Forensic Science

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Author Note

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Forensic science is an essential study in the field of criminal justice, and employs the aspects of physical, natural and social sciences testing biological and physical evidence to develop facts concerning a case. Crime scene investigation requires expertise and experience. Investigations on a crime scene involve the application of logic. Importantly, forensic science also employs the use of information and technology and is considered as the best channel to develop reliable, precise and accurate details about a crime in contrast to testimonies and eyewitnesses. However, there are controversial legal, ethical, and social issues that affect the field of forensic science.

Legal Issues

Forensic science functions in the context of the legal framework. Its purpose is to guide the criminal investigators to present the court with accurate information concerning what transpired at a crime scene. However, forensic science is faced with various legal issues that hinder the implementation of the generated evidence. One of them is search and seizure. A court ruling may dismiss the forensic evidence if the due processes were not followed during the evidence collection stage (Dolf, 2013). For instance, if the investigating team uses unlawful searches on victim and suspect's body, the evidence is dismissed regardless of its accuracy levels. Additionally, there exist regulations on the correct procedure to collect the evidence samples (Oliva & Beety, 2017). Also, due process should be followed while dealing with the cases that require the examination of DNA samples, blood test, and tattoo scanning. If a court proceeding requires evidence from the aforementioned sources, the investigators need to secure a court order which is a lengthy process. For example, in the case of Frye vs. the United States, the defendant presented the evidence of an expert system. The test examined the systolic blood pressure with an argument that the pressure is influenced by the impulses of the nervous system. The court denied this evidence on the basis that the due process was not followed in the examination procedures. Additionally, the court presented that the evidence collection procedure did not meet the scientific principles.

Secondly, the chain of custody is another legal issue faced in the field of forensic science. From the legal point of view, it is important to demonstrate continuity when obtaining the custody of samples to the time when they are tested. In simple terms, the final evidence has to show an unbroken chain from seizure to the analysis time. If there is no sufficient proof to show that the tested sample matches the seized one, the provided evidence is considered irrelevant.

DNA Testing in Forensic Science

The existence of DNA analysis has revolutionized the culture of forensic science for good. Everyone has a unique DNA; this makes it easier for investigators to determine the actual perpetrator. Before the emergence of the DNA analysis, the investigators used to rely on eyewitnesses' testimonies that were inaccurate. Notably, eyewitnesses' misidentification is one of the most frequent reasons of wrong convictions (Kaplan & Puracal, 2018).

Wrongful Conviction

The aspect of wrongful conviction occurs when the investigation is conducted inaccurately, thus affecting the criminal justice systems negatively. Most of the high-profile cases end up in wrong conviction which portrays failure of criminal justice processes. Additionally, wrongful conviction dismantles the role of justice systems to minimize the number of crimes in the society as innocent people are imprisoned, while criminals walk free and probably continue committing other crimes (Zakirova, 2018).

Strengths of Forensic Technology

The use of biometrics in combination with forensics has allowed identification of criminals' fingerprints at crime scenes and objects within the vicinity. Also, most road accidents are caused by reckless driving attributed to alcohol consumption. With the help of forensic analysis, one can determine the vehicle condition and its speed as well as the level of alcohol content in the body fluids. This technology can, therefore, help pinpoint the main cause of an accident.

Weaknesses of Forensic Technology

The DNA data collected from crime scenes and the convicted criminals are preserved in Combined DNA Index System. Forensic scientists, other individuals and police allowed to access the system may see DNA information that may be sensitive which results in the breaching of privacy rights (Bowers, 2014). Alternatively, the confidential information may be leaked in case the system gets compromised. In addition, it is expensive and time-consuming. The results of an analysis may take a lot of time. Without that critical information, criminals often walk free due to the lack of evidence (Bowers, 2014).

Application of Forensic Technology

Forensic technology is being widely used. Notable examples are the forensic pathology, forensic anthropology and crime scene investigations (Bird, Agg, Barnett, & Smith, 2007).

Forensic pathology is a field concerned with determining the course of the death of a victim. The technology was first tested by a James Marsh in 1832. Summoned by the prosecution, he was to give his opinion as a chemist in the murder trial where the defendant John Bodle had been accused of killing his grandfather using coffee laced with arsenic. The first successful prosecution led to the continued application. Currently, pathologists also perform autopsies to verify why and how a victim passed on.

Forensic anthropology is applicable in situations where decomposition of a human has been severe. Anthropologists' role is to study the skeleton of the human to find out the identity of the individual and unearth crime evidence. In its first application, forensic anthropology was used on the trial of John Toms in 1784 in Lancaster (Verheggen et al., 2017). This field has been used widely in the modern world in securing of fingerprints, hair, and fiber at the crime scene to be later used in court as evidence.

Conclusion

Forensic technology is a wide field which cuts across microchemistry, anthropology, and criminalistics just to mention a few. The legal issues include search and seizure that advocates for the use of lawful procedure when collecting the forensic evidence as well as a properly conducted collection and analysis of samples. The ethical issues are mostly related to the ethical conduct of forensic professionals. Notably, DNA testing is the major discipline in the field of forensic science. DNA facilitates the criminal justice system's efforts to determine the actual perpetrators.

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