

Awareness of Forensic Odontology & Child Abuse Among lawyers of Srinagar, India

*Dr.Saima Sultan

MDS Pedodontics & Preventive Dentistry Corresponding author: Dr.Saima Sultan
Corresponding Author: Dr. Saima Sultan

Abstract: Forensic Odontology nowadays has become a developing science and is of great importance to society. It is important that Legal professionals should have a proper knowledge of forensics as the need has increased greatly over the last decades due to the unprecedented demand from the criminal justice.

Materials and Methods: Data was collected based on questionnaire survey among qualified legal professionals related to their awareness of forensic odontology & child abuse.

Results: A total number of 250 legal professionals in Srinagar responded to the questionnaire. Results showed that there was a less knowledge regarding forensic odontology among legal professionals in Srinagar.

Conclusion: It was concluded that majority of lawyers in Srinagar, Kashmir (India), did not have enough knowledge and awareness regarding child abuse and forensic odontology. Each legal professionals has a responsibility to understand the forensic implications associated with the practice of his profession.

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I. Introduction

Child abuse is a worldwide public health problem. It is a vindictive and terrible occurrence and a serious breach of a child's rights to health and protection.¹ Child abuse constitutes all forms of physical and emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity, in the context of a relationship of responsibility, trust or power.² Although the scope of forensic odontology is well established in the dental profession, its practical application also lies largely in the hands of legal professionals, and their knowledge about identification of child abuse and interaction with dentist is crucial in its optimal application in legal issues.³ Forensic odontology in India started way back in 1193 when Raja of Kanauj "Jai Chand" was identified by his artificial tooth after he was murdered in battle of Chandawi. Afterwards in modern India there were number of important cases which were solved with the help of forensic odontologists such as assassination of former Prime Minister Mr. Rajiv Gandhi who was later identified from his dentition and in 2012 Delhi gang rape case was solved by renowned forensic odontologist, Dr Ashith B Acharya, with the help of bite mark analysis.⁴

Forensic odontology comprises number of areas like human identification in air traffic accidents, industrial accidents, natural disasters, age determination, gender and ethnic origin, bite marks analysis particularly in case of child abuse and rape victims.⁵ It is quite imperative for lawyers to have the appropriate knowledge about cases of child abuse so that they are able to handle such cases in right direction to help victims to get justice in court of law. Thus this present study was aimed to understand the level of awareness of forensic odontology and child abuse among lawyers in Srinagar, India.

II. Materials And Methods

A cross-sectional study was conducted among 250 legal professionals in Srinagar, Kashmir (India). A questionnaire based study was conducted among purely practicing lawyers of Srinagar, Kashmir (India). Those practitioners, who had completed their law graduation and willing to participate, were included in the study. The modified **Selvajothi P et al.**⁶ questionnaire was used that included two sections. Permission for using questionnaire from corresponding author was obtained. The first section of questionnaire included demographic data of subjects such as age, gender and experience of practice. The second section of the questionnaire included 18 questions that enquired information regarding knowledge about the identification of child abuse, estimation of dental age, individual identification, bite marks and lip marks knowledge, were obtained from the respondents. The questionnaires were personally given to the study subjects and the duly filled questionnaires were collected back from them the next day so that they get sufficient time to fill the same. Present study was conducted for a period of one month. The data hence obtained was analysed by descriptive statistics.

III. Results

A total of 250 lawyers of high and lower court of Srinagar city participated in the study; a 100% response was obtained. The study group comprised of lawyers in the age group between 30-70 years. Legal counselors under 50 years of age involved 70%, and more than 50 years of age represented 30%. Males comprised of 65% and females 35% in the present study as shown in Figure 1. Depending on the experience in the specific field of law, 60% of the lawyers had experience of less than 20 years, and 40% had experience of more than 20 years. Out of the total subjects, 30% were civil practitioners, 20% were criminal practitioners and 50% handled both civil and criminal cases as shown in figure 2. Lawyers aged above 50 years of age had more knowledge regarding forensic odontology as a part of forensic medicine, handled such cases, and understood enamel of the tooth as the hardest part of the body, bite mark analysis, lip print analysis and regarding forensic dentistry having a vital role in examining child abuse cases when compared with those lawyers aged less than 50 years. Among the lawyers below 50 years of age, few of them were aware of rugae analysis. Regarding handling of any child abuse related case during their career till now no lawyer had handled such cases that too physical abuse/violence case. Regarding the knowledge regarding physical findings from the sexually abused female/male child, no lawyer responded positively. Most of the senior lawyers agreed that Forensic dentistry plays a vital role in examining child abuse cases. However, no lawyer could give satisfactory response with reference to differentiating between animal bite & human bite. Lawyers, who had greater than 20 years of experience, had more knowledge regarding forensic odontology, handled such cases, and understood enamel of the tooth as the hardest part of the body, bite mark analysis, lip print analysis and regarding forensic dentistry having a vital role in examining child abuse cases when compared with those lawyers aged less than 45 years. Regarding handling of any child abuse related case during their career till now only 5 lawyers had handled such cases that too physical abuse/violence cases. Regarding the knowledge about physical findings from the sexually abused female/male child, only 10 lawyers could give the answer

Criminal lawyers had more knowledge regarding child abuse cases and how to solve those cases, DNA analysis with the help of teeth, rugae mark analysis, dentist as expert witness in a court of law than those lawyers practicing in civil or both. The lawyers practicing in both civil and criminal cases too had knowledge of bite mark analysis and child abuse cases. Regarding dentist as an expert witness in court of law and tooth loss or fracture as a grievous injury almost 65% & 75% had correct knowledge of it. (Table 3)

IV. Discussion

The Federation Dentaire Internationale (FDI) defines forensic odontology as that branch of dentistry which deals with the proper handling and examination of dental evidence and with the proper evaluation and presentation of dental findings so as to facilitate justice delivery system [9]. Forensic odontology is also defined as the application of dental science to the law, i.e. the use of dental evidence in the interest of justice.⁷ Forensic odontology has a key role in identification of persons in mass disasters for example, aviation, earthquakes or tsunamis, crime investigations and identification of decomposed and disfigured bodies like that of drowned persons, fire victims and victims of motor vehicle accidents.⁸ Dentistry has much to offer law enforcement in the detection and solution of crime or in civil proceedings.⁹ Biting is considered to be primitive type of assault and results when teeth are employed as a weapon in an act of dominance or desperation.¹⁰ As a result bite marks are usually associated with sex crimes, violence fights and child abuse.¹¹ Bite marks have been recovered from scenes of theft. Hence matching the bite mark to a suspect's dentition may enable the investigating officers to implicate the suspect in a crime.¹² Size, shape and pattern of the incisal or biting edges of the upper and lower anterior teeth are considered to be specific to an individual. Mathematically it has been calculated that biting edges of the twelve anterior teeth can be arranged in 1.36×10^{26} different combinations.¹³ Saliva deposited on the skin may have WBC'S and sloughed epithelial cells which may be a source of DNA, enabling the bite area for saliva traces can prove valuable in investigation. Hence a bite mark may accurately depict the unique pattern of a biter's teeth. This may be crucial to identify a suspect or to exclude an innocent person both of which are equally significant.¹⁴ The present study showed the knowledge among the practicing lawyers towards forensic odontology. Investigation plays a very important role in any crime case. The lawyers should be well equipped with the knowledge of child abuse, identifying individual's age and gender by teeth, associated structures, facial bone and DNA analysis using teeth. In our present study, 45% lawyers knew about estimation of age, and 31% knew about gender determination. Age estimation and gender determination are of wider importance in forensics, not only for the purpose of identifying deceased victims but also in connection with crimes and accidents. This overall reveals not all lawyers of Srinagar city are well versed with forensics.

Results of the questions allied to techniques used in forensic dentistry for example the analysis of bite mark, lip print, rugae and DNA were obtained. Lawyers aged above 50 years of age had more knowledge regarding forensic odontology as a part of forensic medicine, handled such cases, and understood enamel of the tooth as the hardest part of the body, bite mark analysis, lip print analysis and regarding forensic dentistry having a vital role in examining child abuse cases when compared with those lawyers aged less than 50 years.

Among the lawyers below 50 years of age, few of them were aware of rugae analysis. Regarding handling of any child abuse related case during their career till now no lawyer had handled such cases that too physical abuse/violence case. Regarding the knowledge regarding physical findings from the sexually abused female/male child, no lawyer responded positively. Most of the senior lawyers agreed that Forensic dentistry plays a vital role in examining child abuse cases. However, no lawyer could give satisfactory response with reference to differentiating between animal bite & human bite. This clearly denotes that they must be facing difficulty in handling child abuse cases. The findings are almost similar to Selvajothi P et al.⁶ In this study, the male (65%) and the female (35%) lawyers were not distributed equally which shows that the percentage of women among lawyers continues to be less in the Indian Bar,[10] and this is also reflected in the present study.¹⁵

Comparing our study results with other similar studies was not possible much as there are very less studies done on awareness of legal professionals towards child abuse and forensic odontology. There is a need to devote several hours for Forensic Odontology during the law graduation course like it is done in dental undergraduate course.¹⁶ The regulatory bodies and law departments should emphasize for conducting forensic odontology programs for lawyers in collaboration with dental practitioners so that they can discuss the child abuse and other forensic related cases. Current worsening of the conditions due to increasing crime and man-made disasters has amplified the role of forensic odontology in identification of the victims. Hence, in near future, Forensic odontology should be introduced into the law curriculum effectively as an additional chapter, so that the lawyer get well acquainted with the required knowledge for handling the child abuse and other forensic cases in their future practice as legal professionals who lack knowledge of forensic odontology will be unable to competently assess and handle scientific evidence, and hence the pursuit of justice can be seriously hampered potentially, leading to factual errors.¹⁸

V. Conclusion

It was concluded that majority of lawyers in Srinagar, Kashmir (India), did not have enough knowledge and awareness regarding child abuse and forensic odontology. It is as such imperatively emphasized that a common strategic approach should be carried out by the Government, Regulatory bodies and dental practitioners so that law professionals can be updated and made aware of forensic odontology and their practical applications in the legal field to provide timely justice to one and all.

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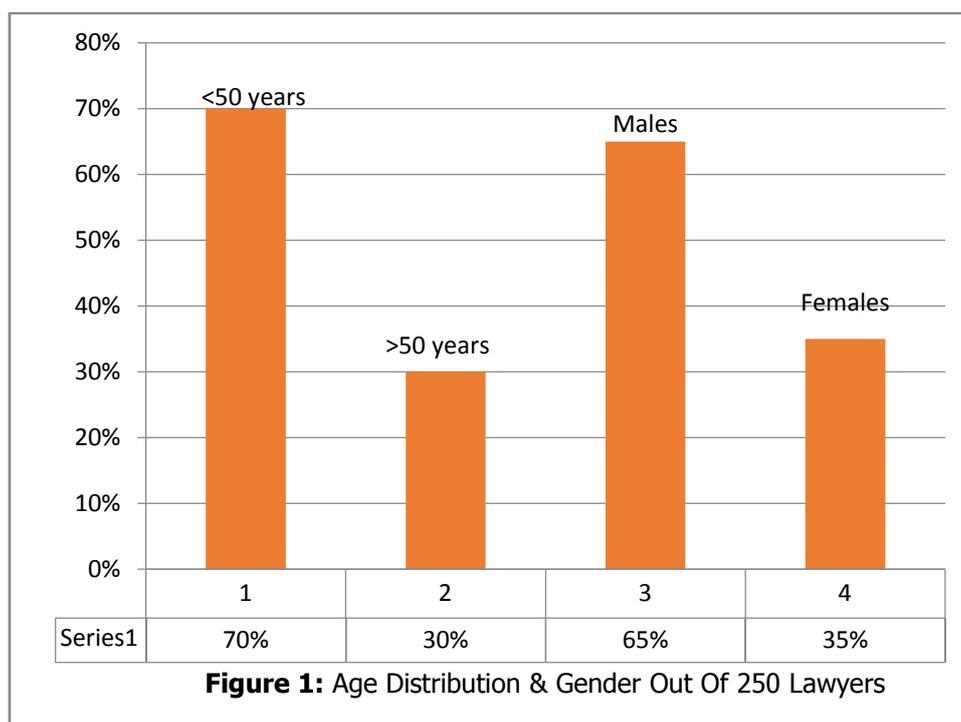
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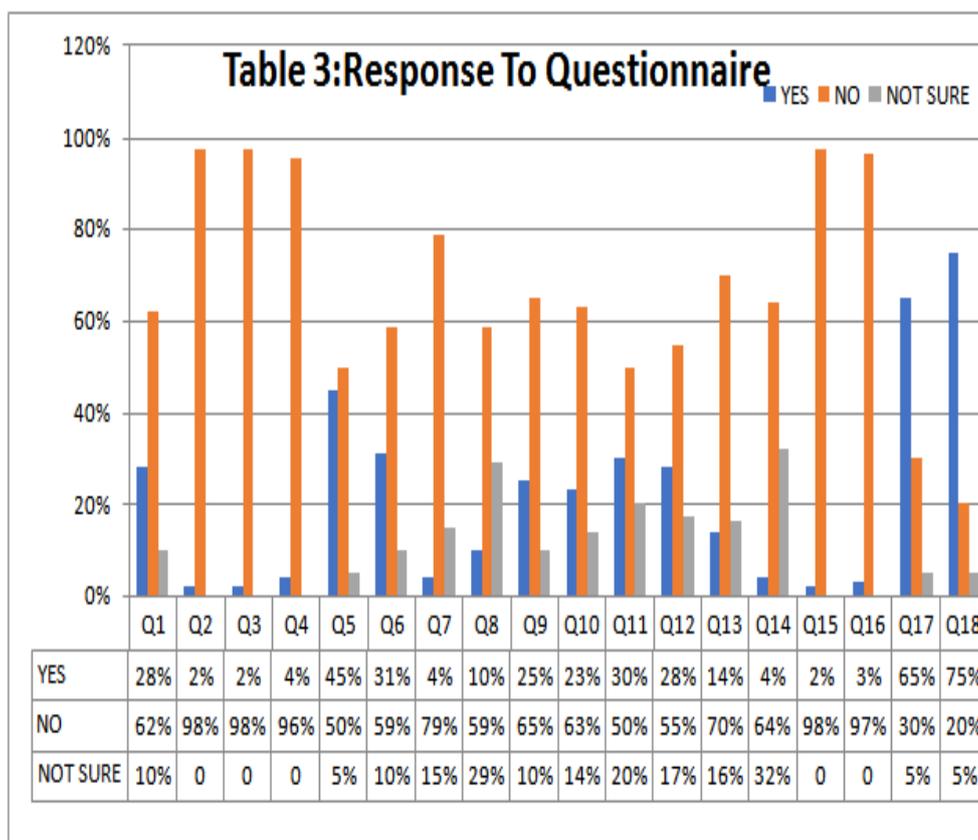
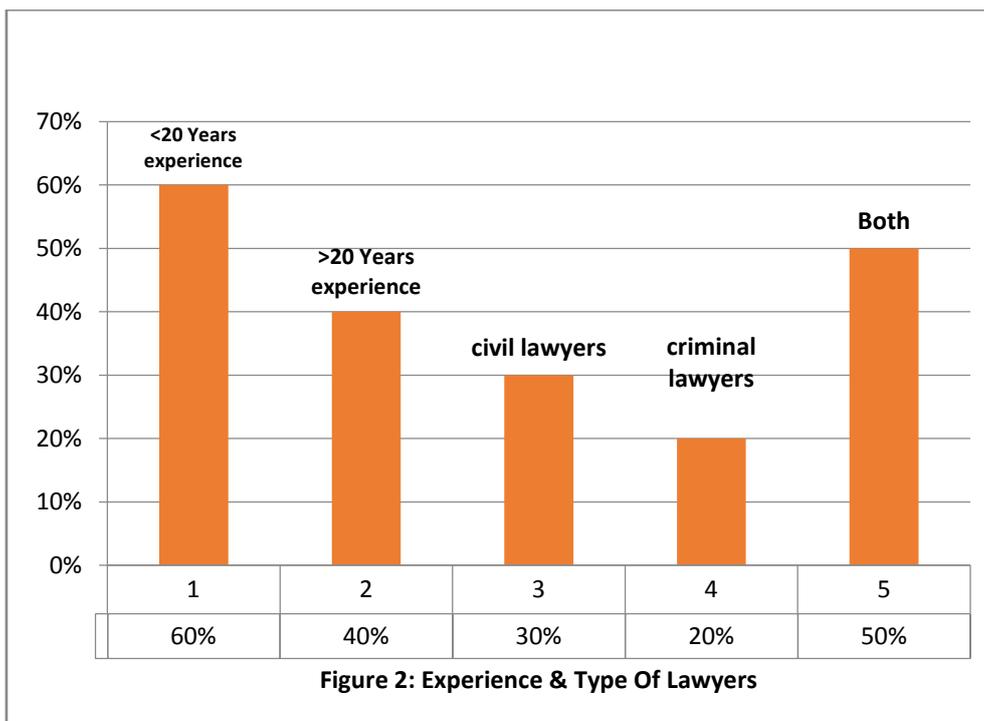
Section I

Lawyer Age	Gender	Experience	Criminal lawyer/civil/or both

Section II:

	Questions	Yes	No	Not sure
01	Forensic odontology/dentistry is a branch of forensic medicine.	28%	62%	10%
02	Have you handled any child abuse related case before?	2%	98%	--
03	Have you encountered any case regarding children and adolescents suspected of being victims of sexual or physical abuse/neglect?	2%	98%	--
04	Do you know what can be the physical findings from the sexually abused female/male child?	4%	96%	--
05	Age estimation in children can be done by examining teeth?	45%	50%	5%
06	Gender determination can be done with the help of teeth & facial bones?	31%	59%	10%
07	Forensic dentistry plays a vital role in examining child abuse cases?	4%	79%	15%
08	Enamel of the tooth is the hardest part of the body?	10%	59%	29%
09	DNA analysis can be done with the help of teeth?	25%	65%	10%
10	Forensic odontology plays an important role in identification of deceased when it is damaged beyond recognition by major calamities such as earthquakes, tsunami, fire accidents?	23%	63%	14%
11	Forensic dentistry plays a role in civil cases involving malpractices?	30%	50%	20%
12	Forensic dentistry plays a role in victim & criminal analysis?	28%	55%	17%
13	Do you know bite mark analysis ?	14%	70%	16%
14	Can you differentiate between animal bite & human bite?	4%	64%	32%
15	Do you have any knowledge about Lip print analysis?	02%	98%	--
16	Do you have any knowledge about Rugae analysis (ridges in the upper part of mouth)?	03%	97%	--
17	The court of law accepts the statement of dentist as an expert witness involving civil and criminal cases?	65%	30%	05%
18	Loss or fracture of tooth is a grievous injury ?	75%	20%	05%





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