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EDITORIAL MESSAGE

My heart goes out to those, who lost their lives to COVID-19 and related ailments! This editorial is a humble tribute to the police personnel fighting the dual battle, both at the home and the work fronts. I salute them for their dedication and sacrifice!

This issue of IPJ carries 12 insightful articles, opening with **"The Future Police",** elaborating on human intelligence and artificial intelligence for ethical and responsible law enforcement. Well documented by S/Sh. Vibhuti Gupta and Amit Kumar, it places emphasis on various vital technological aspects in the prevailing scenario.

The IPJ issue contains numerous well-researched pieces by many eminent writers from relevant fields. I find it a little difficult to talk of all in this limited edit page. However, the **Right to Abortion vis-à-vis Right of an Unborn to Live,** by Dr. Shweta Dhand, throws light on extremely complex issues that our society is confronted with.

Prof. V. K. Ahuja has authored another brilliant article on a pertinent topic for the Indian society, where the Rights of a Transgender Person is being given its due. This write-up anchors the rights and legal protection of rights of transgender persons living in India, besides dealing with prohibition against discrimination and advocating the rights to education and social security for them.

Other writings include the one pertaining to woman safety, like the paper written by Dr A. Kumara Swamy that strongly focuses on violence against women in India, women's safety laws, the POCSO Act and so on.

The article that addresses the health and well-being related issues among the police personnel, in general, is **Occupational Stress among Armed Police: Causes and Effects.** The authors share a deep insight into several aspects related

to police personnel working under constant stress. This informative piece has been co-authored by Sh. Shashi Kant Upadhyay and Ms. Reena Sharma.

Another noteworthy article is on **Drone Swarm**, written by Sh. Pankaj Kumar Singh. Use of tens or hundreds of small drones, launched together, either centrally or autonomously controlled, indicates a paradigm shift in aerial warfare today. Such an attack may comprise of multiple drones, small in size, flying close to the ground, low cost and, more importantly, capable of evading or confusing the existing surveillance systems with the unique ability to select targets based on embedded software and sensors.

I look forward to feedback on the articles being presented and also invite fresh articles for our future issues.

Jai Hind!

(Chief Patron)

The Future Police: Blending Human Intelligence with Artificial Intelligence for Ethical and Responsible Law Enforcement

The Indian Police Journal

Vibhuti Gupta, Ph.D.[1]
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Abstract

Using cutting edge technology in law enforcement has certainly been a path-breaking development and has literally transformed and strengthened the world of criminal investigation and law enforcement. AI is a broad term and engulfs a wide range of technological applications in law enforcement. These technologies have been adapted, successfully implemented by various countries and are helping these countries garner the fruits of these applications in law enforcement. However, it is imperative to note that it does not come without a cost. The application of these technological advancements has raised few serious concerns like privacy of citizens, and ethical and responsible use of AI.

The paper attempts to throw some light on technological advancements today and in future with respect to law enforcement and AI, simultaneously keeping a strong focus on ethics, privacy, and responsible AI. Application of AI in law enforcement is an irreversible process, it will only grow in length and breadth with the passage of time so far as application is concerned, but we need to be mindful about the privacy, ethical and responsible application of AI.

Key words : Algorithms, Machine Learning, Deep Learning, Artificial Intelligence (AI), Ethical and Responsible AI, Privacy Concerns, Neural Network, Liquid Network.

Introduction

Law enforcement has always been challenging and demanding keeping the law enforcement agencies always on toes. It was tough in the past being a policeman/woman; it is going to be

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tougher in the future with the advent of upgraded technology and its easy access to the malefactors. The law enforcement agencies do not have a choice but to upgrade themselves in order to be ahead of the anti-social elements. Like Androids and iPhones, crime too has an upgraded version now and is getting upgraded with new techniques, creative styles and form altogether and at a precipitous pace. Unlike in the past when the uniformed personnel used outdated technology, vehicles and weapons, today, they need to be well versed in as well as well equipped with the most updated technical advancements for the optimum delivery of policing services to the citizenry and to ensure officer safety.

Technology is upgrading phenomenally and as a result the world is witnessing transformation that is unprecedented in the history of human beings. However, technology has its own pros and cons, as was taught to us in our childhood, it is a good servant but a bad master. The adage fortunately or unfortunately, still holds true.

Easy access of sophisticated technology to the law enforcement and anti-social elements alike has posed a serious threat to the society, where the saviour and destroyer are equally well equipped. However, if the saviour; the law enforcement agencies are ahead of the anti-social elements, agile, adaptive,

and quickly upskill themselves, the challenge can be minimised if not removed altogether. Induction of Artificial Intelligence (AI) in law enforcement is one of the many alternatives. Use of Artificial Intelligence in law enforcement shall come up as a viable solution, of course with an uninterrupted upskilling of the people who manage it.

Globally, AI in law enforcement has been generating positive results, though, much sophistication is still required. There are several challenges to AI in law enforcement like predictive policing, body worn cameras with AI, risk assessment, biasness in outcomes in certain communities, for example as widely reported discrimination against the blacks in the US (Angwin et. al., 2016; Heaven 2020), since the algorithm reads a pattern, accuracy in forecasts, transparency in operations, to name just a few. The toughest challenge, however, is of ethical use of AI in law enforcement, without compromising the privacy of the citizens. With examples in countries like the US, where people raised voices and slogans against the induction of AI in law enforcement as they considered it an infringement to their privacy, greater emphasis needs to be aid on responsible and ethical AI in law enforcement to ensure desired results in future.

It is also imperative to bring the communities together, educate them

about AI, bring industry and academia along and then go on to launch AI on a large scale. This will help bring greater participation from the communities, however, in the absence of such participation it would be good to quote Elon Musk; "Governments don't need to follow normal laws. They will obtain AI developed by companies at gunpoint, if necessary".

Research Methodology

The authors decided to study trends regarding the future of policing with respect to technology and Artificial Intelligence in law enforcement. Only the authentic websites were referred to like those of the NITI Ayog, United Nations, INTERPOL, relevant reports of Google, Microsoft, and Axon, since Accenture and Deloitte have a dedicated wing that provides services to government agencies including police, their reports and studies that they undertook, country specific websites etc.

Artificial Intelligence

AI is "an evolving constellation of technologies that enable computers to simulate elements of human thinking-learning and reasoning among them (Byrnes, 2016). It is the ability of a computer or Robot to perform tasks that are generally associated with the human beings who are known for their intelligence. Since AI is enabled with human capabilities, it can well be utilised

in, of course, a controlled manner, to make advances in crime prevention, solving cases, predicting crime, and the like. This technological development called AI cannot be ignored, is there to stay and will further advance in the coming years. It is apparent that AI, Machine Learning and the associated ecosystem of emergent technologies, including the Internet of Things, Quantum computing, will certainly have an impact on government, policies, Law Enforcement, and society as a whole. AI has four domains: Audio Processing, Visual Processing, Resource Optimisation, and Natural Language Processing (UNICRI and INTERPOL, 2019). With advances in technology, Law Enforcement agencies are sure to gain from these four domains.

Audio Processing is a technique in which attributes of the voice of an individual can be manipulated, for example improving the sound quality, minimizing noise effect, or compressing. Taking advantage of advances in anatomy and linguistics, and with the help of AI, the Law Enforcement agencies can create voice profiling. Profiling means extracting desired and necessary information from the behavioural and psychological characteristics of an individual and is used by Law Enforcement agencies as a tool for investigation. Since voice carries with it a plethora of information, with the help of AI, this information can be extracted through voice profiling. It can provide insights into the age, height,

weight, facial structure and other such details of an individual, it can also create face and body of that individual not just of today but can even predict the facial structure, health and body in let's say, the next ten years, providing help to the law enforcement agencies (Singh, R. 2019; UNICRI and INTERPOL, 2020).

Visual Processing means imitating the visual system of a human being by a machine in extracting, analysing and interpreting information from pictures. It has always been a helpful resource to the law enforcement agencies in solving crimes. However, with advancements in technology, sophisticated systems in place, Machine Learning coupled with Deep Learning, it has become ever so convenient to identify, match and analyse faces, number plates, objects etc. Due to deep learning, it can recognise emotions as well and prevent suspicious people from entry to sensitive places.

Resource crunch leads to Resource Optimisation and Law Enforcement agencies are no exception when it comes to resources. It is therefore crucial to optimise the resources that are available. In essence, Smart Policing can be realised by the intelligent application of technology and exploitation of the technological advancements like 5G, Wi-fi 6, Internet of Things, Augmented Reality with AI. This will help in improved decision making, strategic allocation

of vehicles, officers and necessary equipment at desired places as well as reducing emergency response time. With such dynamic systems in place assisted by data and machine learning, the officers will be able to map crime more effectively and hence bolster the connection between Alert, Response and Reaction (UNICRI and INTERPOL, 2019). AI can be particularly helpful in Hot Spot Mapping, Deployment of resources on demand, Patrol route scheduling, Response route plotting and Dispatch of resources with respect to resource optimisation.

Natural Language Processing or computational linguistics is the ability of the AI powered machine to read, understand and analyse natural languages which are not categorically in the format that a computer understands. Its application in law enforcement, though at a nascent stage, yet has been pathbreaking. With the help of this, the information can be extracted from emails, chats, written documents etc and analysed, saving a lot of time of the officers. It can also offer insights to the officer for forensics to help move forward in investigation. It can create transcripts as well from audio clips and after processing can classify the topic on various heads, as well as note the intent and sentiment of the text etc. (UNICRI and INTERPOL, 2020).

About various areas in which AI has been/can be incorporated in law enforcement

AI has been incorporated in law enforcement at many places globally as well as in India in various forms successfully, though much is yet to be covered. Following are a few of them that have been incorporated in a law enforcement. The techniques mentioned below are not essentially from India, but from distinct parts of the world.

Facial Recognition Technology (FRT)

FRT is a biometric identification of the face. It analyses typical characteristics like frown, smile, or emotions and compares them with a huge, pre-stored database (Matyunina, 2017). With the help of AI, it is possible to capture an image, compare with such a large number of images, and find a match, which is humanly not possible.

Body Worn Cameras

Body Worn Cameras (BWC) are audio video devices worn by uniformed personnel for the purpose of law enforcement, during public interactions, visits at crime scenes etc. The entire event is recorded which can also be live streamed to a real time crime center like place or to any connected device at head quarters or police stations, which the team or the seniors can visualise in real time.

Smart Police Station

This was first started by the Dubai Police in the year 2017. Dubai Police brought this concept being mindful of people who do not want to personally meet police officers. With the induction of the Smart Police Station, people may just enter desired information and avail themselves of about sixty services like FIR, payment of fine etc (Ali, 2017).

Predictive Policing Software

Predictive Policing simply means predicting crime beforehand. It is done through highly sophisticated software, and there are many available already, in which the software reads the patterns of crime, creates an algorithm, does scientific analysis and generates results. It can also predict criminal behaviour by the same scientific analysis. This may equip the police with predicting crime and help in controlling as well, however, it comes with its own set of challenges. For example, since it is based on the premise that historical data on crime, geographic and socio-economic factors may help depict future crime, in few cases results can be biased based on high crime trends in a particular area resulting into "overpolicing" of that area, which in effect will generate more crime reporting due to a heavy deployment and the feedback loop becomes ad infinitum. (Loeb, 2018; Rieland, 2018;Bryan, 2020)

Automated Licence Plate Reader

Automated Licence Plate Reader (ALPR) is an important advanced tool to track criminals, find missing children, track vehicles etc. ALPRs are devices that

may be placed on top of buildings or vehicles or suitable locations to collect information connected to the licence plate, compared it with the vehicle list and establish linkage (Gierlack, et al. 2014; Crump, 2013). It can alert the officer for a certain number as well as scan through a huge data set to find related and required information related to the owner.

Police Robot

Police Robots were first inducted as Police Officer by Dubai Police in the year 2017. This Robot is technologically well equipped with an updated version of Facial Recognition Technology. Citizens can interact with them in any language. This Robo Cop has an interactive touch screen installed on it with which after entering necessary information, people may connect to nearby police stations as well (Dunne, 2017; Dubai Police, 2019).

Smart Track System for Driving, Traffic Enforcement, and Protection

This is an attempt by the Dubai Police to make roads safe for people. They have implemented this AI based system to read driver behaviour and design a program to help them subsequently provide feedback and improve road safety (Lalley, 2019; Gulf News, 2019)

Intelligent Virtual Phone Assistant

This AI enabled phone assistant is again an innovative system that can interact with people and connect them to the police personnel. It helps reduce high call volume to police, and the waiting time for the public callers (Agarib, 2018).

Smart Police Vehicles

The Smart Police Vehicles are a luxury fleet of vehicles introduced by Dubai Police, which is the frontrunner in introducing AI in Law Enforcement. These luxury smart police vehicles are AI enabled and most advanced vehicles in the world, even far ahead of the vehicles used by the police forces in the US. These vehicles have wide touch screens and are equipped with the latest FRT and ALPR. With the help of FRT, it can identify any person in a fraction of seconds and reports to the command center or an officer. The ALPR can track vehicles in a fraction of seconds, sift through the data and inform the police officer or command center in just no time. It can also alert an officer if someone is chasing him or her which helps in enhancing officer safety (Workman, 2018; Radu, 2018).

A Comparative Analysis of AI incorporation in law enforcement in various countries

AI is gradually maturing, taking pace, and being adopted in Law Enforcement globally as well as in India. However, there is still a long way to go and obvious challenges are there in terms of relying blindly on AI, the accuracy of algorithm, since AI is dependent on algorithms;

effectiveness of Machine Learning, privacy, ethics, and responsible AI. Nevertheless, countries are aggressively adapting and implementing AI in Law Enforcement, upskilling their uniformed personnel to use the technology, adapt the upgraded versions of the same competently and use them all efficiently in the interest of the citizens. Countries like Germany, Italy, Lithuania, the Netherlands, the Republic of Korea and the United Arab Emirates have also started considering AI as a safe bet (INTERPOL-UNCRI Second Report, 2020). A few countries have also started collaborating with academia to form AI models for Law Enforcement. For instance Germany's Big Data team has established Central Office for Information Technology in the Security Sector (ZITiS), the Australian Federal Police collaborated with Monash University and established Artificial Intelligence for Law Enforcement of Community Safety (Ai-LECS) Lab (INTERPOL-UNCRI Second Report, 2020). In India, such collaborations can take place with the premiere institutes like Indian Institutes of Technology and Bureau of Police Research and Development, if not already established; like the Delhi Police have collaborated with the IIT Delhi for AI in policing.

Dubai has been aggressively using AI in Law Enforcement and it is said to be about ten years ahead of all other countries (Agarib, 2018). It has Police Robots, Smart Police Stations, Intelligent Virtual Phone Assistant, AI enabled vehicles, Smart Track System, Face Recognition Technology, Automated Licence Plate Reader. They have certain ambitious plans for future to adapt and implement cutting edge AI technology like Chatbots, 3D printer, Passenger fine payments at airports through interactive voice response, high-altitude pseudo satellite, Self-driving motorcycle money transfer service for prison inmates, Customer service robots, Smart security patrol system, Virtual smartphone plugin, Smart hand clock for emergency situations, AI clinic (Lalley, 2019). Countries like China have been using AI in Law Enforcement aggressively. It is used in private businesses like KFCs as well in China and the technology is enabled to read emotions, store data and serve orders in future using FRT, that is the scale at which AI is being used in China in addition to law Enforcement. In the US, of course technologies like FRT, ALPR, Predictive Policing and Body Worn Cameras are being used, however, the communities are not very happy with the usage of AI as they consider it a grave privacy intrusion issue. In India, AI is gradually being used in Law Enforcement and at a rapid pace. India too has ALPR, Red Light Jump Alert, FRT, Body Worn Cameras, and many of them are yet to be adopted. Places like Dubai which are the frontrunners when it comes to AI implementation in Law Enforcement have combined FRT, ALPR, Predictive

Policing, all in one. The cameras installed can read number plates, track them as well as predict any crime even before they occur, can report accidents in real time to the concerned for help, can analyse faces through FRT, scan through a host of images and identify. They can also speak to the public as well as make announcements. (Malek, 2018; Ali, 2019)

Use of AI in Law Enforcement in India

Transformation and technological upgradation with updated skill sets is the need of the hour for law enforcement agencies, globally as well as in India. India has quite a few advanced AI applications in place in law enforcement. In India, the law enforcement agencies use AI in the form of FRT, ALPR, Red light Jump Alert, Surveillance etc. However, India has miles to go to implement advanced AI like Robo Cop, Smart Police Stations, Intelligent Virtual Assistants, etc. This is the first time that a mega event like Kumbh will be monitored with AI and it will be installed at fifty odd places (The Times of India, Feb.4, 2021). The UP Police use JARVIS (Joint AI Research for Video Instances and Streams) that mines CCTV footage to identify violence, intrusion and pick-pocketing detection, as well as crowd analysis, and Trinetra for FRT, the Punjab Police uses PAIS, (Police Artificial Intelligence System) for FRT, text reading etc. (Sudhakaran, 2020). Kerala has an ambitious project of installing a virtual

Police Station (The Hindu, Jan. 15, 2021). Delhi Police have a major project for AI and law enforcement in the year 2022 wherein 15000 additional cameras will be installed for enhanced investigation and signed a MoU with the IIT Delhi as well for successful implementation of technology in policing (The Times of India, Jan. 20, 2021).

Privacy Concerns with adoption of AI

Privacy has been a serious concern with AI enabled law enforcement. For example, when the Facial Recognition Technology is used to sift through huge databases to match faces and find the right match, it has been found to be an intrusion into privacy by the citizens. Or when the Automated Licence Plate Reader scans the details of the owners for some vehicle, tracks its movement from one place to another, has also been termed as a privacy concern. It has been considered as a grave privacy concern because at times the data is shared with external agencies who get all the necessary details of the owner of the vehicle. (Crump, 2013; Matyunina, 2017). Authors like Walsh recommend a law for protecting humans from AI (Walsh, 2016). Axon, which is a leading company in manufacturing body worn cameras, has addressed this issue of privacy in ALPR. According to Axon, they will "address issues like data retention and data ownership, creating an ethical framework to help prevent misuse of

the technology" while manufacturing ALPR. Yet another privacy issue erupts with body worn cameras when an officer interacts with someone or in criminal investigation with a BWC. Ideally, it should be with the consent of both the parties, but this aspect is found missing. Whether it is BWC or ALPR or FRT, privacy is gravely being compromised, is helpful to the law enforcement agencies but comes with a cost, like stated in "The Ultimate Guide to Face Recognition" states, "Face recognition is great, but every great thing comes at a price. And the price we pay is our privacy… are we ready to be on a constant watch?".

Countries are aggressively working to address the privacy concern of the citizens while using AI in law enforcement.

Addressing the privacy concerns, Norway has devised an innovative strategy called Non-Intrusive Surveillance Systems. Since law enforcement agencies collect videos and images as evidence and prove them in the court of law, sometimes the AI enabled videos etc disclose a lot of personal information, which was neither required nor desired. The Non-Intrusive Surveillance Systems smartly put emojis or blur images so that the identity is not disclosed. This is an important step in ensuring privacy of the citizens (INTERPOL-UNCRI, 2020).

Australia has designed the Data Airlock and Harmful Materials Recognition in

which the data scientist will be able to work on algorithms, however, they would not be able to view it, thus securing privacy.

Germany has launched the Recommender System under which huge data can be analysed through AI and it can make recommendation to the officer based on his search and preferences exactly as is done in websites like Amazon and Spotify where machine learns the pattern of search and recommends accordingly. It is an active learning content-based tool, in which the algorithm attempts to solve the queries by an officer interactively and provides valuable information for officers.

Ethical and Responsible AI

The above discourse on technological advances leads to a serious concern of ethical and responsible AI. Since Machine Leaning is heavily dependent on algorithms, it reads a pattern to generate results. These patterns can be based on external inputs and internal processing. Since the processing is done by a machine, questions of acting ethically and responsibly need to be addressed. Acting responsibly means acting in a trustworthy manner and when we discuss law enforcement, this trust factor plays a major role because it should encompass rule of law in addition to human rights and justice. The White Paper by Leiden University and TU Delft and the Second INTERPOL-UNICRI report

on Responsible use of AI put forth some concerns with respect to responsible use of AI in law enforcement. The White Paper has deduced them into six core principles (Accountability, Transparency, Privacy and data protection, Fairness and inclusivity, Human Autonomy and Agency, and Socio-technical Robustness and Safety) whereas the INTERPOL-UNICRI has further reduced them into four major areas called FATE (Fairness, Accountability, Transparency and Explainability) (INTERPOL-UNICRI, 2020; Zardiashvili et. al., 2019). Until these criteria are met, it is difficult to gain public confidence which should be preserved and persevered by the law enforcement agencies. Findings generated through AI by Machine Learning and Deep Learning, without human logic and intervention are also difficult to prove in the court of law, since the issue of fixing responsibility is a concern. It is also not clear who should be held accountable for the findings, the developer, manufacturer or the end user i.e. the police. Most of the time, the end user is not even aware of the patterns which lead to a particular outcome, they just get the output, but how Machine Learning reached there is not known to them, they should be upskilled to understand and interpret the data. Until these concerns are addressed, public faith cannot be ensured, they may experience loss of faith in the police, for the very purpose the police exist. Several companies are, therefore, working

exclusively on this aspect to interpret the interpretability of machine learning (Kaur e.al, 2020).

Axon, for example through its Ethics Board, has devised certain criteria to address the concern of responsible use of AI and according to them, it will help the humans to be more human and empower the officers to be more human as well (Axon, 2018). Microsoft has collaborated with industry and academia to address this concern. According to Microsoft, while addressing the concern, they not only focus on the design, development and the deployment of processes that are fair, safe, trustworthy, or just improvement in data and models but also on people who are the end users and interact with the machines. (Amershi, et. al, 2020). The INTERPOL-UNICRI Second Report mentions key areas for Responsible AI. These are Lawfulness, Social Acceptance, and Ethics for AI. To ensure lawfulness it is important to be sensitive towards the community and its needs. If the community does not accept AI or understand its benefits, the very purpose gets defeated. To ensure this, it is imperative to see that it is non-discriminatory, does not infringe fundamental rights, privacy, or equality. Since AI depends heavily on algorithms which itself depend on data, data privacy and data protection it is yet another concern that needs attention and hence there need to be some regulations on data collection,

retention, storage, and processing. This might come as an additional challenge to the law enforcement agencies, however, that demands serious attention if AI is to be used responsibly in future. The EU General Data Protection Regulation (GDPR) proposes six core principles, viz: Lawfulnessfairness and transparency, Purpose limitation, Data minimization, Accuracy, Storage limitation and Integrity and confidentiality (security). (GDPR, Article 5(1)).

Automated Decision Making demands careful deliberations too, again, as it is also algorithm dependent and widely used in Predictive Policing which may provide insights into occurrence of a crime or even about the person who might be involved. Since these decisions are purely automated, they automatically give rise to a suspicion amongst people and become a challenge to defending in the court of law as well. Future attempts need to be made to create some laws or regulations, maybe by involving stakeholders from the judiciary, different interest groups, law enforcement, and administration.

Ethics has been a major concern while using AI. According to the High-Level Expert Group on AI (AI-HLEG) of the European Union, for AI to be considered ethical, it should be lawful, ethical and robust throughout and should be based on fundamental values like respecting human dignity, justice, rule of law and

should take care of citizens' rights, equality as well as non-discrimination (European Union, 2018;High-Level Expert Group on AI, 2019; European Commission (2020). In its Draft for Discussion session on Responsible AI for All, in July, 2020, NITI Ayog in India too focussed on the responsible and ethical use of AI and having a proper policy in place. It discussed the done by AI in India and around the world through various case studies, rights to the citizens as provided by Constitution of India and that all other laws have to be in consonance with it, it also discussed the Indian laws to be compatible with the international laws on AI like with that of GPAI, IEEE and UNESCO.

Source: NITI Ayog Draft for Discusssion,

2020

NITI Ayog thus highlighted few principles for responsible AI to address changing nature of technology and the challenges faced; Principle of Safety and Reliability, Principle of Equality, Principle of Inclusivity and Non-discrimination, Principle of Privacy and Security, Principle of Transparency, Principle of Accountability, Principle of protection and reinforcement of positive human values.

National as well as international agencies have taken up the ethical and responsible use of AI in law enforcement quite seriously and are working aggressively on it to make police of the future well equipped technologically, while having acceptance from the society and important stakeholders as well at the same time.

The authors have attempted to create a Model for the Ethical and Responsible use of AI in law enforcement, simultaneously ensuring privacy. The Model takes into consideration various dimensions that are quintessential for the success of AI in future policing. It must be multidimensional and have dedicated efforts since no single effort has the capacity to fulfil the ambitious aspirations of effective law enforcement in coming years.
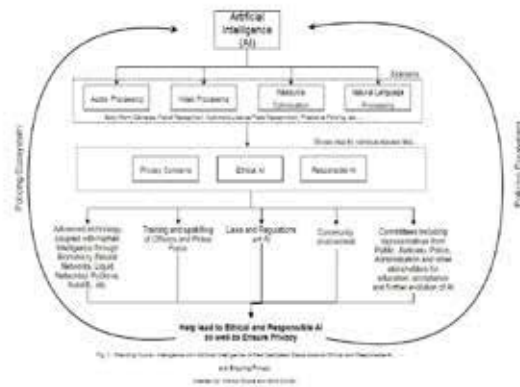
Conclusion

Impossible is nothing, only dedicated effort and determination is required. We can take cues from Shinkansen, the Japanese Bullet Train (García and Miralles, 2017) that was built in record less time and went for complete reconstruction not just overhaul of railway lines to make its ambitious project a reality, the train which ran at 320 km/hr, an increase from the initial 90 km/hr. It appeared impossible though, however, it saw the light of the day. So far AI in law enforcement in future is concerned, the countries, including India need to take serious, well thought out, dedicated as well as determined efforts. They need to have policies in place where the technology can be used for better results, simultaneously, addressing the privacy concerns and ethical and responsible use of AI in law enforcement. Public opinion and trust in law enforcement play an important role, if they are compromised or diluted, the very purpose, efforts, and hard work of uniformed personnel get

defeated. Hence, some committees to address the issues need to be formed with representatives from public, industry, academia, judiciary, media, law enforcement, and administration etc. The officers and staff in law enforcement also need to be upskilled, attempts shall be made to make them agile, who can adapt which dynamic times. Huge investments in terms of training would be required. If we go through the data on investments in training the police personnel in India, we can see that it has had an upward trend, however, heavy investments would be required in research in the field of AI in law enforcement as well as training the officers and staff down the line so that responsible use of AI can be ensured in future.

MODERNIZATION GRANTS TO THE STATE POLICE FORCES

Source: Data on Police Organisations, BPR&D, 2020

However, only technology cannot be the solution, it has to be taken up with a host of other planned strategies. An interesting

insight into future of police force can be seen from the Deloitte analysis. The analysis focuses on how macro demographic and technological trends are changing the policing ecosystem with advanced techniques of crime as well as technology enabled crimes.

Source: Deloitte Analysis, adopted from The Future of Law Enforcement: Policing strategies to meet the challenges of evolving technologies and a changing world. Deloitte Insights.

It further focuses on technological advancements police force must adopt, mobilise the tools, taking people together, as well as use of data to improve policing.

In yet another study that Accenture conducted and interviewed police officers from about seventeen countries; viz;

Australia, Canada, Denmark, England and Wales, Finland, Germany, India, Ireland, Italy, Norway, Portugal, Scotland, Slovakia, Spain, and the United States (state and federal), nine of which were national police services, had some major findings. The study zeroed in on challenges the police force is facing and came up with six steps towards transformation for police of the future. They recommended engaging citizens, empowering police officers, optimising ways of working, proactively managing change, enhancing collaboration and predicting and improving services through analytics. In a recent study, 'Reimagine the Police Force', Accenture highlights four pillars for the future police force; these are Adaptive and agile, Open and collaborative, Empowered and enabled, and Healthy and fulfilled for effective future police force. Thus, while technology is the buzzword and will remain in the decades to come, it has to be clubbed with other strategic measures as well.

Recommendations and Suggestions

The law enforcement agencies can implement AutoML (Automated Machine Learning) in investigations in future. AutoML is an automated process to control ML programs symbolically, In AutoML, the ML programs are mutable programs and can be modified and create an active interaction between various programs and algorithms. (Choudhury, 2021).

PyGlove can be yet another method to improve Machine Learning and its usage in investigations by the law enforcement agencies in future.

Biomimicry in which Liquid Networks(a kind of neural networks that has an inbuilt ability to modify its structures in real time thereby constantly refining its potential to analyse time series data), has the ability to learn on the job (Raibagi, 2021) can also be an option for law enforcement agencies in future, somewhat minimising the issues of ethical AI. These liquid networks can quickly adapt to new sets of data in real time, anticipate behaviour in future and thus can enable algorithms to make decisions of dynamic data. These liquid networks can be used in predictive policing, because they make the algorithms more interpretable, improving upon the drawback of black-box nature of algorithms.

Since these are advanced versions of the existing technologies being used by the law enforcement agencies, they appear to provide some respite with concerns like privacy, automated decisions in predictive policing, and ethical and responsible usage of AI.

Discussion

The paper discussed various technological advancements in the field of AI, as it has become the de rigueur technology

acronym, and its successful application in law enforcement globally as well as in India. It has a host of valuable applications like Facial Recognition Software, Automated monitoring, Biometrics, Robo Cops, Automated Police Stations, Processing substantial amount of data, ShotSpotter, Thermal Imaging, Automatic License Plate Recognition (ALPR), Enhanced Body-Worn Cameras, Drones. However, these applications infringe upon the privacy of citizens. It has also to be ensured that these technologies are used ethically and responsibly in future and hence dedicated efforts in this direction are required. The advanced technologies like Neural Networks, Biomimicry, PyGlove, Liquid Networks may be used in future but responsibly and ethically; as Zardiashvili et. al., (2019) put it, "The question is not if AI should be used, but what it is most suited for and how it can be properly implemented". However, we as a society, as a police force should always remember, technology can be as advanced as we want it to be, but it can never replace the inherent ability of human reasoning and logic, that ability was, is and will always remain quintessential and unique human ability, as Murray and Joyce (2017) express, "let machines do what machines do well, and let humans do what humans do well".

We need to create a fine blend of human intelligence and artificial intelligence, because artificial intelligence, however advanced it might become, will remain artificial !

Practical Implications

The suggestions on the responsible and ethical use of AI in law enforcement including various other measures suggested in the study for future robust police may be considered for policy to make policing effective and efficient.

Limitations of the study

This is a conceptual paper based on extensive review of literature. Some empirical research may be conducted in India. The authors did not find too many research studies on AI and law enforcement with respect to India.

Future Research

An empirical study may be conducted in future to understand what the law enforcement officers recommend. The study shall also include the viewpoint of important stakeholders.

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Drone Swarm has arrived

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Abstract

Taking inspiration from the flock of birds and the elaborately built ant and termite colonies, scientists have advanced the idea of drones much further by bringing in the concept of Drone swarms. In such a swarm, tens or hundreds of small drones are launched together and these can either be centrally controlled or each can operate autonomously using the power of machine language and artificial intelligence. This new concept indicates a paradigm shift in aerial warfare today. The advantages of introducing a drone swarm are many - small in size, low cost, flying close to ground, evading existing surveillance systems and the unique ability to select targets based on embedded software and sensors. Used for the first time in January 2018, the versatility of drone swarms has undergone a sea change and today they are more lethal than ever before. There are no foolproof measures to totally counter this threat today and such a system will probably take some time to evolve. India is well aware of this threat and the government is working in the direction on how to counter these threats. This new concept of asymmetric aerial warfare is very real and does pose a genuine threat to important dignitaries and vital installations. The only option available is to develop ways to effectively and efficiently counter this threat in the best possible manner.

Key Words : Drone swarm - Abqaiq - Houthi - Asymmetric warfare - Artificial intelligence - Machine learning - Autonomously - Jamming - Air defense - Size of drone swarm - Kamikaze - Kinetic - Non Kinetic - Concept of swarm - Ant colony - Stigmergy - HAL - Alfa S - Wingman - Meher Baba -MHA-MoCA.

The first attack by a Drone swarm probably took place in Syria on 19th January 2018. A Russian air base, with a naval facility nearby, detected 13 flying objects on its radar, speeding toward them. They did not look like aeroplanes and were flying

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very low. The Russian air defences were able to shoot down seven of these and jammed the remaining six. These drones, it was later learnt, were all loaded with explosives. This multi- pronged attack on a military facility, though neutralised, raised eyebrows about this new kind of attack and a new paradigm in aerial warfare. A similar incident happened in Sep 2019 when non- state actors sent a swarm of 18 drones and 7 Cruise missiles to attack the Abqaiq and Khurais oil facilities in Saudi Arabia. These drones allegedly fired by Houthi rebels, were low flying, not too sophisticated but were able to slip through the high- tech air defences installed by US and France. They caused a lot of damage to the Saudi refineries and the world crude output fell by almost 5% i.e. 5.7 million barrels in one day. The US ambassador to Israel Daniel Shapiro commented on this major slip-up by saying - the US supplied air defences were not oriented to defend against an attack from Iran, that's incomprehensible. If they were, but they were not engaged that's incompetent. If they simply weren't up to the task of preventing such precision attacks, that's concerning.

It was later learnt that the drone swarms launched on the Russian air base and the Saudi Arabian oil refineries were not too sophisticated and did not carry high explosives. However continuous improvement in artificial Intelligence and machine learning can definitely pose

greater risks for vital installations and high value targets by such drone swarm attacks in times to come. This probably is a new form of asymmetric warfare and it seems that future aerial warfare will be based on electronics, software and sensors in the form of combat swarm of drones.

Capabilities of Drone swarms

This new breed of unmanned aerial vehicles are a step ahead of the individual drones of yester years. These have been developed in the aerospace industry by harnessing the power of artificial intelligence and machine learning in a way that a large number of drones can either operate independently or their actions can be coordinated so that all work towards the same objective. There is no minimum number prescribed for a group of drones to be called a drone swarm. These can be launched from the land or even from an aircraft in air and they can engage a number of targets at the same time with pinpointed accuracy. They can also be launched from the sea or any water body provided the launch craft has enough space for fifty or hundred drones and it has the technology to be in link with the drone swarm. Such a link may not be required in case the swarm has been programmed to function in an autonomous manner. The size of the drones in a swarm can vary from a few inches to a few feet across. These can

be manually controlled from a central authority or they can also be programmed to fly autonomously. Artificial Intelligence and machine learning are the basic building blocks for this new form of warfare.

A drone swarm implies interconnected drones which are capable of working together to counter the enemy. These are low cost intelligent machines which have been inspired by the amazing coordination and collaborative behaviour shown by swarms of insects and birds - working efficiently without any central authority. The drone swarms of the future will probably also have the capability to choose separate targets, think independently, divide up the tasks between them and thereafter execute each task with high precision. Technically these swarms can operate on multiple frequencies which will resist the jamming introduced to counter the drones of today. On the defensive side such swarms can also be programmed to block or defend vital installations by engaging multiple incoming threats. A swarm can also be tasked with creating a cluster before the enemy radar systems so as to distract and confuse the enemy regarding the extent of incoming danger and the number of threats involved.

The idea behind a drone swarm is that machines will be able to talk to each other seamlessly, will take decisions amongst themselves and finally achieve the objective for which they were despatched. These swarms may comprise a large number of low-cost drones that can be programmed, using algorithms, to overwhelm the adversary by making them work together and at times even making them act independently once the target(s) has been sighted.

Limitations of current air- defence systems

The traditional air defence systems are not able to detect this new threat because the small sized drone swarms fly very close to the ground and are able to change their directions frequently. Radars are generally geared to detect high flying, large objects, flying at fast speeds and therefore they are not able to detect these small sized drone swarms. In order to counter this threat an effective air-defence system is required which should be a mix of anti-aircraft guns, missiles and electronic warfare systems. It is because of lack of such multiple layered security systems that the drone swarms are able to exploit this gap and are becoming more successful as potent attack weapons. The challenge today appears not only to shoot down these threats of single drones or neutralise the drone swarms, but also to be able to successfully detect these small-sized multiple objects, moving at high speeds and flying very close to the ground.

How big is a Drone swarm

A large number of countries have exhibited their capability of simultaneously controlling a large number of drones in the sky and performing amazing synchronised aerial displays. Intel Corporation displayed a total of 2066 drones in a swarm formation in California in 2018. This record was broken by Geoscan of Russia on 3rd September 2020 when 2198 drones took to the skies in a scintillating ten minute display over St Petersburg which was visible from over 3 kms away. However the current record is held by Shenzhen Damoda Intelligent Control Technology of China which put up a dazzling aerial show performed by 3051 drones simultaneously on the 20th Sep 2020. This show was done as a tribute to the achievements of China in the space frontier. In India also aerial displays of synchronised drones have begun to taken place, though not at a scale mentioned above. The first time it was done during Kumbh Mela at Allahabad in Mar 2019 when 150 drones took to the skies. In Mar 2020 the night sky of Mumbai was lit up by 256 quadcopter drones which put up a colourful aerial spectacle for ten minutes for the public to see.

Countering a Drone swarm

It has been the experience that the strategy of trying to find out one ideal system to counter a drone swarm has not proved to be very successful. The prevalent logic seems to be that only a good swarm can neutralise an enemy or a hostile swarm. These defensive small sized swarms may be low cost, expendable and probably the only way known today to counter a multi- pronged attack by a drone swarm. In a defensive role a drone swarm can be placed near vital security installations and these can work together to create a defensive wall to thwart the evil designs of an enemy drone/ drone swarm which are sent to damage vital installations or to target an important dignitary. Though the drones are normally programmed to avoid any obstacle, the defensive drone swarm can be programmed to make contact with any incoming drone(s) or threat and blow themselves up in a kamikaze-like-kill thereby neutralising the threat effectively.

The measures required to counter a single drone attack or that of a swarm requires a mix of active and passive measures. These could further be categorised into Kinetic or non- Kinetic measures. The kinetic or the hard kill approach involves the use of high intensity or high power lasers to destroy or disable an incoming threat. The incoming threat is completely destroyed as a result of which they come crashing to the ground. The flip side here is that because of the threat being completely destroyed all electronic evidence in the form of digital footprints available are also lost which could have been of vital help in trying to pinpoint the intent and

source of the perpetrator.

The non-kinetic or the soft kill measures consist of trying to take control of GPS or the radio frequency of the incoming drone(s) or jamming their communication systems thereby disorienting them. This process is called spoofing, where the controls of the drone are taken over by cloning its original signals. This process has the advantage of having the custody of the enemy drone which can then be analysed in detail for all the digital evidence to trace it to its owner.

The use of one drone against another or a swarm of drones against another swarm can also be an option. This way there is a high probability of neutralising a large number of incoming threats or at least minimizing the threat posed by a drone swarm. The drones could be programmed to act in a coordinated manner and approach the incoming swarm. Once the threat is sighted each drone could lock itself to a target, while informing all else in the swarm and thereafter destroy the target and reduce the threat.

Concept of Swarm

The inspiration behind the concept of building up a drone swarm came by studying the ant and termite colonies - it was amazing how they were able to build such large colonies with elaborate structures and carry out their task with amazing precision without any centralised control. This concept, known as stigmergy, implies how animals leave signals on the ground which are picked up by others in the flock and thereafter each job is followed up and repetition avoided. Ants do this by leaving some kind of a chemical trail on the ground and termites do a similar thing inside their mounds. Remarkable coordination and control can also be seen in a flock of birds when they are in a flight - how they respond to subtle changes in speed and direction within split seconds and how they move from one place to another at such a fast pace without even one bird crashing into the other. It seems as if the ants, termites and flock of birds are all coordinated in their actions by a superior centralised command which they obey in a perfect synchronous manner.

Foreign context

The maximum number of drones that can be used in a military or combat strike is not exactly known because of its secret nature. However what started in 2018 with 13 drones attacking the Russian air and naval base in Syria has grown manifold now. US has already demonstrated a swarm drone concept Gremlins which air launches micro-drones to perform a reconnaissance over strategic enemy areas. China also exhibited its capability to launch a swarm of helicopter drones last year which could carry all kinds of arms and ammunition to the target and

then return to base in an autonomous manner. Russian also has this capability in Flock93 which envisages launching of more than 100 drones in a VTOL manner, each carrying a 5.5 pound warhead. Israeli company IAI is now offering drone swarm packages for commercial users which allow the swarm to be controlled by a smartphone app. The actual number of combat drones that can be launched in a swarm by the frontline countries is anybody's guess and something that only time will tell.

Indian Context

The Drone scenario in India has seen the import of Israeli Harop and Heron drones which fly at a very high altitude and are able to do surveillance of a designated area. DRDO has also come up with its Rustom series of surveillance drones and the Aeronautical Development Agency (ADA) is working on Ghatak - a combat drone with stealth technology. India and US have recently signed an agreement to jointly develop drone swarms and anti-drone systems which will help mitigate the threat that is being posed by enemy drones today. US has already demonstrated very significant drone swarm capabilities and with the COMCASA (Communications Compatibility and Security Arrangement) agreement, the transfer of technology and data sharing between the two countries can be a logical step ahead.

HAL is presently working to develop a drone swarm system called ALFA-S (Air Launched Flexible Asset- Swarm). Each drone in this swarm will be about 1- 2 metres in length, carry 1.5 tons of explosives each and fly at speed of approximately 100 km per hour to engage and destroy targets in a kamikaze-like action. One Su- 30 or Jaguar fighter can deliver at least 30- 40 such drones in one go. This swarm will act in a coordinated manner and by using infrared, optical and other sensors it will be able to detect and destroy targets on the ground such as surface-to-air missiles, enemy radars, aircrafts etc.

Wingman is another munition loaded semi-autonomous drone system being developed by HAL on the manned and unmanned platform. The Wingman drones will be half the size of a regular fighter aircraft, will be armed with stealth features and will fly about a hundred kilometres ahead of the conventional aircraft, providing sensitive battlefield information to the mother aircraft. These will operate in large numbers to provide surveillance, cover and protection to fighter pilots when they go on missions in an enemy territory and will engage the enemy threats and try to confuse the enemy radars about the real target.

On the 15th Jan 2021 India also announced its entry into the combat drone swarm club by displaying an attack by 75 drones simultaneously on simulated

targets. This swarm mainly comprised quadcopters- had scout drones which looked for targets, mothership drones which released explosive laden units and finally expendable drones which went for kamikaze like kill. Such swarms are also capable of carrying out supply missions, with a 75 drone swarm capable of delivering over 1200 pounds of supplies and medicines to troops in remote and inaccessible frontline areas.

The commitment of the government towards developing drone swarm capabilities can be seen in futuristic defence projects as the Meher Baba Swarm Drone competition. This is an Indian Air Force funded project, wherein people have been invited to give suggestions and create effective swarm capabilities in drones. The winner of this competition will bag a contract worth Rs 100 crores and will build a fleet of 50 drones for IAF to deliver humanitarian assistance and disaster relief in very remote areas of India as Siachen, Line of control etc.

Conclusion

The threat posed by drone swarms is very real as has been exhibited by the attacks on defense forces and vital installations in the recent past. This new paradigm in asymmetrical warfare does pose serious threats to the defense of the country, installations of national importance, big crowd gatherings and very important dignitaries. The Ministry of Home Affairs, Government of India has issued detailed Standard Operating Procedures for Handling the threats from Drones and other Sub- Conventional Aerial platforms in May 2019. The Ministry of Civil Aviation has also issued National Counter Rogue Drone Guidelines in Oct 2019 which intends to put in place measures and guidelines to handle the threat posed by rogue drones. It talks of a Steering Committee at the national level to evolve a Counter- drone framework and an Implementation Committee for the regular monitoring of sub- conventional threat environment and the implementation of the counter-drone measures at the national and the state level. Because of their low cost, easy to assemble configuration and rapid development of artificial intelligence and machine learning, drone swarms will be used in a variety of ways by nations and non-state actors. The threat can only increase in the times to come and so countries today have no option but to develop systems to counter these threats in an effective manner if they want to protect their high value targets of national importance.

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The story of Gold- Economy and National security

K V Thomas*

Abstract

There is a great saying in Malayalam 'Kanakammoolam Kaminimoolam kalaham palavidhamula kilsulabham' which means that conflicts are aplenty in the world due to women & wealth. In the Indian context, the yellow metal gold is closely intertwined with wealth and women, as it is an essential component of wealth and an object of great attraction for women. That is why, India is the world's second biggest consumer of the precious metal with an annual consumption varying from 800-900 tons. Around 98 per cent of this gold is imported. The gold which is the common man's most preferred investment has made a direct contribution of more than $30 billion to the Indian economy. But the import of gold has led to the higher Current Account Deficit (CAD) and Balance of Payment (BoP) problems in our Economy, which to a great extent, could be checkmated by increase in Import duty of gold. One major fall out of the increase in import duty was the steady spurt in gold smuggling especially by organised smuggling syndicates mainly operating from the United Arab Emirates (UAE). The inflow of large quantity of smuggled gold to India using 'hawala' and 'money-laundering' mechanisms has created a parallel economy. The smuggling syndicates were found using different modus-operandi and ingenious techniques including use of diplomatic channels. A more serious challenge to enforcement agencies is the linkages of such syndicates with terror and extremist groups and the 'terror- financing' by smuggling.The paper examines the role of police in such matters and underlines the need of better collaboration with other stake-holders in the field.To meet such challenges, the paper comes up with a few suggestions which inter-alia include: rationalization of import-export duties of gold/gold jewellery; strict adherence to 'due diligence guidelines' by all companies and importers engaged in gold trade; better coordination and synergy among enforcement agencies dealing with economic offences and up-gradation of their technical and manpower resources .

Key-words: Current Account Deficit (CAD), Import duty, smuggling syndicates, modus operandi, 'hawala transactions' parallel economy, 'terror-financing' Gold Monetization Scheme. Enforcement mechanisms.

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Indians from time immemorial have a great obsession with gold due to a confluence of aesthetic, cultural, religious and economic factors. The desire to possess gold dates back to the Bronze Age of Indus valley civilization when the Indus people wore gold jewellery. As the gold was equated with gods and rulers, the ancient dynasties had amassed gold in large quantities and dedicated to their glorification.Their trade with ancient civilizations such as Rome, Greek etc. in spices, textiles, clothing and plantation commodities helped secure more and more gold reserves. Roman writer Pliny[1] complained in the first century AD about India draining all gold from the empire in lieu of fine fabric and spices. However, such huge stocks of gold were plundered by the colonial invaders including the English East India Company. William Dalrymple, succinctly highlighted this plunder as; 'Powis Castle in Welsh Marches is awash with loot from India with room after room of imperial plunder by East India Company in the eighteenth century'. [2]

But, such colonial loot and plunder didn't exhaust the vast gold reserves of the country. India's princely rulers and emperors-to avoid the gold being looted

by marauding armies- had hidden the gold and jewelleries in safe and secure places like temples or deep jungles or river ravines. The unfolding story of the huge hidden treasures of gold and jewelleries costing several billions in the secret vaults of Kerala'sSreepadmanabhaSwamy Temple in Thiruvananthapuram demonstrates this truth. Similarly, the Archaeological Department through their excavations and 'Treasure hunt'in central Indian states and Assam where historic battles were fought for centuries had unearthed huge hidden gold treasures. Thus, according to some estimates, India has around 25,000 tonnes of gold holdings among its people and several thousand tonnes in the vaults of Reserve Bank of India (RBI) and temple trusts.[3]

It was Gupta dynasty that had first introduced gold coins around 250 AD. Later, the other kingdoms had introduced gold coins to proclaim their glory and image as also to serve as money under any other kingdom. The English East India Company issued gold coins (Corolina) in India along with coins in other metals such as silver, copper and Tin. However, slowly, the coins were replaced by paper money. The first paper currency was issued in British India in the 18th century, with the Bank of Hindustan, General Bank in Bengal and the Bengal Bank becoming the first banks in India to issue such

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1 Gaius PliniusSecundus, called Pliny the Elder, was a Roman author, a naturalist and natural philosopher, a naval and army commander of the early Roman Empire, and a friend of emperor Vespasian. He wrote the Encyclopaedic NaturalisHistoria, which became an editorial model for Encyclopaedia.

2 William Dalrymple. 2019. 'The Anarchy: The East India Company, Corporate Violence, and the Pillage of an Empire'. London: Bloomsbury Publishing.

3 Why India's vaulting Over Gold? June, 5, 2020- https://www.pallikkutam.com/edu-news/why-indias-vaulting-over-gold last accessed on July 16, 2020.

currency. Despite the introduction of paper currency, gold continued to be the prime attraction or source of investment for sizeable population.

Demand &sources of gold

The demand for gold across India- the world's second biggest consumer of the precious metal- varies from 800-900 tonnes per annum. It's estimated worth is over 30 billion USD. India meets most of its gold demand through imports which were in the range of 800- 1000 tonnes per annum during the period 2010-2019. (See Table 1). India's gold imports consist of refined gold and gold-doré. Switzerland, UAE and South Africa are the top 3 countries from which India sources gold imports. Of the total imports, bullion accounted for over 80 percent and doré the rest. The RBI nominated banks/ importers, selected public sector trading houses and the Premier/Star Trading Export Houses in the private sector approved by the Directorate General of Foreign Trade (DGFT) are empowered to import gold without any ceiling. Bulk of the gold imported to the country is refined gold.

Table -1 –Gold import during the period 2010- 2019

Year	Quantity (In Tonnes)	Import duty	Price of gold (10 grams.)
2010	969	INR 208-309/ 10gms+ state tax	18,320
2011	1067	INR300/ 10gms+ state taxes.	23921
2012	843	2-6 per cent (+ state taxes)	29392
2013	876.	8-10 per cent(+state taxes)	29303
2014	899	10 per cent(+state taxes)	28319
2015	914	10 per cent (VAT- 2 %)	26396
2016	780	10 per cent (+VAT 2%)	29358
2017	955.	10 per cent (+GST3 %)	28488
2018	944	10 per cent (+GST3 %)	31438
2019	831	12.5 per cent (+GST 3%)	35220

(**Sources**: *LBMA, MCX Spot Price; CBEC,* Bloomberg and NitiAyog Report on gold)

Less than 2 tonnes of gold is mined in India. Hutti in Karnataka is the major gold –mining project. Mines were earlier located at Uti, Gannajur Main Project, Deccan Gold Mines and Hira-Buddhini (all Karnataka) and Jannagiri Gold Project (Andhra Pradesh). The Union government has accorded top priority to exploring new mines. In 2016-17, over 40 blocks in seven states have been identified for auction under the Mines & Minerals Development & Regulation (Amendment) Act, 2015. Recently, this sector has been opened to private companies to curb overseas purchases of the gold. Vedanta, a unit of London-based Vedanta Resources Inc. won India's first auction of Baghmara gold mine in Chhattisgarh in 2016. Meanwhile, in 2020the Geological Survey of India

(GIS) and Uttar Pradesh Directorate of Geology and Mining have discovered two goldmines having around 3,350 tonne gold ore in Sonbhadra district, bordering Madhya Pradesh. This new discovery of gold deposits is around five times the current gold reserves of India, which is around 626 tonnes.[4]

Gold & Economy:

Gold has a very significant place not just in the socio- cultural milieu in India, but also in the Economy. A report commissioned by the World Gold Council from Price water house Coopers Pvt. Ltd. estimated that gold made a direct contribution of more than $30 billion to the Indian economy[5].Even the poorest of the poor in India possesses a sovereign of gold. Many of them consider it as a symbol of their existence or status. There is a common adage that marriages are held in heaven. But in many communities in India marriages are decided on the quantity of gold jewellery that the brides' parents can offer! To get out of the social taboo of 'dowry', many of them describe such practices as economic empowerment of Indian women!   In the case of gold, there exists a close inter-relationship between tradition and Economy. The Chairman World Gold Council described this as; "People buy gold as a long term

investment to protect their wealth and gold also has a huge significance socially, emotionally and economically in India'.[6]

Gold impacts the Indian economy in multiple ways. The first and foremost one is the impact of gold imports on trade balance and current account in the Balance of Payments (BoP). The more the import of gold, the higher would be the Current Account Deficit (CAD)- High levels of CAD are considered detrimental to the economy since it would necessitate capital flows to maintain the Balance of Payments. The policy position in India vis-à-vis gold in the recent years was to maintain a balance between the gold imports and the CAD. The Government sought to maintain this balance by adopting various regulatory mechanisms particularly by increasing the import duty from time to time. Such measures were proved to be effective in maintaining the balance. For example, a 14.23 per cent decline in gold imports during 2019 as compared to 2018 has helped in narrowing the country's trade deficit to $152.88 billion during 2019-20 as against $184 billion a year ago[7].

However, sufficient gold reserves have been interpreted as signs of the country's economic stability. Many times, such

4   https://www.businesstoday.in/current/economy-politics/geologists-strike-gold-over-3650-tonne-gold-ore-up-sonbhadra/story/396627.htmln last accessed on July 16, 2020.

5   https://www.gold.org/sites/default/files/documents/PWC_direct_economic_impact_of_gold.pdf last assessed on July 16, 2020.

6   (https://www.firstpost.com/business/reliance-industries-launches-new-virtual-platform-chatbot-via-whatsapp-ahead-of-rils-first-online-agm-tomorrow-8594071.html last assessed on July 17, 2020.

7   https://economictimes.indiatimes.com/news/economy/foreign-trade/gold-imports-dip- last assessed on July 17, 2020.

reserves enable the country to overcome serious economic crisis. For example, during 1980s, the poor economic and political management had plunged India into serious BoP problems. The Gulf war had further aggravated the situation when the crude oil price showed a sharp hike. The value of the Indian rupee had fallen drastically. The attempts of Reserve Bank of India to defend the currency by expanding international reserves failed to take off. The only alternative was to secure an emergency loan from the International Monetary Fund (IMF) worth $2.2 billion. India did this by pledging 67 tonnes of India's gold reserves as collateral security. The Reserve Bank of India had to airlift 47 tonnes of gold to the Bank of England and 20 tonnes of gold to the Union Bank of Switzerland to raise $600 million during 1991. There was much hue and cry in India against the depletion of gold-reserves. Ultimately, the above decision coupled with other political factors led to the collapse of the Chandra Shekhar government. But in 2009, India bought back 200 tonnes of gold from the IMF at an estimated price of around Rs. 31,490 crore ($6.70 billion), under the IMF's limited gold sales programme.

The second aspect is on the scale of economic activity in the economy. As the gold market in India is primarily driven by consumption and fabrication of gold into jewellery, this sector makes substantial contributions in economic value-addition, employment generation, foreign exchange earnings and trade balance. These contributions are mainly through activities such as Gold-mining, Refining, Hallmarking, manufacturing and exports of jewellery/gems etc. Over the last few years, there has been significant development in these fields' especially in gold-refining and manufacturing/ exports. India is one of the largest exporters of gems and jewellery[8].

Gold- common man's preferred investment portfolio

The gold has become the most viable and ideal investment for all sections of people or investors. The unpredictability in Indian bourses has made it more attractive to small and medium investors. The 2009 recession had demonstrated that gold has been a less risky investment option as compared with investment in other portfolios. Post the 2009 debacle, while other assets moved sluggishly toward recovery, gold gained about 24% by the year's end.

Another positive factor is its easy liquidity. Anybody can easily convert the gold into cash. Its easy liquidity enables the holders to easily manage their financial exigencies. The easy loan-availability of gold holdings up to 75 per cent of its market value makes the yellow metal more liquid. There are two types of gold

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8   From the Report of India Brand Equity Foundation (IBEF), a Trust established by the Department of Commerce, Ministry of Commerce and Industry, Government of India,.

loan providers - formal (banks and non-banking finance companies) and informal (money lenders and pawnbrokers). The cheaper gold agriculture loans to small scale farmers through nationalised banks have increased the financial viability of gold.

The other schemes such as Gold Monetisation Scheme (GMS) which ensures specified bank interest to the deposits on gold in any form and Gold Exchange-traded Fund (ETF) or a Gold Fund run on the pattern of Mutual Funds have increased the potential of gold as the most attractive investment for all sections of people. It is estimated that around 25000 tons of gold lie unused with the households and religious institutions throughout the nation. The above schemes envisage the mobilisation of such unused gold and its utilisation productively and profitably for developmental and economic activities. .

Gold- Regulations & Regulatory mechanisms:

The gold-policy framework of the government is based on three main objectives namely reduce gold imports so as to bring down Current Account Deficit(CAD), increase transparency by curbing illegal flow and transactions and mobilise the privately held unused gold reserves as an " asset class'. In 1947, restrictions were imposed on import of gold. Then, private ownership of gold bullion was virtually banned. The Gold Control Act, 1962, recalled all gold loans given by banks and stopped its forward trading. The policy to enhance customs duty on gold had gained momentum in 1963 when the production of gold jewellery above 14 carat fineness was banned. In 1968 came another Gold Control Act, which prohibited citizens from owning gold in the form of bars and coins.The government abolished the Gold Control Act of 1968 in 1990, when the concept of liberalisation and globalisation knocked at the doors of Indian Economy. It allowed free import of gold, which in turn generated income from import taxes. As part of liberalisation, the Non-Resident Indian (NRIs) were allowed to carry limited quantity of gold to India. The 2008-09 global financial crisis created renewed consumers' interest in gold resulting in a sharp hike in gold prices

The global economic uncertainties and internal issues affected India's exports and investment flows. To reduce the demand for gold and stabilise the Current Account Deficit (CAD), there were major policy interventions. The major one was to enhance the import duty of gold. Thus, between 2012 and 2013, multiple hikes pushed the import duty on gold from 2 per cent to 10 per cent. A ban was imposed on import of gold coins and sales through banks and post offices. The 80:20 rule was introduced with the stipulation that at least 20% of gold imports had to be exported before bringing in new

consignments. With the introduction of Goods and Services Tax (GST), the excise and the VAT on gold and jewellery have- been subsumed. On enhancing the import duty of gold from 10 per cent to 12.5 per cent in the financial budget 2019-20, the import- gold today attracts an import duty of 12.5 per cent, a GST of 3 per cent, and an additional GST of 5 per cent on making of gold ornaments. (See Table 1 above).Import of gold jewellery faces a 15 percent customs duty.

Gold: Smuggling- sources & modus operandi.

The people's insatiable craze for gold due to various economic-religious and cultural factors and its high demand in the domestic market had always acted as catalysts for smuggling and illegal transactions in gold. Very often regulatory mechanisms on the inflow of gold to the country such as new legislations or a higher rate of import duty/taxes incentivise smuggling of the metal. For instance, the Gold Control Act of 1960s that prohibited import of gold except for jewellery had led to the emergence of notorious network of gold smugglers in the 1960s, 1970s and 1980s. The Bollywood had romanticised such characters through blog busters in the silver screen. Similarly, another spate of smuggling occurred after India increased the import duty of gold three times in 2013 to control a record current-account

deficit. According to Custom's channels, the illegal inflows of gold during 2014 was to the tune of 225 tons.

The current spurt in gold smuggling has been largely attributed to the hike in gold import duties in the financial budget 2019-2020. Perhaps, the Finance Ministry was apprehensive of this challenge as reflected in the words of the then Finance Secretary Subhash Chandra Garg as; 'This decision has been carefully taken. The government has assessed that (smuggling) dimension as well'[9]. Those who are closely associated with bullion market endorsed such views. The functionaries of All India Gem and Jewellery Domestic Council anticipated a hike of 30 to 40 per cent in the inflow of smuggled gold during 2019-20.[10]

While analysing the trends of gold smuggling to India, it can be found that the organised crime or smuggling syndicates dominated the scene for many years with Bombay as the epicentre of such activities. Haji Mastan, Karim Lala, VaradrajanMudaliar, ChotaShakeel and Dawood Ibrahim- the underworld dons of Mumbai- were in the forefront of such smuggling operations for many decades. Many other Mumbai-based groups established their business empires through underworld operations. Now the scenario has drastically changed.

9 https://www.businesstoday.in/current/economy-politics/government-assessed-smuggling-dimension-while-raising-import-duty-on-yellow-metal-finance-secretary/story/362294.html last assessed on July18, '20.

10 Ibid, Sl No. 9

More and more people-employed and unemployed, well paid Executives, blue and white collar workers- have entered into the field in view of the high margin of profit of the smuggled gold as compared to the gold imported through legal channels. Some estimates say there is a profit of Rs 6 lakh on every kg of smuggled gold over that imported through legal routes. As the bullion price has now reached newer heights, illicit trade becomes all the more attractive making the role of enforcement and investigating agencies more arduous.

A study undertaken by Canada-based group IMPACT[11] revealed that up to one-fourth of the total quantity of gold entering India arrives through an illicit trade. The annual import of gold is in the range of 800-900 tonnes, while the annual consumption is above 1,000 tonnes. This suggests that up to 200 tonnes of gold is being smuggled into the country. An analysis of the seizure of smuggled gold during the last 2 years indicated that around 75 per cent of smuggled gold came by air, followed by seas (20-25 per cent) and by land (5-10 per cent). India's better air connectivity with different countries through 34 international airports acts as a 'facilitator' for smuggling by air. On average, most of these airports have 2-3 lakh passengers a month. The Customs or the other agencies have

limitations for the fool-proof scanning of baggage or frisking of passengers. In the case of illegal sea-routes, India has a vast coastline of over 7500 kilometres which is largely porous with isolated creeks, jetties and landing sites conducive for the operations by gold smuggling syndicates. India's porous land borders with Nepal, Bangladesh, Bhutan and Myanmar have been extensively used by gold smuggling syndicates. Of late, there has been a jump in the smuggling of gold into India from China, Taiwan, Singapore and Hong Kong, The trend, according to the Directorate of Revenue Intelligence (DRI) is a clear indication that smuggling syndicates are using e-commerce platforms and couriers to smuggle gold into India by using different concealment techniques in items of common use.

Modus-operandi of Smuggling

Most of the smuggled gold (around 75 per cent) comesto India through the UAE, which plays the role of an intermediary. The gold smuggling syndicates operate with a highly meticulous network in which the key players or 'bosses' act behind the curtain concealing their original identity from other stake-holders. Very often their operations or links transcend beyond the contours of continents. In the case of UAE-based smuggling operations, the kingpins in Africa's Great Lakes region with links to India, import gold doré from countries such as Tanzania, Uganda and Ghana to

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11   Alan Martin: 2019. 'How India Became One of the World's Largest Gold Smuggling Hubs': © IMPACT Transforming Natural Resource Management™ November 2019 ISBN: 978-1-897320-41-9

UAE/ Dubai where they have refineries or facilities for refining gold doré. The IMPACT in their research study have identified half a dozen such key-operators based in East Africa and UAE/ Dubai.From Dubai, the syndicates smuggle refined gold to many locations—mostly to Nepal Bangladesh, Bhutan, Singapore and Thailand—but almost invariably, the gold ends up in India.

Buying gold in Dubai is a perfectly legitimate activity. Usually, the smuggling syndicates mobilise the money for the purchase of gold from Hawala agents. The mobilisation of money through Hawala channels is an easy process in UAE as there are sizeable number of expatriates or Non-Resident Indians (NRI) with business firms who are keen to transfer their money or funds to India through such channels with a view to evading taxes in India. Moreover, a few Hawala syndicates offer commission or incentives to those who transact their funds through hawala channels.

Once the gold is purchased, the syndicates assign the task of delivering the gold to the 'facilitators' or 'conduits'. Majority of them are expatriates in the Gulf engaged in small-scale business or employed in mobile and disposable labour in different sectors.They find trusted 'carriers'; arrange for their air travel to and from India and hand over the smuggled gold with specific instructions regarding the

delivery at the place of destination. Most of the carriers are the young men from India- usually school or college dropouts- often with rural background, who are sent to Dubai on tourist visas or on contract labour. Young women working as 'housemaids' or in beauty parlours or salons are also used as carriers. They are offered commission depending upon the quantity of smuggled gold that they carry and the outcome of the operation. One major task of the facilitators is to ensure the safe passage of the consignment. For that purpose, they cultivate their 'moles' among Customs, aircraft or ground crews, Immigration, Security and Airport personnel by bribing them or exploiting their weakness. Such 'moles' sometimes, work in collusion with carriers' in clearing the smuggled gold concealed in airplane or airport toilets/ restricted areas. . Facilitators' commissions vary depending upon their status and the sensitivity of the operation.

The role of facilitator ends when the consignment safely reaches the destination and is duly handed over to the 'landing agent' who in turn sells the gold to Jewelleries or business groups. The smuggler, in consultation with his Indian counterpart, would set its 'landing price' in India. If a consignment is seized, the smuggler has to bear the entire loss. The smuggling syndicates receive payment only after the sale of gold. The money so received is paid back to the

hawala agents.

Those who had associated themselves with smuggling syndicates revealed that in major operations there are different layers of security or discretion in which the role of every player is clearly defined. Any dilution or deviation of their role would be severely dealt with. For example, a carrier, knows no one connected with the operation except the person who hands over his air ticket. Even the facilitators who have been working for the syndicates for many years do not know the kingpin of the operations. Such security or operational precautions very often incapacitate the Customs or other agencies to reach the 'bosses' or key players of smuggling operations.

The ingenuity or sophistication attained by smuggling syndicates in undertaking their operations has made the tasks of investigating and enforcement agencies more difficult. Earlier, the common technique was to conceal the gold bars inside TV sets, toys, sewing machines CD players, wheelchair frames, chewing gum packets and audio sets.But such techniques have drastically come down including the smuggling of gold in bars. Instead, the new technique is to mould the gold in different forms so that it can be smuggled undetected. Recently, small-sized workshops or units have come up in the UAE and other Gulf countries where the goldsmiths undertake such tasks for

major smuggling groups. They have the expertise and skills to mould gold into any shape or to handle chemicals that can be used as a medium for concealing gold.

But the most disturbing aspect is the move of smuggling syndicates to use diplomatic channels for smuggling operations by misusing the 'diplomatic immunity 'given to diplomats and their Missions under the Vienna Convention on Diplomatic Immunity 1961.The latest example was the 'gold smuggling episode at Trivandrum International airport 'in Kerala. The Customs-unit in the airport has seized 30 kilograms of gold worth about Rs 13 crore from a 'diplomatic bag' addressed to the Attaché of the Consulate office of United Arab Emirates (UAE), Trivandrum, on June 30, 2020. According to the customs, more than one dozen such consignments of different quantities of gold, have been smuggled in through the airport in the recent past, using 'diplomatic channels'. The seized - consignment was brought by a Chartered flight from UAE. The National Investigation Agency (NIA) has taken over the investigation of the case suspecting 'terror-finance' and money laundering and linkages of the smuggling syndicate with the underworld and the expatriate Indians operating from the UAE. The investigation by NIA/Customs has indicated that some of the arrested suspects had maintained linkages with a few senior bureaucrats including those in

the inner circle of the state Chief Minister. It was not the first time the diplomats from the UAE are involved in gold smuggling to India. In March 2013, in Delhi Airport, a UAE Embassy's diplomat was detained with an Indian businessman for smuggling 37 kg gold bars which were concealed in the baggage of the diplomat.

Gold: Hawala- 'Terror-financing':

With the spread of terrorism, many terror organisations were involved in smuggling gold, drugs and other contrabands to raise funds and launder proceeds from other businesses to use in their terror operations. There have been numerous cases that have highlighted the nexus between gold-smuggling and terror financing. The Institute for Security Studies in their study on Terror-financing revealed that Somalia-based Islamists terror group al-Shabaab was engaged in smuggling gold from the Democratic Republic of Congo for funding its terror activities. The smuggled gold was exported to Dubai and the Far East[12]. Taliban, Al –Qaeda and other affiliated groups have mobilised substantial funds through gold smuggling, 'Six al –Qaeda activists arrested in Berlin for plotting attacks in 2003 were financing their operation with the gold smuggled from Dubai in an elaborate two year scheme that included melting, adding extra materials and then reshaping into benign

looking objects"[13] Taliban in February 2006 offered a reward of 100kgs of gold to anyone who killed the individuals responsible for publishing 'blasphemous' cartoon on Prophet Mohammed in a Danish paper. Similarly, in January 2005, an al- Qaeda gold smuggler faced trial before the U S Military tribunal for his role in gold smuggling money transfer from Afghanistan. The Islamic State of Iraq and Syria(ISIS) in 2005 announced their plan to float a central bank and use a gold based currency. The outfit in 2015 looted huge assets including gold from Mosul Central bank. The

Many terror-extremist organisations in India –directly or in collision with smuggling syndicates- use smuggled or looted gold as a major source of finance for terror activities. According to Jennifer Hesterman "the terrorist group that attacked Mumbai in 2003 and 2008, al Qaeda affiliate Laskhar-E- Taiba (LeT) was partially financed by notorious gold smuggler Dawood Ibrahim"[14]Different insurgent/militant organisations in the North Eastern state of Manipur were engaged in smuggling of gold and diamond through the Indo-Myanmar border at Morah. During 'Operation Rhino' in Assam, large quantities of gold were seized by security forces from the hideouts of United Liberation Front

12 africa.cgtn.com/2016/03/28/al-shabaab-funding-attacks-by-smuggling-gold/ last accessed on July 18, '20.

13 Jennifer L Hesterman, 2013, 'The Terrorist-Criminal Nexus: An Alliance of International drug cartels, organised crime &terror groups. CRC Press, London.

14 Ibid, Sl No 13.

(ULFA). These were smuggled and looted gold by the outfit which spent a lion's share of such gold on purchasing arms and ammunition from Thailand, Myanmar etc.

Many terror groups such as Laskhar-e-Taiba (LeT), ISIS, al-Qaeda were noticed using some of the Gulf countries like the UAE as a launching pad for terror activities targeting India. In 1993 Mumbai blasts, the Dubai-based D-Gang in collusion with elements belonging to such groups smuggled large quantities of explosives and arms into Mumbai through Maharashtra and Gujarat coasts. In 2008 'Kashmir Jihadi case' (recruitment of Kerala youth for LeT training in Kashmir), one of the key accused and the main fund raiser for the Jihadi group was operating from Oman in collusion with Oman based LeT operatives and Inter-Services Intelligence (ISI) agents of Pakistan. Above all powerful 'Hawala syndicates' with linkages with the underworld operate in the Gulf and they are the brain behind the purchase of large consignments of gold that are smuggled into Kerala/India.

'Hawala' is the preferred means of payment for illicit gold transactions including terror-financing. It is an informal, trust-based form of payment popular in many countries of Africa, the Middle East and Asia including India. HawalaTransactions are based entirely on trust and networks, whereby money is exchanged between two geographically separated places without the money itself is being physically sent. The terror groups and criminal syndicates normally resort to Hawala channel, as it allows for transactions to be completely off the books.

It is most widely used channel for UAE-based gold smuggling operations to India. There are different ways of Hawala operations. The most common practice is for the gold buyer in India to pay for the gold consignments from UAE directly in Dubai and then have the gold smuggled into India. In another method the smuggling syndicates in UAE mobilise funds from known 'Hawala agents; purchase gold which is smuggled into India through their network. After selling the smuggled gold to their confidential customers, the agents in India return the amount to the smuggler through hawala transactions. The whole premise of using hawala is to keep sale- receipts off the books and away from tax authorities. In an ultimate analysis, the smuggling of gold plays a major role in the generation and absorption of black money in the country.

Role of police and need of coordination among various stake-holders in combating the threat.

In view of the vast network established by smuggling syndicates with a wide spectrum of players such as mafia-dons, terror-extremist groups, bureaucrats

and political power-brokers, smuggling operations can no longer be visualised as a mere economic offence. The Customs or other agencies like the Directorate of Revenue Intelligence (DRI) or the Enforcement Directorate(ED) have limitations to effectively deal with organised crime such as smuggling and inter-related offenses like 'Hawala- transactions', Money Laundering etc. Thus, the Police and other specialised agencies are empowered to step into such areas of crime to combat the threat. The section 54[15] of Criminal Procedure Code (Cr. Pc) empowers the police to arrest any person against whom credible information has been received or a reasonable suspicion exists (on possession of contraband etc.). Needless to mention that it is the police which intercept the maximum number of 'Hawala- money carriers' especially in a number of Southern states like Kerala where such illegal money transactions are aplenty.

The clandestine diversion or use of proceeds generated through smuggling operations for terror-extremist related activities is a serious challenge to various enforcement/ investigation agencies. Considering the seriousness of the offense, the Unlawful Activities Prevention Act (UAPA), has incorporated

specific sections such as 15, 16, 17 &18 under which the perpetrators of such activities can be brought before law by the National Investigation Agency (NIA). Perhaps, the best example is the Kerala Gold smuggling case which is now under investigation by different agencies such as the Customs, the NIA, the ED, the Central Bureau of Investigation (CBI) and the Vigilance Department of Kerala police.

An inter-related aspect is the difference between the customs and the police in investigation- procedures and adducing of evidence. The Courts, while examining such issues in smuggling related offenses, under the provisions of Customs Act 1962 have highlighted that 'the duties of Customs officers are very much different from those of police officers'[16]. Further elaborating this aspect, the Court observed that; 'Customs officer is not primarily concerned with the detection and prevention of crime committed by a person, but is mainly interested in the detection and prevention of smuggling of goods'.

Such factors emphasise the need for a better synergy and collaboration among various agencies in dealing with smuggling and inter-related crimes. The section 151 of Customs Act, 1962 reiterates that 'officers of the police are empowered and required to assist the officers of the

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15   Any police-officer may, without an order from a Magistrate and without a warrant, arrest: first, any person who has been concerned in any cognizable offence or against whom a reasonable complaint has been made or credible information has been received or a reasonable suspicion exists of his having been so concerned.

16   PukhrajPannalal Shah AndOrs. vs K.K. Ganguly And Anr. on 9 November, 1967Equivalent citations: AIR 1968 Bom 433, (1968) 70 BOMLR 231, 1968 CriLJ 161

customs with the execution of the Act'. On the ground, such coordination has become the need of the hour especially in the light of the assault of Customs/DRI officers by armed gangs linked to smuggling syndicates in some states like Kerala. Similarly prevalence of armed gangs that attack carriers who move with contraband gold or 'hawala money' in states like Kerala and Karnataka has become a major law and order problem. The police as the main law enforcement agency with grass-root level presence can successfully handle such crimes which vitiate normalcy.

Conclusion

Gold, is not only the repository of Indian economy but also a popular instrument for managing unaccounted money. The smuggling of gold in large quantities as a sequel to the increase in import duties and the interrelated financial transactions through 'hawala' channels are potential challenges to our economy. Raghuram Rajan, the former Governor of Reserve Bank of India had rightly expressed his concern as "One worry is whether gold is being smuggled in sizeable amounts and is being paid for through the hawala channel".[17]

Though the Modi government, through new schemes such as Gold Monetisation Scheme (GMS), Gold Exchange-traded Fund

(ETF) etc. encouraged people to declare their gold holdings and convert them into an income generating investment, there was a lukewarm response from the large majority of people holding unused gold. The bulk of India's gold reserves, estimated at around 25,000 tons, continues to remain as a dead asset. Thus, new policies need to be formulated to tap the gold reserves to fund the infrastructure projects especially when our economy is passing through a precarious situation due to Covid-19 pandemic and other economic factors. A few measures in this direction inter-alia include:

a) By cutting down the import duty and allowing the jewellers to be a part of the gold monetization scheme, the unutilised gold with the people, to a great extent, can be brought to the market. This will help to bring down the imports and check the increased smuggling of gold.

b) Rationalization of import-export duties with the gold- exporting countries or trading partners to discourage illicit trade in gold. Such duties decide the rate of gold. For example, the rate of gold in the Gulf especially in UAE is less as compared with its price in India. Significantly, trade in yellow metal constitutes more than 70 percent of the total trade between India and the Gulf. Further, this disparity in rate is the motivating factor for the large scale smuggling of gold from UAE into India.

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17 "Yellow Peril' Sarika Malhotra 'Business Today, December 8, 2013 https://www.businesstoday.in/magazine/features/gold-smuggling-resumes-in-india/story/200605.htmllastlast assessed on July 18, 2020.

c) Enforce Due diligence guidelines under Organization for Economic Cooperation and Development (OECD) by all companies and importers engaged in gold trade so as to ensure their strict compliance of the principles of international law and domestic laws, including those governing the illicit trade in gold and other minerals. The violators of rules and procedures should be blacklisted and their license cancelled.

d) Enforcement agencies such as the Police,Customs, Directorate of Revenue intelligence (DRI) ,Enforcement Directorate (ED) and investigation wing of Income Tax through coordinated efforts and investigation should initiate strong action against those behind the illicit gold trade and Hawala transactions. For example, the large majority of the end users of smuggled –gold or the gold imported through' benami names' remain away from the radar of these agencies leading to evasion of huge taxes and generation of black money. Such trends were more glaring before the introduction of GST, as many states failed to generate revenue resources through Value Added Tax (VAT)/ excise duty from major jewellery groups/ exporters or gold-traders.

e) Up-gradation of manpower and technical equipment of enforcement agencies particularly the Customs to check the smuggling of gold especially through airports. The dearth of such resources adversely affects the detection of smuggled gold. It is estimated only 2 per cent of the gold smuggled to India has been detected.

f) More systematic and concerted efforts by enforcement agencies to study and catalogue the patterns and anomalies in gold - trade statistics, import and export of gold, main channels and modus operandi of smuggling syndicates andHawala operators, vulnerable areas for smuggling etc. For that purpose International cooperation between relevant law enforcement agencies should be fostered. Side by side, the intelligence or 'informer network' for collecting actionable inputs to neutralise the major operators in illicit gold trade need to be strengthened,

Deciphering of Latent Fingerprints on Nonporous Surfaces by Domestic Visualizing Agents – A Primary Evaluation Study

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Abstract

Numerous powders are available for the development of latent prints which may present on different surfaces at the scene of crime. Several conventional powders are used for the development of latent prints, but some of the chemical constituents used in them are toxic and may pose potential health hazards. To overcome these types of hurdles we went on the use of non-fingerprint powders which are commonly available. Powder dusting methods were used for the development of latent fingerprints on the articles taken for this present study. More than hundred latent prints were developed from five different articles at different time intervals. The results show that these non-fingerprints powders give clear results on most of the surfaces and they can be successfully used for the development and visualization of latent prints, they have worked well on non-porous surfaces. Further, all the five powders produced good quality prints on the aluminum foil. Particularly, the best results were given by rice flour on all the non-porous surfaces used in this study. Our original study has shown some excellent outcomes with the non-fingerprints powders. To the best of our knowledge, for the present study, we used more number of powders and performed time dependent study of latent fingerprint development. The present study, concluded that these, non-fingerprint powders may be used where there is non-availability of any kind of fingerprint powders. But, it should not suggest being used in a real crime scene.

Keywords: Latent fingerprints, latent print development, various surfaces, conventional powders.

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Background

The reproduction of patterns of the friction ridges on the distal phalanges of the finger and thumb is known as a fingerprint (Nabar, 2008) and it's composed of 99% of water and remaining part consists of small amounts of organic and inorganic materials (Girod, et al., 2012). In spite of the developments made in various identification techniques like DNA profiling, fingerprint science still holds its position and considered as the one of the most reliable techniques which are widely used as forensic evidence to identify an individual (Badiye and Kapoor, 2015). Moreover, finger prints are recognized as the most valuable physical evidence for identification. Although, several scientific methods are available for identification of an unknown individual, despite all the scientific advancements, none of the other scientific methods has proved to be as perfect as a fingerprint. As far as criminal matter is concerned, fingerprints are found at the scene of incidence in the form of latent print which is not visible to a naked eye, here it requires some means of development or an enhancement technique for their visualization. Thus, development of latent print is becoming a crucial part for further action. There is a vast range of porous and non-porous surfaces and for them specific enhancement techniques are selected based on the surface type, porosity and the condition of latent marks (Jain and Pandey, 2018).

Numerous modern techniques have been developed over the years, but the traditional method like powder dusting remains most used method for the development of fingerprints. Numerous powder formulations have been developed and used for the development of latent prints (Rohatgi and Kapoor, 2014). However, this traditional method for latent print development is not always effective. Some of the chemical substances used as fingerprint powders are toxic and may pose potential health hazards (Jain and Pandey, 2018). Many researchers have attempted to use different powders for visualization of fingerprints like silica gel (Singh et al., 2013), turmeric powder (Garg et al., 2011), robin blue (Badiye and Kapoor, 2015), fuller's earth (Thakur and Garg, 2016), synthetic food & festival colors (Kumari et al., 2011). To overcome such rare limitations of fingerprint powder, in an event we have also attempted to use few common household powders for the development of a fingerprint, these are non-toxic, cost effective and are easily available at home for household uses. For development of a latent fingerprint, powder dusting is the method of physical enhancement that relies on the mechanical adherence of the latent fingerprint, and it is one of the factors which are considered while selecting the powders. The present study aims to evaluate the use of household

powders in development of latent fingerprints. Further, the current study may prove valuable and can provide useful information to the investigators in cases of absolute insufficiency or non-availability of regular conventional fingerprint powders.

Materials and Methods

Latent fingerprints were developed on non-porous surface and the articles used in this present study are glass, coffee cup, ceramic tiles, aluminum foil and stainless steel plate (Table 1). To get uniform and better quality prints, the latent test fingerprint was obtained from two male individuals between the age group of 25 – 30 years on different non-porous surfaces. To collect the sweat latent fingerprints the subjects were asked to thoroughly clean their hands with soap and water. The hands were allowed to dry and then palms were closed for sweating. After that, the subjects were asked to use their right hand thumbs, to give latent prints by touching the different non-porous surfaces listed in table 1. While taking fingerprints, care was taken, subjects were educated not to touch anything between the periods of cleaning hands and applying the prints on the articles and not use excess pressure while touching the surface. The study was conducted during the month of May 2018 in an air-conditioned lab at 22±3ºC.

Table 1. Non-Porous articles used in this study

Article	Description
Glass	Transparent
coffee cup	white colour, non-transparent
Stainless steel plate	non-transparent
Alluminium foil	non-transparent
Ceramic tiles	non-transparent, white colour

Methods of Visualization

Powders Used in this Study

In this present study, five different non-finger print powders rice flour, turmeric powder, besan flour, green gram flour, and holi colour (Table 2) were procured from the local market and were used for the latent print development without any processing. All of these five powders were kept in air tight zip lock cover to avoid the direct contact with the outside environment, in order to prevent the absorption of moisture which leads to change in texture and physical nature of these powders subsequently creating difficulty in developing.

Table 2. Powders Used in this Study

Powder	Colour	Description
Rice Flour	White	Fine particles
Turmeric	Yellow	Fine particles
Besan Flour	Pale Yellow	Coarse particles
Green gram flour	Pale Yellow	Coarse particles
Holi Colour	Pink	Mixed particles

Dusting Technique

For the development of latent fingerprints on flat surface articles, powder dusting method was used, powders were sprinkled over the area where chance print may be present and the excess powder was removed by tapping, brushing was done only if needed (excess brushing may damage ridges). If the fingerprints present on the vertical articles, powders were poured above the finger mark and make them flow over the fingerprint, in that way it covers the whole print successfully. The same dusting procedure was followed for the development of chance prints on the surfaces used in this study. Precaution measures were taken like wearing masks and gloves were used while performing fingerprint development in order to avoid coughing and sneezing. In this present study, development of latent fingerprints was carried out on different time intervals such as 0h, 6h and 72h, to study the effect of time and efficiency of powders in latent fingerprint development.

Fingerprint Examination

All fingerprint marks were examined thoroughly with handheld lens and its quality was assessed by scoring method (5 to 0). Scoring was given according to the fingerprint quality assessment scale, adapted from three published studies (Soltyszewski et al., 2007; Castello et al., 2013; Rohatgi and Kapoor 2016) was used (Table 3).

Table 3. Fingerprint Quality Scale

Score	Quality of Print	Description
0		Blur/No print – No visible prints
1		Bad Quality – Prints with no friction ridges and where the identification is not possible with the print. The prints are smudged or obscured and it cannot be classifiable.
2		Poor Quality – Prints with poor quality, also have some friction ridges. The prints may be smudged

3		Reasonable Quality - Prints with classifiable pattern quality also have some ridge details and partial ridge characteristics
4		Good Quality - Prints with clearly defined friction ridges and it should be classifiable as one of the three basic fingerprint patterns (arch, loop, or whorl) along with ridge details and probable identification
5		Very Good Quality - Prints with very clear friction ridges and it should be easily classifiable as one of the three basic finger print patters such as arch, loop and whorl. Core, delta and minutiae should be visible and clear and identification has been assured with that print.

Results and Discussion

The latent fingerprints are developed by using different non-fingerprint powders such as rice flour, turmeric, besan flour, green gram flour and holi powder (pink color) on different non-porous surfaces listed in table 1. In previous studies, some of the researchers have used Turmeric powder (Garg et al., 2011; Rohatgi and Kapoor 2016), holi colour (Badiye and Kapoor, 2015), Silica gel (Singh et al., 2013) for the development of latent prints on a non-porous surface. In the present study, more than 100 fingerprints were developed by powder dusting method by using the non-fingerprint powders listed in table 2. The prints developed on dark surfaces were clear and ridge characteristics are visible due to better contrast of dark surface with light colored powder. In general, all tested powders are good for fingerprint development and in some cases, the quality of the fingerprint depended upon the color of the article surface. Particularly, ceramic tile and coffee cup prints were developed with rice flour, besan flour and green gram flour prints were in good quality, but the prints are in low visibility due to the same color of the powder and surface of the article, the same observation was made earlier (Adhithya and Suneetha, 2015).

The latent fingerprints developed by rice powders were good in quality on all the surfaces as well as at all the time duration (0h, 6h, & 72h) (Fig. 1). Particularly, we have observed the excellent quality of prints on stainless steel surface at 72h aluminum surfaces at 0h. In some other

previous study, similar results were also reported that, the best quality prints were developed on the aluminium foil with turmeric powder (Garg et al., 2011). Likewise, Dhunna et al., (2018) reported that, turmeric powder gives good quality of prints on aluminum surface.
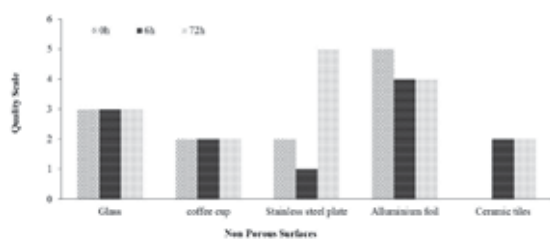
Figure. 1 Quality of Fingerprints Developed by Rice flour on Non-Porous Surfaces

It was noticed, that visibility of the print was very less on coffee cup and ceramic tile due to its color which is similar to the powders. Interestingly, turmeric powder produced good quality of fingerprints on all the surfaces (Fig. 2), because of its yellow color which produced good contrast. Furthermore, turmeric powder gives excellent quality prints on the aluminum foil surfaces at 6h and 72h where we can observe the ridge details. Likewise, besan flour also produced noticeable quality of fingerprints on the non-porous surfaces (Fig. 3). The good quality of fingerprints was developed by besan flour and it was observed on stainless steel and aluminum foils at 0h.
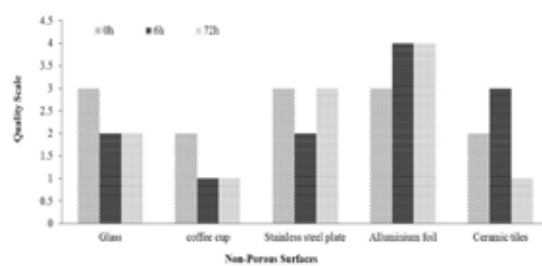
Figure. 2 Quality of Fingerprints Developed by Turmeric Powder on Non-Porous Surfaces
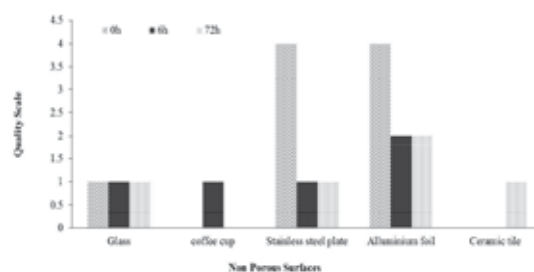
Figure. 3 Quality of Fingerprints Developed by Besan flour on Non-Porous Surfaces

In this present study, it was observed that the latent prints developed by green gram flour were in good quality (Fig. 4). Particularly, glass at 6h, coffee cup at 72h and aluminum foil at 72h show good quality of prints. Further, we have noticed that its efficiency was very less in ceramic tile because of the similar color of the powder and surface color of the ceramic tile.
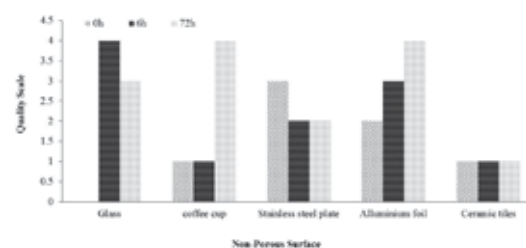
Figure. 4 Quality of Fingerprints Developed by Green gram flour on Non-Porous Surfaces

We have used five different non-fingerprint powders among them four are edible which were used in kitchen, remaining one is inedible and used as a holi color. The holi color produced a moderate quality of prints on all the surfaces used in this study (Fig. 5). Furthermore, the quality of the prints developed by holi color was less, when compared with other powders. However, the prints developed on the aluminum foil was in good quality. In general, besan flour, green gram flour and holi color powders give good quality of prints on stainless steel and aluminum foil, but they have very less reactivity with other surfaces like glass, coffee cup and ceramic tile. Because, these powder components have less adherence property to the sebaceous secretions. Similar kind of attempts also have been made earlier by other substances such as food colours (Kumari et al., 2011), besan, red chilli (Dhunna et al., 2018), Gulal (Kumari et al., 2011), Multani miti (Thakur and Garg, (2016).
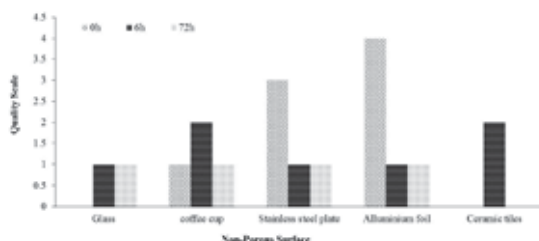
Figure. 5 Quality of Fingerprints Developed by Holi Colour on Non-Porous Surfaces

In order to assess the durability and effectiveness of the powders, we developed latent fingerprints at different time intervals like 0h, 6h and 72h. The fingerprints developed on the aluminum foil give best results in all five tested powders in 0h, 6h and 72h (Fig. 6). Particularly, rice flour, turmeric and green gram flour produced good quality of fingerprints. In 0h all the powders were developed reasonable quality of prints on all the surfaces. Although, at 6h all the powders were reacting well and produced good quality of prints except besan flour due to its coarse nature. At 72h rice flour, turmeric and green gram flour prove to be a good powder with admissible quality of fingerprints. In overall observation, rice flour gives an excellent quality of latent fingerprints with minutiae.

Figure 6. Fingerprint developed on Alluminium foil using Rice flour. Note: A – 0h; B- 6h; C- 72h.

Conclusion

In the present study, it was concluded that the non-fingerprint powders which we used for the latent fingerprint developments proved to be a good alternative to the conventional fingerprint powders. These five powders have produced an admissible quality of latent fingerprints on all tested non-

porous surfaces. These powders are not categorized as fingerprint powders. So that, few of them have some limitations on development of a fingerprint with prolonged time. If we followed fingerprint powder standards for the formulation of these non-fingerprint powders they may become a good substitute for conventional fingerprint powders. Further, development of fingerprints on porous surface and lifting of developed fingerprints using these non-fingerprint powders also have to be addressed in future for the conclusion of the case.

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Right to Abortion vis-a-vis Right of an Unborn to Live

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The Indian Police Journal

Abstract

The Universal Declaration of Human Rights was the first major international human rights instrument to explicitly recognize economic, social and cultural rights. The most important human rights is the right to life. The right to life is a basic human right, the absence of which renders all the other rights meaningless, useless and worthless. In today's scenario, this right has received a global recognition and it has been incorporated in almost all the Human Rights legislations all over the world. It is argued that a foetus cannot be deprived of its life. Destruction of the foetus by termination of pregnancy would involve a violation of the fundamental right of non-deprivation of life of any person, except according to a just, fair and reasonable procedure established by law.[1] Other controversial issue related to this basic right is the question of Right to abortion. Nowadays it is considered that women emancipation is not possible unless woman is given ample liberty in the matters of procreation, abortion and sterilization. However, conceding any such right to woman would affect the right of the unborn to live.

Key Words: Abortion, Foetus, Human Rights, Privacy

Introduction

Abortion is a highly charged emotional subject which involves some highly controversial issues of law, medicine and morality.[2] At least 70,000 women die from complications related to an unsafe abortion every year, according to World Health Organization estimates.[3] Worldwide, unsafe abortions account for 13 per cent of all material deaths, but in some countries up to 60 per cent of all maternal deaths are due to an unsafe abortion. WHO estimates that more than half of the deaths caused by an induced

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abortion occur in South and South-East Asia, followed by sub-Saharan Africa. Hence an illegal abortion is the cause of serious health complications and even death of women the world over. Legal abortion services are not easily available and it is scandalous that such a basic right as the right to help with planning or preventing the birth of a child has been denied to women.[4]

In the 19th Century in the United States of America, many State Legislations came into force providing for the protection of the fetus from the moment of conception through the entire period of gestation. The American Supreme Court for the first time in Roe v. Wade[5] recognized woman's right to terminate her pregnancy. The Court found this right to be rooted in the Constitutional right to privacy. But in later case Webster v. Reproduction Health Services[6] the Supreme Court of America reversed its earlier judgment and upheld a Missouri Statute which declared that 'the life of each human being begins at conception and that unborn children have a protected interest in life, health and well-being'. Prior to Webster, the foetus had no 'protectable interest' until it had reached viability. Thus the American Supreme Court recognized the right of a fetus 'to grow and born'. A critical question is 'does the abortion of a fetus amount to

taking the life of a human being'? There is no satisfactory answer to the question, when does the life come into being.[7]

When does the life begin?

The crucial issue in the debate has quite often been regarding the point of time when life is supposed to commence. Technically, by definition, abortion is destruction of life after conception and before birth. Between these two points of terminus, life must have begun. However, literature reveals that life sciences have not offered any well laid guidelines to determine these crucial questions.[8] According to some biologists, life certainly commences with fertilization, that itself is the beginning of human life. Therefore, they argue that fetal personhood began when sperm and egg were joined and it does not matter how that was done. According to some others, life definitely begins in the eight week when the embryo is undergoing the transition to a foetus and is definitely recognizable as a human being.[9] Another view denies any belief in a fertilized ovum being a human life in the common sense meaning of the term. According to this view, human life begins at birth. Or more technically, when a foetus is sufficiently developed to be capable of living if removed from the mother's womb. That human life begins

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4   *Ibid*

5   410 US 113 (1973)

6   492 US 490 (1989)

7   G.V. Ramaiah, "Right to Conceive vis-à-vis Right to Birth" 9 *AIR* 138 (1996).

8   Kriti Dwivedi, "Medical Termination of Pregnancy Act, 1971: An Overview", available at: www.legalservicesindia.com/articles/pregact.htm.

9   *Supra* note 2 at 468.

at the moment of conception is a religious tenet that makes no claim whatsoever to scientific truth.[10] Dr. Norman Fost of the Medical School of the University of Wisconsin sums up the position thus[11] as follows. "The question is unreasonable. It is not a question that doctors or religious authorities can be helpful because it is not certifiable. It is just a matter of individual opinion."

Each of these two views standing at the extremes, create a dilemma for the lawmakers. If one were to go by the first view that life begins at the moment of conception then interference in the foetus at any stage of its foetal existence could be seen as unethical unless one could take the stand that the rules of the ethics do not recognize the right to life. On the other hand, the other extreme stands at the view that, life begins only on birth. This creates a dilemma of a different type. One may then argue that if there was no life before birth, then all sorts of legal restrictions and sanctions dealing with the interference of the foetus become unnecessary except to the limited extent of preventing such interference in the interest of health of the mother. On this logic whether or not a mother should be free to abort belongs almost entirely to the category of the individual therapeutic questions. It ceases to have any ethical or legal relevance.[12]

Meaning of Abortion

Abortion or miscarriage means the spontaneous or induced termination of pregnancy before the foetus is independently viable, which is usually taken as occurring after the 28th week of conception. Children born a few days before the 28th week are known to have survived with modern care. Medically, abortion means the expulsion of the ovum within the first three months of pregnancy; miscarriage, the expulsion of the foetus from 4th to 7th month; and premature delivery, the delivery of a baby after 7 months of pregnancy and before full term. Legally, miscarriage, abortion and premature labour are now accepted as synonymous terms, indicating any termination of pregnancy at any state before confinement.[13] Abortion may be classified into various categories depending upon the nature and circumstances under which it occurs. For instance, it may be either, (i) natural; (ii) accidental; (iii) spontaneous; (iv)artificial or induced abortion. Abortions falling under the first three categories are not punishable, while induced abortion is criminal unless exempted under the law.[14]

10   *Supra* note 8.

11   Quoted in *Time*, April 6, 1981.

12   *Supra* note 8.

13   K. Mathiharan&Amrit K. Patnaik (eds.), *Modi's Medical Jurisprudence & Toxicology* 1013 (Lexis Nexis Butterworth, New Delhi, 23rd ed., 2006).

14   K.D.Gaur, *Criminal Law & Criminology* 209 (Deep & Deep Publication, New Delhi, 2002).

Abortion: When permissible?

Abortion continues to be completely illegal or severely restricted by law in almost every country. Whether and to what extent abortions should be permitted, encouraged, restricted or severely repressed, is a social issue that has divided theologians, philosophers, legislators and general public. Those who advocate abortion on demand, are implicitly valuing the claim to life of a fetus as less important than the claim of a women to choose the size of her family, pursue an uninterrupted educational and service careers or avoid bringing up an unwanted child.[15]

In India, abortion is not permissible unless it is carried out according to the Medical Termination of Pregnancy Act, 1971 Section 3 of the MTP Act 1971 enumerates five reasons when abortion is permissible namely:

1. therapeutic (when the continuation of pregnancy endangers the life of women or may cause a grave injury to her physical and mental health)

2. social (when economic and social environment is not suitable for continuation of pregnancy i.e. contraceptive failure)

3. humanitarian reasons (e.g. rape)

4. eugenic reasons when there is a risk

of the child born with serious physical or mental handicaps (e.g. congenital defects etc.) and

5. when pregnant woman is mentally not sound with the consent of the guardian (e.g. schizophrenia, mania etc.)[16]

The Act, however, does not permit termination of pregnancy after 20 weeks. When the pregnancy does not exceed 12 weeks the act allows the termination of pregnancy by one registered practitioner on the aforesaid grounds. But when the pregnancy period exceeds 12 weeks but less than 12 weeks, the decision about the termination of pregnancy should be taken by two doctors. Termination of pregnancy beyond 20 weeks is not possible and is considered illegal and will be punishable according to Section 312 of the Indian Penal Code.[17] But if it is immediately necessary to save the life of pregnant mother than pregnancy can be terminated beyond 20 weeks according to Section 5 (1) of the MTP Act. Due to the lacunas in the existing law, earlier this year Medical termination of Pregnancy (Amendment) Bill 2020 was introduced which was approved by the Union Cabinet,

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15 Subhash Chandra Singh, "Right to Abortion: A New Agenda" *AIR* Jour 129 (1997)

16 Kamaljeet Singh and Bhumika Sharma, "Issue of Legalization of Abortion: With Reference to Changed Social Conditions" 116 part 1327 *Crl.LJ* 203 (2010)

17 According to Sec. 312 of IPC "Whoever voluntarily causes a human with child to miscarry shall if such miscarriage be not causal in good forth for the purpose of saving the life of woman, be punished with imprisonment of either description for a term which may extend to three years or with fine or with both, and if the woman be quick with child shall be punished with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine.

chaired by the Prime Minister, to amend the Medical Termination of Pregnancy Act (MTP), 1971. The Bill was supposed to be discussed in the Rajya Sabha, but this has been delayed due to the Covid-19 pandemic. While the new Bill has been deemed 'progressive' and 'liberal' by the government, there are several issues with the proposed amendments as well. The new Bill aims to extend the period of allowed termination of pregnancy upto 20-24 weeks. To terminate until 20 weeks, approval from one registered practitioner would be required, and between 20-24 weeks, approval of two medical practitioners would be needed.[18]

The advances made in the medical sciences seem to be the curse for the female foetuses and pose a great threat to their lives. It is being used to get rid of the girl child before birth and thus hamper the right to live which is a fundamental right. The advancement of science and invention of sophisticated equipment has now made it possible to know the sex of the foetus before birth and to get rid of the unwanted female. Open and flagrant abuse formed the government to pass legislation for eradicating the evil and hence the Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act 1994 was passed. But the actual working of this Act has failed to make an appreciable impact.

The objective of the Act is to provide for the regulation of the use of prenatal diagnostic techniques for the purpose of detecting genetic or metabolic disorders or chromosomal abnormalities or certain congenital malformation or sex-linked disorders and for the prevention of the misuse of this techniques for the purpose of prenatal sex determination leading to the female feticide.[19]

Legalization of Abortion in other Countries of the World

Despite moral dissension, the 20th century has been a liberalization of abortion laws.[20] Due to harmful consequences of illegal abortions and also due to more liberal attitude towards sex and individual freedom, laws have been amended in most countries to allow late abortions. The U.S.S.R. legalized abortion in 1920, followed after World War II by Japan and several east European countries. Abortion was legalized through much of Europe, Asia and the United States in the 1960s and 1970s[21]. In England, Abortion Act, 1967 also legalized termination of pregnancy on certain situations followed by the Human Fertilization and Embryology Act, 1990. Now the law allows abortion in cases where pregnancy would involve risk to the life of the pregnant woman or injury to her physical or mental health or where there is a substantial risk that if the

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18 https://feminisminindia.com/2020/09/28/mtp-amendment-bill-2020/

19 The Preamble to the Prenatal Diagnostic Techniques (Regulation And Prevention of Misuse) Act 1994

20 *Supra* note 16 at 201.

21 *Ibid.*

child were born it would suffer from such physical or mental abnormalities as to be seriously handicapped. Thus, in Britain an abnormal foetus can be aborted at any stage of pregnancy provided specialists agree that there is a possibility that the foetus if born would have a significant disability.

In America liberalization has been effected by the judicial pronouncement in Roe v. Wade.[22] The Court held that the Texas criminal abortion statute restricting legal abortion without regard to : (i) pregnancy stage, and (ii) other interest involved, is violative of the due process clause of the Fourteenth Amendment to the United States' Constitution, which protects against State's action the right to privacy, including a woman's qualified right to terminate her pregnancy.[23]

The countries can broadly be classified into four categories, viz:

1. Conservative Approach: Countries that do not permit abortion under any circumstances are Indonesia[24] and Phillippines[25] where termination of pregnancy is illegal and punishable under law.

2. Limited Approach: Countries like

Bangladesh,[26] Pakistan[27],Srilanka[28] and Malaysia29 permit abortion only to save the life of the mother.

3. Liberal Approach: Countries like India,30 United Kingdom31 and United States of America[32] permit induced abortion under prescribed conditions as provided under the abortion legislations of the concerned country. Earlier abortion was illegal in Roman Catholic - dominated Ireland except when it is necessary to save the life of the mother. Ireland's tough abortion laws came under fire following the death of 31 year -old Indian dentist SavitaHalappanavar, who was 17 weeks pregnant and suffering a miscarriage and septicaemia at University Hospital Galway in Ireland. She requested the doctors for a medical termination as she was miscarrying. But the doctors allegedly refused her a termination because the foetal heartbeat was still present and the couple was told, "This is a Catholic country."This incident has reignited the debate over right to abortion in case of risk in Catholic country.[33] After this incident Ireland was criticized by international human

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22   410 US 113 (1973)

23   See *Supra* note 4 at 236.

24   Penal Code of Indonesia, Art 346-9

25   Penal Code of Phillippines,Art. 256-9

26   Bangladesh Penal Code, sec. 312

27   Pakistan Penal Code, sec. 312

28   Penal Code of Ceylon, sec. 303

29   Malaysia Penal Code, Exception to sec. 312

30   Medical Termination of Pregnancy Act, 1971, sec. 3

31   Abortion Act, 1967, sec. (1).

32   *Roe v. Wade*, 41 USLW 4213 (1973) : 410 US 113 (139)

33   "Irish govt must clarify on abortion issue: Amnesty" *The Tribune*, Nov 18, 2012 at 20.

rights bodies for its failure to bring domestic legislation in line with international human rights principles and all this led to hastily passing a law entitled Health (Regulation of Termination of Pregnancy) Act 2018 which permits abortion during the first twelve weeks of pregnancy, and later in cases where the pregnant woman's life or health is at risk, or in the cases of a fatal foetal abnormality. The achievements of the new Irish law are clear: it offers a free, safe and legal abortion for most people who require it.[34]

4. Complete freedom to choose: Countries like Singapore[35] which permit abortion at the discretion of the woman with no restriction of any sort except that it should be performed by a registered medical practitioner in a hospital or a clinic approved by the government.[36]

Right to Abortion for Rape Survivors

Due to stigma and personal risks surrounding reporting, many victims of rape come forward to request an abortion, either directly or through their parents once their pregnancy is identified through medical testing or made public.[37] Accordingly most of the

countries liberalized abortion laws where pregnancy has been caused due to rape. The common objective of the laws should be providing safe abortion services to women survivors of rape. Even Section 3(2) Explanation1[38] recognizes the right of abortion if the pregnancy is caused by rape. Accordingly, where any pregnancy is alleged by the pregnant woman to have been caused by rape, the anguish caused by such pregnancy shall be presumed to constitute a grave injury to the mental health of the pregnant woman. It is the mental anguish following pregnancy due to rape, which is the main indication. In other words, mental anguish is to be taken into consideration; proving rape and affecting her character is not necessary. Her allegation that she has been raped is sufficient. Further proof of rape like medical examination, trial, and judgment is not necessary.

Judicial Approach regarding Right to Abortion for Rape Victims

There are numerous cases where the court decided that the woman has an absolute right to abortion and no one can take away this right from her. The judiciary has interpreted the right to life and personal liberty as guaranteed by Article 21 of the Indian Constitution to include the Right to abortion also.In rape cases, Indian courts have recognized the severe physical and mental health risks that pregnancy can

34   https://en.wikipedia.org/wiki/Abortion_in_the_Republic_of_Ireland

35   Termination of Pregnancy Act (Ch. 324), sec. 3 (1)

36   K.D. Gaur, *A Textbook on the Indian Penal Code* 465-66 (Universal Law Publishing Co, New Delhi, 4th ed. , 2009)

37   https://www.guttmacher.org/report/abortion-india-literature-review.

38   Medical termination of Pregnancy Act, 1971

cause to women and girls.[39]

In D. Rajeshwari v. State of Tamil Nadu[40], where the court granted the permission to terminate the pregnancy of an unmarried girl of 18 years who was praying for issue that bearing the unwanted pregnancy of the child of three months made her become mentally ill and the continuance of pregnancy has caused great anguish in her mind, which would result in a grave injury to her mental health, since the pregnancy was caused by rape. The court considered the relevant provisions of Medical Termination of Pregnancy Act, 1971 and having regard to factual position of the case, was constrained to come to the conclusion that unless the pregnancy of petitioner was terminated, mental shock and anguish would be caused.

In Kamalavalli v. C.R. Nair[41], the High Court of Madras granted permission to the twenty eight years old rape victim to cause the abortion, subject to the doctor's permission.

Similarly in Dr Nisha Malviya and Anr.v. State of MP[42] the accused had committed rape on a minor girl aged about 12 and made her pregnant. The allegations are that two other co accused took this girl, and they terminated her pregnancy. So

the charge on them is firstly causing a miscarriage without the consent of the girl. The court held all the three accused guilty of termination of pregnancy which was not consented by the mother or the girl.

But in Suchita Srivastva and Another v. Chandigarh Administration[43], the Hon'ble Supreme Court refused to terminate the pregnancy of mentally retarded women. The case came before the Supreme Court in appeal against the judgment of Punjab and Haryana High Court allowing the Chandigarh Administration to terminate the pregnancy of mentally-challenged 19-year old girl who was raped by a security guard at a nariniketan in Chandigarh. Pointing out she wanted to have a child and was physically fit to give birth, the Chief Justice said: "If somebody is ready to take care of the child, should the court order the termination of her pregnancy even then?."[44] Looking at the provision of the Act, the Supreme Court expressed its opinion in favour of continuation of pregnancy. In this case, the victim had crossed the 19th week of pregnancy but the medical examination of the victim had shown no physical abnormality of the foetus and that victim was medically fit to deliver the baby. The court held that it was aware of the fact that she would not be able to bring up the child. "But this could not be the basis for the abortion." Meanwhile,

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39   *X vs. Govt. of NCT*, W.P. (CRL) 18262 OF 2013, H.C. Del., at 3,6 Dec, 2013.

40   1996 Cri LJ 3795.

41   1984 Cri LJ 446.

42   2000 Cri LJ 3671.

43   2009(11) SCALE 813.

44   "SC Saves Rape Victims' Baby" *Hindustan Times*, July 22, 2009 at 1.

three organizations have come forward to take care of the rape victim and her child. They include the Union Government-run National Trust for the Welfare of Person with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities, the Disabled Rights Group and Parivar and the national federation of parents association for persons with these four disabilities.[45]

If the pregnant woman is unmarried but above the age of 18, her own consent is necessary. The consent of guardian in such case is not necessary. But the problem arises when she is a minor or lunatic. Under MTP Act a minor girl cannot approach a doctor for abortion on her own. The written consent of parent or guardian is required.[46] For instance in Shruti Sachdeva's case, where a minor 15 year-old girl was kidnapped from her house and was found in Goa. She was pregnant from Nishan Singh. The father of the girl demanded the medical termination of the pregnancy of his minor daughter terming it as unwanted conception. The father had pleaded that as his minor daughter was a rape victim, the pregnancy would be a grave injury to her mental health.[47] Since she is a rape victim, and minor, the pregnancy can be terminated with the written consent of

her guardians.[48]

Arguments against Abortion

Following are the arguments which favour prohibition of abortion by the pro-life advocates:

- Unborn human is a person with a certain natural inherent capacity (i.e., her essence), she will function as a person in the near future, just as the reversibly comatose and the temporarily unconscious will likewise do because of their natural inherent capacity. The unborn are not potential persons but persons with much potential.49

- The killing of innocent is a crime and the fetus is also an innocent life and by undergoing abortion fetus feels immense pain. So it should not be allowed.

- Many women suffer significant emotional trauma after having an abortion.

- There is also some evidence that having an abortion may increase a woman's risk of breast cancer in later life. Some other complications include damage and / or infection to the uterus and the Fallopian tubes making a woman infertile. Menstrual disturbance can also occur.

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45   "SC No to Abortion for NariNiketan Victim" *The Tribune*, 22 July, 2009 at 1.

46   K. Kannan and KarunakaranMathiharan (eds.), *Modi: A Textbook of Medical Jurisprudence and Toxicology* 724 (Lexis NexisButtersworth, Nagpur, 2012).

47   "CJM Defers Decision on Shruti's Custody" *The Tribune,* November 17, 2012 at 5.

48   "Shruti Case: Court allows DNA test on accused Nishan Singh" *The Tribune*, November 9, 2012 at 4.

49   *Supra* note 8.

- Aborting fetuses because they may be disabled sends an implicit message of rejection to people with disabilities.

- Another argument is that an embryo (or, in later stages of development, a fetus) is a human being, entitled to protection, from the moment of conception and therefore has a right to life that must be respected.

According to this argument, abortion is homicide.[50]

Arguments in Favour

- Every woman has the right to have a control over her own body; no one should be compelled to carry or terminate her pregnancy against her will. There cannot be any equality or full human dignity possible for women unless they have control over their own reproductive processes.

- Our right to privacy is vast enough to include right to marry, right to form a family, right to or not to have children, right to be or not to be a parent etc. without unnecessary government interference. Therefore abortion is a matter of personal privacy.

- Abortion is considered morally and ethically wrong.

- If a woman is restricted from lawful aborting the child then she will have to resort to illegal abortion thereby

causing many deaths as they are frequently performed by those who are not competent to do so. Compared to married woman, an unmarried girl in order to get rid of the product of conception from illicit intercourse is even more exposed to this kind of risk as there is a compelling factor to abort the child even by a non-qualified person.

- If abortion is banned then it will give rise to the emergence of some kind of black market in services which inevitably leads to inflated fees. The quality and the availability of the services depend upon one's capacity to pay.

- Illegal services cause illegal organization of all those who are concerned with illegal abortions. It also promotes police corruption.51

- Act of performing an abortion to save the mother's life when occurs, however, the rationale is not that the fetus is seen to have less value than the mother, but that if no action is taken both will die. Aborting the fetus at least saves the mother's life.52

- Where the woman is restrained from aborting the child and under compulsion she has to carry it and after giving birth she abandons the new baby. This would be more dangerous

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50   ManishaGarg, "Right to Abortion", *available at*: www. legalserviceindia.com/articles/adp_tion.htm.

51   *Supra* note 2 at 467.

52   *Supra* note 50.

to the life of the baby. Thus, it is better to abort at an earlier stage. Moreover, society will be benefitted from parents having children which are welcomed, planned and properly spaced.

- If the abortion is legalized, then it is also helpful in controlling population as rapid increase in population has very serious repercussions on socio-economic development.

- As the government cannot compel an individual to use his or her body as an instrument for preserving people who are already born, much less for preserving a foetus in the womb. For example, the government cannot force a relative of a child afflicted with cancer to donate bone marrow or an organ to the child, even if the child is sure to die without the donation. Then how the government can force a woman to continue a pregnancy that might entail great health risks for the sake of a fetus. Surely a fetus cannot have rights superior to those of a person who has already been born.[53]

Right to Abortion vs. Right of an Unborn to take Birth

After making a careful study of the pros and cons of the entire issue and taking a pragmatic view of the socio-economic and legal problems involved in the case, it may be argued that a pregnant woman

should have "personal liberty" to destroy fetus of her own if she finds it intolerable? To force a woman to continue an unwanted pregnancy is to impose a kind of slavery upon her or at least to infringe her sense of self-respect and dignity. The fetus may have a right to life, but not a right to be kept in a woman's body against her will.[54] After all, fetus has fewer claims to life, than the host i.e. the mother. Hence the fetus in utero is not in the ordinary sense another person distinct from its mother. Even if the fetus is a person, it might be argued that pregnant women have the right to use self-defence in order to protect them from the physical invasion of unwanted pregnancy.[55]

It is submitted that it is the mother next to God who provides the maximum best possible to her child without any reciprocal favour. If she opts for an abortion there might be some reason either due to ignorance, carelessness or acts done wilfully. Nobody would opt for an abortion in a happy state of mind. It is her body and she has a right to secure herself first. Abortion is an issue to be left to the decision of the mother because it is the right of a woman to protect her life and it is only used in dire circumstances. It is further argued that if abortion is not allowed on demand, when a woman does not want to carry her pregnancy but if she is forced to carry it and then abandon the

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53   Reproductive Freedom – The Right to Choose: A Fundamental Liberty *available at* http://www.lectlaw.com/files/con17.htm.

54   S.N. Parikh, "Right to Life and Unborn Person" 11 (3) *IBR* 295 (1984)

55   Judith Jarvis Thomson, "A Defence of Abortion" 1 *Philosophy and PublicAffairs* 47 (1971).

new born child or leading to infanticide. This would be more dangerous to the life of the baby. Hence if there is no possibility of begetting a living child with all human potential it is better to prevent such child to be born and thereby save it from earthly miseries.[56] Therefore it is argued that many social evils like infanticide and exposure of the new born infants can be minimized and prevented only by making abortion legal, safe and accessible to all. Thus, keeping in view the lesser evil, it is better to allow a woman to terminate the pregnancy at an earlier stage. But before allowing a woman to terminate her pregnancy it should be made compulsory for her to know the consequences of abortion by attending doctor's counselling.[57]

Instead of aborting a fetus a women should be well aware of various contraceptives for avoiding pregnancy.

If a woman adopts either of these alternatives, there is no need for her to subject her body to the burden of pregnancy. Further it is submitted that if the state takes complete responsibility of the child, then only the abortion is to be prohibited. But we have seen that various policies and programmes are framed for the welfare of the child but they are not implemented whole heartedly and the child is not given equal opportunities for development. As the State cannot take care of the child and the child is left to die on streets then it is better option to abort the unborn child as the word, "life" in Article 21 of the Constitution has been interpreted to be "living with dignity". Moreover if the government is really worried for the welfare of the unborn, than the government can provide the appropriate means that can support the women in the process of bearing and rearing children and not by restricting the reproductive freedom of the women.

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56   *Supra* note 7 at 139-140.

57   K.Vijaya Lakshmi, "Women's Rights are Human Rights" 96 *AIR* 26 (2009).

A Critical Introspective Analysis of Memory Acquisition Tools: An Investigative Approach

The Indian Police Journal

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Abstract

Forensically sound evidence processing is the key component of prosecution to convict the perpetrator. When an investigator approaches the crime scene and encounters the running system, the most essential thing to do is to capture the system's memory. Memory forensic plays a significant role in the analysis of different forensic artifacts that may not be present on the hard disk. Memory is divided into two regions, user space and kernel space. Incident responders should collect all user space and kernel space for a comprehensive forensic examination. Moreover, memory is fragile in nature, so during the evidence gathering process, the minimum contamination should be performed. Therefore, the best memory acquisition tool must be identified that can assist the forensic examiner with the thorough examination of collected evidence. In this paper, among five commonly used memory acquisition tools, an attempt was made to find the best memory acquisition tool.

Keywords: Digital Forensic Investigation, Memory Acquisition Tools, Kernel Space, User Space, Forensic Artifacts

a. Introduction

Memory Forensic is the vital branch of Digital Forensics. Numerous pieces of evidence like running processes, injected DLLs, registry artifacts, encryption keys, network connections, currently logged in user, presence of malware and many more may be present in memory that may not

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be found in Hard Drives. It is important to collect the memory in a forensically sound manner for a thorough investigation. Memory is divided into two regions: User space and Kernel Space. All user programs and processes are found inside user space whereas operating system resides in kernel space. To investigate the rogue process of contemporary rootkit malware, it is utmost important to capture both user space and kernel space. There are two sorts of memory collection techniques, Hardware based acquisition and Software based acquisition. Hardware based acquisition can be used by Tribble (via PCI Express card) and Firewire (Direct Memory Access). In the firewire method, it bypasses the CPU and the content of physical memory is directly accessed. The problem with the physical method is that it must be installed in the suspect system beforehand, which is not possible in most cases. (Ahmed & Aslam, 2015). Therefore, software based acquisition methods are preferred by most of the investigators. There are many tools available to acquire physical memory. All tools have pros and cons of their own. This paper focuses on identifying the best memory acquisition tool which is found suitable in most of the

parameters essential for the selection of tools.

When a tool is executed in a suspect machine, it occupies some space in RAM which leads to the loss of other evidence. Therefore, the amount of space occupied by the tool is the major parameter of concern for selecting a memory acquisition tool. It is also important to compare the capability of tools to collect the evidence. For a malware analysis it is very important to capture kernel level memory which may contain traces of malware. Therefore, in this paper it is also observed that tools are capable of capturing user space as well as kernel space memory. We used Volatility – an advanced memory analysis framework to compare the outcome of collected memory images because of its wide use in the forensic fraternity.

The rest of the paper is organized as follows: Section 2 describes related work to this topic. In section 3 the need of the work is addressed. Section 4 elaborates experimental set up and methodology. Section 5 discusses the outcome of the experiment and the last section concludes the experiment.

Insert an external device containing memory capturing tool to the suspect system → Locate the tool (GUI Interface or using CMD) → Execute the tool → Capture the memory and save the image file in external device
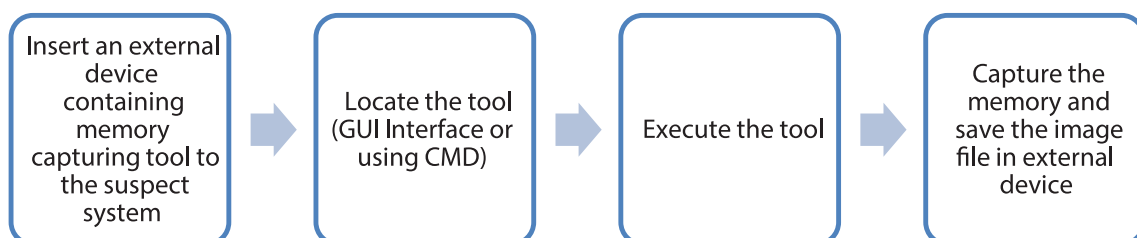
Figure 1 Steps taken for collecting physical memory

Literature Review

William Campbell (Campbell, 2013) has tested 4 (Windows Memory Reader, WinPmem, FTK Imager and DumpIt) different memory acquisition tools. Initially they tested methodology given by Lempereur and colleagues in 2012. Where they took two identical virtual machines, one as control and other being experimented upon. Memory of each virtual machine was compared at a certain point of time to measure the impact of the tool on the memory. They compare all tools on the basis of impact and completeness. At the end they conclude that Windows Memory Reader and DumpIt have the lowest impact on the system.

Carvajal et al. (Carvajal et al., 2013) has selected six different tools for comparison namely Pro Discover, Win32dd, Memoryze, FTK Imager, Nigilant32 and Helix3 - DD to evaluate the efficiency of memory capturing tools. Four parameters were considered for the experiment – Time taken to capture memory, footprints left by each tool, automatic report generation and user friendliness of the tool. They conclude that FTK Imager does not generate automatic reports, time taken is high and footprints left are also very high. Win32dd takes minimum time to collect RAM and leaves minimum evidence in physical memory.

Ahmed et al. (Ahmed & Aslam, 2015)

experimented different memory capturing tool (MoonSols DumpIt, Access Data FTK Imager, Winpmem, Belkasoft Live RAM Capture, Mandiant's Memoryze, Magnet RAM Capture) in two different scenarios where in first case, a clean memory was taken and in other case system was infected with anti-debugging tool and memory was captured. All memory samples were analyzed by 3 different tools (Volatility, Redline and WindowsSCOPE). They conclude that FTK Imager and Magnet RAM capture are not capable of capturing volatile memory when an anti-debugging tool is installed in the system.

Mcdown et al. (Mcdown et al., 2016) did a comparative study of seven different RAM capturing tools (FTK Imager, Belkasoft Live RAM capture, Prodiscover, Winen, Windows Memory Reader, Memoryze and DumpIt) on the basis of user interface, platform limitations, default reporting functionality, total time taken for collection, used DLLs, modified registry keys, and invoked files. They conclude that Windows Memory Reader and Belksoft Live RAM Capture leave minimum footprints in memory while FTK Imager and ProDiscover leave maximum footprints. They stated that Belkasoft Live RAM capture takes less time to capture memory because of two reasons. (i) It executes a smaller number of DDLs (ii) Runs in kernel mode so has higher priority.

Kamal et al. (Kamal et al., 2017) compared memory acquisition tools based on processing time and left artifacts on volatile memory. They took six memory acquisition tools namely Nigilant32, Helix3(DD), FTK Imager, OSForensics3, Pro Discover and Belkasoft Live RAM Capturer. They conclude that Belkasoft Live RAM capture takes minimum time to capture memory and leaves minimal evidence as compared to other tools. Faiz et al. (Faiz & Prabowo, 2018) have compared five different tools (FTK Imager, Belkasoft Live RAM Capturer, Memoryze, DumpIt, Magnet RAM Capturer) for RAM capturing. Parameters selected to compare the tools are the time taken to collect evidence, memory usage, use of dll, and changes in Registry keys. They conclude that FTK Imager left around 10 times more artifacts than DumpIt.

Importance Of This Study

The most unpredictable proof in the machine is RAM because it continuously changes. Due to the nature of the RAM, it needs to be recorded in a forensically sound manner. If an incident respondent encounters the running machine during the crime scene investigation, the acquisition of memory is the first step to be taken by the investigator. In order to capture the memory of the suspect machine, the incident responder should run the tool on the suspect machine. The key component for thorough investigations of digital crime is to determine the required memory acquisition tool.

In the paper, authors (Podile et al., 2015) identify the malware attack by using memory forensics on banking computers. Zeus banking Trojan was the malware that was found, leading to the Man-In-the-Browser attack.

Another memory forensic importance is discussed by Chang et al. (Chang et al., 2013) where they address the challenge of the investigation of the instant messaging program. To answer this challenge, they demonstrated the memory forensic techniques for the analysis of instant messaging programs.

Several studies have been performed to test the performance of memory acquisition tools based on processing time, size of memory occupied by the tool, registry modification etc. This paper focuses on verifying previously reported results for above discussed tools as well as to identify the efficiency of the tools to collect evidence from memory. In case of malware analysis, identifying the rogue process from kernel space in memory is the main focus of investigation. Therefore, we addressed this problem and attempted to answer which tools are capable of capturing the user space as well as kernel space and finding suitable in all other parameters.

Experimental Setup

The Windows 10 Ultimate operating system with 1 GB of RAM and 2 core processors was used as a controlled environment. In VMware Workstation pro 15.0.2 build-10952284, the operating system was installed. Therefore, no other programs have been installed on the device in order to avoid unexpected memory interventions. In addition to that, the computer had no internet connection. The memory acquisition tools used for the experiments are as follows:

i.   FTK Imager 4.2.1

ii. Magnet RAM Capture 1.2.0

iii. Belkasoft RAM Capturer

iv. Dumplt 3.0.20170620.1

v.   Memoryze 3.0

Volatility 2.6.1 framework was used to test the output results from collected images by each of the memory acquisition tools. Each time the system was restarted before acquiring the memory image to avoid the intervention of previously loaded tools. Parameters selected for the comparison of tools are as follows:

a. Time taken by the tool to capture the physical memory

The information stored in the RAM is dynamic and changes over time. It is necessary to gather the RAM evidence at the earliest. In addition, the time taken by the physical memory capture tool is a significant parameter of concern for the first responder.

b. Space occupied by the tool in memory

When a tool runs in a suspect machine, it occupies a certain amount of space in RAM. The data stored in RAM may be overwritten by the space occupied by the tool and can lead to the loss of key evidence. Therefore, the minimum amount of space occupied by the tool must be the first choice of the investigator.

c. Ability to capture user space as well as kernel space

Physical memory is divided into two parts: user space and kernel space. All user programs and software reside within user space whereas operating system resides in kernel space. To investigate the contemporary file less malware and traces of rootkits, it is essential to capture user space as well as kernel space.

d. User Interface

It is noted that, as opposed to GUI tools, CLI tools consume less RAM space. However, Hibshi et al. (Hibshi et al., 2011) concluded in the study that, compared to CLI, users are more comfortable with GUI

e. Portability

In the forensic investigation, it is imperative to take care of minimum contamination of evidence. If the tool needs to be installed in the suspect system, it will make a large number of changes in the suspect system. As a consequence, portable instruments are the investigators' first preference.

Analysis and Results

To compare the memory capturing tools, different parameters have been selected as discussed in the aforementioned section. FTK Imager, Belkasoft live RAM capture and Magnet RAM capture are GUI based tools whereas DumpIt and Memoryze are CLI based tools. GUI tools need less expertise to use as compared to CLI tools. It is also important that tools must be portable (plug and play) to take care of minimum contamination in the victim machine. FTK Imager is not portable software. The tool must be installed before collecting physical memory. Memoryze tool must be installed in the workstation and prepared on a USB device before collecting physical memory from the victim machine. Belkasoft live RAM capture, Magnet RAM capture and DumpIt are portable tools.

Table 1 Comparison of tools

Name of The Tool	Company Name	GUI/CLI	Portable
FTK Imager 4.2.1	Access Data	GUI	×
Belkasoft Live RAM capture	Belkasoft	GUI	√
Magnet RAM capture 1.2.0	Magnet Forensics	GUI	√
DumpIt 1.3.2	MoonSols	CLI	√
Memoryze 3.0	Fireeye	CLI	√

The processing time taken by the tools to collect the physical memory is shown in figure 2 In terms of time, command line utility, DumpIt takes minimum time to collect the physical memory while memorize takes maximum time to capture physical memory amongst all tools.
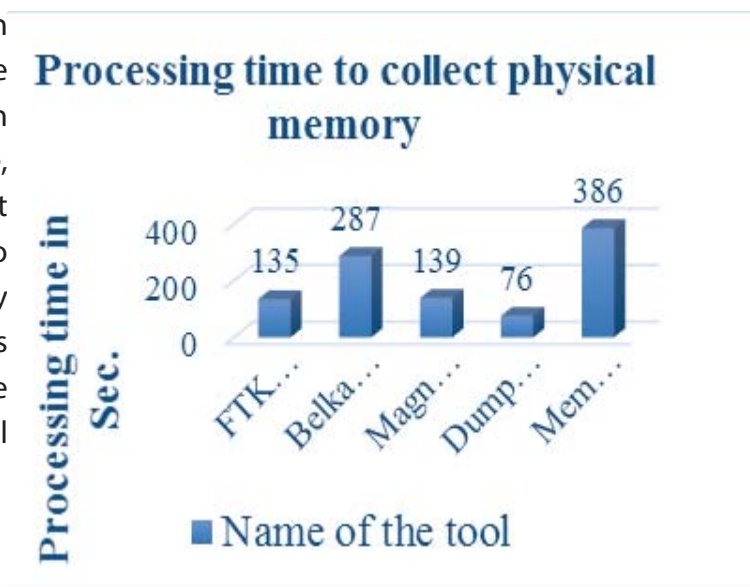
Figure 2 Processing time of each tool

The amount of space occupied by each tool for capturing memory from a suspect system is shown in figure 3. It is the major parameter of concern, since whatever amount of space is occupied by the tool, the data stored in RAM is likely to be overwritten. FTK Imager occupies the maximum amount of space in RAM because it is not a portable tool. It should be installed before capturing the memory. DumpIt occupies minimum space in the RAM. Belkasoft occupies the second lowest space in RAM amongst all the tools. Magnet RAM Capture and Memoryze also occupy a significant amount of space in RAM.
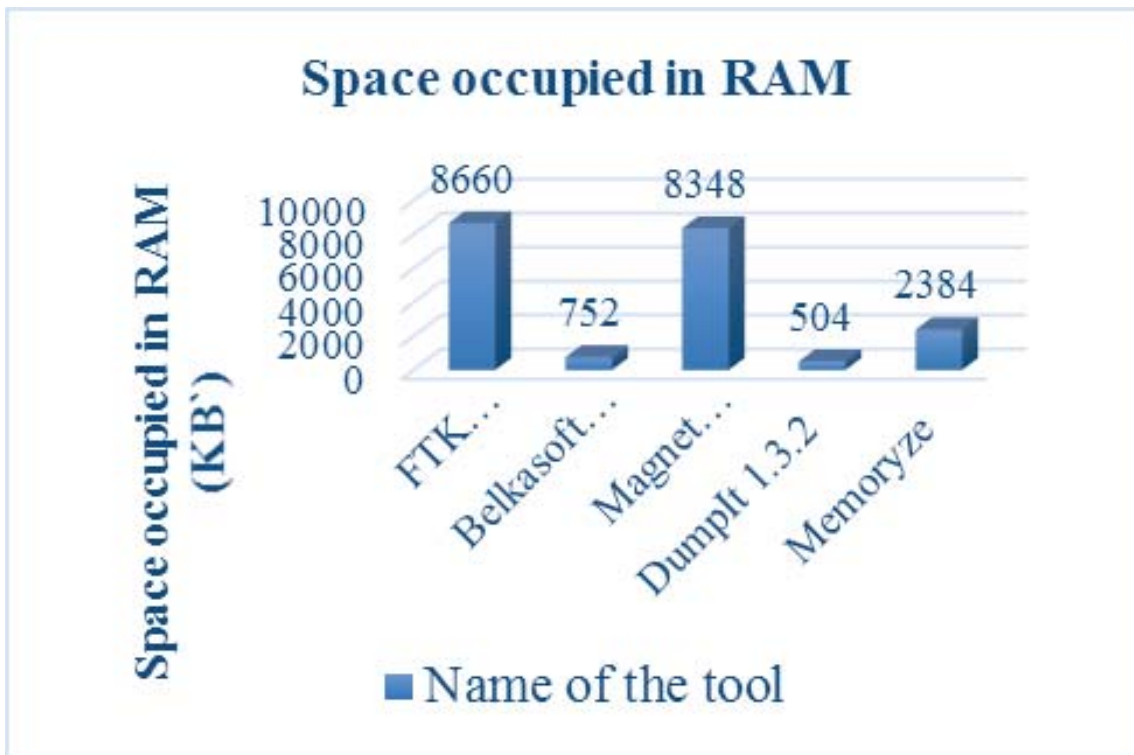
Figure 3 Space occupied in RAM

Different plugins of Volatility Framework were applied to the resultant memory image to verify the capabilities of tools to collect evidence. Plugins used for the experiment are as follows.

a. Kernel space plugins

- SSDT – System Service Descriptor

Table maps system calls to kernel function address. The command shows the service index, function name, and driver of SSDT entries.

- modules – The output shows the list of kernel drivers loaded into the system. It also depends on the KDBG structure.

- Modscan – Unlike the modules command, Modscan can find hidden or unlinked kernel drivers. It can also find previously unloaded drivers.

- Driverscan – It shows the DRIVER_OBJECT in physical memory. It also locates the kernel modules.

- Filescan – The command output shows the open file even if rootkit is hiding on disk. It shows the offset, number of pointers, number of handles, and permission of the file.

- Mutantscan – It shows the mutant object in the physical memory.

- Symlinkscan – It shows the symbolic link objects.

b. **User space analysis plugins**

- imageinfo – To identify the details about captured images like the operating system, service pack, time of capturing, architecture etc. It also provides suggested profiles to be used while using other plugins.

- kdbgscan – Instead of providing only profile suggestions, kdbgscan provides the correct profile and KDBG address. Some of the plugins like pslist rely on the correct KDBG profile. pslist takes the first KDBG from memory image but in every

case it is not the correct KDBG. So to provide correct KDBG is necessary to get accurate results.

- pslist – It provides the list of running processes at the time of collecting memory images. The output shows the offset, PID, PPID, number of threads and handles, session ID, starting time and exit time by pointing to PsActiveProcessHead.

- psscan – The command can find previously terminated or inactive processes. Moreover, it can identify hidden or unlinked processes by rootkits.

- psxview – It enumerates processes using different techniques to find out hidden, terminated and unlinked processes.

c. **Other artifacts**

- Prefetch – Prefetch files are the logs of frequently running applications. By using this command, prefetch files can be extracted from physical memory. The output shows the file name, execution time, number of execution, and file size. Timestamps of the last eight executions can be retrieved from the system.

- shimcache – Most of the forensic tools parse the shimcache from the registry database and it is updated

when the system is shut down. The plugin parses the Application Compatibility Database (shimcache) from memory.

- registry – Windows registry is a hierarchical database which stores the settings of windows operating system in low level. Hivescan command was used to find the physical address of registry hives in memory, and hivelist command was used to locate the virtual address and full path of the registry. At last the print key command was used to display keys and sub keys within a specific registry key.

After collection of physical memory, it is also important to compare the capabilities of tools to collect evidence. For the purpose of rootkit analysis, it is imperative to know whether the tools are capable of collecting kernel space or not. Different plugins were used to evaluate the outcome of the memory images collected by the tools. From the experiment it is observed that, all the memory acquisition tools are capable of capturing the user space as well as kernel space memory and other forensically important artifacts. Table 2 summarizes the outcome of memory analysis under the volatility framework.

Table 2 Other plugins used for forensic artifacts analysis

Name of the Tool	User Space Plugins	Kernel Space Plugins	Other Artifact Plugins
FTK Imager 4.2.1	√	√	√
Belkasoft Live RAM capture	√	√	√
Magnet RAM capture 1.2.0	√	√	√
DumpIt 1.3.2	√	√	√
Memoryze 3.0	√	√	√

From the experiment, following outcome is noted:

c. FTK Imager is not a portable tool and must be installed in the victim machine before the memory acquisition which is not preferred for forensic processes.

d. Belkasoft Live RAM capture occupies less amount of space in RAM but takes higher time for collection.

e. Magnet RAM capture occupies a very high amount of space in RAM that needs to be prevented and takes significant time for acquisition.

f. Memoryze occupies less amount of space in RAM but takes maximum time for collection.

g. DumpIt takes minimum time for collection and occupies a minimum amount of space in RAM amongst all

other tools. DumpIt is found to be the best tool in all parameters that are essential for the selection of tools and may be used for memory acquisition of windows systems.

CONCLUSION

Technological advances can potentially affect the process of digital forensic investigation. In order to investigate the contemporary malware attack, and examine the other key evidence from RAM, investigators should collect the memory in a forensically sound manner with least contamination. Because of the nature of RAM, selection of tools for

acquisition is the key for investigation. Since many tools can potentially overwrite the content of RAM and leads to the loss of crucial evidence. The purpose of this study is to determine the best memory acquisition tool amongst five widely used tools for windows operating systems that can assist an investigator in obtaining crucial evidence at the crime scene. From the experiment, it can be concluded that DumpIt is the best tool to acquire the memory from the running system since it takes a minimum time for acquisition, consumes least RAM space, and has the potential to acquire user space as well as kernel space.

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Rights of Transgender Person in India : Contemporary Development

Prof. (Dr.) V.K. Ahuja

Abstract

The transgender persons have been discriminated and treated with a lot of humilation for centuries. Despite the fact the UDHR, ICCPR and ICESCR recognised human rights for all human beings, States failed to protect their rights as a consequence of which the transgender had to live in a miserable situation. The scenario is now changing and the transgender persons are fighting for their rights in an organised manner in all the States. The Indian legal system was also not fair to them. It was only after the Supreme Court judgement in NALSA case in 2014 that the legislature came out with Transgender Persons Act, 2019. The Act did not come to the expectations of transgender community and has been crticised widely. The Transgender Rules 2020 have also been drafted. The article discusses the international legal regime on the rights of transgender persons, judicial activism in the protection of their rights, and a critical analysis of Transgender Persons Act, 2019.

Keywords: Right, transgender, contemporary development, discrimination, sexual orientation, transphobia, intersex, criminalise

I. Introduction

The world has been very unfair to the people belonging to sexual minorities. Due to their "sexual orientation" or "gender identity", they have always been subjected to harassment, violence, discrimination, stigmatization, exclusion, and all sorts of prejudices throughout the world. Their problems were further aggravated when discrimination was made to them inter alia on the basis of race, religion, age, disability, health, and poor economic conditions. According to United Nations, they are inter alia subjected to "killings, rape and physical attacks, torture, arbitrary detention, the denial of rights to assembly, expression and information, and discrimination in

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employment, health and education".1 According to UNDP Report, the issues they face inter alia are "shame, fear, and internalized transphobia; disclosure and coming out; adjusting, adapting, or not adapting to social pressure to conform; fear of relationships or loss of relationships; and self-imposed limitations on expression or aspirations".[2] As a consequence of the cumulative effect of various types of discrimination, they loose confidence and their self-worth is weakened.[3] In order to avoid onslaught of society, many of them try to live in fear by concealing their gender identity. Many a times, they also develop suicidal tendencies. They used to end up becoming humans without human rights.

The presence of transgender persons can be found in Indian society centuries before. They were recognised as persons having special blessings of God in Hindu mythological texts. They go in a group to families in which a baby is born or a marriage has taken place, to give them badhai (to congratulate them) by singing and dancing. The family gives them some money and they leave. That used to be and is still their main source of income. In many cases when they used to give badhai, the concerned family did not give what they had expected. This resulted in arguments and they would not leave unless paid adequately. As a consequence, many a times they were beaten up severely. The society in due course started considering them nuisance and avoided them. Unfortunately, they were never considered at par with other persons and people used to make fun of them and abused them as if they were not the human beings.

It is so painful to note that in India, transgender persons were recognized as voters for the first time only in 1994. The Election Commission allowed their enrollment by mentioning their gender as "male" or "female".[4] In other words, they did not have the right to vote and elect their leaders prior to 1994. No one thought of their plight and problems from their perspectives.

The first ever protest for the rights of transgender took place in 1991 by a human rights group known as Aids Bhedbhav Virodhi Andolan (ABVA) in New Delhi. The protest was against the atrocities of police on gay people. The ABVA put forward a 16 point charter for the rights of transgender persons. This article inter alia will discuss the international scenario on the rights of transgender, judicial activism in India, and the Transgender Persons Act, 2019 in detail.

1   See Report of the UNHCHR, "Discriminatory Laws and Practices and Acts of Violence against Individuals based on their Sexual Orientation and Gender Identity", 2011, para 1 available at https://www.ohchr.org/Documents/Issues/Discrimination/A.HRC.19.41_English.pdf last visited on 6 November 2020. The Report in paras 24, 26-27 shows that people were killed in various countries due to their sexual orientation or gender identity.

2   UNDP, Hijras/Transgender Women in India: HIV, Human Rights and Social Exclusion, December 2010, p. 4.

3   See also See "Preamble to the Yogyakarta Principles" available at http://yogyakartaprinciples.org/wp-content/uploads/2016/08/principles_en.pdf last visited on 3 November 2020.

4   Archa Vashishtha and Parthvi Ahuja, "Protection of Human Rights of Sexual Minorities: Accepting the Unaccepted" in V.K. Ahuja, Human Rights: Contemporary Issues (2019), pp. 212-34 at p. 218.

II. Transgender Persons

The term "transgender" is used in a broader sense to signify "individuals who defy rigid, binary gender constructions, and who express or present a breaking and/or blurring of culturally prevalent stereotypical gender roles".[5] In other words, the term describes "a wide range of identities and experiences, including but not limited to: pre-operative, post-operative and non-operative transsexual people (who strongly identify with the gender opposite to their biological sex); male and female 'cross-dressers' (sometimes referred to as transvestites, drag queens, or drag kings); and men and women, regardless of sexual orientation, whose appearance or characteristics are perceived to be gender-atypical".[6] Transgender persons include Hijras,[7] eunuchs, Kothis,[8] Aravanis,[9] Jogtas/Jogappas,[10] Shiv-Shakthis11.[12]

Although the term "transgender" has been used as umbrella term in India, it is being considered as a part of the term "sexual minorities" globally in the contemporary scenario. The term "sexual minorities" include lesbians, gays, bisexuals, transgender persons, Queer, and Intersex. The group of them is also referred to as "LGBTQI".

In India, the Transgender Persons (Protection of Rights) Act, 2019 defines "transgender person" to mean "a person whose gender does not match with the gender assigned to that person at birth and includes trans-man or trans-woman (whether or not such person has undergone Sex Reassignment Surgery or hormone therapy or laser therapy or such other therapy), person with intersex variations, gender queer and person having such socio-cultural identities as kinner, hijra, aravani and jogta".[13] The transgender person includes "person with intersex variations" which is defined in the Act to mean "a person who at birth shows variation in his or her primary sexual characteristics, external genitalia, chromosomes or hormones from normative standard of male or female body".[14]

The inclusion of "person with intersex variations" in the definition of "transgender person" was not received well by the transgender community on the ground that "not every intersex

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5   UNDP, Hijras/Transgender Women in India: HIV, Human Rights and Social Exclusion, December 2010, p. 3.

6   Ibid.

7   Born as biological males, hijras identify themselves as women or "neither man nor woman".

8   Kothis, being part of a heterogeneous group, are described as "biological males who show varying degrees of femininity - which may be situational". Some of them have bisexual behavior and marry to a woman.

9   In Tamil Nadu, Hijras are known as Aravanis.

10   Jogta/Jopgappa is male servant and jogti is female servant of Goddess Renukha Devi (Yellamma) in Maharashtra and Karnataka. Jogti Hijras are male-to-female transgender persons whereas Jogtas are heterosexuals who may or may not dress up as woman. Jogtis are also biological females who are dedicated to the Goddess.

11   Shiv-Shakthis are males with feminine gender expression. They marry to a sword and become its bride. They cross-dress and also use ornaments meant for women.

12   For more information, see UNDP, Hijras/Transgender Women in India: HIV, Human Rights and Social Exclusion, December 2010, p. 13.

13   Section 2(k), Transgender Persons Act, 2019.

14   Id., section 2(i).

person identifies as transgender, and not every transgender person is intersex".[15] Their apprehension is that inclusion of intersex person will dilute their rights.[16]

III. Historical Wrongs against Transgender through Enactments

It was not only the society which did wrongs to the transgender persons, the Government in the colonial period was also no more better in that regard. In 1871, Criminal Tribes Act was enacted with the purpose of supervising the acts of transgender persons/ Hijras. The Act deemed them innate criminals who were "addicted to the systematic commission of non-bailable offences". The Act provided for their "registration, surveillance and control of certain criminal tribes and eunuchs" and also penalized those eunuchs "who were registered, and appeared to be dressed or ornamented like a woman, in a public street or place, as well as those who danced or played music in a public place". Arrest of these people could be made and no warrant was required for such arrest. They could also be sentenced to imprisonment maximum up to 2 years or with fine or with both. Local Government was required under the Act "to register the names and residence of all eunuchs" residing in their areas and also their properties, "who were reasonably suspected of kidnapping or castrating children, or of committing offences under Section 377 of the IPC". Further, it was made a punishable offence to keep a boy under 16 years in the charge of a eunuch who was registered as above. The registered eunuchs were prohibited from "acting as guardians to minors, from making a gift deed or a will, or from adopting a son". The Act was finally repealed in August 1949.[17]

Section 377 of the Indian Penal Code was another such provision which created lots of problems to transgender persons. The provision was in existence prior to the enactment of the Criminal Tribes Act, 1871. Section 377 criminalized all "penile-non-vaginal sexual acts" between persons, which also included anal sex and oral sex. Transgender persons were known for being associated with this kind of sexual behaviour. It is appropriate to mention here the judgement of Allahabad High Court in Queen Empress v. Khairati.[18] In this case, Khairati, a eunuch, was arrested on suspicion of being a "habitual sodomite". He was prosecuted and convicted under section 377 of the IPC. On appeal, however, the Allahabad High Court acquitted him. This case shows how section 377, IPC was used "as

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15   See also Sasha R, Trans Bill 2019: Why India's Transgender Community is Opposing a Bill which is Supposed to Protect their Rights, posted on 30th Nov 2019 available at https://yourstory.com/socialstory/2019/11/stoptransbill2019-india-transgender-community-rights

16   Prachi Singh, Why is Transgender Community Unhappy with Trans Persons Bill? Published on 9 October 2019 available at https://www.downtoearth.org.in/blog/governance/why-is-transgender-community-unhappy-with-trans-persons-bill--67158 last visited on 17 November 2020.

17   National Legal Services Authority v. Union of India and Others, Writ Petition (Civil) No.400 of 2012 with Writ Petition (Civil) No.604 of 2013 decided on 15 April 2014, para 16.

18   (1884) ILR 6 All 204.

an instrument of harassment and physical abuse against Hijras and transgender persons". Section 377 is associated with certain sexual acts and is applicable to all persons. However, the transgender persons have been the most likely victims of this provision due to their involvement of specific sexual nature with the persons of same sex.

In Navtej Singh Johar & Others v. Union of India,19 the Supreme Court while decriminalising section 377 to the extent it criminalises "consensual sexual acts between competent adults" in private space, stated that "section 377 IPC subjects the LGBT community to societal pariah and dereliction and is, therefore, manifestly arbitrary, for it has become an odious weapon for the harassment of the LGBT community by subjecting them to discrimination and unequal treatment."20 The Court further stated that "consensual carnal intercourse among adults, be it homosexual or heterosexual, in private space, does not in any way harm the public decency or morality".21

IV. Rights of Transgender Persons: International Scenario

The United Nations Charter may be stated as the stepping stone at international level for the promotion and encouragement of "respect for human rights and for fundamental freedoms for all".22 This means that human rights of all including transgender will have to be promoted worldwide and for this purpose international co-operation is to be achieved. The General Assembly is also required to "initiate studies and make recommendations" for realizing "human rights and fundamental freedoms for all".23 The Economic and Social Council, another organ of the United Nations, is also enabled to make recommendations for the same purposes.24

The significant development, however took place with the adoption of Universal Declaration of Human Rights in 1948. The UDHR recognizes the inherent dignity and the "equal and inalienable rights of all members of the human family".25 It recognizes that all human beings (which also included persons belonging to sexual minorities) are "born free and equal in dignity and rights".26 Further, according to Article 2, they are entitled to all the rights and freedoms without any distinction including distinction on the basis of sex or "other status".27 A similar provision has also been made in Article 2(2) of the International Covenant on Economic,

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19   Writ Petition (Criminal) no. 76 of 2016 decided on 6 September, 2018.

20   Id., para 253.

21   Ibid.

22   See Article 1(3) of the UN Charter, 1945, which is one of the purposes of the United Nations.

23   Id., Article 13(1)(b).

24   Id., Article 62(2).

25   Preamble, Universal Declaration of Human Rights, 1948.

26   Id., Article 1. See also the Report of the UNHCHR, "Discriminatory laws and practices and acts of violence against individuals based on their sexual orientation and gender identity", 2011, para 5 available at https://www.ohchr.org/Documents/Issues/Discrimination/A.HRC.19.41_English.pdf last visited on 6 November 2020.

27   Article 2, Universal Declaration of Human Rights, 1948.

Social and Cultural Rights (ICESCR), 1966.

The Committee on Economic, Social and Cultural Rights explained the term "other status" as used in Article 2(2) of the Covenant in May 2009. The same meaning can also be attributed to the same term as used in Article 2 of the UDHR. The Committee stated:

"Other status as recognized in article 2, paragraph 2, includes sexual orientation. States parties should ensure that a person's sexual orientation is not a barrier to realizing Covenant rights, for example, in accessing survivor's pension rights. In addition, gender identity is recognized as among the prohibited grounds of discrimination; for example, persons who are transgender, transsexual or intersex often face serious human rights violations, such as harassment in schools or in the workplace".[28]

The UDHR also recognizes the right to life and liberty for everyone.[29] Further, according to UDHR and International Covenant on Civil and Political Rights (ICCPR), 1966, "everyone has the right to recognition everywhere as a person before the law".[30] In addition, "all" are considered equal before the law and they are entitled to equal protection of law without any discrimination.[31] There

shall be no arbitrary interference with respect to one's "privacy, family, home or correspondence". Neither will there be an attack on one's "honour and reputation".[32]

No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, or to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.

It is noteworthy that UDHR has used expressions like "all", "everyone", "no one" in most of the provisions. These expressions, being gender neutral, are equally applicable to transgender. As UDHR is a Declaration, its provisions are not applicable as treaty obligation. However, the provisions of UDHR are having binding force as customary international law.

The International Covenant on Civil and Political Rights and International Covenant on Economic, Social and Cultural Rights (ICESCR) were adopted in 1966. Like UDHR, most of their provisions are gender neutral and therefore equally applicable to transgender. It is noteworthy that the provisions of these Covenants have a binding force on State Parties. Unfortunately, at national level, nations somehow did not show interest in recognizing their rights for long. The Human Rights Committee under ICCPR stated that States have a

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28   The Committee on Economic, Social and Cultural Rights, "General Comment No. 20" available at file:///C:/Users/HP/Downloads/E_C.12_GC_20-EN.pdf, para 32 last visited on 5 November 2020.

29   Article 3, UDHR and Articles 6 and 9, ICCPR, 1966.

30   Article 6, UDHR and Article 16, ICCPR, 1966.

31   Article 7, UDHR and Article 26, ICCPR, 1966.

32   Article 12, UDHR and Article 17, ICCPR, 1966.

"legal obligation to ensure to everyone the rights recognized by the Covenant without discrimination on the basis of sexual orientation."[33] The Committee on Economic, Social and Cultural Rights has also expressed similar views.[34]

In Toonen v. Australia[35] also, the Human Rights Committee held that States were under an obligation "to protect individuals from discrimination on the basis of their sexual orientation". The Committee has also taken up two cases, i.e. X v. Colombia[36] and Young v. Australia,[37] in which it observed that pension benefits should be provided to an unmarried same-sex partner, if the same were being provided to unmarried heterosexual couples. Any denial of such benefits to same-sex partner was to be taken as a violation of the rights which have been guaranteed under the ICCPR.

In G v Australia,[38] the UN Human Rights Committee stated that the prohibition against discrimination under ICCPR Article 26 includes discrimination made on the basis of "gender identity, including transgender status". It also stated that "privacy" under Article 17 also protects

"gender identity".

It will be appropriate to mention that the protection of Convention relating to the Status of Refugees of 1951 will not be denied on the basis of "sexual orientation" or "gender identity" of the refugees as they may be recognized as a "particular social group".39 According to UNHCR, "sexual orientation is a fundamental part of human identity, as are those five characteristics of human identity that form the basis of the refugee definition: race, religion, nationality, membership of a particular social group and political opinion".[40] Therefore, all protection of the Convention will be available to refugees without any discrimination on the ground of sexual orientation or gender identity.

The protection under Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment, 1984 is available to all persons irrespective of their sexual orientation, or gender identity. With respect to the obligations of State Parties under the Convention, the Committee against Torture stated that it is the responsibility of State Parties to ensure that their laws are applicable to everyone regardless of inter alia "gender", "sexual orientation" or "transgender

33 See Report of the United Nations High Commissioner for Human Rights, "Discriminatory laws and practices and acts of violence against individuals based on their sexual orientation and gender identity", 2011, para 48 available at https://www.ohchr.org/Documents/Issues/Discrimination/A.HRC.19.41_English.pdf last visited on 6 November 2020.

34 Ibid.

35 Communication No. 488/1992 (CCPR/C/50/D/488/1992).

36 CCPR/C/89/D/1361/2005, paras 7.2-7.3.

37 CCPR/C/78/D/941/2000, paras 10-12.

38 Communication No. 2172/2012 (CCPR/C/119/D/2172/2012) (UN HRC, 15 June 2017).

39 See UNHCR, "UNHCR Guidance Note on Refugee Claims Relating to Sexual Orientation and Gender Identity", 21 November 2008 available at https://www.refworld.org/docid/48abd5660.html last visited on 6 November 2020. See also Report of the UNHCHR, "Discriminatory laws and practices and acts of violence against individuals based on their sexual orientation and gender identity", 2011, para 1 available at https://www.ohchr.org/Documents/Issues/Discrimination/A.HRC.19.41_English.pdf last visited on 6 November 2020.

40 UNHCR, id., para 41.

identity".[41]

It is unfortunate to note that in 1992, the General Assembly adopted a Declaration on minorities which did not include sexual minorities. The Declaration was on the "Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities".[42]

It will be appropriate to refer to "Yogyakarta Principles on the Application of International Human Rights Law in relation to Sexual Orientation and Gender Identity" which were adopted by a distinguished human rights group at Yogyakarta, Indonesia from 6 to 9 November 2006. The Yogyakarta Principles consist of 29 Principles dealing with most of the human rights enshrined in UDHR. According to Yogyakarta Principles, no discrimination is to be made on the basis of "sexual orientation" and "gender identity" of the individual as far as the realization of human rights is concerned. The "sexual orientation" or "gender identity" of the individual is not to be considered a disqualification for the realization of any human rights as enumerated in the Principles.

The Principles lays down various human rights such as the right to - universal enjoyment of human rights; equality and non-discrimination; recognition before the law; life; security of the person; privacy; freedom from arbitrary deprivation of liberty; fair trial; treatment with humanity while in detention; freedom from torture and cruel, inhuman or degrading treatment or punishment; protection from all forms of exploitation, sale and trafficking of human beings; work; social security and to other social protection measures; adequate standard of living; adequate housing; education; health; protection from medical abuses; freedom of opinion and expression; freedom of peaceful assembly and association; freedom of thought, conscience and religion; freedom of movement; seek asylum; found a family; participate in public life; participate in cultural life; promote human rights; effective remedies and redress. Principle 29 makes violators of the human rights including rights mentioned in these Principles, accountable without impunity for their acts. The principles also lay down course of action that States should adopt for every Principle.

The Principles define "sexual orientation" to refer to "each person's capacity for profound emotional, affectional and sexual attraction to, and intimate and sexual relations with, individuals of a different gender or the same gender or

41   Committee against Torture, "Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment, General Comment No. 2 on Implementation of Article 2 by States Parties", 24 January 2008 available at https://www.refworld.org/docid/47ac78ce2.html last visited on 8 November 2020.

42   Declaration adopted by General Assembly resolution 47/135 of 18 December 1992 available at https://www.ohchr.org/en/professionalinterest/pages/minorities.aspx last visited on 21 November 2020.

more than one gender".[43]

The term "gender identity" is defined to refer to "each person's deeply felt internal and individual experience of gender, which may or may not correspond with the sex assigned at birth, including the personal sense of the body (which may involve, if freely chosen, modification of bodily appearance or function by medical, surgical or other means) and other expressions of gender, including dress, speech and mannerisms".[44]

On November 10, 2017, the "Yogyakarta Principles plus 10 (YP+10)" were adopted to document and elaborate the significant developments which have taken place in the field of international human rights law and in the understanding of violations affecting the aforesaid persons. The YP+10 added two more grounds of discrimination. These are "gender expression" and "sex characteristics".

The term "gender expression" is explained as "each person's presentation of the person's gender through physical appearance – including dress, hairstyles, accessories, cosmetics – and mannerisms, speech, behavioural patterns, names and personal references, and noting further that gender expression may or may not

conform to a person's gender identity".[45] The YP+10 clarified that the term "gender expression" is a part of the term "gender identity" as defined in the Yogyakarta Principles.

The term "sex characteristics" is explained as "each person's physical features relating to sex, including genitalia and other sexual and reproductive anatomy, chromosomes, hormones, and secondary physical features emerging from puberty".[46] After the adoption of YP+10, the discrimination or denial of any right on the basis of "sexual orientation", "gender identity", "gender expression", and/or "sex characteristics" is prohibited.

The additional rights enshrined in the YP+10 are right to - State protection; legal recognition; bodily and mental integrity; freedom from criminalisation and sanction on the basis of sexual orientation, gender identity, gender expression or sex characteristics; protection from poverty; sanitation; enjoyment of human rights in relation to information and communication technologies; know the truth regarding facts, circumstances and reasons for violations of the rights; practise, protect, preserve and revive cultural diversity. Like Yogyakarta Principles as originally adopted, the YP+10 also lay down course of action that States should adopt for

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43   See "Preamble to the Yogyakarta Principles" available at http://yogyakartaprinciples.org/wp-content/uploads/2016/08/principles_en.pdf last visited on 3 November 2020.

44   Ibid.

45   The "Preamble to Yogyakarta Principles Plus 10" available at http://yogyakartaprinciples.org/wp-content/uploads/2017/11/A5_yogyakartaWEB-2.pdf last visited on 4 November 2020.

46   *Ibid.*

the implementation of every additional Principle. The YP+10 lay down additional obligations for some of the originally adopted Principles.

The Supreme Court of India in National Legal Services Authority v. Union of India and Others,[47] referred to several Yogyakarta Principles as originally adopted and stated that these Principles have been considered by United Nations bodies, human rights bodies at regional level, Council of Europe, domestic courts, government commissions as well as commissions for human rights, etc. "as an important tool for identifying the obligations of States to respect, protect and fulfill the human rights of all persons, regardless of their gender identity".[48] In other words, the Supreme Court was convinced with the persuasive value of Yogyakarta Principles as the same do not have binding force not being a treaty or convention.

It is noteworthy that the World Health Organisation (WHO) removed "transgender health issues" from the list of "mental illnesses" in the year 2018. It is now called "gender incongruence" and has been reassigned to category 17.[49]

In Europe and United States, the transgender persons are comparatively in a better position than the other parts of the world. In Europe, transgender have got an additional forum to redress their grievances, i.e. before European Court of Human Rights. In Europe, the rights of transgender are considered as an integral part of the international human rights law.50

The European Court of Human Rights held in several cases that laws which criminalise consensual, private sexual activity between adults violated the right to privacy guaranteed by Article 8 of the European Convention for the Protection of Human Rights and Fundamental Freedoms.[51] In Sutherland v. United Kingdom,[52] the European Commission of Human Rights dealt with the question whether the minimum age for homosexual activities and for heterosexual activities which was 18 years and 16 years respectively, violated the right to privacy of homosexuals. The Commission was of the opinion that there was no justification for the different age limits for homosexual and heterosexual activities. The Commission found different age limits for aforesaid activities to be discriminatory and lowered the age limit for homosexual activities to 16. In

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47 Writ Petition (Civil) No.400 of 2012 with Writ Petition (Civil) No.604 of 2013 decided on 15 April 2014.

48 Id., para 23.

49 Anne Fleischmann and Luke Hurst, What is the Approach across Europe to Transgender Identity? last updated on 09/08/2019 available at https://www.euronews.com/2019/08/09/what-is-the-approach-across-europe-to-transgender-identity last visited on 21 November 2020.

50 Archa Vashishtha and Parthvi Ahuja, "Protection of Human Rights of Sexual Minorities: Accepting the Unaccepted" in V.K. Ahuja, Human Rights: Contemporary Issues (2019), pp. 212-34 at p. 224.

51 See Dudgeon v. United Kingdom (1981) 45 ECHR(Ser A) 14; Norris v. Ireland (1988) 142 ECHR (Ser A) 46; and Modinos v. Cyprus (1993) 259 ECHR (Ser A) 1.

52 Application No. 25186/94 dated July 1, 1997.

Grant v. United Kingdom,[53] the European Court of Human Rights while referring to Goodwin v. United Kingdom54 held that the United Kingdom couldn't withhold an earlier pension from a "trans woman, who had undergone gender confirmation surgery".

In United States, laws which prohibited sodomy, oral sex, homosexual activity between consenting adults in private were declared as unconstitutional in 2003.55 The same-sex marriage has been declared valid in 2015 by the US Supreme Court in Obergefell v. Hodges.56 It gives some solace that in the changed scenario there is a movement throughout the world for the recognition of the rights of sexual minorities.

In a recent landmark case Bostock v. Clayton County,[57] the US Supreme Court held that Title VII of the Civil Rights Act of 1964, which makes discrimination in employment inter alia on the ground of a person's sex also covers "sexual orientation" and "transgender status". The ruling of lower court that "sexual orientation discrimination was a form of sex discrimination" was upheld by Supreme Court.[58]

V. Judicial Activism for the Protection of Rights of Transgender in India

The legal position of transgender persons was not very good till recently. There was no specific legislation in India dealing with their rights. Their problems were being dealt with under the Constitution of India. The judiciary has come forward as a saviour of their rights. The situation became better with the enactment of the Transgender Persons (Protection of Rights) Act, 2019, though the Act is not free from criticism.

The judiciary has been a big hope for the transgender persons as and when their rights were violated. In Navtej Singh Johar & Others v. Union of India,[59] the Supreme Court stated that "the LGBT community possesses the same human, fundamental and constitutional rights as other citizens do since these rights inherent in individuals as natural and human rights. … [E]quality is the edifice on which the entire non-discrimination jurisprudence rests".[60] The Court also stated that "in the garb of social morality, the members of the LGBT community must not be outlawed or given a step-motherly treatment of a malefactor by the society".[61]

The Supreme Court in National Legal Services Authority v. Union of India

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53   [2006] ECHR 548, [44].

54   [2002] 35 EHRR 18.

55   Lawrence v. Texas, 539 U.S. 558.

56   192 LEd 2d 609.

57   No. 17–1618, 590 US_(2020) decided on June 15, 2020.

58   See also In Landmark Case, Supreme Court Rules LGBTQ Workers are protected from Job Discrimination, https://www.nbcnews.com/politics/supreme-court/supreme-court-rules-existing-civil-rights-law-protects-gay-lesbian-n1231018 last visited on 24 November 2020.

59   Writ Petition (Criminal) no. 76 of 2016 decided on 6 September, 2018.

60   Id., para 240.

61   Id., para 122.

and Others[62] observed that it can not be a "mute spectator" when the rights of transgender persons are violated, particularly when there is "universal recognition and acceptance" of their rights. The Court referred to Articles 14, 15, 16, 19 and 21 of the Constitution to discuss the rights of transgender persons.

The Court considered right to equality under Article 14[63] as the "basic feature of the Constitution", and observed that treating equals as unequals or vice versa will result in the violation of the "basic structure of the Constitution". The Court further observed that Article 14 also ensures "equal protection and hence a positive obligation on the State to ensure equal protection of laws by bringing in necessary social and economic changes, so that everyone including TGs may enjoy equal protection of laws and nobody is denied such protection".[64] The Court emphasised the term "any person" in Article 14 and observed that it includes not only male and female but also those persons who are neither male nor female such as transgender persons. The Court further stated that they were entitled to "legal protection of laws in all spheres of State activity, including employment, healthcare, education as well as equal

civil and citizenship rights, as enjoyed by any other citizen of this country".[65]

Referring to Articles 15 and 16, the Court stated that these Articles prohibit discrimination inter alia on the ground of "sex". Article 15 prohibits discrimination with respect to access to public place, whereas Article 16 prohibits discrimination regarding equality of opportunities in public employment. "Gender bias" and "gender based discrimination" is prohibited under both the Articles. The Court stated that "gender" and "biological attributes" are distinct components of "sex". "Biological characteristics … include genitals, chromosomes and secondary sexual features, but gender attributes include one's self image, the deep psychological or emotional sense of sexual identity and character". The "sex" based discrimination therefore, includes discrimination on the basis of "gender identity". The Court was also of the opinion that transgender persons were eligible and legally entitled to get the benefits of "special provisions envisaged under Article 15(4) for the advancement of the socially and educationally backward classes (SEBC)". The Court further stated that the Government was required to take affirmative action in this regard to remedy the injustice which had been done to them for the last so many centuries. The Court went on to state that transgender persons were entitled

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62 Writ Petition (Civil) No.400 of 2012 with Writ Petition (Civil) No.604 of 2013, para 49.

63 Article 14 reads that "the State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India".

64 Writ Petition (Civil) No.400 of 2012 with Writ Petition (Civil) No. 604 of 2013, para 54.

65 Ibid.

to reservation in public appointment as envisaged in Article 16(4) and for this purpose the Government was required to take affirmative action so that they could get "due representation in public services".[66]

Regarding Article 19(1)(a), the Court stated that the transgender person has the right to expression of his self-identified gender which can be expressed in many ways including through personal appearance, dressing, words, behaviour, action, presentation, mannerism, etc. subject to Article 19(2) restrictions. The Court further stated that "State cannot prohibit, restrict or interfere in a transgender's expression of such personality… We, therefore, hold that values of privacy, self-identity, autonomy and personal integrity are fundamental rights guaranteed to members of the transgender community under Article 19(1)(a) of the Constitution of India and the State is bound to protect and recognize those rights".[67]

The "heart and soul" of the Constitution of India is Article 21 which protects the life and personal liberty of every person. It ensures that no person is to be deprived of "his life or personal liberty except according to procedure established by law". It takes "all those aspects of life which go to make a person's life meaningful" by inter alia protecting his right to privacy,

right to dignity,[68] and the right to personal autonomy.[69] The Court further observed:

"Recognition of one's gender identity lies at the heart of the fundamental right to dignity. Gender, … constitutes the core of one's sense of being as well as an integral part of a person's identity. Legal recognition of gender identity is, therefore, part of right to dignity and freedom guaranteed under our Constitution".[70]

In Navtej Singh Johar & Others v. Union of India,[71] the Supreme Court was considering the decriminalisation of section 377 of the Indian Penal Code which had an adverse impact on transgender persons due to their sexual orientation. While decriminalising section 377, the Court referred to the judgement of nine Judge Bench of Supreme Court in Justice K.S.Puttaswamy (Retd.) v. Union of India and Others,[72] in which the Court held sexual orientation to be a facet of the privacy of a person and the right to privacy as a fundamental right.

VI. Transgender Persons (Protection of Rights) Act, 2019

In order to provide protection to the

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66   Id., paras 59-60.

67   Id., paras 62, 65 and 66.

68   See also Francis Coralie Mullin v. Administrator, Union Territory of Delhi (1981) 1 SCC 608, paras 7 and 8, in which the Supreme Court stated that the right to dignity ensures the "full development and evolution of persons" and includes "expressing oneself in diverse forms, freely moving about and mixing and commingling with fellow human beings".

69   Writ Petition (Civil) No.400 of 2012 with Writ Petition (Civil) No. 604 of 2013, para 67.

70   Id., para 68.

71   Writ Petition (Criminal) no. 76 of 2016 decided on 6 September, 2018.

72   (2017) 10 SCC 1.

rights of the transgender persons and for their welfare, the Transgender Persons (Protection of Rights) Act (hereinafter "Act") was enacted in 2019.[73] The Transgender Persons' (Protection of Rights) Bill 2019 was passed by the Rajya Sabha on November 25, 2019. Prior to that, the Transgender Bills were introduced in 2016 and 2018 which were criticised widely. The 2019 Act is not an exception and is criticised widely.

The Act defines "family" to mean "a group of people related by blood or marriage or by adoption made in accordance with law".[74] The definition, thus recognises family as group of people who are related in one of the three manners, i.e. by blood, marriage or adoption. The definition has been criticised by transgender community on the ground that it does not include "chosen family". The reason is that most of the transgender persons do not live with their biological families due to one reason or the other which may be beyond their control, such as being disowned by the family, violence by family members and immediate community, etc. They find their kith and kin in their chosen family and also get all support from them.[75]

(i) Prohibition against Discrimination

The Act prohibits any person/

establishment to discriminate against a transgender person on any of the nine grounds as laid down in section 3. Any discrimination in educational establishments is prohibited. The "denial, or discontinuation of, or unfair treatment in, educational establishments and services thereof" to transgender persons is a prohibited activity. Further, any discrimination on account of any unfair treatment with respect to employment/occupation is also prohibited.

The denial of employment/occupation or termination of such employment of transgender person is prohibited being discriminatory under the Act. With respect to healthcare services also any denial or discontinuation of such services to transgender person or giving them unfair treatment is a prohibited act.

The Act prohibits any person/ establishment to deny/discontinue/ give unfair treatment to transgender person regarding access/enjoyment/ use of any "goods, accommodation, service, facility, benefit, privilege or opportunity dedicated to the use of the general public or customarily available to the public". The right of movement of transgender person is not to be denied/discontinued or given unfair treatment as it is prohibited being discriminatory. The same is true

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73 The Transgender Persons Act received Presidential assent on 5 December 2019.

74 Section 2(c), The Transgender Persons Act.

75 Rachana Mudraboyina, Sammera Jagirdar and Philip C. Philip, A Critique of Transgender Persons (Protection of Rights) Bill, 2019, published on August 5, 2019 available at https://feminisminindia.com/2019/08/05/critique-transgender-persons-protection-of-rights-bill-2019/

about the right of transgender person to "reside, purchase, rent, or otherwise occupy any property". The Act also makes it discriminatory to deny access to transgender person to or remove him/her or give unfair treatment in Government/private establishment in whose care or custody such transgender person may be.

(ii) Identity Recognition of Transgender Persons

The Act secures every transgender person the "right to be recognised as such". On such recognition, that person shall have a "right to self-perceived gender identity". In order to get recognition as a transgender person, such person may make an application to the District Magistrate (DM) for the purpose of "issuing a certificate of identity as a transgender person" in the prescribed form and manner. The application is to be accompanied with prescribed documents. Where the person seeking such recognition is a minor, his/her application is to be made by a parent/guardian of the minor.[76]

According to section 6 of the Act, where an application has been made by a person as aforesaid, the DM is duty bound to issue within prescribed time a "certificate of identity as transgender person" to the applicant

after following the prescribed procedure. The certificate shall indicate the gender of such person as transgender. Thereafter, the gender of that person shall be recorded in all official documents. The certificate so issued by the DM shall not only confer rights on them but also be considered as a "proof of recognition of his identity as a transgender person".

In order to protect the privacy of the transgender persons, the Central Government has set up a portal which will enable them to apply online for the purpose of getting their identity certified by the DM. They need not vist the office of DM anymore. The transgender persons have been enabled to upload their affidavits in which they will declare their "self perceived gender identity". On the basis of such affidavits, they will be issued identity certificate.[77]

The issue with this provision is that the rights will not be available automatically. It is the certificate issued by DM which will confer the rights and will act as a proof of recognition of their "identity as a transgender person". In a way it goes against the rulings of Supreme Court in National Legal Services Authority v.

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76   Section 5, The Transgender Persons Act.

77   Ambika Pandit , Centre readies portal for transgender persons to get identity certificate online, protect their privacy, available at http://timesofindia.indiatimes.com/articleshow/79399715. cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst last visited on 25 November 2020.

Union of India and Others[78] where no such condition was imposed.

After the issuance of certificate as discussed above, the transgender person may undergo surgery to change the gender either as a male or female. In such a case that person may make an application for revised certificate to the DM which is to be accompanied by a certificate of the Medical Superintendent/Chief Medical Officer of the medical institution where the surgery has been performed. The DM, on being satisfied about the correctness of the certificate so issued by the medical institution, shall issue a revised certificate indicating the change in gender of such person in a prescribed form and manner and within the prescribed time.

On the issuance of a "certificate of identity" or "revised certificate" as aforesaid, that person may change the "first name in the birth certificate and all other official documents" which relate to the identity of that person. It is however noteworthy that change in gender and the issuance of revised certificate are not to affect the rights and entitlements of such person under the Act. In other words, the rights secured to such a person on the recognition of such a person as

transgender and other entitlements shall continue to be available to him under the Act.[79]

(iii) Welfare Measures by Government

Section 8 obligates the Government to secure "full and effective participation" and the inclusion of transgender persons in society. For this purpose, the Government is required to take appropriate steps. The Government is duty bound to take prescribed welfare measures for the protection of their rights and interests. The Government shall also facilitate them to have access to welfare schemes. The Government is under an obligation to formulate "transgender sensitive, non-stigmatising and non-discriminatory" welfare schemes as well as programmes. To address the needs of transgender persons, the Government is to take steps for their "rescue, protection and rehabilitation". Further, appropriate measures are to be taken by the Government to promote and protect their right to participate in cultural as well as recreational activities.

(iv) Obligation of Establishments and other Persons

With respect to matters relating to employment which may also include recruitment, promotion and related matters, the Act

78   Writ Petition (Civil) No.400 of 2012 with Writ Petition (Civil) No.604 of 2013, para 49.

79   Section 7, The Transgender Persons Act.

obligates establishments to be fair to transgender person and not to discriminate against any one of them. The establishments are also required to provide the prescribed facilities to transgender persons and ensure compliance with the Act.[80]

According to section 11, a complaint officer is to be designated by each and every establishment to deal with all those complaints which are related to violation of the Act. Neither the Act nor the Transgender Persons Rules lay down any eligibility or procedure for the designation of such complaint officer by the establishment. The complaint officer must be a senior person who is sensitive towards the transgender persons. The Government should also make necessary arrangements for the training of such complaint officers so that they could discharge their duties efficiently.

The Act protects the rights of the transgender children by making special provisions for them. Section 12 makes it prohibited to separate a transgender child from his/her parents or immediate family. However, such a child can be separated in his/her interest by the orders of the court. The Act also provides every transgender person - (i) a "right to reside" in the same household in which his/her

parents/members of immediate family reside; (ii) "a right not to be excluded from such household"; and (iii) "a right to enjoy and use the facilities of such household in a non-discriminatory manner".

Section 12 has been drafted in the interest of transgender children to ensure that such children are not separated from the family by anybody other than the court. This provision has been criticized on the ground that it becomes the need of most of the transgender persons to move out of their families due to various reasons, inter alia abandonment by the family, violence and discrimination by the family members as well as by the surrounding community. Their freedom to leave their home in order to move to a chosen family is curtailed and made conditional.[81]

A transgender is to be placed in a rehabilitation centre on the direction of the court if his/her parents/ immediate family members are unable to take care of him/her. The transgender persons are not happy with this provision on the ground that for centuries they have been staying and living independently with community support which of course is not free from violence and

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80   Id., sections 9-10.

81   Rachana Mudraboyina, Sammera Jagirdar and Philip C. Philip, A Critique of Transgender Persons (Protection of Rights) Bill, 2019 posted on August 5, 2019 available at https://feminisminindia.com/2019/08/05/critique-transgender-persons-protection-of-rights-bill-2019/

discrimination. Placing a transgender in a rehabilitation centre, which may not be very sensitive towards transgender will unnecessarily result in policing them. The transgenders, therefore, do not want any restriction on their lives and would like to take their own decisions whether to live with other transgenders in their community or not.82

(v) Rights to Education, Health and Social Security of Transgender Persons

Government funded as well as recognised educational institutions are required to provide inclusive education to transgender persons on non-discrimination and on an equal basis with others. Similarly, transgender persons shall also be provided "opportunities for sports, recreation and leisure activities" by such institutions on a non-discriminatory basis.83

It is noteworthy that recently approved National Education Policy 2020 (hereinafter referred to as "NEP") is based on the principles inter alia "full equity and inclusion". The NEP ensures that every student should be in a position of thriving in the "education system".84 While drafting NEP, care has been taken of the right to education

of transgender persons. The "equitable and inclusive education" has been discussed threadbare in the NEP 2020. It is fundamental to achieve an "inclusive and equitable society". The NEP states with concern that school enrolments of the students in "Socially and Economically Disadvantaged Groups" (SEDGs) which also include transgender persons are declining steadily. It further states that the aim of education system should be to provide every child with all opportunities to learn and excel and no one should be deprived of these opportunities on the basis of his/her "circumstances of birth or background".85 The NEP, therefore aims to eliminate disparity in access to education for all children belonging to any gender or other SEDGs.

In order to achieve the objective of "equitable and inclusive education", a "Gender-Inclusion Fund" is to be constituted by the Government of India. The Fund shall be aimed to build India's capacity "to provide equitable quality education for all … transgender students." The NEP states that:

"The fund will be available to States to implement priorities determined by the Central government critical for assisting… transgender children in gaining access to education (such

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82   Ibid.

83   Section 13, The Transgender Persons Act.

84   National Education Policy 2020, para 0.13.

85   Id., para 6.1.

as the provisions of sanitation and toilets, bicycles, conditional cash transfers, etc.); funds will also enable States to support and scale effective community-based interventions that address local context specific barriers to … transgender children's access to and participation in education".[86]

The NEP is a welcome initiative to aim at equitable and inclusive education. The Government must implement it in letter and spirit to ensure that transgender students get education without hindrance and become part of the mainstream.

According to the Transgender Persons (Protection of Rights) Rules, 2020 (hereinafter referred to as "Rules"), the Government is required to notify the transgender persons of general category in "other backward classes" (OBC) so that they could avail themselves of the benefits of "vertical reservation" which is available to OBC. However, where such a person belongs to SC or ST category, he/she will be covered under the vertical reservation, and in case such person belongs to PwD, ex-servicemen or sportspersons category, he/she will be entitled to the horizontal reservation, as is available to the persons belonging to that category.[87]

The Government is required to "formulate welfare schemes" as well as "programmes to facilitate and support livelihood" for them. The programmes so made by the Government have to include "vocational training and self-employment" for them.[88]

The Act requires Government to take certain measures in relation to health of transgender persons under section 15. The Government is to set up separate "human immunodeficiency virus Sero-surveillance Centres" for the purpose of conducting sero-surveillance for transgender persons. It is well documented that in India there are barriers to transgender persons "in accessing HIV testing, antiretroviral treatment and sexual health services".[89] The Act will now address this issue.

In addition, medical care facilities which may include "sex reassignment surgery" (SRS) and "hormonal therapy" are to be provided by the Government as per the Act. The Government shall also provide counseling before and after "sex reassignment surgery" and "hormonal therapy". A Health Manual will also be brought out by the Government with respect to sex reassignment surgery.[90]

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86   Id., para 6.8.

87   Rule 7(1), Transgender Persons Rules, 2020.

88   Section 14, The Transgender Persons Act, 2019.

89   UNDP, Hijras/Transgender Women in India: HIV, Human Rights and Social Exclusion, December 2010, p. 8.

90   Such a manual is to be brought out in accordance with the guidelines of "World Profession Association for Transgender Health".

It is noteworthy that in India in absence of free SRS in government hospitals, the transgender persons go to quacks or unqualified medical practitioners who do the emasculation, which is most likely to develop "post-operative complications" particularly urological issues and wound infections. In some of the cases, they die due to excessive bleeding. After getting the SRS done at the hands of these unqualified practitioners, the transgender persons approach urologists for getting themselves treated for post-operative issues. Sometimes the cases become very complicated due to delay in approaching the doctors. Overall, they undergo a horrible and very painful situation in India.

It is also appropriate to mention that transgender persons face enormous difficulties in having access to health facilities in many nations. The UNHCHR raised concerns in its report that "gender reassignment therapy, where available, is often prohibitively expensive and State funding or insurance coverage is rarely available. Health-care professionals are often insensitive to the needs of transgender persons and lack necessary professional training".[91]

In India, after the enactment of Transgender Persons Act, the transgender persons are likely to get a fair deal as far as their right to health is concerned. The Government must uphold their right to health in an effective manner. The National Health Policy should also contain transgender specific health policy which may take into account certain other issues not addressed in the Act such as their mental health, fertility, artificial fertilization, surrogacy, etc.[92]

The Government is also obligated to review "medical curriculum and research" for doctors for the purpose of addressing the specific health issues of the transgender persons. The Government is also required to facilitate access to them in hospitals/ healthcare centres, etc. The Government is also liable to make a "comprehensive insurance scheme for Sex Reassignment Surgery, hormonal therapy, laser therapy or any other health issues" for the purpose of covering medical expenses of transgender persons.

It is appropriate to note that most of the transgender persons at present do not have any health or life insurance policy. The reasons may be manifold,

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91   See Report of the UNHCHR, "Discriminatory laws and practices and acts of violence against individuals based on their sexual orientation and gender identity", 2011, para 57 available at https://www.ohchr.org/Documents/Issues/Discrimination/A. HRC.19.41_English.pdf last visited on 6 November 2020.

92   See also Rachana Mudraboyina, Sammera Jagirdar and Philip C. Philip, A Critique of Transgender Persons (Protection of Rights) Bill, 2019 posted on August 5, 2019 available at https://feminisminindia.com/2019/08/05/critique-transgender-persons-protection-of-rights-bill-2019/

such as the inability to pay premium; a lack of knowledge; inability to get enrolled in the insurance schemes; not considering it important, etc. The Government should not only come up with the aforesaid insurance schemes but also educate them about these schemes so that they could take benefits of these schemes in true sense. The Government must ensure that they are not asked for any type of payment by the hospitals and the entire payment is made to the hospitals through insurance schemes.

The transgender persons also face very serious issue of social security for various reasons. They are either disowned and evicted by the family or leave the house at their own due to non-cooperation or uncalled for behaviour of the family members. They do not get any economic support from the family in the long run. They also fail to get employment as the people are not interested in offering them jobs due to societal mindset which is against them. Very few people become self-employed by opening small tea shops or food shops or by organising some cultural programs. To earn their livelihood, they inter alia start begging on the street, buses and trains or indulge in sexual activities where they are more

prone to get infected.93 Now under the Act, the Government is required to formulate "transgender sensitive, non-stigmatising and non-discriminatory" schemes and programmes on educational, health, social security, and welfare matters.94 The Government is also required to create "institutional and infrastructure facilities" within a period of 2 years to protect the rights of transgender persons to enable them to participate in "cultural and recreational activities".95

In order to ensure that the benefits of the welfare schemes reach out to the transgender persons, the Government has been required to have awareness programs for them and also facilitate them to enjoy those benefits. Not only that, the other stakeholders should also be encouraged to develop the required changes in the behaviours of people towards these persons.96

(vi) Constitution of National Council for Transgender Persons

The Central Government is required to constitute a "National Council for Transgender Persons" (hereinafter the "Council"). The Council is to be a big body consisting of the Union Minister and Minister of State of the Ministry of Social Justice and

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93 See also UNDP, Hijras/Transgender Women in India: HIV, Human Rights and Social Exclusion, December 2010, p. 9.

94   Rule 7(3), Transgender Persons Rules, 2020.

95   Id., Rule 7(5).

96   Id., Rule 7(6).

Empowerment as Chairperson and Vice-Chairperson respectively.97 The Council is required to perform certain functions regarding transgender persons. The Council will give advice to the Central Government with respect to the "formulation of policies, programmes, legislation and projects" regarding transgender persons. The Council shall also be responsible for the monitoring and evaluation of the impact of policies and programmes which are designed for achieving "equality and full participation" of such persons. Reviewing and coordinating the activities of all the Government departments, other Governmental Organisations and NGOs which deal with transgender persons matters shall also be the responsibility of the Council. In addition, the grievances of transgender persons are to be redressed by the Council. Finally, the Council shall also perform all other

functions as the Central Government may prescribe.98 For the purposes of carrying out the objectives of the Act, the Central Government is required to credit the necessary sums to the Council.99

The constitution of the aforesaid National Council may be criticized on the ground that there is no adequate representation from the transgender community. In such a big Council, there is provision for the inclusion of just 5 transgender persons from throughout the country. They are the real stakeholders and their under-representation at the Council is likely to affect the decision making of the Council.

(vii) Offences and Penalties

The Act makes certain acts against transgender persons a punishable offence. It is an offence under the Act to compel or entice such a person to indulge in forced or bonded labour. It is however noteworthy that any "compulsory service for public purposes" as may be imposed by the Government is not an offence. Further, denying such persons the "right of passage to a public place" or obstructing them from using or having "access to a public place" which are open to others shall be an

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97 The other members of the Council shall be the Secretary of the Ministry of Social Justice and Empowerment; one representative not below the rank of Joint Secretary from the Ministries of Health and Family Welfare, Home Affairs, Housing and Urban Affairs, Minority Affairs, Human Resources Development (now Education), Rural Development, Labour and Employment and Departments of Legal Affairs, Pensions and Pensioners Welfare and National Institute for Transforming India Aayog; one representative not below the rank of Joint Secretary each from the NHRC and NCW; Central Government nominated representatives of the State Governments and Union territories by rotation, one each from the North, South, East, West and North-East regions. All these persons shall be ex officio members. In addition to them the other members shall be five Central Government nominated representatives of transgender community, by rotation, from the State Governments and Union territories, one each from the North, South, East, West and North-East regions; five Central Government nominated experts to represent NGOs or associations, working for the welfare of transgender persons. The Joint Secretary in the Ministry of Social Justice and Empowerment dealing with the welfare of the transgender persons shall be the Member Secretary. The term of the members except ex officio members shall be 3 years.

98 Section 17, The Transgender Persons Act.

99 *Id.*, section 19.

offence. It will also be an offence to force or cause such persons to "leave household, village or other place of residence". Sometimes, the family members due to societal pressure and fear force the transgender person leave the house. The people in that society may also force or cause such persons to leave their household and may be village as they do not like their presence. This act of family or the outsiders is no more tolerable now as the Act makes it an offence.

Harming or injuring or endangering the life, safety, mental or physical health or well-being of such persons or causing them "physical abuse, sexual abuse, verbal and emotional abuse and economic abuse" is to be treated as an offence under the Act. All the aforesaid offences committed against the transgender persons are punishable with imprisonment ranging from 6 months to 2 years and also with fine.

The aforesaid provision has been criticized on the ground that the Act does not define the term "sexual abuse" and lays down the term of imprisonment between 6 months and 2 years only for a person if he rapes a transgender. On the contrary, if a woman is raped, the imprisonment will not be less than 10 years but may be extended for life. This differentiation shows the insensitiveness of the Government towards transgender persons.

The most troubling fact is that there is no mention inter alia about the rights of transgender with respect to marriage, adoption, family, and inheritance in the Act.

VII. Conclusion

The urban society in India has become a little sensitive towards the transgender persons in the last few years. The things, however, did not change much in the rural areas where old bad practices can be seen against them with impunity. Discrimination, violence, abuse, humiliation against transgender persons are still prevalent there.

The mindset of the society is required to be changed to provide a dignified life for transgender. The beginning is to be made from the family in which the transgender is born. The parents should not think that such children bring shame or dishonour to the family. They should also leave the apprehension which they have in mind due to traditional mindset that the child will not be able to marry or will not be able to take care of the family. The family of the transgender should not feel any pressure to disown and abandon the child or do the honour killing. They should on the contrary approach the State authorities in case of any societal pressure and report the matter to them so that unscrupulous people are taken to task. We need to understand that being a transgender is not an illness. They are our fellow citizens.

It is unfortunate that the transgender persons find it very difficult to even claim their share in the ancestral property or inherit such property. They also face a lot of problems when they purchase some house property as the people do not want to sell them their property. The people always try to avoid buying a property which is situated in the area in which transgender persons reside. This mindset needs to go.

The judiciary has done a commendable job in NALSA and Navtej Singh Johar by upholding the rights of transgender persons. The enactment of the Transgender Persons Act, 2019 is a welcome step. It, no doubt, has certain flaws as discussed before. The shortcomings of the Transgender Persons Act, 2019 must be addressed. The transgender persons should be given adequate representation in the National Council as discussed above. There is a strong need for holding sensitization programmes throughout the country at the level of educational institutions right from schools to universities so that the people could be made aware of the rights of transgender persons and change their mindset towards them. The programmes should also be organised to make transgender persons aware of their rights.

In order to prevent transgender persons from begging and indulging in sexual activities for the purpose of earning their livelihoods, the Government must come forward with a sound social security programme for them ensuring some minimum amount to be paid to them every month. The Government should also run welfare programmes for their betterment.

The time is ripe when the international community must negotiate and adopt an international treaty to give transgender persons their rights which have been denied to them for centuries. There are certain issues such as right to marry with the person of same sex, adoption, etc. on which nations may have divergent opinion due to wide differences in their cultures. A treaty with the liberty to make reservations with respect to certain provisions on which there may be no unanimity among nations may be a good option to begin with. A treaty without the possibility of reservation may not be ratified by many due to their cultural diversities and may not serve the purpose. Treaties allowing reservations may have certain pitfalls, but it is still a better option to bring the States together on a common platform and agreeing to certain things. Once nations come forward to ratify such a treaty, the debate may further be taken up for rest of the issues.

ICT as a New Horizon for Women Safety & Security: A Study of Telangana State

Dr. A. Kumara Swamy*

Abstract

Technology has touched many spheres of our lives in India. There is a technology in business, education, banking, agriculture, communication and almost every part of our life. Indian police are also stepping towards using/applying the technology in the policing, hence Police have been trying to reduce themselves to the paper and pen, a traditional method of policing, which may not reach up to the mark of expectations of police and people to provide law & order and justice. According to National Crime Records Bureau (NCRB) 2017 Report Tealagana State stands at 9 with 17,521 cases of crime against women. And Police-public ratio is 218 for every one lakh people in the state. This means 1.47 police per 458 citizens. Against this backdrop, telangana police have felt that digitalization of police department is the need of the hour. This helps to control various crimes like eve-teasing, harassment, rape, human trafficking, Child Marriages, Cyber-Crimes, Money laundering, Terror attacks etc.This paper discusses the Digitalization of telangana State police and various IT applications for the safety and security of women and Crime detection.

Key words: Cyber-crimes, Hake Eye, Digital Policing, Technology etc.

1. Introduction

Police are facing the Newand Emerging Challenges of cyber-crimes, money laundering, terrorism and insurgency, policing and intelligence gathering operations. Police forces the world over are experimenting with new levels of training and proficiencies, real-time use of data, humane but effective interrogation techniques and transparent tools of surveillance. Cyber-crimes like phishing, identity theft, online banking frauds are forcing the police to keep themselves updated with the latest technology, and hence an urgent need to modernize and

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digitalize our policing (Gupta and Jain, 2018). Campaigns like 'Digital Policing' 'and SMART Policing 'would ring solid, if police are equipped with computers and necessary software, along with the skilled and trained staff.

The 21st century of Technology all over the world is re-shaping both police functioning and Criminal justice system at an unprecedented rate. It makes the police tasks quicker and more efficient. IT has become a Hi-Tech crime fighter for law enforcement agencies by carrying out prevention of crime, analysis, traffic control, offender trafficking etc., the police surveillance is one activity justified by its potential effect and crime prevention. This study brings out the working process of police, various applications and policies to make services faster with the innovated technology, controls crimes and supervising and monitoring the crimes issues as well as staff management.

According to the 2011 census for every 1000 people there are only 914 females for males. Another point of concern is female employment. Women's employment is not only the thing that is lacking, of progressively declining. According to the 2011-12 National Statistical Institute, only 1 per cent of women is employed. On the other hand, the employment level of women is falling, especially in rural areas. Rural employment fell by eight per cent.

2. Global Gender Index Report -2020:

Gender discrimination is on the rise in India, claiming the ranking of the Geneva based international organisation. World Economic Forum (WEF) has released Gender Gap Index 2019-2020. India ranks 112th place for the year 2019-2020, and 2018 ranked 108th.India has moved down position 108th to112th WEF report, with the country ranked among the bottom 5 in health and economic sectors, Iceland is top rank in gender equality. China (106th), Sri Lanka (102nd), Nepal (101st), Brazil (92nd), and Bangladesh (50th), Yemen is ranked (153rd) the last and worst. Women in India have limited financial opportunities (35.4%). Indian women are the smallest on the board of a well-resourced domestic company compared to Pakistan (32.7%), Yemen (27.3), Syria (24.9) and Iraq (22.7%). 13.8% of the board members were women. The smallest in China is 3.7 per cent. The increase in women's representation in this year's politics is only positive. (As per the WEF report 2019).

3. Violence against women in India:

Crime against women such as rape, acid throwing, dowry killings, honour killings, human trafficking, eve-teasing and the forced prostitution of young girls has been reported in India. Police records in India show a high incidence of crimes against women. The National Crime Records Bureau reported in 1998 that by

2010 growth in the rate of crimes against women would exceed the population growth rate. Earlier, many crimes against women were not reported to police due to the social stigma attached to rape and molestation. Official statistics show a dramatic increase in the number of reported crimes against women. According to NCRB (National Crime Records Bureau) 2017 Report 3, 59,849 cases of crime against women were reported in the country. State wise Uttar Pradesh topped the list with 56,011 cases followed by Maharashtra with 31,979 cases West Bengal 30,002 cases and, telangana stands 9th place with 17,521 cases. Among the 19 metropolitan cities in the country, Hyderabad city (consists of Hyderabad, Cyberabad and Rachakonda Police commissionerates) stands fourth in crime against women with 2332 cases. The national capital territory Delhi (11,724), stood first at national level crime against women, after that, Mumbai (6,058) and Bengaluru (3,427) came next in the list respectively. However, Delhi had highest crime rate in the country with 1,050 crime committed per 1 lakh of the population as listed under the Indian penal code. the number of crime committed against women have increased in 2017 by 6% compared to 2016 and by 9% compared to 2015. (NCRB report released on Oct 21, 2019 after two years delay.)

4. The Constitution of India guarantees to the women:

➢ Equality before the law- (Article 14)

➢ No discrimination by the State on the grounds of religion, race, cast, sex, place of birth or any of these (Article 15(1))

➢ Equality of opportunity in employment (Article 16)

➢ Equal pay for equal work (Article 39(d)) and Article 42

➢ State in favour of women and children (Article 15(3))

➢ Renounces practices derogatory to the dignity of women (Article 51(A) (e))

➢ State for securing just and humane conditions of work and for maternity relief (Article 42).

5. Women's safety laws:

Child Marriage Restraint Act,(1929),Muslim Personal Law (Shariat)(1937), Minimum Wages Act(1948), Hindu Marriage Act(1955),Immoral Traffic (prevention) Act(1956),Dowry Prohibition Act(1961), Medical Termination of Pregnancy Act(1971),Indecent Representation of Women(Prevention)Act(1986), Commission of Sati (Prevention)Act(1987), National Commission for Women Act(1990),The Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of Sex Selection) Act(1994),Protection of Women from Domestic Violence

Act(2005), Prevention of Children from Sexual Offences (POCSO)Act(2012),Sexual Harassment of Women at Work Place (Prevention, Prohibition & Redressed) Act(2013).

5.1.POCSO Act 2012:

Protection of Children from Sexual Offences Act, (POCSO) in 2012 a special law was passed to provide protection to children who are victims of sexual abuse. This acts additional safeguard to the child during the criminal trial and provides for protection and rehabilitation of the victim. This Act protects both male and female children who are under 18 years of age.

5.2. Nirbhaya Act, 2013:

The Criminal Law (Amendment) Bill, 2013 commonly known as the Anti-Rape Bill came into force on, April 3, (2013) after President Shri. Pranab Mukherjee put his signature into the Bill. Thereafter this Bill called as the Nirbhaya Act, 2013. The need for a strict law to deal with sexual crimes against women was felt after the brutal gang-rape and murder of a 23-year-old Paramedical student in a moving bus in the national capital Delhi on 16th December 2012.The victim died 13 days after the incident in a Singapore hospital on 29th December 2012. The brutality of the crime shocked the nation. All sections of people in India protested on the streets to demand better safety measures for women and strict laws to punish the culprits. Under public pressure, Central government at the Centre formed Justice JS Verma panel to come up with strict laws to arrest crime against women. In order to bring a strong law, which is pro-women and will act as a deterrent, it will create a revolution in the country.

Thomson Reuters Foundation survey:

The Government of India declared 2001 the Year of Women's Empowerment. The National Policy for the Empowerment of Women was passed in 2001. According to a 2011 poll conducted by the Thomson Reuters Foundation, India was the "fourth most dangerous country" in the world for women, India was also noted as the worst country for women among the G20 countries, and however, this report has faced criticism for promoting inaccurate perceptions. On 9thMarch 2010, one day after International Women's day, Rajya Sabha passed the Women's Reservation Bill requiring that 33% of seats in India's Parliament and state legislative bodies be reserved for women. In October 2017 & 2018 another poll published by Thomson Reuters Foundation found that, Delhi was the fourth most dangerous megacity (total 40 in the world) for women and it was also the worst megacity in the world for women when it came to sexual violence, risk of rape and harassment.

6. "SHE Teams":

Telangana Police started SHE Teams for the safety and security of women in

Telangana. They have noticed the policing practices that are followed in Singapore in providing security to the women. Noticing their practices, Telangana Police have come up with the initiative called SHE Team to protect the Women and Girls against crime. The Hyderabad police constituted 100 SHE teams on October 24, 2014, initially to curb the menace of eve-teasing, harassment of women and girls in public places. But it has eventually expanded its scope of policing to offences such as cyber bullying, sexual assault, sexual harassment, domestic violence, dowry related violence, trafficking, child abuse and child marriages etc. In the year 2018, it was extended to the entire thirty-three districts and nine police commissinerates of Telangana state. SHE Teams are working with a Moto to provide safety and security to women in Telangana. In this project, police have identified more than 350 places as hot spots (high risk) areas such as busy public places, schools and colleges, Buses and Bus-stands, Railway stations, MMTS trains, metro trains, and tourist areas. The strangers and eve-teasers in these locations are being caught and sent to jail for harassing women and girls. As the concept is successful by Telangana police, the other states of India like Maharashtra, Chhattisgarh, Orissa, Andhra Pradesh, Rajasthan and Uttar Pradesh have replicated the same with different names.

6.1. SHE Team includes:

Each team has four or five members.

i. A Sub -Inspector (S.I) heading the team

ii. Assistant Sub Inspector / Head Constable,

iii. A Lady Constable and Two or more male constables.

6.2. Police - Decoy Operation:

In plain clothes, these members present an informal look. In fact, it is this casual appearance that helps them from being identified and noticed. Women police personnel especially constables equipped with a small hidden camera / body worn camera to record the movements of suspects and eve-tears. They would we caught based on the video footage. Lady Constable Disguised as decoy, assists the teams in nabbing the eve teasers on spot with evidence. The teams work in two ways. First, around 200 plain clothes personnel patrol (earlier it was 100, but the number is changing as the Telanagana state & Hyderabad city are spreading and growing) various public spaces prone to harassment issues. When they spot something, they record first before swinging in action. "SHE team needs evidence so that they can act on it; that later helps with prevention. The second way is by lodging a complaint. "SHE team is on all social media platforms and an easy method to reach us is to call

100. This team gets maximum complaints through walk-ins. Sometimes the victim does not want to register a case and is happy if the person is counselled. Most of the days are complaint-high; delivered by WhatsApp, social media and the most preferred complaint mode is personal visits to SHE Teams office to register. From the routine ones, phone harassments, sexual harassment at workplace, blackmailing issues of those involving minors, most offences are dealt with care. Cases of domestic violence are transferred to Bharosa Centere, another initiative of police. Complaints relate to phone harassments. In most cases of minors, the girls/families are not interested in filing an FIR but police encourage them to do it.

6.3. Victim's identity confidential:

Members of SHE Teams are instructed to follow while talking to women in distress. They are also asked to be balanced and not disclose their opinion about the case to the victim or the respondent. They nabbed several people who were harassing Tollywood actors on the internet or in person, and the cases were never disclosed. "Initially, nobody knew about how SHE Teams function, but today thousands, especially youngsters, are volunteering to arrest harassment of women in public places. Many even write anonymous letters to the SHE Teams on problems faced by women in their respective localities. The unit is called SHE

Teams; it mostly comprises male officers, all of whom are given mandatory gender sensitisation training before being inducted into the wing, ensuring that safety of women is not compromised. Some of the eve-teasers and hooliganism are practicing the PD law, taking into account the seriousness of the victims and the negligence of the accused. From 2015 to 2019, more than five thousand cases were registered and 1547 people were sent to jail.

6.4. SHE Team –Awareness:

SHE Teams have also organized several awareness programs educating women on self-defence techniques, cyber-crimes etc. An average per day 60-70 Awareness Programmes, Several campaigns have been started to empower women to make them more confident and since the launching of SHE teams several women have come forward to discuss their ordeal (problems) with SHE Teams. The overall reduction in offences against women is around 20%, Extended to all districts and commissionarates of Telangana. SHE Teams concept is replicated in six other States like Maharashtra, Chattisgarh, Odisha, Andhra Pradesh, Rajasthan and Uttar Pradesh, with different names.

6.5. The complaints received from Oct 24, 2014 to Oct 23, 2019:

In Hyderabad city total 6104 petitions have been received by the police, among these Walk-ins in 1,957cases,though

Email:905,Facebook;343, WatsApp:801,Hawk-eye:134,Twitter:7, Dial100: 1,549, police caught by decoy operations/Red-handed cases: 408, police have registered 307 FIR Cases under various sections and acts (IPC cases-166, Nirbhaya Act cases-125,POCSO – 13, PD Act-3 cases),Petty cases: 570,Warned and let off cases: 1,906.

6.6. Five years successful story of SHE teams:

The SHE Teams, Hyderabad City Police was launched on October 24, 2014, with the sole aim to curb sexual harassment in all aspects, in all forms, at all places, and providing safety and security to women in society. The SHE Teams work in two ways. One is by nabbing culprits red-handed when the members of the SHE Teams move with cameras and record behaviour of the perpetrators in the act before arresting them. The teams ensure a 100% conviction rate by having solid evidence before making a move. The cases are registered Sue Moto when women don't come forward to register a case. The perpetrator's families are called as it is seen that shaming the perpetrators has a major impact.

7. 'Hawk Eye's 'Track Me' -travel safer for women:

Hawk Eye, the popular mobile application (WhatsApp number : 9490616555) of the Hyderabad City Police was launched on January 01, 2015. In the short duration

App has clocked over 10 lakh users, is adding one more feature to its services with an eye on making travel safer for women. The new feature, which is a navigator called 'Track Me', will enable the police to live track the entire route, once the passenger reports her boarding point. Any deviation in the route will immediately send an alert, both to the police and the passenger. The passenger can report that she 'reached safely' once her destination arrives, so that the live tracking can be stopped.

7.1. International Award for Hawk Eye:

Hawk Eye app has been awarded an International Award at the 7th Millionth Awards 2016 in the category of Government and Citizen Engagement. Millionth Award South Asia is an award, instituted to recognize and honour excellence in mobile innovations, applications and content services for development and empowerment across South Asia etc., of the women.

8. "Cyber Rakshak "- Ambassadors of Digital Safety:

Students are trained to become ambassadors of digital safety. At least 100 SHE Teams are working incognito in telangana and Hyderabad city alone for the safety and security of women. The SHE teams merge in the crowd and nab the miscreants after recording video of their act" Telangana State SHE Team, in association with End Now Foundation

and Telangana Academy for Skill and Knowledge (TASK), launched Cyber Rakshak programme. Students from across the State were handpicked as Cyber Rakshaks and trained to become ambassadors of digital safety. They are mentored by Telangana State Police SHE Teams and Cyber Teams along with End Now Foundation, TASK and cyber industry experts. The programme was conceptualised to channel the energy of students into spreading awareness about digital safety and transforming them into powerful and responsible agents in society.

8.1.Objectives of the programme:

➤ Advocate digital safety

➤ Make digital safety information and tools accessible to all

➤ Reduce number of victims of cybercrimes and

➤ Provide de-addiction support for digital addicts.

A Digital Safety' with the four major pillars of advocacy being cyber bullying, digital addiction, online safety and fake news etc. SHE team along with the Cyber Rakshaks, psychiatrist, cyber safety experts will visit educational institutions to conduct awareness sessions on digital safety. "They will also conduct a survey and take feedback from the participants. Further, they would refer victims of cyber abuse

and addiction to the relevant specialist; they will make Telangana a cyber-crime Free State.

9. Child Marriages declined in India: UNICEF:

According to statement issued by the UNICEF on 06 March 2018, there has been a critical drop in the number of child marriages in India from almost 50 % to 30 % per cent over the recent 10 years. The states with the highest prevalence of child marriages are in Bihar, West Bengal & Rajasthan with close to 40 per cent prevalence. While Tamilanadu and Kerala have prevalence below 20 per cent, they have pockets of disparity concentrated in tribal communities and amongst particular castes including the schedule casts. This decline in India has contributed significantly to a global decline in the child marriages. Overall, the proportion of girls who were married as children decreased by 15 % in the last decade, from 1 in 14 to approximately 1in 5. It said that child marriages were prevented globally in the last 10 years (2005-06 and 2015-16) with the largest reduction in the south Asia with India being at the forefront.

10. Practices in overseas on crimes against women:

Many countries have severe punishments for rape. Rape criminals shot dead in China. In some cases, penis removal is punishable. In European and Middle East countries the death penalty is applied to the rapist.

Few states of UAE have adopted openly stoned Punishments. Countries like France, Japan, USA and Russia are serving a life sentence of up to 15 years. Rape and Murders can be reduced if the offenders are immediately prosecuted and sentenced as per the law.

11. Practices in India on crimes against women:

National Cyber Crime Report Portal:

The National Cyber Crime Report Portal (NCCRP), a nationally organized body for the prevention of cyber-crimes, and harassment of women and children, is coming up with a marvellous response. These ports, which were set up under the agencies of Home Ministry on August 30, 2019, have been the subject of complaints all over the country. These ports, which are designed to monitor and control the cyber-sexual harassment at the national level, have been receiving tremendous response from the past (Until January 30, 2020) Union Home Minister (State) Shri. Kishan Reddy answered in Rajya Sabha that 33,152 complaints have been received, among them 790 cases are filed FIR. Anyone can complain in this portal. It will be forwarded to the concerned state's cyber, women child abuse cases.

11.1 Madhya Pradesh Government passed law -Death Penalty to child rapists:

Madhya Pradesh is the first state to make law to award death penalty for rape of girls below the 12 years of age. Rajasthan Assembly passed Criminal Laws (Rajasthan Amendment) Bill on March 09, 2018, awarding the death penalty to convicts involved in the rape of girls below the 12 years of age. The new amendment adds section 376-AA and 376-DD to the Indian Penal Code, 1860. With the passage of the criminal amendment laws (Rajasthan amendment Bill,) 2018, Rajasthan became the second state to award the death penalty to child rapists.

11.2. Andhra Pradesh Criminal Law Amendment Bill, 2019 (also known as "Disha Act"):

Andhra Pradesh Government on December 13, 2019 opened up the Disha Police Stations across 18 police district Headquarters to tackle cases of crimes against women in a speedy manner. These 18 Disha police stations will also include some already existing women's police stations which will be upgraded. The staff in these police stations will be headed by an officer of a deputy Superintendent of Police (Dy.SP) rank officer, two circle inspectors, three sub inspectors and support staff between 30-40 police personnel to assist the victim and arrest the offenders.

Conclusion:

There is a need to curb the greed in the country. There is no exaggeration

in how many new laws come to protect the women and girls. There is a need for governments to consult the women societies, intellectuals, and take appropriate decisions in order to eradicate sexual attacks. It is every citizen's of responsibility to eradicate rape and sexual assaults and protecting the women, thus protecting the image of India. The main reason for this is the lack of immediate punishment for the convicts and the years of trial in the courts in India. Not just "justice delayed, justice denied" Victims should be given timely justice.

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Pharmaceutical Drugs and Crimes: An Exploratory Study

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ABSTRACT

The pharmaceutical drugs and crimes in India have assumed serious proportions in recent times. The problem seems to be serious in the South-West, North-West and North-East region of the country. The main objective of the study is to explore pharmaceutical drugs and crimes in India. In doing so, an attempt has been made to explore pharmaceutical drugs and crimes in the South-West region of the country. The present research is based on exploratory study. Purposive sampling was used to select the respondents and the total number of respondents are 57 which were selected from each Zonal Directors, Superintendents and Intelligence Officers of Chennai, Bangalore, Mumbai, Indore and Ahmedabad which were affiliated with Narcotics Control Bureau, Internal Security-II Division, Ministry of Home Affairs and Government of India. The open online questionnaire was used for data collection. The thematic approach was adopted to analyze the data which addressed pharmaceutical drugs and crimes as a multifaceted criminal activity that creates an irreparable loss to the citizens. Hence, coordination and concerted efforts are the need of the hour to counter and encounter effectively the pharmaceutical drugs and crimes in India.

Key Words: Pharmaceutical Drugs and Crimes, Narcotic Drugs and Psychotropic Substances.

INTRODUCTION

The Pharmaceutical preparations of Narcotic Drugs and Psychotropic Substances are within the purview of The Drugs and Cosmetics Act, 1940 and Rules, 1945 and The Narcotic Drugs and Psychotropic Substances Act, 1985. The Government of India, Ministry of Home

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Affairs, Internal Security-II Division (Narcotics Control Bureau) and Ministry of Finance, Department of Revenue (Central Bureau of Narcotics) making earnest endeavors towards controlling the drugs and handling the difficulties of unlawful cultivation and collection of Opium, Cannabis and Coca leaf, processing of Narcotic Drugs, Psychotropic Substances, Precursor Chemicals and Pharmaceutical Products of various forms. Notwithstanding the issue is by all accounts genuine in the North East, North West and South West regions of the country (AR-NCB, 2016). The exacting controls and observing the spot for certain pharmaceutical items, there was proof demonstrating their redirection more in India.

Drug Trafficking in India

Globally, drug trafficking is a significant issue and remains a test for law enforcement organizations. The drug trafficking situation in India is to a great extent ascribed to different internal and external factors. One of the internal factors influencing drug trafficking in India is the unlawful development of Opium Poppy and Cannabis in certain pockets of the nation. The redirection from licit Opium sources into unlawful creation involves real concern. Opium development is legitimately allowed in three states; Rajasthan, Madhya Pradesh and Uttar Pradesh. Cannabis products

are a standout amongst the most broadly misused substances in India. The unlawful development and wild development of Cannabis in uneven and remote territories of Himachal Pradesh, Arunachal Pradesh, Tripura, Odisha, Jharkhand and so forth lead to intrastate and interstate Cannabis trafficking. The external factor prime of geographical factors impacting India's drug situation is its proximity to the major opium producing regions of South West and South East Asia known as a "Golden Crescent" (Afghanistan, Pakistan and Iran) and the "Golden Triangle" (Myanmar, Laos and Thailand). The geographical location of India as such makes it powerless against travel, dealing and utilization of Narcotic Drugs, Psychotropic Substances, Precursor Chemicals and Pharmaceutical Products of different structures (AR-NCB, 2016).

Laws, Regulations and Enforcement: National and International

In India, the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985 was framed taking into account India's obligations under the three United Nations Conventions 1961 Single Convention on Narcotic Drugs, the 1972 protocol amending the Single Convention. 1971 Convention on Psychotropic Substances and 1988 Convention against the illicit traffic in Narcotic Drugs and Psychotropic Substances (AR-NCB, 2016) as well as Article 47 of the Constitution

of India which guidelines that the "state shall endeavor to bring about prohibition of the consumption, except for medical purposes, of intoxicating drinks and of drugs which are injurious to health". The act prohibits, expect for medical or scientific purposes, the manufacture, production, trade, use and so forth of Narcotic Drugs and Psychotropic Substances. Unlike the earlier Opium Acts, 1878 and the Dangerous Drugs Act, 1930 which it replaced has the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985 which came into effect from 14th November, 1985 expressly provided constitution of a central authority to exercise the powers and functions of the Central Government under the act. In the exercise of these powers, the Narcotics Control Bureau (NCB) was constituted with Headquarters at New Delhi with effect from 17th March, 1986.

The three noteworthy international drug control treaties are commonly strong and reciprocal. The significant reason for the initial two settlements is to classify internationally appropriate control measures to guarantee the accessibility of narcotic drugs and psychotropic substances for restorative and logical purpose and to counteract their preoccupation into illegal channels. The general reason for the United Nations drugs control convention shows is to: (a) Ensure the accessibility of valuable medications for therapeutic purposes. (b) Prevent medication misuse. (c) Limit the supply and utilization of medications only to restorative and logical needs.

The Commission on Narcotic Drugs (CND) was established by the Economic and Social Council (ECOSOC) in 1946, to assist the ECOSOC in supervising the application of the international drug control treaties. In 1991, the General Assembly (GA) expanded the mandate of the CND to enable it to function as the governing body of the United Nations Office on Drugs and Crime (UNODC). ECOSOC resolution in 1999 requested the CND to structure its agenda with two distinct segments; a normative segment for discharging treaty- based and normative factions and an operational segment for exercising the role as the governing body of UNODC. UNODC is a global leader in the fight against illicit drugs and international crime. It was established in 1997 through a merger between the United Nations Drug Control Programme and the Centre for International Crime Prevention. International Narcotics Control Board (INCB) which is an international body that regulates the import and export of narcotic drugs, psychotropic substances and precursor chemicals.

Pharmaceutical Crime

Globally, Pharmaceutical Crimes are a standout amongst the most critical issues. A developing interaction between the new medications and customary

unlawful drug markets (GSU-UNODC, 2018). The Pharmaceutical Crimes in India have expected genuine extents as of late. The issue is by all accounts genuine in the North-East, North-West and South-West regions of the nation. The pharmaceutical products are Alprazolam, Diazepam, Nitrazepam, Tramadol, Buprenorphine and Codeine based cough syrups (AR-NCB, 2016). The medication situation in the nation is additionally confounded by the rising risk of fabricated manufactured synthetic drug diversion of precursor chemicals on a few events. The ongoing trend demonstrates that synthetic drugs are now replacing natural and semi-synthetic drugs. The exacting controls and observing the spot for certain pharmaceutical products, there was proof demonstrating their preoccupation is more in India (AR-NCB, 2015).

The Pharmaceutical Crimes spread the accompanying criminal offences, independent of which National Legislation the wrongdoing falls under: The manufacturing and circulation of fake or misrepresented (misleading / counterfeit / erroneously marked) pharmaceuticals through licit and unlawful supply chains including: robbery, misrepresentation, redirection, sneaking, illicit exchange, illegal tax avoidance, narcoterrorism, web drug store, digital money and bitcoin (Driven by financial profit, criminal components have turned out to be engaged with all aspects of the chain of supply of illegal medications, from manufacturing to distribution. To turn significant benefits, criminals are typically required to have a high level of refinement and association. Pharmaceutical crime, however, was generally not understood to be as organized as more established criminal activities, such as drug trafficking or smuggling. The recent trends of pharmaceutical crime increased the use of the internet, the prevalence of illicit Erectile Dysfunction (ED) medication, the prevalence of doping substances, illicit medicines and narcotics, tenuous ties to terrorism, increased trafficking of Tramadol (Interpol, 2014).

Methodology

The exploratory research is undertaken when few studies exist. Broadly the study aims to explore the pharmaceutical drugs and crimes in the south-west region of India. Purposive sampling design proposes a selection of respondents from specific categories of population, which were affiliated with the Narcotics Control Bureau, Ministry of Home Affairs and Government of India. The on-line (electronic) questionnaire was used for data collection. The questions are open and relating to pharmaceutical drugs crimes, pharmaceutical industry crimes, pharmaceutical illicit drugs trade & finance and criminal justice system. The thematic approach was adopted to analyze the data. The thematic approach was related

to the respondents' perceptions and experiences as the parameter to fulfill the objective of the study. An official approval letter was obtained from the Deputy Director General, South West Region, Narcotics Control Bureau, Mumbai for the conduct of the study and confidentiality were maintained in the data collection.

The limitations of the study were the research study more focused on pharmaceutical drugs and crimes related to narcotic drugs and psychotropic substances in the South West Region of India. The study was carried out in Government of India, Ministry of Home Affairs, Internal Security-II Division, Narcotics Control Bureau, South West Region, the result reflects the opinion of South West zone only, and hence it cannot be used for generalizing research data for the whole of India or other parts of India where this research was not covered. The researcher was unable to collect some data from respondents. The issues of confidentiality were there and some of the officers could not provide all the required data. There were no research studies with pharmaceutical crimes related to Narcotics Drugs and Psychotropic Substances in India due to highly confidential and high risky.

Analysis and Discussion

Legal and Operational Procedure

The legal and operational procedure when the Intelligence officers have receipt of information, he submits it to his immediate superior officer and thereafter gets instructions to act as per the NDPS Act, 1985. A preventive team was formed and necessary search, seizure or arrest orders are issued to the Intelligence officer / Seizing officer. The contraband was seized in the presence of two independent witnesses and the accused person(s) as per the provision of the NDPS Act, 1985. The Intelligence officer submits a report under section 57, NDPS Act, 1985 containing all actions he did since receipt of information. Subsequently, the accused person(s) was/are produced before the Hon'ble NDPS Court as per the provisions of Criminal Procedure Code, 1973 (Cr.P.C) further trial begins". The NDPS Act, 1985 Section 57: Report of arrest and seizure "whenever any person makes any arrest or seizure, under this Act, he shall, within forty-eight hours next after such arrest or seizure, make a full report of all the particulars of such arrest or seizure to his immediate official superior".

Common Modus Operandi

The modus operandi drugs were trafficked through courier parcels, two-wheelers, trains, energy drinks, groceries, etc. The common modus operandi concealing through India speed post, FedEx couriers, cargo, headphone box, carbon sheet, car, plywood and polyethylene bag, book cover, truck, lorry, and flour packet.

The reason behind that licit factory producing the illicit production of the pharmaceutical drugs was to create a diversion from wholesalers to retailers.

Pharmaceutical Industry Areas

The pharmaceutical industries are located in almost all major areas: Ahmedabad, Vadodara, Surat, Vapi, Daman and Diu, Dadra, Nagar Haveli, Bharuch, Indore, Dhar, Bhopal, Gwalior, Thane, Deonar, Lower Parel, Bangalore, Chennai and Trivandrum.

Pharmaceutical Industry license

The pharmaceutical industries related case the officers work under the NDPS Act, 1985 of Regulation Controlled Substances (RCS) Order, 2013. Any pharmaceutical company needs the raw materials, which in turn implies that they will give application officially to NCB, especially the precursor chemicals of five chemicals used by pharmaceutical industries. Once the application is received through Form - A after verification, they will be given the legal license to buy the drug license for their production. Form - A: Registration for manufacture/distribution/ sale/ purchase/possession/storage/ consumption of controlled substance in Schedule A. The substances are Acetic anhydride, N-Acetylanthranilic acid, Anthranilic acid, Ephedrine, and its salts and Pseudoephedrine and its salts. Thus, any industry not bearing the requisite

documents/licenses and still carrying out transactions in controlled substances shall be deemed to be operating illicitly.

Illegal Production / Manufacturing

As per the records zonal units, there have been instances of busting of illicit labs producing pharmaceutical drugs like Alprazolam, Clonazepam, Diazepam and Nitrazepam etc.

Pharmaceutical Drugs Trades / Markets

The pharmaceutical trade/markets: the import and export are dealt with by the Central Bureau of Narcotics. The Narcotics Control Bureau is eligible for issuing a license for all activities as per the NDPS Act, 1985 under the Regulation of Controlled Substances (RCS) order, 2013. The Schedule-A substances are controlled substances whose manufacture, distribution, sale, purchase, possession, storage, and consumption are subject to controls exercised by Narcotics Control Bureau. The five substances are Acetic anhydride, Anthranilic acid, N-Acetylanthranilic acid, Ephedrine and its salts, Pseudoephedrine and its salts. The Acetic Anhydride was the most consumed controlled substance followed by pseudoephedrine and Ephedrine by the firms (all consumers) located in the jurisdiction of the zonal units.

Financial Transactions & Flows

The Illicit financial flows of drugs were

the offender's use direct cash, hawala, smuggling, stocking and unofficial transfer of money and through online used MoneyGram, interbank transfer and the recent trend of the virtual currency like bitcoin transactions for their financial transactions. Information Technology is increasingly used throughout the world for illegal transactions. Nowadays, online transactions are increasing through darknet or dark web. There is no unique law to manage the illicit monetary exchanges related to pharmaceutical medications dealing. Subsequently, there is a need to build up another through a law that will manage unlawful medication dealing and related illicit monetary streams. In India, a digital currency not regulated by Reserve Bank of India through law is also used in the illegal drug trafficking process mostly through the cryptocurrency like bitcoin. Drug money from every year's transactions of illegal financial flows of drug trafficking money turnover is around billions of dollars. The impact of illegal financial flows plays a vital role in local, national and international.

Utilization of Illicit Drug Money

Drug money has been known to be invested in establishing other companies. Most of the time drug money is used in the purchase of immovable and movable assets. They expend their income in several ways: purchasing like house, lands, flats, villas, yachts, gold, and

investment of real estate business and luxurious lifestyle, etc. Some of them using the networks as transactions of structured and organized companies employ salary accounts and lawyers fee. Most of them invest the money into daily money-generating businesses such as food court, restaurants, casinos, red-light entertainment and gas stations.

Effectiveness of Monitoring

Effective monitoring decreases the diversion level and continuous monitoring also reduces diversion and trafficking. If, any illegal diversion happened then monitoring curbs it, by taking proper action. Nowadays, with the increase in information technology, the darkweb, and darknet around the world it is a challenge to the existing investigation system. Users typically access the darknet through the "Onion Router" (TOR) to make sure that their accurate identities remain hidden.

Evidence before the court of law

Evidence that the law enforcement agencies will produce the seized article before the court including the panchnama, explanation of the suspected person(s), forensic lab report, and finally evidence-based financial investigation report like a bank statement, phone call reports, etc. Any other seized item corroborating the Panchnama. In specific cases, social media interactions showing

evidence of drug crime like snapshots of facebook and Whatsapp chats etc. and all available and related evidence. The NDPS Act, 1985 (Section 67: Power to call for information, etc.) Any officer referred to in section 42 who is authorized in this behalf by the Central Government or a State Government may, during the course of any enquiry in connection with the contravention of any provisions of this act.

Suggestion to strengthen the legislation

In India, the legislative process and lawmaking commission are working together to bring the new laws or amendments. India needs to deal with the pharmaceutical crime-related amendments in the NDPS Act, 1985. And reported more field informants and sources are needed. The NCB offices have very fewer staff members, which may be one of the factors that delay the Criminal Justice System processes.

Conclusion

Globally, the drugs business turnover is of around US $500 billion. It is the third largest business in the world, next to petroleum and arms trade. There is a huge volume of money transactions under process in the dark scene of the Indian economy wherein drug smuggling plays an important part.

These transactions produce a parallel economy, which is detrimental to the economy of the country. The illegal flow of drugs and chemicals not only violates India's economics, but also poses a significant threat to national security. The research study has addressed that pharmaceutical drugs and crimes are more dangerous than any other crimes and has deteriorating health consequences for the public at large. Based on the thematic analysis, the research has addressed pharmaceutical drugs and crimes as a multifaceted criminal activity that creates an irreparable loss to the citizens. The pharmaceutical drugs and crimes are likely to occur when three elements interlink among the illicit manufacture, illicit trade and illicit financial flows. The chemistry of pharmaceutical drugs and crimes occur when there was an intersection in time and space. The first element was the illicit manufacture process of clandestine laboratories to the production of pharmaceutical medications. Second, the illicit trade process of the distribution wholesales and retails. Third, illicit financial flows of digital currency like bitcoin. Hence, coordination and concerted efforts are the need of the hour to counter and encounter effectively in order to combat pharmaceutical drugs and crimes in India.

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Neoteric Inclination of Forgery In Pecuniary Documents - Revealed Through Forensic Examination of Documents

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Abstract

The popularity and easy availability of high quality printing, digital image acquisition and processing technology have added new dimensions to the nature and quality of white collar crimes both in terms of their perpetration and detection. With these advancements, the fabrication of documents has become easier and closer to the perfection to commit the varied types of economic crimes. This has led to the uncovering of new dimensions and intricacies of white-collar crimes on the one hand and facing of new challenges in their detection on the other. These hi-tech tools are being used not only to forge the signatures but also to invade the printing process of fabricated items due to their easy access and operation to alter and reproduce the desired contents on the banking instruments. The forensic document experts can examine, detect and interpret the evidence of manipulations & spuriousness in such type of problems even in the absence of samples. Besides examining the different types of forgery involved in the signatures, the printing on the instruments whether conventional or by any other methods used locally by the issuing bank also needs to be examined. In this case study, the systematic method of identification of fraudulent nature of the banking instrument is discussed even in the absence of samples or exemplars.

Key words: White collar crime, Forgery, Samples, Conventional Printing, Laser Printing, Additions, Alterations, Traced Forgery, Banking Instrument.

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Introduction

With the advancement of digital techniques, the reproduction or falsification of documents has become so easy and accurate that in certain cases the forged documents appear much closer to the genuine than the original one that sometimes these escape the eyes of clearing or passing officer of financial institutions. Time to time, the controlling authorities issue an advisory to the Banking sector to regulate the safety measures for achieving the secure and safe transactions. Every major banking channel is nowadays well equipped with minimal instruments - Soft UV light, magnifiers as well as high intensity transmitted light to prevent any falsification. Yet the falsifiers/fraudsters come with an innovative idea of deceit and use advance technology to alter and evade the security measures.

In some of the countries Cheque Truncation System (CTS) or Image-based Clearing system (ICS) for faster clearing of cheques is being used. CTS is based on a cheque truncation or online image-based cheque clearing system where cheque images and magnetic ink character recognition (MICR) data are captured at the collecting bank branch and transmitted electronically[1,2,3,4]. Cheque truncation means stopping the flow of the physical cheques issued by a drawer to the drawee branch. This would eliminate the need to move the physical instruments across branches, resulting in an effective reduction in the time required for payment of cheques, the associated cost of transit and delays in processing, etc., thus speeding up the process of collection or realization of cheques. But this system has again resulted in emergence of various frauds such as stolen cheques and perpetration of crimes through forged signatures as well as alterations on them[5,6].

Forgery based on the skill and techniques of some perfection has complicated document problems making their forensic detection much more difficult and intricate. Sometimes even investigating authorities, during investigation of cases involving a manipulated questioned document are ignorant about various vital facts/clues related to such documents. Some such facts may be:–

1   Cheque Truncation System (CTS) https://m.rbi.org.in/Scripts/FAQView.aspx?Id=63 28/09/2020.

2   Cheque Truncation System (CTS) https://cgda.nic.in/accounts/cts.html 28/09/2020

3   R. Jayadevan · S. R. Kolhe · P. M. Patil · U. Pal, "Automatic processing of handwritten bank cheque images: a survey", Springer-Verlag, 2012, pp. 267-296.

4   Kalarani, D. B. P. and R. Narendhira Kumar, "Cheque Truncation System (Cts): An Overview". Journal of Exclusive Management Science, Vol 4, 2015, pp.1-5.

5   Sharma BK, Singh N, Mishra VP and Kaur G, A study of various financial frauds occurring through Cheques and their detecting parameters, Austin Journal of forensic science and criminology, Volume 4 Issue 4-2017.

6   Ketan Patil, Dr. Navjot Kaur and Manish Malhotra, Study of Genuine and Forged Indian Bank Cheques by using Video Spectral Comparator-40, IJISET, Vol.4 Issue 1, January-2017

Presence of clever and skilful manipulation of elements or text of the original source document in the original or photocopied document[7];

Presence of spurious signatures appended either with free hand simulation or tracing ;

Alterations or obliterations made conventionally or through digital image acquisition and processing technology or fine chemical/mechanical erasure[8];

Presence of image of signature placed on the document- transposition and subsequently covering the outlines with suitable inks[9];

Interlineations[10]

Forensic Document Examiners are dealing with such Bank fraud cases in which fraudsters are continuously exploiting the weakness of the system and developing new methods using technology to cheat both individual and banking system[11]. In some of the cases it has been observed that the identifying content of a person in a banking instrument was altered by means of erasure & addition of printing and the signatures of the person were also

forged to cheat the innocent person[12].

Methodology

The banking instrument i.e. the cheque under discussion (Figure 1) was carefully and thoroughly examined with the utilization of various equipment and facilities such as Hyper Spectral analysis, spectral comparator under suitable light sources and magnifications in respect of the following points.

The genuineness of the signatures executed?

Presence of traced or transposed signatures?[13,14]

The genuineness of Banking Instruments?

Is there any alteration in any portion of the printing/entries in the instruments?

Is any part of the printing/entries being subsequently added?

A careful and through scientific examination of document of the case in totality revealed various manipulations and examiners were able to opine categorically the spurious nature of document with sufficient annotations and objective reasoning to support the findings, which are as below.

(A) When the identifying parameters of

7   Koppenhaver K.M. (2007) Forensic Document Examination, Principles and Practice, New Jersey, Human Press.

8   Kelly Jan Seaman & Lindblom Brian S. (2006). The Scientific Examination of Questioned Documents, Second Edition, New York, CRC Press.

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10 Harrison Wilson R. (1981). Suspect Documents, their Scientific Examination Chicago, Nelson-Hall.

11 Amar Gamal, Hamed Ahmed , Faisal Shafait, Forgery Detection Based on Intrinsic Document Contents, IAPR International Workshop on Document Analysis Systems, DAS, 7-10 April 2014.

12 Huber R.A. & Hedrick A.M. (1999), Handwriting Identification: Facts & Fundamentals, New York, CRC Press.

13 Vastrick, T. W. (1982) Illusions of tracing, Journal of Forensic Sciences, 27, 186.

14 James V.P. Conway (1978), Evidential Documents, Third Printing, Charles C Thomas, Publisher, ISBN 0-398-00342-4 pp 17.

cheque such as Account No., Cheque number, MICR code, etc., which are in general, locally printed by the bank using laser or ink jet printers at the time of issuing the cheque book to a customer were examined under magnification shows the evidence of disturbances in the paper fiber at these places, presence of scattered toner particles as well as reprinting of account number, cheque number, etc. by laser printer[15], indicating the alteration by means of eraser and addition (Figure 2) which reveals that the said cheque was not issued to the victim. This fact strengthened the doubt that this cheque does not belong to the victim account but either it is a stolen cheque of some other person or the fraudster himself manipulated his own cheque of same bank to fetch the money by deceit. The security printing, Micro Lettering, Water Marks, UV security features etc. present on the cheque were examined under various light sources and sufficient magnifications[16]. This exercise revealed that the security printing was finely disturbed at the specified places. The water marks and UV security features were intact and present in the basic body of the

cheque (Figure 3 and 4)[17].

(B) These findings indicated towards the fact that originally the cheque was issued to one genuine account holder and it was used by the fraudster with intent to deceit after making desired alterations to provide it a false pretension that this cheque belongs to victim as victim has suffered loss of huge money from his account due to this spurious cheque which actually he never issued. Moreover, the examination also revealed that this was not a scanned cheque which is evident by the presence of intact water marks and UV security features when examined under transmitted light and under ultra violet light(Figures 3 and 4).

(C) This cheque was found to have a pair of signatures in the obverse & reverse side of the cheque. When these signatures were examined carefully & thoroughly under high magnification & VSC-5000, then revealed that pair of signatures on the obverse side completely super imposed on the pair of signatures existing on the reverse side of the cheque (Figures 5 & 6). These two sets of superimposing signatures existing at front and back side of the cheque had symptoms of 'traced forgery' but the quality of the

15   Roy, A., Halder, B., & Garain, U., "Authentication of currency notes through printing technique verification", in proceedings of the 7th Indian conference on computer vision, graphics and image processing", 2010. Sharfe, G. A. Writing Instruments and Printing Devices,

16   Pranay Bhardwaj, Amit Koul, Anurag Dubey, Nature and extent of impersonation revealed through forensic examination of recruitment documents, IJIRSET, Vol 9, Issue 11, Nov 2020.

17   Dr. B.A Vaid, Mohinder Singh, Pranay Bhardwaj, Introduction of Security features in Routine Bank Instruments to prevent frauds, CBI Bulletin, Vol. XX Nos. 4-6, April-June 2012

tracing was reasonably good[18]. This perfection in superimposition of the two sets of freely written genuine signatures of one person is contrary to the axiom that- No two signatures of a person can be exactly and precisely alike", therefore violate the principle of natural variations[19].

Results:

Natural variations in one's Handwriting are integral part of the writings and are considered as a sign of its genuineness as the hand never acts with machine-like precision. Natural variations are most prominently visible in the size of Handwriting. Presence of exact replica of a signature on two different type documents is not possible and two opposite writings habits at the command of a writer are not possible. Therefore, if two signatures are of exactly the same in size and dimensions as well as superimposing exactly over each other and exist on two different documents/locations, then one of them is definitely considered to the product of the fabrication and trickery. The disputed cheque discussed here had multiple operations of forgery such as erasure, alterations, and additions in printing of cheque identification details as well as traced forgery of signatures of genuine account holder. Questioned document

examiners with their alert, sincere and conscientious scientific exercise could prove the spuriousness of the instrument i.e. cheque even in the absence of samples or standards beyond a reasonable doubt. These observations made during examination provided sufficient data to prove that the questioned document is a spurious 'outgrowth' of the genuine source document involving multiple and skilful manipulations in the source document.

Conclusion

Hand writing experts (and opinions) are scientific and not merely empiric. The philosophy of questioned document examination is about justification of principles. The professional acumen, experience and competence of document examiner have always a vital role to play in bringing out the truth through innovative skills, continuous thought process and objective interpretation of the data related to all those forensic document problems, which are a direct outgrowth of technological advancement or unwanted progeny of modern technology .It is not enough to take the document at its face value, it must be studied in its smallest details keeping in mind the disputed facts what may be proved or disproved, thereby engaging the mental faculties to bring out all those aspects which expose the fraudulent production of the documents. The authors are of the strong view that

18   Osborn A.S. (1929). Questioned documents, Second Edition, Boyd printing Co. Albany.

19   David Ellen (1997), The Scientific Examination of documents, Methods and Techniques, Second Edition, Taylor & Francis Ltd. ISBN 0-7484-0580.

each and every original cheque must be cleared or passed only after exposing the same through UV light/transmitted light in all banking institutions specially at clearing houses.

Therefore, Forensic Document Examiner must keep all academic faculties open blended with experience while examining questioned documents. The examiner should not restrict his examination as per supplied questionnaire but must examine document in totality for exploring possibilities of finding collateral objective evidence of tampering and manipulations embodied in the documents even if he is not supplied with the corresponding samples. This systematic and scientific approach to solving any forensic problem shall reinforce the axiomatic saying 'the absence of evidence is not the evidence of absence'.

FIGURES WITH LEGENDS

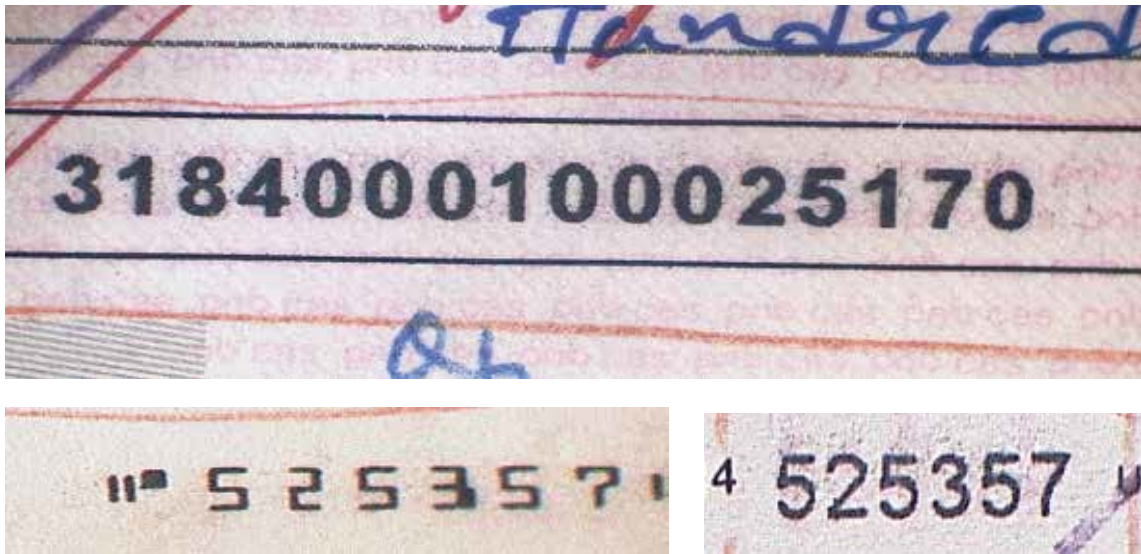Figure 1. Disputed Banking Instrument (Cheque)

Figure 2. Under High Magnification showing addition /alteration in printing in the columns of A/c no., cheque no., etc. in the cheque indicating alteration in printing by means of mechanical erasure (disturbance of fibers as well as presence of scattered toner particles of original printing) and addition in the genuine cheque.

11:06 AM 9/10/2015 Lights=Transmitted 100%, Longpass=VIS, Bandpass=OFF, Mag=2.00
Auto Exposure (Integration=1/8, Iris=50%, Gain=10dB), Brightness=Auto, Contrast=Auto, Imaged width =176.92 mm

Figure 3. Presence of Water Marks under transmitted light indicating genuineness of the Banking Instrument.

Figure 4. Presence of safety printing -UV fluorescence at the left top side of the cheque indicating genuineness of the Banking Instrument.

Figure 5. Q1, Q2 signatures on obverse side and Q3, Q4 signatures on reverse side of the cheque.
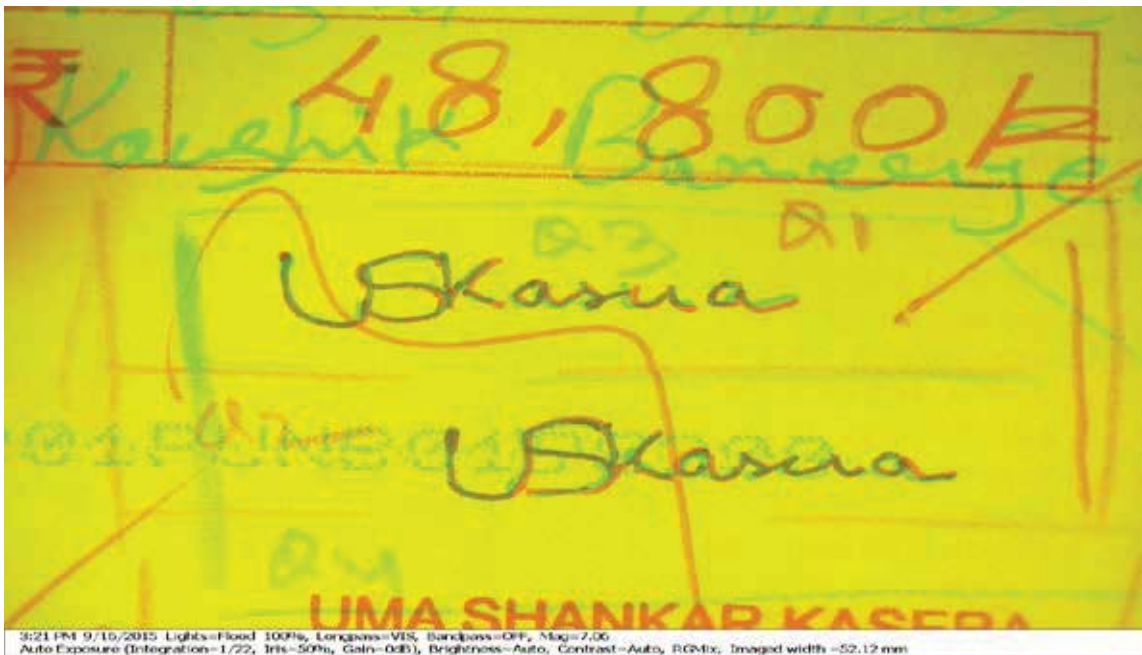

 Figure 6. Superimposition of obverse and reverse signatures using VSC-5000

Occupational Stress among Armed Police; Causes & Effects : A Systematic Review

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Abstract

Stress among armed police forces is increasing and is widespread. The work conditions in these settings make its workers face various types of stress. Various reasons such as the difficult and challenging nature of the jobs, maintaining discipline and law enforcement, long hours of work, and irregular work shifts can lead to increasing levels of stress among police forces. Apart from psychological and physical effects, occupational stress can also lead to various organizational problems such as job dissatisfaction, job turnover, high rate of absenteeism, increased job events, decreased job performance, and organizational commitment. The objectives of this paper are to examine the factors and consequences of occupational stress among armed police force globally and in India and to study the impact on performance and role of leadership as a mediator

Keywords: stress, armed police force, stressor, distress, occupational stress.

Introduction

Stress in the work environment is very basic nowadays and it has become an unavoidable truth inescapable in this period of serious competition. In any case, stress is inborn in uniform services. There have been a few investigations directed on officials in various parts of the world and some in India, which uncover that the current working conditions and a few different components have prompted expanded degrees of stress among officials. An investigation by Singh (2007) directed on Central Reserve Police Force (CRPF) tracked down that the circumstance turns out to be more regrettable due to environmental factors like poor living conditions, odd and prolonged duty hours, toxic leadership, and negative image in society and media.

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Stress can be both positive and negative. Stress is viewed as positive whenever the circumstance offers a chance for an individual to acquire something. Eustress is the term used to depict this positive stress. Eustress can go about as a help for an individual to accomplish top performance. Stress is supposed to be negative when an individual faces social, physical, organizational, and emotional problems (Chandramani and Chavan, 2015). The stressed armed police officers represent a danger not exclusively to themselves yet in addition to their colleagues, offenders, and to public safety as well. In policing, essentially, two sources of stressors are distinguished. The first concerns the characteristic risks of law implementation work. The second relates to the particular regulatory nature of most police associations (Violanti and Aron, 1994; Maloy and Mays, 1984).

Work-related pressure among cops has gotten expanded consideration from the scientific community and society, because of the psychological suffering they perpetrate on the individual, yet also leave their effect on the exhibition of cops and their connections with residents, prompting the expanded chance of all cooperations being viewed as a danger, or to a propensity to utilize extreme power (Quieros et al., 2020). The greater part of research right now being done in the stress field is concerned with "psychological stress", i.e., with the effect of psychosocial factors on the individual (Mason, 1975). Within this growing body of literature, a large group of physical and mental issues has been distinguished as being set off by or related to psychological stressors. Among the more regularly explored physical problems are coronary illness, hypertension, ulcers, diabetes, spinal pains or the lower back disorder, and issues of the immune system (Hinkle and Wolf, 1952; McQuade and Aikman, 1974; Brown, 1975; House, 1974; Rose and Levine, 1979). Major mental illnesses related to mental pressure are incorporate neurosis and psychosis, personality regressions, sexual dysfunction, so-called traumatic neurosis also known as combat neuros~s, and transient situational organic disease of varying severity (Abram, 1970 & Levi, 1972).

Objectives

1. To examine the factors and consequences of occupational stress among armed police force globally and in India

2. To examine the impact on performance and role of leadership as a mediator

Literature review

Stress among armed police forces:

Throughout the long term, numerous specialists, executives, and clinicians have given foreboding proclamations concerning stress in policing

(Somodevilla, 1978). Because of pressure, cops have a 75 percent separate rate, a 20 percent pace of "issue drinking" and have a suicide rate six and a half times that of the average population.

Research shows that for cops between the ages of 25 and 59, the danger of death (as estimated by the "proportionate mortality ratio") is due to cardiovascular illness (that can happen due to stress) that is fundamentally higher than the normal for U.S. males of similar age in all occupations.

Cooper and Payne (1978) portray the systematic documentation of work demands or different aspects of the workplace filling in as significant sources of anxiety (Cooper and Payne, 1978). In such a manner, role ambiguity (Kahn, 1964) role conflict (French and Caplan, 1972), job complexity (Caplan, Cobb, French, Harrison and Pinneau, 1975), work overload or underload (Caplan et al., 1975; Rose, Jenk/ns, and Hurst, 1978), exhausting, monotonous Job schedules (Margolis, Kroes and Quinn, 1974), absence of interest in deciding one's work (Caplan et al., 1975) and duty regarding individuals (Cobb, 1974) all loom as significant stressors with huge strain outcomes going from passionate issues through wellbeing grumblings and infection measures. A different assemblage of research has elaborated on wellbeing and security impacts

attributable to shift work schedules (Tasto and Colligan, 1978).

Research has exhibited that policing is a stressful occupation and that this stress adversely affects armed police officers' psychological and actual wellbeing, execution, and cooperation with citizens. Psychological wellness in the work environment has become a concern because of the costs of depression, anxiety, burnout, and even suicide, which is high among armed police officers. As per ongoing methodical surveys, being police is by all accounts a profoundly demanding and stressful occupation, because of the current attributes of present-day cultures. For a police officer, those attributes include the increase of violence with firearms in urban areas, the uncertainty and danger related to the permanent threat of terrorist attacks, low human and material resources, team or supervision difficulties, criticism from citizens and society, and lack of understanding from family or friends (Cumming et al., 1965; Webster, 2013; Magnavita et al., 2018; Purba and Demou, 2019).

Chakraborthy (2002) led a study on the Armed forces, analyzed 22 patients who made suicide attempts, chose haphazardly 21 in-patients, and 30 well-adjusted controls. He saw that a higher frequency of disciplinary issues, helpless friend relations, and poor peer relations,

strife among patients and their fathers are connected more to mental issues all in all and explicitly to attempted suicides. People who make suicidal gestures to experience issues with male authority figures are rash and the individuals who showed clear impudent conduct, disciplinary issues, and poorer peer and authority relations were released from service prematurely.

Balakrishnamurthy and Shankar (2011) in their investigation, endeavoured to look at the connection between feelings of anxiety and demographic variables of non-gazetted officers of the Central Reserve Police Force. High stress brings about poor performance towards inclining elements like personal and professional responsibilities. It was inferred that demographic factors, for example, age and level of involvement altogether sway the degree of stress experienced by CRPF faculty. Chhabra (2009) contemplated the emotional intelligence and work-related pressure among Border Security Force staff. It was discovered that BSF staff are experiencing high work-related stress across all of the positions. The jawans, nonetheless, have the most noteworthy feelings of anxiety. Lipp (2009) discovered 43% of senior Brazilian cops under critical stress. Sharma (2007) announced a finding from an examination by the Defense Institute of Psychological Research which uncovered that expansion in the work-related factors, for example, years of Job experience and job hierarchy expanded the degree of stress among officials, junior Commissioned officers, and jawans.

Collins et al. (2003) in a cross-sectional examination on county police constables and sergeants in the United Kingdom tracked down that the high-stress group established 41% of the populace and showed a critical relationship with having a negative job perception. Bano (2011) in her research found reasons for stress and experimentally researched the socio-segment factors influencing stress levels among the police work force. Findings point out that political pressure, absence of time for family, negative public image, and low compensation were the essential drivers of stress among the police personnel. Kohan et al. (2002) related occupation stress to high substance use among police. As a Home Ministry report (2017) no particular investigation on hypertension has been directed on CRPF for their representatives' prosperity.

Factors behind stress:

Armed police officers face numerous burdens in the line of duty like shootings, hostage crises, and traumatic incidents, injured victims, child victims, corpses. Notwithstanding these regularly life-threatening critical incidents, there is an assortment of stresses that are explicit to the police profession (Amaranto et al., 2003).

Armed police officers are seen as power figures, in any event, even when they are not working and their position frequently isolates them from others in the public eye (Utah Peace Officer Magazine, as referred to in Street Survival, 2002). Turning into an official is frequently a lifestyle choice instead of simply a profession and the part as an official regularly directs how personal time is spent as well. The changing work routine can disturb routine examples required in marriage and family, which causes stress for the office just as the family (Utah Peace Officer Magazine, as cited in Street Survival, 2002).

There is a great deal of research material on external and occupational sources of stress in police work, underscoring the authoritative and operational issues. These stressors incorporate absence of hierarchical help, an overabundance of responsibility, insufficient leave, political stressors, absence of time for family, incessant transfers, negative public image, and openness to duty-related traumatic events (Arial, 2010; Deb, 2008; Collins, 2003; Kohan, 2002).

Stress and job performance:

Regarding leadership, performance will in general improve when the leader is to a greater degree a mentor than an administrator (Nabeel et al., 2007). This infers that police department leadership that accepts a training worldview will work with officials to address the issues

that cause stress and subvert both health and job performance. Boundaries of policing jobs that can be changed by reduced stress and enhance the performance of the armed police officers involved incorporate responsiveness, a sense of purpose, task orientation, communication management, sharing of responsibilities, and promotion of innovation. Monetary and political variables outside the control of police divisions may likewise affect morale, feelings of anxiety, and job performance. These variables normally are identified economic downturns putting pressure on public sector budgets or laws and political structures that do not adequately prevent political meddling with police processes (Chikwem, 2017).

Another reason for stress for police is the potential for departmental terminations or rearrangements because of charges of corruption or unprofessional conduct by armed police officers(Sundaram and Kumaran, 2012). Not exclusively does corruption or unprofessional conduct adversely influence the police division blamed for such practices, the terrible exposure such offices get can and does dampen morale and heighten stress levels in many other police departments as news is widely disseminated in today's world (Chikwem, 2017).

Most research into the connection between stress and job performance inclines

intensely towards the antagonistic effects of stress. In any case, there have been contentions that people encountering stress can likewise encounter positive results (Chikwem, 2017). The experience of pressure can make a few people more engaged, and a few officials perform at their best when motivated by looming deadlines or identifiable milestones. In any case, a constantly overpowering responsibility, ridiculous cut-off times, resolute plans for getting work done, and deficient compensation are probably going to add to a feeling of dissatisfaction and expanded degrees of stress (Iwasaki et al., 2005).

Discussion

Occupational stress among police personnel can lead to reduced productivity, absenteeism, lower morale, increased conflict with others, physical and emotional problems, and dissatisfaction with life (Selokar, Nimbarte, Ahana, Gaidhane, Wagh V, 2011).

In another study, the demand to work overtime and lack of time to spend with family were the reasons for stress (Suresh, Anantharamam, Angusamy and Ganesan, 2013). Parsekar et al., (2015) found that the major organizational stressors were a shortage of staff, overburden of work, too much computer work, lack of training on new equipment, and inadequate equipment (Parsekar, Singh and Bhumika, 2015). In a similar study in the United States, Kores et al., identified job overload, administration, role conflict, court-related matters, role ambiguity, and the line of duty crisis, unusual work hours, as the stress-causing factors in police personnel (Kroes, Margolis and Hurrell, 1974).

Zukauskas *et al*. (2009) identified in their study on police officers that consequences of stress included depression, alcoholism, physical illness, and suicide. Kohan *et al*. (2002) correlated job stress with high substance use among police.

Saya and Venkata's (2014) study featured the way that an apparent feeling of anxiety is high among the police workforce, which focuses on the requirement for specific procedures to decrease its level (Kanble and Phalke, 2011; Selokar et al., 2011). There is restricted information to the extent of stress at a worldwide level. An investigation done on Malaysian police tracked down the general pervasiveness of stress to 38.8% (Masilamani et al., 2013). Another research done in Italy showed that about 60% of police officers had moderate or serious stress. The examination showed a genuinely higher pervasiveness among more youthful subjects contrasted with older subjects (Tomei et al., 2012).

The situation in India:

There are a few reasons credited to stress among officials. For instance, the finding of a study at Waghodia police

headquarters in Gujarat by Kalpesh Naik in 2012, recommends that there is a huge distinction in the degree of stress among police faculty and the sources of stress differ according to their temperament of the profile, shifts, assignment, job, and duties. Another examination led by Deb and others (2005) on West Bengal cops found that weakness, helpless companion relations, inborn impoverishment, low status, demanding working conditions, un-benefit, and political pressing factors are fundamental drivers of stress. In 2005, Mehta and others led an examination for The Bureau of Police Research and Development (BPR&D), on Central Armed Police Forces (CAPF). They revealed that the reasons for disappointment among officials are unreasonable responsibility, long duty hours, denial of leave, terrible treatment by bosses/peers, poor living conditions.

In a study conducted in Udupi, Karnataka, by Parsekar et al. (2015) the main operational stressor was spending less time with friends and family. The other stressors were occupation-related health issues, demand to work overtime, fatigue, and finding time to stay in good physical condition.

Deb et al., in a study on traffic constables under Kolkata Police, revealed that 79.4% of them were tolerably or profoundly stressed (Deb, Chakroborty, Chatterjee and Srivastava, 2008). An examination by Rao et al. on Central Industrial Security Force (CISF) staff discovered 28.8% of them scoring positive for high stress. The study additionally discovered higher mental morbidity in the high-stress group(Rao, Moinuddin, Sai, Sarma, Sarma, Rao, 2008).

Leadership and stress:

Leadership behaviors are fit for reducing the real measure of stress experienced by soldiers in garrison and on military activities. Even though there are sure stressors over which leaders have no control (e.g., troublesome day-to-day environments in deployment and heavy workload during critical missions), leaders can influence certain stressors by giving armed police officers clear assumptions for execution and giving soldiers the scope to practice judgment over how tasks are finished (Britt, 1988).

Action taken by leaders is straightforwardly identified with the measure of stress soldiers go through. More significant, is that leaders can help support soldiers from the adverse consequence of stressors, through leadership behavior themselves (i.e., offering help) or by affecting known buffers, for example, work commitment and self-adequacy. The nature of military tasks is with the end goal that soldiers will consistently be presented to a wide assortment of stressors going from high work-burden to terrible stressors related to battle (Britt et al., 2004).

Conclusion:

Stress among armed police forces is as common as occupational stress in any workplace. It can be caused due to various factors. The challenging work environment creates difficulties for the armed police officers, of which stress is an integral part. Studies on stress have suggested that there be stress management and resilience interventions. Chronic stress can lead to burnout and reduce the engagement of police forces. However, proper leadership has been found to have an effect on stress among armed police forces. The leadership role as a mediator has been found to reduce stress among the armed police forces. In Gujarat India, The Mind Practice (mental health care and forensic Psychological service provider) have closely worked with The City Police and Prisons in Gujarat state) addresses the stress in the police personnel and provide psychological therapies and various training programmes to equip them with psychological tools to better function professionally and personally also assist in the investigations. The Mind Practice also the Psychological assessment as well for the suspects, victims to assist better in investigations and even for the police professionals.

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Urban Process and Its Impact on Crime in the Indian Context – Needed Response from Police

Dr. Anupam Sharma[*]

Abstract

Urbanisation process is associated with industrialisation which facilitates development in the economy and provides a better quality of life to people. The heterogeneous nature of urban areas, poverty, unemployment, and information technology, lack of integration and traditional social control and lust for luxurious lifestyle and excessive use of technology in committing cyber crime, etc. are main responsible factors for raising crime rate. The crime in urban India is peculiar and has shown a consistent rise, including violent and cyber crimes and is bringing major changes in spatial form of many cities. Crime prone society generates insecurity, intolerance and deprives people from their life, liberty, property, rights and people lose faith in system. To prevent crime and proper investigation police need to be trained sensitively and effectively. Preventive machinery and the people's cooperation are the need of the hour to prevent crime and protect and promote rights of people.

Keywords: urbanisation, heterogeneous, Capital accumulation, cyber crime, preventive machinery.

Urbanisation refers to the concept when people move to urban areas from remote areas in search of a better quality of life (Elis and Liu, 2018). It is a process which brings people together of different caste, class, religion and race, etc. and mainly this togetherness is due to rapid industrialisation process and it develops a heterogeneous society which seems different in nature from rural society. Urban areas are places where people of different culture background live together (Soh, 2012). The process of urbanisation is quite old, but its major effect can be seen an industrialisation process in the nineteenth century. In

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Europe in the 19th century and the 20th century in India and other developing countries industrial revolution triggered off due to rapid industrialisation and several other reasons. People started migrating from one place to another, and this migration was beyond boundaries of nations. Due to this process of migration small places or village started to convert into towns and big cities. Today, 54 per cent of the world's population lives in urban areas, a proportion that is expected to increase to 66 percent by 2050 (www.un.org). The process of urbanisation is slow in developing countries while it is fast in rapid growing economies where industries are set up to give the speed of development and provide the opportunity of jobs for people of different sections and region who wish to migrate in search of a job in other areas. Urban areas are known by their facilities and enhanced opportunities of living and employment (Elis and Liu, 2018). As mentioned by scholars that migration for better employment opportunities in urban areas is an important factor (Heyer, Roberts, and Williams, 1981, Knights and Gunatilaka, 2017). The comfortable environment and attraction of wealth are a factor which attracts people to urban areas (Harris and Todaro, 1970).

In South Asia region and India approximately 34 per cent people live in urban areas. The process of urbanisation which was slow in the beginning of the 20th century got accelerated after independence and still is going on gradually where in 1960 this percentage was 17.92 per cent and now it has reached up to 33.6 per cent (data.worldbank.org). According to the United Nations, urban population of India will be less than 35% in 2020 and approximately 40% in 2030. In India there are six categories of urban areas which are categorised on the basis of number of population and occupation. There are 19 mega cities which have more than two million population and are located in different parts of country, especially in Maharashtra and Uttar Pradesh. Still process is going on where small villages are converting into towns and towns into big cities or metro cities. In India urban structure is becoming more and more concentrated due to this higher demographic growth in larger cities.

India got independence seven decades ago, and during this period several policies and programmes were formulated and executed to give the speed to industrialisation which brought several new urban areas into force but due to lack of proper planning, most cities are unplanned and unchecked as well. The Population has been increasing by leaps and bounds, but these cities lack civic amenities which are essential or basics of life. The slum population (informal settlement within the city) constitute about twenty percent of all urban areas and these areas are overcrowded, lack

of basics facilities, miserable living conditions and bound to live in small houses. Then main reason for slum proliferation is rapid and non inclusive patterns of urbanisation catalyzed by increasing rural migration to urban areas. (nbo.nic.in). Due to this rapid urbanisation process, urban areas experience heavy population growth of both floating (daily commuters employed in different sectors) and non floating nature. Overcrowded areas witness group conflicts, sex crimes, violence kidnapping and abduction and murders. In urban areas most highlighted problems are of security and crime (Ahmed and Salihu, 2013). According to Wirth (1964), "special urban characteristics such as size, density, heterogeneity, and impersonality are responsible for a mode of living that generates more crime". Humphries and Wallace (1980) said that "capital accumulation is the basis of crime in cities". In any society urban crime prevails. It creates an unsafe environment, threatens lives, belonging and has an impact on life, quality and economy of the country" (Elis and Liu, 2018).

It is not a common perception, but the well-proved fact that crime rate is higher in many countries in urban areas than rural or villages. Although percentage differs from country to country or region to region, but it exists almost everywhere. This is a question of research globally as to what the reasons are and why urban areas are experiencing a high level of crime in comparison to nearby areas. Criminologist and sociologist tried to find out an answer to this question with the help of independent and dependent variables through primary and secondary data. They found several reasons behind these urban crimes, but there is not a single specific factor in the list of factors of urban crime which can be generalised in different socio politico and economic scenario. Different types of crimes are due to different types of people and at different times and circumstances (Dambazau, 2007). In this perspective, the present research paper analyses, the relation between urbanisation and crime in terms of socio and economic within Indian urban areas. Secondary sources such as books, journals, the government's reports, research papers, articles, newspapers and web resources, etc. consulted to finalise the paper.

Crime in India in Metro Cities:

According to the National Crime Records Bureau during 2016, a total of 4,831,515 cases were registered under Indian penal code and Special and Local Laws crimes across the country. There was an increase in the crime rate of three consecutive years from 2014-2016 in the country. In India, prominent urban crimes that are being presently reported and recorded can be grouped under two major categories such as crimes identified under the Indian Penal Code (IPC) and

Special & Local Laws (SLL). Crime can be categorised under IPC as Crimes against Body, Crimes against Property, Crimes against Public Order, Economic Crimes, Crimes against Women, Crimes against Children and other IPC crimes. NCRB presented its report and analysed data of crime of nineteen metropolitan cities (have more than 2 million population). In these cities, a total of 8,08,637 cognizable crimes were reported across country wherein 5,13,635 were reported under IPC and 2,95,002 under SLL. This number is increased by 6.5 per cent over 2015. IPC crimes have increased by 7.3% and SLL crimes by 5.2% over 2015. Incidence of crime shows an increase rate of the crime in the last three consecutive years (ncrb.ac.in). Total 38.8 per cent of crime under IPC was committed in Delhi, capital of the country followed by Bengaluru and Mumbai while maximum number of crime under SLL were registered in Chennai 32.9 per cent followed by Kochi and Surat. Violent crimes are more prominent in urban areas as reported in Indian cities. 40.6 per cent was violent crime against the total crime wherein 13.2 per cent was of Kidnapping & Abduction and 1.9 per cent was of murder. These violent crimes are changing the city's landscape and pattern of life of people. High levels of crime can have a very serious impact on the economy of the neighbourhood or city centre (Mishra, 2002). Economic crimes are also on the such as criminal

breach of trust, cheating, forgery and counterfeiting, cheating accounted for maximum such cases where Rajasthan and Uttar Pradesh states have the highest crime rate in India.

Figure: 1: Comparative graph of Crime in India & Metropolitan Cities (Have more than 2 million population)
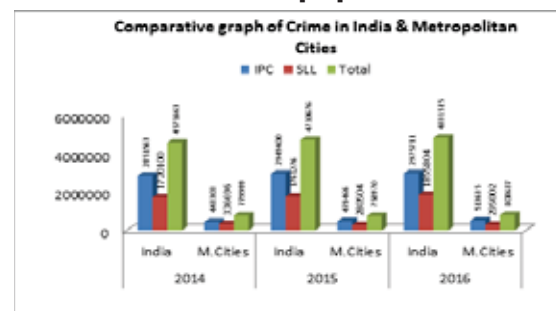
Source: ncrb.gov.in

Causing of Crime:

(i) Urban areas provide numerous opportunities for people such as better living conditions, education, employment, health facilities etc. but these areas are recognized as a breeding ground for criminals for committing crime therefore in India urban areas are more prone to crime compared to rural. The nature of urban areas is heterogeneous and people come here from different backgrounds. A few urban areas are well planned while the rest of the areas are outcomes of large floating population from nearby places and rural areas. This unchecked plan and less control over floating population are responsible for unrest situation

and the increasing rate of crime in these areas.

(ii) Migration from rural or nearby places is in search of a job in Indian urban areas are the main cause of urbanisation. In India still about 70 per cent of the population is residing in remote or villages so they come in urban areas for employment facility and a better quality of life. But due to an inadequate opportunity of employment, cities fail to adjust them to legal mainstream, and then resulting more of them start to make money from other sources including criminal activities. As already said by researchers that poverty and unemployment are the main cause of criminal behaviour (Usman, Yakubu and Bello, 2012, Ajaegbu, 2012). The metropolitan cities in India have problems of unemployment and besides this problem, these cities attract numerous unemployed youth of far and near, who being unsuccessful in getting a suitable job resort to illegal means to earn their livelihood and thus increase incidences of theft, house-breaking and chain snatching etc. In developing countries like India, the situation does not support urbanised area, so due to this reason people get involved in criminal activities to fulfil their daily needs. Data reveals in India that a big percentage of criminals is unemployed and especially youth who come in search of a job but

due to unavailability of the job they indulge in criminal activities specific in technological crime.

(iii) Due to the nature of urban society, traditional social control exercised by parents, grandparents, friends, relatives, neighbours and the community is also vanishing. Each member of the family wants economic independence and personal freedom, even at the cost of compromising moral values. This feeling of freedom and vanishing control of community in different ways negatively support people to involve in criminal activities.

(iv) Urban areas do not attract people of rural background but people in small towns and cities, therefore, in India a big percentage of the population is daily commuters who go back in the evening to their respective villages or towns. These daily commuters are free from social restrictions compared to others who have been inhabitants of the city. Due to a lack of unfamiliarity with their next door neighbour, they are unable to interact with each other. This is a very common phenomenon in cities especially in big cities where boundaries are not counted. Lack of intimacy, lower connectivity of people and less engagement with other are again responsible for crime boosting.

(v) Poverty is considered the main cause behind urban criminality because hunger gives birth to different types of crime. Most of the criminologists and sociologists observed the

uppermost crime rates within the poorest urban slums (Patterson, 1991). As pointed out by Hipp (2007) that many foremost criminologists trust that poverty-crime connection is direct and clear. In India poverty is also a responsible factor for crime and especially economic crime as theft and fraud to appease their hunger. Poverty is considered the main cause of crime in Indian urban areas, but other side data of cyber or computer crime reveals that people of young age from upper section of society are more involved in criminal activities in comparison to others while at this age financial crisis does not matter a lot. The data of cyber criminals reveal that the most of cyber criminals are from young age group and do not have such a liability.

(vi) India is a pluralistic society where people of different castes, religions and regions live and especially urban areas are heterogeneous in nature. This heterogeneous structure of the population also adds to criminal activities. The families in these cities are fractionalized and as they come from various parts of the country and abroad, feeling of co-operation amongst them lacks in urban community. Lack of feeling, of togetherness creates a feeling of escape from police.

(vii) The disruption of social and cultural values, especially in urban areas is resulting in antisocial behaviour very commonly. Being a transition phase of Indian society people, especially youth are in a state of flux and turn easily to criminal activities to enjoy urban way of life. Again lower probability of being recognised by their knowns and police puts them back into the criminal world and it has an impact on the rising rate of crime.

(viii) Graph of Crime against women and children has been moving up in urban areas of the country. They are easily victimised by offenders, even small age of children. Crimes including murder, rape, dowry death, cruelty by husband and relatives, kidnapping and abduction, human trafficking, assault on women, sexual harassment, and publishing or transmitting of sexually explicit, procuration of minor girls, importation of girls from foreign country, use of children for pornography/storing child pornography material are main crimes against women and children committed and reported in Indian police stations. Various initiatives are being taken by government and preventive machinery but still are inadequate to prevent the increasing rate of urban crime in the country.

(ix) Crime in urban areas has been increasing with parallel of urbanisation consistently even in most of the cities and violent crimes are increasing more in the last few years. In 2016, 40.6 per cent cases were of violent crime against total crime in the country (ncrb.gov.

in). These incidents of violent crime bring a sense of insecurity among people and force them to change their life style, their movement and use of public place as alone and discourage them from participating in such activities where they have to use public services. It discourages people from congregating at one place even in the park, during morning walks, and forces withdrawal of people from other community life and thus minimises chances of togetherness.

Figure: 2: Violent Crime in Metropolitan Cities (Have more than 2 million population)
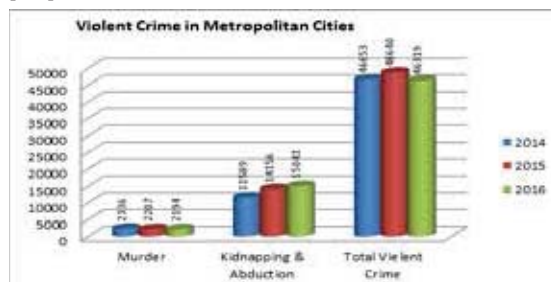
Source: ncrb.gov.in

Analysis of crime data of the last 5 years in India reveals that urban crimes are increasing in every aspect of life except in a few cases. Presently there is availability of data of crime of 19 mega cities which have more than 2 million population. These mega cities are heterogeneous in nature and people of different sections such as caste, religion, education and profession and region, food habits and language, etc. reside here. People in cities are found more impersonal and a lack of community feelings exists

there. Feeling of living together is declining, sense of gain, profit, status, maintaining individuality has become more prevalent. Nuclear family and working parents give a feeling of neglect of children. This is the main reason that most cyber criminals are very young people. Persons arrested for cyber crime, 544 out of 1,224 (44.44 per cent) were in the age group of 18 & above-below 30 during 2014 (Crime in India, 2014) it presents an alarming picture of which path youth are going on.

Due to specific characteristics of urban areas people find it easy to buy anonymity and escape from police detection. Mega cities show the different trends of crime from those of the rural areas.

Economic crime, violent crime fraud and cyber crime are more rife in urban areas while in the rural theft, burgling, and dacoity are more dominant. Corruption, while collar crime, financial scandals are more common in urban regions and reason behind these is that these crimes need more sharpness to commit. Such types of crime thrive more easily available in urban areas than in the rural areas.

Economic structures of urban and rural areas are found different and especially the structure of urban areas is more crime booster in itself. The widening gap between the 'haves' and a 'have-nots' is taking its toll. There seems a lack of parity among

inhabitants of urban areas but to enjoy all life amenities, these 'have-nots' often resort to illegal means and commit crime too. Sometimes in a few cases criminals commit a heinous crime to get parity with others and enjoyment of life of luxury.

Figure: 3: Violent, Economic and Cyber Crime in Metropolitan Cities (Have more than 2 million population)
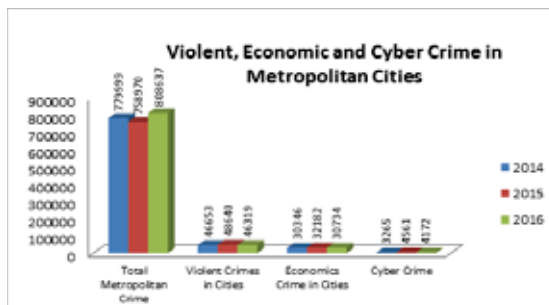
Source: ncrb.org

Soh (2012) rightly said that people of different culture background live together. Indian cities are centre of cultural heterogeneity where people belong to different cultures. Due to nature of dominance over other communities is a common phenomenon the result is that 751 incidents of communal riots have taken place in India in 2015 (timesofindia.indiatimes.com). These riots not only provoke violence and crime which destroy property and lives of hundreds of people too.

In urban areas children are mainly engaged with Television and it has become a great tool for attraction of children and youth of society. Round the clock, they have an opportunity to watch various channels of their choices. It is well proved by psychological and sociological research that who ever watches more violent movies, serials, stories and games on television shows a higher level of aggressive behaviour. This type of behaviour of children and youth is more prone to criminal activities especially in absence of social control such as parents, relatives, neighbourhood and friends. So many incidents of crime have taken place in India after watching and being inspired by television's movies and serials.

Cyber Crime in Mega Cities:

(i) Urban crimes are increasing due to excess use of technology in different ways. It is playing a crucial role in the new types of crimes such as identity theft, fraud, child intellectual property theft, etc. and it has been creating a lot of problems and challenges for preventive machinery. Cyber crimes are a new class of crimes where computers, mobiles and internet are used to commit crime. In cases of cyber crimes, criminals are not visible as traditional criminals but may be to your next door, relatives, colleagues, and friends and even beyond boundaries. These crimes are mainly committed due to adventures, teasing the people, a financial gain, etc. bulling, in search of applying technologies, doing a small fraud, accepting challenge of hacking sites and stealing the data and sometimes only for petty purposes crimes are committed. Data

of the cyber crime of the last five years reveals that crime rate has been increasing by leaps and bounds, and it doubled in 2011 to 2012 which is higher than other type of crimes. This trend of crime needs to be tackled by criminologists and sociologists from different perspectives because it is breaking social structure and spoiling the future of young people.

Graph: 4: Total Cyber Crime and Cyber Crime in Metropolitan Cities
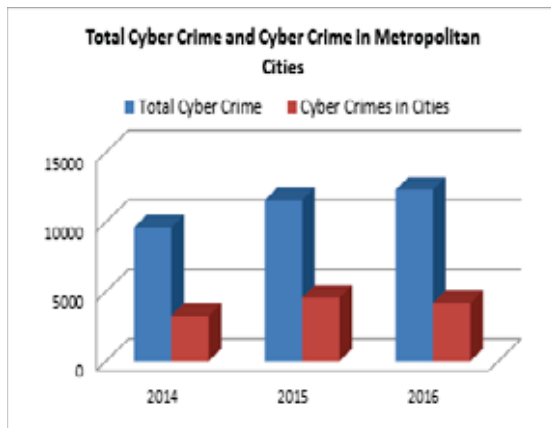
Source: ncrb.org

(ii) In India most young people are involved in technology related crimes for several goals. Nuclear structure of family, working parents and busyness of sisters and brother with their routine work and schedule, children do not spend time with each other and due to this trend they are engaged with their gadgets. Availability of these gadgets in their hands makes them expert with technology, and this technology has become a great tool to commit crime. Children often find themselves isolated in this society with very little or no restrain so this entices them towards criminality. Thus, in such social structure and life-style where there is a scant family discipline, a lack of social control and community feeling, more irresponsible behaviour and a wide generation gap which tend to break social structure and give birth to crimes like that of juvenile delinquency, obscenity, alcoholism and drug addiction, eve-teasing, telephone nuisance, etc. which ultimately give rise to violent crimes even murder too.

(iii) Cyber crimes are registered under Information Technology Act, 2000, and have specific provisions for dealing with cyber crimes and set the quantum of punishment. Cyber crime motives are Illegal Gain, Revenge, Insult to Modesty of Women, Sexual Exploitation, Extortion/Blackmailing, Prank/ Satisfaction of Gaining Control, Causing Disrepute, Inciting Hate Crimes against Community (Crime in India, 2016: 444). India was in a group of leading countries which had specific law for dealing cyber crimes. This Act provides support for investigation authorities and judicial machineries too.

(iv) In India there is a huge organisation of policing which works through day and night with its full efforts. As

discussed in the first part of paper that urban and rural areas are different in nature, therefore to deal with urban crime different type of policing is required, and it is the urgent need of the hour to make police efficient and effective to deal with urban crime. Police needs to be trained in terms of the latest equipment to fight with criminals and expertise in use of modern technologies as used by cyber criminals for committing crime. Like traditional crime, cyber crime makes less impact on the body, but has a tremendous negative impact on mind and psychology of the victims. Modern guns, rifles, pistols, telephonic facilities computers and internet, etc. may be more effective tools for police for the prevention and detection of crime. Therefore, police need to be trained psychologically to understand and analyse the impact of crime on human behaviour.

As mentioned above poverty, family needs, a life of luxury, overcrowding are main responsible factors for committing crime and a desire to achieve the best by minimum efforts particularly by the youth of society is again a crime booster factor in urban areas. This group commits crime individually or involves in criminal activities and organises its gang and sometimes combines with or joins the existing gangs in society too. The emerging of these new urban challenges

for the government to frame them in such a manner that people's sufferings can be minimised and happy life can be assured. Metro cities are well equipped and well planned in the process, but rest of the cities suffer from this angle.

Above analysis of causing of urban crimes concludes that in India there are some common causes but few of them are contextual and can be better understood in socio-political and cultural context and need to deal with consideration of a given context. Although efforts are being continuously made by the government, still there is a need of the hour to have a strong policy to deal with such crime and maintain faith of people in system. Being a democratic system, the first and foremost duty is to provide safety and security to people so that all over the development of people could take place in society and ultimately they can contribute to the development of the country.

Major Suggestions for combating Urban Crime: To combat urban crimes following initiatives are required at government and civil society level. The major recommendations may be concluded as under:

(i) In present context where socio-economic and cultural scenario has been consistently changing parents/guardian, relatives and friends need to keep proper watch on their children and the neighbourhood. Due to trend

of nuclear family in urban areas, children and youth are entering into criminal activities even at a very early age. To control all these, proper social restrictions should be there to have kept eyes on their children. In this perspective effective mechanism with the cooperation of people, civil society and police need to draft to solve the problem of escalation of crime rate, especially in urban areas. Although in a few areas these committees are already working, the need is to make them more effective and people oriented.

(ii) Women, children and the aged are easily targeted by criminals, especially in an urban society. They are easily victimized because of less powerful in self-protection. Data reveal that 11.8 per cent crime of total IPC crime during the year 2014 crimes was committed against women and children. Crime prevention against women and children will be given priority by government and other organisations and needs to develop special techniques to control crime against them. Neighbourhood Watch Scheme introduced in 1989 with the aim of reducing crime, creates a greater sense of security, higher community involvement and improved police–public relations (Joshi and Bajpai, 1995). To prevent crimes against girls and women, police should have

miscreants capturing force, arrest those persons who try to commit crime against girls and women. This is the time to make these schemes and programs more effective to prevent crime against women.

(iii) This is a fact that most people migrate to urban areas for employment and a better quality of life so happened in India where a big percentage of people migrated and were even still migrating to get a better employment opportunity, therefore this should be on priority of government agenda to provide more employment opportunities in government and private sectors. It was mentioned by Myers (1983) after conducting a study on offenders released by federal prisons in 1972 that punishment is not more effective tool for preventing crime but better opportunities for employment may be helpful in reducing crime rate.

(iv) Regular meetings of police with people to resolve their problems are required immediately. Proper patrolling at night as well as day time may reduce cases of eruption of criminal activities, because it is generally found that most of the crime generally takes place at lonely places. Criminals target these places for committing crime or victimize innocent people. Proper lighting, patrolling and awareness

among people may be a helpful tool to reduce crime incidents in lonely places and can create faith among the public about prevention of crime.

(v) To discourage criminals, all committed crimes should be registered in police stations. Registration of all crime will bring criminals to police custody, and justice will be ensured to victims of crimes. This will be a message for other criminals or even others for the future. Stringent punishment procedure should be set for criminals to ensure justice to victims and set a message for others.

(vi) Women have also been entering into the criminal world, and this is not of about the lower class but upper sections of society too. Women of the upper class desire a life of luxury, modern life style, and a better social status, so they commit crime particularly economic crime. In this regard it is suggested that proper watch should be kept at home by the family members, neighbourhood and other sections of the society. People should be aware about from what sources their children are getting money and on what items they are spending that. The Proper mechanism to engage girls and women should be provided by government and civil society. They need to be educated that crime is not a proper way to make

money but only legal sources must be adopted by them for their livelihood.

(vii) Police personnel should be practicise the concept of community policing in their functioning and work with cooperation and respect each other. Police may take steps in spreading awareness about criminals' behaviour and their activities among common people so that percentage of victimization may be reduced.

(viii) Policemen should keep a proper and continuous watch on youth, new comers and floating population in urban area because they are more prone to criminal activities and have less fear of being caught and be punished. They do not know when they can be caught in this regard. Police should be active and make a rapport with this class which may help with prevention of crime. Police should also organize some training programs for those persons who are more prone to criminal activities and are not more aware about the outcomes or punishment of crime.

(ix) Police can also organize police-public committees for prevention of crime. Local people, their representatives and other influential persons of the locality should be kept in these committees which have great influence in their areas. These people may help in prevention and detection of crime

and maintaining peace in society. These committees may also play a crucial role in the developmental task and other role of police in society.

(x) In India, a scheme known as Slum Police Panchayat was initiated/ made in Mumbai in 2004 with the objective of working on principles of dispute resolution at the local level. The representative of slum dwellers is designated as 'Zopadpatti Police Sahayak' who assists police in keeping watch in their respective areas (Mumbai Police, 2004). These schemes need to be implemented by all states to prevent crime in the slum of cities.

(xi) Proper infrastructure like vehicles, bullet proof jackets, weapons, computers and furniture should be provided for police, which are the basic needs of an organization and enrich a department. Sometimes policemen have to purchase modern weapons and equipment from their own salary which is necessary for their family needs. This type of tendency should be kept away from the police department and they should be provided with all basic infrastructures.

(xii) The latest technology should be used to prevent and investigate crime from a different point of view. Cameras need to be installed at streets, lonely places and more-crowed places to identify the offenders or antisocial elements. The police department should be updated to prevent, and investigation of crime and police personnel should be trained in computer operation not only in typing work, but also to develop strategies for prevention and investigation of cyber crime which are being committed in more numbers with different trends in society. This system will help in maintaining crime data and make them high tech for prevention and detection of cyber crime and rest of crime.

(xiii) This is the time or need to examine those aspects of urban spatial patterns and social relationships between groups and/or individuals which make urban areas more prone to violent upsurges. This has become relevant due to manifold increase of crimes in urban areas.

The above analysis of the research paper concludes that increasing speed of the urban process has brought people from different places together, but this trend decreases integration feeling among people. This less integration and less control of social agencies are also responsible for escalating of the higher rate of crime in cities. Withering away of values, morality in urban society also accounts for crime augmentation in a different way, especially against women and children. The trend of arrested

criminals especially cyber reveals that the most arrested criminals are young age people. Economic causes such as poverty, unemployment lust for greed and sometimes for a life of luxury are responsible factors behind these crimes. A hungry man can literally do anything to appease his or her family member's hunger, even in rare cases murder too. But on the other side, not only poverty but also capital accumulation has been held as a basis of crime in cities (Soh, 2012) and this is proved that criminals come not only from the lower class but higher class too, especially in cases of cyber crimes. Women are also increasing in the world of crime not only in petty crimes, but heinous too, which is a new type of threat to preventive machinery.

Inclusive urban planning should be priority of government along with proper checking in terms of basic civic amenities in these areas. Although crime control and detection of crime are the first and foremost duty of police machinery, police should be supported by social organisations and civil society for prevention and detection of crime as well, because criminals are a part and parcel of society and even after committing crime they hide in society. To make this machinery effective they need to be given modern weapons and equipment, vehicles, the latest guns and rifles, mobiles, computers and training to operate them, etc. Now the time has come to have a sharp focus on community policing where people can participate in prevention and detection of crime and maintenance of law and order.

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