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Work pressures of the nursing staff and their impact on the volume of medical errors in the radiology department

An applied study on King Khalid General Hospital in Hafr Al-Batin

Name: Mohammed Marzouq AlRashidi

Job Title: Non-Physician Radiology Specialist

Workplace: Public Health at Health Affairs in Hafar Al-Batin

Name: Ahmed Mufdi AlEnazi

Job Title: Non-Physician Radiology Specialist

Workplace: Public Health at Health Affairs in Hafar Al-Batin

Name: Maryam Ayyed AlMutairi

Job Title: Nursing Technician

Workplace: Medcare Hospital in Hafar Al-Batin

Name: Maha Murfu AlEnazi

Job Title: Nursing Technician

Workplace: King Khalid General Hospital in Hafar Al-Batin

Abstract:

The study aimed to identify the work pressures of the nursing staff and their impact on the volume of medical errors at King Khalid General Hospital in Hafr Al-Batin. The study adopted the descriptive analytical approach. The study also used the questionnaire as a tool to collect data from members of the study sample. The study sample consisted of (٢٧٨) of the nursing staff at King Khalid General Hospital in Hafr Al-Batin, where the data was analyzed using (Spss) to reach the results. The study results showed that there was a high degree of work pressures among nursing staff at King Khalid Hospital. The study also showed that the Medical errors that occur in King Khalid General Hospital were high. Moreover, the results showed that there is a statistically significant effect at the level of significance (0.05) of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin. Based on the results, the study recommended that it is necessary for the hospital to reduce job pressures on its employees in order to limit the spread of medical errors.

Keywords: Work pressures, medical errors, nursing staff, King Khalid General Hospital in Hafr Al-Batin.

Introduction:

The emergence and increase of work pressures on employees came as a result of the rapid changes and developments in the work environment and its nature, as it has become an unstable and demanding environment, as well as the change in the needs and requirements of customers (Ngoc et al., 2020).

Work pressure affects the various operations and activities of the organization, as well as employees and workers, as work pressure is one of the most important reasons for low productivity in the workplace, low performance of workers, and increased absenteeism and dissatisfaction, and this is reflected negatively on customer satisfaction with the services and products provided by the organization (Fonkeng, 2018).

However, work pressures present challenges facing organizations in general and health care institutions in particular, as it has a negative impact on the individual performance of the medical staff in providing health care, and its impact hinders the work of departments in the health institution, which means that the performance of the organization as a whole is affected and it is far from achieving its goals (Dighe, 2020).

Work pressures in the health sector and health institutions express harmful physical and emotional responses that occur when job requirements do not match the capabilities, resources, or needs of the medical or nursing staff in health institutions, as it reduces and frustrates the performance of the medical and nursing staff in these institutions (Lee et al, 2019).

Worringer et al. (2020) indicates that the performance of nurses and medical staff is affected by working in conditions and situations that affect their quality and efficiency in different ways, as medical errors are considered one of the most dangerous effects of work stress for medical staff resulting from low performance, because it is related to human life.

Therefore, health institutions must adopt new management concepts that help them focus on developing and improving how health services are provided through the development and implementation of plans, as well as setting standards for monitoring

and evaluating the quality of health services and their providers (Martinaningtyas, 2020).

The study Problem:

Service institutions, and health ones in particular, depend mainly on their human cadres to achieve their goals, as the human element in them represents the most important asset of their assets. Therefore, these institutions work to prepare and develop their staff continuously to achieve their goals, and this is not achieved by the presence of burdens and pressures that burden the staff. According to Hussein (2023), some organizations seek to keep pace with the constantly changing business environment. This is by placing more load on its staff, by increasing their working time and assigning them additional tasks, disregarding their needs, abilities and skills. This is in the hope of achieving greater achievement and maintaining its competitiveness, which may affect the employees and develop a negative feeling of frustration and lack of self-respect, thus increasing absenteeism rates and decreasing the quality of service.

The low efficiency and quality of the health service may cause medical errors, which are among the problems that entail great risks and consequences (such as cases of disability or death), in addition to the moral damage to feelings and emotions as a result of these medical errors. According to Rodziewicz, et.al (2021), it is difficult to detect a consistent cause of medical errors. However, if that cause of medical errors are found, a consistent viable solution can be provided that reduces the chances of those mistakes being repeated. This is done by identifying undesirable events that occur, learning from them, and working to prevent them, which leads to improving patient safety. The problem of the study lies in the fact that work pressures may be one of the causes that lead to the occurrence and recurrence of medical errors for hospital staff, which raised the problem of the study that is determined by answering its main question: What is the effect of work pressures on medical errors?

. Through the main study question, the following sub-questions emerge:

- What is the level of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) to which staff at King Khalid General Hospital in Hafr Al-Batin are exposed?
- What is the seriousness of medical errors at King Khalid General Hospital in Hafr Al-Batin?
- What is the effect of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) on increasing medical errors at King Khalid General Hospital in Hafr Al-Batin?

The Study Significance:

The current study has two Significance points (scientific and applied), as follow:

An applied importance:

The significance of the study enables the importance of highlighting the role of negative work pressures in hospitals and its impact on increasing medical errors, which is useful for hospital management in studying work pressures, keeping them within acceptable limits for staff, increasing interest in studying medical errors, explaining the causes of their occurrence, and studying them to reduce them in the future.

A scientific importance:

The significance of the study (from a scientific point of view) is its originality, as it is one of the rare studies in its subject matter and the first in the Arab world to deal with the issue of "Work pressures of the nursing staff and their impact on the volume of medical errors in the radiology department" (according to the knowledge of the researcher). The researcher hopes that the current study will be a starting point for future researchers to conduct further study and academic research related to the subject of the study. The researcher also hopes that the current study will work to increase the scientific content in Arab studies with studies that have not been sufficiently addressed in local and Arab research.

The study Objectives:

The study seeks to achieve the following objectives:

- Identifying the level of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) to which staff at King Khalid General Hospital in Hafr Al-Batin are exposed.
- Identifying the seriousness of medical errors at King Khalid General Hospital in Hafr Al-Batin.
- Identifying the effect of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) on increasing medical errors at King Khalid General Hospital in Hafr Al-Batin.

Terms Definitions:

Work Pressure: "Reaction and responses that occur when work requirements do not match the employee's resources, capabilities and needs towards many negative circumstances related to work content, work organization and work environment that affect emotionally and physically on the employee" (Chatzigianni et al., 2018: p.450).

Medical Errors: "An act of omission or commission in planning or execution of care that contributes or could contribute to an unintended result" (Bam et al. 2021: p.3152).

Literature Review

Stress and pressure arise as a behavioral measure and emotional and physical responses as a result of continuous pressures that are greater than the ability of the adaptive, where stress is a positive or negative reaction to some personal stimulus related to work, and stress is positive if it stimulates the person to act in a specific situation, while it is negative if it becomes excessive and causes the person to perform poorly or not at all (Asaloei et al., 2020).

Stress is considered as the relationship between the environment and the person or the factors responsible for depletion, as it refers to any stimulus emanating from the

external or internal environment that exceeds the sources of adaptation of the individual or the social system in which he resides (Cordioli et al., 2019).

Chatzigianni et al. (2018) indicated that stress and pressure in the workplace stem from various adverse factors encompassing the nature of the work itself, its organization, and the working environment. It also encompasses the emotional and physical reactions that manifest when the demands of a job do not align with an employee's resources, abilities, and personal requirements.

As well as, work pressure is a type of stress resulting from conditions in the work environment, which negatively affects the performance of employees or the general well-being of their body and mind (Mawardi, 2022).

Job-related stress arises in reaction to specific environmental stimuli, and its prevalence has become increasingly apparent, often resulting in diminished employee morale. Work-related stress is a two-sided coin, potentially serving as either a productive or counterproductive force. Its impact can be constructive when it inspires individuals and enhances their performance, encouraging greater productivity (Vijayan, 2017).

Work-related stress significantly contributes to reduced workplace productivity. It also exerts adverse effects on organizational outcomes, leading to diminished performance, heightened absenteeism, and increased job dissatisfaction. This is primarily due to the demands placed on employees by their workplace and the surrounding environment. Moreover, prolonged exposure to excessive pressure gradually erodes their capacity to effectively adapt to and manage stress (Fonkeng, 2018).

However, there are a group of factors that lead to workers feeling pressure at work, and Deng et al. (2020) indicates that the environment and external events are among the important factors that cause work pressure, as it is possible that these causes are the result of a force emanating from nature or humans and can occur from unintentionally, which leads to a significant change in their behavior within the workplace.

As well as, organizational factors are also among the most important factors that lead to job pressures, as the nature and effects of these pressures differ according to the job pressures between establishments, for several reasons, such as: the policies that are applied in organizing work, the organizational climate, and the size of the establishment (Chetty et al, 2016).

In addition to personal factors, which are considered sources of job stress that result from the employee in his personal capacity, and include two types: first, pressures related to the employee's life circumstances, which are external personal factors such as suffering from family problems that lead to the employee feeling confused; second, the internal pressures of employees depend on the nature of his personality and way of thinking, such as his ambition to achieve a specific goal (Dighe, 2020).

Ngoc et al. (2020) showed that one of the detrimental consequences of workplace pressure on organizations is that it has emerged as a significant challenge jeopardizing their overall performance, the quality of their services and products, and the contentment and allegiance of their employees. This, in turn, can impact their competitiveness, stemming from their inability to keep up with the swiftly evolving requirements of customers within the ever-shifting and demanding business environment.

On the other hand, workplace pressures manifest across a spectrum of organizations, roles, and professions, but they are notably pronounced within the healthcare sector, particularly among both male and female nurses. The initial endeavor to measure and appraise occupational stress among healthcare practitioners and nurses was undertaken in 1960. This assessment identified four principal sources of anxiety within the healthcare workforce: patient care, decision-making, responsibilities, and adaptability to change (Dighe, 2020).

The healthcare sector and its institutions often encounter challenges that hinder and impede the effectiveness of their medical and nursing personnel. Chief among these challenges is job-related stress, which manifests as detrimental physical and emotional

reactions when the demands of the job do not align with the capacities, resources, or requirements of the healthcare staff within these institutions (Lee et al, 2019).

According to Pragholapati et al. (2020), job pressure within the scope of nursing work will vary in degree, depending on the pressures in the work unit and the response to pressures, as the level of work pressures in the emergency department is higher compared to other work units, and in hospitals service units are found in an attempt to facilitate services and reduce the burden on staff; Outpatient unit, inpatient unit, and intensive care unit (ICU).

Commonly measured outcomes for nurses include job dissatisfaction and burnout. Burnout has been linked to higher rates of absenteeism, and it also contributes to higher nurse turnover rates and lower job satisfaction. Moreover, a high workload among nurses has been linked to one aspect of burnout, which is emotional exhaustion (MacPhee et al., 2017).

Nurses represent the largest workforce within the healthcare sector and hold a crucial position in ensuring the quality-of-care services and the satisfaction of patients receiving healthcare services (Poursadeghiyan et al., 2016).

Therefore, the work pressures that nurses are exposed to may lead to substandard performance and low quality of services provided, which directly affects the quality of health care provided to patients, which subsequently affects their safety and increases the possibility of errors occurring (Almenyan et al., 2021).

Medical errors are considered one of the most important forms of low quality of performance resulting from work pressures that nurses are exposed to, because they may lead to the end of a person’s life, and the consequences for the patient can vary depending on the type of mistake made, as the medical error may range from simple uncomfortable pain to temporary disability or even death (Worringer et al., 2020).

Cloete (2014) indicated that medical errors constitute a challenge for patients and staff, which is to control medical errors and reduce their number, because medical errors occur at every stage of the health care process.

In addition, medical errors include health care team errors, employee errors, and even technical problems in the devices, the challenge also lies in the fact that one of the factors causing these errors is that the harm to the patient is less obvious (Nezamodini et al., 2016).

However, medical errors defined as a failure to perform or a deliberate action in the planning or delivery of care that may lead to an unintended outcome (Bam et al., 2021).

Medical errors also described as an occurrence involving the failure to carry out or the improper execution of a plan that results in or may result in an unintended outcome (Aljabari and Kadhim, 2021).

On the other hand, causes of medical errors classified in groups depending on the reasons, this classification is showed by World Health Organization (WHO) as a following (2016):

Factors related to healthcare professionals: include insufficient therapeutic training, limited drug expertise and experience, inadequate understanding of the patient, deficient risk perception, and healthcare professionals being overworked or fatigued.

Factors related to patients: such as Patient attributes (e.g., personality traits, literacy levels, and language barriers), clinical case complexity, encompassing multiple health conditions, polypharmacy, and the use of high-risk medications.

Factors related to work environment: Include workload and time pressures, distractions and interruptions, lack of standardized protocols and procedures, insufficient resources.

Factors related to with medicines: include naming of medicines and labelling and packaging.

Factors related to tasks: such as repetitive systems for ordering, processing and authorization, patient monitoring (dependent on practice, patient, other health care settings, prescriber).

Factors associated with computerized information systems: include difficult processes for generating first prescriptions like drug pick lists, default dose regimens

and missed alerts, difficult processes for generating correct repeat prescriptions, lack of accuracy of patient records, and inadequate design that allows for human error.

Based on the foregoing, we can note that there are many and varied forms of medical errors as a result of different circumstances, most notably the lack of experience of nurses.

Thus, nurses play a major role in dealing with medical errors and limiting their occurrence, as health care providers who deal closely with patients and report errors most often, that is, when nurses make a mistake while practicing their routine work, they have to decide whether or not to file a formal report, which leads to controlling or exacerbating the error (Kohen et al., 2016).

Özyer et al. (2020) indicated that in order to address medical errors, it is important to identify the main causes that nurses face during their work, as the stress resulting from working conditions in nursing plays a role in paving the way for medical errors in the occurrence of deficiencies and negligence in professional practices, such as their preoccupation with matters that distract their focus when providing health services or treatment to the patient.

Previous Studies:

Yan et al. (2023) Rates of perceived medical errors and its correlation with work-related factors and personal distress among emergency physicians in China: a national cross-sectional study

The study aimed to explore perceived medical errors and their correlation with work-related factors and personal distress among physicians in emergency departments in China. From July 2018 to August 2018, a national web-based cross-sectional study was conducted; a sample of (10,457) emergency physicians completed the survey. Almost half (43.63%) of physicians reported self-perceived medical errors during the previous 3 months. The results showed that the rate of workplace verbal aggression, effort-reward imbalance and depressive symptoms were 81.81%, 78.39% and 35.71%, respectively; also, medical errors were more likely to be reported among chief physicians, and those who reported the department was short-staffed for physicians,

and who experienced workplace verbal aggression and intense work stress, as well as, medical errors were significantly associated with negative affect and lower self-efficacy. The study recommended that targeted interventions are required to reduce physicians' workload and improve their working environment. In addition, accounting for healthcare providers' distress is imperative for reducing the incidence of medical errors and improving their health.

AL-Mugheed et al. (2022) Patient Safety Attitudes among Doctors and Nurses: Associations with Workload, Adverse Events, Experience

The study aimed to investigate patient safety attitudes among doctors and nurses and explore associations between workload, adverse events, and experience with patient safety attitudes. The sample of the study included (73) doctors and (246) nurses working in two private hospitals in Northern Cyprus. The study used a descriptive and cross-sectional design, also the study used a questionnaire to collect data. The results indicated that the participants had negative perceptions in all patient safety domains; the work conditions domain received the highest positive perception rate, and the safety climate domain received the lowest perception rate among the participants. As well as, nurses showed a higher positive perception than doctors regarding job satisfaction, stress recognition, and perceptions of management domains. The study suggests that policymakers and directors can improve the quality of care of patients and patient safety by boosting the decision-making of health care providers on several domains of safety attitudes; and patient safety needs to be improved in hospitals through in-service education, management support, and institutional regulations.

Babapour et al. (٢٠٢٢) Nurses' job stress and its impact on quality of life and caring behaviors: a cross-sectional study

The study aimed to study the relationship between work stress, quality of life, and caring behaviors of nurses. The study sample consisted of (115) nurses in two health institutions. The questionnaire was used to collect data. The study found the following results: Working nurses have higher levels of perceived work stress, which can have negative effects on quality of life and caring behaviors, as it overwhelms care

performance and service delivery and reduces effective behaviors and work efficiency, which may be one of the factors affecting results of patient services and provision of appropriate health care. The study recommended the necessity of conducting primary management at the organizational level, providing cognitive behavioral intervention programs with the aim of identifying sources of stress in the workplace, providing soft skills programs such as teamwork, behavioral and communication skills, and teaching effective coping strategies to reduce stress.

Ghasemi et al. (2022) A comprehensive method for the quantification of medication error probability based on fuzzy SLIM

The study aimed at developing a new and comprehensive method for estimating the probability of medication errors in hospitals. An extensive literature review was conducted to identify factors affecting medication errors. Success Likelihood Index Methodology was employed for calculating the probability of medication errors. A case study in an emergency department was conducted using the framework. Results showed that a total number of 17 factors affecting medication error were identified (workload, patient safety climate, and fatigue) were the most important ones, also the results showed that subtasks requiring nurses to read the handwritten of other nurses and physicians are more prone to human error. The study suggests that hospital managers and occupational health and safety practitioners can use the method developed in this study to monitor and manage medication errors in hospitals.

Bam, et al. (2021) Nursing students' perception of medical errors: A cross-sectional study in a university

The study aimed to assess nursing students' perception of medical errors in a Ghanaian university. The study followed the analytical descriptive approach, and the study used a questionnaire to collect its data. The study sample consisted of (200) students. The study reached a number of results, the most prominent of which was that medication error and negligence are the most common medical errors, and that nurses and doctors staff make most of the medical errors, the study also concluded that medication errors are the most common errors that can affect patient safety. The study

recommended enhanced supervision and effective methods for teaching medication administration, and wise measures in addressing this to reduce the margin of error in health facilities.

Mosadeghrad et al, (2020) Medical errors in Iranian hospitals: systematic review

The study aimed to determine the prevalence of medical errors in Iranian hospitals. The study relied on the methods of systematic review and meta-analysis. All articles written in English and Persian on the prevalence of medical errors in Iranian hospitals until March 2019 were searched through online platforms, and the reference lists of paper books and journals were searched manually. The study reached results, the most important of which is that the prevalence of medical error in Iran is low, the study also showed that providing appropriate education and training to patients and staff, streamlining and standardizing hospital operations, strengthening hospital information systems, improving communication, promoting a safety culture, improving employee welfare and satisfaction, as well as implementing useful quality management strategies to reduce medical errors. Based on the results, the study recommended the need to use more advanced and valid methods such as error reporting, examination, and universal tools for examining medical errors in Iranian hospitals.

Özyer et al. (2020), The Effect of Workload Perception and Occupational Stress on Medical Error Attitudes of Nurses Working in Surgical Clinics

The study aimed to determine workload perception and effects of occupational stress on medical error attitudes of nurses working in surgical clinics. The sample of the study was (100) nurses employed at surgery clinics, Ordu State Hospital and Training and Research Hospital of Ordu University, Turkey. Data collected by using questionnaire. Results indicated that nurses' perception of work stress and work overload did not affect medical error attitudes, and the overall average scores of surgical nurses on the scales of individual workload perception, occupational stress, and medical error attitude are directly proportional.

Garcia et al. (2019) Influence of Burnout on Patient Safety: Systematic Review and Meta-Analysis

The study aimed to analyze the relationship between burnout and patient safety. A systematic review with a meta-analysis performed using PubMed and Web of Science databases during January 2018, twenty-one studies were analyzed. The results indicated that there is an association between the existence of burnout and the worsening of patient safety, high levels of burnout is more common among physicians and nurses, and it is associated with external factors such as: high workload, long journeys, and ineffective interpersonal relationships. The study recommended the need of development of new studies aimed at identifying this association more closely in all health professionals, regardless of their line of work, is extremely relevant for health interventions, and trying to avoid professional exhaustion is an important strategy for improving patient safety.

Abdul Salam et al. (2019) The impact of work-related stress on medication errors in Eastern Region Saudi Arabia

The study aimed to examine the relationship between overall level and source-specific work-related stressors on medication errors rate. The sample of the study included (296) healthcare professionals in King Abdulaziz Hospital in Al-Ahsa, KSA. A cross-sectional study examined the relationship between overall levels of stress, The results indicated that the odds ratio (OR) and corresponding 95% confidence interval (CI) for HCPs documented incident report medication errors and self-reported sources of Job Stress Survey, as well as, job demands, such as social stressors (home life disruption, difficulties with colleagues), time pressures, structural determinants (compulsory night/weekend call duties) and higher income, were significantly associated with medication errors whereas overall stress revealed a 2-fold higher trend. The study suggests that shift work and disruption of home life can be improved through staffing schedules and staff recruitment to ensure less need for double shifts, and a culture of work-balance, in addition, further research on how the dynamic between difficulties with colleagues can guided in a healthy manner to reduce medication errors needs to exploration.

The Study methodology:

The study adopted the descriptive analytical approach; where the descriptive approach was used through a survey on scientific production from literature, with the aim of describing the phenomenon, its nature, and the quality of the relationship between its variables. The analytical approach was also used by conducting a field survey at King Khaled Eye Specialist Hospital to collect and analyze data and reach knowledge of the role of strategic planning in the quality of the health facility's performance.

Hypothesis:

The main hypothesis:

There is a statistically significant effect at the level of significance (0.05) of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

The following sub-hypotheses emerge from the study's main hypothesis:

- There is a statistically significant effect of role burden on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.
- There is a statistically significant effect of role ambiguity on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.
- There is a statistically significant effect of work environment on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.
- There is a statistically significant effect of career growth on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

The study limitations:

- Spatial limitations: The study was applied on King Khalid General Hospital in Hafr Al-Batin.
- Temporal limitations: The study was applied during the academic year 2023 AD, corresponding to 1445 AH.
- Human Limitations: The study was applied on nursing staff at King Khalid General Hospital in Hafr Al-Batin.
- Objective boundaries: The subject of the study was "Work pressures of the nursing staff and their impact on the volume of medical errors in the radiology department".

The Study population and sample:

King Khaled Hospital in Hafr Al-Batin was selected as an applied study, where the study population includes all the hospital nursing staff, who number (٧٨٠) nurse, and for the purposes of the study, the random sampling method was used.

The sample of the study included a random sample of workers at King Khalid Hospital, and the sample size was determined based on the (Sample Size Calculator: https://www.calculator.net/sample-size-calculator.html), and it amounted to 278 samples at significance level (0.05).

Samples characteristics:

1) Gender

Table (1) Gender

	Frequency	Percent
Male	232	83.5
Female	46	16.5
Total	**278**	**100.0**

Table No. (1) Shows most of the study sample members were male with (83.5%) of the sample, while the percentage of females reached (16.5%) of the workers at King Khalid Hospital.

2) Experience

Table (2) Experience

	Frequency	Percent
less than 5 years	70	25.2
5 - less than 10 years	53	19.1
10 - less than 15 years	67	24.1
15 years and more	88	31.7
Total	**278**	**100.0**

Table (2) shows that (31.7%) of the sample have (15 years and more) of experience, while (25.2%) of the sample have (less than 5 years) of experience. In addition, (24.1%) of the sample have (10-less than 15 years) of experience, while the lowest ratio was for the experience (5 to less than 10 years) reached (19.1%) of the workers at King Khalid Hospital.

3) Education

Table (3) Education

	Frequency	Percent
Diploma or less	18	6.5
Bachelor's	168	60.4
Master	73	26.3
PhD	19	6.8
Total	**278**	**100.0**

Table No. (3) Shows that (60.4%) of the sample hold Bachelor degree, while (26.3%) of the samples hold Master's degree. In addition, the table shows that (6.8%) of the sample hold PhD degree, while (6.5%) of the sample hold Diploma or less degree at King Khalid Hospital.

Data collection:

Two sources were used to collect data related to the study:

- Secondary sources: which will follow the principle of a desk survey, including references, books, and studies.
- Primary sources: which will depend on the data collected from the study sample, depending on the study tool.

The Study tool:

The researcher relied on previous studies in developing a questionnaire to collect primary data. The responses were classified according to the five-point Likert scale, and were identified with five responses (strongly agree, agree, neutral, disagree, and strongly disagree).

Reliability

Cronbach's Alpha was run to ensure Reliability of the study questionnaire Cronbach's Alpha values were (94.9%) more that (60%), which indicates that the questionnaire has suitable Reliability, to analysis its data. (Sekaran & Bougie, 2013), table no. (4) Shows the results:

Table (4) Internal coherence consistency coefficients (Cronbach's Alpha)

variables	Number of paragraphs	(Cronbach's Alpha)
	Work pressures	
Role Burden	5	0.707
Role Ambiguity	6	0.848
Work Environment	7	0.899
Career Growth	5	0.794
Medical Errors	**6**	**0.779**
All Variables	**29**	**0.949**

The table shows that the stability coefficients for all the study variables were more than (60%), indicating that there is an internal consistency between the paragraphs of each variable, which confirms the validity and significance of the questionnaire in the measurement.

Statistical methods:

The statistical package (SPSS) was used to analyze the study data, using the following statistical methods:

- Descriptive statistic measures to describe the characteristics of the study sample in percentages, answer the study questions and the degree of importance of its dimensions.
- Multiple regression test to test the hypotheses of the study.

Data Statistical Analysis and Results:

First, Work Pressures among workers at King Khalid Hospital:

To identify Work Pressures among workers at King Khalid Hospital, Means and Std. were applied, where table (5) shows the results:

Table (5) Means and Std. of Work Pressures arranged descending

No.	Statement	Mean	Std.
1	Career Growth	3.765	0.944
2	Role Burden	3.709	0.977
3	Work Environment	3.684	0.976
4	Role Ambiguity	3.671	1.026
	Average	**3.707**	**0.981**

Table No. (5) indicates the Work Pressures among workers at King Khalid Hospital; arithmetic mean (3.707), S.t (0.981), which indicated that the work pressures among workers at King Khalid Hospital were high (high appreciation).

The results showed that all dimensions of work Pressures (role burden, role Ambiguity, work environment, career growth) were at a high level among workers at King Khalid Hospital. The results showed that (career growth) was in the first rank with mean reached (3.765), followed by the (role burden) with a mean reached (3.709).

Moreover, the results showed that (work environment) was at third rank with mean reached (3.684), while in last place was (role ambiguity) with a mean reached (3.671) among workers at King Khalid Hospital.

Second, Medical errors that occur in King Khalid General Hospital:

To identify Medical errors that occur in King Khalid General Hospital, Means and Std. were applied, where table (6) shows the results:

Table (6) Means and Std. of Medical errors

No.	Statement	Mean	Std.	Rate
24	Misdiagnosis	3.759	0.948	High
25	Performing a surgical procedure on the wrong side of the body	3.730	0.940	High
26	Missing results of an important test because a doctor or nurse fell asleep for a short time after caring for a critically ill patient.	3.813	0.900	High
27	Giving patients the wrong medicine or the wrong dose.	3.853	0.893	High
28	Giving patients a drug they are allergic to	3.766	0.953	High
29	Lack of careful monitoring of critically ill patients.	3.719	0.965	High
	Average	**3.773**	**0.933**	**High**

Table No. (6) indicates the attitudes of the sample towards questionnaire statements of Medical errors that occur in King Khalid General Hospital; arithmetic mean (3.773), S.t (0.933), which indicated that the Medical errors that occur in King Khalid General Hospital were high (high appreciation). The results also showed that all Medical errors listed in the table had an arithmetic mean ranging between (3.719-3.853) at high appreciation for all of them.

The results indicate that the most common medical errors occurring in King Khalid General Hospital were giving patients the wrong medicine or the wrong dose, where the arithmetic mean reached (3.853) (high appreciation). On the other hand, the results indicated that the least errors occur in King Khalid General Hospital were the lack of careful monitoring of critically ill patients, where the arithmetic mean reached (3.719) (high appreciation).

Hypothesis Analysis results:

The main Hypothesis:

There is a statistically significant effect at the level of significance (0.05) of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

To test this hypothesis, multi regression used to find out if there is a statistically significant effect of work pressures on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin at significance level ($\alpha \leq 0.05$).

Model Summary:

Table (7) Model Summary main hypothesis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.809[a]	.655	.650	.38094

a. Predictors: (Constant), Career_growth, role_burden, work_environment, role_ambiguity

Table No. (7) shows the value of the Regression coefficient between the independent and dependent variable, reaching its value (0.809) as shown, the value of the coefficient of determination (R^2) reaches value of (0.655), which indicates that (65.5%) of changes in dependent variable caused by independent variables.

Table (8) represents the results of analysis of independent variables (role burden, role ambiguity, work environment, career growth) on the volume of medical errors in

the radiology department at King Khalid General Hospital in Hafr Al-Batin to test the significance of regression model:

Table (8) ANOVA[a] independent variables on medical errors

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	75.108	4	18.777	129.396	.000[b]
	Residual	39.616	273	.145		
	Total	114.723	277			

a. Dependent Variable: errors

b. Predictors: (Constant), Career_growth, role_burden, work_environment, role_ambiguity

Table (8) shows analysis of variance, which aims to identify the explanatory model of independent variable (work pressures) on dependent variable (medical errors) through examined (F). The Examine (F) value was equal to (129.396) with possibility value (0.00) which is lower than the specific value (0.05), and that shows that there is a significant effect exists at significance level ($\alpha \leq 0.05$).

Therefore, we reject the null hypothesis and accept the alternative: There is a statistically significant effect at the level of significance (0.05) of work pressures in their dimensions (role burden, role ambiguity, work environment, career growth) on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

Thus, it can be said that at least one independent variables (role burden, role ambiguity, work environment, career growth) could have significant effect on dependent variable, and this is determined by a significant multiple regression test equation coefficients.

Multivariate Regression Morality:

Table (9) shows the values of the regression coefficients for the capabilities and the statistical tests.

Table (9) work pressures (role burden, role ambiguity, work environment, career growth) on medical errors

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.885	.143		6.185	.000
Role Burden	.022	.050	.022	.429	.668
Role Ambiguity	.155	.059	.187	2.629	.009
Work Environment	.304	.056	.364	5.425	.000
Career Growth	.297	.048	.323	6.245	.000

a. Dependent Variable: errors

Sub Hypothesis:

There is a statistically significant effect of role burden on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

The table (9) indicates that there is no statistically significant effect of role burden on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin. The calculated value of (T) was (٠،٤٢٩), which is lower than its tabular value at significance level (0.668), which is higher than the specific value (0.05). Therefore, we reject the alternative hypothesis and accept the null:

There is no statistically significant effect of role burden on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

There is a statistically significant effect of role ambiguity on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

The table (9) indicates that there is statistically significant effect of role ambiguity on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin. The calculated value of (T) was (2.629), which is higher than

its tabular value at significance level (0.009), which is lower than the specific value (0.05). Therefore, we reject the null hypothesis and accept the alternative:

There is statistically significant effect of role ambiguity on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

There is a statistically significant effect of work environment on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

The table (9) indicates that there is statistically significant effect of work environment on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin. The calculated value of (T) was (5.425), which is higher than its tabular value at significance level (0.00), which is lower than the specific value (0.05). Therefore, we reject the null hypothesis and accept the alternative:

There is statistically significant effect of work environment on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

There is a statistically significant effect of career growth on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

The table (9) indicates that there is statistically significant effect of career growth on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin. The calculated value of (T) was (6.245), which is higher than its tabular value at significance level (0.00), which is lower than the specific value (0.05). Therefore, we reject the null hypothesis and accept the alternative:

There is statistically significant effect of career growth on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

Results:

The study found that there was a high degree of work pressures among nursing staff at King Khalid Hospital. The results showed that all dimensions of work Pressures (role burden, role Ambiguity, work environment, career growth) were at a high level among nursing staff at King Khalid Hospital. Moreover, the study showed that (career growth) was in the first rank, followed by the (role burden). In addition, (work environment) was at third rank, while in last place was (role ambiguity) among nursing staff at King Khalid Hospital.

The results of the study indicated that the Medical errors that occur in King Khalid General Hospital were high. The results indicate that the most common medical errors occurring in King Khalid General Hospital were giving patients the wrong medicine or the wrong dose. On the other hand, the least errors occur in King Khalid General Hospital were the lack of careful monitoring of critically ill patients.

The results of testing the study hypotheses showed that there is a statistically significant effect at the level of significance (0.05) of work pressures and all their dimensions except (role burden) on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin this is a result consistent with Yan et al. (2023) study that reached that aggression and intense work stress, as well as, medical errors were significantly associated with negative affect and lower self-efficacy. The results differed from the findings of Özyer et al. (2020) study which reached that urses' perception of work stress and work overload did not affect medical error attitudes. Based on that result, the study showed the following:

- There is no statistically significant effect of role burden on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.
- There is statistically significant effect of role ambiguity on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

- There is statistically significant effect of work environment on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.
- There is statistically significant effect of career growth on the volume of medical errors in the radiology department at King Khalid General Hospital in Hafr Al-Batin.

Recommendations:

In light of the results, the study recommends the following:

- It is necessary for the hospital to seek to reduce the role burden among workers, by reducing the tasks assigned to them, providing appropriate times for them to complete the tasks, and providing a sufficient number of staff to complete the tasks at the hospital.
- It is necessary for the hospital to seek to reduce the role ambiguity among workers, by reducing demands and tasks on employees, and clarifying the time allocated for completing tasks.
- It is necessary for the hospital to seek to reduce the role ambiguity among workers, by reducing demands and tasks on employees, and clarifying the time allocated for completing tasks.
- The hospital should strive to improve its work environment, by seeking to maintain its workers, reduce the transmission of infection to them, and facilitate communication between workers to reduce their work pressures.
- It is necessary for hospital workers to focus when giving patients medication or doses to reduce medical errors resulting from giving them the wrong medication or dose.
- It is necessary for the hospital to reduce job pressures on its employees in order to limit the spread of medical errors in it.

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