

# Forensic Science Trend, Current and Challenges in Ethiopia: A Narrative Review Evidence from Recent Literature and Policies

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## Abstract

Forensic science is a science of associating people, places and things involved in criminal activities for criminal proceedings. The development of forensic science across the world is less promising when compared with other sciences. Even though, there is strong interest and high demand in the provision of justice for criminal courts. The main aim of this narrative review is to identify the prime forensic science limitation and gaps from the previous studies to speculate ways of improvements in forensic service. In addition to this, the paper highlights forensic science laboratory standards, accreditation and policy related aspects and progresses for the betterment of future forensic service. It also tried to explore ways of improving forensic science in Ethiopia from the existing problem and current experience. Among the problems in Ethiopian forensic science; under stressing the significance of forensic science by administrative government, lack of awareness among forensic officers, absence of independent national forensic institute and shortage of expertise. The author strongly recommends that Ethiopian government should awake to design a national policy of forensic science and independent national forensic laboratory that will delivery national investigation and training in the arena of forensic science. Therefore, a policy strategy frames a direction for the development of forensic science through governing service provision, quality assurance, accreditation, related research and higher education.

**Keywords:** Forensic science • Investigation • Laboratory standards • National policy • Quality assurance

## Introduction

Forensic science is the science of associating people, places, and things involved in criminal activities; these scientific disciplines assist in investigating and adjudicating criminal and civil cases [1]. Forensic science has its own governing fundamental principles, ethics and practices that include duties and responsibility of seeking truth which in turn adds value to the life of society through bringing justice and fairness [2].

Physical evidence that is collected from the victim, suspect and the crime scene are important imputes of forensic science examination. In the scene of the crime there is something which can serve as a clue. Locard principle asserts "every contact leaves its own trace evidence." Whenever two objects come in contact, they exchange tiny trace evidence that is incredibly unique and individual, and the law of individuality substantiates the Locard principle. "Everything in this universe is unique neither nature has repeated itself nor man does. "Evidence never lies only man does" standing from this connotation,

the acceptance and persuasive ability of forensic evidence across the world from day to day became widespread with support of scientific research and technology [3].

Furthermore, personal testimonies which have been used for centuries were found to have relative drawbacks compared to physical evidence. In which physical evidence has a discriminating power in identification of the distinct suspect. This can be achieved, if only the intention and personnel manipulation of the forensic evidence is targeted toward seeking the truth. In addition to this, for the reliability and admissibility of the forensic evidence "beyond a reasonable doubt" the role of physical evidence is undoubtful unlike personal testimonies [4]. However, the incorporation of physical evidence with personal testimonies in criminal proceedings was universally recognized and recommended by legal experts.

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**Received:** 06 January, 2023, Manuscript No. JFR-23-85669; **Editor assigned:** 09 January, 2023, PreQC No. JFR-23-85669 (PQ); **Reviewed:** 24 January, 2023, QC No. JFR-23-85669; **Revised:** 15 March, 2023, Manuscript No. JFR-23-85669 (R); **Published:** 23 March, 2023, DOI: 10.37421/2157-7145.2023.13.547

## Literature Review

### Forensic science identified gaps and policy related aspects

According to this review showed policy related aspects of forensic science in Ghana legislation, found a limitation of governance, service provision, quality assurance, accreditation, education, and research [5-8]. They have highlighted the importance of framing a strategic national policy through adopting the best practice of other countries in the field of forensic science. To compliment with another study also hypothesized that level of literacy, interest and occupation, awareness of police investigative methods and the experience of police operations will predict whether a person had knowledge about forensic science or was aware of its application in crime-solving [9,10]. Conferring to Shunmuga Sundaram and his colleagues described that most of the study respondents <50% were not aware of the use of forensic service in the criminal investigations in Ethiopia. Finally, reconstructed as education is an important pioneer of knowledge acquisition and it should be amended to improve advocacy and awareness related to forensic science. In addition to this, legal framework, governance, and administration are some of the pillar ground works for efficient and effective forensic science delivery. Nevertheless, the degree of forensic science considered being coherent, consistent, and unified discipline will ascertain how forensic science develops [11-13].

Thus, this article has consolidated that forensic science in the academy is essential in order to establish a virtuous circle that will sustain research in the discipline and address wider policy and socio-economic questions that persistently trouble the field [14]. In other perspective, the rigor of these findings asserts that; technologies are highly developed to the level of nanotech and infinite figures of scientific disciplines. Thus, it creates diversity and fragmentation of forensic science. Hence, it is very necessary to shift from “means to purpose” of current forensic science challenges. And this will help to refocus forensic science on research and development relying on shared principles and purposes. Above all surge of globalization from coast to coast, development of technology, dissemination speed of information, execution of crime at a trans boundary and entry and exit nationally has become widespread and urges countering of such a crime.

Different studies have shown forensic science is not yet widely established as an independent curriculum and it has been called for over the past centuries, as a “distinctive tertiary education in forensic science” [15]. Also lack of skill about basics of forensic science theory and professional disciplines are the basic obstacle of the service delivery. This study highly encourages mentoring of professionals to join the fields and provides the chance of acquiring the skills and knowledge that can infuse “a culture of lifelong learning and integrity in practice.” This author calls for a larger scientific community in advocating and supporting forensic colleagues for financial support and research grants [16]. Another supportive finding shows “effective partnerships between lawyers and forensic scientists are indispensable for integrating scientific evidence into criminal proceedings and must be renegotiated between individual practitioners on an on-going basis”.

### Necessity of establishing forensic laboratory and accreditation

As study suggests forensic science have multiplied almost four-fold since the early 1970's due to abuse of controlled drugs that necessitate for the identification of such substances in the society. Forensic laboratories serve as a center of evidence investigation for justice with the grand drive of providing justice for the suspects and civilians. Wickenheiser, Ray described as “It is a worthwhile to reimagine forensic science service” with regards to compromised quality and cost. This study concludes with a timely, technologically competitive instrument and effective analysis within a brief time will optimize the value of forensic laboratory service [17].

The work of ISO Technical Committee TC272 program was intended to foster forensic science development regarding standard and accreditation. As per this study Ethiopia was not either a member of participating or observing committee of ISO Technical Committee TC272. And the establishment of independent forensic science accreditation can produce qualified forensic experts and increase the level quality services. This ultimate reason urges the forensic facilities to endorse forensic standards and accreditation. Accordingly, Samuels, stated the limitation of forensic science accreditation globally. For instance, few authorities are left unaccredited and service consumers are forced to get service from unaccredited forensic specialists [18]. Studies have shown the fundamental necessity of forensic accreditation and standards tracks a benchmark for quality and risk management for forensic science which is acceptable and achievable.

Olckers and co-authors, indicated the ultimate purpose of forensic standards is not merely for the provider preferably for the service consumers. In addition to these operating procedures as per the standards will take the forensic specialist to enhance their reputation for technical excelling. The established forensic science should be regulated and accredited with professionals. Unless and otherwise it lacks accountability and pursuit of justice become compromised. To summarize, the development of forensic science highly demands international cooperation between specialist and expert witness even before the establishment of forensic institution. Here after, strengthening forensic science examination and use of forensic knowledge and skills for resolving criminal court is the only way forward.

### Status of forensic science in Ethiopia

The status of forensic science overtime in many countries is different as it depends on their historical development perspective of politics, economy, and social structure. In Ethiopia there is indefinite literature that indicate where, when and how forensic science service was started. It was agreed that several types of traditional criminal investigation methods were used. One of these investigation methods was called Lebashay. In this method, the society and local administrators involved in the investigation use different torture activities to reveal and identify the truth, which is unreasonable and traditional application of forensic science in the investigation process. It was during the time of Emperor Haile Selassie that the first Forensic science laboratory was established. Forensic Investigation Directorate had been established in 1947 by the assistance of the German federal

government, formerly "ABADINA" police college, and the present Ethiopian police university college. Its establishment had been started with two units with fingerprint and police photograph laboratories. After many years, the division became expanded into six labs which serve Ethiopian people for many years without showing any expansion in their organizational structure, technology, and professional capacity. Later, forensic investigation directorate incorporated different laboratories like document examination, photograph, bio-chemical, arson, ballistics, explosive, fingerprint, trace/tools mark and cybercrime examination.

## Discussion

And recently they incorporated forensic DNA and serology in 2021/2022. While Ethiopian federal police university is the only police training and education university in Ethiopia dedicated to produce police officers in different fields in the country. Also work with research, consultation, community engagement and cooperation with different institutions in police indoctrination.

### Existing problems and future concern of forensic science in Ethiopia

Sourcing different review Ethiopia do not have higher education apart from Ethiopian police university either public or private that delivers a forensic science as one independent science discipline (Only forensic chemistry and toxicology with undergraduate program was opened in Arba minch university under the department of chemistry in 2017). Furthermore, higher education providing social science like departments of law and other social studies did not incorporate forensic science as a supportive course especially in law science. This is typical indication for the lack of attention for the discipline and it has been regarded as unexplored science by Ethiopian ministry of education and general attorney. Ethiopian forensic science is under the administration of Ethiopian federal police which has its own pros and cons for the development and independence of forensic science for justice delivery. Mainly institute of forensic investigation which is directed under general attorney in most countries was found to be very encouraging for the autonomy as well as for the advancement as independent institute at a state level. Whereas, Ethiopia has no independent and structured forensic science institute nationally that guides and guarantee certificate of court testimonies and other short- and long-term training for the forensic experts. Also Ethiopia have no a closer cooperation between the various universities and law schools in terms of curricula development, teaching methods and research.

Finally, judges and public prosecutors were not well cognizant concerning forensic science evidence and its reliability for court testimonies. Most of these judges and public prosecutors have no clear knowledge on the role of forensic science evidence in the criminal justice system. Their knowledge of forensic science evidence is dependent on their personal knowledge of reading materials, fiction, and movies.

## Conclusion

This narrative review was done with the aim of identifying the main limitation of forensic science from previous studies and has found several reconstruct of evidence from an unfamiliar perspective. Different reviews recognized policy related aspects

of forensic science showing gaps in governance, service provision, quality assurance, accreditation, education, and research. Most essentially framing forensic science into national policy strategy as a primary means of prevailing justice for a society and preventing crime using different scientific methods and technology is found to be a fundamental. Following this, ensuring forensic science laboratories that are operating with appropriate standards and reaching out across the continent through networks will have a far reaching effect. An important recommendation is to improve forensic science for the creation of a policy strategy which frames a direction for the development of forensic science. This could be achieved by solving existing gaps in the skills and expertise of forensic specialists through providing continuous and updated training. Moreover, other governmental and nongovernmental organizations and various public associations should be involved to uplift all the pitfalls of the forensic science service. Additionally, international cooperation in the field of conducting forensic examinations, accreditation of professionals, associations and maintaining standards that reproduce competency, accountability, and spirit of competition for the advancement of the sector is mandatory. To conclude with, Ethiopian government should awake to design a national policy of forensic science and independent national forensic laboratory that will delivery national training and investigation in the arena of forensic science.

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**How to cite this article:** Geleta, Segni Nemomsa, Gesesew Kibr and Muluneh Kidane. "Forensic Science Trend, Current and Challenges in Ethiopia: A Narrative Review Evidence from Recent Literature and Policies." *J Forensic Res* 14 (2023): 547.