

**Midocean University**

**College of Management**

**Department of Risk management**



**Research Thesis:**

**Impact of Risk Management in Healthcare within Emergency Medical Services in the  
Kingdom of Saudi Arabia**

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### Abstract

**Background:** Efficient risk management within Emergency Medical Services (EMS) is crucial for ensuring patient safety, enhancing service quality, and aligning with the national healthcare goals of Saudi Arabia.

**Objectives:** This study aimed to evaluate the impact of current risk management practices within the EMS system in KSA, identifying the key risk areas and assessing the effectiveness of these practices in improving operational efficiency and patient care outcomes.

**Methods:** A quantitative research design was employed, focusing on healthcare providers within KSA's EMS system. Participants included paramedics, emergency medical technicians (EMTs), EMS nurses, and administrators with at least two years of experience. Data was collected via a structured Likert scale questionnaire. Descriptive and inferential statistical analyses were conducted using SPSS to analyze responses, with emphasis on correlations between the participants' characteristics and satisfaction with risk management and EMS healthcare services.

**Results:** This study surveyed 43 healthcare professionals to evaluate satisfaction with risk management practices in the Saudi EMS system. The majority of participants were male (62.8%) and predominantly aged 30-39 (69.8%). Most held a bachelor's degree (65.1%), with Technician Specialists forming the largest professional group (72.1%). While most participants (85.7%) reported moderate satisfaction with risk management practices, a significant negative correlation was found between years of experience and satisfaction levels ( $r = -0.273$ ,  $p\text{-value} = 0.04$ ), indicating a slight decrease in satisfaction with increased experience.

**Conclusion:** The findings are likely to underscore the importance of robust risk management in EMS for patient safety and system efficiency. Recommendations will address the identified

gaps, potentially influencing policy and practice to elevate the standard of emergency medical care in KSA.

**Keywords:** Risk Management, Emergency Medical Services, Saudi Arabia, Healthcare.

## 1.0 INTRODUCTION

Emergency medical services (EMS) are considered high-risk work settings due to the unique working conditions. The intricate factors in a work environment, such as dependency, time pressure, and lack of transparency, hinder quick and thorough cognitive processing of emergency circumstances (Zimmer et al., 2010). This human element contradicts patient safety. Reason's Swiss Cheese model suggests that each dangerous deed or hidden error contributes to the eventual downfall of a labor system. Poor communication can greatly hinder group effectiveness and promote risky behaviors. Both variables must be recognized in risk management to ensure patient safety (Leonard et al., 2004).

Risk management is crucial for the success of industries such as healthcare, and project management since it may help save time, cut costs, and prevent failures before they happen (Hillson & Murray-Webster, 2007). Extensive study has been conducted on the advantages of risk management. It identifies beneficial alternative courses of action, boosts confidence in accomplishing project objectives, improves odds of success, and minimizes uncertainties and duplication of work (Bannerman, 2008). An efficient risk management program in the health sector, or any other field, enhances comprehension of the risks associated with every project and facilitates the making of well-informed decisions. Healthcare professionals have acknowledged the need of risk management due to the rising frequency and seriousness of medical mistakes caused by interactions with medical equipment (Al-Barnawi et al., 2019).

Risk management in Emergency Medical Services (EMS) in the Kingdom of Saudi Arabia (KSA) is crucial due to the significant role EMS plays in the healthcare system. Risk management in this context is identifying, assessing, and prioritizing risks, then efficiently allocating resources to reduce, monitor, and control the likelihood or effect of adverse occurrences in the emergency medical field.

The influence of risk management on healthcare, especially in EMS in the Kingdom of Saudi Arabia, is substantial and has several aspects. It promotes patient safety and well-being while also improving the operational efficiency of emergency medical services. Continual attempts to enhance risk management strategies are crucial for maintaining advancements in emergency care quality and addressing the evolving healthcare requirements of the community.

**Background of the problem**

Risk management in Emergency Medical Services (EMS) in the Kingdom of Saudi Arabia (KSA) is intricate because of demographic, geographical, technical, and regulatory considerations. The varied geographical area, including urban, rural, and desert locations, presents logistical and operational problems for Emergency Medical Services (EMS), such as accessibility, response times, and providing timely care. For example, the annual Hajj pilgrimage is a major event that raises the need for services, requiring strong risk management measures. Efficient EMS operations rely on technological integration and standards, although issues like as standardization, interoperability, and training can create dangers. Adapting to changing requirements necessitates ongoing training and quality enhancement efforts. The Saudi Vision 2030 aspires to change healthcare by focusing on quality, efficiency, and patient-centered treatment. It is essential to address these difficulties by implementing appropriate risk management strategies to enhance EMS and guarantee the safety and well-being of residents and visitors.

**Problem statement**

The Emergency Medical Services (EMS) in Saudi Arabia has obstacles hindering their performance. These include slow response times and poor care quality in some areas. Adopting new technology, following international standards, and aligning with Saudi Vision 2030 add to the difficulties. Effective risk management is essential to overcome these challenges and improve EMS service quality, efficiency, and resilience. This will ensure public safety and align with the national healthcare goals. However, there is limited research on this topic in Saudi Arabia.

**Objectives of the study****Purpose of the Study**

To study the satisfaction of healthcare professionals within KSA's EMS system with risk management practices in the emergency medical services.

**The specific objectives of the Study**

1. to measure the degree of satisfaction with the current risk management practices.
2. To estimate the perception of healthcare professionals toward the role of stakeholders in risk management practices in the emergency system.
3. To assess the association between healthcare professionals' years of experience in the emergency system and their degree of satisfaction with risk management practices.

4. To assess the association between healthcare professionals' role in the emergency system and their degree of satisfaction with risk management practices.

### **The importance of the study**

Studying the influence of risk management in Emergency Medical Services (EMS) in the Kingdom of Saudi Arabia (KSA) is significance for enhancing patient safety, system efficiency, and responsiveness. It can help develop ways to decrease medical mistakes, better patient outcomes, and improve the quality of emergency treatment. The study may encourage ongoing development and creativity by comparing itself to global standards and adding to the understanding of EMS risk management.

### **Study Questions**

1. What is the current level of satisfaction among healthcare professionals regarding risk management practices?
2. How do healthcare professionals perceive the involvement of stakeholders in risk management within the emergency system?
3. Is there a correlation between the years of experience healthcare professionals have in the emergency system and their satisfaction with risk management practices?
4. Does the specific role of healthcare professionals within the emergency system influence their satisfaction levels with risk management practices?

### **Research Hypothesis**

**H0:** Risk management have no impact on the operational effectiveness and patient care outcomes within the EMS system in the KSA.

**H1:** Risk management positively impact the operational effectiveness and patient care outcomes within the EMS system in the KSA.

### **Theoretical model**

#### **Components of the theoretical model:**

##### **Core Focus:**

The core focus is on evaluating the effectiveness of risk management practices within the EMS system in Saudi Arabia and their impact on healthcare professionals' satisfaction levels.

##### **Primary Outcomes:**

1. Healthcare Professional Satisfaction: The main outcome is the degree of satisfaction with the current risk management practices among healthcare professionals in the EMS system.
2. Quality of Healthcare Services: This includes the impact of risk management practices on the quality of care provided in the EMS system.

### **Secondary Outcomes:**

1. Operational Efficiency: How risk management practices affect the efficiency of operations within the EMS system.
2. Patient Care Outcomes: The influence of risk management on patient safety and care outcomes in the EMS system.

## **2.0 LITERATURE REVIEW**

### **2.1. Introduction**

In the rapid and critical healthcare setting, it is crucial to prioritize the safety and quality of healthcare by implementing effective risk management strategies. In Emergency Medical Services (EMS), quick reaction and handling of unexpected situations significantly affect patient results.

### **2.2. Dependant variables:**

- The degree of satisfaction with risk management practices.
- The quality of healthcare services in EMS.

### **2.3. Independent variables:**

- Years of experience of the healthcare professionals.
- The current risk management practices within the EMS system.
- The demographic variables such as age, gender, educational level, and the role of the healthcare professionals.

### **2.4. Summary of past studies:**

#### ***2.4.1. Importance of Risk Management in Healthcare***

Effective risk management is essential for enhancing patient safety and the quality of care in emergency medical services. Implementing successful tactics aids in recognizing, evaluating, and minimizing possible risks, resulting in less medical mistakes and adverse occurrences.

**Almaki et al. (2011)** highlighted the changes in the health care system in Saudi Arabia, pointing out concerns such as rising demand, prices, shortages, unequal access, quality issues, chronic illnesses, and research requirements. The authors suggested some possible solutions include decentralizing the Ministry of Health, increasing the involvement of the business sector, improving primary health care services, upgrading human resources, adopting the national health information system, and bolstering health research and evidence-based practice.

**According to Alahmadi (2010)** incorporating risk management practices in EMS can effectively decrease legal and financial risks related to healthcare delivery. This is especially important due to the rising healthcare litigation and the necessity for healthcare providers to comply with national and international safety standards.

#### **2.4. 2. Risk Management in Saudi Arabian EMS**

**Alghamdi (2016)** mentioned that the Saudi Arabian healthcare system has experienced significant changes focused on enhancing the quality and safety of healthcare services, particularly Emergency Medical Services (EMS). Policies and guidelines emphasizing risk management in healthcare have been implemented by the Ministry of Health and other regulatory authorities.

**According to Almalki et al. (2011)** the Emergency Medical Services (EMS) in Saudi Arabia encounter issues such as absence of established procedures, inconsistent service quality, and insufficient research on risk management methods in EMS environments. Nevertheless, these constraints offer possibilities to establish detailed risk management systems customized for the Saudi environment.

#### **2.5. Theoretical framework of the study:**

The theoretical framework for the study is grounded in the principles of risk management within healthcare systems, particularly focusing on Emergency Medical Services (EMS) in Saudi Arabia. It incorporates established theories and research findings on patient safety culture, the significance of effective risk management practices, and the impact of these practices on healthcare professionals' satisfaction and service quality. The framework draws from literature that examines the dynamics of healthcare systems, the role of healthcare providers in EMS, and the challenges faced by such systems in ensuring efficient and safe patient care.

### **3.0 RESEARCH METHODOLOGY**

#### **3.1. Introduction:**

In this study, we employed a quantitative research design to assess the impact of risk management practices on healthcare professionals' satisfaction within the Emergency Medical Services (EMS) system in Saudi Arabia. The following subsections will describe the study's design, data collection instruments, participant selection, and the statistical methods used to analyze the data.

#### **3.2. Research Design**

Quantitative research design.

### 3.3. Search Strategy

For the theoretical framework, the study relied on an in-depth literature review to explore the impact of risk management in healthcare within Emergency Medical Services (EMS) in Saudi Arabia. Initially, the study topic was broken down into essential terms like risk management, healthcare, EMS, and Saudi Arabia. Key topics encompassed risk assessment, risk reduction, safety management, ambulance services, pre-hospital care, and emergency treatment. Secondly, appropriate sources were selected, including databases like PubMed, MEDLINE, Google Scholar, local Saudi Arabian medical and health publications or databases, as well as government and health ministry papers from Saudi Arabia, that were likely to include relevant material. Finally, the literature was screened and chosen according to certain criteria, while maintaining thorough documentation of the search process for the sake of repeatability and legitimacy.

### 3.4. Population of the study

The study population was the healthcare providers such as paramedics, emergency medical technicians (EMTs), EMS nurses, and EMS administrators, alongside other healthcare professionals directly involved in EMS.

#### Inclusion Criteria:

1. Health care providers: Paramedics, emergency medical technicians (EMTs), EMS nurses, EMS administrators, and other healthcare professionals who played a role in emergency medical services.
2. The participants should have worked within the Kingdom of Saudi Arabia.
3. The minimum level of experience was at least two years working in EMS.
4. The participants who were willing to provide informed consent and agreed with the study's procedures.

### 3.5. Sample Characteristic

- **Professional Role:** breakdown of the participants by their specific roles within the EMS system, such as the proportion of paramedics, emergency medical technicians (EMTs), EMS nurses, and EMS administrators.
- **Years of Experience:** the average years of experience in EMS among the participants.
- **Geographical Location:** Distribution of participants across different regions of Saudi Arabia.
- **Gender and Age:** the gender and age range of the participants.

- **Educational level:** Information on the highest level of education achieved by participants and any specific training in EMS or risk management
- **The type of EMS organization:** Government or private.

### 3.6. Sample size determination:

In this study, a convenience quota sampling technique was employed to distribute the questionnaire to a targeted group of participants. Out of the 150 healthcare professionals who were approached, 43 provided valid responses, resulting in a response rate of approximately 28.7%.

### 3.7. Data collection tools:

The data collecting tool was a structured questionnaire designed by the researcher based on the literature review. Participants were required to evaluate their degree of agreement with a set of items using a 5-point scale ranging from "Strongly Disagree" to "Strongly Agree," providing detailed insights into their opinions, perspectives, and experiences. The questionnaire collected demographic and professional background details including age, gender, role in EMS, years of experience, and type of EMS service to aid in thorough data analysis and interpretation. Prior to distribution, the questionnaire was pilot tested with a small group of EMS professionals to ensure clarity and relevance. Distribution methods were customized to effectively reach the target population, while ensuring ethical considerations such as informed consent and confidentiality were carefully followed.

### 3.8. Data Analysis:

The data were analyzed using statistical software (SPSS) by using descriptive statistics, which included frequency distributions, mean, median, and mode scores. Inferential statistics, such as correlation analysis, regression analysis, and possibly factor analysis, investigated the connections between risk management and their impact on EMS healthcare services. T-tests or ANOVA were employed to compare answers among various demographic and professional categories. Tables or graphs were used to clearly illustrate the results.

## 4.0 Practical study:

### Study findings:

Descriptive data findings:

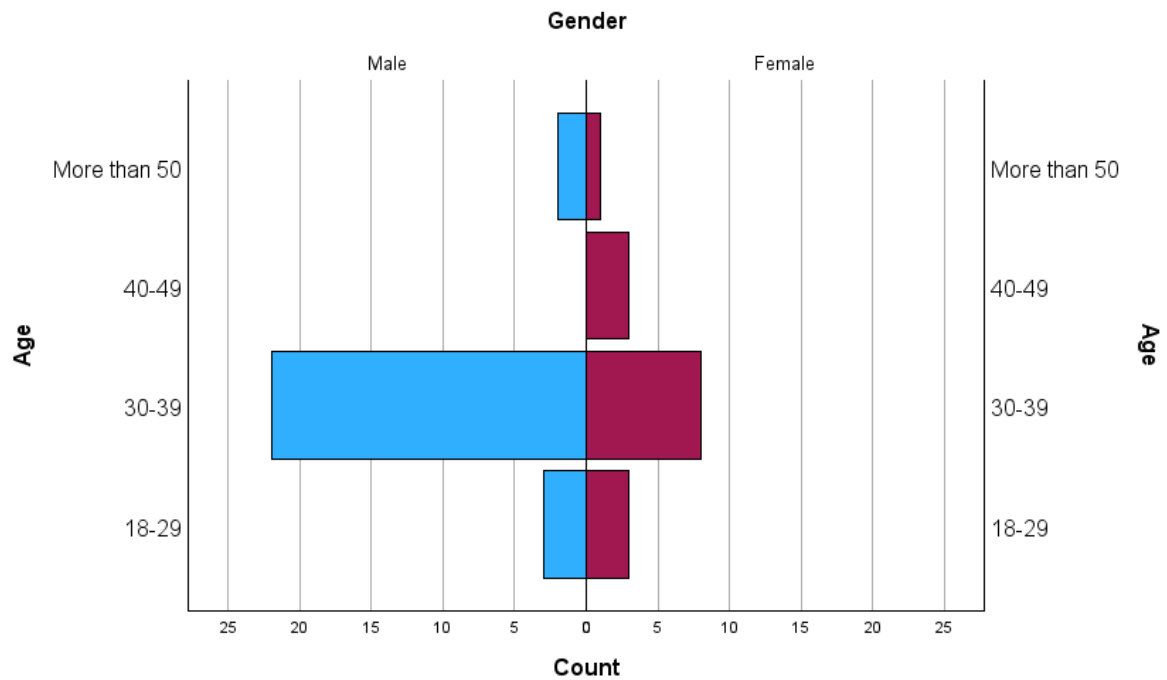
- Gender

distribution among the 43 participants in this study; there was a higher proportion of male participants 62.8% (n=27) while the proportion of female participants was 34.9% (n=15).

- Age

The population of this study was stratified into four age as the following 18 to 29, 30 to 39, 40 to 49, and more than 40. the second group (30 to 39) years of age group with the highest proportion of 69.8% (n=30)

**Figure1: Distribution of Age and Gender among the participants**

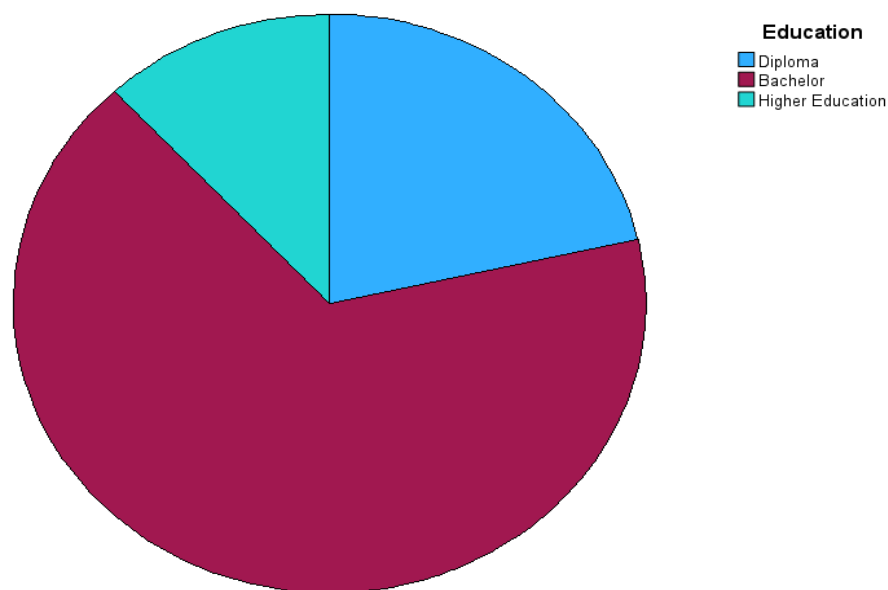


- Educational level

The educational levels were studied in three strata.

20.9% (n= 9) of the participants have diplomas. 65.1% (n=28) of the study population has a bachelor's degree, and only 11.6% (n= 5) have a higher education degree.

**Figure 2: Pie chart of participant's educational level**



- Role of the participant in the EMS system:

14% (n=6) of the participants were health assistants.

11.6% (n=5) were emergency medicine technicians.

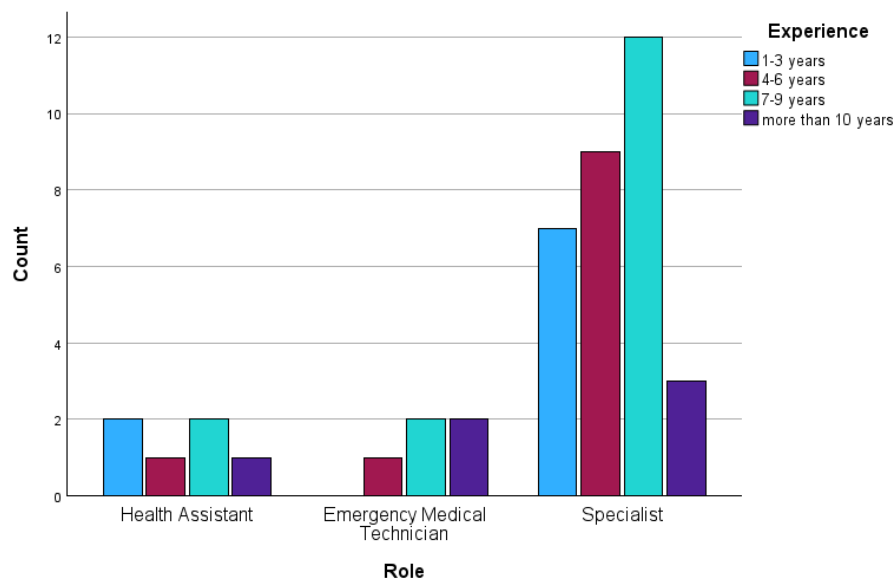
While the majority of the participants 72.1% (n=31) were Technician Specialists.

- Years of experience of the participants in the EMS system:

The majority 37% (n= 16) of the participants have 7 to 9 years of experience. Only 14% (n=6) of the participants have more than 10 years of experience.

20.9% (n=9) have 1 to 3 experience years and 25.6% (n=11) have 4 to 6 experience years.

**Figure 3: Role in the EMS system and years of experience**



### Frequency Tables:

#### Age

|                    | Frequency | Percent | Cumulative Percent |
|--------------------|-----------|---------|--------------------|
| Valid              | 1         | 2.3     | 2.3                |
| 18-29 years        | 6         | 14.0    | 16.3               |
| 30-39 years        | 30        | 69.8    | 86.0               |
| 40-49 years        | 3         | 7.0     | 93.0               |
| More than 50 years | 3         | 7.0     | 100.0              |
| Total              | 43        | 100.0   |                    |

#### Gender

|        | Frequency | Percent | Cumulative Percent |
|--------|-----------|---------|--------------------|
|        | 1         | 2.3     | 2.3                |
| Male   | 27        | 62.8    | 65.1               |
| Female | 15        | 34.9    | 100.0              |
| Total  | 43        | 100.0   |                    |

**Educational Level**

|                  | Frequency | Percent | Cumulative Percent |
|------------------|-----------|---------|--------------------|
|                  | 1         | 2.3     | 2.3                |
| Diploma          | 9         | 20.9    | 23.3               |
| Bachelor         | 28        | 65.1    | 88.4               |
| Higher Education | 5         | 11.6    | 100.0              |
| Total            | 43        | 100.0   |                    |

**Role in Emergency System**

|                              | Frequency | Percent | Cumulative Percent |
|------------------------------|-----------|---------|--------------------|
|                              | 1         | 2.3     | 2.3                |
| Health Assistant             | 6         | 14.0    | 16.3               |
| Emergency Medical Technician | 5         | 11.6    | 27.9               |
| Specialist                   | 31        | 72.1    | 100.0              |
| Total                        | 43        | 100.0   |                    |

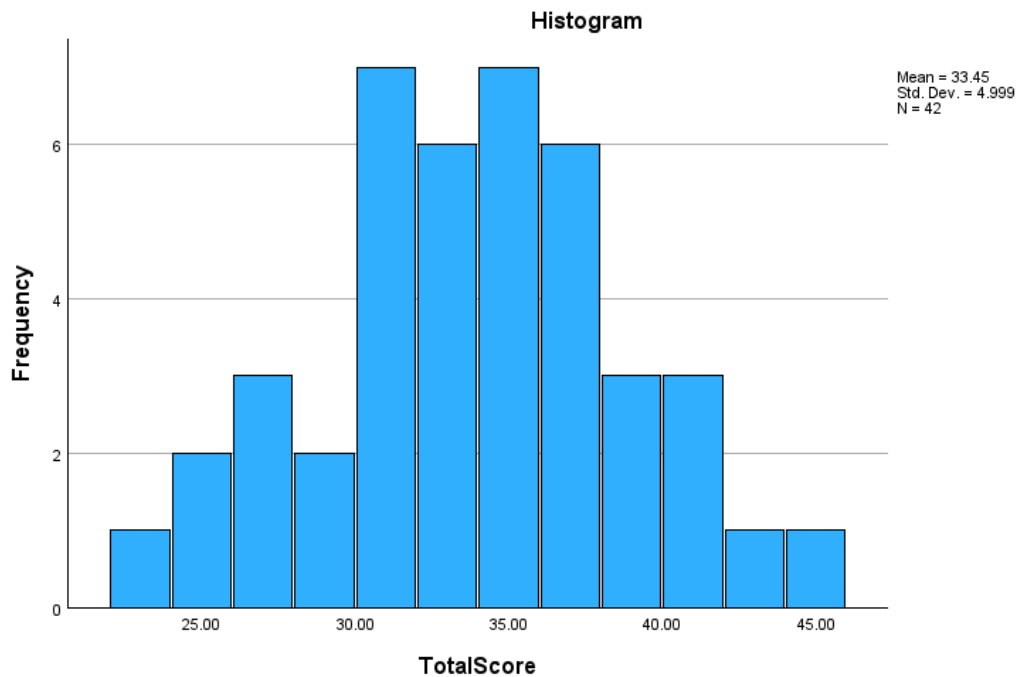
**Years of Experience**

|                    | Frequency | Percent | Cumulative Percent |
|--------------------|-----------|---------|--------------------|
|                    | 1         | 2.3     | 2.3                |
| 1-3 years          | 9         | 20.9    | 23.3               |
| 4-6 years          | 11        | 25.6    | 48.8               |
| 7-9 years          | 16        | 37.2    | 86.0               |
| more than 10 years | 6         | 14.0    | 100.0              |
| Total              | 43        | 100.0   |                    |

- Level of satisfaction:

The majority of the participants 85.7% (n= 36) have moderate levels of satisfaction. The rest of the participants were equally distributed between high and low levels of satisfaction.

Figure 4: Total level of satisfaction with risk management strategies.



Half of the participants 51.1% (n= 22) agreed or strongly agreed that Saudi Arabia has a well-established emergency medical services (EMS) system. While 40.5% (n= 17) of the participants have agreed or strongly agreed that The key challenges and risks faced by the Saudi EMS system are well recognized.

51.1% (n=22) of the study population confirm that the existing policies and regulations adequately govern risk management in the Saudi EMS system.

Regarding the employment of risk management practices, the majority of the participants 47.6% (n= 20) were neutral toward the sentence A variety of risk management practices are extensively employed in the Saudi EMS system.

54.7% (n=23) acknowledged that the Risk management practices significantly impact the key performance indicators (KPIs) of the Saudi EMS system.

The majority of the participants 47.6% (n=20) were neutral toward the stakeholder's positive perceptions of the role and effectiveness of risk management in the Saudi EMS.

A great majority of the study population 76.2% (n= 32) recognized that there is a critical need for additional information and improvement in risk management practices in the Saudi EMS.

***Table 1: Percentages of Likert scale Level of satisfaction Questionnaire answered by participants***

| Statement                                                                                                                                        | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|---------|----------|-------------------|
| 1. Saudi Arabia has a well-established emergency medical services (EMS) system.                                                                  | 26%            | 23.8% | 26.2%   | 19%      | 4.8%              |
| 2. The key challenges and risks faced by the Saudi EMS system are well-recognized.                                                               | 11.9%          | 28.6% | 40.5%   | 11.9%    | 7.1%              |
| 3. Existing policies and regulations adequately govern risk management in the Saudi EMS system.                                                  | 7.1%           | 42.9% | 38.1%   | 7.1%     | 4.8%              |
| 4. A variety of risk management practices are extensively employed in the Saudi EMS system.                                                      | 7.1%           | 47.6% | 40.5%   | 47.6%    | 7.1%              |
| 5. Risk management practices are effectively implemented and monitored in the Saudi EMS system.                                                  | 4.8%           | 40.5% | 45.2%   | 7.1%     | 2.4%              |
| 6. The benefits and challenges associated with different risk management practices are widely acknowledged.                                      | 7.1%           | 47.6% | 38.1%   | 7.1%     | 0.0%              |
| 7. Risk management practices significantly impact the key performance indicators (KPIs) of the Saudi EMS system.                                 | 16.7%          | 38.1% | 38.1%   | 7.1%     | 0.0%              |
| 8. There is substantial evidence on the impact of risk management on response times, patient safety, staff well-being, and resource utilization. | 7.1%           | 47.6% | 35.7%   | 7.1%     | 2.4%              |
| 9. Studies have extensively explored the cost-effectiveness of different risk management approaches in the Saudi EMS system.                     | 7.1%           | 47.6% | 35.7%   | 7.1%     | 2.4%              |
| 10. Different stakeholders perceive the role and effectiveness of risk management in the Saudi EMS positively.                                   | 2.4%           | 35.7% | 47.6%   | 9.5%     | 4.8%              |
| 11. Barriers and facilitators to implementing risk management practices are clearly identified from various stakeholder perspectives.            | 7.1%           | 38.1% | 38.1%   | 11.9%    | 4.8%              |

|                                                                                                                               |       |       |     |      |      |
|-------------------------------------------------------------------------------------------------------------------------------|-------|-------|-----|------|------|
| <b>12. There is a critical need for additional information and improvement in risk management practices in the Saudi EMS.</b> | 40.5% | 35.7% | 19% | 0.00 | 4.8% |
|-------------------------------------------------------------------------------------------------------------------------------|-------|-------|-----|------|------|

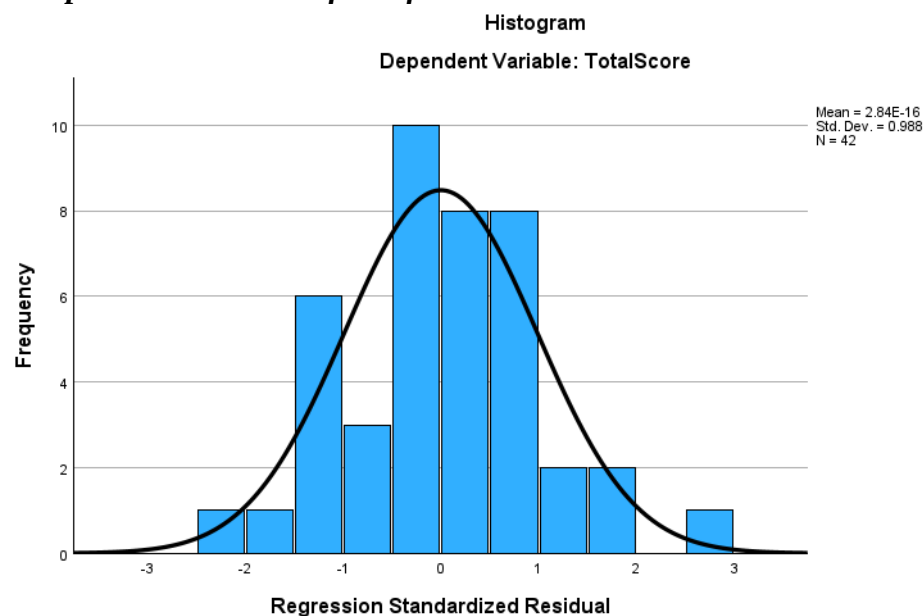
The results did not identify any significant statistical association between the level of satisfaction of the participants and their gender, age, role, or educational level.

There was a statistically significant association between the years of experience and the level of satisfaction with the risk management practices in Saudi EMS ( $p$ -value = 0.04). The correlation analysis revealed a statistically significant negative relationship ( $r = -0.273$ ,  $n = 43$ ). Specifically, as the years of Experience increased, the level of satisfaction tended to decrease slightly.

**Table2: the results of analysis of variance and t-test for the association between satisfaction level and various variables of the study.**

| Variables           | p-value (Level of satisfaction with risk management practices.) |
|---------------------|-----------------------------------------------------------------|
| Gender              | 0.901                                                           |
| Age                 | 0.155                                                           |
| Educational level   | 0.436                                                           |
| Proficiency role    | 0.938                                                           |
| Years of experience | <b>0.049</b>                                                    |

**Figures 5: Linear regression model for assessing the relationship between years of experience and level of satisfaction**



## **Discussion:**

This study investigated the level of satisfaction with risk management practices in emergency systems in Saudi Arabia among health practitioners in the EMS systems.

This study has a lower response rate than the study (Alahmadi, 2010) but with a similar distribution of health practitioners among both studies. The outcomes of our study resonated with the findings of that study, which emphasized the importance of supportive patient safety measures in Saudi Arabia hospitals. Our study's manifestation of moderate satisfaction levels among healthcare professionals suggests that while there is an understanding of risk management practices, there may be a gap in the adequate implementation and reinforcement of patient safety measures.

In 2010 research accentuated a high incidence of failures in emergency medical service simulated scenarios. This aligns with our study findings where experience negatively correlates with satisfaction. This could imply that more experienced professionals are more aware of the gaps in risk management practices, leading to their decreased satisfaction. The failure in the simulated scenario could be attributed to an error in the implementation of the training programs which could grow the sense of burden and dissatisfaction in senior practitioners. The negative correlation between experience and satisfaction indicates a need for ongoing training and development programs, especially for seasoned professionals, to keep them updated and engaged with the latest risk management practices.

In a study performed in 2008 by Bannerman reassessed risk management in software projects and found that formal project administration is not always a predictor of success. Similarly, our study suggests that despite the existence of policies and regulations, there is a need for continuous improvement and adaptation to the dynamic essence of risk management in healthcare.

Al-Barnawi et al. (2018) discussed the role of electronic medical records in risk management in Saudi hospitals. The call for additional knowledge and refinement in our study may be managed by leveraging technology to facilitate risk management practices.

In 2016 Alghamdi conducted a study on EMS in Saudi Arabia that discussed the significance of paramedics and the barriers they face, such as traffic congestion and lack of competence among medical staff. (Alghamdi,2016)While both studies focus on EMS, our study is distinct in its examination of satisfaction levels related to risk management practices rather than barriers to paramedic efficiency.

The comparison to an overview of the Saudi healthcare system highlighted challenges such as a shortage of Saudi health professionals and the need for effective reform. (Almalki, 2011) our study contributes to this discussion by furnishing insights into the satisfaction levels of healthcare professionals with current risk management practices, suggesting areas for potential reform.

### **Study conclusion:**

In conclusion, this thesis has illuminated the complexities of risk management satisfaction among healthcare professionals within the Saudi EMS system. Through a comprehensive survey of 43 participants, it has uncovered a nuanced landscape where age, gender, and professional role do not significantly influence satisfaction levels, whereas years of experience do, albeit negatively. The findings advocate for targeted interventions to bolster satisfaction, particularly among seasoned professionals, and call for ongoing policy and regulation enhancements to adapt to the evolving demands of risk management in healthcare.

### **Study recommendation:**

1. **Enhance Awareness and Training:** Given the moderate levels of satisfaction and the neutral stance on the employment of risk management practices, it is recommended to increase awareness and training programs for healthcare professionals. These should focus on the importance and effectiveness of risk management practices in the EMS system.
2. **Stakeholder Engagement:** With a significant portion of participants neutral about stakeholder perceptions, efforts should be made to actively engage stakeholders in discussions and decision-making processes to enhance their positive perceptions and involvement.
3. **Addressing the Experience-Satisfaction Gap:** The negative correlation between years of experience and satisfaction levels suggests a need to address potential burnout. Implementing mentorship programs and career development opportunities could mitigate this trend.

**4. Policy and Regulation Review:** Although a majority confirm that existing policies and regulations adequately govern risk management, the call for additional information and improvement indicates room for enhancement. A thorough review and update of these policies may be necessary to align with current challenges and risks.

**5. Targeted Interventions for Young Professionals:** With the largest age group being 30 to 39, targeted interventions to maintain and improve satisfaction levels in this demographic could have a significant impact on the overall effectiveness of the EMS system.

#### **Study limitations:**

- The limitations of this study include a relatively small sample size of 43 participants, which may not fully represent the broader population of healthcare professionals in Saudi Arabia.
- The study's cross-sectional design limits the ability to establish causality between experience and satisfaction levels.
- The focus on a single geographic region may reduce the generalizability of the findings to other areas with different healthcare systems.
- Self-reported measures of satisfaction are subject to bias and may not accurately reflect the true effectiveness of risk management practices.

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## APPENDIXES

### APPENDIX 1: QUESTIONNAIRE QUESTIONS

| Statement                                                                                                                                         | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|---------|----------|-------------------|
| 13. Saudi Arabia has a well-established emergency medical services (EMS) system.                                                                  |                |       |         |          |                   |
| 14. The key challenges and risks faced by the Saudi EMS system are well-recognized.                                                               |                |       |         |          |                   |
| 15. Existing policies and regulations adequately govern risk management in the Saudi EMS system.                                                  |                |       |         |          |                   |
| 16. A variety of risk management practices are extensively employed in the Saudi EMS system.                                                      |                |       |         |          |                   |
| 17. Risk management practices are effectively implemented and monitored in the Saudi EMS system.                                                  |                |       |         |          |                   |
| 18. The benefits and challenges associated with different risk management practices are widely acknowledged.                                      |                |       |         |          |                   |
| 19. Risk management practices significantly impact the key performance indicators (KPIs) of the Saudi EMS system.                                 |                |       |         |          |                   |
| 20. There is substantial evidence on the impact of risk management on response times, patient safety, staff well-being, and resource utilization. |                |       |         |          |                   |
| 21. Studies have extensively explored the cost-effectiveness of different risk management approaches in the Saudi EMS system.                     |                |       |         |          |                   |
| 22. Different stakeholders perceive the role and effectiveness of risk management in the Saudi EMS positively.                                    |                |       |         |          |                   |
| 23. Barriers and facilitators to implementing risk management practices are clearly identified from various stakeholder perspectives.             |                |       |         |          |                   |
| 24. There is a critical need for additional information and improvement in risk management practices in the Saudi EMS.                            |                |       |         |          |                   |

**Abstract:**

**Background:** Efficient risk management within Emergency Medical Services (EMS) is crucial for ensuring patient safety, enhancing service quality, and aligning with the national healthcare goals of Saudi Arabia

**Objectives:** The study aimed to evaluate the impact of current risk management practices within the EMS system in KSA, identifying the key risk areas and assessing the effectiveness of these practices in improving operational efficiency and patient care outcomes

**Methods:** A quantitative research design was employed, focusing on healthcare providers within KSA's EMS system. Participants included paramedics, emergency medical technicians (EMTs), EMS nurses, and administrators with at least two years of experience. Data were collected via a structured Likert scale questionnaire. Descriptive and inferential statistical analyses were conducted using SPSS to analyze responses, with an emphasis on correlations between risk management and EMS healthcare services

**Results:** The study surveyed 43 healthcare professionals to evaluate satisfaction with risk management practices in the Saudi EMS system. The majority of participants were male (62.8%) and predominantly aged 30-39 (69.8%). Most held a bachelor's degree (65.1%), with Technician Specialists forming the largest professional group (72.1%). While most participants (85.7%) reported moderate satisfaction with risk management practices, a significant negative correlation was found between years of experience and satisfaction levels ( $r = -0.273$ ,  $p\text{-value} = 0.04$ ), indicating a slight decrease in satisfaction with increased experience.

**Conclusion:** The findings were likely to underscore the importance of robust risk management in EMS for patient safety and system efficiency. Recommendations addressed the identified gaps, potentially influencing policy and practice to elevate the standard of emergency medical care in KSA.

## المستخلص

**الخلفية:** إدارة المخاطر الفعالة داخل نظام خدمات الطوارئ الطبية أمر حاسم لضمان سلامة المرضى، وتعزيز جودة الخدمة، ويتوافق تماما مع الأهداف الصحية الوطنية للمملكة العربية السعودية.

**الأهداف:** تهدف هذه الدراسة إلى تقييم تأثير الممارسات الحالية لإدارة المخاطر داخل نظام خدمات الطوارئ الطبية في المملكة العربية السعودية، وتحديد المناطق الرئيسية للمخاطر وتقييم فعالية هذه الممارسات في تحسين الكفاءة التشغيلية ونتائج رعاية المرضى.

**الطرق:** تم استخدام تصميم بحث كمي، مع التركيز على مقدمي الرعاية الصحية ضمن نظام خدمات الطوارئ الطبية في المملكة العربية السعودية. شملت عينة الدراسة كل من المسعفين، وفنيي الطوارئ الطبية، وممرضي الطوارئ، والإداريين الذين لديهم خبرة لا تقل عن سنتين. ثم تم جمع البيانات من خلال استبيان مقياس ليكرت المنظم. سيتم إجراء التحليلات الإحصائية الوصفية والاستدلالية مع التركيز على الارتباطات بين إدارة المخاطر وخدمات الرعاية الصحية.

**النتائج:** أجرت هذه الدراسة استطلاعاً شمل 43 من المهنيين الصحيين لتقييم الرضا عن ممارسات إدارة المخاطر في نظام خدمات الطوارئ الطبية السعودي. كان غالبية المشاركين من الذكور (62.8%) وكانوا في الغالب في الفئة العمرية من 30 إلى 39 (69.8%). كان معظم المشاركين من حملة درجة البكالوريوس (65.1%)، وشكل أخصائيو الفنيين أكبر مجموعة مهنية (72.1%). بينما أبلغ معظم المشاركين (85.7%) عن رضا متوسط عن ممارسات إدارة المخاطر، تم العثور على ارتباط سلبي مهم بين سنوات الخبرة ومستويات الرضا ( $r = -0.273$ ، قيمة  $p = 0.04$ )، مما يشير إلى انخفاض طفيف في الرضا مع زيادة الخبرة.

**الخاتمة:** هذه النتائج تؤكد على أهمية إدارة المخاطر في نظام خدمات الطوارئ الطبية لسلامة المرضى وكفاءة النظام. وتعالج التوصيات في هذه الدراسة الفجوات التي قد تؤثر على السياسات والممارسات لرفع معايير الرعاية الطبية الطارئة في المملكة العربية السعودية.