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Medico legal aspects of medical malpractice dead cases in Cairo and Giza governorates from 2014–2015

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Abstract

Background In Egypt, as elsewhere around the world, there are more medical malpractice claims and lawsuits being brought against doctors and hospitals. The present study attempts to identify the medico-legal aspects of medical malpractice cases, determine the most frequent causes of medical errors, and the most medical specialities facing this problem and their qualifications. Find out the positive cases from the negative ones, and determine the causes of their death.

Methods This study is a retrospective descriptive observational study of medical malpractice dead cases in Cairo and Giza governorates from the available records and reports of the Forensic Medical Authority from the 1st of January 2014- to the 1st of January 2015 which included 112 cases with alleged medical malpractice dead cases. The outcomes of forensic autopsies were used to distinguish between positive and negative cases.

Results According to the socio-demographic data of the claimed cases, the female cases (53.6%) dominated the male cases (46.4%). The majority of accusations of medical errors were submitted due to negligence (73.68%), followed by complications within surgical therapy (15.79%). In the study, claims against obstetricians were the highest (24.1%), followed by those against anesthesiologists (20.5%), and general surgeons (17%). university hospitals have the highest percentage of positive cases (75%), followed by insurance hospitals (25%), private hospitals (15.6%), and public hospitals (11.1%).

Conclusions The majority of the studied cases were female. Obstetricians had the most accusations in the study and the most positive cases. The most frequent medical error in the study is negligence. All of the study's cases of obstructed labour are positive, but none of the cardiac arrhythmia or heart failure cases are. The majority of cases at university hospitals were positive and the majority of cases at public hospitals were negative.

Keywords Private hospitals, Obstetricians, Negligence, Egyptian medical syndicate, Adverse drug events, Obstructed labor, Septic shock

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Background

The Egyptian Medical Syndicate and the Egyptian Forensic Medicine Authority receive hundreds of malpractice claims every year. Detecting negligence is based on reviews of the claims files (Azab 2013).

A medical error is defined as any event during a medical procedure that could have been avoided and could have resulted in patient harm. It can also mean that a healthcare provider doesn't follow the usual procedures. They may make a wrong diagnosis because of incomplete information or a lack of skill, so they do not give the right treatment to the patient, causing harm (Kalemdar and Aktaş 2013).

To prove a negligence claim, the following four criteria must be met: These elements are as follows: a legal duty must exist on the part of the doctor to initiate treatment or care for the patient; a breach of this duty is treated as treating doctor failure, and a causal link exists between such a breach of duty and injury to the patient and the injury caused (Bal 2009).

To improve the quality of healthcare and keep patients safe, we should try to keep patients from getting hurt and protect them from bad things that can be stopped. To meet this goal, we should understand why these errors occurred and how they cause patient harm so we can avoid them in the future (Gluck 2008).

Aim of the work

The study aims to identify the medico-legal aspects of medical malpractice dead cases in the governorates of Cairo and Giza, as well as the most common causes of medical errors, medical specialties that faces this problem and their qualifications. It helps to identify negative and positive cases in the study and determine the causes of their death.

Methods

I. Subjects

This study is a retrospective descriptive observational study of alleged medical malpractice dead cases in Cairo and Giza governorates from the available records and reports of Forensic Medical Authority in Cairo governorate from the period of (Jan 2014- Jan 2015) which included 112 dead cases with alleged medical malpractice.

Inclusion criteria

The study included all dead cases with the allegation of medical malpractice in Cairo & Giza governorates from the period of (Jan 2014- Jan 2015).

Ethical considerations

For the collection of the retrospective data, approvals have been obtained from the Head of the Forensic Medical Authority and the chief medical officer in the department of forensic medicine, Cairo governorate, Ministry of Justice. Confidentiality of records and data was maintained by keeping the records and information anonymous.

II- Methods

The obtained data in the study included the following items:

- (1) Personal data for Socio-demographic data:
 - Age
 - Sex
- (2) Geographical distribution of authorized prosecutions.
- (3) Place of neglect (public, private, insurance, university hospitals).
- (4) Different medical specialties: obstetrics & gynecology, anesthesia, general surgery, pediatrics & neonatology, internal medicine, oncology, urology, orthopedics, ENT, critical care, psychiatry, ER
- (5) Scientific degrees of accused doctors (consultants, specialists, residents, diploma, GP)
- (6) Results of forensic autopsies (positive, negative). The positive and negative cases were determined according to the results of forensic autopsies.
- (7) Types of medical errors. Types of medical errors are classified into 5 groups. The 5 groups are
 - Group 1: negligence & omitting the necessary treatment
 - Group 2: complication at and/or after surgery
 - Group 3: wrong treatment
 - Group 4: mistake in care
 - Group 5: adverse drug events, medication errors (Madea and Preuß 2009).
- (8) Causes of death: septic shock, respiratory failure, the complications of anesthesia, hypovolemic shock, anaphylactic shock, cardiac arrhythmia, renal failure, heart failure, fetal distress, obstructed labor.

Statistical analysis

Analysis of data was performed using SPSS v. 25 (Statistical Package for Social science) for Windows. The description of variables was presented as follows:

Table 1 Sex variations of the studied dead cases

Characteristics	N= 112	Percent %
Sex		
Female	60	53.60%
Male	52	46.40%

Table 2 Types of medical errors in the positive studied dead cases

Characteristics	N= 19	Percent%
Medical errors		
Group 1(negligence)	14	73.68%
Group 2(complication of surgery)	3	15.79%
Group 3(wrong treatment)	1	5.26%
Group 4(mistake in care)	1	5.26%

The description of qualitative variables was in the form of numbers (No.) and percent (%).

- Comparison between categorical data was done using the Chi-square test, to test the statistical difference between the two groups.
- The significance of the results was assessed in the form of a *P*-value that was differentiated into:
- Non-significant when *P*-value > 0.05
- Significant when *P*-value ≤ 0.05
- Highly significant when *P*-value ≤ 0.001

Results

According to the results of the study, female cases are a little higher than male cases (53.6%) which is shown in Table 1

Table 2 shows that most medical mistakes are caused by negligence (73.68%), followed by surgical therapy complications (15.79%), wrong therapy (15.79%), and care mistakes (5.26%) for each. Examples of medical errors are shown below in (Table 3).

In regards to medical specialities, Table 4 shows that obstetricians had the most accusations in the study (24.1%), followed by anesthesiologists (20.5%), and general surgeons (17%).

In regards to the relation between the age of the dead studied cases and the results of forensic autopsies, the age group from 1 year to the second decade had the most positive cases (33.3%), followed by the cases younger than 1 year (28.6%). All cases from the 4th decade to the 6th were negative followed by cases older than the 6th decade

Table 3 Examples of medical errors

Group 1 (Negligence)	- Delay in decision taking(eg.delay in c- section causing fetal distress and death) - Doctor does not order the necessary lab tests (eg. the patient’s unnoticed rise in bleeding tendency) -Wrong decision (eg. The doctor make normal delivery decision instead of the case indicated for c.s section) - Process error: (eg.doctor inject another substance instead of the dye) -The doctor is absent from work
Group 2—Complications at and/or after surgery:	RSl:the surgeon forget a tool causing peritonitis - intra-operative complication: airway obstruction during operation (delay in suction and monitoring the pt) -Post operative comp: improper follow up after c.s section
Group 3—Wrong treatment, inappropriate treatment	Blood transfusion reaction(wrong ABO group)
Group 4—Mistake in care	Does not do allergy test before penicillin injection

Table 4 Variations of different medical specialties on the studied dead cases

Characteristic’s	N= 112	Percent %
Medical Specialty		
Obstetrics & gynaecology	27	24.1%
Anesthesia	23	20.5%
General surgery &their specialties (GS)	19	17.0%
Pediatrics & neonatology	12	10.7%
Internal medicine	10	8.9%
Oncology	9	8.0%
Urology	8	7.1%
Orthopedic	7	6.3%
ENT	5	4.5%
Critical care	3	2.7%
Psychiatry	3	2.7%
ER	3	2.7%

(83.3%), as shown in Table 5. This relationship was statistically significant.

Table 6 depicts the relationship between authorized prosecutions and forensic autopsies.

It demonstrates that the areas with the highest percentage of positive cases were North Giza (42.1%), West Cairo (40%), South Cairo (17.6%), and South Giza (9.8%), respectively.

According to the study, university hospitals have the highest percentage of positive cases (75%), followed by insurance hospitals (25%), private hospitals (15.6%), and public hospitals (11.1%). These results are

Table 5 Relation between the age of dead studied cases & results of the forensic autopsy

Age (decade)	Positive		Negative		P-value
	N	%	N	%	
< 1 year	4	28.60%	10	71.40%	0.020 (S)
1-2 nd	7	33.30%	14	66.70%	
2 nd -4 th	6	17.60%	28	82.40%	
4 th -6 th	0	0.00%	31	100.00%	
>6 th	2	16.70%	10	83.30%	

Table 6 Relation between the authorized prosecutions & results of forensic autopsies

Authorized prosecutions	Positive		Negative		P-value
	N	%	N	%	
East Cairo	0	0.00%	13	100.00%	0.002 (S)
North Cairo	0	0.00%	12	100.00%	
North Giza	8	42.10%	11	57.90%	
South Cairo	3	17.60%	14	82.40%	
South Giza	4	9.80%	37	90.20%	
West Cairo	4	40.00%	6	60.00%	

Table 7 Relation between the place of neglection & results of forensic autopsies

Place of neglection	Positive		Negative		P-value
	N	%	N	%	
Insurance	1	25.00%	3	75.00%	0.015 (S)
Private	12	15.60%	65	84.40%	
Public	3	11.10%	24	88.90%	
University	3	75.00%	1	25.00%	

shown in Table 7. This relationship was statistically significant.

Table 8 shows that all cases of obstructed labor were positive (100%) and all cases of cardiac arrhythmia and heart failure were negative.

Regarding the relation between the doctor’s qualifications and the results of the forensic autopsy, Table 9 demonstrates that the cases treated by physicians with a diploma was 100% positive, followed by specialists with (27.6%).

Discussion

There are an increasing number of claims of medical malpractice in Egypt. Medical malpractice claims are on the rise for a variety of reasons; including the

Table 8 Relation between causes of death & results of forensic autopsies

Causes of death	Positive		Negative		P-value
	N	%	N	%	
Anaphylactic shock	2	28.60%	5	71.40%	0.008 (S)
Hypovolemic shock	4	33.30%	8	66.70%	
Cardiac arrhythmia	0	0.00%	7	100.00%	
Complication of anesthesia	2	15.40%	11	84.60%	
Foetal distress	2	66.70%	1	33.30%	
Heart failure	0	0.00%	5	100.00%	
Obstructed labor	2	100.00%	0	0.00%	
Renal failure	1	16.70%	5	83.30%	
Respiratory failure	2	8.30%	22	91.70%	
Septic shock	4	12.10%	29	87.90%	

Table 9 The relation between qualifications of accused doctors & results of forensic autopsies

Degree	Positive		Negative		P-Value
	N	%	N	%	
Consultant	4	8.70%	42	91.30%	0.044 (S)
All department	3	13.60%	19	86.40%	
Diploma	1	100.00%	0	0.00%	
Resident	3	21.40%	11	78.60%	
Specialist	8	27.60%	21	72.40%	

continuous advances in medicine, their excessive introduction to society, developing public awareness, and other medical and legal considerations. Additionally, an increase in relevant news stories in the media significantly fueled this uptick.

Therefore, this study aims to shed light on the medical malpractice death cases in the governorates of Cairo and Giza between 2014 and 2015. The data for the study was obtained from saved documents at the Forensic Medical Authority in the Cairo governorate. The number of included cases was 112.

According to the study, there were more female cases than male cases (53.60% to 46.40%), which is in line with a study from Tanta University where men made up (35.29%) of the cases and women (64.7%) of the cases (El Kelany and Shahin 2016) and disagree with a study that claimed that (48.5%) of cases were females and (51.5%) were males (Hamasaki and Hagihara 2011).

Negligence is the most common form of medical error (73.68%), followed by complications in surgical therapy (15.79%), a mistake in care, and a wrong therapy (5.26%) for each. These findings are consistent with a German

study, which found that neglect is the most common error (48.5%), followed by complications in surgical therapy (33.1%), wrong therapy (17.2%), adverse drug therapy (12.5%), and mistakes in care (7.2%) (Madea and Preuß, 2009).

Also, these findings are in line with a study from Wuhan, China, that found complications with surgical therapy (18.6%) to be the second most common cause after negligence (50.5%) (He et al. 2015). These findings conflict with a study that revealed that surgical procedure errors were the most common (32.3%), followed by inadequate postoperative follow-up (20%) (Azab 2013).

The study revealed that obstetricians had the most cases (24.1%), followed by anesthesiologists (20.5%) and general surgeons (17%). A growing incidence of cesarian sections and other medical conditions necessitating interventions are causing these results, which agree with a study in Saudi Arabia that noted that obstetricians had the most cases (27%), followed by general surgeons (17%), internal medicine (13%), and lastly pediatricians (10%) (Samarkandi 2006).

Another study from Tanta University confirms these results, which reported that gynecologists were the most (23.5%), followed by general surgeons (17.6%), anesthesiologists (11.8%), and orthopedic surgeons (11.8%). Plastic surgeons, cardiothoracic surgeons, neurosurgeons, ophthalmologists, and dermatologists were all accused in a single case (El Kelany and Shahin 2016).

In terms of the correlation between the age of the studied cases and the results of the forensic autopsies, the most positive cases (33.3%) belonged to the age group between one year and the second decade.

According to the survey, West Cairo had the highest percentage of positive cases (40%), followed by North Giza (42.1%). The majority of cases at university hospitals were positive (75%) and the majority of cases at public hospitals were negative (88.9%) in regards to the relation between the place of neglect and the results of the forensic autopsies, Due to complicated cases almost being transferred from public hospitals to university hospitals.

All cases of obstructed labor were found to be positive (100%), followed by fetal distress (66.7%), but all cases of cardiac arrhythmia and heart failure were found to be negative.

All cases of obstructed labor were positive because it is one of the most common preventable causes of maternal and prenatal morbidity and mortality in developing countries (Islam Ja, et al, 2012) It is one of the indications for the cesarian section, and it is a lifesaving procedure. If the doctor doesn't take that decision or is late in his procedure, that may lead to obstructed labor and be considered medical negligence, which he is accused

of. All cases of heart failure or cardiac arrhythmia were negative because most of their relatives attributed their deaths to the most recent medical intervention, which is incorrect, and the deaths were the result of previously undiagnosed medical conditions.

In terms of the relationship between accused doctors' qualifications and the results of forensic autopsies, doctors with diplomas have the most positive cases (100%), followed by specialists (27.6%), and consultants have the fewest (8.7%). These results are due to the difference in scientific and practical experience between doctors with diplomas and consultants.

Conclusions

We revealed from the study that: Females account for the majority of the analyzed cases. Obstetricians had the most reported cases of mortality. Negligence is the most common medical error. All of the study's cases of obstructed labor are positive, but none of the cardiac arrhythmia or heart failure cases are. The majority of cases at university hospitals were positive and the majority of cases at public hospitals were negative. The most positive cases are with obstetricians. Consultants have the least positive cases, whereas doctors with diplomas have the most positive ones.

Abbreviations

ENT	Otorhinolaryngology
ER	Emergency room
GP	General practitioner

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Authors' contributions

All authors contributed equally in the study.

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Availability of data and materials

The data and materials of the study are maintained from the available records in Forensic medicine Authority- Cairo department.

Declarations

Ethics approval and consent to participate

We should notice that this study is a retrospective study so informed consent is not needed for this type of study.

Consent for publication

I confirm that all authors have approved the manuscript for submission and publication.

Competing interests

We have no competing interests to disclose.

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