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Review of Current Status of Forensic Medicine and Related Courses at Saudi Universities Offering Medical Programs

مراجعة الوضع الراهن للطب الشرعي والمساقات ذات الصلة في الجامعات السعودية التي تقدم برامج طبية



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Abstract

This study reviewed the status of undergraduate education in Forensic Medicine within the Kingdom of Saudi Arabia. The Forensic Medicine curricula of 65 universities were reviewed through accessing the respective university websites. There were visible inconsistencies in Forensic Medicine. The inconsistencies were in the credit hours, the year Forensic Medicine was taught and the curricula themselves. This means that the Saudi medical graduates are being imparted the education in Forensic medicine in a non-standardized manner. The study concludes that Forensic medicine curricula currently need to be standardized with respect to the subjects taught within Forensic Medicine courses and credit hours/year the subject was being taught. The study also proposes a model curriculum for teaching Forensic medicine at undergraduate level. The Saudi health Commission has already published standards for postgraduate training in Forensic medicine, this can serve as a guide for undergraduate education as well. The observations and changes recommended are envisaged to standardized undergraduate education of Forensic Medicine within the Kingdom.

Keywords: Forensic Medicine, Saudi, Undergraduate, Saudi Universities, Teaching, Quality



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المستخلص

استعرضت هذه الدراسة حالة التعليم الجامعي في الطب الشرعي داخل المملكة العربية السعودية. تم مراجعة المناهج الدراسية للطب الشرعي لـ 65 جامعة من خلال الوصول إلى مواقع الويب الخاصة بالجامعات المعنية. لوحظت وجود أوجه عدم اتساق في الطب الشرعي. تمثلت أوجه عدم الاتساق في الساعات المعتمدة والسنة التي تم فيها تدريس الطب الشرعي والمناهج الدراسية نفسها. هذا يعني أن الخريجين الطبيين السعوديين يتلقون تعليم الطب الشرعي بطريقة غير موحدة.

يستنتج البحث أن المناهج الدراسية للطب الشرعي تحتاج حاليًا إلى توحيد فيما يتعلق بالمواضيع التي يتم تدريسها ضمن مقررات الطب الشرعي والساعات المعتمدة والسنة التي يتم فيها تدريس الموضوع. كما يقترح البحث منهجًا دراسيًا نموذجيًا لتدريس الطب الشرعي على مستوى البكالوريوس.

لقد نشرت الهيئة السعودية للصحة بالفعل معايير للتدريب العالي في الطب الشرعي، ويمكن أن يكون هذا بمثابة دليل للتعليم الجامعي أيضًا. ومن المتوقع أن تؤدي الملاحظات والتغييرات الموصى بها إلى توحيد التعليم الجامعي للطب الشرعي داخل المملكة.

الكلمات المفتاحية: علوم الأدلة الجنائية، الطب الشرعي، السعودية، التعليم الجامعي، الجامعات السعودية، التدريس، الجودة

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1. Introduction

Forensic Medicine has been characterized as “a science that addresses the association and utilization of medical facts in relation to legal issues” [1]. Parikh articulated that forensic medicine involves “the application of medical and paramedical scientific expertise to specific areas of law, encompassing both civil and criminal domains” [2]. However, forensic medicine appears to hold greater significance in the application of medical knowledge when addressing legal matters pertinent to criminal cases. This encompasses various medical interpretations such as autopsy examination, wound assessment, toxicological analysis, evaluation of sexual assault victims and/or assailants, disaster victim identification, and the medical considerations involved in crime scene assessments [3]. Previously a lack of comprehensive information regarding forensic medicine within the college curriculum, has been highlighted and the necessity for enhanced education on forensic science and its specialized fields was proposed [4]. Notably, there has been a considerable decline in the utilization of autopsy instruments for instructional purposes at the undergraduate level, despite the critical role that autopsy plays in medical education [4]. A comprehensive survey revealed that forensic medicine is integrated into the curriculum of slightly more than half (59.3%) of Saudi Medical Colleges [5]. Instruction in Forensic Medicine constitutes a vital element of medical education programs. This discipline is increasingly identified as clinical forensic medicine and is recognized as a clinical subject in numerous countries. Clinical forensic medicine represents a specialized area within forensic medicine, closely linked to the judicial system of a nation. The practice of clinical forensic medicine is undergoing development, although it exhibits variations across different jurisdictions [6]. Within the medical practices of healthcare professionals, forensic med-

icine—including forensic toxicology and medical jurisprudence—remains essential. Acknowledging the significance and necessity of Forensic Medical Education, the authors advocated for the standardization of forensic medicine curricula to align with international benchmarks. On a national level, Saudi universities must synchronize their forensic medicine course curricula to achieve the requisite medical proficiency. During the 6th International Conference on Forensic Sciences & Forensic Medicine, held in Riyadh, Kingdom of Saudi Arabia, from December 5–7, 2023, the authors introduced a "Model Curriculum for Undergraduate Medical Students for Saudi Medical Universities," aiming to address this concern and propose a viable solution. The presented model can serve as a framework for medical colleges to impart forensic medicine education in a uniform manner.

Saudi medical graduates are provided with a course in forensic medicine as an integral component of their undergraduate medical education. However, notable discrepancies exist among various medical institutions within the Kingdom. In certain universities, the forensic medicine curriculum is offered in the third year, while others present it in the fourth or fifth year. Furthermore, the allocation of credit hours is inconsistent, which complicates efforts to achieve standardization for the Forensic Medicine Course across the Kingdom.

2. Methodology

The current investigation was carried out at the Division of Forensic Medicine, within the Department of Biomedical Sciences, at the College of Medicine, King Faisal University, located in Al-Ahsa, Kingdom of Saudi Arabia. The author has meticulously examined the literature and information available from the official websites of the universities to arrive at the conclusions presented.



The data collection was primarily sourced from the official websites of the universities, along with the accessible academic curriculum of the college.

A total of 65 universities were selected for review from Saudi Arabian higher education institutions based on the following established selection criteria [23]:

1. Being chartered, licensed, or accredited by the relevant Saudi Arabian higher education regulatory body.
2. Providing a minimum of three-year bachelor's degrees or postgraduate master's or doctoral degrees.
3. Offering courses predominantly in a traditional, non-distance education format.

2.1. Inclusion Criteria

Data was obtained from the official websites of medical colleges that provide undergraduate-level forensic medicine programs. Colleges that do not offer forensic medicine as distinct courses were also incorporated into this research.

Exclusion Criteria:

Institutions that do not provide a medical program were excluded from the study. Websites lacking sufficient data or failing to display forensic medicine prominently were excluded from the analysis. Universities that offer forensic-related subjects exclusively at the master's level, without corresponding undergraduate offerings, were also omitted from the study. Programs focused on computer forensics were excluded from research. Courses or programs that present forensics alongside disciplines unrelated to medical programs were excluded from the study.

2.2. Limitation of the study

Certain websites provided outdated information, indicating a lack of updates. Some universities have integrated forensic medicine with other disciplines,

complicating the establishment of a clear understanding of the review process.

3. Review of Current Status of Forensic Medicine and related course at Saudi Universities offering Medical Program.

There are 19 universities in Saudi Arabia delivering dedicated forensic medicine courses. 18 other universities deliver forensic medicine as part of another course and 9 universities do not deliver forensic medicine within their curriculum (Table 1).

3.1. Credit hours

There exists considerable disparity in the distribution of credit hours for forensic medicine courses among various universities. The credit hours allocated range from one at King Faisal University [7] to three at several other institutions. At Imam Abdulrahman bin Faisal University in Dammam, forensic medicine is presented as a three-credit course for final-year students. This course equips students with an understanding of the essential principles of forensic medicine and their application to suspected forensic cases [11]. At Al Maarefa University in Riyadh, forensic medicine is offered under the course title "Principals of Forensic Medicine" [FRNS537], with an allocation of three credit hours for fifth-year students [24]. Additionally, the college provides a course titled "Ethics and Law for Health Professions" at the fourth-year level [24].

Conversely, in the majority of institutions, two credit hours are typically designated for content delivery. Forensic medicine is integrated within the toxicology curriculum as a two-credit course for third-year students at Alfaisal University in Riyadh [Semester 5] [14]. Similarly, forensic medicine is combined with toxicology as a two-credit subject for third-year students at Jazan University [15]. The course "Forensic Medicine & Biomedical Ethics" is



Table 1- Classification of Universities predicated on the condition of dissemination of Forensic Medicine Curriculum

Category	Name of the Universities	
1. Universities with dedicated Forensic Medicine courses	King Saud University, Riyadh	Al-Baha University
	King Abdulaziz University, Jeddah	Al Maarefa University
	King Faisal University, Al-Ahsa	Alrayyan Medical College, Medina
	Imam Abdulrahman Bin Faisal University, Dammam	Dar Al Uloom University
	Qassim University, Qassim	Fahad Bin Sultan University, Tabuk
	Alfaisal University, Riyadh	At Najran University, Najran
	Jazan University, Jazan	Northern Borders University, Arar
	Princess Nora bint Abdulrahman University, Riyadh	Shaqra University, Shaqra
	Betterjee Medical College, Jeddah	University of Bisha, Bisha
		Tabuk University
2. Universities integrating Forensic Medicine into other subjects	Taif University	Imam Abdulrahman Bin Faisal University, Dammam
	Prince Sattam Bin Abdulaziz University, Alkharj	Qassim University, Qassim
	Fakeeh College for Medical Sciences, Jeddah	Princess Nora bint Abdulrahman University, Riyadh
	Ibn Sina National College for Medical Studies, Jeddah	Betterjee Medical College, Jeddah
	Sulaiman Al Rajhi University, Al-Bukayriyah	Al-Baha University
	Taif University, Taif	Al Maarefa University
	Vision Colleges for Education, Jeddah	Alrayyan Medical College, Medina
	Ummul Qura University, Mekkah	Dar Al Uloom University
	King Abdulaziz University, Jeddah	At Najran University, Najran
3. Universities with limited or no Forensic Medicine coverage	Jouf University, Sakakah	Sulaiman Al Rajhi University, Al-Bukayriyah
	Taif University	Taif University, Taif
	Prince Sattam Bin Abdulaziz University, Alkharj	Vision Colleges for Education, Jeddah
	Fakeeh College for Medical Sciences, Jeddah	Ummul Qura University, Mekkah
	Ibn Sina National College for Medical Studies, Jeddah	

available as a two-credit option at Prince Sattam Bin Abdulaziz University in Alkharj [16]. At the College of Medicine, Princess Nora bint Abdulrahman University in Riyadh, forensic medicine is administered as a two-credit course at the third-year level [17].

3.2. Curriculum Contents

There exists a degree of variability in the delivery of content. The fundamental core subjects are

substantially presented at the preclinical stage. At the College of Medicine, King Saud University in Riyadh, forensic medicine is offered as a two-credit course at the third-year level. This course encompasses the foundational principles of Forensic Medicine along with an examination of Toxicology. The primary focus is on contemporary advancements within the field of Forensic Medicine, including the management of uncertainties, mechanical injuries,



firearm injuries, burns, mechanical asphyxiation, and poisoning. Additionally, this course promotes discussions among students concerning medical ethics and legal considerations in relation to Forensic Medicine [8, 9]. Conversely, the content becomes increasingly aligned with clinical forensic medicine and its practical applications when the course is conducted at advanced levels that incorporate clinical subjects. At the Faculty of Medicine, King Abdulaziz University in Jeddah, forensic medicine is also provided as a two-credit course within the "Clinical Skills Module." This course serves as a prerequisite for students in their fifth and sixth years [10, 39]. The curriculum primarily concentrates on topics such as Identification & Mass Disaster, Death & Post-Mortem Changes, Brain Death, the Medico-Legal Significance of Wounds, Head Injuries, Firearm Injuries, Physical Injuries, Asphyxia, and Sexual Offences [47].

3. 3. Year Level

In the majority of universities, forensic medicine is typically introduced at the third-year level [King Saud University, Riyadh, Alfaisal University, Riyadh, Jazan University, Jazan, Princess Nora bint Abdulrahman University, Riyadh, Dar Al Uloom University, King Faisal University, Al-Ahsa]. The earliest introduction occurs at the second-year level at Taif University, where Forensic Medicine is offered as a two-credit hour course titled "Islamic Culture (Medical Jurisprudence)" [35]. It is worth noting that Taif University does not provide discrete courses focused solely on toxicology and forensic medicine; instead, the Department of Pharmacology imparts a segment of these subjects with the intent of educating students about toxicology and its applications, as well as forensic science and its applications [13, 46].

The Universities it is delivered at year four, fifth or sixth year.

3. 3. 1. Year 4 Level

- At Betterjee Medical College, Riyadh forensic Medicine is delivered alongside Toxicology as a three-credit course at year four level [21].
- At College of Medicine, Fahad Bin Sultan University, Tabuk forensic medicine is delivered at fourth year as two credit course [27].
- At College of Medicine, Shaqra University, Shaqra forensic medicine is delivered as two credit course at Year four level [32].
- At College of Medicine, Northern Borders University, arar forensic medicine is delivered as two credit course at Year four level.
- At Faculty of Medicine, Tabuk University, Tabuk. forensic medicine is delivered as two credit course at Year four level [37].

3.3.2. Year 5 Level

- The Clinical Sciences Department at Qassim University Qassim teaches forensic medicine as a two-credit course at the Year 5 level [12, 45].
- At Alrayyan Medical College, Medina forensic medicine and toxicology is delivered at year 5 level in semester 1 [25].
- At Albaha University the Department of Pharmacology is one of the basic sciences departments in Albaha Faculty of Medicine. It encompasses two specialties; Pharmacology, and Forensics Medicine and Toxicology [22].

3.3.3. Year 6 Level

- The forensic medicine and toxicology has been assigned two credit hours at year six level at College of Medicine, Al-Baha University [41].



Table 2 - The Condition of Credit Hour Allocation for Forensic Medicine at Prominent Saudi Institutions *

Name of the University	Dedicated Forensic Medicine Course?	Credit Hours	Year Level	Integrated into Other Subjects?	Notes
King Saud University, Riyadh	Yes	2	3	No	This course also encourages students to discuss medical ethics and law in relation to Forensic Medicine.
King Abdulaziz University, Jeddah	Yes	2	5,6	Yes	Delivered as part of the "Clinical Skills Module". It is a prerequisite for the fifth and sixth years. The course focused on Identification & Mass disaster, Death & Post mortem changes and brain death, Medico legal importance of wounds, Head Injuries, Fire Arm Injuries, Physical injuries, Asphyxia and Sexual Offences
King Faisal University, Al-Ahsa	Yes	1	3	No	One credit is specifically reserved for forensic medicine and is considered mandatory elective. Prerequisite for year 4.
Imam Abdulrahman Bin Faisal University, Dammam	Yes	3	5	Yes	The course helps students comprehend the fundamentals of forensic medicine and how to apply them to suspected forensic cases.
Qassim University, Qassim	Yes	2	5	Yes	Forensic Medicine course is longitudinal.
Taif University	No	2	2	Yes	Forensic Medicine is delivered as two credit hours course with course name as "Islamic culture (medical jurisprudence)"
Alfaisal University, Riyadh	Yes	2	3	No	Delivered in semester 5.
Jazan University, Jazan	Yes	2	3	No	
Prince Sattam Bin Abdulaziz University, Alkharj	No	2	Na	Yes	The subject "Forensic Medicine & Bio-medical Ethics" is offered as a two-credit option
Jouf University, Sakakah	No	2	Na	N/A	The detailed information is not accessible at college website.
Princess Nora bint Abdulrahman University, Riyadh	Yes	2	3	Yes	It is integrated with toxicology
Betterjee Medical College, Jeddah	Yes	3	4	Yes	Forensic Medicine is delivered alongside Toxicology
Al-Baha University	Yes	2	6	Yes	It is integrated with toxicology. Pre-requisite courses: Previous courses for the fourth and fifth year
Al Maarefa University	Yes	3	4-5	Yes	The college also give course on "Ethics and Law for Health Professions" at fourth year level
Alrayyan Medical College, Medina	Yes	Na	5	Yes	It is integrated with toxicology.



Table 2 Continued

Name of the University	Dedicated Forensic Medicine Course?	Credit Hours	Year Level	Integrated into Other Subjects?	Notes
Dar Al Uloom University	Yes	2	3	Yes	It is integrated with Clinical toxicology.
Fakeeh College for Medical Sciences, Jeddah	No	Na	4	Yes	Forensic medicine is taught as course title "Medico-Legal Sciences".
Fahad Bin Sultan University, Tabuk	Yes	2	4	No	
Ibn Sina National College for Medical Studies, Jeddah	No	2	4	Yes	The course is not mandatory, and the students can choose one course out of six options
At Najran University, Najran	Yes	2	6	Yes	It is integrated with toxicology.
Northern Borders University, Arar	Yes	2	4	No	
Shaqra University, Shaqra	Yes	2	4	No	
Sulaiman Al Rajhi University, Al-Bukayriyah	No	1	4	Yes	Forensic medicine is not given separately, however "Health Law & Health Ethics" one credit course is delivered at year four in clinical sciences department.
Taif University, Taif	No	2	Na	Yes	The department of pathology delivered forensic medicine in Pathology. The college also delivered course in "Health-care Ethics and Laws" at year three level
University of Bisha, Bisha	Yes	2	6		
Tabuk University	Yes	2	4	No	
Vision Colleges for Education, Jeddah	No	N/A		Yes	Integrated with basic sciences courses
Ummul Qura University, Makkah	No	N/A		Yes	Forensic Medicine is delivered by department of pathology

*The current status of the forensic medicine course is delineated regarding the allocated credit hours and the academic year in which the course is offered at Saudi universities that provide forensic medicine within their undergraduate medical curriculum. Unavailable data is indicated as N/A.

- At Najran University, Najran forensic medicine and toxicology is delivered as two credit course at Year six level [30].
- At College of Medicine, University of Bisha Forensic medicine is taught by Department of Pathology as two credit course delivered at year six level [36, 43].

It is distinctly apparent from the discrepancies in credit hours, curriculum content, and academic year level that a significant variance exists in forensic medicine education among medical schools in Saudi Arabia. Further study is imperative to assess the influence of course delivery across different academic years in order to elucidate the effects



Table 3- Departments providing forensic medicine teaching in Saudi Arabian Universities.

S	Name of University	Name of Department
1	King Faisal University, Al-Ahsa	Biomedical Sciences
2	Imam Abdulrahman bin Faisal University, Dammam	Pathology
3	King Saud University, Riyadh	Family and Community Medicine [20]
4	King Abdulaziz University, Jeddah	Pathology
5	Alfaisal University, Riyadh	Pathology
6	Jazan University, Jazan	Pharmacology
7	Princess Nora bint Abdulrahman University, Riyadh	Internal Medicine Division of Clinical Sciences Department
8	Qassim University	Clinical Sciences Department
9	Dar Al Uloom University	Clinical Sciences Department
10	Taibah University	Department of Pathology

of variable timing of course delivery on the student learning experience.

A notable inconsistency prevails regarding the incorporation of forensic medicine within medical curricula throughout Saudi Arabia. Certain institutions, including King Saud University in Riyadh, Alfaisal University in Riyadh, and Jazan University in Jazan, provide specialized forensic medicine courses offering two credit hours at the third-year level; conversely, others, such as Imam Abdulrahman bin Faisal University in Dammam and King Abdulaziz University in Jeddah, integrate elements of this discipline into broader courses such as Pathology. This lack of uniformity in dedicated instruction, alongside the variations in credit hours and academic year levels, raises concerns regarding the standardization and comprehensiveness of forensic medicine education nationwide.

4. Other Atypical findings

At the College of Medicine, Dar Al Uloom University in Riyadh, forensic medicine and toxicology are offered within the Clinical Medicine Science Department as a two-credit course titled "Forensic Medicine & Clinical Toxicology (FORM 321)" at the

third-year level [26]. At Fakeeh College for Medical Sciences in Jeddah, forensic medicine is taught in the fourth year under the course title "Medico-Legal Sciences." This course is designed to familiarize medical students with the fundamental facts, concepts, and scientific principles of forensic medicine essential for medical practice by imparting both theoretical and practical knowledge of the discipline while equipping students to critically analyze and interpret forensic medical and scientific evidence, including toxicological samples [28]. At Ibn Sina National College for Medical Studies in Jeddah, forensic medicine is presented as a two-credit elective course in the fourth year. This course is optional, allowing students to select one course from a total of six available options [29]. At the College of Medicine, Sulaiman Al Rajhi University in Al-Bukayriyah, forensic medicine and toxicology are not offered as distinct courses; instead, a one-credit course titled "Health Law & Health Ethics" is provided during the fourth year [33]. At Taibah University, forensic medicine is not offered as a standalone course; however, it is incorporated into the pathology curriculum. Additionally, the college offers a course on "Healthcare Ethics and Laws" at the third-year level [42]. At



Table 4 - Proposed credit hours for the delivery of Forensic medicine and related courses.

S	Subject/Course	Credit Hours
1	Forensic Medicine alone	3
2	Medical Jurisprudence	1
3	Toxicology alone	1
4	Medical Ethics	2
5	Forensic Medicine and Toxicology	4
6	Forensic Radiology	1
7	Medical Laws/Health Laws	1

Vision Colleges for Education in Jeddah, forensic medicine is taught by the Basic Sciences Department [38]. At Ummul Qura University in Makkah, forensic medicine is delivered by the Department of Pathology [40].

5. Discussion

Saudi medical graduates are educated in forensic medicine within their undergraduate medical curriculum; however, variations exist among the various medical institutions throughout the Kingdom. At certain institutions, it is delivered in the third year, while at others, it is presented in the fourth year. Additionally, the allocation of credit hours for the course varies across different institutions. These discrepancies pose significant challenges in standardizing the Forensic Medicine Course across the Kingdom.

At this juncture, it is evident that:

1. Forensic medicine is available as a one-credit course in some regions, whereas in others, it is offered as a two- or three-credit course. In certain universities, it is taught independently or integrated with toxicology. It is presented at the third-year level in some institutions and at the fourth, fifth, or sixth year in others. In some locations, it is included within the clinical department of the school of biomedical

sciences, while in others, it is housed within the departments of pathology, pharmacology, family and community medicine, and internal medicine. It is classified as a clinical discipline in some institutions and as a non-clinical discipline in others.

The author observed that there is a lack of uniformity in the teaching of forensic medicine among Saudi universities offering undergraduate medical programs. Ibrahim M. Al-Anazi et al. (2022) also concluded that further research is necessary to develop an appropriate curriculum, standardize forensic medicine education, and evaluate the quality of these programs. The author assessed the courses provided at various colleges and determined that there is a pressing need for the standardization of the forensic medicine curriculum across Saudi universities offering undergraduate medical education.

To thoroughly implement the fundamental undergraduate forensic medicine curriculum, a committed allocation of three credit hours solely for forensic medicine is vital. An institution intending to integrate courses in toxicology alongside forensic medicine should augment the credit hour allocation to four. Courses encompassing toxicology, medical ethics, medical jurisprudence, forensic radiology, medical statutes, and health regulations, among other disciplines, may be provided independently from the



Table 5 - Proposed contents delivered at Level 1: Basic Core Contents

S	Main Learning Objective	Concepts Delivered	Time allocated
1	Introduction	Brainstorming and psychological preparation of student to take the course and developing interest in subject	One Contact Hour /One Session
2	Pathophysiology of Death*	Understanding of Scenario around Dying person and management of dying patients in casualty immediately after death.	Two Contact Hours/ Two separate Sessions of one hour each
3	Forensic Identification	Students should be able to identify human beings and can differentiate human remains from other sources brought to hospital	Two Contact Hours/ Two separate Sessions of one hour each
4	Pathophysiology of Wounds/ Injuries*	Focus on identification of various types of injuries in clinical practices and also to differentiate between simple and dangerous injuries	Two Contact Hours/ Two separate Sessions of one hour each
5	Head Injuries	Mainly focus on Medicolegal Management of Head Injury patients visiting hospital	One Contact Hour
6	Gunshot and explosion deaths	Mainly focus on Medicolegal Management of Gunshot and explosive Injury patients visiting hospital	One Contact Hour
7	Asphyxia	Focused on Asphyxia Deaths	One Contact Hour
8	Death by drowning	Focus on death due to drowning and whether it is fresh water or sea water.	One Contact Hour
9	Hyperthermia and hypothermia: Effects of heat and cold	Mainly focus on Medicolegal Management of burn patients visiting hospital	Two Contact Hours
10	Sexual offences, Criminal Abortion,	Mainly focus on Medicolegal Management of Sexual offence cases visiting hospital including examination victims.	One Contact Hour
11	Child Abuse and Neglect	Overall Child Abuse and neglect specially cases which are under reported like a spy.	One Contact Hour

forensic medicine course, permitting discrete credit awards (Table 4). Recommended credit hours for the dissemination of material in various forensic and associated fields have been also been delineated (Table 4).

This author proposes curriculum content for the forensic medicine syllabus, in conjunction with the specified number of hours assigned to the course (Table 5). To efficaciously execute the requisite undergraduate forensic medicine curriculum, it is imperative that three credit hours be devoted exclusively to forensic medicine. Should any institution

aspire to offer courses in toxicology concomitantly with forensic medicine, the credit hour allocation should be augmented to four.

It is noteworthy that a uniform Forensic Medicine Syllabus for the Saudi Board in Forensic Medicine Education (FMT) has been previously instituted by the Saudi Commission of Health Specialties (SCHS).

Courses offered by the Saudi Board encompass forensic medicine, toxicology and forensic chemistry, forensic radiology, pathology, Islamic Shari'ah and forensic ethics, basic and applied human anatomy, statistical analysis and the foundations



of scientific research, as well as forensic science. The reference document provides comprehensive guidelines for all aspects of learning and assessment. As it functions as a benchmark document, the academic institutions in the Kingdom may employ it as their principal reference for harmonizing the instruction of forensic medicine.

6. Conclusion

We ascertain that Saudi medical graduates face constrained access to undergraduate forensic medicine education due to a lack of consistency. There are noticeable variances in the Forensic Medicine Curriculum presented to Saudi Medical Graduates at the undergraduate level. The author evaluated the courses provided by various institutions and determined that there is a pressing need for the standardization of the forensic medicine curriculum across Saudi universities that offer an undergraduate medical program. Certain universities integrate their undergraduate forensic medical curriculum with other subjects, or they fail to offer forensic medicine courses as standalone offerings. There exists no dedicated division or department solely responsible for the instruction of forensic medicine; in some instances, it is taught by other departments such as Pathology, Pharmacology, etc., which further undermines the quality of forensic medicine education at these institutions.

Some Suggestion to improve that Quality of Forensic Medicine Education at Saudi Universities

1. Undergraduate programs in forensic medicine ought to be made available at all universities across Saudi Arabia.
2. As recommended by Sabri I, [43], it is also prudent to provide internship students in Clinical Forensic Medicine with a 15-day training period within the forensic medicine department, division, or unit, focusing on cases involving injuries, age determination, sexual offenses, and various M.L. issues, as well as the analysis of blood and seminal stains, incidents of burns, poisoning, post-mortem examinations, and intoxication assessments.
3. To enhance the relevance of forensic medicine and toxicology for medical graduates and facilitate their application in everyday clinical practices, it is advisable to synchronize these subjects with clinical disciplines.
4. It is recommended that the curriculum content be customized for each student in alignment with the suggestions provided by the institution, by standardizing the course assessment process in accordance with established norms and methodologies developed with the guidance of a medical education expert. In instances where credit hours may restrict the delivery of a comprehensive curriculum,
5. It is recommended to eliminate curriculum components that are more relevant to post-graduate studies and not directly applicable to the undergraduate forensic medicine curriculum.
6. It is proposed that the educational institution allocate credit hours while considering the specific subject matter to be addressed.
7. It is advisable to assign credit hours in accordance with the guidelines outlined in Table 4, encompassing three credits in forensic medicine and four credits in toxicology combined.
8. Whenever feasible and applicable, it is recommended to arrange field trips and hands-on experiences. Assignments such as "Death Certificate, Injury Certificate, Age



Estimation, Examination of Cases Involving Sexual Offense Victims and Perpetrators, and Post-Mortem Reports, etc." may be provided to students during classroom instruction or tutorials in the absence of field excursions.

9. It is recommended that a dedicated, adequately staffed division, department, or unit of forensic medicine be established within the basic science or clinical science faculties, with the objective of delivering content related to toxicology, medical ethics, medical jurisprudence, forensic psychology, forensic radiology, forensic chemistry, forensic dentistry, and forensic medicine research.
10. We advocate for the implementation of a standardized curriculum within the medical colleges of Saudi universities.

Conflict of interest

The authors declare no conflicts of interest.

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