



Role Of Crime Laboratories: Scope And Prospective In Criminal Investigation - Survey Based Analysis

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Received: 16.05.2022, Revised: 09.06.2022, Accepted: 14.06.2022

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Abstract: Forensic Science is a discipline focused on gathering and analyzing evidences related to crime. It is carried out in a laboratory to provide unbiased report to the investigating agencies and to the judiciary. Forensic investigators collect genetic and non-genetic proof usually encountered in criminal cases. They do a careful analysis and prepare a report that aids the agencies in investigation. A Forensic Science Laboratory is a facility that carries out analytical work related to crime scenes. It works by analyzing the various types of evidential material found during a crime scene. This has been executed from the information gained from various already published research papers, conference proceedings and data available on the internet. The data is also collected from the survey conducted with the help of structured questions which have been asked in Google form online questionnaires on the subject matter.

Keywords: Forensic Science, Crime Laboratories, Status, Present Need, Survey based analysis

Introduction

Main objective of Forensic Science is to provide an unbiased report to the agencies investigating crimes. The role of a forensic scientist is to analyze various kinds of evidential material found at a crime scene. This laboratory uses state-of-the-art equipment and procedures to carry out analytical work related to any criminal case. These laboratories are specialized in handling the analysis of evidential material. They can be used to determine the type of material that was found during a crime scene. The applications of scientific inquiry to the investigation of crimes involve the examination of physical specimens, which are often referred to as evidence. Technology can be seen as a vital conduit for bringing technical findings and insights into research. It's intriguing to look at

the relationship between technology and forensic science from such a broad and road standpoint.

Review of Literature

Role of crime laboratories and their importance in criminal investigation is given by some researches and scientist. The expression "Crime laboratories" deals with the different aspects of crime investigation of physical evidence from crime scene which help in investigation of cases (Hawkin, 2016). In forensic scientific disciplines, procedures, methodologies and published substances are all demonstrated through crime laboratories. A few specialties test are purely laboratory-based, such as DNA analysis, rape, blood test or death related test, content while others rely on professional pattern interpretation like handwriting pattern fingerprinting and foot marks etc. Scientists' competence and investigation skills were



required for several occupations (such as Apothecary, Pharmacists or biologists). Scientists, as well as police or law enforcement officer collect evidences and facts and deposit the same in the laboratories for further results. Laboratories plays important role in investigation of investigation (Rathod, 2018).

Objectives

1. To elaborate the role of forensic laboratories in criminal investigation.
2. To know the need of technology in process of investigation.
3. To collect and analyse the data from public in connection with the need and awareness regarding crime labs.

Hypothesis

H0: There is no need of Criminal laboratories in crime investigation for quick and transparent disposal of cases.

H1: There is need of Criminal laboratories in crime investigation for quick and transparent disposal of cases.

Research Methodology

The collection of data through survey was conducted from September 2021 to March 2022 by using a questionnaire containing 21 questions through Google forms. The primary and secondary data has been used to frame and defend hypothesis. Total number of respondents was 315 out of which 7 were outliers (315-7=308), which were excluded from total number. The survey was carried out through an online questionnaire. The responses were then analyzed and interpreted using SPSS software.

Data Analysis

Data was analyzed and interpreted on the basis of hypotheses taken and data retrieved from the respondents. The questions asked 1. Crime labs

can save time and lengthy process of criminal trials (Table 1)

Table 1: Crime labs can save time and lengthy process of criminal trials?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	277	89.9	89.9	89.9
No	17	5.5	5.5	95.5
Can't Say	14	4.5	4.5	100.0
Total	308	100.0	100.0	

In response to the above question two hundred and seventy seven agreed that crime labs can provide good assistance and can save time & lengthy process in criminal investigations, while seventeen disagreed and fourteen said can't say out of 308 respondents. Lab testing can be included as a part of every investigation so that it will take less time in total procedure of trials.

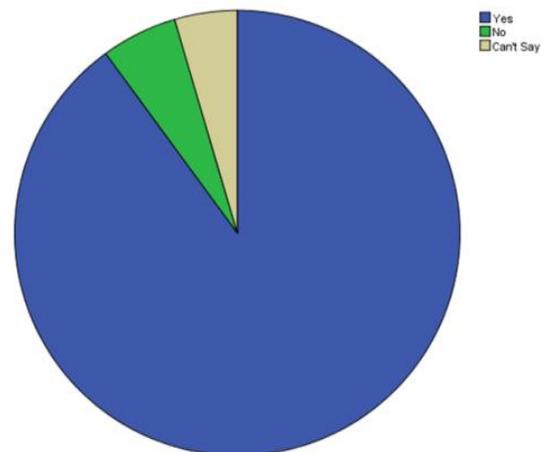


Figure 1: Crime labs can save time and lengthy process of criminal trials?



Table 2: Chi-Square Test

	Observed N	Expected N	Residual
Yes	277	102.7	174.3
No	17	102.7	-85.7
Can't Say	14	102.7	-88.7
Total	308		

Table 3: Test Statistics

	Crime labs can save time and lengthy process of criminal trials?
Chi-Square	444.084 ^a
Df	2
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 102.7.

A chi-square (χ^2) statistic is a measure of the difference between the observed and expected frequencies of the outcomes of a set of events or variables. Chi-square is useful for analyzing such differences in categorical variables, especially those nominal in nature.

When another question was asked from the persons of Targeted Group, in relation with the research, Do you think that Forensic Science Labs are inadequate in number in India (Table 4)

Table 4: Do you think that Forensic Science Labs are inadequate in number in India?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	156	50.6	50.6	50.6
No	125	40.6	40.6	91.2
Can't Say	27	8.8	8.8	100.0
Total	308	100.0	100.0	

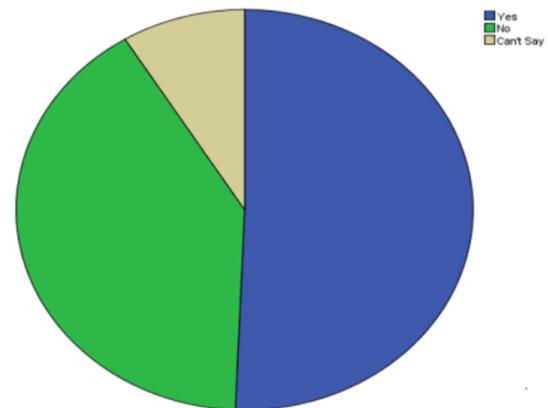


Figure 2: Do you think that Forensic Science Labs are inadequate in number in India?

In response to the above question one hundred and fifty six agreed that number of forensic science labs are less and ill-equipped in India, while one hundred and twenty five disagreed and twenty seven said can't say out of 308 respondents.

Table 5: Chi Square

	Observed N	Expected N	Residual
Yes	156	102.7	53.3
No	125	102.7	22.3
Can't Say	27	102.7	-75.7
Total	308		

Table 6: Test Statistics

	Do you think that Forensic Science Labs are inadequate in number in India?
Chi-Square	88.331 ^a
df	2
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 102.7.



A chi-square test is a statistical test used to compare observed results with expected results. The purpose of this test is to determine if a difference between observed data and expected data is due to chance, or if it is due to a relationship between the variables you are studying.

When another question was asked from the persons of Targeted Group, in relation with the research, the answer was as given below:

Table 7: Results generated from crime laboratories from investigation are good piece of evidence in process of criminal trials?

	Frequency.	Percent.	Valid Percent.	Cumulative Percent.
Valid Yes	178	57.8	57.8	57.8
No	55	17.9	17.9	75.6
Can't Say	75	24.4	24.4	100.0
Total	308	100.0	100.0	

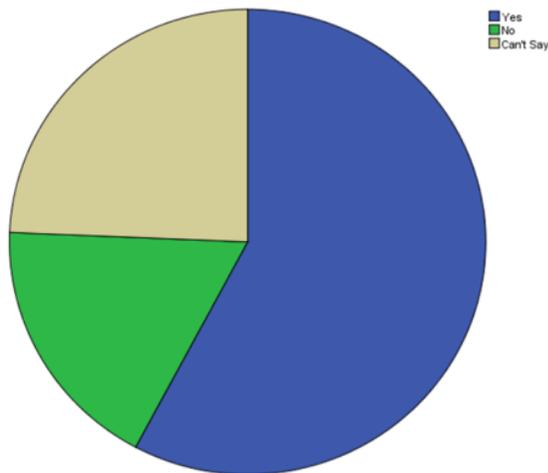


Figure 3: Results generated from crime laboratories from investigation are good piece of evidence in process of criminal trials?

In response to the above question one hundred and seventy-eight agreed that the evidence generated from the crime laboratories are good

piece of evidence which can support in process of criminal trials, while fifty five disagreed and seventy five said can't say out of 308 respondents.

Table 8: Chi Square

	Observed N	Expected N	Residual
Yes	178	102.7	75.3
No	55	102.7	-47.7
Can't Say	75	102.7	-27.7
Total	308		

Table 9: Test Statistics

	Results generated from crime laboratories from investigation are good piece of evidence in process of criminal trials?
Chi-Square	84.864 ^a
Df	2
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 102.7.

Hence, Null Hypothesis is rejected.

The outcome resembles that appropriate management of crime labs is needed in India to have fast and transparent investigation in the process of criminal trials. There should be mandatory guidelines in this regard and the government should also look into adding some strict provision

Conclusions

The crime scene must be preserved as part of the evidence collection process. It is used by experts to keep the items uncontaminated until they are recorded and analyzed. Crime scene investigations and forensic science can be utilized to make the difference between a successful case and a cold case. It is high time



that forensic science laboratories and law enforcement agencies are equipped with the necessary equipment and funds to carry out their duties successfully. Only then will the future of crime scene investigation and forensic science be attainable.

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