

Assessment The Prevalence of Medical Errors and Their related factors in Governmental Hospitals in Benghazi-Libya

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Abstract:

Background: A ME is characterized by either employing incorrect plans to achieve an aim (errors that occur from planning) or failing to accomplish planned activities (errors of execution).or using wrong plans to attain an objective (errors that result due to planning) ^[1]. **Aim:** This study was aimed to identify, discover medical errors, cause and risk factors and methods of reduction in governmental hospitals in Benghazi-Libya. **Methods:** A cross-sectional study by using questionnaire combined of a total of n (100) participants, from both genders, and different specialties, random sampling technique were used in this study, data collection process was face to face interview with each staff member. The questionnaire contains a total of 31 question as the survey consist of three parts: The first part contains socio-demographic data, second part (dimension of medical errors and assessed the knowledge of the participants regarding medical errors), third section (Reasons behind the occurrence of medical errors), then statistical analysis was performed by using SPSS Soft-Ware package for windows version 28. **Results:** The frequency of medical errors according to stuff prospective was really high as major errors (46%), moderate errors (38%), minor errors (14%), the most common reasons for medical errors according to stuff prospective were lack of training and knowledge with average and nursing errors (4.10), high work load (3.98), non-significant relationship found between type of medical errors and (academic qualification and years of experience). **Conclusion:** In conclusion medical errors high frequency in governmental hospital. This study is useful to help hospitals improve their patient health plan system and reduce medical errors in Libya. Also, it is necessary to promote work environments that emphasize preventing errors, learning from errors, with evaluation system frequently about medical errors. Furthermore, study require due to some limitation first, shortage in sample size due to time constrains, second, this study focus only on opinion of health care stuff, patients and family member also required.

Keywords:- Medical Errors, Pravelance, Patient, Health.

I. INTRODUCTION

One of the frequent reasons for iatrogenic adverse events in the healthcare sector is medical mistakes (MEs). A ME is characterized by either employing incorrect plans to achieve an aim (errors resulting from planning) or failing to accomplish planned activities (errors of execution) ^[1]. MEs can also be defined as an act that fails to accomplish its intended goal or as an inadvertent act (either by commission or omission) ^[2]. It is suggested that patient outcomes are frequently influenced by factors outside the healthcare provider's control ^[3]. A key right that must be upheld when visiting or hospitalizing patients is patient safety.. It is rather significant to investigate the possible causes and preventive measures for medical errors. In addition, medical error prevention can help to reduce adverse after-effects such as permanent disability, complications and death ^[4]. When providing patients treatments or services, clinicians have a moral duty to maximize benefits and limit damage. Additionally, clinicians have an ethical duty to refrain from purposefully or negligently harming patients ^[5]. Value-based ethical environments must be established and maintained in order to prevent medical errors.. Such environments describe ethical policies that focus on employee's commitment to values and norms related to practices ^[6]. Since the middle of the 1950s, the issue of patient safety has been regularly mentioned in the medical literature. However, regular studies regarding treatment-related patient deaths and injuries have had virtually no impact on modern medical practice. The medical community has just lately begun to systematically work toward lowering or eliminating the annual number of avoidable hospital injuries and deaths. For instance, since the 1950s, unnecessary tonsillectomies have been strongly denounced in the medical literature. However, the profession acted very slowly to limit this common procedure until public scandal, on the avoidable deaths of children, forced the issue in the early 1970s ^[7]. Error classification systems may need to be specialty- specific and reflect each specialty's realm of practice. Different classifications have been drawn up to fit fields such as laboratory medicine, anesthesia, general practice, otolaryngology ^[8] In otolaryngology, for instance, the critical areas that appear to be the more common cause, in order of

frequency, are: technical errors (19.3% of all errors), medication errors (13.7%), errors related to testing (10.4%), errors in surgical planning (9.9%), equipment- related errors (9.4%), post-operative errors (8.5%), wrong site surgery (6.1%). These classifications should become familiar to all physicians, within a particular specialty, so that “ad hoc” interventions can be adopted to improve safety [9].

1.1 Epidemiology of Medical Errors:

The largest population studies come from USA and Australia. The Harvard Medical Practice Study is the reference for estimating the extent of medical injuries occurring in hospitals [10]. Brennan *et al.* examined the medical records of 30,121 patients who were admitted in 1984 to 51 acute care hospitals in the state of New York.. They reported that preventable adverse events occurred in 3.7% of admissions (69% of injuries were caused by errors) [11]. In a study on the quality of Australian health care, a population-based study modelled on the Harvard study, investigators reviewed the medical records of 14,179 admissions to 28 hospitals in New South Wales and South Australia in 1995 [12]. An detrimental event happened in 16.6% of hospitalizations, leaving 13.7% of patients permanently disabled and 4.9% dead; 51% of adverse occurrences were thought to have been avoidable.. A replication of the Harvard study was performed in Colorado and Utah on 15,000 patients. The incidence rate of preventable adverse events was 2.9% in the elderly, of which 3% led to death and 1.6% in the non-elderly, of which 1.9% led to death.[13]

Additionally, the national rate of hospital-reported medical errors in children admitted to hospitals in the United States was estimated to be between 1.8 and 3.0 per 100 discharges [14]. Due to their relevance and preventability, adverse drug events and medication errors have been thoroughly studied. In a research conducted in two teaching hospitals in Boston by Bates *et al.*, 57% of the events were major, 30% were serious, 12% were life-threatening, and 1% were deadly. Forty-two percent of the adverse events that were deemed serious or life-threatening could have been avoided. The usage of analgesics, antibiotics, sedatives, chemotherapeutic agents, cardiovascular medications, and anticoagulants was linked to the medication errors. [15]. 15% of prescription errors were found to occur in UK critical care units, with potassium chloride, heparin, magnesium sulphate, paracetamol, and propofol being the five most frequently written wrong prescriptions. While 19.6% of the errors were deemed substantial, serious, or possibly life-threatening, the majority were minor [16]. Regarding the kind of dispensing error, Rolland found that 67.1% of reported errors were caused by the combination of the wrong patient and the wrong medicine [17]. Another significant contributor to morbidity and mortality is medication mistakes.

mortality among hospitalized children. Due to small volumes of solution involved, even a large error may occur with an unsuspectingly small dose [18].

1.2 Aim of the Study:

This study was aimed to identify, discover medical errors, cause and methods of reduction in governmental hospitals in Benghazi-Libya.

1.3 Objectives:

- Assessing socio-demographic factors and academic qualifications of staff members.
- Describe and explore were medical errors encountered in governmental hospitals.
- Assessing relationship between medical errors and factors in the study.

II. DEGREE OF MEDICAL ERRORS

Many contemporary researchers have divided medical error into serious and gross errors and minor errors:

1. The gross, serious error: It is the error that occurs due to negligence that could have been avoided and its consequences could have been avoided. It does not occur from the least alert and perceptive person. [19] It can be defined within the scope of medical liability as “any act that is not approved by medical principles, is not approved by medical and scientific experts, and is not committed by a similar doctor or surgeon” [20]. An example is when the anesthesiologist increases the amount of anesthetic.
2. A minor error: It is an error that the vigilant doctor who found himself in the same circumstances as the responsible doctor sees as unlikely to occur [21]. The doctor’s liability for gross error and minor error: It is noted that the ancient jurists did not differentiate in the doctor’s liability between gross error and minor error. What is considered in the doctor’s liability is his exceeding the limit or deviating from the norm.

2.2 Types of Medical Errors:

2.2.1 Types of medical error in Islamic jurists have divided error into two categories in general.

1.A mistake in intent or assumption: If a person throws his shadow as prey, then this is a mistake in intent, as the human being is prey. The same applies in medical work, as the doctor makes a mistake by cutting off the healthy limb and leaving the affected limb.

2.The error in the action is that you cut off an action from which another action is issued, for example, that he throws a projection and protects it, and through it he hits the groan of the truth, [22], [23].He asked him in the medical laboratory what would result from the patient’s assessment of his illness or death, as

the doctor intended to do something praising, but he did something forbidden ^[24]

2.2.2 Type of Medical According to Medical Field:

1. Medication Errors: Medication error is among the most common medical errors of patients' safety in healthcare. There is no fixed definition of medication error. According to American Academy of Pediatrics, ^[25] medication error is defined as "Disregarding the status of forming a damage, or risk, any avoidable incidence to occur during the process from medication request to patient monitoring." It can take place from human mistakes and systemic errors ^[25].

2. Surgical Errors: Surgical operation is an essential and lifesaving component of healthcare. At present surgery is considered highly unsafe, which accounts one in every 10,000 surgical operations. But in an orthopedic trauma, the figure is observed one in every 100 cases. ^[26] The surgical errors arise from the surgeons, anesthetists, nurses, and other members related with operations. Errors can be reduced in surgical operations by the careful coordination of the members of the team, use of advanced technology and technical skills, avoid of contamination, proper use of anesthesia, proper nursing, and very quick procedures. ^[27]

3. Diagnostic Errors: Diagnosis is one of the most important activities that are performed by the primary healthcare providers. ^[28] Diagnostic errors are considered as failures to provide accurate and timely explanation of the patient's health problems. ^[29] These are common and occur in every healthcare system. Most cases these do not have serious effects, but sometimes cause serious harm, such as disability and death. ^[30] Although patient safety in healthcare has increased, diagnostic error remains common. Most trainees and specialists pay little attention to the root causes of diagnostic errors and do not take them seriously to avoid them ^[31].

4. Blood Transfusion Errors: Blood is a biological component that passes through arteries and veins by the heart and lung. Correct transfusion of blood can save lives of patients. The right blood donation to the right patient at the right time is an essential part of healthcare ^[32]. Blood transfusion before World War I was an experimental, trial-and-error nature. The first blood bank was established at the Cook County Hospital in Chicago of Illinois. During the World War II there was a massive growth in blood banking to save lives of battle injuries ^[33] Sometimes blood transforms face errors. For example, delay of blood supply to an urgently needed patient, or mislabeling the blood sample, or fraction use of another patient's blood, or transfusion-transmitted bacterial infections, or over-transfusion leading to circulatory overload, or pulmonary oedema, issuing wrong ABO, or Rh group for, or transfusion of blood of another patient ^[34].

5. Nosocomial and Post-Surgical Wound Infections: Nosocomial infections are the infection of other diseases when the patients are taking treatment of a disease during prolonged stay in intensive in healthcare, and prolonged use of antibiotics, but were not infected at hospital admission. ^[35] These are the most common type of complication affecting hospitalized patients. These happen 7% in developed and 10% in developing countries. ^[36] These infections are transmitted by bacteria and viruses through hand-mouth respiratory route, and fecal-oral route. Nosocomial infections related diseases are; sepsis, surgical site infections (SSIs) (caused by Staphylococcus, Streptococcus, and Pseudomonas bacteria), pneumonia, Influenza, hepatitis B and C, HIV, rotavirus, urinary tract infections bloodstream infections, and herpes-simplex virus through unsafe injection ^{[37][38]}.

2.3 Detection of Medical Errors:

To analyze and plan to remedy a problem, it is first necessary to collect data about the problem and then medical errors and clinical risk management to summarize that data. Collection strategies include: retrospective chart review, performance monitoring, anonymous incident reporting, event audit and analysis of complaints and litigations ^[39]. Each strategy has unique strengths and none is sufficient by itself. An effective way to learn about healthcare organizations is through incident analysis, which should result in improvements to increase patient safety. Examples of these improvements include the adoption of protocols or organizational changes in the field where the error has been discovered to occur more frequently. One important tactic that healthcare professionals should take into account in their efforts to lower errors is a non-punitive approach to event reporting. If this is the aim, then it is necessary to record not just events but also near misses, which are described as "any action or condition that could have caused an injury or damage." Because they provide a more comprehensive picture of the problem than simply actual accidents do, near misses are helpful tools that enhance patient safety. Incident reporting as a means of identifying the causes of human error in medicine has its limitations: reports are not well distributed across all grades of staff, adverse consequences may only emerge over a matter of days, weeks or months, voluntary reporting is rarely used because the staff are not sure about anonymity, busy personnel do not have enough time to complete reports for small accidents, there are problems concerning classification and analysis, etc. ^[40]

2.4 General Framework of Public Hospitals:

After the term "hospital" is an Arabic word, used in the modern era, and it is the name of a place from Sha'i and was used instead of the Persian word Bipartisan, which means the house of the sick. The World Health Organization defined the hospital as "an essential part of a social and medical

organization, whose function is summarized in providing comprehensive health care to the population, whether curative or preventive, and its outpatient clinic services extend to the family in its home environment. It is also a center for training health workers, and conducting social and vital research.^[41]

The hospital is defined in Islamic jurisprudence as a complex health institution, and the reasons for its organization are many, the most important of which is providing medical and nursing activities and professions, in addition to administrative, financial, and accounting work. It deals with all classes and categories of society, in addition to containing a large number of types of professions and skills in various medical fields. The hospital includes a technical part that includes medical and non-medical devices and equipment, in addition to a highly skilled workforce, culture, and a medium technical workforce, an administrative workforce, and an unskilled workforce who perform different roles.^[42] All of them aim to provide treatment services and prevention. Departments in hospitals are divided into technical departments, which include doctors, health team members including pharmacists, nurses, and allied health professionals, in addition to service departments of a medical-administrative nature, which handle file services, medical social services, and patient admission and discharge services.^[43] As for the administrative services departments, they include personnel management, financial management, public relations, maintenance services, etc.

As for the medical staff in hospitals, it consists of trainee doctors known as interns. They are recent graduates who spend a year of training in hospitals after their graduation in the various departments, under the supervision of Hamdan doctors, 2008. Resident doctors are those who have passed the training stage and have been selected to work in the hospital and receive training to qualify them as specialist doctors in one of the medical specialties. This period ranges from two to four years, and these doctors can assume direct responsibility for treating patients. In addition to specialist doctors who bear direct and final responsibility for treating patients, these doctors may work full-time and are known as full-time doctors working in the hospital, or they may work as part-time doctors, i.e. independent, and are called upon in certain cases, and they may have full clinics. As for the consultant doctors, they are the ones who provide advice and guidance to the specialist doctors when they ask for advice from them [44]. Accordingly, the medical staff in hospitals consists of interns, resident doctors, specialists, and consultants, in addition to doctors and those responsible for other technical services such as anesthesiologists, radiologists, laboratories, and others. After the first appearance of hospitals in the form of public hospitals, a classification of public hospitals, which are known according to for the following classifications as.^[45]

The main departments are internal medicine, general surgery, pediatrics, and obstetrics and gynecology. It may also include specialized services such as ophthalmology, otolaryngology, and bones. In addition to the outpatient clinics of the General

Hospital, the Pharmacy Services Department, and Radiology. Laboratories, etc.^[46]

Two public hospitals according to ownership public hospitals are part of the facilities that are affiliated with the state in terms of management, supervision, performance and financing and are divided into two types.^[47] that public hospitals provide services available to all citizens under the National Health Service system. Public hospitals whose services are available to a specific, defined category of citizens, such as hospitals Military.

Public hospitals provide their therapeutic and medical services according to a set of principles. Public hospitals rely on the principle of continuity in implementing public service in an organized and permanent manner, and the principle of the quality of the service provided in order to be consistent with the public interest and to develop its capabilities, in addition to the principle of equality for all before the service provided by the public hospital, which is a constitutional principle, as the public facility is charged with providing the same benefits to all citizens at the same level.^[47]

2.5 Existing Relationships in Public Hospitals:

During the provision of medical services within public hospitals, many relationships arise, and in order to determine the responsibility of each party, these relationships will be studied: the relationship between the doctor and the public hospital, the relationship between the doctor and the patient, and the relationship between the patient and the doctor in the general hospital.

First, the doctor's relationship with the general hospital:

A doctor who works in a public hospital after being a public employee performs permanent work in the service of a public facility run by the state, or one of the other public legal persons. Doctors are classified in the public service and according to the job categories in the second category, which includes jobs whose duties and responsibilities include performing specialized work, which is considered^[48] Medical professions including the public service confirms the nature of subordination to the state, as the doctor is subordinate to the public hospital in which he works, and the subject of controversy is the subordination of the technical and non-technical work provided by the doctor working in the public hospital, as the employee's subordination to the facility.

Second: The relationship between the doctor and the patient:

The legal relationship between the doctor and the patient is determined by the case or circumstances that brought them together. In the case where the patient chooses the doctor to receive treatment from him, the legal relationship between them is a contractual relationship. However, in the case where the doctor provides treatment to the patient without receiving a fee from him, the ruling differs from one case to another and is based on the common intention of both the doctor and the patient.^[49] If it is directed towards arranging an obligation on the doctor, then the responsibility that can be raised in the

event of the doctor's breach is contractual responsibility. However, if the common intention between them is not directed towards creating an obligation on the doctor, then the responsibility that the patient can raise is tortious liability.

Third: The patient's relationship with the general hospital:
The relationship between the patient and the public hospital is through the government health sector, which falls under the supervision of the Ministry of Health, which provides its services throughout the country in accordance with the applicable laws, regulations and specifications. The patient deals with the public hospital as a legal entity. The patient does not have the freedom to choose the doctor who treats him, but this falls under the authority of the public hospital administration. Accordingly, the relationship between the patient and the public hospital is the basis for the doctor to perform his duty, function and tasks related to providing his medical and therapeutic services through this relationship.[50]

2.6 Compensation for Medical Errors in Public Hospitals:

Compensation is defined as a penalty and compensation for the harm that befell the injured party. The harm is represented by an assault on a right or interest of the injured party, and compensation is represented by removing the effect of the assault on this right or interest of the injured party. Compensation means correcting the balance that was disturbed and wasted as a result of the occurrence of the damage to what it was, by returning the injured party, at the expense of the person responsible for to be in, had the harmful act not occurred. Compensation is done in two ways: the first is in kind, which is restoring the situation to what it was before the occurrence of the harmful act, and removing the damage resulting from it, and the judge is obligated to compensate in kind if possible, or upon the request of the patient, provided that the debtor does not burden the general hospital or the doctor). In the event that Ahmed ^[51] is unable to compensate in kind, then the second method is resorted to, which is monetary compensation, which is a sum of money estimated by the judge to compensate the injured party, and is most commonly applied in compensation for liability. Aldin, Ahmed, (1989): The Responsibility of The Physician: Problems of Civil Liability in Public Hospitals, Kuwait. A-Abrashi, Hassan, Civil Liability of Physicians and Surgeons, in Egyptian Legislation.

The basic principle is that monetary compensation should be paid in one lump sum, but there is nothing to prevent it from being paid in instalments as a salary for a specific period or for life, provided that the monetary compensation does not exceed or fall short of the amount of damage. ^[52]

III. METHODOLOGY

3.1 Research Design and population:

This was cross-sectional study was based on self-made questionnaire based upon similar questionnaires from previous studies on medical error, the target population were medical staffs at different governmental hospitals in Benghazi Libya. Those hospitals offer a wide range of medical services, as governmental hospital play an important role in development of medical services and tracking medical errors. This study was conducted for two months from August to September 2024.

3.2 Participants and Data collection:

- A total of (n = 100) participants enrolled in this study, from both genders, and different specialties (doctors, pharmacists, nurses, technicians), random sampling technique were used in this study.
- Data collection process was according questionnaire face to face interview with each staff member in those hospitals the questionnaire was printed and made available at reception desks from where respondents could collect them and also return after completion.
- The questionnaire contains a total of 31 question, as the survey consist of three parts: The first part contains socio-demographic data of the participants (age, gender, specialty, qualification, job title, years of experience, hospitals attendant).
- Second part: Contain dimension of medical errors and assessed the knowledge of the participants regarding medical errors see (Appendix 1) the question at the end of each outcome was followed by response options of agree, not agree, strongly agree, strongly not agree, neutral.
- Third section: Reasons behind the occurrence of medical errors (Appendix 1) following by response options of agree, not agree, strongly agree, strongly not agree, neutral lie the previous section.

3.3 Statistical Analysis:

In this study statistical analysis was performed by using SPSS (Statistical Package for the Social Sciences) Soft-Ware package for windows version 28. Descriptive statistics were presented categorical variables were expressed as frequencies and, percentages. All data was represented in graphical and tabular form. Arithmetic mean test was used and, chi square test was using to assess relationship between type of medical errors other factors.

3.4 Ethical Considerations:

The study was approved by Qurina University-Faculty of medical sciences- Health management department, AL-Jalah

trauma and surgical hospital, Benghazi medical center, Pediatric hospital and AL-Hawary hospital, Cardiac center. All procedures performed in studies involving human participants were permissioned and accordance with the ethical standards.

IV. RESULTS AND DISCUSSIONS

4.1 Results:

•Sociodemographic results:

Table (5.1.1): As seen below describe sociodemographic data of the participants, first of all hospitals attended by medical staffs as 31% of them were from AL-Jala trauma hospital, 26% Benghazi medical center, 19% Pediatric hospital, 16% from AL-Hawary hospital, and 8% from cardiac center. Second ages of participants as nearly half of them 44% fell in the range between (35-49), followed by that fell in the age bracket of (25-34) with 32%, 18% of them from 50 and above, and last 6% of them range (18-24). Third the gender, as there was a total of 63 (63%) female participants and 37 (37%) of them were a male.

Table (4.1.1): Hospitals Attend it, Age, Gender.

Hospitals Attend it	Frequency	percent
AL-Jala trauma hospital	31	31%
Benghazi medical center	26	26%
Paediatric hospital	19	19%
AL-Hawary Hospital	16	16%
Cardiac center	8	8%
Total	100	100%
Age	Frequency	Percent
18-24	6	6%
25-34	32	32%
35-49	44	44%
50 +	18	18%
Total	100	100%
Gender	Frequency	percent
Female	63	63%
Male	37	37%
Total	100	100%

Table (4.1.2): Job title of each participant according to career as half of them take part of survey were doctors (50%), followed by nurses (16%), while head of departments (12%), then technicians (10%), 5% medical affairs managers, lastly Heads nurses (4%), and (3%) General managers.

Table (4.1.2): Job title of participants.

Job Title	Frequency	Percent
Medical affairs managers	5	5%
General managers	3	3%
Head of departments	12	12%
Doctor	50	50%
Head nurses	4	4%
Nurses	16	16%
Technicians	10	10%
Total	100	100%

Figure (4.1.1): In term of educational level 45% of them with higher diploma, while 30% percent of participants with bachelor degree, 19% master degree and only 6% with PhD.

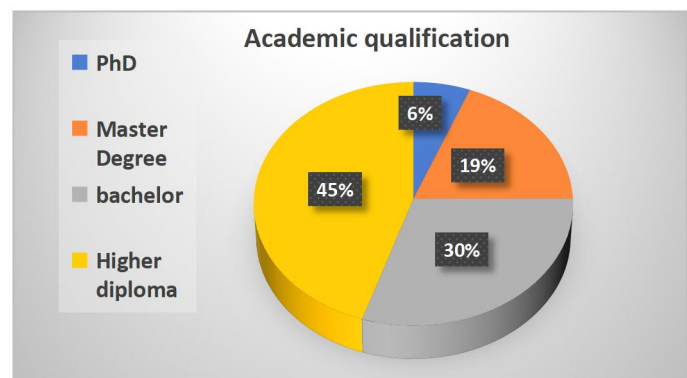


Figure (4.1.1): Specialty of participants.

Table (4.1.3): In term of specialty a total of 20 (20%) of participants were nurses, while 14 (14%) general surgeons, 11 (11%) Anesthesiologists, 9 (9%) gynecologists, pediatricians 8 (8%), 7 (7%) physicians, 5 (5%) Health administrators, 4 (4%) sharing the same percent (Lab Technicians, cardiac doctors, plastic surgeons), 3(3%) also sharing the same percent (Radiology technicians, Anesthesia technicians, Nutritionists), 3(3%), 2(2%) (orthopedists, pharmacists), and 1(1%) medical statistics.

Table (4.1.3): Specialty of participants.

Specialty	Frequency	percent
Nurses	20	20%
Lab Technician	4	4%
Radiology technician	3	3%
Anesthesia technician	3	3%
Medical statistic	1	1%
Cardiac doctor	4	4%
Nutritionist	3	3%
Orthopedist	2	2%
gynecologist	9	9%
Plastic surgeon	4	4%
Anesthesiologist	11	11%
Pharmacist	2	2%
physician	7	7%
pediatrician	8	8%
General surgery	14	14%
Health administrative	5	5%
Total	100	100%

Figure (4.1.2): Indicate experience years of each participant as a total of 45% with (4-10 years) years of experience, followed by 27% (11-15 years), while 18 % of them with more than 15 years, and only 10% with less than 4 years.

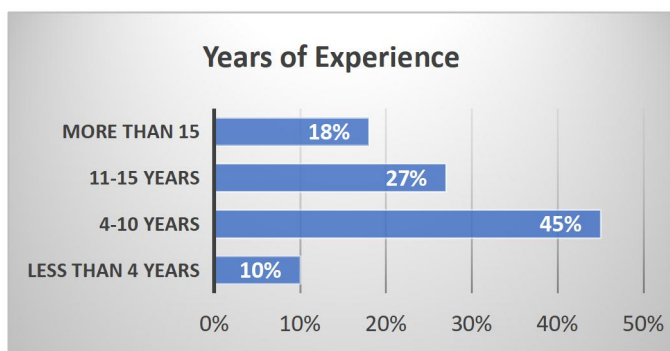


Figure (4.1.2): Years of experience of the participants.

Figure (4.1.3): As seen bellow medical stuffs were questioned about medical errors where commonly encountered in hospitals from their prospective as most them said in operating room with (35%), followed by emergency room with (23%), while (21%) of them said in ICU, (14%) said in the wards, and only (7%) of them said in OPD.

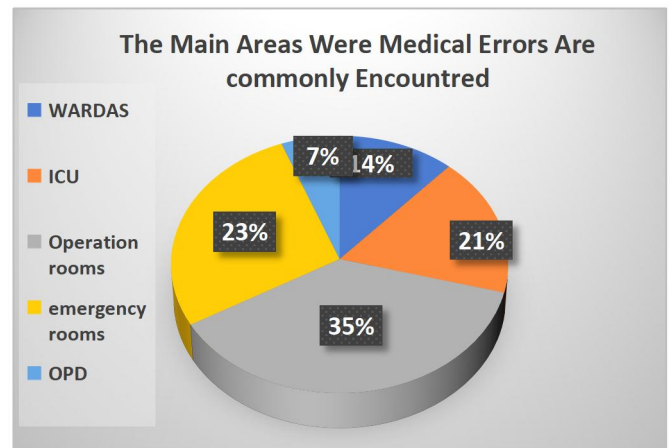


Figure (4.1.3): The main areas where medical errors are commonly encountered as inquired.

Figure (4.1.4): As noted in the curve, 45% of participants choose none medical errors in governmental hospitals, followed by 23% chose minor errors, while 17% moderate errors and only 15% of them chose major errors.

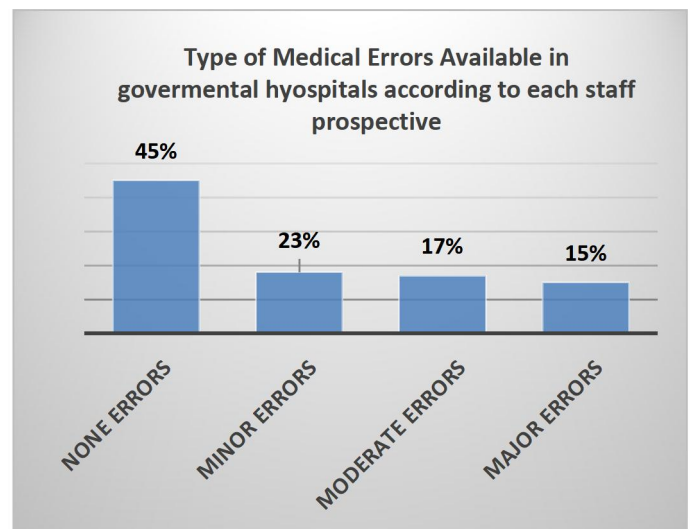


Figure (4.1.4): Type of medical errors in each governmental hospital from staff perspective.

Figure (4.1.5): Medical errors have huge impact on patient and system of health at hospitals as more choosing impact where hospital readmission (52%), followed by side effect to the patient (34%), patient death (10%), lasts no negative impact as taking only (4%).

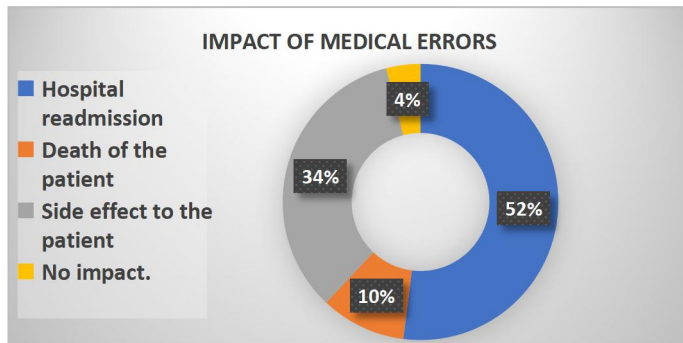


Figure (4.1.1): The possible impact of medical errors.

• Statistical Analysis results:

Table (4.1.4): Was showing answers of inquiring questions about medical errors in hospitals with arithmetic mean as first question was with The Arithmetic Mean 3.45, second question (4.01), third question (3.30), fourth question (4.87), fifth (4.99), sixth (3.12), seventh (92), eighth (3.11), ninth (3.66), tenth (2.89), eleventh (3.75), twelfth (3.96).

Table (4.1.4): Question regarding medical errors with arithmetic mean.

	Question regarding medical errors	Sample	The Arithmetic Mean
1	Are there medical records to be filled out in case of a medical error?	100	3.45
2	Is it the employees themselves who take the initiative to report a medical error?	100	4.01
3	Is medical error reported by patients or their families?	100	3.30
4	Are there any communication channels such as a hotline or a complaint box to receive complaints?	100	4.87
5	Is there an appropriate documentation mechanism for medical errors?	100	4.96
6	Does the hospital administration discuss medical error issues with health care workers as a case study to learn from them and not repeat them?	100	3.12
7	Are the mechanisms for legal accountability for medical errors clearly announced to all hospital employees?	100	2.92
8	Is there any negligence in holding accountable those proven to have committed medical error?	100	3.11

9	Are customs and traditions sometimes taken into account in dealing with medical errors?	100	3.66
10	Are patient complaints regarding medical errors handled?	100	2.89
11	Medical errors are more deadly to people than road accidents?	100	3.75
12	Medical errors are sometimes limited, so the doctor should not always be blamed for them?	100	3.96
General Average			3.38

Table (4.1.5): As noted, bellow the choicest reason found with higher arithmetic value, as first (Is job dissatisfaction the cause? Choses as the most cause 4.10, second reason (Is a glitch in the question system the cause?) with 3.99, third (Is work pressure the reason?) with 3.98, fourth (Is the duality of the work system for health workers between government and private work the reason?) with 3.71 last chosen reason was (Is the reason for the weakness of the medical staff in government hospitals?) with 3.31.

Table (4.1.5): The reason behind medical errors.

	The reason behind medical errors	Sample	The Arithmetic Mean
1	Is high workload for health care stuffs??	100	3.98
2	Is job dissatisfaction the cause?	100	3.89
3	Is lack of training and knowledge the reason?	100	4.10
4	Is a glitch in the question system the cause?	100	3.62
5	Is the reason for the weakness of the medical staff in government hospitals?	100	3.31
6	Miscommunication between health care?	100	3.44
7	Is the reason mistake in prescription (incomplete prescription, drug-drug interactions and incorrect medical)?	100	3.79
8	Is a nursing error (i.e. wrong route of administration, wrong dose, and omission of medical)?	100	4.10
9	lack of evaluation and rating system?	100	3.54
10	Is the duality of the work system for health workers between government and private work the reason?	100	3.71
General Average			3.75

Table (4.1.6), Figure (4.1.6): As seen below describe a none significant relationship, where the result value was higher than probability value (0.05) which indicates the weak relationship between type of medical errors and academic qualification, $p = (0.087)$ as obviously clear in governmental hospitals academic qualification doesn't play an important role in medical errors.

Table (4.1.6): Type of medical errors and academic qualification crosstabulation.

	Type of medical errors in each governmental hospital from staff perspective				Total
	None Errors	Minor Errors	Moderate Errors	Major Errors	
PhD	3	0	1	1	6
Master Degree	9	3	3	4	19
Bachelor	13	12	4	2	30
Higher diploma	20	8	9	8	45
Total	45	23	17	15	100
P Value	0.087				

Table (4.1.7), Figure (4.1.7): As seen below describe a none significant relationship, where the result was higher than probability value (0.05) which indicates the weak relationship between type of medical errors and years of experience, $p = (0.068)$ as obviously clear in governmental hospitals, years of experience doesn't play an important role in medical errors.

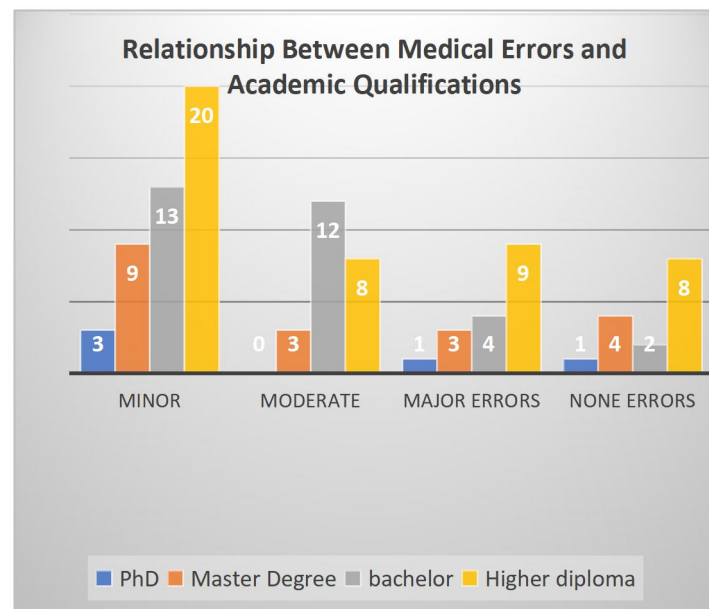


Figure (4.1.6): Relationship between type of medical errors and academic qualification.

Table (4.1.7): Type of medical errors and years of experience crosstabulation.

	Type of medical errors and years of experience crosstabulation				Total
	None Errors	Minor Errors	Moderate Errors	Major Errors	
More than 15 years	13	4	0	1	18
11-15 years	11	8	4	4	27
4-10 years	17	9	11	8	45
Less than 4 years	4	2	2	2	10
Total	45	23	17	15	100
P Value	0.068				

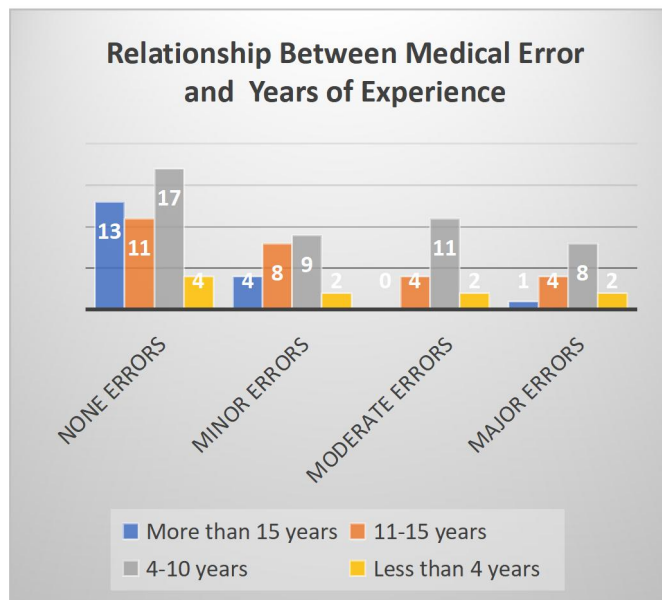


Figure (4.1.7): Relationship between Type of medical errors and years of experience.

4.2 Discussions:

Medical errors consider one of the most impact on patient's health and safety in governmental hospitals in Libya, Medical errors can cause serious problems and increase patient mortality and hospital costs [56], [57], [58], [59],[60]. Medical errors may also contribute to a decline in patient-physician and health stuff confidence [56],[57]. This study was focusing on identifying, discover medical errors, cause, risk factors and methods of reduction in governmental hospitals in Benghazi-Libya. As this study shows medical errors occurrence in most governmental hospitals in Benghazi Libya with 55%, Similarly, to Zamzam et, al as evident that the frequency of medical errors relatively high in Kuwait tertiary hospital [53]. Opposite to us, a s study, Ali and colleagues reported that medical errors occur between 11% and 25% of the patients in the Middle East experience[61] According to this study the result shows medical errors occur in most main section in the hospitals as operating room taking the higher percent for occurrence with (35%), emergency room with (23%), ICUs (21%), medical wards (14%) in contrast, another study for Zamzam et, al found that the common areas where MEs occurred include the emergency room (57.0%), medical wards (43.3%), operation rooms (33.1%), Intensive Care Units (ICUs) (17.8).[53]Also cause of medical errors in this study lay importantly according to stuffs prospective due to lack of training and knowledge and nursing errors with average (4.10) then high workload (3.98), in compare to this a study by Asmaa Alyaemni king Saud university Lack of knowledge may contribute to errors being underreported in Saudia Arabia all this indicated that the training level has a significant influence on the disclosure of a major medical error[54]Also, the situation in governmental hospitals is worsened by poor coordination

and lack of training and evaluation programs to educate health care practitioner s on the importance of reporting medical errors similar to a study by Harding L *et al.* 2014 [62]Compatible with a Mrayyan Mt *et al* (2007), Lisby M, *et al.* (2010). Study with most healthcare providers lack a rating system that can be used to identify medical errors and other adverse effect [63], [64],as these study results shows that the hospital readmission was the main adverse effect of medical errors, this result was in line with study of [53] Zamzam Ahmed and colleagues as 32.9% of the MEs contributed to prolonged hospital stays and re-admissions. Also, another study the European Union, estimated that hospital readmissions and hospitalizations as a result of medical errors account for between 8% and 12% of all reported cases [65]. In addition, a study found that 21% of US citizens are readmitted as a result of medical errors resulting from adverse effects.

V. CONCLUSION

This study was focusing in identifying and assessing medical errors in governmental hospital, their cause, and strategies possible use to reduction of them, as result shows medical errors frequency are too high in Benghazi governmental hospital. This study is useful to help hospitals improve their patient health plan system and reduce medical errors in Libya. Also, it is necessary to promote work environments that emphasize preventing errors, learning from errors, with evaluation system frequently about medical errors. Furthermore, study require due to some limitation first, shortage in sample size due to time constrains, second, this study focus only on opinion of health care stuff, patients and family member also required.

VI. RECOMMENDATIONS

1. Job training program regarding medical errors, patient safety to report and discuss medical errors and their adverse events.
2. Monthly medical evaluation or assessment system should be applied in governmental hospital, and their impact on care delivery.
- 3.Hospitals should create an effective committee of patient safety teams involving all domains of healthcare providers including setting up ways of reporting and following up on patient safety activities.
- 4.Quality control of medical service and improvement of medical project should be applied and encouraged medical stuff for it.
- 5.Intensive quality assurance measures for all health care professionals.

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