

AWARENESS OF PEOPLE ABOUT FORENSIC DOCTORS IN IRAQ IN 2018: A CROSS SECTIONAL STUDY

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ABSTRACT

Background: Forensic medicine is the branch of medicine that deals with applying medical knowledge to establish facts in civil or criminal cases, such as investigations into the cause and time of death. In Iraq, people's knowledge about forensic doctors' profiles is unknown, so this study aims to assess the general population's knowledge regarding forensic doctors. **Methods:** This is a cross-sectional study that involved 644 participants from different provinces in Iraq using a self-administered questionnaire published via social media websites. The survey involved questions about the sociodemographic status of participants and twelve questions about forensic doctor duties, which were listed in the Iraqi constitution. These were tested for internal consistency with an alpha Cronbach value of 0.82. The data was analyzed using Statistical Package for the Social science (SPSS) version 23. **Results:** The mean number of questions correctly answered was 7.35 with a standard deviation of 3, 9.5% of the sample answered all the questions correctly, 30.4% answered from 9 to 11 questions, 20.5% from 7 to 8, 28% from 4 to 6, 9.4% from 1 to 3 and 2.2% answered all questions wrongly. The highest awareness was about the duty of dissecting bodies, identifying the remnants' identity, and identifying the cause of death. The lowest awareness was about public morality issues as a duty of the forensic doctor. There was a statistically significant association between the number of correctly answered questions and gender, age, marital status, and education level. **Conclusion** This study shows moderate knowledge and awareness about forensic doctors among Iraq's general population.

Keywords: Awareness, Forensic doctor, Iraq, Duties.

INTRODUCTION

Forensic medicine is the science of applying medical knowledge to legal cases. Routine tasks include issuing birth and death certificates, deciding insurance eligibility, and reporting infectious diseases (Omo-Aghoja L et al. 2016). In addition, forensic medicine consists of medico-legal autopsies, forensic pathology, and dealing with domestic violence and rape (Madadin MS, 2013).

Cultural values influence forensic

medicine, which is evident in forensic autopsies. A forensic autopsy is conducted only after taking consent from the deceased's relatives in this region. However, many of those relatives refuse the autopsy for varied reasons; this reason includes body disfiguring, delay in funerals, police, and court involvement, and disturbed their peace (Rathinam RD et al., 2013; Al-saif DM et al. 2016; Mohammed M et al., 2016).

Forensic medicine practitioners have

played indispensable roles in presenting evidence that was crucial in the successful prosecution and conviction of criminals and proving the innocence of falsely accused defendants. During the last 20 years, scientific advances in the practices of forensic medicine, DNA centred technologies, have indicated that many applications of forensic sciences have a crucial role in assisting law enforcement in the process of identifying and gathering evidence against criminals (**National health council, 2014**)

It is also utilized in cases that have a civil orientation, medical malpractice suits, and insurance settlements that require the identification of a clear cause of death, court cases that involve paternity tests may require the results of blood tests, obtaining medical history, evaluating crime scene evidence and witness statements are amongst the duties of the forensic physician alongside their work in determining the identity of a victim and the time, manner and cause of death. (**Obafunwa JO et al. 2015**), (**Rower L, 2013**).

Clinical forensic medicine practitioners have been referred to using many different titles over the years; however, the currently applied term is forensic physician, and other used titles include forensic medical examiner, police surgeon, forensic medical officer (**Payne J, 2016**)

Common responsibilities of forensic physicians include: (Payne J, 2016)

- Writing reports based on analysed evidence.
- Activity coordination related to collection, prevention, and transportation from the crime scene.
- Working as an intermediate between forensic laboratory and crime scene investigators.
- Documentation and description of injuries.
- Examining the body for any signs of drugs (like poisoning).
- Estimation of drug and alcohol intoxication and withdrawal.
- A comprehensive examination to assess a person's ability to operate a motor

vehicle under general medical standards and about alcohol and drug abuse.

- Monitoring detention conditions for detainees.
- Examination of alleged child victims of neglect, physical or sexual abuse.
- Examination of the victims and attackers in alleged police assaults.
- Undertaking mental state examination.

Appropriate assessment, clear documentation, and accurate explanation of injuries are among any forensic physician's duties. This will always depend on taking a good history and performing a detailed physical examination and documentation of all relevant findings. (**Payne-James JJ et al. 2011**).

In Iraq, the forensic system is considered continental. In this system, the same doctor examines the living for documenting violence and death, leading to the dispersion of efforts. In other countries, the forensic system may differ according to the country's conditions, laws, and graveyards (**WHO, 2015**).

In Iraq, the institute of forensic medicine is under the jurisdiction of the ministry of health and environment. In the college of medicine, the forensic medicine department is part of the histopathology department; due to the insufficient number of forensic medicine practitioners in Iraq, some provinces don't have a forensic specialist; therefore, a general surgeon fills in for this job after undergoing a training course in forensic medicine.

As People frequently encounter or become involved in forensic doctor duties, awareness about this department is fundamental to avoid difficulties arising from lack of understanding or misinterpreting these legal procedures. Therefore, awareness of the forensic doctor has to be assessed. Since people's knowledge regarding forensic doctors' profiles is unknown, this study aims to assess forensic profiles' general population's knowledge.

MATERIALS AND METHODS

• Data collection:

This is a cross-sectional conducted in December 2018; the population was the people of Iraq from different provinces.

The study involved 644 participants from different provinces in Iraq. A self-administered questionnaire was used as a tool for the data collection, which was published as an online version on social media websites. Google forms tool was used to generate the online copy of the questionnaire. The authors assumed that Facebook represented the most widely used social media in Iraq and spreading the survey on other platforms may duplicate the subjects.

For that reason, most participants were young in their studying years as they are more likely to use these social media in Iraq.

Inclusion criteria: All adults above 18 years of age.

Exclusion criteria: Any medical, military, or law-specialized personnel.

• Questionnaire:

The survey involved demographic questions (age, gender, residence, educational degree, occupation, and marital status) and specific twelve questions that regard the participants' knowledge about forensic personnel duties and the source from which he/she obtained their knowledge. The Twelve Duties were taken from the Iraqi constitution and were written in the Arabic language; the Iraqi Constitution was used to determine the roles of forensic doctors in Iraq.

The questionnaire was tested for one-dimensionality with principal factor, and one factor was identified with Eigen-value 1.59.

The questionnaire was tested for

internal consistency using the Alpha Cronbach method for the twelve questions related to the forensic doctor duties and showed a value of 0.82.

Item response theory of one parameter (Rasch model) was used to evaluate the difficulty of the questions related to the latent subject trait (awareness) with difficulty parameter b ranging from -2.8 to 1.60 and the discrimination parameter of 1.121.

• Ethical Considerations:

The full consent of the subjects of the study, privacy, confidentiality, and anonymity of participants were ensured, any misleading information and representation of primary data findings in a biased way was avoided.

• Statistical Analysis:

The data were analysed using the Statistical Package of social science (SPSS) version 23. T-test, Pearson correlation, and ANOVA statistical analysis methods were implemented.

RESULTS

• Descriptive results:

• The mean age of the participants was 28 with a standard deviation of 10, the minimum age was 18, and the maximum was 83.

• 95.8% of the participants have heard about forensic medicine, and only 11% have visited the forensic medicine department. This may occur when they accompany their deceased relative.

57% of the sample are from the capital Baghdad, 8.1% from Al-Anbar, 6.1% from Karbala, 5.6% from Babil, 3.6% from Mousl, 3.3% from Al-Najaf, 2.5% from Basrah, 2.3% from Erbil, the other 11.5% were from other different provinces.

Table (1): Shows the frequencies of sociodemographic states.

		Frequency	Percent (%)
Gender	Male	214	33.2%
	Female	430	66.8%
Work	Employee	187	29%
	Free Worker	40	6.2%
	Student	305	47.4%
	Unemployed	99	15.4%
	Retired	13	2%
Marital Status	Single	416	64.6%
	Married	228	35.4%

Table (2): Shows the education level of the participants.

Academic Achievement	Frequency	Percent (%)
Primary	5	0.8%
Intermediate	13	2.0%
Secondary	149	23.1%
College	343	53.3%
Higher Education	93	14.4%
Institute	40	6.2%
Illiterate	1	0.2%
Total	644	100.0%

The mean number of questions correctly answered was 7.35, with a standard deviation of 3.

9.5% of the sample answered all the questions correctly, 30.4% answered from 9

to 11 questions, 20.5% from 7 to 8, 28% from 4 to 6, 9.4% from 1 to 3 and 2.2% answered all questions wrongly. Table 3 represents the details of all questions.

Table (3): Shows the participants' responses about the duties of the forensic doctor.

Items of forensic medicine doctor		Frequency	Percent (%)
Does the forensic doctor have to examine injured people and the cause of the injury?	no	120	18.6%
	yes	445	69.1%
	do not know	79	12.3%
Is it the duty of a forensic doctor to dissect bodies or their remains and examine the bones to identify the Identity of the deceased and explain the cause of death and answer investigators' questions?	no	9	1.4%
	yes	604	93.8%
	do not know	31	4.8%
Does he have to attend the process of opening the grave and taking the bodies or their parts to describe or dissect them to indicate the cause of death or take any other actions requested by the judge?	no	110	17.1%
	yes	346	53.7%
	do not know	188	29.2%
Does the forensic doctor have to give the technical opinion on medical issues presented to the Judicial authority?	No	50	7.8%
	Yes	395	61.3%
	do not know	199	30.9%

Does the forensic doctor have to determine the age and gender based on a request from the court or any investigative request?	No	35	5.4%
	Yes	486	75.5%
	do not know	123	19.1%
Does the forensic doctor have to investigate and inspect the site if necessary?	no	107	16.6%
	yes	332	51.6%
	do not know	205	31.8%
Does the forensic doctor have to examine the facts that are against public morality?	no	145	22.5%
	yes	310	48.1%
	do not know	189	29.4%
Does the forensic doctor have to examine blood and other secretions and state their types?	no	120	18.6%
	yes	361	56.1%
	do not know	163	25.3%
Does the forensic doctor have to examine hair and Identify its origin?	no	133	20.7%
	yes	347	53.9%
	do not know	164	25.4%
Does the forensic doctor have to analyze samples such as toxins, drugs, body secretions, fire-release residues... etc.	no	118	18.3%
	yes	401	62.3%
	do not know	125	19.4%
Does the forensic doctor have to examine Histological samples and verify their origin in all possible ways?	no	81	12.6%
	yes	345	53.6%
	do not know	218	33.8%
Does the forensic doctor have to perform DNA analysis?	no	127	19.7%
	yes	367	57%
	do not know	150	23.3%

Table (4): Shows opinions of the participant about the educational status of the forensic doctor.

		Frequency	Percent (%)
Education status of forensic doctor	Doctor	420	65.2%
	Dentist	1	0.2%
	Lawyer	12	1.9%
	All of the above duties	61	9.5%
	Others	23	3.6%
	Do not know	127	19.7%

Participants were asked regarding two extra inappropriate duties, Table 5.

Illustrate the results

		Frequency	Percent (%)
Does the forensic doctor have to do surgeries for living people in criminal cases?	No	271	42.1%
	Yes	121	18.8%
	do not know	252	39.1%
Is it the duty of a forensic doctor to give Legal provisions?	No	458	71.1%
	Yes	50	7.8%
	do not know	136	21.1%

Participants were asked about their opinion about the purpose of dissecting corpses, 13 (2.1%) claimed that it is for the death certificate, 229(36.5%) for identifying the cause of death, 345 (55%) Both above answers and 40 (6.4%) said that it is mandatory for all dead people.

Also, they were asked about their source of information about forensic medicine: 152 (23.6%) from the media, 69 (10.7%) from social media, 3 (0.5%) from the law, 17 (2.6%) because of a previous visit to a forensic Institute, 86 (13.4%) heard about it from a friend or relative and the remaining 317 (49.2%) know the information from other sources (Not disclosed).

- **Analytic results:**

Associations between variables:
1. Age and knowledge about forensic doctors: 17% of the participants above 30 answered all the questions correctly; meanwhile, only 7.2% aged 30 and below did so. The relation between the age and the number of questions correctly answered was significant (p-value of 0.031) but with a weak positive correlation (Pearson coefficient is 0.223)

2. Educational level and the knowledge about forensic doctors: There was a statistically significant difference between educational level and the number of correctly answered questions using one-way ANOVA with a p-value of 0.0001.

3. Gender and the knowledge about forensic doctors: 36% of males answered 10 to 12 questions correctly, opposite to 26.3% of females. Using T-test, there was a statistically significant association

difference between gender and the number of questions answered correctly with a p-value of 0.042.

4. Marital status and the knowledge about forensic doctors: 36% of married people answered 10 to 12 questions correctly, in opposite to 25.9% of unmarried ones, Using T-test, there was a statistically significant difference among marital status and the number of questions that were answered correctly with a p-value of 0.01.

5. Forensic department visits and the knowledge about forensic doctors: 59.2% of people who visited the forensic medicine department answered 10 to 12 questions correctly in contrast to people who didn't (25.8%), so the awareness of people who visited the department was significantly higher than those who didn't with a p-value of 0.0001.

6. The mean number of questions answered correctly among those (4.2%) who have never heard about the forensic doctor was 5.3; meanwhile, the mean of the other group was 7.4. T-test analysis shows there was a significant difference between the two groups (p-value of 0.001)

DISCUSSION

Terrorism acts of manslaughter, bombings, improvised explosives, rockets, and mortars have been common events in Iraq since 1980. Also, attacks took place in public places like cafes and markets; therefore, Forensic medicine is an important branch that would assist in solving cases and identifying victims of abuse and corpses. However, more

exceptional knowledge and awareness about this branch would be required among the general population, so this study aimed to evaluate this awareness.

The mean age of participants is 28; this mean may represent most Facebook users in Iraq (**Mazen G et al., 2015**), which was the primary way to distribute the questionnaire among participants.

Most of the participants answered many of the questions about the duties of the forensic doctor correctly. This could be due to the increase in crimes which will cause more interactions with this field.

The results showed that the percentage of knowledge regarding the questions that take into consideration examining injured people and the cause of injury was 69.1%, and this indicates that people have good awareness about this important duty of forensic doctors to determine the severity and type of injury, such as in crimes, explosions or accidents, and to assess damage and identification of injured victims.

The prevalence of knowledge about forensic doctor duties that regards the examination of blood and other secretions and for his duty regarding analysis of samples such as toxins, drugs, and fire-release residues was 56.1%, 62.3%, respectively, which are important in the cases of crime, rape, and violation, so people have relatively good awareness about the examinations or processes that occur in such cases and how the forensic doctors will determine the cause of death in each case.

About half of the patients knew about the duties regarding inspection on the site of death, visiting graves and taking parts of corpses, identification of hair, taking histological samples, and DNA analysis. Also, the majority had knowledge about the duty of dissecting bodies and remains, examining bones, explaining the cause of death, and determining age and gender; all of the answers above may be attributed to the period of the 1980s during which the catastrophes of wars and the bombings that

followed formed a phenomenon that had an impact of "mass graves" were thousands of people were buried randomly in large unmarked graves, and this taught the people more about the requirements that are needed to determine the identities of dead people and remnants.

Regarding the question of examining incidents related to sensitive matters among the public that had the tendency to be concealed in fear of shame in Iraq's conservative community, such as rape and sexual assault, about half of the participants were informed about them. The issue of public morality and fear of shame is relatively common in Iraqi society, so people may have learned about such incidents from the news and social media, which made them aware of it.

Most of the participants gained their knowledge from various resources; both the media and social media played an essential role in this (34.3%), which is similar to a study conducted in Saudi Arabia in 2013 (**Madadin MS, 2013**). Regarding the importance of that issue, a study about how watching forensic crime scene investigations on television affects people expectations reveals a positive correlation between duration and frequency of watching forensic shows in television, including crime scene investigation, and their ratings of how often various forms of forensic evidence are offered in real-life court scenarios. (**Flanagan A et al., 2017**)

Males had better knowledge than females, and this may be since males are more active in the forensic processing steps that deal with deadly incidents in our society. Also, males were more prone to death during the multiple wars that occurred in the country. In addition to the culture of the country that put more limitations to women in such activities like burials.

Results have shown that married people had better knowledge than single ones, this may be due to the mixing in cultural ideas and marriage can introduce individuals to more people in contrast to bachelors who may have had fewer

interactions, Also Married people are usually older than single people so their awareness about duties of forensic doctors will be better as this awareness increases with age as shown in the results.

Only a few participants have visited the forensic medicine institute, which may be explained by the system of forensic medicine applied in Iraq (continental) in which only certain death cases are sent to the forensic center, in contrast to the coroner system in which most of the corpses are dissected.

Overall, results showed relatively adequate knowledge and a good awareness of the importance of forensic medicine among the general population of Iraq as this was contributed to the role of forensic medicine in many Iraqi issues such as the Contingency operating base (COB) Speicher, Mass graves, and 2016 Karrada bombing. This was in contrast to a study conducted in Saudi Arabia (KSA) in 2013 (**Madadin MS, 2013**).

As for the study's limitations, an online survey was used for most of the participants. Therefore, only those who had access to the internet could have the chance to participate in the study. A Larger sample size including all age groups in future studies may aid in generalizing the results.

Conclusion

Results have shown a moderate level of knowledge and awareness about forensic medical doctors among the general population of Iraq.

Recommendations:

As a recommendation for the following studies, the sample should include more people from villages and rural areas and not just educated people who could use the internet.

2. As for future plans to raise the public's awareness, including the duties of the forensic doctors in secondary schools curriculum will make the awareness about this department flourish from a young age.

3. Medical students and doctors participation in teaching their families and friends will help as this is a part of the

responsibilities of any doctor to share in the

Abbreviations:

SPSS: statistical package for social science

ANOVA: Analysis of variance.

DNA: Deoxyribonucleic acid

COB: Contingency operating base

KSA: Kingdom of Saudi Arabia

Conflict of interest:

Nil

Funding resource:

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Ethical clearance:

The ethical consent of the research was taken from Baghdad University College of medicine ethical committee.

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الخلاصة في اللغة العربية :

وعي الناس عن الطبيب العدلي في العراق في سنة 2019

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(1) استاذ مساعد في الطب العدلي ورئيس فرع الطب العدلي في جامعة بغداد كلية الطب.
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تمت هذا الدراسة عن طريق استبيان الكتروني تم نشره على مختلف وسائل التواصل الاجتماعي في الانترنت، وتضمنت 644 مشاركا من مختلف محافظات العراق، بعد اخذ الموافقة بملئ الاستبيان وبيان الغرض منه. الغاية من الدراسة كانت تقييم وعي الناس عن دور الطبيب العدلي ووظائفه. الاستبيان تضمن معلومات اجتماعية وديموغرافية عن المشاركين وكذلك 12 سؤالا عن واجبات الطبيب العدلي المدرجة في الدستور العراقي. اوجدت الدراسة ان وعي المشاركين في البحث متوسط نسبيا عن الطبيب العدلي في العراق. معدل الاساله التي اجيببت بشكل صحيح كانت 7.3. اعلا وعي كان لوظيفة الطبيب العدلي للتشريح والتعرف على باقي الجثث لمعرفة الهوية وسبب الوفاة، واقل وعي كان عن وظيفة الطبيب المهمه في المشاركة في قضايا الاداب والاخلاق العامه.