

# Profile of Medico-legal Age Estimation Cases in a Tertiary Hospital in Kathmandu

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## ABSTRACT

**Introduction:** Medico-legal age estimation is the estimation of chronological age of an individual which is based upon analysis of physical development of the body, development of secondary sexual traits, tooth eruption, appearance of ossification centers of bones, and the degree of epiphyseal union. Chronological age of the subject whether a minor (less than 18 years) or an adult determines the fate of the case in the court of law.

**Objective:** The present study revealed varied profiles of the perpetrator and the victim who came for medico-legal age estimation.

**Methods:** This is a retrospective, descriptive cross-sectional study conducted in the Department of Forensic Medicine, Maharajgunj Medical Campus, Institute of Medicine (IoM). The data of medico-legal age estimation of 5 years period was analyzed using the statistical software SPSS 20.

**Results:** Total of 313 individuals were studied. Majority of the individuals were within the age group of 16-17 years. Males (70.3 %) outnumbered females (29.7 %). Theft (31.9 %) was common among subjects, followed by sexual assault (18.2 %) and majority of subjects (59.7%) came from Province 3. Sixty percent of the subject's alleged age, matched the estimated ages.

**Conclusion:** This study shows the status of children in crime which demands attention of concerned authority. Males were significantly involved in theft and females were victims of sexual assault. Forty percent of the alleged age given by the subject differed from the estimated age, to change the fate of the case. These results could greatly benefit the judiciary system of Nepal.

**Keywords:** Age estimation; medico-legal, profile.

## INTRODUCTION

Medico-legal age estimation is the estimation of chronological age of an individual which is

based upon analysis of physical development of the body, development of secondary sexual traits, tooth eruption, appearance of ossification centers of bones, and the degree of epiphyseal union.<sup>1</sup> This kind of age estimation is only suitable for an individual less than 22 years of age as by this time the person attains adulthood and majority of the epiphysis are fused and the

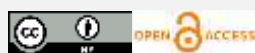
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estimated age is given in a narrowest range that is possible. Chronological age of the subject whether a minor or an adult determines the fate of the case in the court of law. Estimation of chronological age of the subject is equally important in both living as well as deceased in modern societies.<sup>2</sup> Knowing the chronological age of an individual is equally important whether the subject is a victim, a perpetrator or an immigrant.<sup>3,4</sup>

The common medico legal cases that mandate age estimation in the court of law include alleged cases of physical and sexual assault, drugs smuggling, perpetrator of sexual assault, theft, murder, human trafficking etc.<sup>3-6</sup> In the present study retrospective analysis of all the cases brought for age estimation in Department of forensic medicine for the period of 5 years was evaluated. The present study can provide an insight to the medico-legal cases involving specially children.

## METHODS

Non probability census sampling was used for this study. Five-year data of medico-legal age estimation cases from April 2017 to March 2022 were collected retrospectively from the department of Forensic Medicine after obtaining ethical clearance from Institutional Review Committee of Institute of Medicine, Tribhuvan University. The medico-legal age estimation process comprised of analysis of physical development, secondary sexual characteristics development, tooth eruption, appearance of ossification centers, and the degree of epiphyseal union of bones of the elbow, wrist and pelvis. Alleged age claimed by the examinee or the age in question relevant to the interest of the court of law was studied. Likewise, estimated age given by the expert, sex of the examinee, subjects from various provinces, nature of medico-legal cases were collected and analyzed using the chi square analysis in SPSS version 20. Variables of the study are mentioned in Table 1.

**Table 1: Variables of the study based on age, sex, province and medicolegal cases.**

Alleged Age group (Age given by the individuals)	Estimated Age The (Age estimated by forensic experts)	Sex	Province	Types of medico-legal cases
Less than 10 years	Less than 10 years	-Male	Province 1	Drugs
10 – 13 years	10 – 13 years	-Female	Province 2	Perpetrator of sexual assault
14 – 15 years	14 – 15 years		Province 3	Physical assault
16 – 17 years	16 – 17 years		Province 4	Victims of sexual assault
More than 18 years	More than 18 years		Province 5	Theft
			Province 6	Human trafficking
			India	Homicide
				Unknown
				Victims of Sexual abuse
				Smuggling

**RESULTS**

There were 313 individuals brought for medico-legal age estimation. More than half (60 %) of the alleged age and estimated age matched. There were much more males in this study than the females: 220 (70.3 %) to 93 (29.7%), respectively.

Among the total cases, 39.70 % of the cases belonged to the 16 – 17 years of alleged-age group and the least (2.9 %) belonged to the less than 10 year’s alleged-age group. The maximum

number of individuals (39 %) of cases belonged to the 16 - 17 years of the estimated age group and the least (3.5%) to the less than 10 years of the estimated age group.

More than half of the cases (59.4 %) came from Province 3 and the least were from Province 5 and 6, with 2.2 % each. Quite a few of the cases were from our neighbouring country India, 33 case or 10.5 %. Most of the individuals were involved in theft, 31.9 % and the least in smuggling, 0.3 % as mentioned in Table 2.

**Table 2: Distribution of cases according to the medico-legal cases.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Drugs	34	10.9	10.9	10.9
	Perpetrator	34	10.9	10.9	21.7
	Physical assault	2	.6	.6	22.4
	Sexual assault	57	18.2	18.2	40.6
	Theft	100	31.9	31.9	72.5
	Human trafficking	13	4.2	4.2	76.7
	Homicide	12	3.8	3.8	80.5
	Unknown	49	15.7	15.7	96.2
	Sexual abuse	11	3.5	3.5	99.7
	Smuggling	1	.3	.3	100.0
	Total	313	100.0	100.0	

The majority of the females, 55.43 %, belonged to the less than 15 years of the alleged-age group and most of the males, 66.97 %, belonged to the more than 16 years of the alleged-age group.

Similar results were seen in the estimated age group as more of the females’ belonged to the younger age groups as mentioned in Figure 1 and 2 respectively.

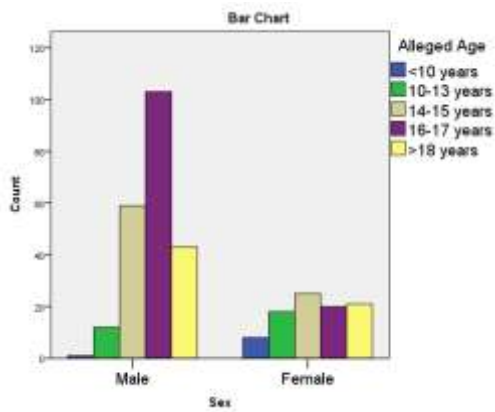


Figure 1: Correlation between sex and given age (P value = 0.000) (significant)

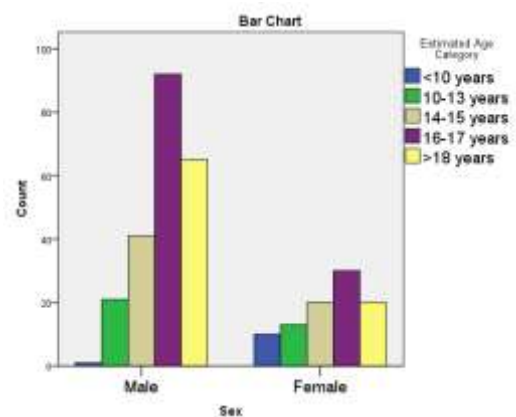


Figure 2: Correlation between sex and estimated age (P value = 0.000) (significant)

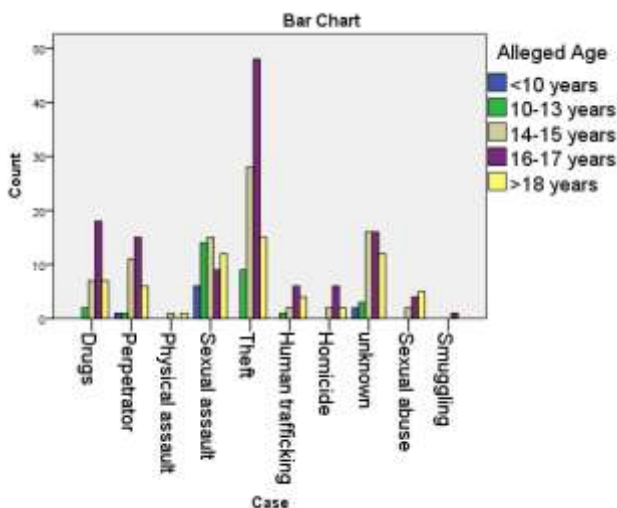


Figure 3: Correlation between medico-legal cases and given age (P value = 0.006) (significant)

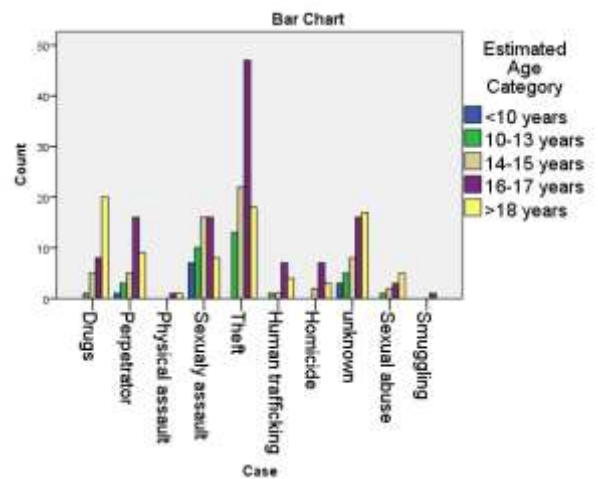


Figure 4: Correlation between medico-legal cases and estimated age (P value= 0.003) (significant)

The majority of the individuals of the less than 10 years of alleged age, 66.7 %, and the 10-13 years, 46.7 %, were victims of sexual assault, 14-15 years (33.3 %), 16-17 years (39.0 %) and the more than 18 years (23.4 %) were involved in theft as mentioned in Figure 3.

Considering the estimated age and medico-legal cases, the majority of the less than 10 years, 63.6 %, were victims of sexual assault and most of the cases of 10-13 years, 14-15 years and 16-17 years (38.2 %, 36.1 % and 38.5 % respectively), were involved in theft and the more than 18

years (23.5 %) were involved in drug related-crimes as mentioned in Figure 4.

## DISCUSSION

Most of the cases of this study (39.4 %) were in the age group of 16 – 17 years, which differed from the studies by Garg V et al, Malik Y et al, Yadav A et al and Trangadia M et al, which had cases in the 21 – 30 years age groups.<sup>7-10</sup> The findings of our study were similar to those of the study by Mina SS et al.<sup>11</sup> This is likely due to immaturity of the mid-teen minors and their less experience of the complexities of growing up into an adult as a whole as compared to the older teens and young adults. Their risk-taking behaviors could make them more prone to violence as well. Not only that family issues like broken family, lack of moral guidance and supervision, poor educational quality, poor school performance, substance abuse, peer pressure and socio-economic factors also play a significant role.<sup>12</sup>

The males (70.3 %) outnumbered the females (29.7 %) which was similar to other studies by Garg V et al, Malik Y et al and Yadav A et al.<sup>7-10</sup> Our society and families encourage the male children to be more active in beyond-the-home responsibilities while the female children are given the responsibilities to help out with the work at home.<sup>10</sup> This culture of ours results in the male children facing more vulnerable situations that might lead to their being involved in crimes.

The results of this study also showed that females are significantly younger in these medico-legal cases. Most of the female (61.3 %) were victims of sexual assault. Males were commonly involved in theft (43.18 %). But if we look from the criminal aspect, theft (31.9 %) was the most common crime, followed by incidents of sexual assault (18.2 %). This is obvious from the fact that females are more vulnerable for sexual assault. We further notice that children below the estimated ages of 10 years old (63.6%) were victims of sexual assault. Most (37.78 %) individuals aged 10 to 17 engaged in theft, while 23.5% of those over 18 years old were implicated in drug-related crimes.

Most cases (59.4 %) originated from Province 3. This is understandable since Kathmandu, the nation's capital, along with Lalitpur and Bhaktapur, now essentially form one large metropolitan area with a substantial population. Quite a few of the cases were from our neighbouring country India, 33 case or 10.5 %. Although their hometown was in India, they resided here for work.

Sixty percent of the alleged age matched with the estimated age. This means that 40 % of the individual's alleged age does not match the estimated age. It is not hard to understand that the subjects whose age did not match the estimated age either wanted to evade punishment if he or she is a perpetrator or to increase the severity of the crime if he or she is a victim. Because, according to the "Muluki

Aparadh Samhita 2074 of Nepal," individuals under 10 years old who commit an offence are exempt from punishment; those aged 10 to 14 may face up to six months of imprisonment or be sent to a reform home for up to one year; individuals aged 14 to 16 are liable for half the punishment applicable to adults (18 years and above); and those aged 16 to 18 are subject to two-thirds of the punishment imposable on legally adult persons (18 years and above).<sup>14</sup> Muluki Aparadh Samhita 2074 has further defined rape as a sexual intercourse between man and woman without a woman's consent or with a girl child below eighteen years of age even with her consent. For a person committing rape (perpetrators), shall be liable to the sentence of imprisonment based on age of the woman (victim). If victim is below 10 years or above 70 years, the perpetrator will be liable for lifetime imprisonment; for victim of age 10 – 14 years, the perpetrator may face up to 18 – 20 years of imprisonment; victim aged 14-16 years, the perpetrators shall be imprisoned for 10 -12 years and for victims aged more than 18 years, the perpetrators shall be imprisoned for 7 – 10 years.<sup>14</sup> This probably seems to be the main

reason why the perpetrators and the victims provide wrong ages.

## CONCLUSIONS

This study outlines the profile of medico-legal age estimation cases in Kathmandu, with most cases involving adolescents, thereby highlighting their susceptibility. Forensic medicine experts must recognize the increasing involvement of minors in criminal activities and collaborate closely with law enforcement to ensure justice for these at-risk youths. Not only that stakeholders and government should play an important role in addressing minors in crime. The study's findings should alert relevant authorities to the issue of juvenile crimes affecting children. Notably, in 40% of the medico-legal cases, the alleged age differed from the estimated age, potentially due to individuals attempting either to avoid punishment themselves or to increase the severity of punishment for alleged offenders. These results could greatly benefit the medico-legal system of Nepal.

**Conflict of Interest:** None.



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