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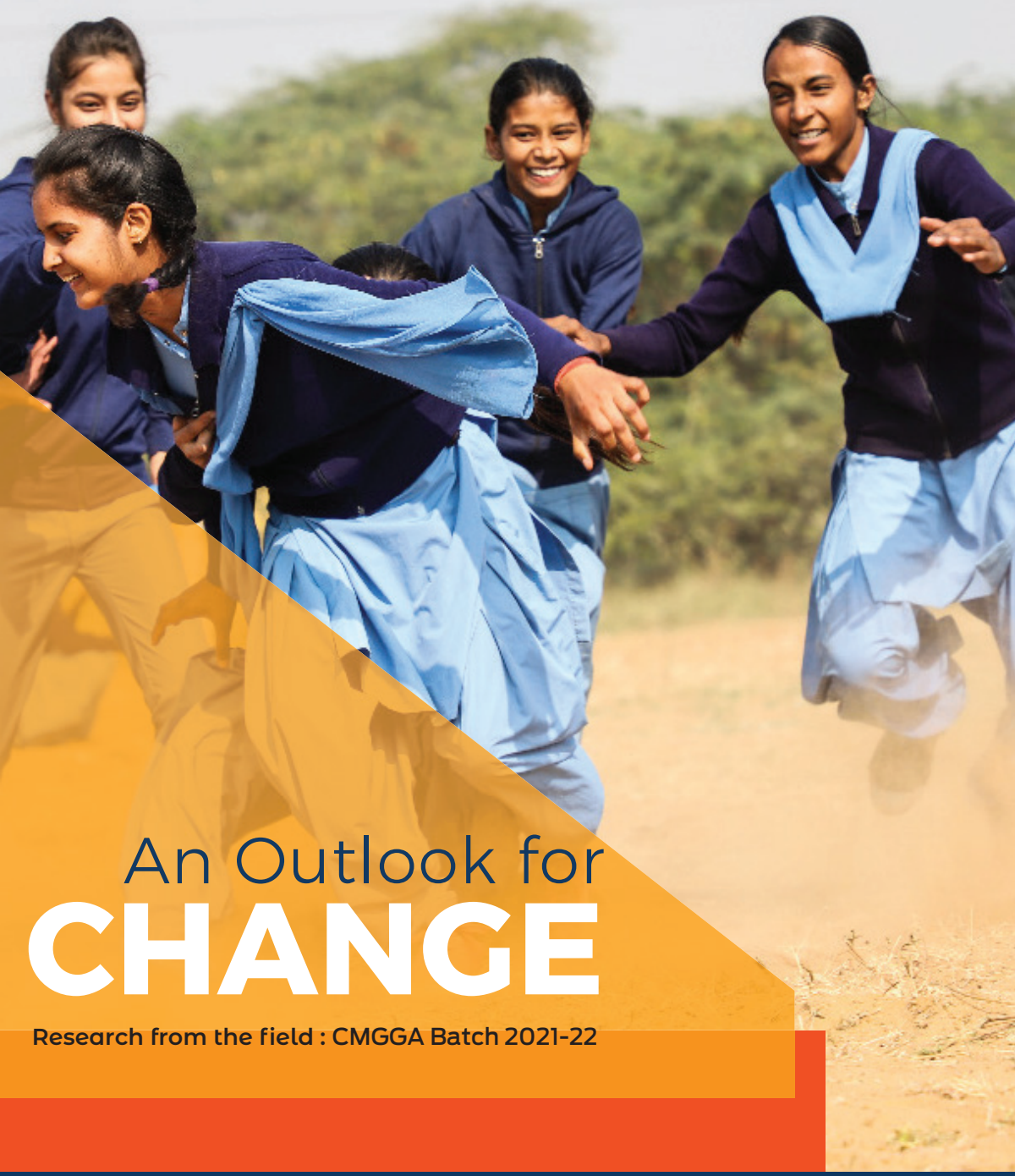
Chief Minister's Good Governance Associates
for a progressive Haryana



An Outlook for CHANGE

Research from the field : CMGGA Batch 2021-22

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About this issue

The Chief Minister's Good Governance Associates (CMGGA) programme lays special emphasis on the importance of research, both qualitative and quantitative, to drive efficient governance. The whole programme, centered around promoting 'good governance', has been designed in such a way that it inculcates the process of referring to data as a habit and a necessity, rather than an elective process.

Right from the training days of this batch of CMGGA, the Project Director, Dr Amit Agrawal, laid special emphasis on the importance of deep research for any policy and more importantly, that it should be translated into action. CMGGA is in a unique position to translate research into action and equally importantly the vice-versa, for the reader to learn about the governance practices in Haryana. This publication would not have been possible without his constant support and guidance.

We would especially like to thank our research guides, Anand Prakash and Shreya Sharma. They guided the associates right from the selection of their topics to teaching them the methods of primary and secondary data collection uptil giving these papers their final shape. This publication would not have been possible without their continued guidance and support.

Finally and most importantly, we would like to show our gratitude to all the individual respondents and district officers for sharing their stories with associates and giving them their valuable time.

This research compendium deals with a wide array of themes. It ranges from discourses surrounding abortion and pregrnancy in Haryana, biomedical waste management to policy reviews of flagship projects such as Parivar Pehchan Patra and Swamitva Yojana. The compendium wonderfully projects the ever-widening possibilities to think about change and development in society.

In chapter one, Tanya and Tavleen, provide a fascinating study on the factors that shape the accessibility and affordability of sexual and reproductive health services. Through lived experiences of all stakeholders involved, in the districts of Karnal and Jhajjar, they show that in addition to the policies to ensure abortion access in India, there is a requirement to change the perception of woman from being just an incubator to an individual in her own right in the debate.

The Creative and Critical Thinking curriculum is an important part of the NEP 2020 and Haryana has been one the first states in India to begin a CCT program in schools. In chapter two, Sarath, Vipul and Jyoti, analyse the methods that Haryana

schools utilise to develop creative and critical thinking in their students. As part of a larger working paper, they present a summary in this compendium.

Biomedical waste is a word that entered most of our diction, since the unfortunate pandemic of COVID-19 hit us. In chapter three, Aravind, Dinesh and Kritish through a series of interviews and participant observation present to us a revealing study on the condition of the staff who manage the biomedical waste on a daily basis.

Technology in governance has been a priority for the state government. In chapter four, Karan, Saket and Sukhda provide a review of the flagship project, Parivar Pechan Patra. With them having been a part of the implementation process, this provides for a fascinating read on the implementation of the project. They showcase how PPP has the potential to be a game changer in service delivery to the citizens and the relation between state and citizen. In chapter five, Kunal and Kausthub provide a landscape of the usage of technology in police administration in Haryana. Given the unique positioning of CMGGAs in the district, this provides an insider view on the impact of technology on the police administration. As part of their working paper, they present a summary in this compendium.

Land and electricity, arguably rank as two of the most important discussion points in a farming society such as Haryana. They are critical for equitable socio-economic development of Haryana. In chapter six, Aman, Raju and Anushka, provide a policy review of the Swamitva Yojana that aims to provide ownership rights of 'Lal Dora' land to citizens. In chapter seven, Shubham, Gaurav and Parag provide a policy review of the Mhara Gaon Jagmag Gaon, that aims to provide efficient and continuous electricity in rural Haryana.

Chapters eight and nine present two case studies of best practices on transport and water management. In chapter eight, Arvind, presents the lessons for Haryana transport from the Bengaluru transport system. In chapter nine, Avinash presents the lessons for Haryana from the Indore water management system.

Each associate is indebted to Ashoka University for the support it provided to pursue research as part of this programme

– Programme Team, CMGGA

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Understanding the discourse surrounding pregnancy and abortion, and factors affecting decision making during this process

TANYA JAIN AND TAVLEEN SINGH

ABSTRACT

The struggle for abortion rights has been a contentious issue globally amid political and socio-cultural challenges. This study, conducted in the semi urban and rural districts of Karnal and Jhajjar, seeks to explore factors such as social location, power relations, provider-seeker relationships that shape the accessibility and affordability of sexual and reproductive health services. Tracing the ecosystem through lived experiences of women, healthcare providers, field level workers and adolescent girls, the study attempts to throw light on the stigma, decision making and various debates on fetal personhood and morality that surface in this process. This study raises a voice for universal and inclusive access to sexual and reproductive health and rights (SRHR) and safe abortion as a critical part of a strong and resilient women centric health care service system.

I. INTRODUCTION

Abortion was legalized in India in 1971 and the bill [1]said its objectives were humane (for victims of sexual violence), health (in cases of contraception failure) and eugenic (to control 'crippled' children). (cite source)

The Medical Termination of Pregnancy Bill, 2020 was introduced in Lok Sabha on March 2, 2020 and passed on March 17, 2020. It amends the Act to increase the upper limit for surgical termination from 20 to 24 weeks for certain categories of women, removes this limit in the case of substantial foetal abnormalities, and constitutes Medical Boards at the state-level. It also allows not only married but also unmarried women to seek abortion in case of failure of contraception, which was earlier restricted to married women.

Extensive research has been done on the issues pertaining to abortion both in India and internationally. Shrage (2003) explains the nuances of the Roe v Wade judgment by the U.S Supreme Court, explaining how it is a part of the continued debates surrounding abortion in the country. Shrage argues that despite having broader ambits within the law, civil liberties don't align with an unrestricted access to abortion. She talks about the inaccessibility of services to the marginalized communities due to lack of public funds and investments. She critiques the concept of 'viability' that is central to deciding who qualifies for non-therapeutic abortion. She focuses on ways to form support so that there is a conducive space for choice to be exercised as opposed to increasing choice itself.

Throughout history, the Indian government's public health concern has been on population control, later called family planning but holding the same core values of linking poverty to population. Rather than focusing on inequalities and the redistribution of resources, the government has formulated policies restricting child birth of the poor, which still maintains the exploitative cycle of poverty (Williams 2014, Rao 2004) Abortion was legalized in India in 1971 and the bill said its objectives were humane (for victims of sexual violence), health (in cases of contraception failure) and eugenic (to control 'crippled' children).

In the Indian context, Menon (1995) argues that the concern with fetal health starts and ends at abortion and no concern is seen towards other factors which could shape its future life, thus proving that the motive is regulation of women's bodies. She questions discussion on abortion within a rights based framework based on three reasons. One is the change in public perception about abortion from being a medical treatment to a right. Second is the contestation provided by father's rights and fetal rights. Lastly, there is less focus on the institutional and infrastructural facilities that the government needs to provide to facilitate informed choice. Further, she frames the debate between the right to abortion

[1] *The Medical Termination of Pregnancy Act 1971* s.3 (Ind.).

and the ban on sex selection under the Pre-Conception and Pre-Natal Diagnostic Techniques Act, 1994, which had been precipitated due to the work of several advocacy and activist groups which saw this ban as social change. In resolving the philosophical dilemmas she argues that rights over one's body exist within a shared understanding of the meaning of body, consent, responsibility and the socio economic atmosphere.

In India, approximately eight women die from complications related to unsafe abortion every day, the third leading cause of maternal mortality in the country. With this research, we are aiming to know what causes certain segments of the population to approach informal health facilities for abortions, level of awareness about family planning in women and the process of decision making. In addition to this, we are also attempting to understand if there are support systems existent in the healthcare ecosystem to assist families going through abortion or miscarriages.

In Haryana, the narrative of a medical termination of pregnancy can not be understood without the context of *Beti Bachao, Beti Padhao*, a scheme that aims to address the poor sex ratio at birth that has been seen in the state historically due to the deeply embedded roots of patriarchy. While the scheme has many aspects, one of the most popular focuses on raids to identify practitioners and individuals seeking MTP, to curb sex selective termination of foetus.

II. METHODOLOGY

This research uses qualitative methods to explore different perspectives on the subject. Qualitative study allows for multiple views on reality which creates space for different perceptions emerging from patients, healthcare practitioners and other stakeholders in the ecosystem of a pregnancy. It posits that knowledge itself is socially and culturally constructed and it is this emerging vocabulary in the field that we aimed to study. (Silverman, 2015)

The study was carried out in two districts of Haryana, namely Jhajjar and Karnal over a span of 5 months from February 2022 to June 2022. We conducted 27 interviews with adolescent girls, mothers (pregnant / lactating), health practitioners, on-ground health workers, and school teachers. The interviewees were picked from diverse backgrounds including both rural and urban areas and government and private set-up. Snowball sampling method was utilized for selection of the interviewees.

The method adopted for data collection was an in-depth semi structured interview, these interviews were conducted through the help of a questionnaire. Our choice of method was due to the nature of our objectives. Since we wished to explore the lived realities and experiences of women who were undergoing pregnancy and abortion, it was important to foreground their narratives, which was done by conducting in depth interviews. This method allowed us to focus on learning

the perspectives of the participants, rather than the meanings we might have held ourselves.

Access to the field has been a challenge due to the sensitive nature of the research theme, as well as a hesitancy to discuss issues related to medical termination of pregnancy with the researchers, who are often perceived to be representatives of the government.

III. ANALYSIS AND DISCUSSION

Accessing healthcare

When transcending from citizen to patient, an individual faces many options, primary of them being a choice between availing government facilities or private. Influenced by factors such as income and geographical location, both entail a vastly different experience.

In India, a pregnant woman can avail free services including diagnosis, consultation and treatment. The most basic facility is the sub center, where deliveries can take place in the Primary Health Center (PHC) and Community Health Center (CHC) for slightly more investigative needs and the district hospital for advanced services.

Across respondents, there was a preference for availing services at the district hospital despite distances and long queues at these facilities. A rural respondent from a lower income family shared her experience,

"Didi, jab itni zaroori cheez ho toh usme ham kamti kaise kar sakte hai? 2 roti kam khaa lenge, magar acche aspatal mei dikhayenge. Yaha toh kabhi doctor hoti hai, kabhi nahi. Waha pe bohut baddhe doctor hote, woh thoda jaldi mei dekhte hai, magar woh jaante hai. Yaha toh kabhi kabhi bas teeke waali didi hi dekh leti hai."

(Didi, when something is so important then how can we cut corners? We will eat 2 rotis less, but go to a good hospital. The doctor is not always present here. The doctors there might be in a hurry, but they know more. Sometimes here, only the ANM is present."

-Reena Devi, March'22

One's social location can also determine the experience she has during her pregnancy. For one of the respondents, a Muslim woman with 4 children, having another child was not financially viable. However, she did not wish to go to a traditional health facility set up at all, due to an alienation caused by her past experiences.

"Mujjhe unse koi ummed nahi thi. Iss basti mei doctoron se koi ummed rakhta hi nahi hai. Woh hume dekhte hai, humara burqa dekhte hai, aur samajhte hai yeh toh unpadh hai, inko toh kuch aata hi nahi. Phir woh hume kuch samjhate

bhi nahi hai. Agar koi sawaal pooche toh hass dete hai. Waise bhi Musalmaan se sabko ab khatra hai. Aapne aas pass news mei bhi dekha hoga. Basti mei sab saari precautions lete hai, hum apni taraf se ek doosre ki madad karte hai aur ek doosre ko sab batane ki koshish karte hai. Kyuki agar kuch hota hai toh humari madad koi nahi karega."

("No, I had no expectations. We don't have any expectations from doctors. They anyway look at us and think that because we are wearing burqa we don't know anything and they don't want to tell us anything. If we ask a question they will laugh at us. And anyway they think that we are all threatening them. You must have seen it in the news. I will tell you nobody has taken precautions the way our families have. Because we know that if something happens to us doctors will not do anything.")

- Zahra, June'22

Zahra's identity as a Muslim woman had determined the care she received within the health care system in the past and persistent discrimination had caused her to have low expectations from it, even before the consultation had started. Institutional mechanisms of discrimination can not only adversely affect health directly due to poor social determinants of health but they can also reduce health seeking behavior, because of the conscious or unconscious bias of the service provider, as they are largely from a dominant group who yields power. Her minority status and perception of lack of support from formalized health services forced her to avail the services of a Dai, an unregistered midwife who practiced abortion in secrecy without informing government services or her family. While we tried to trace Dais to interview them, this was a very hidden network and none of them consented to going on the record. Women usually come to know about them only through other women, often having to travel distances and undergo procedures without any information or any support.

THE PATIENT CLINICIAN INTERFACE

A pregnant woman has institutionalized touch points with various stakeholders, depending on the services she avails. In the case of private services, this might be restricted to a clinician with specialized training, but in the governmental set up the ecosystem involves community based workers such as ASHA and Anganwaadi workers as well. Being a primary contact for information, they hold the power to shape the conversation based on the information they provide. This section explores the contexts which give rise to different lexicons and how this determines the understanding of choice for the woman.

"Abortion is very accessible. In fact, I would say, too accessible. They all know about it and they don't even have to think about getting it. I think they might be more careful if we made it more difficult for them. But anyway, my job is to tell

them the information. I convey facts. Hard numbers and statistical figures and test results. So they can make what they will out of it. I don't ask too many questions about their background either, just whatever is minimum"

- Dr. Nivedita, May'22

These are the words of a private practitioner practicing in one of the affluent areas of urban Karnal. Trained in medicine from Delhi and the United Kingdom, she has seen the context around her change, and women become more open about their gynecological needs. It must be noted that with consultation fees of over Rs. 2500, this ease comes at a high cost. These services too have an ambit defined by the marital status and age of the woman, as she explains.

"When they come after marriage, I can be more open with them. As young girls, they always come with their mothers. You think I can talk about sex then? Their mothers will take them to another doctor only. They are going through a lot of changes at this time, I think it's better that they discuss them with someone they feel more comfortable with. School teachers, maybe."

While a private practitioner, albeit in some situations, might provide judgment free services, the government sector is further compounded with the narratives shaped by Beti Bachao Beti Padhao.

An ASHA worker who has been working on the field for over 6 years shared,

"Dekhiye, aap jaanti hi hai, koi maa apne bacche ko choddna nahi chahti. Gareeb ho ya ameer, har maa ko apna baccha pyaara hota hai. Yeh (medical termination of pregnancy) toh tab hi hota hai jab logo ko beti girani ho. Aaj kal Beti Bachao mei yeh sab log pakde jaa rahe hai. Mere pass toh kabhi koi nahi aaya yeh kehna ki abort karna hai, agar aata hai toh mei seedha report kardungi"

("As you know, no mother wants to leave their child. Poor or rich, every mother loves their child. Medical termination only happens in the case of sex selection. Nowadays, under Beti Bachao, such people are being caught. No one has ever come to me to ask about abortion, but if they do I will report them immedtiatly.")

- Jyoti, March 22

Other ASHA workers were also asked about their views on mothers aborting their children. One of the ASHAs shared:

"Nahi nahi madam, abortion kyun karna hai. Yahan toh baccha hona bhagwan ki dein maana jaata hai, yahan toh log 3-3 4-4 bacche bhi kar lete hain"

("No no madam, why do we have to opt for abortion. Children are god's blessing, women bear 3-3 4-4 children also here")

- Amanpreet, May 2022

AWARENESS AND BEHAVIORAL PATTERNS SURROUNDING SEXUAL AND REPRODUCTIVE HEALTH

We interviewed both adolescent girls and mothers to understand their awareness level about their own bodies and their rights. Through discussions with the aforementioned groups, low awareness about sexual and reproductive health and rights (SRHR) emerged as the major theme.

Further, it was noted that women have limited sources and access to this information throughout their lives. While conducting interviews, discomfort with words like "sex", "abortion", "vagina" was noticed in the interviewees which indicates lack of conversation around the topics in their schools / families. In schools, teachers were also noted to not be equipped with adequate resources to impact education about SRHR. As a result, students have limited knowledge about their own bodies, which often also leads to spread of misinformation and myths.

Upon speaking with adolescent girls from grade X in a school based in Jhajjar, it was noted that topics like menstruation, puberty were not inclusively discussed in classrooms. Girls were often briefed about them in hushed corners, or instances of no information whatsoever being communicated to them were also noted. One of the girl being interviewed shared:

"Periods ke baare mein school mein toh nahi bataya, koi session nahi hua tha. Lekin haan pads milte hai humein school mein aur pads dete waqt teachers bata deti hai periods ke baare mein thoda. But kabhi bahut detail mein nahi discuss kiya"

("There was no discussion about periods in school, no session was held as well. But yes, pads are given in school and while giving them, teachers share a bit about periods but never very extensively")

- Priya, June 2022

Due to no conversations around the topic, it was also seen that students end up believing in and following various myths. Aforementioned interviewees mentioned that they are not allowed to jump too much, they refrain from eating anything cold, they don't go out of the house a lot, and don't eat anything sour as well. It was also noted that non-inclusive conversations also impact the comfort level of students with their fellow peers / teachers. Another interviewee shared:

"Hamare Science ke teacher male hai toh kabhi kabhi unse sab kuch nahi puch paate. Lekin Seema aur Nisha Ma'am hai school mein, woh sab doubts hum unse puch lete hai"

"(Our Science teacher is a male, so at times we are not able to ask everything from him. But Seema and Nisha Ma'am are also there in school, we clarify those doubts with them)"

- Aashna, June 2022

In India's healthcare system, ASHA (Accredited Social Health Activist) workers play an important role in delivering important healthcare information directly to the beneficiaries. One important mandate of an ASHA worker is to counsel and guide newly wedded women about family planning which includes timing one's pregnancy and sterilization methods. Upon asking the interviewees about the information they received from ASHA workers, low and delayed communication was noted. Mothers who have become pregnant twice were still seen to be unaware about various family planning methods one can adopt. It was also noted that ASHA workers were not visiting mothers who were getting their treatment done from private facilities as frequently as they visited others.

As a result, women were found to be more comfortable in discussing family planning services, abortion, or any other sexual and reproductive health concern with other women in the village who were their age, as opposed to medical professionals or community workers. However, the information discussed here was often traditional knowledge and not medically or scientifically backed facts, risking the propagation of age old myths and misconceptions.

Further, on evaluating the data published by National Family Health Survey 5 (NFHS 5), Haryana was noted to have an abysmally low percentage (0.9%) of men who were getting sterilized. Upon asking, ASHA workers shared that men fear losing their virility, and generally expect women to take care of all the reproductive processes.

THE NOTION OF CHOICE

In both the districts, it was noted that families do not have any explicit conversation about family planning. A young mother shared

"*Karna toh tha hi, toh humne kar liya. Itna socha nahi"*

("We had to do it, so we did it. Did not think too much about it")

- Priyanka, February 2022

Having children after marriage did not seem to be a choice for mothers, but rather a necessity.

A study in north India (Saini, 2006) reported that mothers-in-law were the most important persons in the family for taking decisions on health care for a child. Another study done by Pachauri (2014) reported that the status of mother –in –law, and her authoritative figure in the family unit in northern India, leads to her control over the health care decisions made for the daughter-in-law during postpartum care or treatment-seeking. Respondents in our study were also noted to get greatly influenced by their husbands or mother-in-laws, who usually decide when they should have a baby. Mother-in-laws were noted to have a larger influence while making such decisions, they were also seen to be more hasty in having the first

child due to the fear of infidelity. Further, these decisions are also driven by a desire to have a male child and taking the family name forward.

Many young mothers, who were studying before they got married and had the aspiration to continue studying, discontinued their studies either after getting married or after having their first child. They were also seen justifying their decision and defending their families by saying that they wouldn't have been able to perform their role as a wife or mother properly had they not discontinued their studies. Women were seen prioritizing their families over their careers, goals and aspirations. A young mother living in Dadri Toye village of district Jhajjar shared:

"Shaadi se pehle main padh rahi thi, aathvi tak padhayi karli thi. Shaadi ke samay bola tha ki aage padhayenge, lekin shaadi hone ke baad kisine zikar hi nahi kiya. Phir bahut kaam bhi aagaye the, ab voh karte ya padhayi karte toh humne chhod di padhayi. Phir bacche hogaye, uske baad toh kabhi socha hi nahi"

("I was studying before marriage, I had studied till 8th grade. At the time of my marriage, I was told that my in-laws would help me study further; however, nobody talked about it after the marriage. There was a lot of work that came my way as well after getting married, hence I dropped the idea of studying further. When I had children later on, I never thought about studying again")

- Krishna, April 2022

Children were also commonly seen as a connecting link between husbands and wives. A newly married woman shared that her husband works in another city during the week and comes back home only on the weekend. She mentioned how a baby would ensure that her husband stays true to her and has interest in their family. Women were also noted to believe that children will complete their families. A woman during our interviews shared :

"Inhone kaha hum do aur humare do. Phir humne kar liya"

("He said we are two and we'd make two more. Then we did it")

- Suman, February 2022

Thus, receiving support and having to balance fragile emotions of family members are important factors that women consider during their decision making.

Another dimension to decision making is the understanding of one's own body and the experience of being pregnant. While there is a lot of research that focuses on the clinical aspects of pregnancy, we wished to also explore the dimension of women's embodied experience through it, which is the ways in which women understand this unique experience and give sense to harboring another human being inside their own, how they relate to this body and their own. This is important because it influences her idea about pregnancy, motherhood and affects the decision making processes for future pregnancies as well.

A participant from Baragaon village in Karnal, who had carried an unplanned pregnancy to term shared.

"Mei samjha hi nahi sakti sahi tareeke se ki kaisa lagta hai jab andar se bachha hilta hai. Ek baar koi maa woh mehsus karle, toh woh kabhi soch bhi nahi sakte bacche ko giraane ke baare mei. Apna hissa sa lagne lagta hai."

("I can't explain what it feel like when the child moves inside you. If a mother experiences that, they can't think about aborting the child. It feels like (the child) is a part of oneself.")

- Savita Devi, April'22

However, this experience is not universal. An upper middle class participant shared,

"I knew I didn't want to have this baby, but a part of me was wondering if I was being selfish. I didn't know if I felt prepared at all. I discussed this with my doctor and she said that the decision was entirely up to me and she would schedule an ultrasound. That really helped me decide because it finally felt real enough. The kicking doesn't make sense to you. But now there was an image in front of the screen and I really could see the mass of cells. And I knew that it would be the most heartless thing to bring this baby into the world that I did not want."

- Baani, March'22

Navigating through questions of morality, for Baani, her doctor's suggestion to get an ultrasound in a neutral way created a space for her to make a decision. Access to technology rendered an image for her that helped her map out what her pregnancy outcomes looked like.

EXPERIENCE OF ABORTION / MISCARRIAGE

When asked about their perspective on abortions and what do they see in the community, ASHA workers shared that women generally do not abort their children unless it is medically necessary. They also shared that there is a lot of stigma in the communities because of which women generally do not share even when they have had an abortion, they are mostly concerned about what would the society say.

Mothers were also asked about their experiences with miscarriages; they shared that the entire process was extremely painful and mentally stressful for them. On further asking about who they confided in during this period, most of them said that they did not share it with anybody; while the family supported them in the procedural work, there was no emotional support for them as such. Many of them also briefly highlighted how it did not seem like a need to share what they felt emotionally with others.

One of the mothers also shared that this entire experience made her doubt the entire healthcare system as well; she shared that despite following all the health processes, she was told "*baccha kharab hogaya hai*". Resultantly, she did not share the news of her current pregnancy with ASHA workers until the end of her 3rd month as opposed to sharing the news within a 1-1.5 months earlier.

IV. CONCLUSION

The discourse emerging around abortion, family planning and sexual knowledge is developed within the shadow of bodily autonomy and reproductive freedom, which are critical for a justice and rights based approach to this domain.

While there are policies to ensure abortion access in India, women still face many challenges which are socio-economic in nature and exist at the intersectionality of stigma and a lack of focus on the woman herself, with them being seen more as an incubator in the abortion debate. To build a robust maternal healthcare system, it is important that women's bodies be valued not just at the time of pregnancy and birth but through all of her medical needs.

Through our research, we have noted an extreme lack of awareness about sexual and reproductive health amongst women of all ages; this often becomes a breeding ground for stigma and myths across the community. Women were noted to have little understanding about what it entails which leads to them becoming subservient to others, at times for decision making. This is also directly impacted by the views held by the community including the on-field healthcare workers.

Women's experiences of seeking healthcare during their pregnancy were molded by their socio-economic and cultural positions in society, with women from marginalized backgrounds facing more challenges.

Resultantly, women generally find themselves alone in the process with no confidant which often leads to them resorting to unsafe methods as well, when need be.

Comprehensive abortion care services will reduce maternal mortality due to unsafe abortion, allow women the right to exercise control over their own bodies and lead socially and economically productive lives as well.

This entails normalizing and de-stigmatizing sexual and reproductive rights within institutions and people.

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Creative and Critical Thinking

A Study of the Haryana Government School Ecosystem

SARATH NINAN MATHEW, VIPUL FALOR, JYOTI SHUKLA

Model making at MSS Rai, Sonipat

INTRODUCTION

National Education Policy 2020 states that "Education is fundamental for achieving full human potential, developing an equitable and just society and promoting national development" (Ministry of Human Resource Development, 2020. The importance of education at an individual and societal level is well documented and understood. However, there is enough literature highlighting that despite near universal enrollment of students at primary schools, the quality of education being provided in them has remained inadequate to achieve the above mentioned objectives, especially in developing countries like India. The area of research was therefore chosen in the context of realizing the importance of this problem and to air a deeper understanding of it.

It is understood that the world is changing exponentially while our education system is still that of the industrial/factory era in its character. The traditional metrics of success in an outdated system will not lead to the achievement of the noble vision set up by the NEP 2020. It is also evident that there is a requirement of '21st century education' which provides for those skills that respond to the economical, technological, and societal shifts that our present day modern society is undergoing (Hallerman, Lewis & Dresbach, 2019).The CBSE classifies 'Creativity' and 'Critical Thinking' as quintessential 21st century learning skills

that are extremely important in the acquisition of new knowledge (Central Board of Secondary Education, 2020). Parallel to gathering an understanding of these ideas, an exploration was conducted of the 'CCT Program' designed by SCERT Haryana. This program aimed to create a repository of questions which was envisioned to make students creative and critical thinkers. Taking inspiration from the above factors, the focus of research was made to be on assessing the interventions of Government of India and Government of Haryana in terms of their effectiveness of developing CCT in Haryana's government schools. An understanding of CCT was derived from the parameters laid down by national and international sources.

Schools are expected to provide a structured education to all children so that they can grow academically, learn important skills and develop their personality. Hence, the area of research was restricted to schools. There are multiple factors that determine the kind of education that will be delivered to students in these schools. A narrowed focus was on - 1. Analyzing important processes that happen within a school which determine the quality of education that will be delivered in that school and 2. Interacting with important stakeholders of the education ecosystem of Haryana.

Teacher training, teaching pedagogies and assessments form the important trifacta that determine the teaching instructions that will be delivered to the students as supported by literature reviews. The research attempts to study the various teacher training programs, teaching practices and all the traditional and new assessments vis a vis the parameters identified from secondary literature.

Class experiments in Mathematics conducted at MSS Rai, Sonipat

LITERATURE AND CONTEXT

CCT - Definition and Importance

Critical Thinking can be understood as the ability to question any statement or thought presented to a person. The questioning need not always lead to the negation of the statement being studied; but the activity of raising questions will in almost all cases lead to better understanding of the study material. Creativity on the other hand is the ability to think / create new ideas or products.

Both creativity and critical thinking are integral to academic and overall development of students. Memorisation is only a very small part of learning. True learning happens when students can analyze what they have learned and also imbibe the syllabus with their own individuality by creating something by themselves. Parallelly, CCT is also highly prized in the 21st century job sector (Sellars et al, 2018). Here, the importance attached to memorisation versus CCT skills are heavily skewed in the favor of the latter.

CCT in India

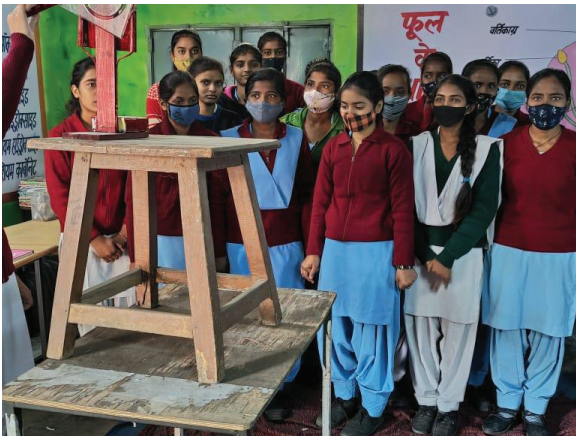
Majority of the literature on education in India concentrates on learning level outcomes. There is very limited literature that directly touches upon CCT. The former category of works talk about teacher vacancies, excess syllabus, lack of benches and books, apathy by parents and students, and a host of other issues (Misra, 2021; Joshi, Vinay & Bhaskar, 2020). With the National Education Policy of 2020, there is considerable attention on CCT in the Indian policy sphere. The policy directly refers to both critical thinking and creativity. NCERT has launched a nationwide training program for teachers titled, NISHTHA - National Initiative for School Heads' and Teachers' Holistic Advancement. Exploratory discussions with education department officials and government school teachers showed that the stakeholders consider Nishtha to be helpful in improving CCT. There is particular focus on activity based learning and use of teaching learning materials under NISHTHA training both of which are recognised in literature as useful for improving CCT in students.

Use of technology in classrooms at GSSS Gohana, Sonipat

CCT in Haryana

The National level measures such as NISHTHA are functioning in Haryana at full force under the leadership of SCERT. In addition to this, the Government of Haryana started a CCT program in 2020. The program involved the creation of a repository of CCT oriented questions that teachers can use in class. This repository was prepared by select schools across the state of Haryana for the subjects, Science, Mathematics, and Hindi. In its conceptualization, the program involved both a training element and provision of CCT material to schools. The former role is fulfilled by the teacher understanding what a CCT oriented question is by reading the repository and thus being equipped to design their own CCT questions. The latter role is performed when the teacher uses the questions as practice questions in class. Unfortunately, the program was never publicized in schools. Thus, despite the repository being available in the SCERT website, a considerable number of teachers were not aware of the repository.

To study the above mentioned processes, primary data was collected from various stakeholders as well as secondary literature. Teachers are the main providers of education while the students are on the receiving end. Apart from them, administrators in the form of district and block level officers, subject matter experts expected to act as mentors to teachers, school principals and officials working under Sarva Shiksha Abhiyaan (SSA) to improve the quality of education were identified as important stakeholders in Haryana's education ecosystem. The focus of the study was to look at CCT friendliness of government interventions in schools, therefore important stakeholders like parents and community were excluded from the study. After exploratory interviews with stakeholders and a pilot survey, data was recorded from a total of 75 stakeholders across the three survey districts and collected quantitative and qualitative insights on the above three processes with respect to CCT.



MSS Rai, Sonipat (Math class- Clinometer)

METHODOLOGY

With identifying the area in which the research was to be conducted, the topic was narrowed down to CCT. This involved a preliminary literature reading of the current trends and issues in this sphere.The research question was formulated after a review of international conceptual understanding of terminology and ideas around CCT. This was followed by secondary literature review around the topic and developing an understanding of 'CCT' as understood by global and Indian sources. A simultaneous study was conducted for documenting details of existing interventions across the three parameters of pedagogy, teacher training and student assessments.

A pilot process for questionnaire formulation was initiated with three separate questionnaires for students, teachers and administrators. The pilot was conducted and the questionnaire was revised based on feedback. The sampling was initiated for -

	Administrators	Teachers	Students
Ambala	5	10	10
Sonipat	5	10	10
Yamunanagar	5	10	10
TOTAL	**15**	**30**	**30**
	75 respondents		

MSS Rai, Sonipat (Chemistry class)

LEARNINGS AND WAY FORWARD

Global and Local

The Organization for Economic Co-operation and Development (OECD)'s report titled *"Fostering Students' Creativity and Critical Thinking, What it means in School" has* evaluated Creativity and Critical Thinking (CCT) across 11 countries. The report focuses on the feedback from field work where teachers share their reflections on some good practices with respect to CCT. Insights from this global analysis focuses on teacher plans, lesson frameworks and student assignments that go beyond the textbook. The effort of inculcating CCT in a school set up requires many countries' approaches to teaching pedagogy to be altered to make room for initiatives that boost creative thinking in students. Classroom set ups and environment is also required to be changed to foster questioning freedom and ease within the children.

CCT aspects for classrooms require going beyond class lessons and curriculum. The very nature of classroom interaction, the relationship between teachers and students, are looked at as the focal points for CCT.

Establishing 'creativity' and 'critical thinking' as explicit learning goals is very important. The conventional parameters of success in the classrooms do not incentivize teachers to focus on them. Hence, making CCT as learning goals and defining them clearly so that the understanding is universal and consistent across all the stakeholders is the first step. The study in Haryana recognizes this as a universal requirement and asks all interviewed stakeholders their understanding and awareness of CCT, going beyond to even ask about the source of this information. This line of questioning provides avenues for streamlining the awareness component for the CCT initiative.

There is a need to depart from traditionally established practices and modify teaching and assessment approaches. To do this, professional development of teachers to equip them with the best classroom practices along with the understanding of CCT is very important. In Haryana, trainings like Nishtha have been reported to be conducive to CCT enhancement by stakeholders interviewed, even though the mandate of the training is not CCT specific. CCT questions repositories also indirectly try to train teachers to change the way they teach and ask questions to their students. There is considerable scope for improvement on the front of better accessibility and information dissemination of the repository for the knowledge and use of teachers. The repository can also be expanded to further exploration of training and development initiatives centered around CCT.

It was observed that deliberate formulation of CCT and strategies for its implementation triggered changes in teacher's beliefs and practices in the global context. Furthermore, teachers refined the tools and strategies provided and adapted them to their relevant contexts, highlighting important areas of innovation

specific to geographies, cultures and other multidimensional aspects across countries. Pedagogical interventions also showed positive outcomes on students in terms of increased interest, better test and creativity test scores. In Haryana, students' survey responses are conducive to a similar insight. There are mentions of class activities and engaging assignments helping students not just better their understanding of concepts, but also inclining towards new and unexplored ways of thinking and questioning.

Major parts of the data accumulated through the surveys and interviews are under analysis for further publication. These data insights will form the basis for the study's recommendations towards improving the CCT inculcating infrastructure in the state of Haryana.

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3

Biomedical Waste Management

Understanding the risk generating processes in government healthcare institutions

ARAVIND NAIR, DINESH MALLAH, KRITISH KUMAR

ABSTRACT

The purpose of this study was to understand the level of awareness and perception of the ground workers (class 4 staff, sanitation/housekeeping staff) regarding biomedical waste management and the risks involved in it. A close-ended survey, semi-structured interview and focus group discussions were conducted involving 61 housekeeping/class 4 staff, 12 Infection Control Nurses and 2 District Quality Assurance Consultants.

It was observed that 44% of the respondents were not immunized against Hepatitis B and 14 % of them have received neither the Hepatitis B nor the tetanus vaccine. 26% of the respondents said that they have never received any training related to biomedical waste management. 74% of those who hadn't received the vaccines said that they were not aware that they were supposed to receive the vaccine. Only 8% of the respondents used heavy duty gloves while handling biomedical waste. The study highlighted the need to have strict monitoring of the supply of protective equipment, the vaccination of employees and the performance of empanelled waste collection agencies. It also highlighted the utility of having a dedicated personnel in the institution for infection control.

KEY WORDS

Biomedical waste, hospital, healthcare, housekeeping staff, infection control, protective equipment

INTRODUCTION

Problem Statement and Rationale

Waste management is a pressing concern globally. India is also grappling with rising levels of waste generation, with the urban population of India estimated to grow to 50% by 2050, accompanied by a 5% annual rise in waste generation (ASSOCHAM, 2017). Bio-Medical Waste (henceforth BMW) forms a significant part of the waste generated, especially in the post-covid scenario.

Due to the unprecedented rise in BMW generation, it becomes important to ensure that BMW is being disposed of scientifically as per the mandates given in the Bio Medical Waste Management (BMWM) Rules 2016, and that adequate awareness sessions and trainings are conducted for the same. The purpose of this research is to compare and critically analyze the perceptions and practices pertaining to BMWM that are being followed across 3 districts of Haryana, which will help in identifying best practices as well as the potential bottlenecks and policy gaps in the implementation of BMWM in the state.

LITERATURE

Healthcare activities are of extreme importance in the modern world, and improving the access to healthcare services has been one of the key focus areas of governments across the world. However, one harmful by-product of healthcare services is the biomedical waste generated from hospitals and other healthcare centers. According to the Bio-Medical Waste Management Rules 2016, biomedical waste is defined as *"any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps."* (Government of India, 2016). The World Health Organization has notified that out of the total biomedical waste generated, 85% is non-hazardous and 15% is hazardous (WHO, 2018). The proper segregation and treatment of this low proportion of hazardous waste is extremely important, as improper management can lead to it mixing with the general waste and turning the whole batch into hazardous waste.

The Government of India released the Biomedical Waste Management Rules, 2016 in order to set guidelines for effective and scientific disposal of biomedical waste in the country. The biomedical waste is to be segregated into 4 different categories, and each category of waste is to be stored in a secure container, color-coded according to the category. These rules also define 5 steps (Segregation, Collection, Pre-treatment, Intramural Transportation and Storage) which are to be mandatorily followed by every healthcare facility with regards to biomedical waste management. The final treatment of biomedical waste is supposed to take place at a Central Biomedical Waste Treatment Facility (CBWTF).

Even though the BMWM Rules were notified in 2016, there is a lack of data regarding implementation across states and the compliance of healthcare facilities regarding the same. According to the Gap Analysis of Compliance Reports submitted by the State governments/UTs to the Central Pollution Control Board, there is a shortage of Common BMW Treatment Facilities, unscientific deep burial of BMW is practiced extensively, and there are several institutions without authorization under BMW Management Rules 2016.

Several studies have been conducted across the world, and in India to understand the level of awareness, attitude and practices of doctors, nurses and other staff of healthcare facilities with respect to biomedical waste management. According to a study conducted by Saini et al. (2020), more than 90% of the students in a nursing college in Hisar were aware about the importance of BMWM and 85% of them had received some form of training regarding the same. Rao et al. (2018) found that out of 472 respondents in a tertiary healthcare hospital in Mysore, more than 50% had satisfactory knowledge and a good attitude towards BMWM. However, they identified the gaps in knowledge among the housekeeping staff and recommended that they receive proper training and awareness sessions regarding the same. These findings were verified by Golandaj et al. (2019) who noted that while theoretical awareness regarding BMWM was high among doctors, nurses and students, it was extremely low among the housekeeping staff. They also found that only 43% of the housekeeping staff were immunized for Hepatitis B which can spread through handling of BMW. Sharma et al. (2017), through a study of 200 employees of a hospital in Rohtak district found that while doctors and nursing staff have a higher level of knowledge regarding BMWM practices and the risks involved in it, the Class IV or housekeeping staff had very little awareness regarding the same. These findings were complemented by a recent study by Sachin et. al (2021) as well, who found that approximately 60% of the housekeeping staff of a medical college in Maharashtra had poor knowledge and practices related to biomedical waste management.

There are multiple reasons for the non-compliance to biomedical waste management procedures. Lien et. al (2018) identified lack of resources like PPE/vaccines, lack of knowledge in workers, lack of knowledge in patients and their relatives and high workload as major factors contributing to improper biomedical waste management in health institutions in Vietnam. These findings have relevance in the Indian context as well. Joshi et al. (2015)conducted an FGD conducted with employees working at different levels of a tertiary hospital in India and found that lack of protective equipment and vaccines, lack of hygiene in patients, irregular collection by the waste disposal vendors and shortage of staff/high workload were the major factors hampering the proper implementation of biomedical waste management. Pandey et. al (2016) and Gupta & Verma (2022) found through participant observation at hospitals that the absence of separate lifts/stairs for transporting biomedical waste, absence of foot-operated bins, absence of biohazard signs on dustbins containing biomedical waste, improper disposal of used needles, congested passages and

improper spill management are also factors that can lead to the spread of infections through biomedical waste.

There are several health risks associated with improper management of biomedical waste. Improper BMW management can lead to the spread of diseases like HIV, Hepatitis, Ebola and TB (Chandrappa and Das, 2012). Given that the housekeeping staff or class IV staff who have to handle a major portion of BMW have relatively lower knowledge about the risks associated with the process, it is important to build awareness among them and to map out and minimize the health risk generating factors in the biomedical waste management process.

This study attempts to understand the level of awareness and perceptions of the housekeeping staff/class 4 workers involved in biomedical waste management regarding the risks involved in it, and the measures taken for the safety of the workers directly in contact with biomedical waste. It will attempt to answer the following research questions:

What are the risk generating processes involved in biomedical waste management in Government hospitals?

What is the level of awareness of the housekeeping/ class 4 staff regarding BMW management?

What are the perceptions of the ground-level workers handling biomedical waste regarding their own safety?

Are adequate steps taken by the healthcare institutions to ensure that the ground level staff are protected from infections caused by BMW?

METHODOLOGY

Research Design

This research will use mixed methods - primary quantitative data regarding the awareness among class 4 workers and sweepers regarding biomedical waste management and the safety measures taken by them. Further, quantitative data on the number of registered biomedical waste generating healthcare facilities (HCFs), total quantity of biomedical waste generated, treated and disposed in a day, details of the vendor responsible for collection and treatment, etc. was collected. Primary qualitative data was collected to draw inferences from the experiences and perceptions of different stakeholders involved in the process of biomedical waste management.

Methods of data collection

Primary data was collected through close-ended surveys, semi-structured in-person interviews (with key stakeholders), focus group discussions and

participant observation to understand the level of awareness and the perspectives of stakeholders related to the risk generating processes involved in biomedical waste management.

Sampling

Major stakeholders like doctors of the district Civil Hospital, District Quality Assurance Consultant, Nodal Deputy Chief Medical Officer for biomedical waste, and management of the vendor for biomedical waste collection and treatment was selected through purposive sampling. For the surveys and FGDs the nursing staff, housekeeping/class 4 staff of hospitals and field staff of the waste management vendor will be selected at random or based on availability. The following stakeholders was contacted for FGDs and/or interviews:

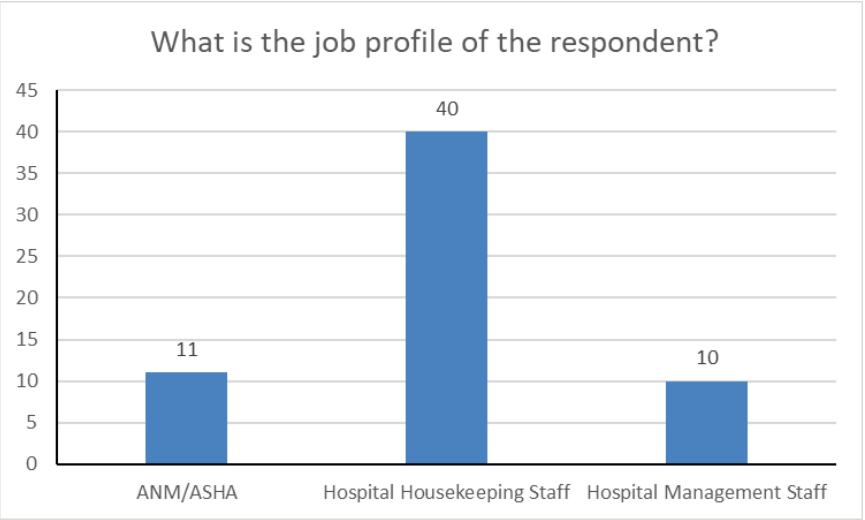
Stakeholder	Method	Objective
District Quality Assurance Consultant	Interview	Understanding BMW management as a part of NQAS and the trainings as a part of this
Infection Control Nurse	FGD	Understanding the attitude of nursing staff towards BMW and perceptions of their own safety
ANMs	FGD	Understanding the role of ANMs in BMW management at sub center level
Housekeeping/ Cleaning Staff of the hospital	FGD/ Interview (based on number of staff)	Understanding the awareness and experiences of housekeeping staff around BMW management and their perceptions of risks involved

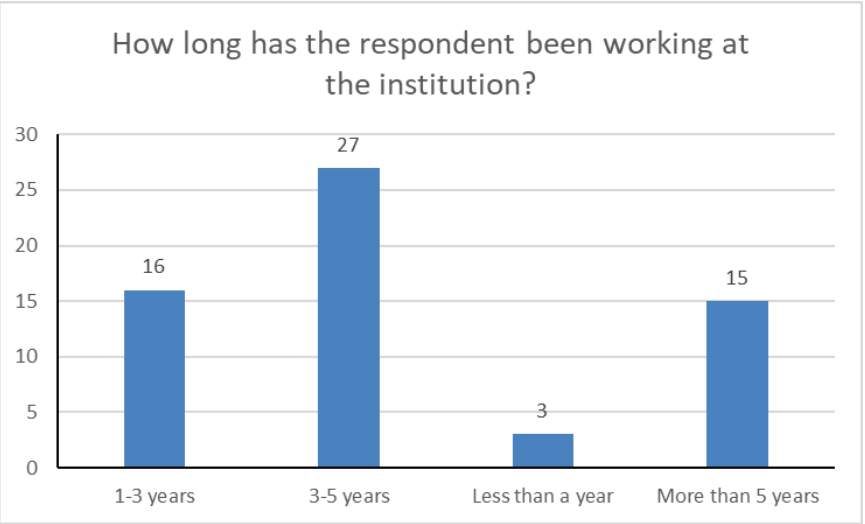
DATA ANALYSIS AND DISCUSSION

Descriptive statistics

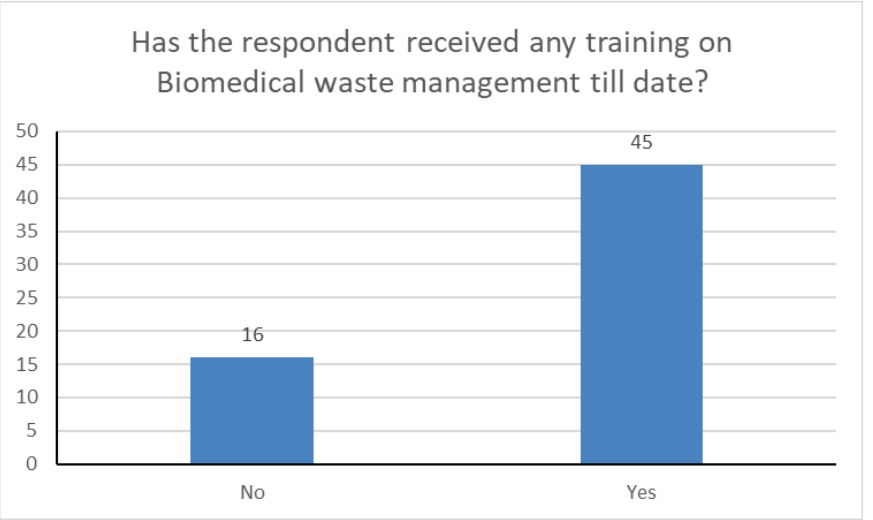
The results of the survey have been analyzed and graphically presented in this section, including the profile of respondents and their responses to certain important questions.

Out of the 61 respondents, 11 were ANM/ASHA workers, 40 were hospital housekeeping staff and 10 were hospital management staff (attendants, staff manager etc.)

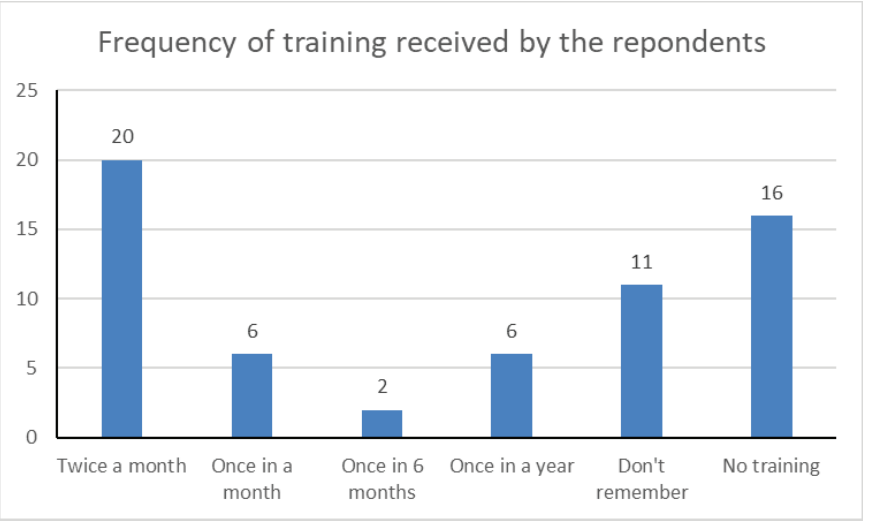




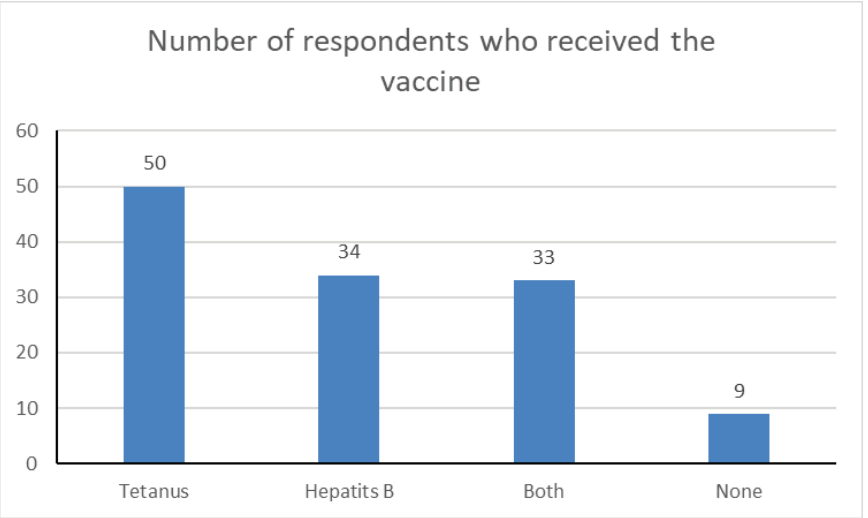
Out of 61 participants, 15 participants have been working for more than 5 years, 27 participants have been working in this institution for 3 to 5 years, 16 participants have been working for 1 to 3 years. and 3 participants have been working for less than one year.



Out of 61 participants, 45 participants had received training on biomedical waste management, whereas 16 participants had not received training on biomedical waste management.



Out of 61 participants, 20 participants said that they receive biomedical waste management training sessions twice a month, 6 participants said that they receive the training session once a month and 6 participants said that they receive it once a year. 2 participants said that they received the training session once in 6 months. 16 participants did not receive any training and 11 participants do not remember the frequency of their training sessions.



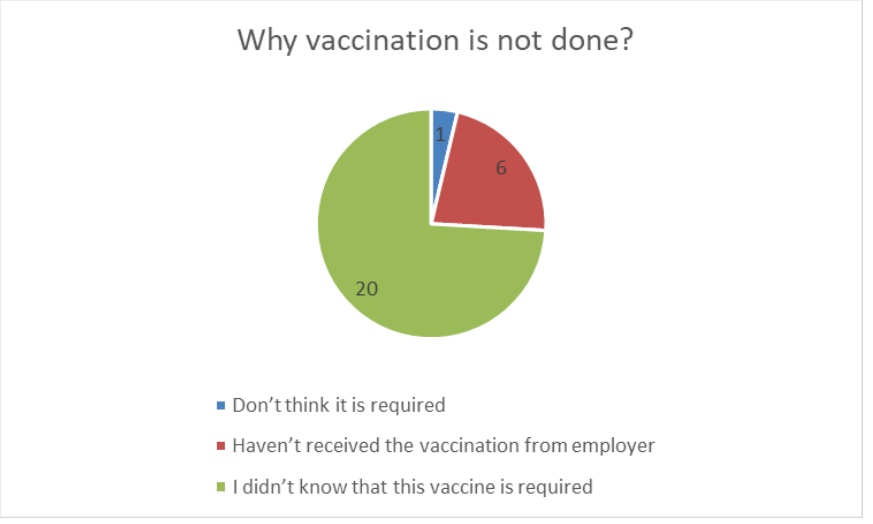
50 out of 61 respondents received the tetanus vaccine, while 33 out of the 61 respondents received the Hepatitis B vaccine. 33 respondents received both vaccines while 9 respondents received neither of the vaccines.

Level of awareness among housekeeping/class 4 workers regarding biomedical waste management

It was also observed that in PHCs or SDHs without an ICN the workers did not receive specific training related to biomedical waste management, and the awareness was spread by doctors or the staff nurse during routine work. Out of the 61 respondents, 16 workers responded that they had never received any training related to biomedical waste management. Only 14 out of 61 respondents gave correct answers to all questions regarding identification of biomedical waste and its disposal into the appropriate bins. It was observed that a majority of the respondents were confused about the disposal of syringe needles and glass vials, which increased tremendously in volume post covid. 38 respondents were able to identify improper waste management practices, and around 49 workers were of the opinion that biomedical waste should be segregated by the person who generates it. Out of 61 respondents, 20 respondents were unaware of the fact that they are supposed to receive a tetanus/hepatitis B vaccination. This shows that one-third of the respondents were unaware of the vaccination they were supposed to receive for protection against infections.

Question	Number of respondents who gave the right answer (out of 61 respondents)
In which color coded bin will expired medicines be disposed of?	41
In which color coded bin will glass vials (bottles of medicines) be disposed of?	40
In which color coded bin will used syringe needles be disposed of?	47
Identify biomedical waste out of the following items: Cotton swabs used to clean blood, Electronic waste from machines used in the hospital, Expired medicines such as tablets, Leftover food waste from a patient, All of the above	24
Respondents who answered all questions correctly	**14**

Table displaying the number of respondents who selected the correct choices in the survey related to identification and proper disposal of biomedical waste.



Out of the 27 participants who hadn't received one or either vaccine, 20 participants said that they are not aware that those vaccinations are required, 6 participants said that they haven't received the vaccination from the employer, whereas 1 participant stated that they don't think it is required.

These findings are in line with the findings made by Rao et al. (2018), Golandaj et al. (2019) and Sharma et al. (2017) who have found that the level of awareness regarding biomedical waste management was low in class 4 and housekeeping staff. This hints at the need to direct continuous efforts towards conducting training and awareness sessions for these workers.

Identifying the points of risk generation in BMWM

The process of managing biomedical waste has the potential to put workers at risk, if he/she does not use protective equipment and is not vaccinated. Based on the survey conducted with 61 housekeeping/hospital management staff, it was found that out of the 51 participants said that they use some kind of protective gear while handling biomedical waste. Out of these 51, only 5 workers used heavy duty gloves while the rest of the workers used disposable surgical gloves. 50 respondents had received a tetanus vaccination, but only 34 had received the vaccination for Hepatitis B. There were 9 workers who had not received both vaccines. Out of the employees who did not receive either vaccine, 20 workers said that they did not know that the vaccine was required and that their employers did not arrange the vaccination. This can be connected back to Gondalaj et al. (2019), who observed that out of their sample, only 43% of class 4 staff were immunized against Hepatitis B, and to Joshi (2015) who had identified shortage of Hepatitis-B vaccines in the healthcare institutions studied by them. The BMW rules 2016 state that heavy duty gloves, gum boots or safety shoes for waste collectors, mask, and splash proof gowns should be provided to the workers and that all employees who may come in contact with biomedical waste have to be immunized against tetanus and Hepatitis B. The findings of the survey indicate that these provisions are not being followed properly in the three districts studied as a part of this research.

Insights from the focus group discussions conducted with housekeeping and class 4 workers and the interviews conducted with the Infection Control Nurses (ICN) and DQACs revealed that some workers refrain from using heavy duty gloves to handle biomedical waste as these gloves end up being loose and uncomfortable. Because of this, workers end up using disposable gloves which poses a risk especially to workers who handle needles and sharps.

"Sir we got the gloves (surgical) 3 days ago but did receive anything after that, so we are using this from then." - Sanitation Worker, PHC Satnali

"One response that we received from the ground is that the workers are not comfortable using heavy duty gloves as they might be loose and difficult to work quickly with. In this respect surgical gloves are much more convenient but puts the health of the worker at tremendous risk" -DQAC Gurugram

The inferences from the survey and the FGDs indicate that while a majority of the sample use some form of gloves for protection, most of the workers use surgical gloves which puts them at risk of infections especially from sharp objects like needles. Out of 61 respondents, only 5 respondents said that they use heavy duty gloves. The hospital management staff in Gurugram and Mahendragarh said that the supply of heavy duty gloves was irregular, which is another reason for low usage. More than 20% of the respondents had not received either one or both vaccines intended to protect them from infections while handling biomedical waste. It was also observed that only 3 respondents said that they use protective

equipment like gum boots for covering their feet, whereas the biomedical waste management guidelines clearly mention that gumboots should be used, especially by workers who enter the common biomedical room. These findings match the findings of Lien et al. (2018), Joshi et al. (2015) and Singh et al. (2018) who have identified low availability of vaccines and protective equipment as major risk factors for the health of workers handling biomedical waste.

"Sir I don't know about gum boots but we work wearing slippers." - Cleaning Staff, SDH Mahendragarh

While the BMW rules 2016 state that no untreated waste shall be stored at the healthcare facility for more than 48 hours, there were 4 healthcare institutions where the biomedical waste was collected once in a week, and 5 institutions where the waste was collected once in 2 weeks. Irregular collection of waste in this manner leads to accumulation of biomedical waste in the hospital premises, which is another risk factor especially for workers entering the biomedical waste collection room.

Such exposure to diseases puts the lives of workers at risk and highlights the need for facilitating proper vaccination of all workers, and ensuring that they have comfortable protective equipment of good quality.

Role of the Infection Control Nurse in ensuring compliance to BMWM

Healthcare institutions that have applied for the National Quality Assurance Standards (NQAS) certification are assessed under 8 broad areas: Service Provision, Patient Rights, Inputs, Support Services, Clinical Care, Infection Control, Quality Management and Outcome. As a part of point 6 - Infection Control, Infection Control Nurses (ICN) are appointed in each institution that is NQAS certified or has applied for the certification. Through the personal interviews conducted with the District Quality Assurance Consultant (DQAC) at Gurugram and Mahendragarh, it was ascertained that the presence of ICNs in healthcare institutions ensured regular training and sensitization of all workers, including the ground level staff regarding biomedical waste management.

According to the DQAC at Gurugram, "*You will see that most hospitals with an ICN will have a better compliance in biomedical waste management, since there is a staff completely dedicated to infection control*"

Multiple class 4 workers and sweepers testified during the FGDs that the ICNs were in regular contact with them for training and sensitization regarding safe disposal of biomedical waste. The workers also said that they depend on the ICN for help whenever they have confusions regarding biomedical waste management.

"*Madam is always behind us to make sure that we're following the correct methods while disposing of biomedical waste. We joke that she always comes after us like a ghost.*" - Cleaning staff, Civil Hospital Gurugram

"*ICN madam always reminds us about all the rules of managing biomedical waste, and scolds anyone who doesn't do it correctly*" - Class 4 staff, Civil Hospital Mahendragarh

Perceptions of class 4 and housekeeping staff regarding BMW and safety

It was observed during the FGDs and personal interviews with workers that they seemed to be satisfied with the level of protection arranged for them by their employers. One major reason for this could be that the workers do not have in-depth knowledge of the provisions of the biomedical waste management act which clearly lays down the protective measures that are to be ensured by the healthcare institutions. As discussed above, more than 20% of the respondents had not received either one, or both vaccines that protect them from infections. Out of these employees, approximately 75% said that they did not know that they were supposed to be vaccinated for protection from Hepatitis B. The lack of information in this regard could be one of the major reasons why the ground level staff are not demanding better protective measures.

During the FGDs, a few employees raised concerns about the unavailability/poor quality of protective equipment.

"*The heavy duty gloves in our hospital haven't been changed in a long time, and it has become very dirty. We don't have a proper place to store these equipments as well, and I got bite by an insect which was inside my gloves which I had to left in the store area"* - Cleaning staff, SDH Pataudi

"*The heavy duty gloves we receive have become damaged because we use the same gloves for a long time*" - Cleaning Staff, Civil hospital MGH

These employees demanded that the equipment given to them should be changed regularly, otherwise disposable gloves would be a better option for them.

Other than this feedback, a majority of the respondents said that they were satisfied with the level of protection they have received from their employers. This points to the possibility of a study to understand how, and whether this perception of ground level workers would change once they are made aware of all the protection they are entitled to as a part of the biomedical waste management act.

Empowerment of the ground level workers

The interview with the DQAC in Gurugram brought up the importance of training the housekeeping staff and empowering them to deny orders from senior staff to dispose of biomedical waste generated by the latter.

According to DQAC Gurugram, *"There have been instances where doctors or other senior staff force the class 4 staff or cleaners to dispose of biomedical waste generated by the former. As part of any training related to biomedical*

waste, I have instructed all ICNs to empower the workers to refuse this behavior and ask seniors to dispose of the waste by themselves".

The survey results show that out of 61 workers interviewed, 47 were of the opinion that biomedical waste should be segregated and disposed of in the correct bin by the person who has generated the waste. None of the respondents reported that they were asked to dispose of biomedical waste generated by a senior employee (doctor or nurse). While this answer could have been influenced by the power dynamics and the setting of the interview, it should be noted that more than 50 of the respondents were of the opinion that it is a wrong practice to make junior employees dispose of the waste generated by senior employees. This awareness itself has a huge role to play in ensuring that ground level workers are not exploited and exposed to the infections caused by biomedical waste.

FINDINGS FROM PARTICIPANT OBSERVATION

Participant observation was carried out in all 3 districts, where the researchers visited healthcare institutions and systematically observed the waste management practices being followed. The purpose of this exercise was to get first-hand insights about the biomedical waste disposal practices being followed at the healthcare institutions and to identify any factors posing risk to the health of the staff or patients. The following observations were made:

IRREGULAR WASTE COLLECTION AT DADRI AND MGH

It was observed at Charkhi Dadri and Mahendragarh that the collection of biomedical waste by the vendor was irregular, and that waste would be picked up from the healthcare facilities once or twice a week, which goes against the BMW Rules 2016, which state that untreated waste should not be stored at the healthcare facility for more than 48 hours.

In both districts, it was observed that due to this delay biomedical waste was being burnt on the premises of the institution (Refer to images). At 3 healthcare institutions, biomedical waste such as syringes, gloves, IV fluid, expired medicine strips etc. was found to be dumped and/or burnt in the open (refer to Images 1, 2 and 3 given below). This is an extremely dangerous practice, and puts the staff and those in the surrounding of the institution at risk.

Image 1. (Charkhi Dadri, 4 June 2022)

Image 2. (Charkhi Dadri, 4 June 2022)

Image 3. (Mahendragarh, 12 April 2022)

Improper waste collection rooms

According to the rules released by Government of India 2018 Guidelines for Management of Healthcare Waste, there are certain norms that are set for the biomedical waste collection rooms at each institution. For example, the room should be located away from the reach of the general public, it should be closed and locked, it should have necessary messaging indicating restricted access, and it should have a water supply source adjacent to it so that the workers can wash their hands after handling the waste.

However, during the observation visits, it was found that multiple institutions, especially PHCs had inadequate facilities in the biomedical room. Some examples are PHC Bhondsi (Gurugram), CHC Nangal Choudhary (Mahendragarh) and PHC Balkara (Charkhi Dadri) where there was no provision of water for hand-washing, and the biomedical rooms had not been cleaned properly. The absence of a water facility at the biomedical rooms is particularly concerning, since this forces the concerned worker to wash themselves at another location which can lead to the spread of infections.

Usage of protective equipment

It was observed across all 3 districts that a majority of the class 4 workers or the cleaning staff used disposable gloves while handling biomedical waste, while it has been clearly mentioned in the biomedical waste management rules that heavy duty gloves should be used. This has been captured in the survey as well, with only 5 out of the workers responding that they use heavy duty gloves. It was also observed that even though some workers responded that they use gum boots, none of the workers used gum boots while entering the biomedical room on the day of the visit.

This points to two issues: the unavailability of protective equipment, and the unwillingness/discomfort on the part of the workers to use this equipment.

Segregation

It was observed that while waste segregation was practiced properly in most institutions, the staff in a few institutions were not handling the Covid-vaccine waste properly. For example, at SDH Haily Mandi and SDH Ateli, the glass vials, syringe tubes and syringe needles were being disposed of in the same container. This again poses a risk for the health of the workers who will have to segregate it to ensure proper treatment, or the unsegregated waste will have to be treated.

CONCLUSION AND WAY FORWARD

This study used mixed methods to understand the level of awareness of ground workers like housekeeping or class 4 staff regarding biomedical waste management and the risk generating factors involved in the process

of biomedical waste management. Based on the quantitative and qualitative data analysis, it was concluded that the workers had a low level of awareness regarding the different categories of biomedical waste (only 23% of the respondents could give right answers to all questions related to awareness), and they were largely unaware of the types of protective equipment and immunizations they are required to use for protection against infections. It was also observed that the required protective equipment was not available at multiple healthcare institutions studied in this project. These findings indicate that there is a need to have strict reviews of the vaccination status of the housekeeping/class 4 staff, and to have a proper supply mechanism for the protective equipment such as heavy duty gloves and gumboots.

Another important insight from the study was regarding the irregular collection of biomedical waste from healthcare facilities, which eventually led to the burning of biomedical waste within the premises of the facility. This problem indicates the need for strict monitoring of the performance of the waste collection vendor by the health department. The study also brought the need for having a dedicated personnel for infection control at all healthcare institutions to manage all matters related to infection control, including biomedical waste management.

The findings from this study can be used as a base to conduct further research or an audit focusing on the measures taken for the protection of ground level workers handling biomedical waste in Haryana, or across India.

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4

Parivar Pehchan Patra

A study on the conceptualisation and implementation of the flagship programme by the Government of Haryana

KARAN KAPOOR, SAKET SUBH, SUKHDA

I. INTRODUCTION

The Government is a primary stakeholder to provide numerous citizen centric services and welfare schemes to the citizens of the Country. These services and welfare schemes range from applying for water connections, construction permits and welfare schemes such as pensions to weaker sections of the society. For successful delivery of all such services and schemes, the citizens are required to be aware of the: (a) availability of the service/scheme; (b) information surrounding the designated department delivering the service/scheme; and, (c) information on documents needed for successfully applying for the service/scheme. Once such information is gathered, the citizen is then required to apply to the designated department with the documents to secure the scheme/service delivery.

With more than 500 schemes/services[1], currently being delivered by Haryana government requiring different documents for each such service/scheme, it becomes difficult sometimes for the citizens to be aware of the service/scheme relevant to them and arrange for the required documents, and further make an online/offline application for the same within the designated timeline. At times, the citizens also take advantage of the loopholes present in the system to secure multiple benefits from the same scheme/service, simply by making forged documents. Also, the same individual can sometimes secure benefits of the scheme providing similar benefits from different delivering departments, simply because the delivering departments did not have the visibility in the same regard. The problem gets further amplified by the fact that the government lacks an efficient system to reach out to the target beneficiaries to make them aware of the services/schemes.

In the digital age, the said problems, to some extent, can be appropriately addressed by having an aggregated database of the residents, temporary as well as permanent, of the state, with relevant identifiers, wherein all the data from existing government databases, such as Aadhaar, Birth and Death Records, are merged. Since this database can be made accessible to all relevant departments, it is likely to substantially reduce inclusion and exclusion errors in terms of scheme/service delivery. Further, considering the said database is likely to be an aggregator of various government databases, the citizens may not be required to furnish multiple documents to even apply for schemes/services.

Genesis of Parivaar Pehchaan Patra

To further the vision of good governance, in 2018 the Hon'ble Chief Minister of Haryana advised that a data-backed policy approach be adopted so that the beneficiaries of government-sponsored welfare schemes receive them in a seamless manner.

[1] https://cdnbbsr.s3waas.gov.in/s37b7a53e239400a13bd6be6c91c4f6c4e/uploads/2022/02/2022021734.pdf

Further, given that in India, a family is an important unit when it comes to envisaging equitable benefit distribution from poverty alleviation programmes, it was decided that "a family-oriented approach" be adopted rather than "an individual-centric approach". Thus, the Parivar Pehchaan Patra was envisaged as an instrument to materialize this vision.

Parivar Pehchan Patra (PPP) is a unique 8-digit ID issued to each family registered in the PPP database. It aims to build a comprehensive, reliable and accurate database of families residing in the state which can be further utilized by various departments for welfare schemes and service delivery across the state.[2] **While PPP is a unique ID for the family, each member (at the backend) is also assigned a unique member ID**. This PPP ID is mandatory for a family/person to apply for most of the services/schemes in the state.

Structure of the Paper

Parivar Pehchan Patra (PPP) was rolled out in **August 2020** and as of June 2022, over 70 Lakhs PPP IDs have been created.[3] The PPP ID attributes its credibility to the Haryana Parivar Pehchan Act which came into force on September 6, 2021. However, it is pertinent to note that, for the ambitious vision of PPP to be successful, it is imperative that the data in the PPP database is authentic, accurate and is regularly updated (owing to the dynamic nature of identifiers in the PPP). To ensure the achievement of this objective, it is imperative that the following particulars are executed efficiently:

a. The process of creating the PPP ID should be easy and accessible to the citizens.
b. Process of verification to verify/authenticate[4] data identifiers should be efficient in conception and execution. Identifiers such as, caste, age and dynamic identifiers like income, qualification and extent of physical disability , are some of the data pointers upon which delivery of quite a few services and schemes are contingent on. Thus, *correct verification of these identifiers are crucial to maintain the authenticity of the database.*

At the time of carrying out present research, the following verification modules were being undertaken:

i. Income verification
ii. Date of Birth verification

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2 https://meraparivar.haryana.gov.in/PPP_FAQ%20Document12jan21.pdf
3 https://meraparivar.haryana.gov.in/CampDashboard/CampDashboard
4 Section 2(1)(a) of the Act: "Authentication" means the process by which the Parivar Pehchan number alongwith related information is submitted to the Family Information Data Repository for its verification or authentication and such Repository verifies the correctness or the lack thereof, through the process specified in section 4, and the expression "authenticated" with its cognate meanings and grammatical variations shall be construed accordingly;

iii. Caste verification

iv. Divyang verification

c. The ease with which a citizen can correct their erroneous data in the PPP or raise grievances against in-correct particulars, including accessibility and efficiency of the mechanism .

In this paper, we have strived to analyze the policy of Parivar Pehchaan Patra and features thereof. Further, the paper attempts to briefly present a comparison between the policy design of PPP and similar domestic and international used cases. The present paper seeks to on the operational functions of PPP, specifically limited to, Income verification, Date of Birth verification and, Grievance Redressal/Correction Module, to understand the status of PPP, its strengths and, challenges thereof. Further, the paper seeks to provide recommendations on the challenges which are likely to improve the operational particulars surrounding PPP. Please note, the authors have also analyzed particulars with respect to Creation of PPP, Caste verification and, comparison of PPP with respect to Aadhaar, however, the finding in this regard, have not been documented herein. Further, the authors have not delved into the data privacy related aspects of PPP and have focused the research majorly around challenges surrounding the on-going operational particulars, which have a direct bearing on the sanctity of the data recorded in PPP database.

Methodology

The research paper has aimed to study and understand the conceptualisation as well as implementation of Govt. of Haryana's flagship program - Parivar Pehchan Patra (PPP). The methodology used in the research paper is a mix of quantitative and qualitative tools. We relied on primary and secondary sources of information. As a part of primary sources we relied heavily on PPP Act, government notices, circulars and guidelines, the reference to the same can be found across the paper. We met and interacted with field teams to understand ground realities. Simultaneously, we also conducted semi-structured interviews with district officials and citizens. For secondary sources, we referred to similar policy interventions within and outside the country. Since it's a new concept, documented information was not readily available. This paper is based on our insights and involvement while implementing this project in our respective districts as Chief Minister's Good Governance Associate. These insights were generated by analyzing the data, interviews and case studies from the field.

II. PARIVAR PEHCHAN PATRA

PPP: The Policy

As per the Haryana Parivar Pehchan Act, the objective of PPP is to provide Parivar Pehchan number as an unique identifier number to each family, required for the

determination of eligibility for, or the provision of, any scheme, service, subsidy or benefit provided or implemented by or on behalf of the State Government or by any Government agency or local authority. In view thereof, every individual or a family who is residing in the territorial limits of the State of Haryana and an employee of the State Government, Government agency or local authority who resides outside the State of Haryana or who has been deputed by the State Government, Government agency or local authority outside the State of Haryana,[5] is entitled to secure a PPP by providing, submitting or updating on the designated portal, information[6] comprised of such data fields, as may be notified by the Authority with the prior approval of the State Government, for determining eligibility for or the provision of any scheme, service[7], subsidy[8] or benefit provided or implemented by or on behalf of the State Government or any Government agency or local authority.[9] Irrespective of a family being temporary or permanent, they need to get themselves enrolled in PPP.

As per the notification, PPP requires 35 data fields to be submitted by the applicant/ family, out of which , 11 data fields are optional.[5] The said information is required to be provided for each family member and for the family, by any adult member of the family, to obtain a Parivar Pehchan number.[10] The information required to be submitted by the applicant, is largely self-declaratory in nature. For a family to make a PPP ID, basic personal information like - Name, Age, Gender, Caste, Bank details, Disability status and particulars thereof along with various dynamic data fields like - Income, Qualification and Occupation are required to be submitted for each family member. However, unlike in Aadhaar, there is no provision/ requirement for one to record their biometric details in/for PPP. In addition to the self-declared data, PPP requires for the applicant to mandatorily provide the following documents: (a) Aadhaar Number; and, (b) PAN Number (if available). By virtue of this, the data recorded in the PPP, even before verification processes are undertaken, commands some degree of authenticity, as the same is verified

5 Section 2(1)(t) of the Act.

6 Section 2 (1)(l) of the Act: "Information" in respect of a family, includes information of all members of the family and such data fields for the purposes of determining eligibility for or the provision of any scheme, service, subsidy or benefit provided or implemented by or on behalf of the State Government or any Government agency or local authority;

7 Section 2 (1)(u) of the Act: "Services" means any provision, facility, utility or any other assistance provided or implemented in any form by or on behalf of the State Government or any Government agency or local authority to an individual or a family and includes such other services, as may be notified by the State Government, from time to time;

8 Section 2(1)(w) of the Act: "Subsidy" means any form of aid, support, grant, subvention or appropriation in cash or kind to an individual or a family and includes such other subsidies provided, wholly or partly out of the Consolidated Fund of the State of Haryana.

9 Section 3(1) of the Act.

10 Notification No. HPPA-1/10-21-04- In exercise of the powers conferred by sub-section (1) of Section 3 of the Haryana Parivar Pehchan Act, 2021 (20 of 2021) - https://meraparivar.haryana.gov.in/HPPADoc/Section3(1)HPPANotification.pdf

from existing government databases. The Family ID is sought to be linked to the Birth, Death and Marriage records to ensure automatic updation of the family data as and when such life events happen.[11]

Once created, PPP is able to identify the families registered and maintain the basic data of the family with the consent of the family in a digital format.[12] Certain identifiers are then sent to the respective districts for verifications to check the authenticity of the data recorded. We shall be exploring the verification & grievance redressal of PPP data in the subsequent sections of the paper. It is to note that the departments have taken due recognition of the fact that for the vision of PPP to materialize it is imperative that an authentic, verified and reliable database of all families in Haryana be created.

The policy till now has clearly explained the key characteristics of PPP. In order to implement the policies in its true letter and spirit, under the provisions of section 10, the state government specified an authority called the Haryana Parivar Pehchan Authority. With the notification under Section 8, the state government has mandated the authority to collect, manage, hold and update the information being shared by families. The authority shall also provide data analytics support to the state government for formulation and implementation of policies, schemes, services, benefits and subsidies. With HPPA overlooking the policy, CRID (Citizen Resource Information Department) has been identified as the nodal department for implementation of this scheme on the ground. Additional Deputy Commissioners have been appointed as the district CRID officer to manage the on-boarding, verification and grievance redressal of PPP. The state government has also appointed officers right from the state, district (DCRIMs) to block level (ZCRIMs) to fasten the execution. CRID is also supporting the technical interventions like dashboards, Portal, Mobile application for data reporting and monitoring. The task seemed difficult in the beginning considering the lack of technical expertise, human resource and SOPs. But, CRID took the challenge under its belt and performed exceptionally well in streamlining the resources and formalizing the procedures. However, with regular inclusion of new components, many procedures are yet to be streamlined.

There are two more points which a reader must know to get an overall perspective of PPP. Firstly, its reliance on family as a unit instead of individual and secondly, its actual requirement considering the omnipresence of Aadhaar.

PPP for all practical purposes assigns a family head and all the other members of the family must be directly/indirectly related to him/her. It also says that the family member shall share a common kitchen and financial resources. This is crucial to

[11] https://meraparivar.haryana.gov.in/ (Home Page)
[12] https://meraparivar.haryana.gov.in/ (Home Page)

understand given that most of the welfare schemes in future will be dependent on family indicators like income and qualification. The rationale behind this shift, according to officials, is that most of the schemes are centered around family and the vision of the government is to uplift the family rather than just one individual.

In contrast we observed that most of the schemes before PPP catered to individual identifiers while delivery and usually did not consider family schematics. Having said this, we do acknowledge that given the paucity of resources with the government, by doing this it wants to ensure that the benefits of government schemes are distributed uniformly across the most needy ones. The intent is laudable but the actual implementation is rigged with challenges and ambiguity. Considering Haryana's family dynamics, we observed that it is extremely difficult to ascertain the true status, especially 'income' of the whole family. This idea can be a game changer if the procedure behind verifying family identifiers can be further streamlined.

One of the questions that the team sought to probe into, was the need for PPP, despite the presence of a relatively stable 'Aadhaar' database. It is pertinent to note that, PPP has a broader vision in comparison to Aadhaar. While Aadhar is meant to primarily be an identification tool for individuals, PPP aims to achieve 360 degree profiling of the families and members thereof, with an objective to improve service/scheme delivery. Since, Aadhaar is the Central Government's database, the State government requires permission of the Central Government, to access/secure data therefrom. This creates lengthy delivery channels and usually is insufficient to address urgent situations.

With time, and upon maturity of the database, PPP will be able to achieve the vision of being the aggregator of requisite information/data points generally needed for automated scheme and service delivery. In addition to the above, owing to having relevant identifiers at the backend and also inter-linkages of documents, Family ID will link existing independent schemes like scholarships, subsidies and pensions to ensure consistency and reliability and at the same time enabling automatic onboarding of beneficiaries.[13] The data available in the Family Id database will be used to determine eligibility through which automatic identification of beneficiaries shall be done for receiving benefits. Therefore, once the database of families is created, families need not then apply to receive benefits under each individual scheme.[14] Further, once the data in the PPP database is authenticated and verified, a beneficiary will not be required to repeatedly submit multiple documents.[15] One of the successes that PPP has seen since its roll-out is the introduction of auto-enrollment/auto-identification features in the Old

[13] https://meraparivar.haryana.gov.in/ (Home Page)
[14] https://meraparivar.haryana.gov.in/ (Home Page)
[15] https://meraparivar.haryana.gov.in/ (Home Page)

Age Samman scheme *(Pensions to those personnel having reached the age of 60 years and being below an income bracket, subject to other eligibility criteria)*. For the Old Age Samman scheme, a scheme being delivered by the Social Justice and Empowerment Department, the department through CRID is striving to automatically identify and onboard all eligible beneficiaries to the scheme upon turning 60 years of age. Presently, the mechanism adopted is that the data that has been verified through CRID is shared with Social Justice and Empowerment Department (SJE) HQ and the said details of the prospect beneficiaries then being sent to the relevant district department for verification and onboarding. This implies that the beneficiaries, even if not aware of the scheme, are being identified and are specifically being targeted to ensure onboarding on the relevant scheme.

III. DOMESTIC AND INTERNATIONAL EXAMPLES OF FAMILY ID PROJECTS

The above sections give a fair understanding of PPP and what it aims to achieve in Haryana. Haryana is the first but not the only state in India to envisage this concept. The idea of a database with 360 degree profiling of an individual is being mulled and implemented by various governments both domestically as well as internationally. In order to enhance the scope of the paper and understand best practices on implementation, we studied similar examples of PPP. Through this section we will briefly touch upon those examples.

We have studied three projects:

1. Karnataka Government - Kutumba ID
2. Telangana Government - Samgra Vedika
3. Brazil - Unified Registry for Social Programmes

Kutumba ID - Karnataka:

Launched in 2020, Kutumba is the most similar example of this idea in India. It is like PPP Id which intends to prepare an accurate and exhaustive database on families living in Karnataka. The following objectives of the scheme are similar to PPP:

- Suo Moto delivery of schemes/services to eligible beneficiaries through automatic selection
- Enhanced transparency and effectiveness in delivery of schemes/services
- The family ID obviates the need of repeatedly asking for certificates from the beneficiaries.
- Database will act as a rigorous tool for future data analysis and budget estimation for new schemes.

The table below gives a comparative analysis of both the projects:

Particulars	Kutumba	PPP
Head of the family	There is a Single Point of Contact which is like the head of the family. Any adult member can be nominated as SPOC for all future correspondence.	Core of the family is the 'head' in the case of PPP.
Verification	The Panchayat and Urban Development Department will act as verifier and approver of kutumba families.	In case of PPP, pooled resources of government officials from different departments and social volunteers act as verifier and approver of the information.
Information Reporting	Self- Reported	Self-Reported
Data fields	Basic data fields like - Date of Birth, Caste, gender, spouse name etc is asked.	Along with these basic data fields many dynamic fields like Income, Occupation, Qualification have also been sought after in PPP which makes it much more exhaustive. PPP has more data fields than Kutumba.
Family Definition	Any resident of Karnataka. Husband, Wife and Unmarried children are considered as the minimal members to constitute and enroll as a family. But it also defines three peculiar cases to enroll as a single member family.	The definition is more or less the same for Haryana. The verbatim is slightly different though. But, unlike Kutumba, it is silent on single member family IDs.
Data Updation	Data updation for 5 fields are allowed.	Data updation for 14 fields are allowed.

Considering all the information highlighted above we can definitely say that the projects are very similar and the objective of both the IDs look similar. Due to paucity of information on ground implementation of Kutumba we are not in a position to comment on the existing status of Kutumba and challenges faced by the Karnataka government.

Samagra Vedika - Telangana Government:

Samagra vedika is an effort taken by the government of Telangana to create an exhaustive database for streamlining the delivery of welfare schemes in the state. This was done by using Big Data analysis and ML techniques. Unlike PPP and Kutumba, the project is integrating all the existing government databases to prepare an exhaustive profile. This is slightly different from the other projects as it doesn't aim to create a separate family identification. The database is helping to plug identity, quantity and eligibility fraud in the implementation of welfare schemes. Samagra Vedika is very similar to PPP in terms of idea but quite different in implementation. Therefore, the use of just the backend data limits the scope of this project.

Brazil - Unified Registry for social program:

Our team also studied an international use case to understand the relevance and key aspects of unified registry. Launched in 2001, unified registry is a tool for identification and socio-economic characterization of low income families that can be used for social programs and policies geared towards these families.

The key objectives of this program are as follows:

- Identification and characterization of low income families
- Building a network of social promotion and protection to coordinate existing policies
- Planning tool for public policies targeted towards low income families
- Pooling efforts to ensure priority support for vulnerable families.

The idea is quite similar to PPP with certain important distinctions. Unified registry is not open to all the families of Brazil. It strives to identify and register only the low income families for which there is a well defined criteria. Although the key tenet of creating an extensive database for families to provide welfare services remains the same for both PPP and unified registry.

Overall we can say that there is an explicit need for the Indian states to create an extensive database of its citizens for the streamlining of government schemes/ services given the humongous budget expenditures. The same is also evident from the examples shared above. Haryana is pioneering this space with the invention of PPP. Since the government is treading a unique path there are challenges per se with data accuracy. The government is mindful of these challenges given the constant effort to streamline the processes. Until the data is mature enough people will face several issues but in the long term this will be one of the biggest technological breakthroughs in service delivery. Haryana can learn and adapt some best practices from the above examples in order to reach towards the desired goal.

IV. INCOME VERIFICATION

With a major proportion of the population still employed in the unorganized sector, presently, there is no database in the country (or at least an accurate one) which records income of the person. A family was required to record the income of their members and occupation thereof at the time of making the PPP.

Once recorded, the government began the process of verifying the income of the families in a phased manner. As on date, income of more than 46 Lakh families in Haryana have been verified. In the districts where the research was undertaken, the following were the figures:

Districts	Phase	Number Of Families Pushed Verification	Number Of Verified Families	Number Of Untraceable Families
Faridabad	1	47377	37,346	9,185
	2	23,842	23,832	3
	3	33,561	29,267	4,216
	4	55,464	53,926	1,536
	5	1,19,545	1,16,025	3,520
	6	27,572	26,803	769
Gurugram	1	20,863	19,095	1,698
	2	17,947	17,926	21
	3	21,390	20,983	366
	4	38,420	37,770	649
	5	91,286	89,477	1809
	6	31,655	19,194	437
Jind	1	13,245	12,704	496
	2	44,887	44,854	33
	3	42,092	41,527	565
	4	48,553	48,068	484
	5	74,876	73,596	1279
	6	20,906	20,212	373

Process employed for verification

The ADC-cum-District CRIO (Citizen Resources Information Officer) have been implementing the Parivar Pehchan Patra (PPP) programme of the state Government in their respective districts. In addition to other responsibilities, one of the tasks is to undertake verification of the data provided by the family members on a self-

declaration basis.[16] For the purposes of income verification, local committees have been constituted in the districts of five members.

Local Committees (LC) comprising of the following members were directed to be constituted in each district to verify income of the families pushed by the state HQ:

(i) A Government official to be identified by the ADC-cum-District CRIO;

(ii) Local Computer Operator registered with CRID for the local unit

(iii) A college student, preferably from the same area.

(iv) A social worker, preferably from the same area, to be nominated by the Deputy Commissioner.

(v) A volunteer, from the same area, to be nominated by the Deputy Commissioner.[17]

As per the directions received LCs were to be established for around 250-300 households, preferably with polling booth area as the geographic unit. **The LCs constituted were also required to be identified and entered on the portal created by CRID. CRID Central Team and also respective Departments of Government of Haryana provide support to the LCs for conducting income verification.** For a group of 15 local committees, there would be a LC Supervisor, who would be a CRID official and who shall be separately appointed by the Deputy Commissioner. [18]

[16] Memo No. PSIPSCRID/2020 Dated: 05.01.2021 – From - Principal Secretary to Government Haryana, Citizen Resources Information Department, Haryana Civil Secretariat, Chandigarh.- https://cridlc.edisha.gov.in/pdf/PPPInstructiontoDistricts.pdf - https://cridlc.edisha.gov.in/

[17] Memo No. PSIPSCRID/2020 Dated: 05.01.2021 – From - Principal Secretary to Government Haryana, Citizen Resources Information Department, Haryana Civil Secretariat, Chandigarh.- https://cridlc.edisha.gov.in/pdf/PPPInstructiontoDistricts.pdf

[18] Memo No. PSIPSCRID/2020 Dated: 05.01.2021 – From - Principal Secretary to Government Haryana, Citizen Resources Information Department, Haryana Civil Secretariat, Chandigarh.- https://cridlc.edisha.gov.in/pdf/PPPInstructiontoDistricts.pdf

As on 7th July, 2022, the following was the status of LCs:

Districts	Total LCs	Team Lead Count	Operator Count	Volunteer Count	Social Worker Count	Student Count
Faridabad	1327	1316	1230	1238	681	1050
Gurugram	2106	952	872	779	820	517
Jind	1006	1001	995	654	955	705
Completed LCs means the Local Committees composed of 3 or more members. Majority of Team Leads are teachers and other staff from education department in Jind.						

Source: https://cridlc.edisha.gov.in/dashboard/dashboard

- Each LC member is required to independently visit the family reflecting on their logins. The mobile application being used for verification, captures the location of the verifier, as evidence to if the verification was undertaken in person.
- The process that is being currently followed is that the verifier shall visit the family assigned in person and ask the family member present about the profession or occupation the members are practicing and the income of each member.
- As per the response of the member(s) interviewed, the verifier records the data over the mobile application (against each member) and assigns the appropriate income slab to the family. Accordingly, the verifier also determines the annual income of the family.
- Once a family is verified by at least 3 members (any three members) of the assigned LC, the family is classified as *Completed Families.*
- If, there happens to be a mismatch in the income reported, then other/ remaining members (if any) in the LC are required to verify the income. The verification process is complete, when at least 3 LC members report the same income slab.
- If at least three LC members do not report the same income or slab thereof, the family is pushed for verification to the Sector Committee.

Sector Committees (SC) comprising of the following members were directed to be constituted in each district to verify income of the families pushed by the state HQ (Data as on 7th July) :

Districts	Total SCs	Team Lead Count	Volunteer Count	Social Worker Count	Operator Count	Student Count
Faridabad	13	24	24	0	21	13
Gurugram	43	46	41	0	~	33
Jind	54	50	44	0	49	13

Source: https://cridlc.edisha.gov.in/dashboard/dashboard

Analysis

It is important to note that going forward the verified income shall be used to generate income certificates and identify families for scheme, service and benefit delivery. This means that income verification needs to be correct. However, based on primary and secondary research the following fallacies were found:

A. The workforce employed comprise of computer operators, class IV personnel, students and volunteers, with no checks per se to assess if the workforce employed has the bandwidth (as this is over and above their usual jobs), is competent and sincere to assess income of a given family. The trend of verification that is presently being followed is that, people simply record the income that is shared by the family and then there are some cases, where the verifier exercises his/her/their discretion to assess/determine income. Further, monetary incentives are being provided to Team Leads and Operators only. To add to the aforesaid problem, the verifiers have not been provided with formal **parameters as** aids **to determine/assess** income of the families. The absence of proxy parameters or guidelines to determine/assess income makes the verifier (who are not *per se* scrutinized before being onboarded and belong to various socio-economic and educational backgrounds) rely on the response of the family being verified and his/her/their discretion. This leads to subjectivity and is likely to increase margin of error in the data identifiers.

B. The probability of subjectivity and margin of error is further increased by the fact that people are not per se quite forthcoming with disclosing their actual income. Even after phase V, verifiers have not been provided with proper ID cards to ensure people entertain them. Further, the problem is aggravated by the fact that still quite a lot of income verification (40% approximately)[19] is done over call. The beneficiary is even more skeptical to share such details over call, especially with the cases of bank fraud coming to light.

[19] Approximations suggested by the District CRID Team in Primary Interviews.

C. While the GPS feature is installed in the mobile application, which captures the latitude and longitude from the GPS system on the phone of the verifier at the time of the entry. The intent of the feature was to foster verifications in persons via home visits. However, the system merely captures the location of the verifier at the time when the verification entry is made on the mobile application and does not generate any alert if the location is not of the desired area. To find discrepancies one has to manually look at the data. Further, one can palace entries from anywhere and is not required for the person to upload data/record entries on the mobile phone from the desired area/residence of the family. Since, the system merely captures the latitude and longitude of the verifier, it becomes further difficult for anyone to verify the location (village/ward area) just by looking at the data. At the district level, the system is rarely used and when used it is simply used to see if the verifier has uploaded multiple data entries from any given location. These are big impediments to monitor if the verifier has undertaken the verification in person.

D. Presently, for the database to mature to the quantum required to ensure effective scheme and service delivery, there has to be increased focus on quality of the data. While review meetings take place regularly at both the state and the district level, the focus is usually on the quantum of data to be completed and not per se on quality of the data. This shifts the focus of the field verifiers and other stakeholders from ensuring quality to ensuring completion of the quantum of families assigned.

Suggestions to the present structure

A. **Limit the data/focus for field verification**: The state department should demarcate a baseline income slab and only verifications of the (self-declared) income of the families falling below the said baseline should be taken up for field verification. The same is suggested because not all services and schemes are income contingent and those which are (except for procuring income certificate and caste certificate) focus on low income families. For example, the state department could keep a baseline below Rs. 3,00,000/- as family income.

B. **Proposed changes to the model of (field) income verification:** As mentioned above, the workforce employed comprise of computer operators, class IV personnel, students and volunteers, with no checks *per se* to assess if the workforce employed has the bandwidth (as this is over and above their usual jobs), is competent and sincere to assess income of a given family. The present jury model of verification is not only workforce heavy but also given the reliance on non-specialists workforce for income verification, without any defined parameters or guidelines there is an increased probability of subjectivity and hence errors in data. Accordingly, the following suggestions are proposed:

I. Certain proxy parameters need to be established to assess approximate income of the family: As per an article by the World Bank, Proxy Means Test[20] allows the verifier to estimate the income or consumption when precise measurements are unavailable or difficult to obtain. The article acknowledges that, there are situations wherein one might not be able to determine/assess how much a family earns or spends every month. Sometimes, even the household members themselves might not be able to tell (they seldom maintain detailed records). The same problem is prevalent with the families being surveyed in Haryana here (esspecially those that are employed in the unorganized sector). Further, considering the workforce involved, many do not know - what constitutes income and/or what to look for to determine income, especially when the families are not *per se* forthcoming with their income particulars.

In view of the above, the World Bank reports[21] prescribes a set of proxy parameters that helps determine the approximate income of the family, by assigning a coefficient to each such particular and also prescribes a method to come up with an approximate income. The following parameters have been provided:

- Household owns the house
- One child in the household
- Two children in the household
- Three or more children in the household
- Household owns cattle
- Household owns a bicycle
- Household owns a car
- Dwelling walls made of brick
- Dwelling walls made of tin
- Dwelling walls made of clay
- Number of household members in employment
- Number of persons per room

These parameters can also be changed as per requirement and/or nature of the society. Further, determination of particulars of Household Consumer Expenditure Survey by Ministry of Statistics and Programme Implementation[22,23] or any other particular may also be adopted. The methodology could be such that the verifiers will be asked to record simplistic numeral and binary responses on the already rolled-out mobile application which then at the backend on the basis of the

[20] https://olc.worldbank.org/sites/default/files/1.pdf
[21] https://olc.worldbank.org/sites/default/files/1.pdf
[22] https://www.ilo.org/ilostat-files/SSM/SSM6/E/321A.html
[23] https://pib.gov.in/Pressreleaseshare.aspx?PRID=1591792

algorithm would determine an approximate income of the family. The process could go simultaneously with the income verification process where the income of the family is asked from the family being surveyed.

II. MODIFYING THE PRESENT JURY MODEL FOR INCOME VERIFICATION:

The quantum and nature of the workforce presently engaged for verification is not likely to be a sustainable solution/feasible solution in the long term, considering income is a complex and dynamic data point and will have to be revisited periodically. Accordingly, it is suggested that the income of a family be assessed and determined:

a. Through the workforce of third party non-governmental entity (private entity - identified by the state government) acting under the supervision of District CRID, and such workforce should include Nambardar, staff of BDPO and MC; and/or

b. The Jury system be abandoned and verification be carried out by formally identified, trained, workforce, with one personnel (maximum two personnel) carrying out the verification of one family. All such workforce employed should be appropriately compensated, monetarily, for their efforts and engagement. Their incentives, as presently being done, could be linked to their performance, to incentivize performance.

C. **Other modes for Income Verification:** For those families not covered, following means of verification is proposed:

I. For such people who are employed in the private sector, verification can take place through securing relevant information from ITR and PAN databases.

II. Verification of income data of privately employed, government employed and pensioners through – PAN, ITR database. Further, for people employed in formal and informal sectors, whether in private or government sectors (to the extent possible) district and/or state departments should be mandated to write to establishments and secure details there from (may be over a newly created or existing portal) the name of the employee, PPP ID, position (occupation), informal/formal sector employment and monthly salary. Such information can be sought from the employers directly through a portal, along with the declaration that the data/information being provided is true, while making them aware of the consequence of providing erroneous information to the government under the law. From the backend, the income of these families can be mapped to their respective PPP IDs. This exercise will help secure, relatively accurate income and occupation data. This exercise will also help provide credibility to the income verifications undertaken of below families claiming to earn below Rs. 3,00,000/- per annum, if there is an overlap.

D. **Keeping up with the dynamic nature of income:** Income is a dynamic particular/data point and is likely to change with time. Accordingly, to ensure that the data recorded is accurate and updated, it is advised that the government places a mechanism to ensure updation of data pointers every two years (including other data identifiers in PPP). For the same, the following mechanism is suggested:

   i. Verification of all data pointers is done on mission mode, ward by ward and village by village, over a 2 months period through SARAL Kendra and MCF and BDPO office under the supervision of District CRID.

   ii. Tech intervention for the following data pointers can be introduced to improve the efficacy of the verification process.

   iii. To verify the authenticity of the data and find anomalies therein, the state government shall undertake correlation and verification exercises of the PPP database with other poverty statistics estimates available (either at block, district, zone or state level) like census, consumption expenditure survey, BPL cards, Household Consumer Expenditure Survey etc.

E. **Problems with income certificate creation:** Presently, the income certificates made after the integration of PPP, only prescribes income brackets (as defined) and does not record income explicitly. Further, the income certificate only records the upper-limit of the verified (defined) income brackets. This creates a problem as it leads to exclusion of eligible beneficiaries. Even for those families, for whom the income is correctly verified, sometimes face problems - as the recording of the upper limit of the income slab precludes them from taking benefits of certain schemes or atleast makes the correction thereof difficult.

V. DATE OF BIRTH VERIFICATION

For verification of date of birth, the state department pushes the data of individuals, in a phased manner on the mobile logins of team leads of the local committee. It was observed through primary interviews of the District Stakeholders that each team lead receives data of the individual within the assigned area of the local committees.

District	Phase	Number Of Individuals Pushed Verification	Number Of Individuals Verified24	Number Of Untracable Individuals
Faridabad	2	5316	450	4866
Jind	2	6329	3030	3299
Gurugram	2	3274	686	2588

Source : PPP Dashboard

The verification is only carried out by the Team Leads in the following manner:

1. Unlike in case income verification, data of individuals (and not families) are pushed to the mobile application logins of the team leads.
2. Team leads are expected to visit the individuals in person and mobile application's operation requires team lead to verify the date of birth and accordingly the age of the individual by verifying and uploading either of the below mentioned documents on the mobile application:
   - Voter ID Card issued before 2012
   - Matriculation certificate
   - Birth certificate
   - School leaving certificate with attested school register record
3. If the individual cannot produce the aforesaid document(s), then the verifiers select the option of '*No Document'* and thereafter, place the date of birth as per the beneficiary's response. In some cases, while selecting the *'No Document'* option on the mobile application, the verifier asks the individual to furnish documents such as - Passport, PAN etc. to determine age/date of birth. However this exercise of asking the person under verification to furnish additional documents upon selecting '*No Document'* option is used as per discretion of the verifier and there is neither a requirement nor an option to upload the said document(s).
4. While the same mobile is being used for date of birth verification as is being used for income verification, the GPS option is not enabled for the said date of birth verification. Nevertheless, since, the verification process, itself requires for the verifiers to contact the individuals in person for securing/uploading documents, the percentage of in person verification as per district stakeholders is close to 80 percent[25] .

[24] Verified, whether the document is produced or not.
[25] Primary Interview with District CRID, Faridabad.

Analysis

Going forward, date of births will be used as a crucial identifier to identify families for scheme, service and benefit delivery. However, based on primary research and secondary research, the following fallacies were found:

A. The probability of subjectivity and margin of error is further increased by the fact that people are not per se quite forthcoming with disclosing their income. Even after a long time past the roll-out of date of birth verification, verifiers have not been provided with proper ID cards to ensure people entertain them and they surely are quite hesitant in sharing their documents for verification and uploading.

B. To further ensure that the people under verification are comfortable in sharing information and documents, the said person should get a message that their data has been pushed for verification and someone from the administration would be reaching out for undertaking verification. Further, once the verification is complete the persons should get a message about the confirmed/verified data and the link of the correction module for placing a correction request, if wrongly entered.

C. It is important to note that, while the mobile application has guiding particulars embedded in the application, wherein the verifier is informed what documents to secure and what documents to upload. However, there were no written guidelines available until June 2022, wherein the document for the correction module was shared with the district stakeholders. The said document has concrete information about the document that needs to be secured from the families who have shared a request for correction of their date of birth. The said documents include Aadhaar Card as well. The problem arises in cases where 'No document is available with the person being verified. In this case, the verification relies on the discretion of the verifier, as to if he/she requests for other documents (such as passport etc.) or simply records the age, as per response of the beneficiary. In view of the above, written guidelines need to be issued by the department, recording clearly the steps that need to be followed if 'No Document is available with the person being verified.' The mobile application also needs to be modified to allow uploading of such newly (formally) introduced documents on the mobile application.

D. In addition to the above, in case of absolutely 'Non-availability of prescribed documents' the following modes for age assessment and affirmation can be adopted: (i) conducting medical examination as was done for those people with no or proper document with the applicant for Old Age Pension; (ii) Confirmation over a form (would be introduced in the system) by the Gazetted officer after field verification of the person's neighbors, sarpanch/parishad, nambardar etc.

E. The present mechanism of Date of Birth verification is time consuming and workforce intensive. Further, presently, very limited data has been pushed to the districts for Date of Birth verification and the progress in this regard is slow

and limited. That is to say, as *per* primary and secondary research it was found that, presently the focus of the state department is to verify the data of people who are either 60 and above or are nearing 60 years of age. Accordingly, if the present mechanism is followed without changes, it would take a long time for the verification to be complete. Accordingly, it is suggested that a ward wise/village wise strategy be adopted where on a mission mode data of the entire families (to be verified) is verified within a defined time period (15 days per ward/village). Since only verification of date of birth through documents is needed, the families can be asked to take original documents to the nearest SARAL Kendra/Antyodaya Bhawan/Antyodaya SARAL Kendra, for verification and uploading. This would ensure that, verification process is expedited and the families under verification will not have doubts about the authenticity of the verifier (as mentioned above). The families (to be verified) can be mobilized with the help of bulk messaging on their mobile numbers, chowkidars, Sarpanchas (for rural areas), Parshads (for urban areas) and personnel under BDPOs (for rural) and MC (for urban areas).

F. Once the date of birth is properly verified, then there will not be a need to update the data periodically, except for those that seek correction in the existing particular as date of birth is a static data identifier.

G. Presently, for the database to mature to the quantum required to ensure effective scheme and service delivery, there has to be an increased focus on quality of the data. While review meetings take place regularly at both the state and the district level, the focus is usually on the quantum of data to be completed and not per se on the quality of verification.

VI. GRIEVANCE REDRESSAL

Parivaar pehchan Patra as a document is all about data. Data is a fact which explains the subject it pertains to. Since it's a fact there are chances of errors because of wrong entry and mis-information. If data is wrong everything directly or indirectly linked to it is implicitly wrong. Thus, arises a need to correct the data to maintain its authenticity and rigor. This need of correction of data can be termed as grievance redressal in the context of PPP.

There are essentially two types of grievances in PPP:

1. **Data correction before verification** - In case of physical data entry there are chances of errors in recording. These errors can be solved by editing the same. People generally raise a grievance for getting the data edited. This part deals with data editing before the same has been verified as per the mechanisms explained in the above sections.
2. **Post Verification grievance cum dispute:** Verification is important to ensure data authenticity. But there are possibilities of wrong verification especially in

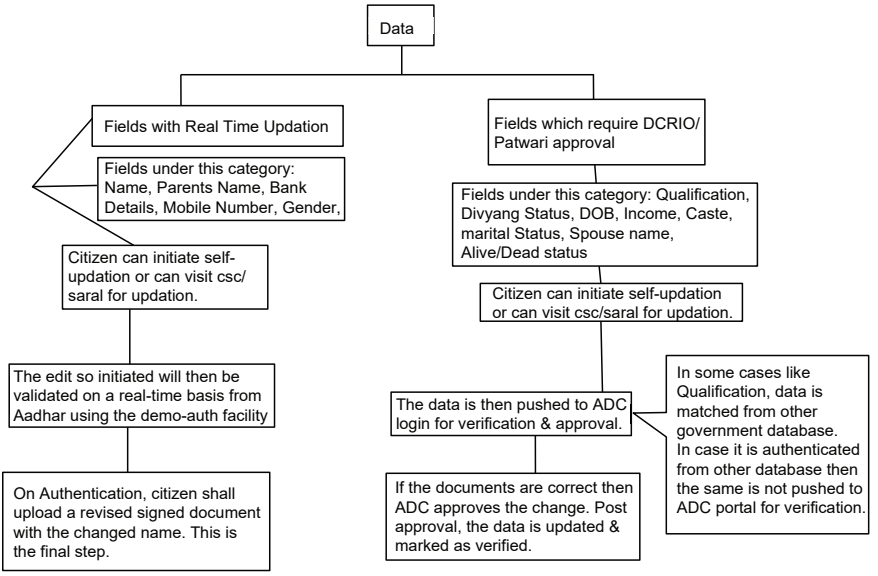
case of dynamic parameters like Income. In case of wrong verification citizens raise a grievance to get it corrected.

Process of grievance redressal

The whole process of grievance redressal is executed online via Parivaar Pehchan Patra website. Correction module has been created where citizens can either self-update the details or can visit a CSC/Saral kendra for data updation. Currently, updation of 14 below mentioned fields are allowed by the CRID department:

1. Name
2. Mobile Number
3. Parents Name (Mother and Father)
4. Bank Account Details
5. Income
6. Date of Birth
7. Qualification
8. Marital Status
9. Dead/ Alive status of member
10. Spouse Name
11. Divyang
12. Engagement
13. Caste
14. Gender

DETAILED WORKFLOW



Importance of grievance redressal

As mentioned above, the essence of PPP is data. Since, accessibility of most of the services/schemes is based upon PPP, wrong data can lead to roadblocks in last mile delivery. Not only wrong data, but the dynamic nature of various fields like Income, occupation, Qualification etc is catered by this module which in turn ensures data reliability and authenticity. This is what makes grievance redressal one of the most important modules of PPP.

Following case study gives a more nuanced understanding of the importance of this module and the consequences in case of lack of the same:

Case - Wrong income verification made the beneficiary ineligible for scheme

- One beneficiary has 5 kids and her husband is missing from the last 7 years. She is working in a private school for a salary of Rs. 5000/Month. She is highly dependent on government schemes like scholarships to meet the needs of her family. Her annual income in the PPP was recorded as Rs. 60,000 Per Annum.
- The LC members without even contacting her verified her income in the bracket - 1,80,000-2,50,000 per annum.
- As per current rules, the maximum amount is written on the income certificate. Thus her income certificate is of Rs. 2.5 Lakh.
- Due to high income all her daughters lost their scholarship benefits.

These are some of the issues being faced by wrong data verification leading to exclusion of eligible beneficiaries from receiving government benefits.

Challenges with the grievance redressal mechanism

1. **Lack of Awareness:** There are different kinds of errors being witnessed by citizens in family IDs. These errors are of varying complexity. But, citizen en-masse are not aware about the existing redressal mechanism. Citizens first visit a CSC/ secretariat where they are routed to ADC office, who in turn again send them to CSC for final resolution. In all it takes a citizen numerous rounds of visits to different offices for multiple weeks to get simple issues resolved. Our beneficiary survey also shows that the majority of citizens don't know about the correction module or that there is an option of self editing. Citizens are not aware about the fields that can be corrected and whom to approach for the same. This asymmetry of information often leads to exploitation like bribery etc. **They don't know the access points, documents and post grievance request submission process.**
2. **Lack of systematic communication between district and state:** There are some peculiar cases which cannot be solved at the district level. The same is then sent to the state HQ via official email channels. But, district stakeholders have confirmed the delayed or no response from state level functionaries. In many cases the issue stands unresolved and there is no follow-up. While interacting with district officials, we realized that there is no system like a portal or app to properly track the applications at the state level.

   Similar issues are observed when HQ sends information to districts. Our interviews with ZCRIMs established the lack of nuanced understanding of processes and guidelines on their part. This means that information is not available to all the stakeholders at the district level. Thus both top to bottom and vice versa communication is not streamlined.
3. **Delay in grievance resolution:** Many grievances of complex nature like - Income change, caste change and other technical issues take at least 10-15 days for resolution. These 10-15 days don't take into account the back and forth visits of a citizen to different places to get his/her grievance registered in the first place. Therefore the current mechanisms are not streamlined enough to provide speedy resolution.
4. **Non-accessibility of edit for certain parameters:** PPP is made of several parameters which prepares an exhaustive 360 degree profiling of an individual and the family. As mentioned above, only 14 such parameters can be edited presently. But many citizens are facing issues because of Occupation, Member Split and Merge, wherein edit access is not allowed.

ADC Office which is the nodal office for PPP is receiving numerous requests for occupation change, member merge and split. Since, there is no solution available

at the district level, all such cases are being sent to the state HQ depending upon the complexity.

Suggestions

- The grievance handling processes have evolved with time. The department has put a fairly robust online system at place. But, the stakeholders interacting with that system like CSC, Citizens and ADC office staff are not that trained and well versed with the nuanced details. Moreover, citizens come with issues only at the time of emergencies making things more difficult.
  - The department must first educate citizens and CSCs on the correction module and the exact processes of grievance redressal. Extensive IEC activities must be put in place to reach out to citizens.
  - Secondly, citizens must be reached out proactively to get their data corrected in PPP. A cutoff date can be set up to call all the citizens and get their basic information corrected. Data can be freezed post this cutoff date. Otherwise citizens will keep coming at the time of exigencies.
- Integrating the existing redressal infrastructure with saral and having a seperate desk in all the saral kendras to just cater to issues with PPP.
- A dedicated PPP helpline for the citizens to register their simple issues online and to get some guidance on complex ones. Accountability for grievance resolution.

VII. CONCLUSION

PPP is quite an ambitious effort by the Government of Haryana. In India, PPP is probably one of the most comprehensive databases which seeks to cover static identifiers such as name, address, age, caste etc. as well as dynamic ones like income, qualification, occupation, etc. The analysis shared above makes an explicit case for the Indian states to create such an extensive database of its citizens for the streamlining of government schemes/services given the humongous budget expenditures. Haryana is pioneering this space with the invention of PPP.

For the vision of PPP to be successful it is imperative that the data recorded in the PPP database is accurate and reliable. To achieve this ambitious goal it is important that the operational features (i.e. aspects related to creation, verification and, correction/grievance redressal of PPP) are streamlined and free of defects as they have a direct bearing on the accuracy of the data.

While there are operational challenges in the verification and grievance redressal/ correction modules, as mentioned above, the government is actively taking steps to address the same and is rolling out safeguards from time to time. This makes the entire landscape quite dynamic. In addition to the above recommendations, the authors would like to express that, presently the on-going verifications are very

human resource heavy, the same needs to be balanced with the introduction of technology and needs to be carried out in a targeted manner as mentioned above.

In a very short span of time, the Government of Haryana has not only managed to on-board a large number of families onto PPP but also have made the submission of PPP Number/ID mandatory to secure benefits of most services and schemes. Further, the government has started using the data from PPP to facilitate better and targeted scheme delivery. For instance, for Old Age Samman Pension[26] the state government has launched a proactive identification/proactive pension delivery/ onboarding mechanism wherein the beneficiaries are identified through verified PPP data and with the assistance of the department are on-boarded onto the scheme without the need to separately apply with the department. Similarly, for another scheme called *Mukhyamantri Antyodaya Parivar Utthan Yojana* (MMAPUY) which aims to provide livelihood support to the (identified) families earning (approximately) below 1 lakh per annum by offering a bouquet of schemes to enhance their livelihood the identification of the beneficiaries (low income families) is being done using verified data of PPP. Further, PPP is being used to identify the construction workers in the state and provide the eligible workers certain social security benefits. Going forward, the mechanisms of PPP shall also be used to save leakages in government schemes by ensuring that ghost beneficiaries are eliminated and non-eligible personnel do not secure the benefits of any scheme.

These instances show a clear potential in PPP, if harnessed effectively. Commenting on the potential of PPP and the experienced benefit thereof, Mr. Umashankar, Principal Secretary to the Chief Minister of Haryana had shared that:

"When Covid hit us, within the month of April and during a small duration in May, it is because of the already compiled data that the government could reach out to nearly 16.5 lakh families and provide them with the financial assistance. All this was done without getting into a long-winded documentary verification exercise because we had the primary data compiled with us".(Bhatia, 2020)

This demonstrates the huge potential in PPP. But the same is not without challenges. Till such time that verifications are complete, data is stabilized and database is matured, people are likely to face issues, in scheme and/or service delivery owing to issues in the data recorded but in the long term this will be one of the biggest technological breakthroughs in service delivery.

[26] Pension/financial assistance being provided to personnel provided to personnel above the age of 60 years, subject to them meeting the income and domicile criteria

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5

Technology in Police Administration

The Case of Haryana

KUNAL CHAUHAN AND KAUSTHUB IRUKULLA

I. INTRODUCTION

Police department plays a vital role in the functioning of a state. Policing elements have been an integral part of the social contract in the evolution of any socio-political framework of modern society. The department's functioning has a direct bearing on the lives of citizens and on the functioning of the judicial system. Unfortunately, many instances in the past have brought the department's efficient functioning into question. One of the main reasons for the same is inefficient internal management of police departments, and resources thereof. The inefficient management of resources and lack of appropriate technological interventions can cause hindrance to effective service delivery and result in the inefficacious performance of any governance organization, police functioning is no different.

In this context, the area of "Technology in Governance" was looked at with an emphasis on the overlap of existing technological interventions that impact and contribute to police administration in Haryana.

II. LITERATURE REVIEW

Secondary research on police administration, police reform and technology's impact on police in India was conducted while the scope of the study was expanded by understanding the meaning of terms such as Police, e-Governance and technological impact on governance. A review of the history and functioning of Haryana Police Department was also carried out.

Police are one of the most dynamic and foundational organizations in a society. The police are expected to play their role as the most accessible, efficient and interactive organization. Armed forces, intelligence agencies and police are distinct in their functioning in society as their roles and responsibilities are different from other organs of the state while being simultaneously highly complicated as compared to their counterparts. The sole objective of any police reform is to improve police efficiency and to enable them to render the best service to the citizens.

The police differ from an ordinary citizen, as it is their full-time duty to see that the law is upheld and public order maintained. Police have to deal with different types of crimes like white collar as well as technical crimes. Moreover, the police are also considered to be the first line of defense in any situation. Criminals in the modern age are growing increasingly advanced as compared to the police. Police forces need to be adept at technologically guided criminal tendencies and proactive in the modern arena of technology and cyber crime (Mehta, 2017).

The term e-governance refers to the process of using information technology to automate both the internal operations of the government and its external interactions with citizens and other agencies. Computerization of internal operations reduces cost and improves processing time while at the same time allowing government

processes to be more elaborate in order to increase their efficacy. Automation of interactions with citizens reduces the overhead for both the government and the citizens, thus creating value for the economy. The police department plays an imperative role in maintaining the law and order situation in any state. It is an area of high government-to-citizen interaction (Shastri et al., 2009).

Chaturvedi (2017) has summarized the issue of 'Underutilisation of funds for modernisation' for both Centre and states. Funds allocated for improving police infrastructure include one segment focusing on communication equipment and transport facilities. The Bureau of Police Research and Development has shown that only 14% of this allocation has been spent for the year 2015-16. Initiatives like POLNET, aimed at providing satellite-based communication networks to police forces, were reported as non-functional in numerous states across the country. Hence, there is a wide scope of improvement in terms of the modernization of police forces in India, especially in the fields of technological and cyber spaces. The potential of technological education and training of police officers for intra and inter departmental management of communication, information and resources should be central for any serious attempts at police reforms.

An essential part of the internal functioning of the police department is resource and infrastructure management. In our secondary research, we were able to find some data on the shortcomings in the resources management of the police departments across Indian states. The CAG has found that the weaponry of several state police forces is outdated, and the acquisition process of weapons is slow, causing a shortage in arms and ammunition. An audit of the Rajasthan police force (2009 to 2014) concluded that there was a shortage of 75% in the availability of modern weapons against the state's own specific requirements. The same audit also found that even when weapons were procured, a large proportion of them (59%) were lying idle because they had not been distributed to the police stations. Similar audits in West Bengal and Gujarat found shortages of 71% and 36% respectively in required weaponry. In addition to this, the audits have noted that police vehicles are in short supply. New vehicles are often used to replace old vehicles, and there is a shortage of drivers. This affects the response time of the police, and consequently their effectiveness. As of January 2015, state forces had a total of 1,63,946 vehicles, marking a 30.5% deficiency against the required stock of vehicles (2,35,339 vehicles) (Chaturvedi, 2017).

III. THE CASE OF HARYANA

Haryana has been at the forefront of numerous police reforms as well as innovative ventures that have been summarized below. Some of these initiatives are based at Thana level and are an attempt to streamline internal data collection and management for police officers who are involved in crime reporting and investigation. Other interventions aim at facilitating conducive

citizen-centric reforms in the processes of crime reporting, accessing status reports and follow-ups. Another category of interventions looks at methods of digitizing the intra departmental communication for routine functioning of the department. These initiatives cumulatively show the outlook of the department with respect to technology. There is an added push towards incorporating more state-of-the-art tools and methodologies in the functioning of the department, capacity building and training the personnel who are in direct contact with the tools, and the interface between the police and citizens.

The following technological interventions and platforms were explored via secondary literature and became the basis for exploratory stakeholder discussions at the early stages of the study:

Crime Criminal Information System (CCIS): This is a criminal records management system maintained by the National Crime Records Bureau (NCRB).

CCTNS: Crime and Criminal Tracking Network & Systems (CCTNS) aims to create a comprehensive and integrated system for enhancing the efficiency and effective policing at all levels through the adoption of principles of e-governance. It also aims to create a nationwide infrastructure for the evolution of an IT-enabled state-of-art tracking system around crime detention and detection of criminals.

Motor Vehicle Coordination System: This is used for punching and storing the data of stolen/recovered vehicles at SCRB / DCRB.

Talash: This is used for punching and storing the data of missing persons / unidentified dead bodies.

Organized Crime Information System: This is a web-based application developed by National Crime Record Bureau (NCRB) for punching in information related to various agencies involved in organized criminal activities including history sheeters, terrorist activities, robbery, theft etc.

IT Training Centers: Considering the fact that various national and state level initiatives have been undertaken to induce computerization in the police department

POLNET: Polnet project under implementation through DCPW, New Delhi is a satellite-based Police Telecommunication system, free from terrestrial lines, for providing end-to-end connectivity between national capitals, State/ U.T. capitals, Range / Distt. Hqrs. and further countrywide link up between all Police Stations in India.

Digital Investigation Training and Analysis Centre (DITAC): The centre has been developed on modern lines and is equipped with highly sophisticated tools and software. Under the initiative, the following three wings were created to deal with the concerned areas: 1. Social Media Monitoring cell, 2. Cyber lab, and 3. Training Lab.

Durga Shakti App: The Durga Shakti App was launched by the Haryana police in 2018. The main objectives of the app are to ensure the safety and security of women and girls in the state, to present immediate police help to girls and women in case of any emergent situation, and to create awareness among the women and girls related to security and safety measures.

Biometric technology: With the help of Biometric technology, data can be used to track the criminal while applying for any of the above documents in a legal manner. There are diverse methods to gauge the sameness in crime evidence and criminals like fingerprints, Eye/Iris scan, Voice recognition tools etc.

E-Saathi App: This app was aimed to help the general public, including senior citizens, to remain in touch with police and also give suggestions to facilitate participatory community policing: 'Your Police at Your Doorstep' initiative.

Helpline in Cybercrime: The Haryana Government has launched a toll-free helpline number (1800- 180-1234) to report cyber crimes.

E-Beat Book' System: E-Beat Book' System is a web and mobile-based application which will ease the collection, updation and analysis of information related to crime and criminals on a real-time basis.

Emergency Response Support System: The objectives of ERSS are to launch a pan-India single emergency response number '112' to address various types of distress calls such as police, fire and ambulance etc.

Human Resource Management System: HRMS Haryana is a human resource management system government of Haryana. It is the management system that is used to manage the data of Government employees of Haryana. All the services like salary, billing, pension, service book, salary statement, annual salary statement, and biodata are available on the HRMS Haryana portal.

IV. RESEARCH METHODOLOGY

The secondary research on the background of police administration and the integration of technology in governance guided the understanding of the topic. The research questions were further narrowed down to the work of the police department and the assistance provided by the integration of technology. In the past 3 decades, numerous interventions have been implemented to integrate recent technological capacities in police functioning. Each of these interventions has played a significant role in making policing better and more transparent for the department and for the citizens. Post explorations into functioning interventions, a detailed study was planned for relevant and contemporary interventions, such as Crime and Criminal Tracking Network and Systems (CCTNS), Emergency Response Support System and Human Resource Management System.

A pilot study was initiated to understand the routine work of the police along with the functioning of shortlisted interventions: 112 Emergency Service is to contact the police and covers the domain of citizen-police interaction; CCTNS facilitates reporting and investigation of crime and HRMS is used for internal management of police personnel.

Post the pilot study, the questionnaires were reformulated to incorporate feedback received from the field. For the purposes of our study, three separate questionnaires were drafted. To understand the ground implementation of the interventions, we drafted **one** questionnaire for thana-level officials and staff. This allowed a close view of the implementation and challenges faced by the staff while using these interventions. **Second** questionnaire was for the operator/ technical staff and IT wing regarding the operational and backend system of the technological interventions at the district level. This group of stakeholders is also involved in the training and supervision of some of these interventions. **Third** questionnaire was for the senior stakeholders (IG, SP or DSP) to include in the study the broad vision of the interventions that policy formulators and decision makers provide.

V. SURVEY AND INTERVIEWS

A survey of 30 respondents was conducted in two districts of Haryana (table below). Interviews were conducted at the Thanas and IT wings in the districts. Questionnaires attempted to capture various facets of the research question including:

Knowledge and awareness of interventions
Training and Capacity Building of personnel
Use frequency of shortlisted interventions
Advantages of technological platforms incorporated
Evolution of technological initiatives within the department
Challenges faced by operators and users of apps and portals.

The data from the surveys, interviews and FGDs is under the final data analysis process for the purpose of publication.

District	Respondents
Hisar	15
Kaithal	15
Total	30

The study tried to review the ground level use and patterns of issues faced by the surveyed population.

Along with the surveys, the first round of stakeholder consultations was initiated, which included unstructured conversations with senior officers at the district level i.e., Superintendent of Police (SP) and Deputy Superintendent of Police (DSP) along with clerical staff handling the tech interventions.

The focus on interventions like 112 Emergency Response Support System provided insight into the corresponding role of Haryana Police with other departments and circumstances other than exclusively crime related. This has been summarized as the following case study with a look at contemporary Emergency Response Support Systems.

112 CASE STUDY:

The Government of Haryana launched the Centralized Emergency Response Support System: 112 in 2021 with an aim to provide emergency service to callers in distress or emergency situations within 15 minutes in urban areas and 20 minutes in rural areas. State Emergency Response Center (SERC) at Panchkula, manages the functioning of Dial 112 ERSS. SERC is equipped with state-of-the-art facilities such as advanced geospatial technology to provide better location services, timely response and coordination between SERC and Dial 112 vehicles.

As part of the Emergency Response System study, the existing system and challenges faced by the Response teams in Haryana were studied. A comparative secondary literature study was also conducted to look at emergency response systems in other Indian states and countries. Following are some of the insights gathered:

Telangana Dial 100: The Telangana Government is working on integrating drone technology with the existing Dial 100 system to ensure faster response in areas with heavy traffic and narrow alleys (Vudali, 2022). Drones will also help the Dial 100 vehicles to navigate and use the drone camera feed to assess the situation before reaching the spot.

UK and Thailand: The United Kingdom Emergency Response System has fire and ambulance services integrated into one system and provides simpler access to services for citizens. It also uses CCTV footage to mitigate potential terrorist activities[5]. Thailand's 191 Emergency Response System is working on a similar model of the United Kingdom CCTV integration for prevention of crime.

USA 911: The United States of America's Dial 911 is one of the most robust and popular Emergency Response Systems in the world. It uses features such as CCTV, facial recognition and cross-referencing of criminal databases for the identification and investigation of criminals and crime respectively.

South Korea 110: South Korean Emergency Response System provides services in multiple languages such as English, Japanese and Chinese apart from Korean. This helps foreigners and tourists in better communication with the authorities.

Hong Kong 119: Hong Kong has introduced a fine up to HK$2000 on individuals involved in prank calls. It should be noted that Thailand also imposes huge fines for prank emergency calls.

VI. LOOKING AHEAD

During our field visits and research study, we found systemic challenges that police personnel face to adopt technology in their day-to-day functioning. We tried to understand some of these major challenges such as lack of training, infrastructure and manpower. Our research explored the possibility of addressing some of these issues by efficient use of available workforce and resources. There was an attempt to study the best practices across the world and comparative studies with respect to Haryana to identify areas of cross learning and improvement.

While the benefits of technological interventions like CCTNS have been reported to improve storage of and access to crime records, the survey results show that there are discrepancies in the actual human resource engagement with these platforms. CCTNS alone provides an advanced alternative to traditional methods of paper and files, yet the engagement of the personnel with the filing of these records is distorted at the thana level, with a few "designated operators" using the portal on a regular basis.

This imbalance in the context of actual on ground working of the interventions are microscopic facets that come to light through the survey. These insights can be linked to monitoring and evaluation mechanisms surrounding the technology interaction of the department as well as the training framework for the personnel.

The insights provided through the study can be further expanded for a wider sample and more in-depth interviews. Facets like inventory management and the risks associated with intra departmental communication via public platforms such as Whatsapp are areas of study that have immense potential for contributing to the police reforms process in the country. In the face of rising cyber crime and bank bank fraud incidents, a technologically equipped and trained police department is an immediate need of the hour.

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6

Swamitva Yojna and Lal Dora - The Case of Haryana

AMAN WALIA, RAJU RAM, ANUSHKA MISHRA

I. INTRODUCTION

In the economic and social development of a nation, land rights given to the people play an important role in deciding the nature of the relationship between citizenry, state and the economic system. Pre-Independence, India had a varying and evolving regime of land rights that found its basis in the reign of local rulers, and transformed with the Mughal Era, the economic policies of the East India Company, and the regulatory attempts of the British Crown. While facets like the Zamindari system played an important role in both the land and social relationships between different sections of the population, the central purpose of the system was to raise revenue.

After independence, the right of ownership of land to the common people was ensured in various phases. Land rights became an influential and politically active multifold agenda to attempt poverty alleviation and to tackle inequality. The government made special efforts to do so, in which abolition of intermediaries, tenancy reforms, land consolidation, fixation of land per family and distribution of surplus land among the landless people were the major initiatives.

Moving forward in this direction, in the year 2020, the Government of India introduced the Swamitva scheme. The initiative's prime objective was to liberate rural and semi urban population from Lal Dora land relationships and to give them ownership of land of their residence. The scheme stems from recognition of natural land rights of individuals on areas designated as "Lal Dora"[1] since colonial times. This process ensures land rights to residents of 'abadi area' of villages, by giving them the legal title of their land via a property card. This scheme of the Union Ministry of Panchayati Raj is being implemented jointly by the Revenue Departments and the Panchayati Raj Departments of the states. There are technical contributions from the Survey of India.

II. LITERATURE

Land administration in modern India is rooted in the emergence of rules concerning land management in medieval India. The British East India Company later modified this for their benefits in an attempt to maximize economic exploitation while paying little to no attention to the welfare of the local population. Initiatives like Permanent Settlement, Ryotwari system and surveys of land were undertaken to formulate better revenue collection policies. During this period, 'lal dora' was categorized as a separate entity. This was recorded by the Britishers as inhabited land separated by a red line from nearby agricultural land in revenue records in

[1] Lal Dora land refers to residential parts of villages. They were surrounded by farmlands under the British Revenue System. The municipal rules are generally not applicable in such areas (The Indian Express, 2021).

India. After Independence, the country witnessed some major land reforms like the abolition of Zamindari, Bhu-daan (voluntary relinquishing land titles in favor of cultivators) and land consolidation etc. But even after many such land reforms, the concerns surrounding 'lal dora' remained unaddressed (Tathabrata,2016).

The Haryana Land Records Manual (2022) describes the Lal Dora and Abadi Areas as:

The inhabited area of a village i.e. Abadi Deh, within the boundary line of Lal Dora, has remained without recording of rights of the land/home owners and proprietors, preparation of record, or the marking of boundaries by carrying out a map and survey. The right holder enjoys the use and occupation of the land/ property during his/her lifetime and on death, this title passes to descendents, and the successor-in-interest of the right holder is entitled to lease, will, mortgage, etc. However, the well-established interest, title and proprietary right have not been recorded in records so far. Resultantly, it is causing hardship in identification of rights and, in administration of village.(p.1)

There are various complications that surround the process of acquisition of land when it comes to Lal Dora properties. These complications thereafter impact the property relations of the people in possession of such land parcels such as those found in urban villages of Delhi. (Sushmita, 2019) The regulatory framework over this sphere is guided by various documents, especially land records, General Power of Attorney to view lack of uniformity over the property ownership and relations, and the notifications issued on the instances of construction work done on Lal Dora lands. There is also a long history to be traced on the issues attached to Lal Dora including the lack of clear cut ownership, renting and occupation.

Sushmita (2019) emphasizes on the South Delhi region and the process of land grabbing "both inside and outside Lal Dora", which has become a "function of accumulation. The lack of documentation and the complex structure of lal dora management has led to large swaths becoming unidentifiable land with no clear way of differentiating 'villages' and unauthorized land. All of this has led to the complicated nature of land ownership and even more complexity in maintaining such land records. Therefore, in such cases, a point of friction would take place over evidence and counter-evidence of property ownership as there remained non-existence of any legitimate way of giving land titles. Moreover, "the case of Lal Dora would show a range of claims made on the basis of a diverse nature of possessions and ownerships where the two may not necessarily overlap."

A body of literature also explores the gender dimension of land rights in the context of lal dora, as an extension of the relationship that Indian women have with land and landed property. The existing literature (Velera et al., 2018) on women's inheritance rights in India agrees that significant gender bias persists following the attempts at land reform. Gender equity in land rights enhances women's status and decision-making power in the household. However, the authors also found that

the impact of women's land title ownership on women's participation in family decision-making varies across states, which can be influenced by the awareness of the people about the legal provisions for inheritance and the implementation of inheritance rights.

III. SWAMITVA YOJANA

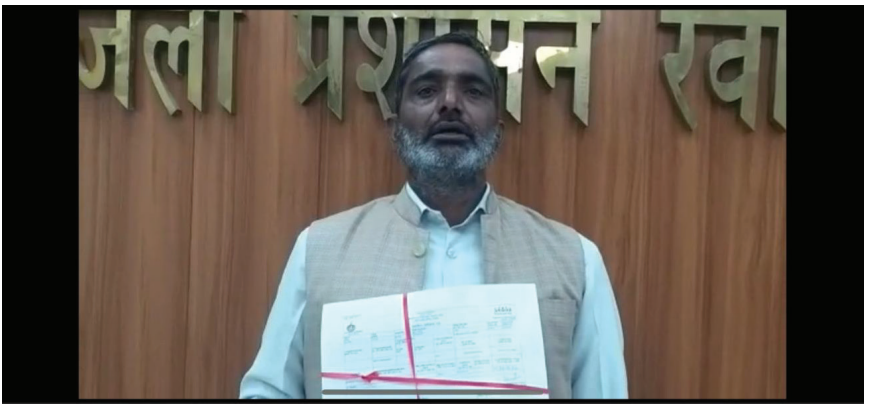
The Government of India introduced Swamitva Yojana to survey the land pockets in rural areas using drone technology. Under the scheme, surveys are to be carried out across the country in a phased manner over four years (2020 - 2024). The goal of the scheme includes updating the 'record-of-rights' in the revenue/property registers and issuance of property cards to the property owners. The scheme is proposed as a Central Sector scheme titled SVAMITVA, ie. Survey of villages and mapping with improvised technology in village areas, with an estimated budget of Rs 79.65 crores for its pilot phase (FY 2020 -21).

Mapping as part of the drone survey in Rewari

The departments involved in executing the scheme are the Ministry of Panchayati Raj as Nodal Ministry, and Survey of India as the Technology Implementation Agency at the central level. At the state level, the State Revenue department and State Panchayati Raj Department are responsible for the implementation.

The list of these stakeholders is given below -

- Nodal Ministry (Ministry of Panchayati Raj), Govt of India.
- Survey of India (Technology Implementation Agency)
- State Revenue department
- State Panchayati Raj Department
- Local district authorities.
- Property owner
- Gram Panchayat (GP).
- National Informatics Center (NIC) – GIS Division
- Other line departments having assets in Rural inhabited areas (if any) for preparing a comprehensive database.



Issue of Property Cards in Rewari (beneficiary Rajesh Kumar)

IV. METHODOLOGY

Post literature review of the issues surrounding land rights and lal dora land in India and Haryana, an evaluation study was initiated to better understand the on ground functioning of the scheme from the perspective of beneficiaries and officials involved in the implementation process. A mixed-method approach was adopted for data collection in the districts of Nuh, Rewari and Hisar. In order to ensure greater depth of understanding, data collection was completed through semi-structured in depth interviews with stakeholders and beneficiaries, and Focused Group Discussions (FGDs) with beneficiaries were conducted. Further, quantitative data was collected from the official Swamitva Portal website[2], district review reports and available departmental documents. Secondary data was studied

[2] http://svamitva.haryanadp.gov.in/Default.aspx

to understand the sociological, economic and historical context under which the scheme was executed.

The authors of the study were posted as CMGGAs in Nuh, Rewari and Hisar, and hence access to information on the scheme as well as interviews with officials and beneficiaries were facilitated by this.

V. DATA ANALYSIS AND DISCUSSION

Evaluation Parameters

Given that the scheme largely aimed at bringing the land out of the lal dora category into a formally regulated system, the first parameter the study looked at was the area under lal dora before the scheme, and land distributed since. Another parameter that the study took to study the scheme was the grievance redressal method offered to the citizens. We reviewed both the in-scheme redressal methods as well as the mechanism with respect to issues faced in scheme operationalisation. We also assessed the scheme on the basis of land disputes, before and after the introduction of the scheme. The ownership trend study with a gendered lens was initiated, the number of deeds in the name of the female family member was intended to be the study parameter, but there was found to be a lack of data availability at the district levels on the socio-economic and gender profiles of the beneficiaries. Administrative ease of operation was also studied under the scheme, by the means of interviews with administrative officers who are involved in the execution of the scheme.

1. SWAMITVA SCHEME PROGRESS TILL 21ST JUNE, 2022

Data Source- http://svamitva.haryanadp.gov.in/ScheduleSummary.aspx

Out of 6,256 villages in Haryana that were in Lal Dora abadi area, 16,826 property title deeds have been frozen in 54.54% (3412) villages. In top performing districts of Yamunanagar and Kurukshetra, title deeds have been frozen in 94.54% (519) and 84.58% (340) villages respectively. In poor performing districts Palwal and Nuh, performance is at 5.88% (16) and 11.87% (47) villages respectively.

Out of the total targeted villages in the state, properties have been identified in 82% (5148) villages. In Yamunanagar and Faridabad districts, this phase has been completed in 100 percent villages, whereas in Rewari and Nuh only 50% and 54% respectively.

Village visits during the study period showed cases such as the following:

Malawas village of Nuh district is spread over 123 hectare, out of which 4324 square meters is designated as Lal Dora land. Total population of the village is 535. After the implementation of the Swamitva scheme, 44 property holders of the village got the ownership of their land located in Lal Dora.

Sr No.	District	Target Villages	Chuna Marking Done	No of Villages where Claims/ Objections Invited	Final Map given by SOI after Claims	No. of villages where Property Identified	No. of Beneficiaries Identified	No. of Properties Identified	No. of villages where Properties registered	No. of Properties registered	No. of villages where title deeds Frozen	No. of title deeds frozen
1	AMBALA	437	437	437	437	366	76161	70913	144	16906	143	16826
2	BHIWANI	306	306	306	306	231	53012	42864	202	21215	202	21208
3	CHARKHI DADARI	170	170	170	170	113	28020	18806	103	10991	103	10970
4	FARIDABAD	100	100	100	100	100	34864	30337	19	1503	19	1417
5	FATEHABAD	258	258	258	258	229	64501	55108	210	33254	186	26658
6	GURUGRAM	169	169	169	169	129	39218	32571	76	6792	32	2027
7	HISAR	251	251	251	249	213	123141	108949	124	24137	123	24044
8	JHAJJAR	230	230	230	230	190	93177	89091	112	14085	112	13822
9	JIND	293	293	292	292	264	94848	86436	200	25279	181	25013
10	KAITHAL	260	260	260	260	196	52373	46325	171	22871	170	22845
11	KARNAL	382	382	382	382	297	103484	85279	239	46939	239	46933
12	KURUKSHETRA	402	402	402	402	395	121780	107555	345	40741	340	38064
13	MAHENDRAGARH	349	349	349	349	332	96913	59681	279	17637	279	17635
14	NUH	396	396	396	396	214	46077	34154	48	8130	47	8129
15	PALWAL	272	270	270	270	268	79409	67625	16	5106	16	5106
16	PANCHKULA	143	143	143	143	110	24990	21991	104	14330	102	13102
17	PANIPAT	170	170	170	170	167	123608	118213	110	20858	63	11338
18	REWARI	387	387	366	242	193	45844	31718	150	11064	150	11051
19	ROHTAK	120	119	119	119	89	19884	18357	78	12907	78	12907
20	SIRSA	308	308	308	303	265	52652	44294	261	35777	259	35093
21	SONIPAT	304	292	292	292	211	166769	159591	50	5626	45	4887
22	YAMUNANAGAR	549	549	549	549	545	176154	138099	532	81289	513	62246
TOTAL		6256	6241	6219	6088	5117	1717469	1467957	3573	4777437	3402	431321

As evident, the scheme is operational at various stages of performance across districts. The various phases of the scheme operate in contextual cycles of operations spreading across drone surveys, property marking, gram sabha discussions on the finalization of maps, dispute resolution processes at the village and district level, and so on.

2. GRIEVANCE REDRESSAL:

The scheme involves a series of steps, and a number of stakeholders. Any delay at any stage relates to a delay in the final outcome. Post survey mapping of the properties in the designated areas, marking of properties is done with respect to owners of the land and property. Post this, there is the mechanism of Gram Sabha sitting for discussion of the markings made and disputes or concerns are invited from habitants. This forms the first level of raising a complaint or discussing any grievance. The following case study from one of the interviewed beneficiaries elaborates on this mechanism:

Nuh: Suman (name changed), who lives in the village of Mailawas, mentioned that "in the map obtained from the first survey done by drone, some area of the land" of his house "went to the part of elder brother Hari (name changed)". When he raised this objection in the Gram Sabha, "the error was corrected" and he "got the revised area in the final map". Subsequently, he also "got the property card". As evident, the provision of Gram Sabha assemblies as a platform for grievance redressal provides ease of access to a discussion as well as a complaint platform for the beneficiaries.

Khatiwas village is part of the revenue estate of Bawal Tehsil in district Rewari. The village has Lal Dora area of 11 Kanal and 10 Marla. In this village, a total of 59 Property Cards have been distributed. Sh. Sita Ram (name changed) is a resident of this village and his residence came under Lal Dora area. During Gram Sabha when details were getting finalized about the name of the owners of the property, he "raised a request" to include his son's name in the Property Card instead of his. "The Panchayat officers duly noted this request and sent the new details of the owner's for correction". When the property card was provided, the beneficiary was "happy" to see the name of his son on the card and thanked the officials for the correction.

Currently, in case of enquiries and complaints, beneficiaries reach out to the Panchayat Secretary for grievances. In case it doesn't get resolved at that level, or if the citizens have complaints against the verification done by the Panchayat Secretary, they come to the concerned Block Development Officer to lodge a complaint.

The following case study from an interview in Mailawas Village points towards the need of a better grievance redressal mechanism:

Chandan (name changed) was "not able to attend the Gram Sabha related to the Swamitva Yojana". After the release of the final map, he came to know that the area of his house shown on the map is "less than the real area". Since he could not attend the Gram Sabha, this objection could not be raised by Chandan. Since the release of the final map, "the property has been frozen". Two more beneficiaries (male, female) of Mailawas village are also facing the same problem as Chandan.

The above case underlines the fact that a centralized, institutionalized grievance redressal mechanism is either inaccessible to the beneficiaries or the information on further access points for complaints is not available with them. The ground-level insights suggest that there lacks a proper grievance redressal mechanism that can cater to all types of grievances that a citizen has. From the observations, it has been found that organizing Gram Sabhas has been the only means of addressing citizens' grievances/disputes/objections. The interviews with multiple ground level stakeholders, who are incharge of executing the scheme, suggested that a procedure needs to be put in place that provides a clear and transparent framework for addressing citizen's grievances and ensures reportage of the action taken by

the concerned authority. This would not just ensure transparency in the execution of the scheme but would also ease out the process for the citizenry.

Stakeholder discussions have provided insights over the lack of a centralized process and platform for grievance redressal:

During an interview, Add. CEO Zila Parishad, (Hisar), HCS, commented that "people usually go first to the Panchayat Secretary in case of complaint. When that doesn't help, they come to the BDPO office. However, these officials don't have the authority to unfreeze the noted information and have to request the state to take action on the complaint. The whole process takes time, and the citizen ends up frustrated".

Land disputes

Included in the central spillovers of the scheme is the aim to resolve property related disputes and legal cases. The scheme mechanism was made such that the properties were categorized as 'verified', 'not verified' and 'disputed'. With the generation of property cards, which were verified by the Panchayat Department, it was envisaged that the number of properties that were already disputed would come down. The ground officials report that this goal indeed has been achieved, however, a few outlier cases have also come to light. A few interviews were reflective of this:

Rewari: In the Kalrawas village of block Bawal district Rewari, Balram (name changed) "claimed to have ownership over a property" along with his two brothers. But "Gram Sachiv found this property as disputed and the same was confirmed by Village Nambardar and other villagers as well." The officials found that there is "already a case pending with regards to this property". So no property card was distributed and the property was put as 'disputed' in the data list.

For resolving such disputed properties, a standard resolution process is followed whether in a court or any other appellate authority based on the type of dispute. There are only a few occasions that these disputes get resolved at the village level itself with the help of officials and elected representatives like Sarpanch, Panchayat Samiti Members etc. Most other cases tend to be dealt with outside of the scheme's jurisdiction.

Stakeholder interviews also showed similar instances:

Hisar: The Swamitva nodal in the DDPO, Hisar recalls that in the Hansi block, "a man had given his house on rent to his friend. During the time of door to door survey, the tenant gave his name as the land owner. The real owner of the land has claimed that this land is not under the noted name. The case has now been put under the 'disputed' category. Multiple cases of this kind have come to light".

Administrative part and Financial Outlay of the Scheme

Under the Financial Outlay for the pilot phase, Svamitva scheme has used a component-wise funding pattern with the payments received by states in different installments. A total of 24.24 crores was provided for the establishment of CORS networks while for Large Scale Mapping (LSM) using Drone, a total of 48.50 crores were outlayed. State Revenue Departments have received 4 crores for the IEC activities while on the other hand some funds have been allocated for the Enhancement of Spatial Planning Application "Gram Manchitra" and Online Monitoring System. National Programme Management Unit (NPMU) and State Programme Management Unit (SPMU) have also received 76 lakhs and 65 lakhs respectively for carrying out different activities related to day-to-day operations. Most of these funds are given in installments and a few parameters have been defined for the fund's disbursement.

For the effective administration purposes of the scheme, a list of stakeholders have been created at each level from Nodal Ministry at the Government level up to Gram Panchayat.

VI. CONCLUSION

The study sought to highlight the good practices around operationalisation of the scheme and understand the challenges that are being faced by the beneficiaries and implementation officials of the scheme. Apart from the insights mentioned above, the following insights have been recorded from an on ground view of the scheme in the duration of the study:

Data and Information Management

The issue of data availability with respect to gender and socio-economic profiles of beneficiaries is a loophole that can be easily remedied. This data can provide us with useful information on the impact of the scheme as well as locate trends in the better implementation of the scheme for targeted sections of the population. Land rights to the marginalized sections is one of the central ideological pillars in India's land reforms attempts and this requires better data for better policies.

Another area of improvement is the data and information on the land dispute cases reported within the scheme. The study sought to study this as a parameter for its quantitative impact on the land dispute cases before and after the scheme. Unfortunately, this data has been reported as unavailable and uncompiled by various stakeholders across the studied district.s

Spillovers

The extent and impact of the spillover benefits of having a Property ID card (benefit for municipalities and gram panchayats for property tax collections, using

the property as a financial asset, maintenance of land records) do not seem to have reached the citizens yet so the mechanisms must be developed to speed up the process of receiving benefits from having a Property Card.

Operational and Administrative

The scheme's implementation has seen multiple operational challenges that are mostly linked with the administration part. These challenges have slow-paced the progress of the scheme and created inefficient processes throughout the implementation. One such challenge was faced in district Rewari due to the faraway location of the Survey of India Center where every time the staff from the Panchayat Department had to physically travel long distances just to get a couple of queries resolved and other work done.

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7

Mhara Gaon Jagmag Gaon - Policy Review

SHUBHAM CHATURVEDI, GAURAV SIROHI, PARAG JASWAL

I. INTRODUCTION

Rural electrification is considered to be the backbone of the rural economy. Expanding electrification and scaling up electricity services is critical to both the economic and social development of India. The role of rural electricity cannot be overemphasized- it supports the agricultural sector, the small and medium enterprises (leading to more employment opportunities), enhances infrastructure for health,education and banking(ATM) services apart from providing better social security opportunities. It is expected to improve people's quality of life and spur growth on a range of various socio-economic fronts. In rural areas, it allows school going children to study for more hours which results in better school performance and in turn increases the household income.. It also lowers indoor pollution by replacing kerosene based lighting and allows women to be involved in income generating activities after completion of household work.

India is the world's sixth largest consumer of electricity and accounts for 3.4 percent of the global energy consumption. The year 2022 has been earmarked for achieving the target of '24×7 Power for All'. It is worth mentioning the important facets of rural electrification which are mainly setting up of rural electricity infrastructure, providing connectivity to households, adequate supply of desired quality of power, supply of electricity at affordable rates and providing sustainable power in an efficient manner.

II. LITERATURE AND CONTEXT

India has achieved its long-pending goal of 100% electrification of its villages. According to Central Electricity Authority (CEA), a village is considered electrified only if the Gram Panchayat certifies that the basic infrastructure has been provided to the inhabited area, including Dalit hamlets, and 10% of the households are electrified. Therefore, if a village of 100 households has 10 electrified houses, the entire village can be called an electrified village.

In this context, with the objectives to curb theft of power, improve billing efficiency, improve quality of services to the consumers of the selected feeders and allow increased supply hours to villages where there is decrease in losses, **Mhara Gaon Jagmag Gaon Scheme** was launched by the Hon'ble Chief Minister on 1st July 2015.

Haryana Power Generation Corporation Limited(HPGCL) came into existence in the 1990s. Its responsibilities included setting up and maintaining power generation plants. Panipat Thermal Power Station, Yamuna Nagar's Deen Bandhu Chhotu Ram Power Project and Hisar's Rajiv Gandhi Thermal Power Project generate power within the state.Haryana Vidyut Prashashan Nigam Limited (HVPNL) is responsible for transmission and distribution of electricity within the state through

Utthar Haryana Bijli Vitram Nigam (UHBVN) and Dakshin Haryana Bijli Vitram Nigam(DHBVN). These two companies supply power to the substations which in turn is supplied to the citizens through 11 KV feeders.

Since the inception of the scheme, 5569 villages have been covered under the 24*7 power supply. 77 % of the state has 24*7 power supply. Two major discoms supply electricity to different parts of the state as follows:

- *Utthar Haryana Bijli Vitram Nigam(UHBVN)* - Northern and Eastern Haryana Belt i.e ., Panchkula, Ambala, Yamunanagar, Kurukshetra, Kaithal, Karnal, Panipat, Sonipat, Rohtak and Jhajjar.

  and
- *Dakshin Haryana Bijli Vitram Nigam(DHBVN)* - South and Western Haryana Belt i.e., Sirsa, Fatehabad, Hisar, Jind, Bhiwani, Mahendragarh, Rewari, Ggn, Faridabad, Mewat and Palwal.

Understanding the scheme Mhara Gaon Jagmag Gaon (MGJG) scheme was launched with the aim of providing electricity to the villagers on the urban pattern. The activities which are being carried out in the villages to improve the quality of service to consumers include : i) Replacement of bare conductor with AB cable. ii) Replacement of defective/electro mechanical meters. iii) Shifting of meters outside the premises. iv) Maintenance of DT's. v) Maintenance of LD system vi) While replacement/relocation of meter as a one time measure, the meter would be replaced on the spot without further checking from the M&T Lab.

The objective of the scheme is to curb the theft of power in villages by improving billing efficiency. Under this scheme, wherever above parameters are found improved, increased supply hours to villages are provided. At present, 5569 villages are being provided 24*7 power supply. 24 hours supply is being provided to all villages of the District namely Ambala, Panchkula, Yamuna Nagar, Kurukshetra, Faridabad, Gurugram, Rewari, Sirsa & Fathebad.

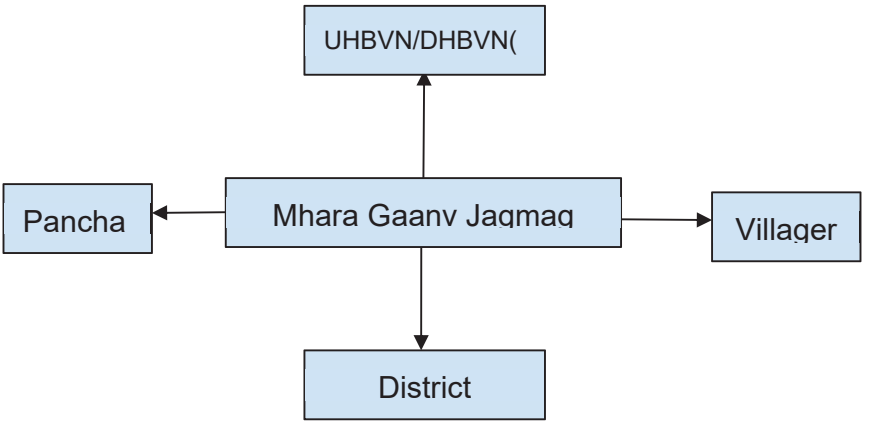
Process To start with, One Rural Domestic Supply(RDS) Feeder in each of Haryana[1] Assembly Constituencies having least losses selected and provided increased power supply from 12 to 15 Hours. Villagers could pay their pending dues in 5 regular installments and the discoms would waive off the entire surcharge. To curb the theft, discoms would replace bare conductors with more secure AB cables. Defective electrical/mechanical meters would be replaced and meters would be shifted outside the premises on a poll.

To increase power supply from 15 to 18 hours, a village has to fulfill two conditions. Replacement of bare conductors with AB cables and meters of all households will

[1] In Haryana, Rate (2022) is based on consumers.

be outside on a poll. To increase it from 18 to 21 hours , in addition to the above two conditions, technical losses of the feeders would be restricted to 20% loss and the 90% of the households clearing their dues. Once, the technical losses are restricted to 10% , 24*7 supply is provided to the village and it becomes a Jagmag Gaon.

To resolve people's grievances , the government has set up Bijli Panchayats in the villages. They happen on a regular basis where senior officials of the discoms and district administration are present and the billing complaints are resolved on the spot. Through these bijli panchayats, the support of Sarpanch, Panch and villagers is also ensured for hassle free functioning of the scheme.



Stakeholders, MGJG

III. STUDY METHODOLOGY

The objective of this study is to attempt a scheme evaluation on the implementation process in selected districts of Haryana. This study was carried out in three districts of Haryana namely Bhiwani, Panipat and Rohtak . The reason for choosing these districts was to include different aspects of Haryana's social and economical aspects . According to Census 2011 figures, the rural population in the three districts is 80.34%, 53.95% and 57.96% respectively.

Along with a brief exploratory pilot aimed at understanding the technicalities and scheme functioning mechanisms in the state, the study looked at secondary quantitative data from various sources at the district level including the implementation agencies and nodal offices. Qualitative data was largely collected via stakeholder interviews and FGDs conducted at the village level in different districts. The FGDs were of two kinds: one involving the beneficiaries of the villages and the other with the administrative and implementation stakeholders of the scheme.

Various parameters were identified based on the scheme's unique functioning in Haryana in the context of rural electrification in India. This process and subsequent insights were used to recognize and discuss the challenges faced by the various stakeholders of the scheme.

The contributors of the study were posted as Chief Minister's Good Governance Associates(CMGGAs) in the districts.

IV. PARAMETER ANALYSIS

The parameters for our analysis have been selected based on the expectations that are derived from the notifications issued by the government from time to time. These contribute towards a critical evaluation of the scheme as it has both quantitative and qualitative aspects. The Parameters are : (i) Feeders, (ii) Finances, (iii) Discom Debt, (iv) Grievance Redressal, and (v)Awareness and Community Participation (Bijli Panchayat).

Feeders

Feeders are important to evaluate the infrastructural aspects of the scheme. The government has been investing considerable funds in the scheme. Henceforth, the proportional increase in power supply with respect to the feeders have been studied. The percentage of MGJG villages in respective categories is shown in the table below.

District Name	Total Villages	Total Feeders	Villages getting 24*7 Supply	Balance Villages for 24*7 hours supply	% MGJG Villages
Bhiwani	306	101	226	80	74%
Panipat	190	99	154	36	73%
Rohtak	172	112	90	82	53%

Source: Data received from UHBVN and DHBVN respectively **(April'22)**

Relatively, Rohtak has a low performance with 53% MGJG Villages. The reasons for low performance which that could be corroborated were (i) Material shortage in the department (demand for some feeders have been raised but supply is pending), (ii) Public resistance in villages like Titoli, Humayunapur, Assan, Kansala, Bhalaut, Ladhot, Madina, Khidwali, Sanghi etc., where there is resistance to pay the old dues. The qualitative insights have been captured in case studies and (iii) Coordination between Police and Power Department as stringent action is sometimes not taken against the culprit disrupting the department officials to work in the district.

Finances of UHBVN and DHBVN (Circle)

The Central Government's scheme **Ujjwal Discom Assurance Yojana (UDAY)** for operational and financial turnaround of the Power Distribution Companies (DISCOMs) owned by any state was launched in 2015**.** It has been observed that distribution companies have been in distress due to less billing efficiency. A look at MGJG's contribution to this issue becomes important.

The tables below show that T&D Losses have been steadily decreasing over the years as the billing efficiency has improved. With the placement of meters outside the homes, the tracking of the bills has improved in many villages across Haryana. In Panipat, there is over recovery, since backlog cases outstanding were recovered with the support of villages and efforts of the department.

District	Years	Revenue Target (Rs. Cr)	Revenue Achieved UHBVN (Rs. Cr)	Collection Efficiency (%)	Loss Discoms (%)
Rohtak	2017	106.34	92.99	87.45	76.11
	2018	117.34	111.97	95.42	68.76
	2019	121.36	112.88	93.02	67.29
	2020	133.10	133.09	99.70	57.99
	2021	151.70	151.70	107.36	46.91

Source: Data received from UHBVN and DHBVN

District	Years	Revenue Target (Rs. Cr)	Revenue Achieved UH-BVN (Rs. Cr)	Collection Efficiency (%)	Loss Discoms (%)
Panipat	2017	21.83	13.06	60%	25.65
	2018	20.84	13.90	67%	20.86
	2019	14.81	14.71	99%	16.5
	2020	12.81	15.86	124%	17.13
	2021	12.81	15.26	119%	14.96

Source: Data received from UHBVN and DHBVN

District	Years	Revenue Target (Rs. Cr)	Revenue Achieved UHBVN (Rs. Cr)	Collection Efficiency (%)	Loss Discoms (%)
Bhiwani	2017	533.69	468.58	87.80	21.28
	2018	520.47	485.76	93.33	19.31
	2019	562.3	483.50	86.00	19.69
	2020	581.06	513.77	88.42	19.40
	2021	566.86	557.73	98.39	14.29

Source: Data received from UHBVN and DHBVN

Complaints/Grievance redressal

Grievance redressal is an essential component of the scheme. Citizens have multiple channels to register their complaints with the discoms. 95% of complaints are related to billing and meter. Other complaints are for shifting HT and LT lines and shifting meters and transformers. District-level complaints are sent to dedicated Whatsapp and Landline numbers. Bijli Suvidha Kendra (BSK) team, which comprises two members, looks into these complaints and resolves them.

Another way is where citizens can register their billing and meter complaints online on the Consumer Grievance Redressal System (CGRS). From here, the complaint goes to the concerned officer in the subdivision in the district and is resolved within the Right to Service (RTS) timelines. By dialing a number, consumers can also register their complaints directly to the Head Quarters (HQ) level. Almost 95% of these complaints are resolved in a time bound manner under RTS.

Whenever there are planned outages, the department officials update the timing on an MIS Portal of UHBVN, wherein the state team also can see the status. When the consumer calls, and if the area matches with the outage area, the concerned grievance redressal officer informs accordingly. Below is the status of complaints for three districts:

District Name	Total Complaints	Billing Complaints	Metering Complaints	Shifting of HT and LT Lines	Shifting of Meters	Shifting of Transformers
Bhiwani	55,257	39,537	12,720	951	1554	495
Panipat	25453	18339	5713	434	788	179
Rohtak	30,276	23,248	5,238	661	892	237

Awareness and Community Participation

In 2016, the Government of Haryana constituted 'Haryana Swarn Jayanti Bijli Samities' in all 230 subdivisions of the state. This committee consisted of the representatives from different sections such as farmers, women, panchayat members and district administration. These were held once in two months and grievances of all the villages were being solved.

After this, certain villages were identified which were not willing to clear their dues or people resisted getting the meters outside their houses. To solve this problem, Bijli Panchayat was started. It is another way to solve citizens' grievances. Bijli Panchayats were started primarily in the villages where billing efficiency has been low over the years. The idea was to encourage the citizens to pay their due bills on time. In these panchayats, which are attended by officials such as SDO and team members, consultation take place with the villagers on where meters can be placed, tariff details, and the advantages of being billed on time are also conveyed to the people present. Through these panchayats, a lot of grievances are being solved. Billing efficiency in the laggard villages have also seen a rise. Below is the data for Bijli Panchayats held in three districts:

District Name	First Held	Last Held	Total Held
Bhiwani	15.09.2016	13.03.2022	71
Panipat	20.4.2017	15.7.2021	98
Rohtak	01.08.2016	12.01.2022	49

Bijli Panchayats

V. CASE STUDIES

Case Study 1 In Rohtak's Kharwad village, electricity is being given for 8 hours even though 90% households pay the bill. The losses have decreased considerably over a period of time. Villagers have complained about the issue to the concerned officials but the issue has persisted. Officials maintain that there are some discrepancies regarding the pending bills and once they are clear, the electricity hours will be increased for the village.

Case Study 2 In some villages of Rohtak, there is a constant resistance towards the placement of meters being placed outside the households. Many villages have not cleared their pending bills. Officials when visiting these villages face physical violence from villagers and are not allowed to put up meters on the polls. This has stalled the process of making a village jagmag. There is a level of distrust as people believe that old meters show less reading and the new ones will make them pay higher bills. Officials continue to try and speak to the villagers and make them understand the benefits of clearing dues and getting 24*7 electricity.

Case Study 3 In Panipat's Beholi village, 24*7 electricity is being supplied under the scheme. People have also paid their bills and have cooperated with the officials in getting the old wires replaced and placing new meters outside the houses. During summer time, the electricity reduces to 16 hours only.

VI. CONCLUSION

Overall, MGJG scheme has seen a significant success with 5569 villages eligible for getting 24*7 power supply. Considering the state of electricity before the inception of the scheme, covering 77% of the villages under 24*7 power supply is a major step towards providing electricity to each and every household in the villages of Haryana. Some of the best practices that became visible while studying the scheme was the Grievance Redressal system online and offline. Under the RTS, people's grievances of faulty meters are being addressed in a time bound manner. With the inception of Bijli Panchayats, more and more villages have come on board to adopt the scheme. The level of trust between the electricity department officials and the citizens have increased considerably. This can be seen in the people paying their past dues and reduced loss in efficiency.

Under GOI's Deendayal Upadhaya Gram Jyoti Yojana, a village is considered electrified when at least 10% of its households are electrified irrespective of the quality of electricity. The limitation with this scheme is that it does not focus on 24*7 supply of electricity in a particular village and its objective is to have some sort of electricity infrastructure in the village. Through the Mhara Gaon Jagmag Gaon (MGJG) scheme, the Haryana government has tried to solve this limitation by focusing on curbing the electricity theft and paid up connections for every household. There is still some resistance towards the metered connections but a

lot of progress has been made under this scheme. The recovery rate of bills has improved much since the scheme has started.

Since 2001, there has been an improvement in access to electricity in rural India. India's goal to electrify all households remains a distant dream as the majority of un electrified houses remain in the rural areas. Haryana has taken a lead in providing electricity to every household and it is also making sure that no theft of electricity happens and the consumers can also pay their remaining dues in installments.

Major parts of the data accumulated through the secondary sources, surveys and interviews are under analysis for further publication. These data insights will form the basis for the study's recommendations towards improving the Mhara Gaon Jagmag Gaon in Haryana.

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8

Bengaluru Transport System - Learnings for Haryana

ARVIND KUMAR

I. INTRODUCTION

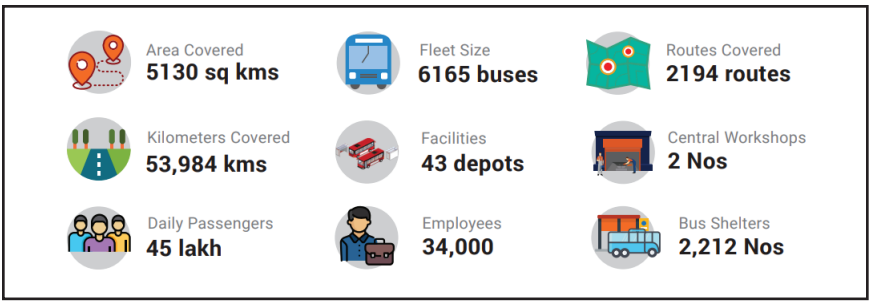
Bengaluru is the capital of the southern Indian state of Karnataka. It is India's fourth most populated metropolis and one of the country's largest and fastest-growing metropolitan districts. With 91% of its inhabitants residing in urban areas, the Bengaluru district is the most urbanized in Karnataka state. IT-enabled services, robotics, biotechnology, engineering & electronics are among the city's key high-tech industries.

The population of Bengaluru grew 49% from 2000 to 2018, with migration accounting for about 30% of that growth. It is expected that the population of Bengaluru city will reach 16.2 million by 2030 from a current population of ~12 million. The rapid pace of urbanization has not been without problems, which include urban sprawl, unplanned and/or sporadic development, and inadequate infrastructure. This has resulted in congestion, declining mobility, high land prices, deteriorating infrastructure, and environmental degradation. These factors reduce productivity, inhibit economic efficiency, and negatively affect the quality of life.

BENGALURU METROPOLITAN TRANSPORT CORPORATION (BMTC)

Bengaluru's public transport is managed by the BMTC. Bengaluru has a total length of 6,000 kilometers of road and an area of 8,000 square kilometers. 2 National Expressways, 3 National Highways, and 12 State Highways intersect the Bengaluru Metropolitan Region (BMR), linking key towns and cities. In BMR, the radial road network converges into the core, containing both center-periphery and transit traffic, which clogs the city center. In recent years, the city has seen significant growth in terms of transportation infrastructure, with large projects such as bridges and flyovers being completed. The primary goal of this infrastructural development throughout the city is to alleviate traffic congestion.

Bengaluru's urban transportation needs are primarily met by the road-based network, as rail lines were not constructed to cater for the need of the urban and regional traffic. The city's traffic is dominated by motorized 2- and 3-wheelers, with the Bengaluru Metropolitan Transport Corporation's (BMTC) bus network serving as the most essential urban transportation infrastructure. It employs ~34,000 people and operates a fleet of over 6,000 buses. Every day, it transports more than 45 Lakh passengers over 2,000 routes and 8,000 bus stops, covering more than 1.2 million kilometers and earning almost Rs. 4 Cr. in income. (BMTC 2018).



Bengaluru Metropolitan Transport Corporation (BMTC, 2018)

However, the increased congestion and decreased average travel speeds have had a negative impact on city bus travel. Bus ridership fell from 50 Lakh in fiscal 2014 to 35 Lakh in fiscal 2019. Further, insufficient public transportation and rising family incomes have led to a rapid increase in the number of private vehicles on the road, which has risen ~2.7x from 32 Lakhs in 2009 to 86 Lakhs in 2020. According to a 2016 survey, 91% of respondent households shared that they would be willing to switch to a better public transportation system if it offered significant time and cost savings. While the vehicle density of the city is growing by at least one lakh every year, the total road length has remained the same.

According to the city's Revised Master Plan 2015, the area dedicated to transportation and communication in the city was 7.3%, when the norm is 20%. As a result of this, Bengaluru has seen an unfathomable increase in traffic. Nearly all of the major intersections are overcrowded, causing traffic cops to turn off fixed-time traffic signals in a number of spots. According to a 2018 analysis by Boston Consulting Group, Bengaluru has the second-highest peak hour congestion level, i.e. the percentage of additional time necessary to commute during peak hours, among India's top four metropolises, at 162%. This has also resulted in a considerable reduction in average traffic speeds, which have dropped from 33 km/h to less than 5 km/h (ET, 2017).

BENGALURU METRO RAIL CORPORATION LIMITED (BMRCL)

BMRCL, usually referred to as *Namma Metro*, is the city's newest mode of public transportation. It is the country's third-largest metro network, with a total length of ~56 kilometres. The daily ridership of the Namma Metro is currently around 4.6 lakh. It is divided into four phases: Phase 1, Phase 2, Phase 2a, and Phase 3, with four lines: purple, green, yellow, and red. The burden of on-road transportation is gradually diminishing as the metro system expands.

After a decade of operation, several analysts have concluded that it is becoming a white elephant, with costs far outweighing advantages. While the high expenses were predicted, especially when compared to the existing bus system, the metro is not living up to its billing, and the current design and operations are also not resulting in a significant reduction in traffic congestion. Operational expenditures are currently around Rs. 1 crore per day, with daily losses of approximately Rs. 45 lakhs (November 2021). The BMRCL will need to more than quadruple its ridership to 12.5 lakh to break even, according to a 2021 study by the International Association of Public Transport (IAPT).

KEY LEARNINGS FROM BENGALURU METRO

- Bengaluru's metro has a 79% passenger fare revenue share, with Non-farebox revenue (renting and advertising) only 9%, the lowest of the four major cities. BMRCL needs to find ways to increase earnings other than ticket prices, such as through advertising. Other metro systems should take note of this and figure out how to establish new revenue streams in order to reduce the financial burden in the initial years.
- The BMRCL's initial phase lacked a clear planning strategy, resulting in poor last-mile connection and low ridership. As a result, metros in other cities must be planned in accordance with the needs of the respective city areas instead of having a uniform approach.
- Furthermore, it was discovered that the State and Central Governments ignored other agreed-upon conditions such as appropriate parking at metro stations, transit-oriented development, and first- and last-mile connections. These issues diminished the metro system's favourable impact on the city's transportation infrastructure. These characteristics must be prioritised while establishing metro systems in other cities.
- When it comes to multimodal integration, civil society organisations have also pointed out that the BMRCL has been particularly insensitive to citizens' recommendations for unclear reasons. Despite public opposition, they have also changed the location of metro stations. Citizen participation is crucial in determining city development goals. Hence their feedback should be considered an integral component of the development process.

II. KEY TAKEAWAYS FROM THE BENGALURU ROAD TRANSPORT SYSTEM

Health Aspects

Bengaluru's transport system is critical to people's health. It allows people to travel for jobs, education, commerce, recreation, health, and access social services. However, gaps in road network planning and bad traffic management

have resulted in a slew of health issues for Bengaluru residents. Its citizens' health and productivity are being harmed as a result of the high levels of air and noise pollution, costing them an average of INR 52,264 per year in medication and other measures. Citizens who travel in private vehicles on a daily basis have reported health issues such as back discomfort, asthma, stress, respiratory problems, and other ailments, according to multiple polls. The number of sick days taken by commuters has increased, as has the amount of money spent on preventive efforts to avoid traffic congestion.

Given the amount of industrialisation in Haryana's NCR region, it's important to address the health implications of the transportation system when planning transport infrastructure for these cities. A few important suggestions in this regard could be

- Consideration of health aspects in the formulation and evaluation of policies and projects, along with assessing the projects' health consequences
- Inclusion of vehicles developed using new and growing technologies
- Ensuring that used vehicles are disposed of after a set period of time.
- Ensuring that enough land is allocated to develop transport infrastructure
- Awareness and promotion of carpooling among citizens
- Promoting cycling by having a vast network of cycle routes, as well as improved infrastructure to support them

FINANCIAL STATUS

With a welfare-oriented strategy, BMTC has a social obligation to provide inexpensive bus services, which means it is unable to raise fares significantly while operating costs continue to climb.

BMTC was once known as India's only profit-making public transport corporation. But it has become one of the significant defaulters among state PSUs. In FY 2020-21, the BMTC estimated a revenue loss of about Rs 200 crores. This is in addition to an outstanding debt of Rs 740 crores. The financial problem is mainly attributed to the purchase of expensive air-conditioned buses that never made an operational profit. In addition, a massive loss in ridership due to competition from online service providers, an increase in diesel prices, the lack of support and poor last-mile connectivity have also played vital roles in the corporation's financial downfall. The State Government contributes very little to the transportation agency's budget. It receives no operating subsidies from the government, unlike the majority of municipal bus operators in the country, with the exception of payments for its substantially subsidised passes.

BMTC has tried to reduce losses by increasing Vayu Vajra services (AC buses) that cater to IT employees and airport passengers and acquiring 90 electric feeder buses for last-mile connectivity with Namma Metro. The transport corporation is also using technology and apps to draw more commuters.

KEY TAKEAWAYS FOR HARYANA

- Public transport bodies usually possess a vast area of land which can be rented to private/govt bodies to generate revenue.
- The buses and bus terminals of the government transport agencies can be utilised to generate revenue from other activities such as advertisements.
- Long-term leases could be a good option to get favourable rates.
- A formula-driven fund allocation method should be established to ensure that the public transport bodies receive a predictable amount of funding from the state government for operational and capital initiatives.
- There should also be a mandate for organised financial planning, which includes alternative funding sources such as green bonds or infrastructure bonds backed by the state government or other state finance firms as guarantors.
- Public transport bodies could explore establishing a system similar to Delhi Integrated Multi-Modal Transit System (DIMTS), in which private companies are awarded bids based on their capacity, to reduce operational expenses and increase individual profitability.
- The public transport agencies should keep comparing costs to those of other Indian and global cities to develop cost-cutting methods.
- For fuel purchases, the bodies should consider using a fuel hedging strategy similar to that used by the airline sector.

POOR LAST MILE CONNECTIVITY

According to research released in March 2020 by the Bengaluru Political Action Committee (BPAC), public mobility in Bengaluru is 48%, compared to 80% in Mumbai. Furthermore, the last-mile connection is inadequate, requiring commuters to rely more on private vehicles in an already congested metropolis. From the standpoint of an expanding city, it is manifestly unsustainable. Public transit is more than just a way of getting someone from point A to point B and back. It is a concept that gives people convenient mobility access to workplaces, medical care, and recreational options, as well as the flexibility to travel between cities.

Bengaluru's failure stems from a lack of collaboration across authorities, a lack of clarity in implementation, poor project execution choices, and a lack of vision as the city grew. According to a customer survey conducted by CHALO and PGA Labs, bus passengers return to private vehicles or other modes like sharing autos due to crowding during peak hours, badly maintained buses, and growing unhappiness. Commuters were eager to return to public transportation if it was guaranteed to be reliable. It is critical to plan and implement early so that demand may be managed more easily afterwards.

KEY TAKEAWAYS FOR HARYANA

- First and last-mile connectivity to public transportation is a crucial aspect of the public transportation travel experience. There is currently no official physical or information integration across the city's forms of transportation. Ensuring integration will greatly help in improving the last mile connectivity leading to an increase in the adoption of public transport.
- Shared mobility: shared cabs and shared vehicles – are efficient ways to get to and from public transportation. In some regions of Bengaluru, shared driving services are effective in linking the city's interior with public transit terminals. Other cities could learn from it and promote the practice of carpooling along with providing policy support to companies offering such services.
- Furthermore, the most preferred solution for closing the first and last-mile gap is a shuttle service or a feeder bus system with a defined route covering the distance between residential neighborhoods and public transit stations. This practice can be adopted in cities across India to ensure that the gap is filled.
- For fleet expansion, the public transport bodies should consider a leased operator or a PPP model, buses are leased from private operators for the duration of the lease.
- BMTC has purchased Electric buses to solve the last-mile connectivity issues faced by metro passengers. Similar models can be adopted in cities where new metro projects have either started or are planned to start.

INTELLIGENT TRANSPORT SYSTEM (ITS)

The BMTC developed an intelligent Transport System for real-time tracking of buses and passenger trips, by capturing and using enormous amounts of daily data in digital format. This is helping in more data-intensive decisions: e.g. operational decisions around cash flow and more tactical decisions regarding the planning bus routes and schedules. It provides accurate information regarding current bus location, arrival time at bus stops, etc., to the traveller, reducing waiting time and enhancing efficiency. These features attract more passengers to this means of public transport, thus easing the traffic burden on the roads.

The ITS has four key technological components and is operated from a Central Control Room:

Component	Features
Vehicle Tracking System (VTS)	Two additional features: the vehicle tracking unit (VTU) and the Voice Kit. The GPRS-enabled VTU shares real-time location every 10 seconds, along with vehicle and shift number. Voice Kit – a microphone and speaker enables 2-way communication between the bus and the Control Room. Enables the driver to speak with the Control Room in an emergency like an accident or breakdown. Allows the Control Room and the bus depot to contact the bus driver if an alert is triggered, such as skipping a bus stop, unauthorised stoppages, change in the route, speeding, etc.
Electronic Ticketing System (ETS)	2 connected elements – the Electronic Ticketing Machines (ETM) and the Depot Application. Conductors use the ETM to issue journey tickets to passengers, which is transmitted electronically to the ITS every five minutes. The Depot Application is installed at all bus depots, and it gathers information from both the ETM and VTU and top-down sources. It can then generate data on the crew duty rotation, the log sheet for the driver, kilometres travelled and details about fuel usage, ticketing, etc.
Passenger Information System (PIS)	Bus location information system powered by real-time data from the VTS. Provides information about buses going from a particular stop: the destination, the route via which the bus will go, the estimated time of arrival, etc.
BMTC Mobile Application	Android application with a simple user interface that allows tracking of buses in real-time, including their estimated arrival time at a specific bus stop. Provides bus timetables, route maps and a trip planner.

Source: (Centre for Development Informatics Global Development Institute, SEED, 2018)

KEY TAKEAWAYS FOR HARYANA:

The ITS has multiple benefits:

- Historical traffic data is used to plan new infrastructure, adjust traffic signal times, and expand public transportation, among other things.
- Incident detection - ITS pinpoints the locations of accidents or vehicle breakdowns, allowing for quick response in emergency circumstances and the implementation of preventative measures in high-accident areas.
- The ITS dashboard may be used to follow every bus in real-time, keep track of income collected each day, conduct audits for verification, and keep a better record of all personnel's duty schedules. This has simplified end-of-day auditing and cash reconciliation, resulting in fewer revenue differences.
- The data can be used to optimise routes, schedule bus operations to better respond to daily and seasonal patterns of public transportation demand, and improve crew operation and management efficiency.
- Finally, ITS also assists commuters by giving them information about the arrival of public transportation, which lowers their waiting time and allows them to better plan their journey.

CONCLUSION

Similar to Bengaluru, some cities in Haryana have also witnessed a sharp increase in population (e.g. between 2011-21, Gurgaon [1]population has grown 240%, Faridabad 38%, Hisar 19%) due to inbound migration. This has brought with it accompanying issues of haphazard development, and a pressure on mobility options, including affordable and efficient mass transport. The Bengaluru Transport model gives planners in Haryana a birds-eye view of the opportunities to adopt and adapt the best features of the system. At the same time, there are sufficient learnings on how not to fail in their approach to multi-modal transport. Urban planners in Haryana should devote adequate time, effort and budget, build consensus amongst the administration and civil society and plan the cities with a modern transport network with the future population in perspective.

[1] https://www.indiaonlinepages.com/population/gurgaon-population.html

9

Indore Water Management System

Learnings for Haryana

AVINASH MITRA

Keywords - Drinking water, wastewater, rainwater harvesting, groundwater, Sewerage Treatment Plants (STPs), Indore Municipal Corporation (IMC)

I. INTRODUCTION

Indore is the cleanest city in India and also the financial capital and most populous city of the Indian state of Madhya Pradesh. As per Census 2011 data, Indore city's population was 19.69 lakhs, and the population of Indore metropolitan region was 21.96 lakhs. The Indore Municipal Corporation (IMC) is charged with provision of civic facilities, including water supply.

Indore had an estimated water demand of 421 million litres per day (MLD) during 2021[1]. There are three existing sources of water viz. Narmada River, Yashwant Sagar and Bilawali Tank, of which Narmada is the predominant source. IMC supplies piped water from these sources and augments this supply through 4,945 tube wells and 1,004 hand pumps[2].

IMC has set up Sewerage Treatment Plants (STPs) across the city and 30% of recycled water from the sewer is being re-used at construction sites and for gardening purposes. The IMC has also decentralized setting up Water Treatment Plants. For example, the Indore Zoo has the capacity to recycle 50,000 litres of water per day. Through effective campaigns, the municipality has been effective in bringing about behavior change and inculcating good water practices. The municipality has facilitated installation of rainwater harvesting techniques and ground water recharge systems across the city.

The municipality bears the cost of drawing water and supplying from the existing traditional sources, the electricity cost of pumping groundwater as well as running STPs and setting up water re-charge stations. The total cost is estimated to be around Rs. 133.95 crore (including water supply, sewer work and reuse water[3]). Funds are generated through Central Sponsored Missions/Schemes and user charge borne directly by beneficiaries. Indore's Smart City Plan consists of area-based development (ABD) and pan-city development (PCD). Water supply and management falls under the first component.

Indore, in the early 2010's, anticipating an increase in water demand due to rapid urbanization, drew up a roadmap to design and implement an efficient and sustainable water management system. Effective IEC, Community involvement and ownership, decentralized water treatment plants have all contributed in making Indore a model city in water management. The city has been awarded the

[1] *Restoration of traditional water supply sources in Indore, India - Report submitted by The Climate Group July 2020*

[2] *Environment Planning & Coordination Organization Report - Report on Indore water management*

[3] *ADB Water Supply and Sewerage Report - IMC)*

title of country's 1st Water Plus city by the Union Ministry of Housing & Urban Affairs (Swachh Survekshan 2021). [A Water Plus city certificate is provided to a city for maintaining cleanliness in rivers and drains under its administration.]

The city's impactful and sustainable management practices offer lessons which can be replicated in and contextualized for Haryana in five ways. First, Smart cities such as Karnal, Faridabad etc. can explore ways funds (from Smart Cities Mission) have been utilized in setting up and running water management projects. Secondly, proactively setting up STPs and nudging industries to set-up water management units (Similar to Tier II cities as Indore). Thirdly, promoting good practices through effective Behavioural Change Communication tools (Involvement of NGOs and local youth); Fourthly, facilitating installation of rain water harvesting and groundwater recharge units and Lastly, Community involvement and ownership.

Demand

Recent estimates suggest that the population would have grown by ~10 lakhs with the estimated current population above 30 lakh[4]. The IMC's influence is spread over a geographic area of 276 km^2. The IMC area is divided into 19 administrative zones & 85 wards. Given the estimated population growth, the city's estimated water demand was 421 MLD for 2021.

Supply

Sources of supply are categorized into three categories - Fresh (Surface) water, Groundwater and re-used water (treated water).

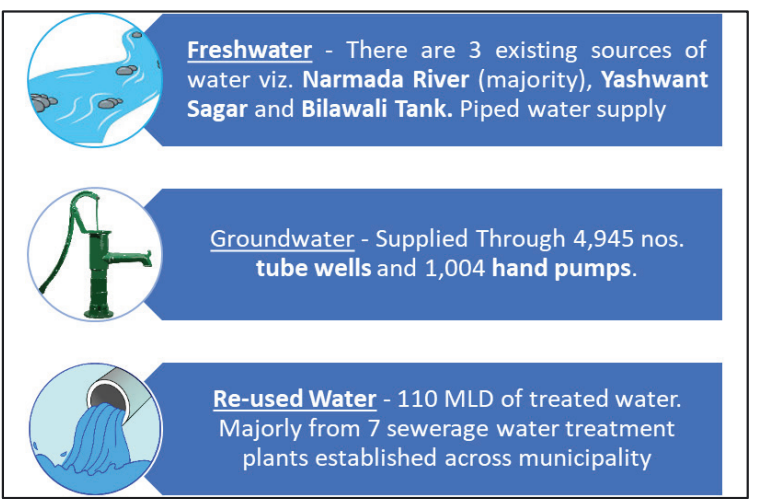


Image (i): 3 categories of Water Sources

4 *based on extrapolation by macrotrends & world population review*

***a)* Surface and Groundwater**

Water drawn from the 3 existing traditional sources amounts to 397 MLD (Narmada River alone accounting for 360 MLD) and that from groundwater is 60 MLD. Due to loss arising from leakage of pipes and other infrastructure gaps the amount of potable water available to the citizen is much lesser.

To support increasing water demand resulting from rapid urbanization, the municipality has started treating waste water and decentralized water management, supporting indegenous water restoration methods.

***b)* STP : Water Treatment**

i) Wastewater from houses and commercial spaces through 1,746 public and 5,624 domestic downfalls are treated before releasing it into the river

ii) 7 sewerage water treatment plants established across the municipality

iii)City Re-uses 110 MLD of treated water mainly for cleaning, gardening etc.

iv) *Decentralized WasteWater Treatment Plant* – in partnership with IMC with the Indore Zoo. Sewerage Treatment Plant – capacity 50,000 litres per day recycled water used from nearby canal – used for cleaning cages, gardening and green fodder production)

II. MANAGEMENT

Indore's Smart City Plan consists of area-based development (ABD) and pan-city development (PCD). ABD will focus on the overall water (infrastructure and sewerage) management along with other areas of the city for infrastructure development while PCD is meant to focus on smart technology that will integrate systems within the city and provide data to create a more efficient system.

Implementing and Regulatory Agency

- IMC
- Indore Smart City Development Limited (ISCDL)
- Special Purpose Vehicle (SPV)- a limited company, to keep it uncoupled from the larger municipal governance and democratic processes. (The SPV would be formed based on a tripartite agreement between the central government, state government and the municipal body)

Finance

Indore, aligned with the Union government's Smart City Project, has access to funds from Smart City Mission as well as Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

The municipality has reported 46% efficiency in collection of water related charges. Metered connections have very low penetration and most Households are charged a flat rate instead of usage based charges.

In non-piped areas, the municipality facilitates setting up borewells to utilize groundwater and RO infrastructure for which it charges a tariff for installation and maintenance. But there are areas which are prone to ground water contamination affecting the health of the dependent community member. Many alternative safe water sources have been installed across the city. In one such example, the municipality (land, subsidized electricity) with the help of Basti Vikash Samiti established The Amrit Drinking Water Plant (RO System) in 2013 with the capacity of providing safe drinking water at 3000 liters/hr. Each family in the community has to pay Rs.150 for registration and Rs 5/day for 20 liters[5].

IEC-BCC

Extensive awareness campaign by IMC in education institutions, newspapers, FGDs, Gummed Posters and Flyers in strategic locations across the city as well as on public buses, transport etc. These IEC activities were carried out through NGOs and PR agencies and were of the following nature, as depicted in the diagram below

[6]*Image (ii) : IEC Strategy of IMC*

[5] *ADB Water Supply and Sewerage Report - IMC*

[6] *https://www.slideshare.net/HanumatMalviya/indore-municipal-corporationswachchh-bharat-mission-no-1-town*

III. IMPACT

Indore City has been recognized as India's cleanest city 5 years in a row (Swachh Survekshans – 2017-2021), was awarded the National Water Award in 2020 (for best initiatives in water conservation among districts in the country's West Zone) and is the only Water Plus city in the country. A city can be declared as Water Plus only after all wastewater released from households, commercial establishments, and the like is treated to a satisfactory level before releasing the treated wastewater to the environment (SBM Water plus protocol - Ministry of Housing and Urban Affairs).

About 7,000 public and domestic sewer outfalls in the city were stopped, and the city's rivers were freed from the sewer lines. The 30% recycled water from the sewer was re-used by people at construction sites and by citizens for gardening purposes.

Efforts on the part of the municipality buoyed by enthusiastic citizens has helped establish various water conservation projects across societies-communities across the city. Rejuvenation of 90 bawlis and wells of Holkar era and recharging of rainwater in government buildings brought them laurels. Following are other initiatives implemented with the assistance of IMC and TARU Organization (Social Organization working with EWS)

1. **Groundwater Recharge through Rain water harvesting** – (Recharge pits and roof-top harvesting techniques implemented in 11 low income Households (HH) in the community)
2. **Improving Water Storage capacity at community level** – (Installation of water tanks which helps in storing water and reduces electricity consumption – Rs. 100 per HH for structure for tank)

ACHIEVEMENTS
1. Water Surplus City – Swach Survekshan 2021
2. National Water Award 2020 - Best Water Conservation initiatives among districts in West India
3. India's cleanest city 5 years in a row (Swachh Survekshans – 2017-2021)
4. Rejuvenation of River Kanh and Saraswati (100% Waste Water treated before releasing it into the environment)
5. Selected as one of the first twenty cities to be developed as 'Smart Cities'

**(Sources: swachhindia.ndtv.com and smart cities.gov.in)*

IV. WAY FORWARD

1. AMRUT project Rs. 152.5 crores for water supply and sewerage
2. Currently as per Indore's Smart City SPV, Indore Smart City Development Limited, 48 projects are currently under implementation worth Rs. 2,320.42

crore, and nearly 40% of that arise due to water supply and sewerage management projects.

3. Proposed Projects -- There are a total of 66 proposed projects with a total estimated cost of Rs. 34.96 crores. These include riverfront development, smart pole installation, slum beautification, heritage shopping complex, heritage walk, underground cabling work, development of integrated smart road network, improvement of water supply and sewerage systems in ABD area and implementation of LED street lighting at PPP basis[7].

LESSONS FOR HARYANA[8]

According to the latest report by the Central Ground Water Board, 85 blocks [9](60% of the state's geographical area) in 14 out of 22 districts in Haryana had reached the red category (most severely stressed) due to groundwater exploitation. Aggressive farming and rapid urbanization are responsible for this grim situation which is a cause of serious concern with regard to water availability for the state going forward.

A Tier II city, Indore has paved the way for local governing bodies to adopt and promote good water practices. A few of the Best Practices can be contextualized and replicated, as much as possible, in the urban areas of Haryana.

In terms of access to resources, cities such as Karnal and Faridabad can efficiently utilize funds available from the Smart Cities Mission. The respective Municipalities can explore best practices in terms of efficient allocation of resources in waste and water management. Investment under Smart Cities Mission has allocated funds worth Rs. 2991.02 cr for Rainwater harvesting and re-use in redevelopment buildings.

There is a need to evaluate existing STPs [10]and its functionality in Urban Local Bodies. They can mobilize resources to upgrade existing ones and install new ones wherever they are lacking. Industries can be nudged to adhere to a Supreme Court Mandate which requires industrial units to set up effluent treatment plants. NGT-appointed state monitoring committee announced that only 9 out of 79 of the STPs, in Haryana, in the Yamuna catchment area are functional. Gurugram and Faridabad are major pollutants of the river. In April '21, a sewerage treatment plant was set-up in Faridabad at a cost of Rs. 21 Lakh in collaboration with Japanese

[7] *March 2020 – Smart City Indore: A Case Study*

[8] *https://www.hindustantimes.com/gurugram/with-most-stps-out-of-order-haryana-continues-to-pollute-the-yamuna/story-4XTWZ9ErsWZrHvk17gWv0M.html*

[9] *https://india.mongabay.com/2021/07/groundwater-depletion-in-haryana-a-cause-of-serious-concern/*

[10] *https://www.dailypioneer.com/2021/state-editions/haryana-cm-inaugurates-stp-pilot-project.html*

company Daiki Axis India, with an aim to re-use 25% treated water in 2021 and increase that to 60% in 2022. This target can only be achieved if more such STPs are installed in urban areas and existing ones are upgraded.

For this the municipality has to identify and provide land. Decentralized water plants can also be facilitated by nudging Zoos, other medium-large sized government institutions to install their respective systems. Concessions and incentives by the municipalities can mobilize institutions in setting up STPs.

Successful communication techniques can bring about a positive influence on its citizens. Print, Digital Media, Nukkad Natak etc. are proven techniques to bring about behavior change. For this, the Information and PR department play a major role in dissemination of appropriate information, Education department for conducting competitions and encouraging students, deploying NGOs and CSOs to create posters, conduct rallies & mike campaigns, conduct short street plays in strategic locations etc. The state can also elevate the importance of Water Day, Earth Day etc. by mandating celebrations and events in schools and government institutions.

The government has to lead by example by installing Rain water harvesting and ground water recharge pits in all Public Schools and Government institution buildings. Students can be made Change Agents by adopting these practices, as much as possible, back home in their respective communities. Government can also facilitate setting up these systems in Public Owned Buildings and spaces such as PWD Guest House, Offices and Departments with adequate space.

Youth and artisans can promote events - both online and offline that lead to better awareness in society. Community involvement cannot be restricted to just this and building ownership, by introducing water charges, can help reduce wastage and provide funds to help sustain the model. Involvement of NGOs and CSOs also ensure ownership and also forms a direct feedback channel from the field to ULB officials.

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