

Defensive Medicine Practice in Different Specialties among Junior Physicians in KasrAlAiny Hospitals, Egypt

Marwa Diaaeldeen Abbass Hasan, Dina Ali Shokry¹, Rehab Hanafy Mahmoud, Marwa Mostafa Ahmed

Departments of Family Medicine and ¹Forensic Medicine and Clinical Toxicology, Faculty of Medicine, Cairo University, Giza, Egypt

Abstract

Background: Defensive medicine has great impact on medical practice and population health. It may provide enhanced quality of services with good explanations to patients resulting in increased satisfaction. On the other hand, it might include unnecessary investigations, prescription of unnecessary treatments which may be expensive or dangerous for patients. **Aim of Work:** This study aims to evaluate awareness and practice of defensive medicine among junior doctors in Cairo University Hospital. **Methods:** This cross-sectional study includes 261 junior physicians by interviewing them using a structured questionnaire. **Results:** Defensive medicine practice is highly affected by sociodemographic characteristics of study population. Almost half the female doctors are always giving extra details about the medication use (56%) $P < 0.001$. Around 90% of both specialties have not been involved in medical litigation. **Conclusions:** Defensive medicine is highly prevalent among junior physicians. Following clinical standards and fear of legal actions by patients are considered main causes of practice of defensive medicine.

Keywords: Defensive medicine, medical liability, medical litigations

INTRODUCTION

Defensive medicine is defined as the overuse of the resources such as ordering unnecessary investigations, giving treatment, or performing procedures aiming at doctors' self-protection against claims rather than for the patient best interest.^[1]

There are two types of defensive medicine: negative defensive medicine includes high-risk patients or procedures avoidance, while positive defensive medicine such as ordering unnecessary procedures and treatments,^[2] which are done primarily out of fear of malpractice liability risk.^[3] By definition, malpractice is the breach by a member of profession of either a standard of care or a standard of conduct.^[4]

Malpractice claims have a great effect on the doctor's financial aspect and reputation. It also has an impact on his professional advancement and career.^[5] Egypt, as a developing country, faces the medical malpractice problem but the data are deficient regarding the magnitude of the problems. However, the Egyptian Medical Syndicate sets new regulations in 2013 regarding the good medical practice in professional medical ethics.^[6] The defensive medicine practice differs from a country to another affected by the surrounding circumstances.^[7]

The defensive medicine practice usually results from the physician's sense of uncertainty, fear of liability, and poor outcomes. This usually directs the physicians to do unnecessary procedures that are not only increase the health-care expenses but also expose the patients to the risk of more hazardous interventions.^[8] Some physicians use the expensive screening tools to avoid the feeling of low self-esteem and losing their reputation inside their community.^[9] This could be the reflection of increased claims in the Greater Cairo wherein the period from 1973 to 1979, there were only 64 claims recorded that increased to be 2043 cases from 2000 to 2003.^[7,10]

This sharp increase in the number of medical claims can be based upon the increased citizen's awareness by his rights and could be affected by the presence of the specialized lawyers

Address for correspondence: Dr. Marwa Diaaeldeen Abbass Hasan, Department of Family Medicine, Faculty of Medicine, Cairo University, Giza, Egypt.
E-mail: marwa.diaa@kasralainy.edu.eg

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who encourage the patients to raise lawsuits for financial compensations.^[11]

Defensive medicine puts a high financial burden over different healthcare systems. In Italy, 10% of spent health-care resources were due to defensive medicine practice.^[12] It affects the individuals before birth as it leads to increase the C-sections rate over the normal vaginal deliveries as a known pattern of defensive medicine practice.^[1,13]

Objectives

1. To evaluate awareness and practice of defensive medicine among junior doctors at KasrAlAiny hospital
2. To explore reasons of defensive medicine practice.

METHODS

This is a cross-sectional study conducted in 261 junior doctors of different specialties in Cairo University Hospitals from February 2019 to October 2019. A sample of 261 junior doctors in different specialties were obtained, among a total of 23 clusters (departments) in the KasrAlAiny hospital, 35% cluster sample (8 clusters including general surgery, gynecology, neurosurgery, cardiothoracic surgery, internal medicine, neurology, cardiology, and chest medicine) was determined using the Open Epi program (Brixton Health/EpiCalc 2000 Website: <http://www.brixtonhealth.com>)(Gilman, J., and M. Myatt.1998. EpiCalc 2000. Version 1.02. Brixton Books, London, United Kingdom), then EpiCalc 2000 (EpiCalc. exe.) was used to calculate the sample size. Assuming 80% power, 0.05 level of significance, 84% null hypothesis value, and estimated proportion of 90%, the sample size was calculated to be 261.

Ethical approval was obtained from the Research and Ethical Committee of Cairo University.

A five domain-based questionnaire was designed by the researchers after reviewing the literature viz. sociodemography, defensive medicine behaviour, medical litigation experience, defensive medicine practice and perception of good practice.

The participants were interviewed by the researcher after signing an informed written consent. The concept of the defensive medicine was elaborated first, and then, they were asked to fill up the above-designed questionnaire.

Data were statistically described in terms of mean, standard deviation, or frequencies (number of cases) and percentages when appropriate. For comparing categorical data, Chi-square (2) test was performed. Exact test was used when the expected frequency was less than <5 . $P < 0.05$ was considered statistically significant. All statistical calculations were done using computer program (Statistical Package for the Social Science, SPSS Inc., Chicago, IL, USA) release 15 for Microsoft Windows (2006).

RESULTS

The age of the majority of participants was between 26 and 30 years (77.0%) and 166 (63.6%) were females. The doctors

are almost equally distributed between medical and surgical specialties. Almost all physicians got primary medical qualification and postgraduate qualification only from Egypt. Around 90% of participants do not have insurance against professional errors.

The most common form of positive defensive medicine practice was taking extra details about disease. Around half of participants (55.9%) often take extra details about disease and (36.1%) always do it. The second most common form was following up success of management. Around 57 of participants (57.9%) often follow-up success of management and (33.3%) always follow-up success of management. The least common form was recommendation of unnecessary medication, investigation, and referral. About half of participants do not recommend unnecessary medication, investigation, and referral. The most common form of practicing negative defensive medicine was avoiding high-risk procedures then avoiding high-risk patient where 24.5% of doctors always avoid high-risk procedures and 17.6% avoid high-risk patient.

Table 1 shows statistically difference between male and female physicians and specialists in different defensive medicine behaviors.

Table 2 shows statistically significant difference between the medical and surgical specialties regarding the medical litigations experience. Around 90% of both specialties in different genders have not been involved in medical litigation. Almost half the medical specialty physicians can accept patient previously involved in medical litigation opposite only 38.3% of the surgical specialty that showed statistically significant difference.

Table 3 shows statistically significant difference between medical and surgical specialties regarding the reason for defensive medicine practice where 52.6% of the surgeons consider that the legal concern by the patient is the reason for the defensive medicine practice opposite 28.5% only of the physicians.

Table 4 shows statistically significant difference between the medical and surgical specialties where 4.4% of the surgical physicians considered that defensive medicine is more expensive than medical litigation costs opposite 19.4% in the medical specialty.

DISCUSSION

Many forms of practicing defensive medicine were explored in our study. The most common forms of practicing positive defensive medicine were taking extra details about disease and following up success of management, while the most common form of practicing negative defensive medicine was avoiding high risk procedures followed by avoiding high risk patient.

This was concordant with the study conducted by Hasan *et al.* in Bahrain who evaluated the practicing of defensive

medicine among primary care doctors. They concluded that most common forms of practicing defensive medicine were taking extra detail history (66.4%), ordering more test than called for (60.0%), and avoid risky procedures and interventions (59.1%).^[7]

Our results are also in agreement with another study conducted in 2016 in Sudan by Ali *et al.* They stated that 41% reported practicing positive defensive medicine while 30.8% reported practicing negative one. Arranging unnecessary recommendation including referral, investigation, medication, surgery (cesarean section) was the most common form of defensive medicine.^[14]

Another study conducted in Iran concluded that the frequency of defensive medicine was high in the studied population and that most participants showed negative behaviors in their work such as not prescribing risky methods to cure patients, avoiding admitting high-risk patients, prescribing unnecessary clinical procedures, prescribing unnecessary treatment, prescribing unnecessary medicines and patients' unnecessary referral to specialists.^[15] This highlights the importance of increasing the physicians' awareness to avoid the unnecessary usage of the available resources to overcome uncertainties encountered in the clinical practice.

The present study shows that there is statistical significance between the practice of different forms of defensive medicine and gender. This is concordant with the study conducted in Bahrain in 2018 which revealed that females practiced defensive medicine significantly higher than

male physicians.^[7] Another study conducted in Iran in 2014 concluded that negative defensive medicine was more common in female physicians than in their male counterpart (83.6% vs. 76%) and this difference was statistically significant ($P = 0.04$).^[15]

Ortashi *et al.* in 2013 found no significant relation between litigation and gender.^[16] On the other hand, our study shows that 68.4% of male physicians have been involved in medical litigations, while around half of female physicians have been involved in medical litigations. This is may be due to fact that females tend give extra details about the disease and recommend unnecessary (referral, investigation, and medications) more than males in our study.

Many studies suggested that there is significant association between medical litigation and specialty. However, our study did not show any significant different in the medical litigation among different specialties.

Kamel *et al.* conducted a study in 2015 to evaluate malpractice claims in Dakhalia and Damietta Governorates in Egypt. It was concluded that anesthesia represented the highest percentage of claims followed by general surgery then gynecology and obstetrics, orthopedics, and ophthalmology.^[6] On the other hand, Sherief in 2005 found that claims against general surgeons were the most frequent followed by obstetricians and gynecologists in the Greater Cairo. Moreover, the most recurrent positive cases were against obstetricians and gynecologists.^[11] This was not

Table 1: Comparison regarding defensive medicine behavior

	Gender, count (%)		P	Specialty, count (%)		P
	Male	Female		Medical	Surgical	
Take extra details about disease						
None	5 (5.3)	16 (9.6)	0.182	8 (5.6)	13 (11.3)	0.164
Often	59 (62.8)	86 (51.8)		79 (54.9)	65 (56.5)	
Always	30 (31.9)	64 (38.6)		57 (39.6)	37 (32.2)	
Give extra details how to take medication properly						
None	14 (14.9)	19 (11.4)	<0.001	12 (8.3)	21 (18.3)	0.001
Often	51 (54.3)	54 (32.5)		50 (34.7)	54 (47.0)	
Always	29 (30.9)	93 (56.0)		82 (56.9)	40 (34.8)	
Follow-up success						
None	6 (6.4)	17 (10.3)	0.003	15 (10.5)	8 (7.0)	0.354
Often	44 (46.8)	105 (63.6)		85 (59.4)	64 (55.7)	
Always	44 (46.8)	43 (26.1)		43 (30.1)	43 (37.4)	
Unnecessary medication, investigation, refer						
None	65 (69.1)	75 (45.2)	<0.001	71 (49.3)	68 (59.1)	0.093
Often	29 (30.9)	87 (52.4)		69 (47.9)	47 (40.9)	
Always	0 (0.0)	4 (2.4)		4 (2.8)	0 (0.0)	
Avoid high-risk patient						
None	20 (21.1)	77 (46.7)	<0.001	58 (40.3)	39 (33.9)	0.173
Often	54 (56.8)	63 (38.2)		66 (45.8)	50 (43.5)	
Always	21 (22.1)	25 (15.2)		20 (13.9)	26 (22.6)	
Avoid high-risk procedure						
None	26 (27.4)	54 (32.9)	0.039	48 (33.6)	32 (27.8)	0.537
Often	37 (38.9)	78 (47.6)		63 (44.1)	52 (45.2)	
Always	32 (33.7)	32 (19.5)		32 (22.4)	31 (27.0)	

Table 2: Comparison regarding medical litigations experience

	Gender, count (%)		P	Specialty, count (%)		P
	Male	Female		Medical	Surgical	
Have you been involved in medical litigation?						
Yes	5 (5.3)	20 (12.2)	0.072	15 (10.5)	10 (8.8)	0.644
No	89 (94.7)	144 (87.8)		128 (89.5)	104 (91.2)	
Has anyone of your colleagues ever been involved in medical litigations?						
Yes	65 (68.4)	78 (47.0)	0.001	68 (46.9)	75 (65.2)	0.003
No	30 (31.6)	88 (53.0)		77 (53.1)	40 (34.8)	
Are you willing to accept patient who previously involved in medical litigation?						
Yes	41 (43.2)	80 (48.5)	0.407	76 (52.8)	44 (38.3)	0.020
No	54 (56.8)	85 (51.5)		68 (47.2)	71 (61.7)	
If patient complained against you what is your reaction? (complete his management)						
None	28 (30.1)	33 (22.4)	0.070	35 (26.9)	26 (23.9)	0.034
Often	47 (50.5)	96 (65.3)		69 (53.1)	73 (67.0)	
Always	18 (19.4)	18 (12.2)		26 (20.0)	10 (9.2)	
If patient complained against you what is your reaction? (refer to another doctor)						
None	33 (35.5)	27 (18.0)	0.003	34 (26.4)	25 (22.1)	0.038
Often	47 (50.5)	83 (55.3)		60 (46.5)	70 (61.9)	
Always	13 (14.0)	40 (26.7)		35 (27.1)	18 (15.9)	
Do you freely report your own mistakes?						
None	17 (17.9)	12 (7.3)	0.002	10 (6.9)	18 (15.8)	0.013
Often	40 (42.1)	104 (63.0)		91 (62.8)	53 (46.5)	
Always	38 (40.0)	49 (29.7)		44 (30.3)	43 (37.7)	
Do you feel supported in your medical decision by your staff?						
None	16 (16.8)	31 (18.7)	0.890	35 (24.1)	12 (10.4)	0.016
Often	57 (60.0)	100 (60.2)		82 (56.6)	74 (64.3)	
Always	22 (23.2)	35 (21.1)		28 (19.3)	29 (25.2)	

Table 3: Comparison regarding defensive medicine practice reasons

Reason of your practicing of defensive medicine	Gender, count (%)		P	Specialty, count (%)		P
	Male	Female		Medical	Surgical	
Following clinical standard, ethics						
None	1 (1.1)	17 (10.7)	0.013	15 (10.9)	3 (2.7)	0.016
Often	42 (45.2)	58 (36.5)		47 (34.1)	52 (46.0)	
Always	50 (53.8)	84 (52.8)		76 (55.1)	58 (51.3)	
Legal concern by patient						
None	17 (18.7)	23 (14.3)	0.549	31 (22.6)	9 (7.9)	<0.001
Often	37 (40.7)	75 (46.6)		67 (48.9)	45 (39.5)	
Always	37 (40.7)	63 (39.1)		39 (28.5)	60 (52.6)	
Patient pressure, relief of anxiety						
None	27 (29.0)	25 (16.0)	0.003	31 (22.8)	21 (18.8)	0.273
Often	51 (54.8)	79 (50.6)		65 (47.8)	65 (58.0)	
Always	15 (16.1)	52 (33.3)		40 (29.4)	26 (23.2)	

the case in the study conducted in Japan in 2005, where the internal medicine was the most frequently affected specialty followed by general surgery then gynecology and obstetrics.^[1]

In our study, 46.9% of participants who work at both medical and surgical specialties and their colleagues have been involved in medical litigations.

It is recommended to develop effective programs and interventions to educate medical staff about proper practice of

defensive medicine. Further research is needed to investigate the costs of defensive medicine and medical litigations in Egypt.

CONCLUSIONS

Defensive medicine practice is common among our study participants. Taking extra details about disease and following up success of management are the common forms of the defensive medicine identified in this study. There is statistical

Table 4: Comparison regarding good practice perception

	Gender, count (%)		P	Specialty, count (%)		P
	Male	Female		Medical	Surgical	
Defensive medicine is good for patients, they will benefit from thorough evaluation and treatment plan						
None	15 (15.8)	16 (9.7)	0.304	13 (9.0)	18 (15.7)	0.050
Often	30 (31.6)	61 (37.0)		45 (31.3)	45 (39.1)	
Always	50 (52.6)	88 (53.3)		86 (59.7)	52 (45.2)	
Defensive medicine should decrease if evidence-based medicine and related guidelines are implemented						
None	22 (23.2)	21 (12.7)	0.087	20 (13.9)	23 (20.0)	0.410
Often	31 (32.6)	65 (39.4)		56 (38.9)	40 (34.8)	
Always	42 (44.2)	79 (47.9)		68 (47.2)	52 (45.2)	
Defensive medicine is costly and most of the time dangerous for patients						
None	71 (74.7)	111 (67.3)	0.102	97 (67.4)	84 (73.0)	0.597
Often	20 (21.1)	34 (20.6)		33 (22.9)	21 (18.3)	
Always	4 (4.2)	20 (12.1)		14 (9.7)	10 (8.7)	
Defensive medicine is more expensive than medical litigation costs						
None	67 (70.5)	96 (58.5)	0.130	76 (52.8)	86 (75.4)	<0.001
Often	17 (17.9)	46 (28.0)		40 (27.8)	23 (20.2)	
Always	11 (11.6)	22 (13.4)		28 (19.4)	5 (4.4)	
Defensive medicine reflects a physician with solid medical knowledge and skills						
None	28 (29.5)	33 (20.1)	<0.001	29 (20.3)	32 (27.8)	0.134
Often	24 (25.3)	85 (51.8)		68 (47.6)	41 (35.7)	
Always	43 (45.3)	46 (28.0)		46 (32.2)	42 (36.5)	
Defensive medicine reflects a physician with insufficient experience, exposure, and confidence						
None	55 (58.5)	107 (64.8)	0.183	89 (61.8)	72 (63.2)	0.051
Often	24 (25.5)	44 (26.7)		44 (30.6)	24 (21.1)	
Always	15 (16.0)	14 (8.5)		11 (7.6)	18 (15.8)	

significance difference between the practice of different forms of defensive medicine and gender.

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Conflicts of interest

There are no conflicts of interest.

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