

IMPACT ASSESSMENT REPORT 2023

3D Printing Machine for
Medical Simulation



Prepared By:

SGS

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ABBREVIATIONS

AIIMS - All India Institute of Medical Sciences

CSR - Corporate Social Responsibility

NETS - Neurosurgery Education and Training School

ACKNOWLEDGEMENT

We, SGS, would like to express our gratitude towards PNB Housing Finance Limited for entrusting us with this impact assessment assignment. We are extremely thankful for their assistance during the course of the study.

We thank everyone who participated in the study and contributed to gathering insights. We appreciate the All India Institute of Medical Science (AIIMS) team's cooperation with the SGS team during the primary research.

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EXECUTIVE SUMMARY

As a part of PNB Housing Finance Limited CSR interventions, the Neurosurgery Education and Training School (NETS) at All India Institute of Medical Sciences (AIIMS), New Delhi, was supported with Stratasys's J750 digital anatomy printer, which allows printing of anatomical structures with properties similar to real tissues.

3D printing technology has made a significant advancement in the field of neurosurgery. It has enabled the development of patient-specific anatomical models, surgical implants and other tools that assist neurosurgeons in their procedures. These 3D printed models can enhance surgical planning, improve precision, and ultimately improve patient outcomes.

The initiative has helped not just the resident surgeons of AIIMS; it has also benefitted doctors from across India. 68 doctors from AIIMS and outside have been trained through 939 sessions so far. The prototype developed using 3D printing technology has helped surgeons reduce the surgery time and helped them analyse the case before the operative procedure starts with patients.

The initiative supported by PNB Housing Finance Limited aligns with Schedule VII and Sustainable Development Goal 3, i.e. Good Health and Well-being.

SGS was entrusted with undertaking an impact assessment for the support provided by PNB Housing Finance Limited to AIIMS, New Delhi. The objective of the assignment was to understand the efficiency of the CSR intervention supported. The SGS team interacted with neurosurgeons and the technical staff of AIIMS. The impact assessment was conducted using a semi-structured questionnaire under qualitative assessment.



68 Surgeons Trained



939 Sessions Conducted

1. INTRODUCTION

PNB HOUSING FINANCE LIMITED

PNB Housing is one of India's prominent and fourth largest Housing Finance Company by Asset Under Management as on 31st March 2022*. PNB Housing offers retail and corporate loans, including individual home loans, retail loan against property, retail non-resident property loan, construction finance and lease rental discounting among others.

PNB Housing is also establishing in the affordable housing financing space with our dedicated Unnati segment. PNB Housing's network of 99 branches are spread across 67 unique cities and 38 outreach centers. This includes 24 new locations for Unnati across the country. We operate the sales and distribution function through our wholly owned subsidiary, PHFL Home Loans and Services Limited.



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CSR AT PNB HOUSING FINANCE LIMITED

PNB Housing Finance believes in driving action toward the sustainable development of communities around them. PNB Housing Finance Limited is executing the social vision and making a positive impact through its dedicated CSR arm Pehel Foundation.

The mission of PNB Housing is to plan interventions that are holistic in nature and attempts to improve the socioeconomic conditions of the communities at large. The interventions supported by PNB Housing do not only impact the development of direct beneficiaries but also attempt to enhance the quality of lives of those who are present in the ecosystem of the impact area.

PNB Housing focused and streamlined its efforts on strengthening the healthcare infrastructure across locations, to tackle the ever-increasing demand from the healthcare sector due to the pandemic. PNB Housing Finance Limited has supported welfare projects for construction workers, and enabling children's access to formal education by strengthening school infrastructure.

PNB Housing has also supported projects related to water conservation, increasing green cover, improving access to clean drinking water, and livelihood generation for women and persons with disability



Priority Thematic Area

STRENGTHENING HEALTHCARE INFRASTRUCTURE

Recognising the need to put up a strong front in the face of the pandemic and future health crises, PNB Housing Finance Limited upgraded infrastructure of Public Health Centers (PHCs), provided 3D Printing and Scanning Machine for Prosthetic limbs. NETS at AIIMS was supported with 3D printing machine to enable better medical simulations.

2. BACKGROUND OF THE STUDY

ABOUT THE PROJECT

The Neurosurgery Education and Training School (NETS) was supported with Stratasys J750 Digital Anatomy Printer under the CSR initiative of PNB Housing Finance Limited. The state-of-the-art 3D printer allows the printing of anatomical structures with haptic properties similar to real tissues.

NETS is a surgical skills simulation facility equipped with microscopic, endoscopic and high-speed drilling training facilities. The lab uses several 3D scanning and 3D printing techniques to develop various modules related to neurosurgical simulation and instrumentation.

The 3D printer helps create artificial anatomies/ twin organs that can be fabricated and match the properties of real anatomy. The method is cost-effective and enables training for more surgeons.

NETS is a surgical skills simulation facility equipped with microscopic, endoscopic and high-speed drilling training facilities. The lab uses several 3D scanning and 3D printing techniques to develop various modules related to neurosurgical simulation and instrumentation.

Challenges faced by NETS Lab



Reduced availability of cadavers
due to COVID



Ethical Concerns



Higher cost of synthetic cadavers



Mismatch between human
anatomy and synthetic cadavers

OBJECTIVES OF THE PROJECT



To enable medical practitioners to create prototypes of human anatomy using 3D Printer



To help surgeons reduce the surgery time and help them analyse the case before operating a patient



To train surgeons in a safe repeatable and controlled environment

Location

The support was provided to the All India Institute of Medical Sciences (AIIMS), New Delhi.

Beneficiaries

The project intends to benefit the resident surgeons of AIIMS and doctors from other prestigious institutions to impact further the lives of patients undergoing critical surgeries.

3. STUDY DESIGN AND METHODOLOGY

APPROACH AND RESEARCH DESIGN

The chapter describes the process adopted and the methodology used to assess the overall impact of the intervention undertaken by PNB Housing Finance Limited.

The impact assessment study employed combined data collection methods through participatory assessment tools to obtain all information required to analyse impact comprehensively. SGS's approach to the study was guided by providing insights to enable PNB Housing Finance Limited to gauge the project's overall impact and understand stakeholder sentiments and strategies for future implementation.

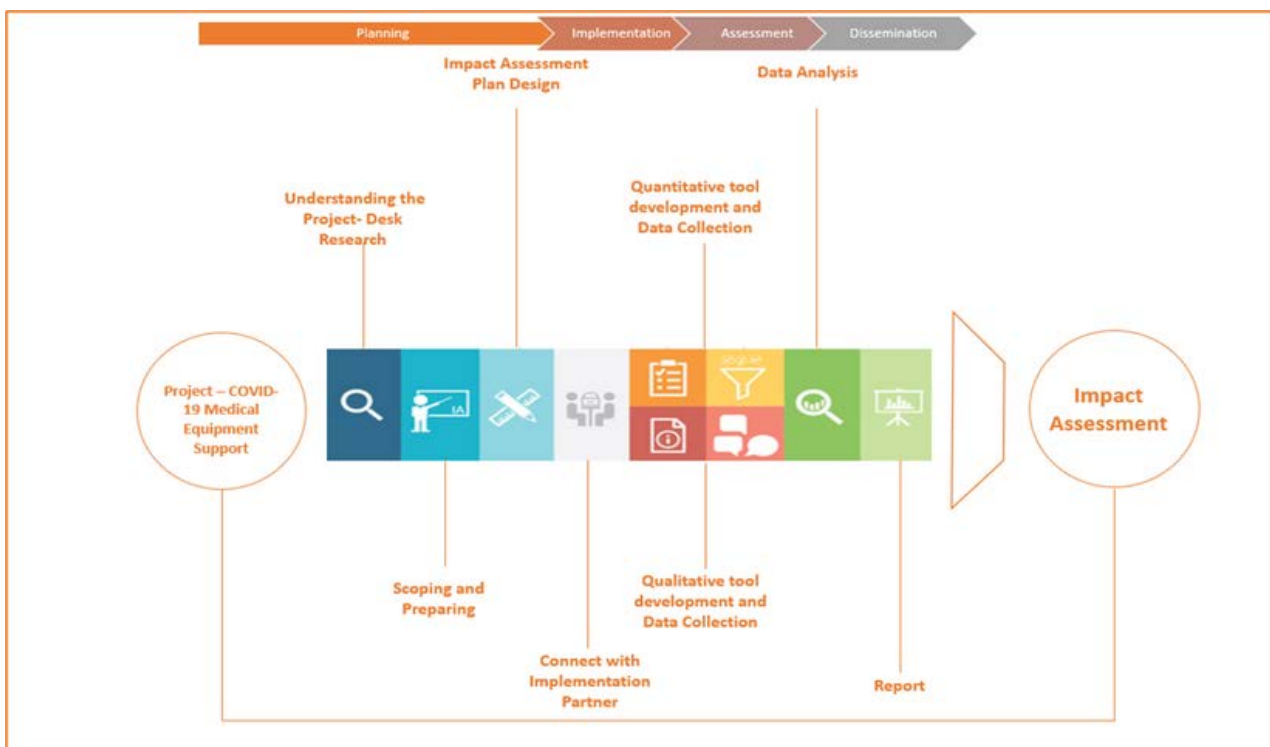


Fig 1: SGS's Impact Assessment Approach

APPROACH AND RESEARCH DESIGN

SGS deployed a two-pronged approach for the impact assessment of the project. The study used quantitative and qualitative methods and an in-depth desk review of secondary data. In order to understand the program holistically, different structured questionnaires were prepared for various stakeholders, i.e. doctors/technical staff etc.

A combination of research and consultative approach was adopted to address the scope of work under the assessment study.

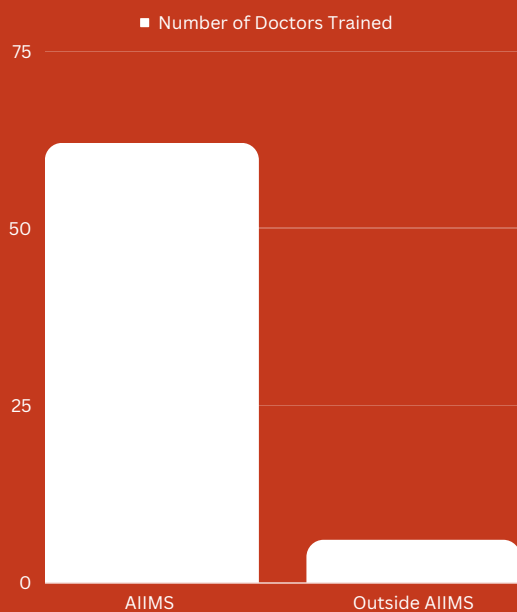
Various tools were used for collecting data from the stakeholders. The intervention's primary beneficiaries were interviewed through structured questionnaires and face-to-face meetings. Semi-structured questionnaires were used to gain qualitative input from the respondents.

4. FINDINGS

3D PRINTING TECHNOLOGY HAS HELPED RESIDENT NEUROSURGEONS IMMENSELY TO CREATE HUMAN ANATOMY PROTOTYPES

Number of Doctors Trained - 68

Total of 62 doctors from AIIMS from Neurosurgery, Surgery, Dental, Orthopedics and ENT have been trained so far. 6 doctors from Madhya Pradesh and Telangana have benefitted by training.



939

Sessions have been conducted for surgeons on high-speed drilling, neuro-endoscopy simulations, and micro-neurosurgery simulations

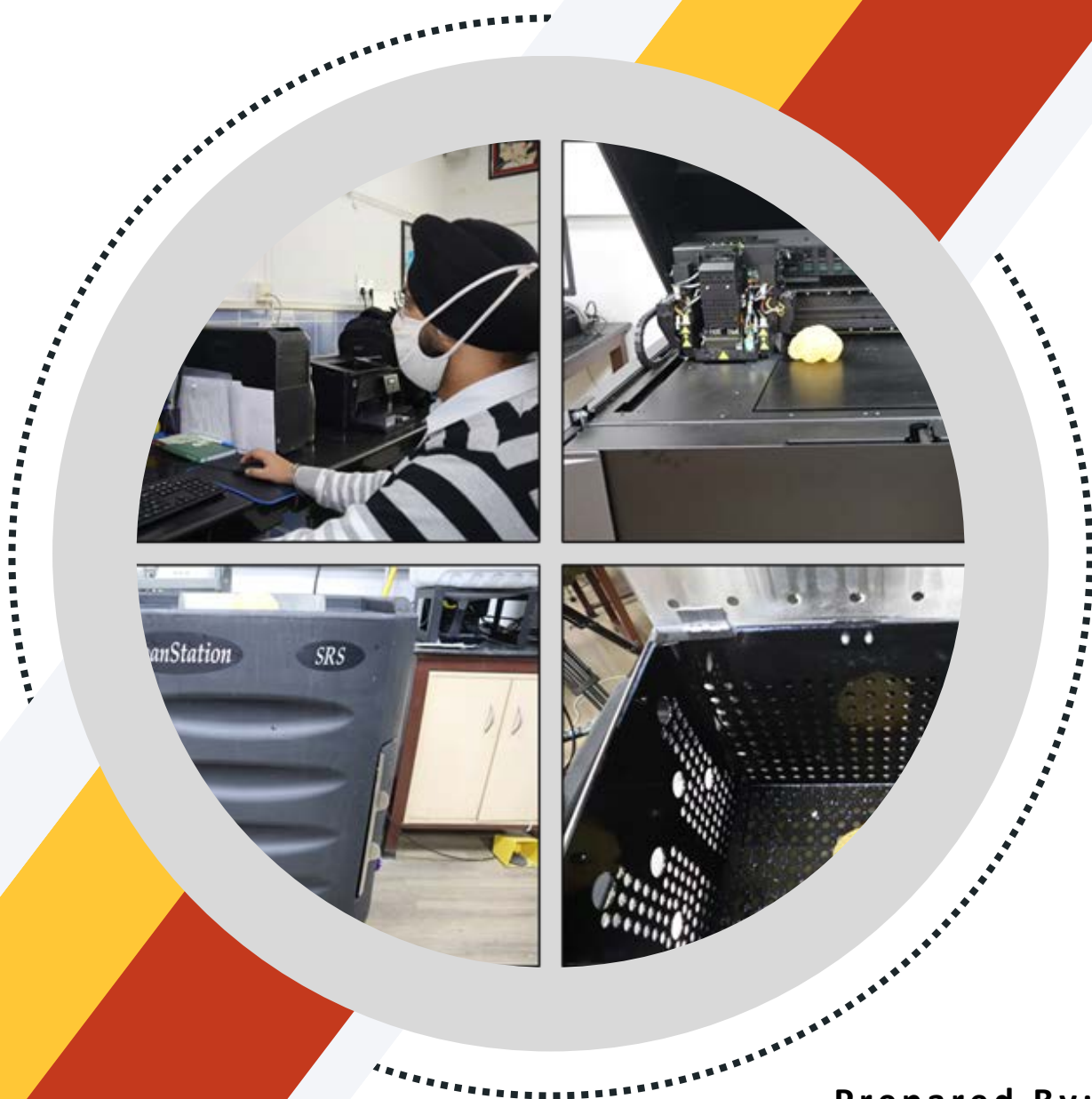
The initiative supported by PNB Housing Finance Limited has helped in,

- Training surgeons in safe and controlled environment
- Analysing cases before actually operating them, leading to less error while operating
- Reducing surgery time



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IMPACT ASSESSMENT REPORT 2023

COVID SUPPORT IN GOVERNMENT HOSPITALS
OF HARYANA AND CHHATTISGARH

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Figure 2 - Number of Respondents

Figure 3 - Support was useful

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EXECUTIVE SUMMARY

India experienced a massive surge in COVID-19 cases, particularly during the second wave in early 2021. The rapid increase in infections overwhelmed the healthcare infrastructure, including hospitals, ICU beds, and medical resources. The surge in cases led to a shortage of hospital beds, particularly in the worst-affected regions. Many hospitals reached full capacity, making accommodating all COVID-19 patients requiring hospitalisation challenging. The surge in cases exposed the system's existing gaps and capacity constraints.

PNB Housing Finance Limited and its implementation partner American India Foundation (AIF), quickly responded to the need for Indian health infrastructure. To cater to the need for hospital beds, 50 and 20 beds of portable units were installed at Palwal and Raipur district hospitals.

The portable hospital units were installed in close proximity to existing public health infrastructure. These self-contained hospitals have separate zones for the isolation of patients, intensive care and accommodation facilities for health personnel. The structure of the unit is compliant with Indian Standard Building Codes.

SGS was entrusted with the responsibility of undertaking the project's impact assessment. The SGS team visited and interacted with the medical staff of both district hospitals.

The equipment provided has a lifetime of 20 years. It is estimated that 4 patients can avail of the service per month. The initiative PNB Housing Finance Limited supported aligns with Schedule VII and Sustainable Development Goal 3, i.e. Good Health and Well-being.



20 years lifetime of the equipment



**4 patients can be treated on each bed per month
3360 patients can be treated each year**

1. INTRODUCTION

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PNB Housing has also supported projects related to water conservation, increasing green cover, improving access to clean drinking water, and livelihood generation for women and persons with disability

ABOUT THE IMPLEMENTATION PARTNER



American India Foundation (AIF) is committed to improving the lives of India's underprivileged, with a special focus on women, children, and youth. AIF does this through high impact interventions in education, health, and livelihoods, because poverty is multidimensional. AIF's unique value proposition is its broad engagement between communities, civil society, and expertise, thereby building a lasting bridge between the United States and India. With offices in New York and California, twelve chapters across the U.S., and India operations headquartered in Delhi NCR, AIF has impacted 6.7 million lives across 26 states of India.

2. BACKGROUND OF THE STUDY

ABOUT THE PROJECT

PNB Housing Finance Limited along with its implementation partner American India Foundation provided portable units with 50 and 20 beds in district hospitals of Palwal, Haryana and Raipur, Chhattisgarh to combat the ever-increasing demand for beds including ICU beds. These units were installed in close proximity to existing public health infrastructure.

Each of these self-contained hospitals has separate zones for the isolation of patients, intensive care and accommodation facilities for health personnel. The all-weather structures are compliant with Indian Standard Building Codes and can be potentially equipped with IT infrastructure for telemedicine. The hospitals are fully furnished and equipped to provide in-patient and critical care services.

Post-COVID these beds can be used as isolation wards to treat people with tuberculosis and other diseases.



2 Portable units provided in Civil Hospitals of Palwal, Haryana and Raipur, Chattisgarh



70 Beds added to cater the ever increasing COVID-19 surge in cases



OBJECTIVES OF THE PROJECT



To provide additional capacity of beds in hospitals to accommodate the increased number of COVID-19 patients



To strengthen the medical infrastructure overwhelmed with COVID-19 cases

Location

The portable hospitals were set up in the district hospital of Palwal, Haryana and Raipur, Chhatisgarh.

Location	Number of Beds
Palwal, Haryana	50
Raipur, Chhatisgarh	20

Beneficiaries

The project has benefitted patients infected with COVID-19. A portable hospital set-up has also benefitted patients with Tuberculosis in Raipur.

3. STUDY DESIGN AND METHODOLOGY

APPROACH AND RESEARCH DESIGN

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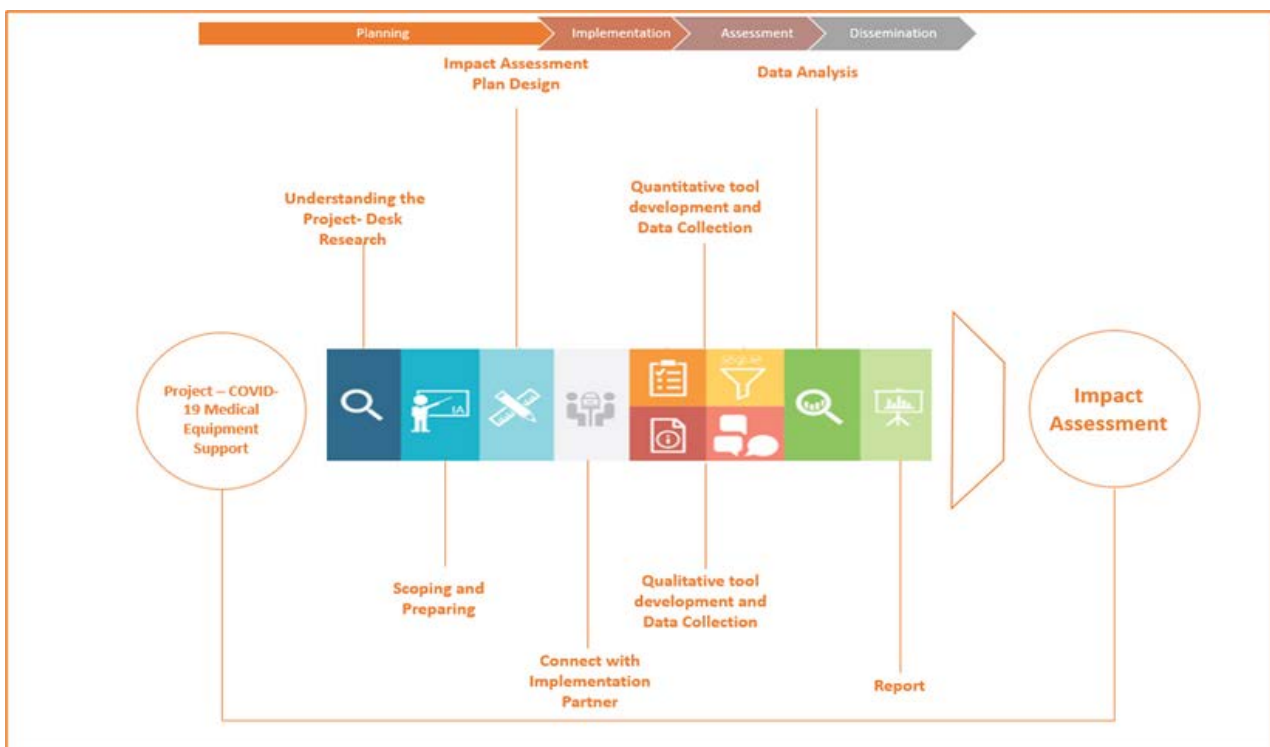


Fig 1: SGS's Impact Assessment Approach

METHODOLOGY

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A combination of research and consultative approach was adopted to address the scope of work under the assessment study. It is difficult to interact with beneficiaries (COVID infected patients) due to the nature of this project. Our team interacted with hospital staff to gauge their views on the project.



4. FINDINGS AND CONCLUSION

A total of 25 respondents were interviewed for the survey. 6 and 19 interviews were conducted at Raipur and Palwal, respectively. All respondents consulted for the assessment are a part of the medical staff at district hospitals.

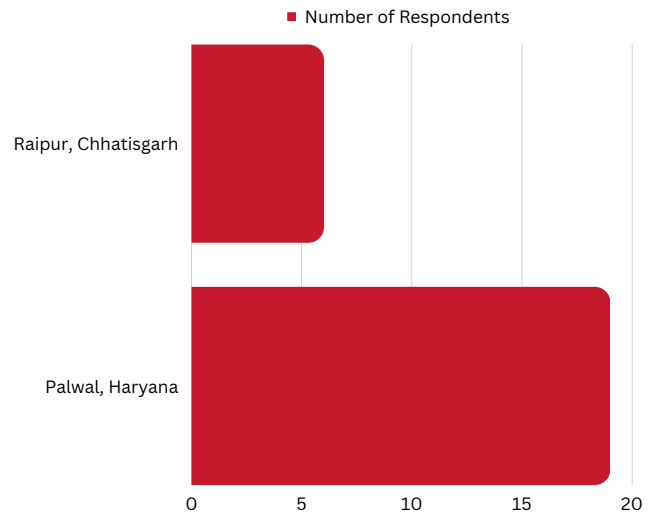


Fig 2: Number of Respondents



500+ patients footfall at both health care facilities

94% of the respondents mentioned that the healthcare facility was overwhelmed with the influx of covid patients. More than 100 covid cases were registered per day basis. More than 10 patients required either ICU beds or isolation during the peak of the second wave of COVID.

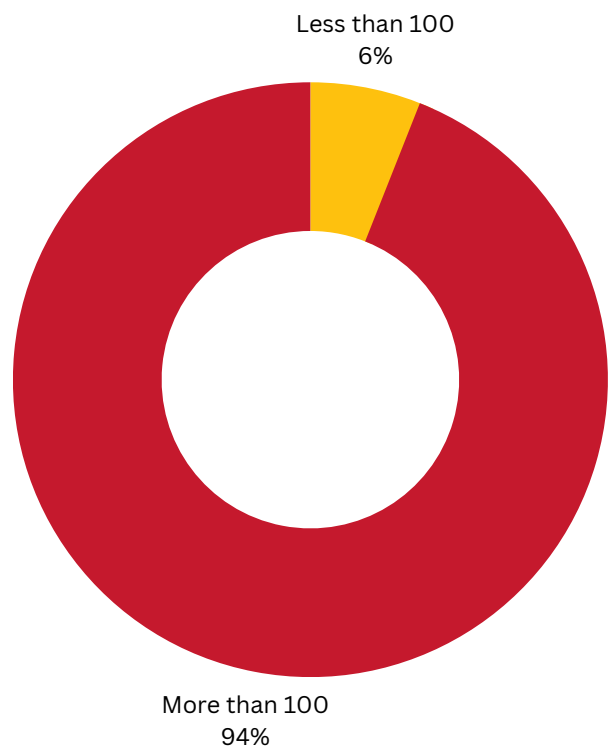


Fig 2: COVID cases registered per day basis

20% of the respondents stated that the support extended helped augment the need for the health care infrastructure. These respondents primarily represented the district hospital in Raipur, Chhattisgarh.

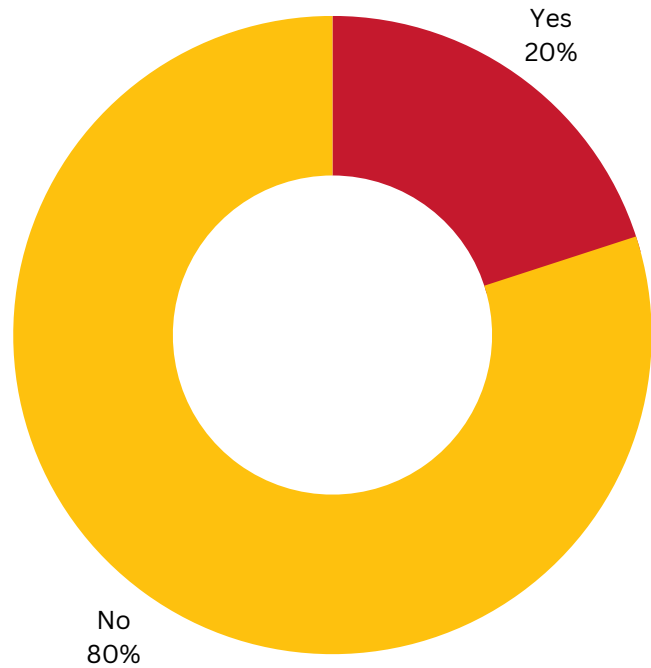


Fig 3: Support was useful



**20 Years
of Lifetime**

**4 Patients can avail the benefit
on an average per month**



CONCLUSION AND RECOMMENDATION

3 GOOD HEALTH AND WELL-BEING



PNB Housing Finance Limited's CSR intervention is in alignment with Schedule VII of section 135 i.e. access to quality healthcare. The intervention supported by PNB Housing Finance Limited also complements the efforts to achieve United Nation's sustainable development goals i.e. Good Health and Wellbeing.

- It is recommended that the beds are utilised for diseases like tuberculosis in which patients require isolation.
- The portable cabins should be interconnected, ensuring the doctors' mobility. This recommendation was voiced by medical staff in Palwal.
- In Palwal, portable units should be provisioned with an oxygen supply.



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IMPACT ASSESSMENT REPORT 2023

Holistic Development of Children of
Construction Workers in Partnership
with Mobile Creche

Prepared By:
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Figure 9 - Education support provided at the center

Figure 10 - Receive information on child's nutrition

Figure 11 - Growth in height and weight

ABBREVIATIONS

CSR - Corporate Social Responsibility

MC - Mobile Creche

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EXECUTIVE SUMMARY

India has a significant number of children living in poverty. While there have been efforts to reduce child poverty in the country, the scale of the issue remains a challenge. Poverty affects children in various ways, including limited access to education, healthcare, nutrition, and other essential services. Any child's first six years (formative) are crucial for holistic development. Many children in this critical age group suffer neglect, abuse, and deprivation from essential education, health care, and nutrition.

Approximately 20 million children under the age of six live in poverty in urban India. Parents of such children are primarily daily wage labourers without additional benefits or social security from their employers or government.

PNB Housing Finance Limited, through its mobile creche initiative, aims to improve the overall well-being and development of children from marginalised communities by addressing their childcare needs. The mobile creche program aims to address the childcare needs of migrant construction workers who often bring their young children to construction sites due to the lack of proper childcare facilities in the vicinity. This initiative recognises the importance of providing a safe and nurturing environment for these children while their parents are engaged in work.

Through this initiative, PNB Housing has reached out to more than 3,000 children of construction workers in Delhi and Mumbai. SGS was entrusted with the responsibility to undertake an impact assessment of the CSR initiative PNB Housing Finance Limited supported. The impact assessment was carried out using both qualitative and quantitative methods. The analysis and observations are outlined in the findings and conclusion chapter. Some of the key findings are as below.

- **70%** of the respondents' children **accessed the creche facility for all weekdays**
- **90%** of the respondents mentioned that their children **received 3 meals a day**
- **Growth monitoring** was undertaken regularly
- **92%** of the respondents were aware of the **medical consultation provided at the creche facility**
- **84%** of the respondents **affirmed that their children receive educational support**
- **Medical support such as deworming, immunisation and health supplements were provided to children**
- **78%** of the respondents have observed the **benefits of the facility in terms of the child's growth**

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ABOUT THE IMPLEMENTATION PARTNER



Mobile Creche (MC) has been providing health and childcare services to children at construction sites and urban slums to the most vulnerable groups in need of urgent interventions since 1969. Over a period of time, apart from its core activities of addressing the health and development needs of children at construction sites, MC diversified its energies to work closely with urban slum communities in Delhi NCR. Simultaneously, it also expanded its training initiatives through PAN India and build facilitative partnerships with other players in the NGO and real estate sectors for crèches and health services.

MC has worked with more than 200 building contractors, reached out to more than 8,60,000 children, trained 6,500 childcare workers, run 650 day-care centres and trained and supported 250 government Creches and developed almost a dozen women's groups to demand quality childcare services.

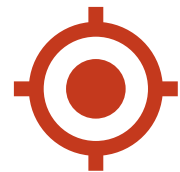
2. BACKGROUND OF THE STUDY

ABOUT THE PROJECT

The Mobile Creche project is an initiative providing childcare services to construction workers and other vulnerable communities at construction sites across India. It aims to address the challenges faced by migrant workers who often have limited access to safe and affordable childcare facilities.

PNB Housing Finance has supported the Mobile Creche project as part of its Corporate Social Responsibility (CSR) initiatives. Through its CSR program, PNB Housing Finance has extended financial assistance and other resources to the Mobile Creches project to establish and operate mobile creches at construction sites.

These mobile creches are equipped with facilities for early childhood care, including nutrition, health check-ups, educational activities, and play areas. They provide a safe and nurturing environment for children while their parents work. The Mobile Creche project also focuses on enhancing the overall well-being of children by promoting early childhood development and providing educational support.



Supported 4 Centers in
Delhi and Mumbai



Outreach of 3,000+
Children in FY 2020-21

PROJECT PILLARS



Education

- Early Simulation
- Child Centered Approach
- Readiness Skills
- Tutorial Support



Health

- Regular Health Check Ups
- Immunization
- Deworming and Supplementation



Nutrition

- Special Balanced Diet for Malnourished
- Nutritious meals to all
- Growth Monitoring



Community Awareness

- Mothers Meetings
- One to One Interaction

OBJECTIVES OF THE PROJECT



To ensure the safety and well-being of construction workers' children while they are away for work.



To provide early childhood education to support their overall development.



To ensure that children of construction workers receive nutritious meals.

Location

The support was extended in Delhi and Mumbai.

Beneficiaries

The project intends to benefit the children of construction workers across locations. Construction workers (parents) are also the direct beneficiaries of the project.

3. STUDY DESIGN AND METHODOLOGY

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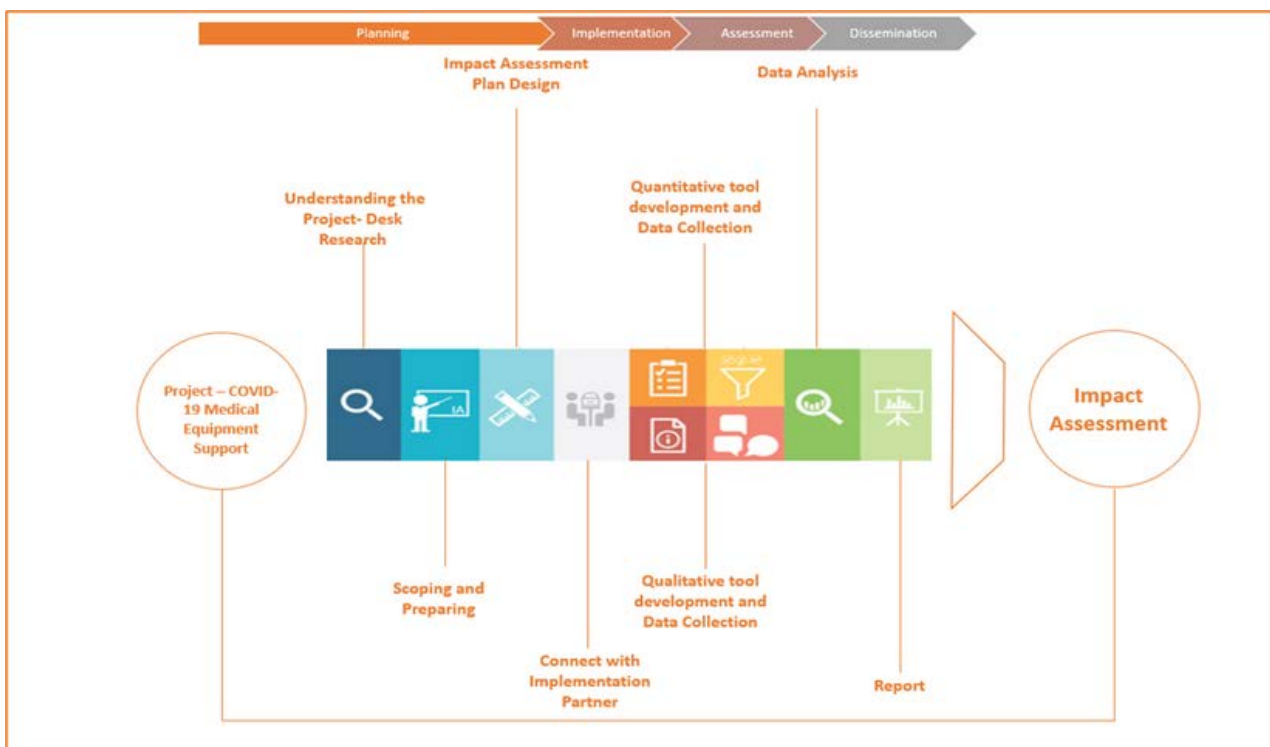


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A combination of research and consultative approach was adopted to address the scope of work under the assessment study.

Various tools were used for collecting data from the stakeholders. The intervention's primary beneficiaries were interviewed through structured questionnaires and face-to-face meetings. Semi-structured questionnaires were used to gain qualitative input from the respondents.

The beneficiaries of this project are construction migrant workers. Due to the nature of their work, they usually migrate from one place to another. Considering this limitation, an observation based comparative analysis was undertaken to understand the implementation rigour and outcome/impacts of the initiative. For this assignment, the team interacted with staff members and construction workers (parents) associated with operational facilities.

Stakeholder Type	Number of Sample Collected
Mobile Creche Staff	4
Construction Workers	14

STAKEHOLDER MAPPING

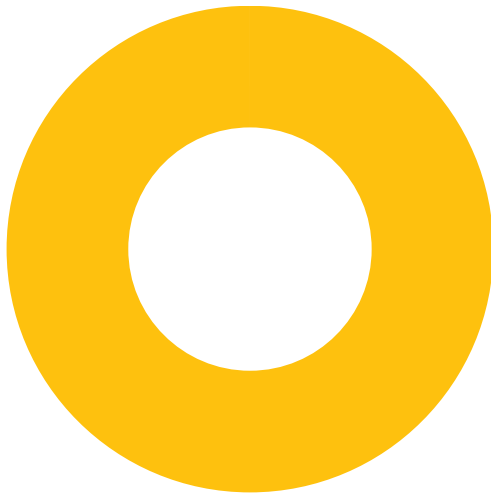
Direct and indirect stakeholders were mapped out to assess the project outcome and beneficiary perceptions through multiple lenses. Beneficiaries were consulted as direct stakeholders. In this project where beneficiaries are children, SGS team interacted with construction workers (parents). Mobile Creche staff members were also consulted for this assessment.

Various tools were used for collecting data from the stakeholders. The intervention's primary beneficiaries were interviewed through structured questionnaires and face-to-face meetings. Semi-structured questionnaires were used to gain qualitative input from the respondents.

DATA ANALYSIS TECHNIQUE

The conclusions and findings in this report are drawn from a mix of sources, including qualitative interviews, publicly available data and information, and existing research, among others. The information collected from the field through structured interviews was systematically coded, validated, analysed, and tabulated. To systematically describe the basic features of the data, this study used descriptive statistics to provide simple summaries about the impact blended with graphical representations. This forms the basis for quantitative analysis of the data. Simple data summaries have also been developed to postulate the impact of the intervention effectively.

4. FINDINGS AND CONCLUSION



Upto 3 Years
100%

Fig 2: Age of the Children

Our team interacted with construction workers (parents) of the children who actively accessed the creche facility. 100% of the respondents' children belong to the age group of up to 3 years.

70% of the respondents sent their children to the creche facility on all weekdays. While 25% and 5% of respondents' children access the facility for 4-5 days and less than 3 days, respectively.

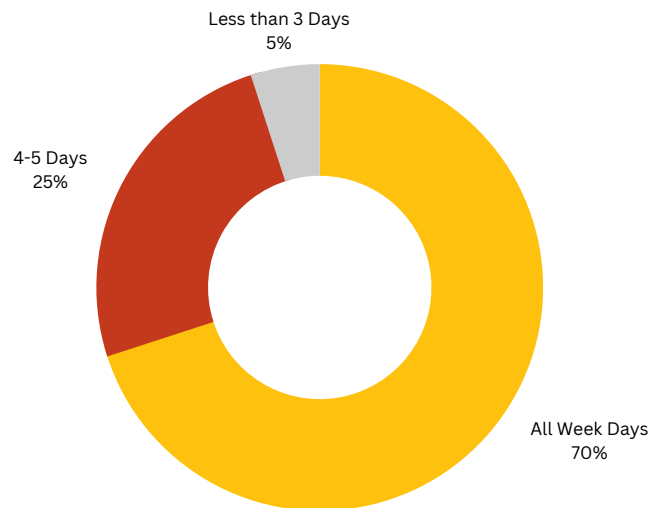
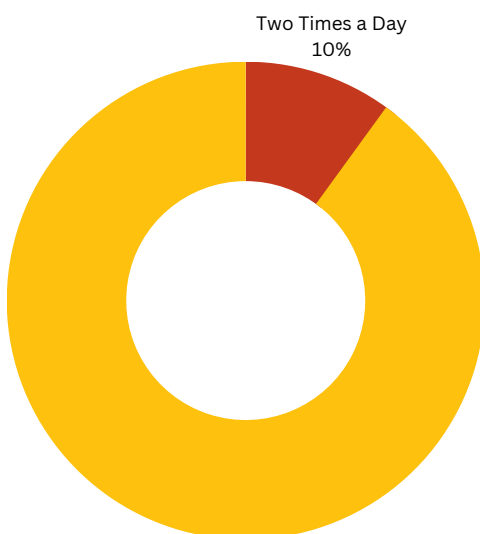


Fig 3 Access to Creche Facility



Three Times a Day
90%

Fig 4: Number of meals provided during the day

90% of the respondents stated that their children receive nutritional meals at the creche centre thrice daily. Children receive breakfast, lunch and evening snacks every day. Few respondents could also highlight that khichdi/ daliya, which has high nutritional value, was provided during lunch.

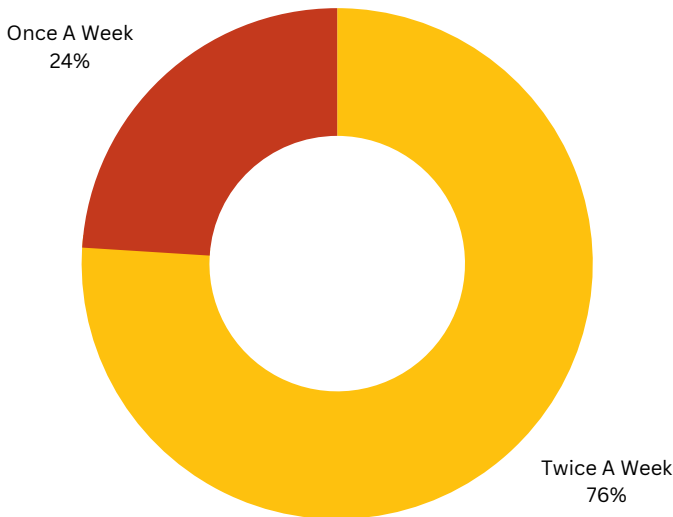


Fig 5: Receive fruits and eggs

To ensure a balanced diet, the creche centre also provides fruits and eggs to children. 76% of the respondents stated that their children receive fruits and eggs twice a week.

All parents mentioned that creche centre staff undertake monthly growth monitoring. The height and weight of the child is measured every month. All of the respondents were aware of the consultation provided by the doctors.



Fig 6: Height and Weight Measurement



Fig 7: Doctors Consultation

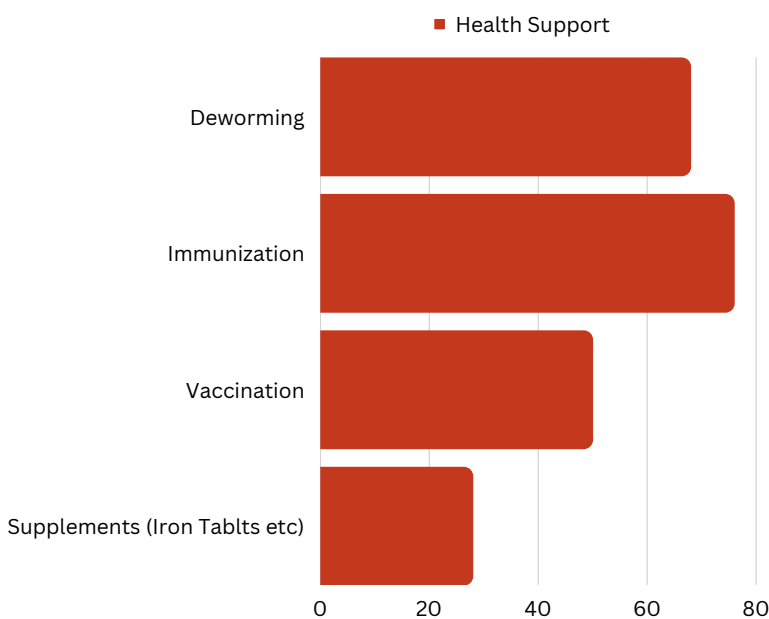


Fig 8: Health support provided at the center

The parents of children who access the creche facility were aware of the health support extended to their children. Respondents affirmed that the creche centre provided deworming, immunisation and vaccination support, as shown in Fig.8.

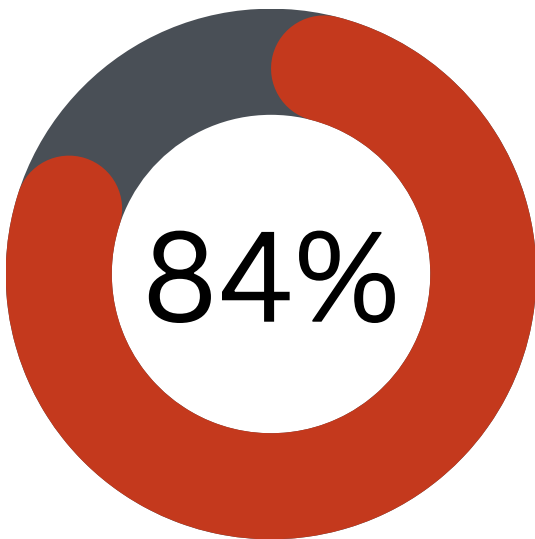


Fig 9: Education support provided at the center

Mobile Creches had developed its pre-school education curriculum, emphasising age-appropriate stimulating and play methods to develop literacy and numeracy skills. Teaching methods, including storytelling, exposure visits and project work, are used to help children in their development.

84% of the respondents were about the educational support provided at the creche centre.

As indicated in Figure 10, respondents mentioned receiving information on at-home nutritional support for their children from the centre.

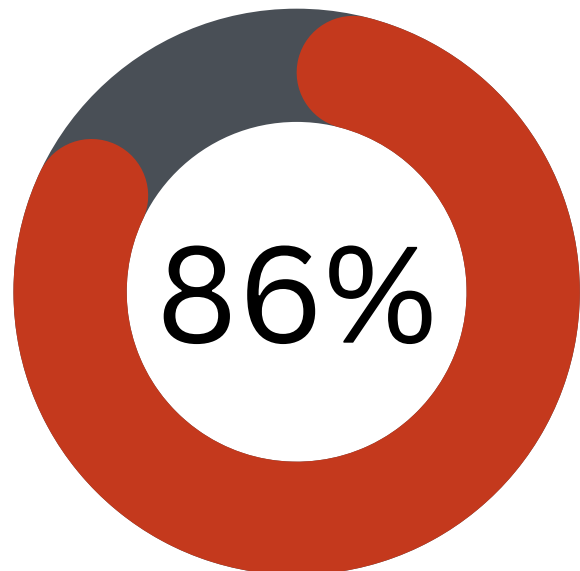


Fig 10: Receive information from center on Child's nutritional support

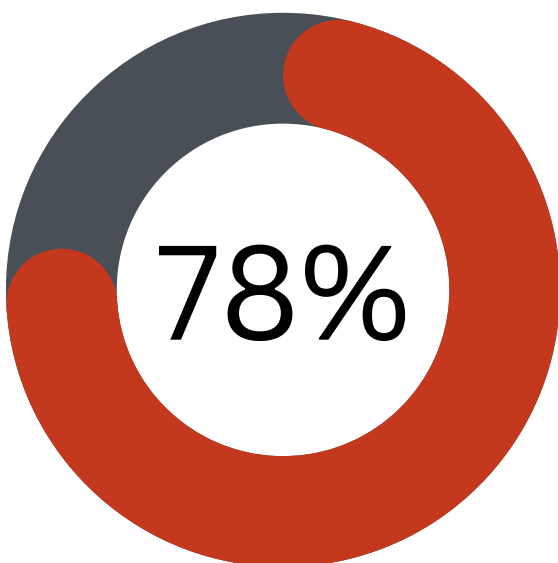


Fig 11: Improvement in Height and Weight of the Children

78% of the respondents stated that they had observed growth in their children's weight and height.

CONCLUSION

The need for creche facilities in India arises from several factors, including changing workforce dynamics. Construction workers in India often face challenges in accessing childcare facilities while they are at work. Due to the lack of such facilities, children of the most marginalised and vulnerable population face dire implications, such as lack of access to early education and health services and malnutrition, among many other challenges.

Through this intervention, PNB Housing Finance Limited has reached out to more than 3,000 children of construction workers. PNB Housing Finance Limited's CSR intervention cut across thematic areas such as access to education and providing better quality health care as mentioned in Schedule VII of section 135. The intervention supported by PNB Housing Finance Limited also complements the efforts to achieve United Nation's sustainable development goals.



The intervention positively impacts children from marginalised communities by addressing their childcare needs. The initiative has provided a safe and nurturing environment for these children while their parents are engaged in work. The initiative has a multiplier effect as more women can contribute to the workforce and further to the economy.



Ghar Ki Baat

IMPACT ASSESSMENT REPORT 2023

Holistic Development of Children of
Construction Workers in Partnership
with Mobile Creche

Prepared By:
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IMPACT ASSESSMENT REPORT 2023

3D Printing and Scanning
Technology for Rehabilitation
Devices - NIEPMD Chennai



Prepared By:

SGS

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ABBREVIATIONS

CSR - Corporate Social Responsibility

NIEPMD - National Institute for Empowerment of Persons with Multiple Diseases

ACKNOWLEDGEMENT

We, SGS, would like to express our gratitude towards PNB Housing Finance Limited for entrusting us with this impact assessment assignment. We are extremely thankful for their assistance during the course of the study.

We thank everyone who participated in the study and contributed to gathering insights. In this regard, we would like to thank the medical staff, authorities, and beneficiaries at the targeted healthcare facilities for their support throughout the study and active participation.

We appreciate the National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD) team's cooperation with the SGS team during the primary research.

We truly appreciate all the intellectual guidance from PNB Housing Finance Limited and implementation partners teams throughout the study. Last but not least, we want to express our gratitude to everyone who spent the time answering the extensive survey.

SGS Team

ETHICAL CONSIDERATION

Informed consent

The interviews were done after the respondents gave their consent. Even after the interviews were completed, their permission was sought to proceed with their responses.

Confidentiality

The information provided by participants has been kept private. At no point were their data or identities disclosed. The research findings have been quoted in a way that does not expose the respondents' identities.

Comfort

The interviews were performed following the respondents' preferences. In addition, the interview time was chosen in consultation with them. At each level, respondents' convenience and comfort were considered.

Right to reject or withdraw

Respondents were guaranteed safety and allowed to refuse to answer questions or withdraw during the study.

EXECUTIVE SUMMARY

It is estimated that the disabled population in India is around 2.68 crores individuals, which accounts for approximately 2.21% of the total population. This estimate is based on data from the census conducted in 2011. It is to be noted that the actual number would have gone up in the last decade.

India has a large population, and the prevalence of disabilities is relatively high. Disabilities can encompass a wide range of conditions, including physical disabilities, sensory impairments, intellectual disabilities, and mental health conditions. The Rights of Persons with Disabilities Act 2016 in India recognises 21 types of disabilities. Disabilities can result from various causes, including congenital conditions, accidents, injuries, and medical conditions.

While healthcare infrastructure in India has improved, access to quality healthcare remains challenging, particularly in rural areas. This can result in delayed or inadequate treatment for injuries, leading to the need for prosthetic solutions. Prosthetics can be crucial in restoring mobility and functionality for individuals with limb loss or limb impairment.

To address the need for prosthetics and orthotics in India, it is important to have a multi-faceted approach involving awareness, improved healthcare facilities and affordable and accessible prosthetic/ orthotics options. PNB Housing Finance Limited supported the National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD) to upgrade its facilities with state-of-the-art 3D printing and scanning device. NIEPMD intends to replace middle-aged technology through this technology, which leads to lengthy and time-consuming fabrication processes.

Few of the benefits of this new age technology are,



Reduction in fabrication time,
leading to less delivery time



Beneficiary specific data collection



Minimize human errors



Scientifically designed,
light weight and appealing

Key Findings at Glance

- 40+ beneficiaries received support through this initiative.
- 100% of the beneficiaries received the rehabilitation devices free of cost.
- Average savings of INR 25,000 per unit.
- Lengthy fabrication time has been reduced after the introduction of 3D Printing technology.
- 80% of the respondents are satisfied with the quality of the rehabilitation device.

1. INTRODUCTION

PNB HOUSING FINANCE LIMITED

PNB Housing is one of India's prominent and fourth largest Housing Finance Company by Asset Under Management as on 31st March 2022*. PNB Housing offers retail and corporate loans, including individual home loans, retail loan against property, retail non-resident property loan, construction finance and lease rental discounting among others.

PNB Housing is also establishing in the affordable housing financing space with our dedicated Unnati segment. PNB Housing's network of 99 branches are spread across 67 unique cities and 38 outreach centers. This includes 24 new locations for Unnati across the country. We operate the sales and distribution function through our wholly owned subsidiary, PHFL Home Loans and Services Limited.



Since inception, PNB Housing Finance has helped millions of Indians in realising their aspiration of owning a home. With India soon to celebrate 75 years of Independence, we renew our commitment towards the 'Housing for All' vision and are well positioned to catalytic growth in the real estate sector. At PNB Housing Finance, we are committed to India's growth story

CSR AT PNB HOUSING FINANCE LIMITED

PNB Housing Finance believes in driving action toward the sustainable development of communities around them. PNB Housing Finance Limited is executing the social vision and making a positive impact through its dedicated CSR arm Pehel Foundation.

The mission of PNB Housing is to plan interventions that are holistic in nature and attempts to improve the socioeconomic conditions of the communities at large. The interventions supported by PNB Housing do not only impact the development of direct beneficiaries but also attempt to enhance the quality of lives of those who are present in the ecosystem of the impact area.

PNB Housing focused and streamlined its efforts on strengthening the healthcare infrastructure across locations, to tackle the ever-increasing demand from the healthcare sector due to the pandemic. PNB Housing Finance Limited has supported welfare projects for construction workers, and enabling children's access to formal education by strengthening school infrastructure.

PNB Housing has also supported projects related to water conservation, increasing green cover, improving access to clean drinking water, and livelihood generation for women and persons with disability



Priority Thematic Area

STRENGTHENING HEALTHCARE INFRASTRUCTURE

Recognising the need to put up a strong front in the face of the pandemic and future health crises, PNB Housing Finance Limited upgrades infrastructure of Public Health Centers (PHCs), provided 3D Printing and Scanning Machine for Prosthetic limbs.

SDG ALIGNMENT



ABOUT THE IMPLEMENTATION PARTNER



NIEPMD is a rehabilitation institution equipped with multidisciplinary rehabilitation team professionals ranging from doctors to caregivers with six departments namely medical science, therapeutics, speech hearing and communication, clinical psychology, special education and adult independent living.

NIEPMD is the only institute in South East Asia to cater for the needs of persons with multiple disabilities. NIEPM provides rehabilitation devices free of cost to beneficiaries ranging from newborns to 60+ of age group.

2. BACKGROUND OF THE STUDY

ABOUT THE PROJECT

3D printing and scanning technology aims to facilitate and reduce the delivery time in terms of easy beneficiary-specific data collection, reduced fabrication time, minimising human errors, scientifically designed & developed, lightweight and more cosmetic appealing aids and assistive devices which will ultimately improve user satisfaction and more acceptance of such devices.

The introduced technology helps not only people with disabilities but also the staff associated with NIEPMD. A few of the advantages of the new-age 3D printing technology are below.

- Reduce the number of visits for beneficiaries
- Quick and time-bound support
- Better access to beneficiaries in rural areas
- Minimise human errors in developing the devices
- Scientifically designed devices



OBJECTIVES OF THE PROJECT

1. To minimise human errors in developing prosthetics/ orthotics devices.
2. To provide more scientifically designed devices which are lightweight and appealing to people with disabilities.
3. To improve access to quality prosthetics/ orthotics in rural India.

LOCATION

The support was provided at National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD), Chennai, Tamil Nadu.

BENEFICIARIES



The project intends to benefit the persons with disabilities and their families from across India.

3. STUDY DESIGN AND METHODOLOGY

APPROACH AND RESEARCH DESIGN

The chapter describes the process adopted and the methodology used to assess the overall impact of the intervention undertaken by PNB Housing Finance Limited.

The impact assessment study employed combined data collection methods through participatory assessment tools to obtain all information required to analyse impact comprehensively. SGS’s approach to the study was guided by providing insights to enable PNB Housing Finance Limited to gauge the project's overall impact and understand stakeholder sentiments and strategies for future implementation.

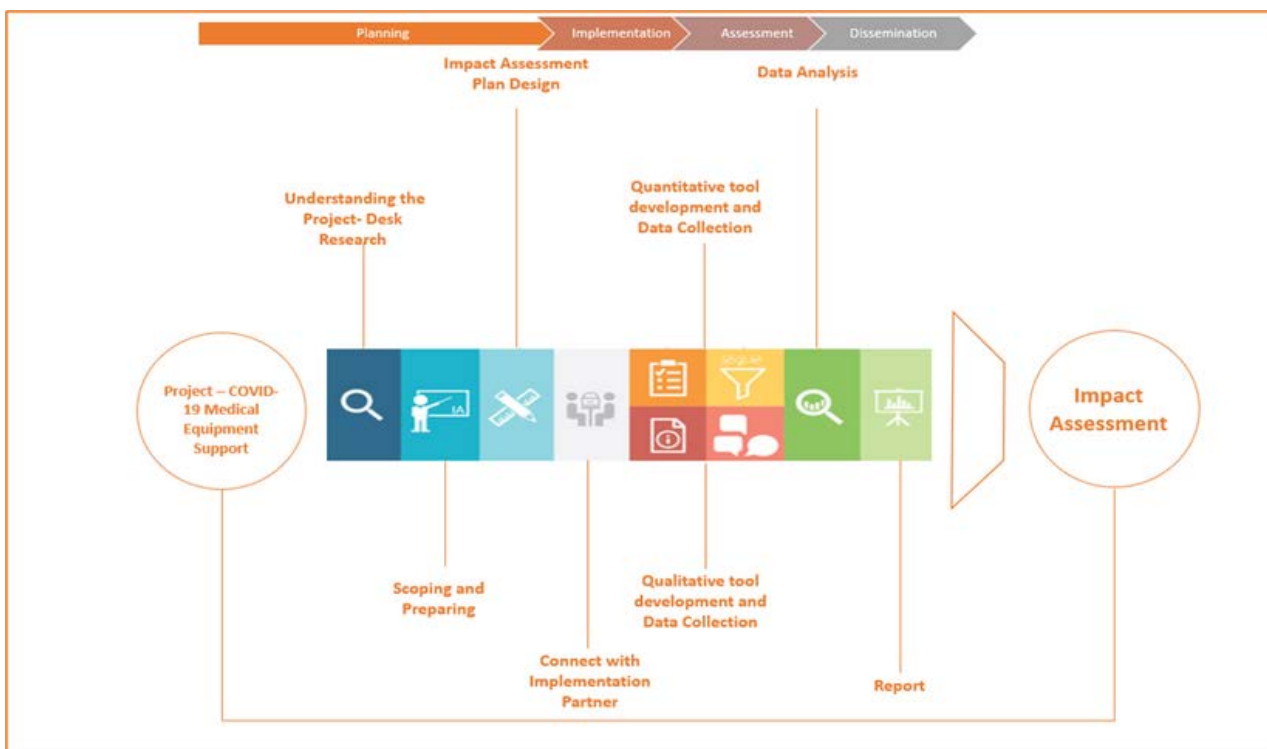


Fig 1: SGS's Impact Assessment Approach

METHODOLOGY

SGS deployed a two-pronged approach for the impact assessment of the project. The study used quantitative and qualitative methods coupled with an in-depth desk review of secondary data. In order to understand the program holistically, different structured questionnaires were prepared for various stakeholders, i.e. medical staff and beneficiaries.

The interviews with beneficiaries were conducted via both in-person and virtual modes. Our team interacted with a few beneficiaries who were present at the medical facilities. Beneficiaries who could not make it to the medical facility were interviewed using virtual mode.

A combination of research and consultative approach was adopted to address the scope of work under the assessment study. Considering the relevance of the current evaluation study, the SGS team conducted interviews with 12 respondents from NIEPMD. Our team also interacted with 28 beneficiaries.

Stakeholder Type	Number of Sample Collected
NIEPMD Staff	12
Persons with Disabilities	28

Table 1: Number of stakeholders consulted for the study

STAKEHOLDER MAPPING

Direct and indirect stakeholders were mapped out to assess the project outcome and beneficiary perceptions through multiple lenses. Beneficiaries were consulted as direct stakeholders. In cases where beneficiaries are children, SGS interacted with their parents. NIEPMD staff members were consulted as indirect stakeholders.

Various tools were used for collecting data from the stakeholders. The intervention's primary beneficiaries were interviewed through structured questionnaires and face-to-face meetings. Semi-structured questionnaires were used to gain qualitative input from the respondents.

DATA ANALYSIS TECHNIQUE

The conclusions and findings in this report are drawn from a mix of sources, including qualitative interviews, publicly available data and information, and existing research, among others. The information collected from the field through structured interviews was systematically coded, validated, analysed, and tabulated. To systematically describe the basic features of the data, this study used descriptive statistics to provide simple summaries about the impact blended with graphical representations. This forms the basis for quantitative analysis of the data. Simple data summaries have also been developed to postulate the impact of the intervention effectively.

4. FINDINGS

Findings - NIEPMD Staff Members

A total of 12 respondents were interviewed who are directly associated with the intervention. These respondents are included Consultants for surgical shoes, Assistant Professor of Prosthetics and Orthotics (P&O), Demonstrator, Rehabilitation Officer.



68% Male Respondents



32% Female Respondents



**40+ Patients Benefitted
with an average of 3-4 patients
availing of the service per month**

All respondents were about the timeline of the installation. The installation was completed in April 2022 in alignment with the agreed timeline with PNB Housing Finance Limited.

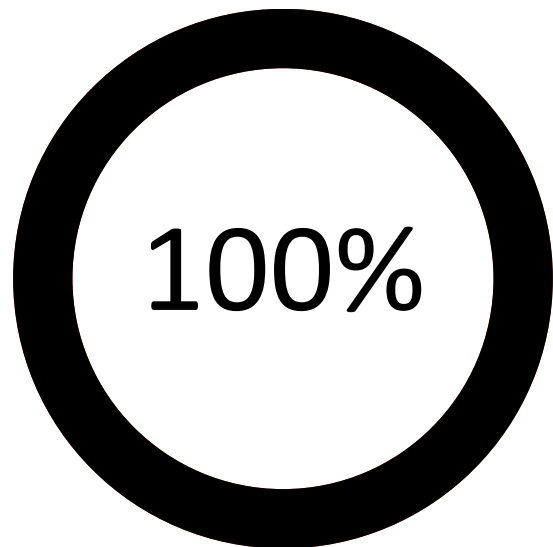


Figure 2: Timely Installation of 3D Printing Machine

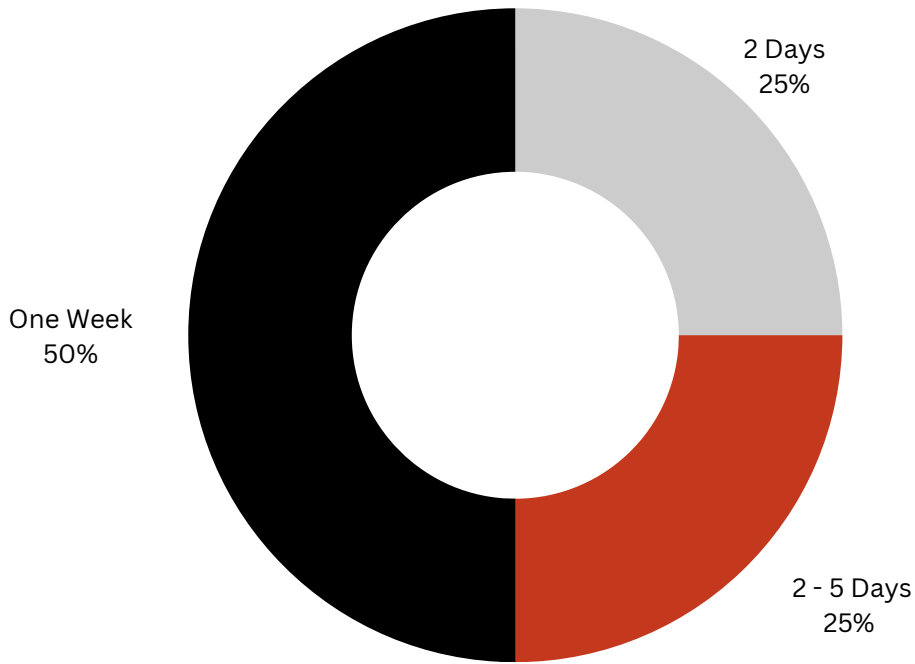


Figure 3: Time taken with traditional technology

The respondents opined that introducing this new-age technology had helped them reduce fabrication time and, in turn, reduced delivery time to beneficiaries. 75% of the respondents agreed that the fabrication time has now reduced from 2-5 days to 2 days post this intervention.

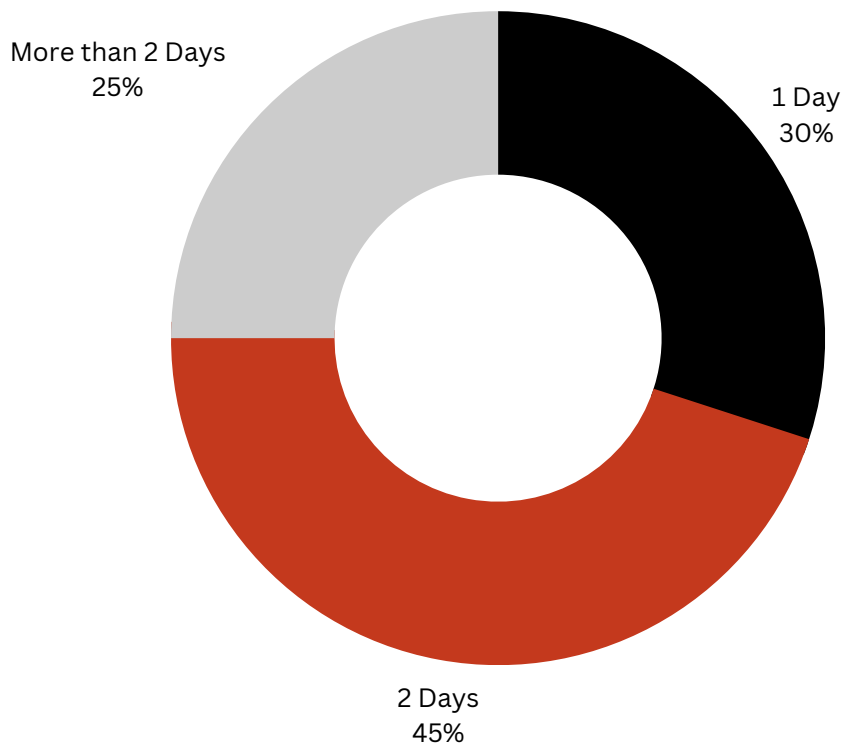


Figure 4: Time taken with 3D Printer Technology

The figure below represents some of the challenges faced by the team. The chance of human error with the old method was the most common challenge highlighted by all 12 respondents. Higher fabrication time, the long wait period for patients, and less acceptance were a few other major challenges highlighted by respondents.

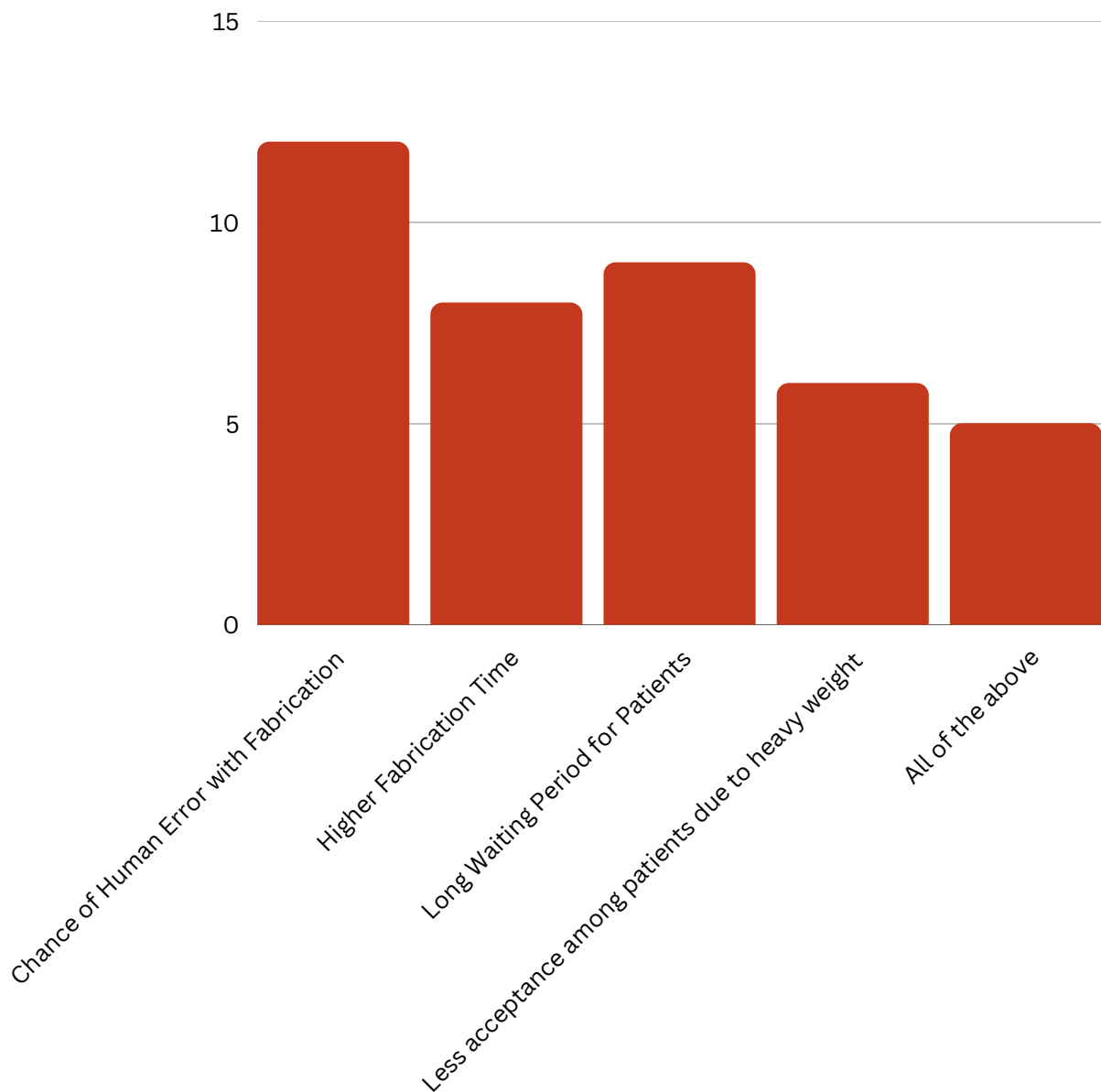


Figure 5: Challenges with old manufacturing process at NIEPMD



Figure 6: Attended Training Sessions

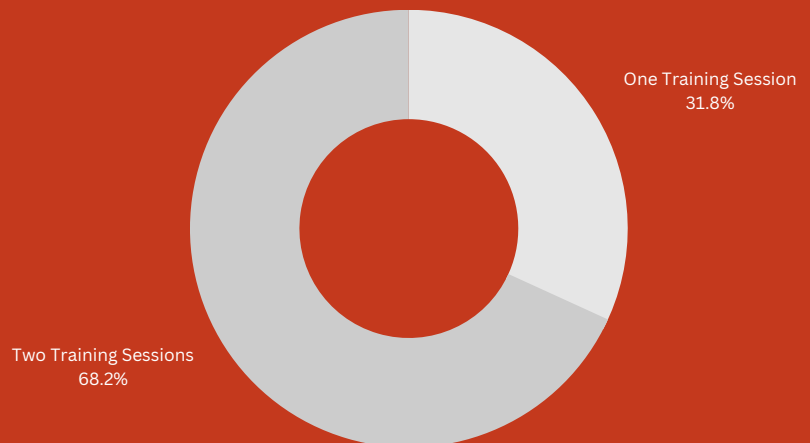


Figure 7: Number of Training Sessions Attended

All respondents mentioned participating in training sessions to upgrade and enhance their knowledge of 3D printing technology. Respondents have been a part of at least one training session. To constantly upgrade the skills of the staff, periodic evaluations have been conducted by NIEPMD.



Figure 8: Part of periodic evaluation for skill upgradation



Figure 9: Support Provided Free of Cost

100% of the respondents stated that support was provided to persons with disabilities free of cost. The support extended to the beneficiaries has resulted in minimum savings of INR 15,000 – INR 20,000 to up to INR 70,000, depending on the material and complexity of the component.

Findings - Beneficiaries

A total of 41 patients have been treated so far under this initiative. 27 males and 14 females have received services under this initiative. Our team interacted with 28 beneficiaries who benefitted from this initiative.



27 Male Patients



14 Female Patients

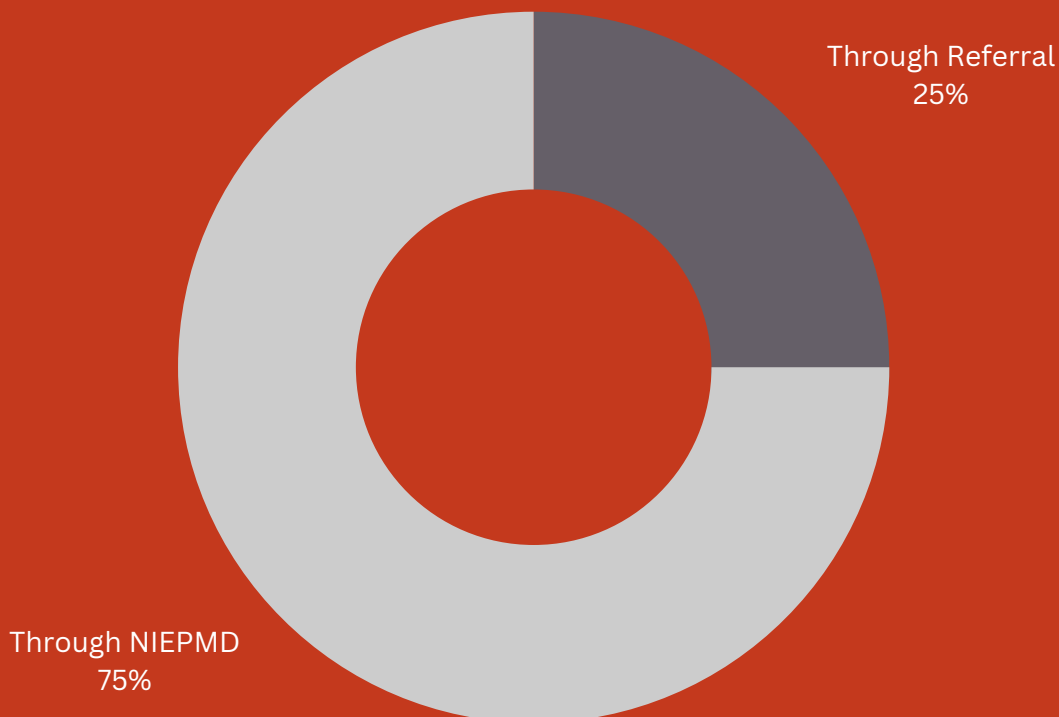


Figure 10: Awareness about the initiative

75% of the respondents came to know about the initiative through NIEPMD. The organisation usually disseminate information through social media, predominantly through WhatsApp texts.



Figure 11: Support Provided Free of Cost

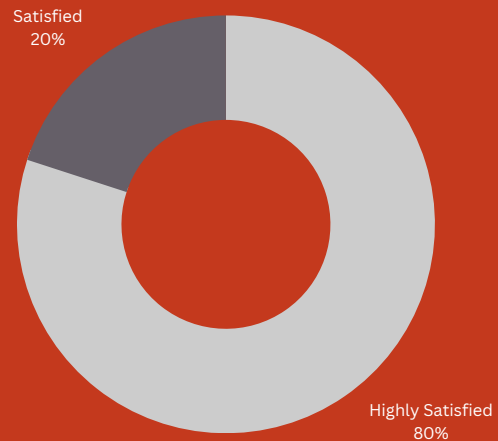


Figure 12: Quality of the product

All respondents unanimously mentioned that the support had been extended free of cost. 80% of the respondents are highly satisfied with the quality of the product and services availed. 70% of the respondents received their fabricated product within 2 days.

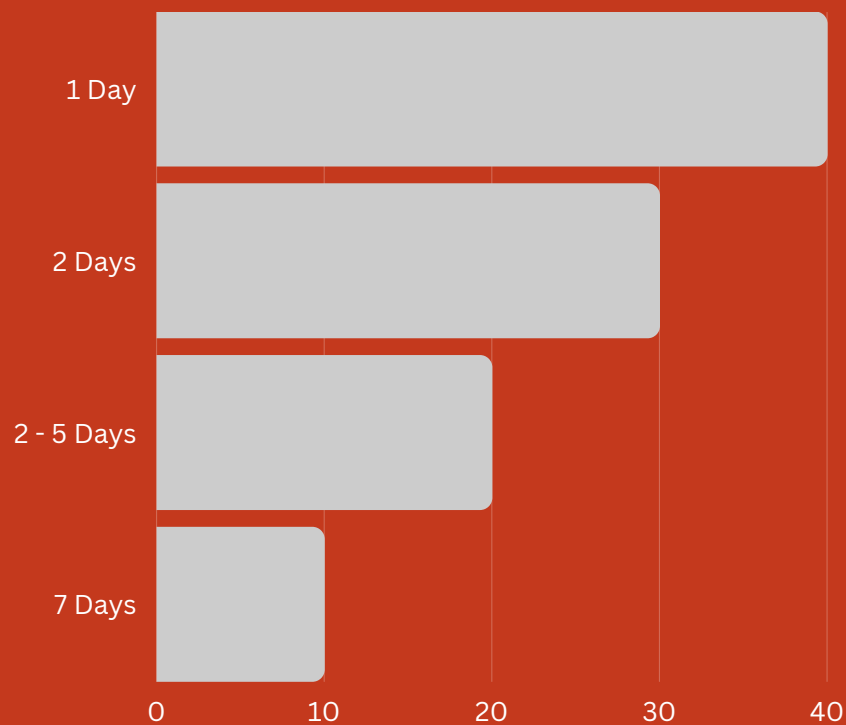


Figure 13: Delivery Time

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