences and Perceptions About Their Roles: Case of Turkey, 22. Annual Meeting of the Society in Europe for Simulation Applied to Medicine (SESAM) Lizbon 2016, 15 – 17. 06.2016, Lizbon, Portugal. (Oral Presentation)

9. **Sarmasoğlu, S.** Using Standardized Patients and Gynecological Teaching Associate to Develop Skills of Nursing Students, 26-29.01.2016, Tainan, Taiwan. (Invited Speaker)

English

- ÜDS: 86.250

International Projects

Country	Institution	Project	Dates
Denmark	Copenhagen Academy for Medical Education and Simulation	Erasmus + Student Mobility	2017, 4 moths
Sweden	Karolinska Institute	International Collaboration Project : Innovative Teaching Aprroach: Standardized Patients in Education	2013,4 moths

Memberships in Professional Organizations

- Society in Europe for Simulation Applied to Medicine (SESAM)

- Hacettepe Hemşirelik Lisans ve Lisansüstü Mezunları Derneği (HHEMDER)

- Association of Standardized Patient Educators (ASPE)