

### **B35 A Strategic Design to Arrest a Serial Rapist and Killer: The Role of a DNA Profiling Database and Population Census Data**

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**Learning Overview:** After attending this presentation, attendees will be able to understand the strategic design used by the investigation agency to arrest a serial rapist and killer reported in the Kasur district in the Punjab province of Pakistan. The case study will be helpful to understand the process where an unsolved serial rape and murder case was solved and the culprit was brought to justice using modern forensic tools. Moreover, this case study will help to understand the raping trends with minors in the area.

**Impact on the Forensic Science Community:** The presentation will impact the forensic science community by providing the results of the case studies which were concluded based on population census data of the Kasur district of Pakistan. Attendees will also be informed about the admissibility of DNA profiling and digital evidence in the court of law in Pakistan, the increasing confidence in forensic tools after this case, and the increasing trend of utilizing forensic expertise rather than conventional investigation methods (e.g., eyewitnesses, etc.).

Since 2013, nearly 10,620 rape cases of minor girls were reported in Pakistan against which only 112 convictions were obtained in courts of law. Such low conviction rate is due to poor investigative strategy and use of old conventional investigative tools. In recent studies it has been observed that 9 girls and 3 boys out of every 100 persons are victims of child abuse.<sup>1</sup> In this case study first rape and murder was reported in April 2015, after which a series of cases were reported. The last case was reported on January 9, 2018. In a span of 3 years, a total of 8 cases of rape came into notice in which minor girls (average age 9 years) were abducted from outside their houses. Out of 8 victims, 5 were murdered after rape and their dead bodies were found mostly in houses under construction, vacant plots, or parks in the vicinity of abduction. All of these incidents took place in a radius of 4 kilometers with 2-3 months' time intervals.

Analysis of case samples in DNA and serology section of Punjab Forensic Science Agency (PFSA) revealed the single male profile from all the victims. It was a matter of grave concern, and in first time in the history of Pakistan a strategy was devised to reach this serial killer. Police forces, intelligence agencies, PFSA and regional police heads were called together to plan the strategy. Population census data was released for the first time to the civil administration with the permission of the prime minister of Pakistan to locate the suspect. The targeted average age group was selected as 20 to 35 years based on the physical appearance of the suspect from CCTV footages received from the locality of incident. The visual images were enhanced by the audio-visual department of PFSA. Buccal swabs of 1,174 individuals were collected by door-to-door searches and verified from census data. DNA extraction was performed employing organic phase separation. DNA from the buccal swab standards of all the suspects was characterized through the Polymerase Chain Reaction (PCR) at the genetic loci D8S1179, D21S11, D7S820, CSF1PO, D3S1358, TH01, D13S317, D16S539, D2S1338, D19S433, vWA, TPOX, D18S51, D5S818, FGA and Amelogenin using AMPFISTR® Identifiler® Plus amplification kit. The amplified products were run on the ABI 3500 Genetic Analyzer and the results obtained were analyzed using GeneMapper® ID-X Software Version 1.2.

The DNA profile of suspect (sample No. 814) matched with the DNA profile of the perpetrator that was already maintained in the PFSA DNA database. The DNA profile of suspect No. 814 was previously obtained from the sperm fractions of vaginal/anal swabs and semen stains found on the clothing of the 8 minor girls. Based on DNA analysis, 90 suspects apprehended by the police and 1,173 individuals whose samples were collected during the mass screening conducted by PFSA, were eliminated as being possible source of foreign male DNA obtained from all the eight minor victims.

#### **Reference(s):**

1. Barth, J., Bermetz, L., Heim, E., Trelle, S., Tonia, T. (2013). The current prevalence of child sexual abuse worldwide: a systematic review and meta-analysis. *International Journal of Public Health*, 58: 469-483.

#### **DNA, Serial Killer, Census Data**