

CSR projects approved by the Board of Directors of the Company for financial year 2025-26				
Sr.No	Thrut Area	Nature of the Project	Items from the list of activities in Schedule VII of the Companies Act, 2013	Amount Allocated for the Projects (Rs. In Crores)
1	Health Care	Contribution towards purchase of necessary equipment's to carry out necessary interior and civil work including Operations Theatres, Ward Room, Physio Lab, Rehab, Sports Science Lab along with all material for New sports injury and rehabilitation center within its existing premises of Hospital; Contribution for Sponsoring surgeries and post operative care to under privileged children upto 18 years having vascular conditions such as coil closures which require ballooning or stenting, intra cardiac repairs, closure of Ventricular septal defect and bidirectional Glenn (BDG) shunt; Chuck Sleeve for Robotics surgery for Robotic Machine; Corpus fund support for multidisciplinary rehabilitation for the PwP's and their caregivers to the economically weaker patients.	Clause (i) Promoting health Care including Preventive Health Care and Sanitation, Eradicating hunger, poverty and malunitrition and making available safe drinking water	18.93
2	Education	Partnering for Serving Mid day meals to 25000 childerns in various school at Bhuj (Gujarat); Partnering with Rajasthani Sammelan Education Trust for project involving Construction of Self-Financed Private Skills University, thereby with such University comprising of 6 schools of higher education in the nature of degree colleges at Mumbai; Contribution for the provision of quality, holistic, inclusive education to the students. The education will be provided to around 400 students ranging from Nursery to Grade 12; Contribution for constuction of well equipped science laboratory at High school for quality education to 206 students from Std 5 to 10 classes.	Clause (ii) Promoting education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects	12.48
3	Rural Development	Projects in the area towards infrastructure support for the benefits of villages	Clause (x) Rural Development	12.72
4		CSR Administrative Expenses		0.08
		TOTAL		*44.21
* Rs. 44.21 Crores includes unspent CSR amount of Rs. 8.69 Crores for FY 2024-25.				



Mid-day Meal programme [The Akshaya Patra Foundation]

Balkrishna Industries Limited Impact Assessment for FY23-24

February 2026



Disclaimer

- Our report shall be prepared solely for Balkrishna Industries Limited (BKT). KPMG does not accept or assume any liability, responsibility, or duty of care for any use of or reliance on this report by anyone, other than our Client, to the extent agreed in the Agreement.
- Impact assessment is limited to the projects allocated by BKT
- No framework has been used in preparing the report as detailed herein. No professional assurance standards ex. ISAE, SSAE etc. have been applied while preparing this report and accordingly the rigors applicable under such standards are not applicable for the scope covered by our report.
- Procedures, analysis and recommendations, if any, are advisory in nature basis the information collected from various sources both publicly and those provided by the client.
- Our observations represent our understanding and interpretation of the facts based on reporting of beneficiaries and stakeholders.
- Our report, by its very nature, may involve numerous assumptions, inherent risks, and uncertainties, both general and specific. The conclusions drawn shall be based on the information available with us at the time of preparing the report.
- We shall not perform an audit and shall not express an opinion or any other form of assurance. Further, comments in our report are not and shall not be intended, nor should they be interpreted to be legal advice or opinion. BKT shall be fully and solely responsible for applying independent judgment, with respect to the findings included in the report, to make appropriate decisions in relation to future course of action, if any. We shall not take responsibility for the consequences resulting from decisions based on information included in the report.
- While information obtained from the public domain or external sources has not been verified for authenticity, accuracy, or completeness, we have obtained information, as far as possible, from sources generally considered to be reliable. However, it must be noted that some of these websites/third party sources may not be updated regularly. We assume no responsibility for the reliability and credibility of such information.
- Our work shall be limited to the specific procedures described in this Engagement Letter and shall be based only on the information and analysis of the data obtained through interviews of beneficiaries supported under the programme, selected as sample respondents and discussions with BKT team and stakeholders of the programme. Accordingly, changes in circumstances or information available after the review could affect the findings outlined in our report.
- In no circumstances shall we be liable, for any loss or damage, of whatsoever nature, arising from information material to our work being withheld or concealed from us or misrepresented to us by any person to whom we make information requests.
- In accordance with its policy, KPMG advises that neither it nor any of its partner, director or employee undertakes any responsibility arising in any way whatsoever, to any person other than BKT in respect of the matters dealt with in this report, including any errors or omissions therein, arising through negligence or otherwise, howsoever caused.
- In connection with our report or any part thereof, KPMG does not owe duty of care (whether in contract or in tort or under statute or otherwise) to any person or party to whom the report is circulated to and KPMG shall not be liable to any party who uses or relies on this report. KPMG thus disclaims all responsibility or liability for any costs, damages, losses, liabilities, expenses incurred by such third party arising out of or in connection with the report or any part thereof.
- By reading our report, the reader of the report shall be deemed to have accepted the terms mentioned hereinabove



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Executive Summary – Mid day meal

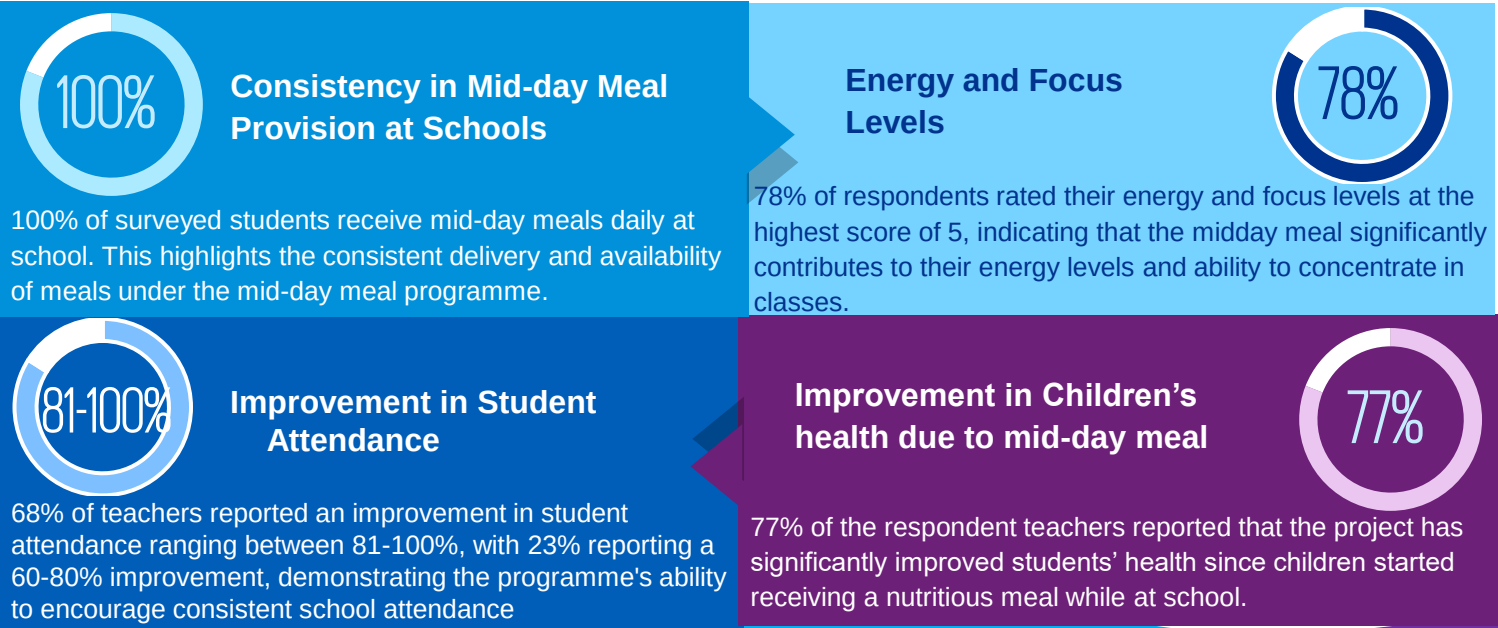
Implementing Partner- The Akshaya Patra Foundation
Period under assessment: April 2023-March 2024



Project objective:

The objective of the **Akshaya Patra Mid-Day Meal Programme** is to improve the **nutritional status** of children studying in government and government-aided schools. It aims to motivate children from socio-economically weaker backgrounds to attend school regularly and focus on classroom activities. Additionally, the programme provides nutritional support to children during drought-affected periods. This programme is aligned with Sustainable Development Goals like **Zero Hunger** and **Quality Education**.

Key findings :



Key recommendations

- Recommendations on menu:** Respondents have requested buttermilk or 'Raita' provision, alternate snacks like sprouts, boiled Chana, peanuts, etc instead of 'Chruma' on some days, adding rice to Saturday menu, resuming periodic fruit distribution, and additional gourd vegetables.
- Documentation of nutritional value:** The project should quantify the nutritional value of the daily mid-day meals consumed by children.
- Documentation of impact and feedback:** The project to document impact generated by conducting regular studies to document baseline levels of health metrics and academic performance and then documenting periodic progress.
- Liasoning and partnerships:** Project to explore strategies for sustainability.

About the project – Mid day meal

Vision

The vision of the Akshaya Patra Foundation is to ensure that no child in India is deprived of education because of hunger.

Mission

The mission of the Akshaya Patra Foundation is to feed 3 million children of India by 2025.

Type of beneficiaries:

- Male & Female student beneficiaries from lower socio-economic background.

28,000

Student
beneficiaries
reached

360

Schools
covered
under the
programme

Project objective

- The objective of the Mid-Day Meal programme was to provide nutritious mid-day meals to underprivileged children, in identified school in Bhuj, to ensure that they receive a **healthy and balanced meal**, and to **reduce drop-outs from school** due to hunger or poor nutrition.
- The programme is aligned with the Government of India's **PM-POSHAN** initiative. The Mid-day meal scheme of the India Government (now rechristened PM-POSHAN) has helped ensure that every child has access to nutritious food and proper education. It is one of the largest school lunch programmes in the world, offering a lasting impact to more than **11.80 Crore children in 11.20 lakh schools** (as per 2021-22 data) across the country.

Project components

- The primary component of this project is the provision of **hot and nutritious meals**. They use a variety of seasonal vegetables, seasonally-appropriate grains, and locally available ingredients (including spices and condiments) to ensure menu diversity and adherence to regional palates. For example - Dalma in Odisha and Bisibelebath in Karnataka. Additionally, they serve fruits and locally popular nutritional snacks such as Sukhadi in Gujarat.

Project location – Bhuj, Gujarat



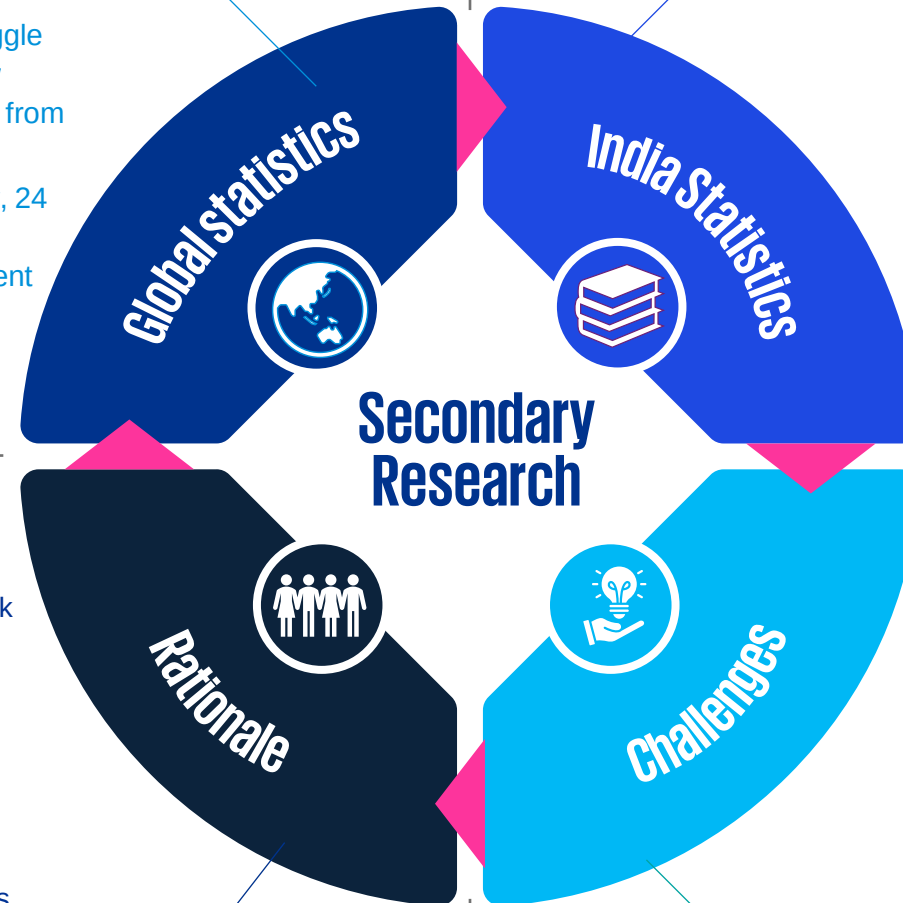
SDG Alignment



Overview of the problem statement

- **School Meal Accessibility** – Many countries struggle with inconsistent meal distribution, leading to low enrollment and attendance rates among children from underprivileged backgrounds
- **Risk of School Dropouts** – Due to food insecurity, 24 million schoolchildren are at risk of dropping out, reversing decades of progress in school enrollment

- **Ensuring Child Nutrition** – With 39 billion missed school meals, such programmes are crucial for preventing malnutrition.
- **Boosting School Retention** – 24 million children risk dropping out due to hunger, affecting education outcomes, and ultimately affecting the country's economy and overall development.
- **Addressing Hunger Levels** – 50% of adolescents reported regular hunger, underscoring food insecurity.
- **Strengthening Global Commitment** – Organisations like UNICEF & WHO advocate for expanded school meal policies to improve children's well-being.

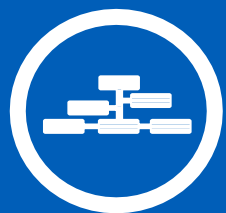


- **Limited Coverage in Rural Areas** – While the PM POSHAN scheme supports mid-day meals across India, rural regions like Bhuj face challenges in consistent meal distribution, affecting school attendance.
- **Nutritional Deficiencies** – Despite government efforts, mid-day meals in Bhuj often lack adequate micronutrients, impacting children's growth and cognitive development.
- **Food Safety Concerns** – Reports indicate quality issues in meal preparation, with instances of contaminated food affecting students' health.
- **Funding Constraints** – Despite government allocations, local implementation struggles with budget shortages, limiting the programme effectiveness
- **Nutritional Deficiencies** – Lack of variety and insufficient micronutrients in meals leads to chronic malnutrition and consistently low energy levels among students.

Impact Map

Inputs/Activities	Outputs	Outcomes	Impact
Financial Support given by BKT Tires to provide daily mid-day meals to 23,200 school children across 360 schools in Bhuj, Gujarat. The Akshaya Patra Foundation, daily, prepares the meals and transports it to each of the schools in their specially-equipped vans which ensure that the meals remain sterilised and hot until they are served to the children.	A hot, nutritious, hygienically prepared mid-day meal, consisting of grains, vegetables, and lentils, is served daily to every student (in the selected schools) inside their school premises.	• Improved average attendance percentage of students in school due to meal provision • Better participation in classroom, greater concentration during class lessons, and enhanced focus and learning ability of students due to better nutrition. • Enhanced performance of students in their examinations and assessments/ tests due to better attendance in school and focus on studies. • Reduced rates of school drop-outs due to provision of daily meals at school • Increase in school enrolment rates due to mid-day meal provision • Reduced gender and other socio-economic discrimination due to equal access to mid-day meals to all students • Improved health metrics of children in terms of PHC data (Stunting, wasting, undernourishment, anaemia, infections, etc)	• Enhanced academic performance and overall nutrition status of school children from socio-economically disadvantaged strata of society. • Higher rates of students completing their education due to fewer drop-outs • Better socialisation among children from diverse backgrounds leading to less discrimination amongst them. • Better chances of finding employment and livelihood opportunities for children, once they grow older and complete their schooling, due to better health and nutrition status.

Approach and Methodology of the study



Phase 1: Consultation & Scoping

- Establish clear scope of the assessment
- Review project documents to develop a preliminary understanding of the projects



Phase 2: Review of existing Theory of Change

- Conduct interactions with implementing agency to understand the projects, geographies, modes of implementation, and intended impacts
- Strengthen Impact Map of the programme in consultation with partners



Phase 3: Sampling and Tool Designing

- Finalise the sampling plan for stakeholders, design tools for stakeholder interactions



Phase 4: Stakeholder Interaction and data collection

- Conduct stakeholder interactions (on a sample basis) through field visits to programme locations



Phase 5: Analysis & Impact Assessment Report Preparation

- Conduct data analysis and prepare report on Impact Assessment basis information gathered through stakeholder interactions

Sampling

Stakeholders	Tools Utilised
Students	Structured questionnaire Focused group discussion
Teachers	Structured questionnaire Focused group discussion

School	Students	Teachers
Shree primary school, Samatra	10	2
Shree Padhdhar primary school,	20	11
Shree Kandherai Primary School	20	7
Shree Nadapa Primary School	10	2
TOTAL	60	22

Sampling and data collection approach

Study design: A primary study involving a mixed-methods research approach, involving both quantitative and qualitative tools, was adopted for this study.

Sample size: Basis 90% confidence level and 11% margin of error for the universe of 28,000 beneficiaries, the sample size calculated was 57.

Sampling method: Stratified random sampling was used to select study participants from the database shared.

Mode of data collection: In-person and Focused group interactions were held with participants from across all the school locations to ensure a representative sample. Care was also taken to ensure equitable representation from both male and female.

The location **Bhuj, Gujarat** was selected for the visit due to the higher percentage of beneficiaries in this area, in addition to discussions with the **BKT team**.

One-on-one surveys and FGD to capture qualitative insights were administered to participants, designed specifically to the intended outcomes of the programme.

Interactions were also conducted with Akshaya Patra staff members to understand the benefits and areas of improvement evidenced by them.

Impact findings - Teachers

Consistency in Mid-day Meal Distribution

Since the meal is served daily, not only does it address the issue of chronic hunger, but also supports a conducive learning environment, reinforcing its importance in fostering regular attendance and continuous academic engagement.

100%

Improved Attendance

68% of the respondents reported a commendable attendance improvement of **81-100%**, while **23%** observed an improvement of **61-80%**. These percentages highlight the effectiveness of the initiative in addressing barriers to regular attendance in the school

91%

Overall Improvement in Health

77%, rated health improvements at **5** (significant improvement), while **14%** rated it at **4**, showcasing overall positive health outcomes. The meal is addressing nutritional gaps, contributing to students' overall physical well-being

91%

Enhanced Classroom Focus

68% rated improvement in classroom concentration at **5**, while **27%** rated it at **4**, indicating overall positive results. Better nutrition leads to better concentration levels, which in turn leads to better overall academic performance.

95%

Impact findings - Teachers

Ensuring Balanced Nutrition

- **86%** of the teachers stated that students **always** receive a **balanced diet with adequate nutrition** through the mid-day meal programme.

School Enrollment Growth

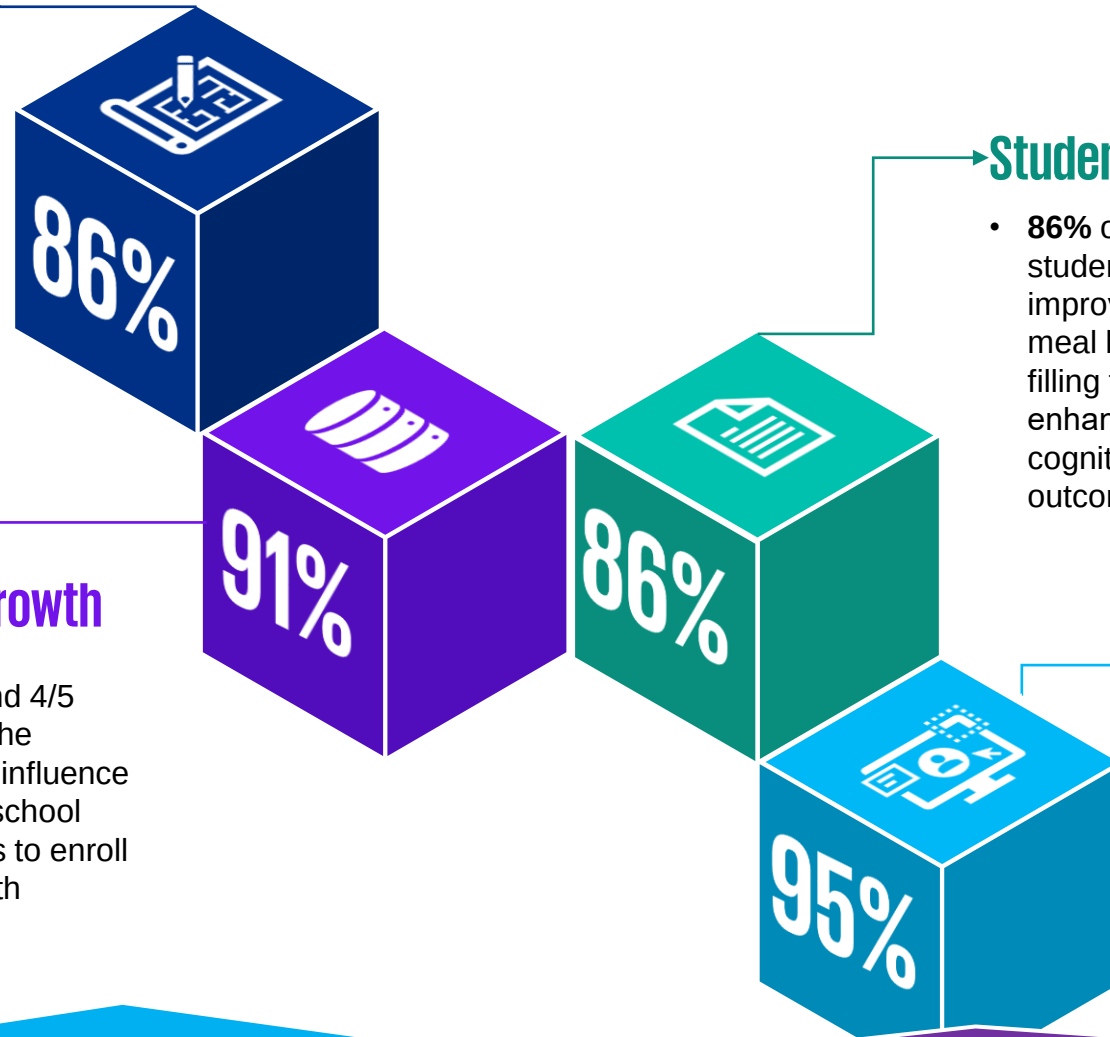
- **91%** of respondents rated 5/5 (68%) and 4/5 (23%) in terms of enrolment growth in the school. This programme has a positive influence - The availability of nutritious meals at school serves as a strong incentive for families to enroll their children, ensuring they receive both education and proper nutrition.

Student Performance

- **86%** of the Teachers have expressed that students demonstrated significant academic improvement. This shows that the mid-day meal has been playing a crucial role in filling the nutrition gaps which has helped in enhancing the students' concentration, cognitive function, and overall learning outcomes.

Student Equality

- **95%** of respondents believe that the programme consistently promotes fairness by ensuring that all students, regardless of their background, receive a nutritious meal. This initiative helps bridge socio-economic gaps, creating a more inclusive and supportive learning environment



Impact findings - Student

100%

100% of the respondents reported receiving midday meals at school daily. This showcases the programme's reliability in ensuring consistent meal delivery to all students which contributes to addressing chronic hunger, improving daily attendance, and fostering a conducive learning environment.

Consistency in Mid-day Meal provision

100%

100% of respondents stated that it encourages them to come to school regularly. The availability of nutritious and delicious meals not only addresses hunger but also creates a positive association with attending school, ensuring that children look forward to their day in school.

Improved Attendance

83%

83% of respondents reporting that their health has improved significantly since receiving these meals and the rest 17% noted moderate improvement. This initiative contributes not only to better physical health but also to enhanced energy levels and overall well-being of the children.

Overall Health Improvement

83%

83% of respondents reported noticeable improvements in their height and weight over time showcasing the programme's success in addressing malnutrition and fostering proper growth among students.

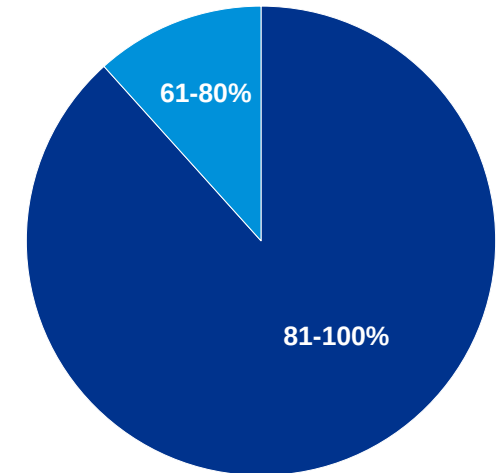
Positive growth metrics

83%

83% of respondents expressed that their concentration levels had improved after consuming the mid-day meal on a daily basis. The availability of nutritious food ensures that students are not distracted by chronic hunger, allowing them to focus better as well as participate more effectively in their learning process.

Enhanced Classroom Focus

Students' attribution to programme for educational success



88%

88% of the students attributed **81-100%** of their educational success to the mid-day meal program. This shows the programme's significant impact on student learning and retention.

Limitations of the study

Perception-Based Findings: The key findings of the impact assessment report are based on the perceptions of direct beneficiaries. While this provides valuable insights into the beneficiaries' experiences, it may not capture the full scope of the impact or the experiences of all stakeholders



In reference to the data collection few limitations are mentioned below:

- As most of the beneficiaries had finished their examinations, mobilisation of 100% of sampled students was not possible.
- Due to language barriers in the project geographies (Bhuj, Gujarat) some data points may have been lost in translation while collecting the data.

Testimonials



Principal

"Before Akshaya Patra, school used to prepare meals in their own kitchen. This project has helped the school to save time and is serving better quality and variety of food than was possible for the school."



Teacher

"At the start we were a little worried about the hygiene level and whether the quality of food was of good standards. But after visiting the Akshaya Patra kitchen we got to know that our house's kitchen also may not be as clean as the Akshaya Patra kitchen."



Student 1

"The food served in our school food is tastier than what is made at my house. I like to come to school daily and enjoy the meals with my friends."



Student 2

"I enjoy the Friday meals the most. The rice and dal served here is even more tasty and enjoyable than the food served at my house."

Way Forward



The project should quantify the nutritional value of the daily mid-day meals consumed by children. This will ensure better adherence to recommended dietary intake, as well as to assess any nutrient deficiencies and take corrective action.

The project to document impact generated by conducting regular studies to document baseline levels of health metrics and academic performance and then documenting periodic progress. This will help to measure success and take more data-driven remedial action to improve project outcomes and longer-term impact. Documenting the differences generated by new capital investments against older mechanisms will quantify the delta impact generated. Quantitative data in addition to qualitative insights will aid in adding more value to impact findings and feedback.

Given the climatic conditions and requests from schools, students and teachers suggested menu changes such as incorporation of buttermilk supply, provision of fruits, adding more variety in dry snacks, including different vegetable preparations, etc. These changes may help to maintain food variety and ensure consumption of various micronutrients.

Documentation
on nutritional
value

Recommendations
on menu

**Mid-day meal
programme**

Documentation
of impact and
feedback

Partnerships for
sustainability

In order to be more self-sustaining in the longer run, It is recommended to develop liaisons or establish partnerships with Government, private or mixed-sector bodies to ensure that material inputs and/or financial support continues uninterrupted and beneficiaries continue to get the mid-day meal support.

Annexure A



School children having their hot meal served



School children consuming their hot meal



Hot food packaged and carried from the transport van to the school

Annexure A



Interaction with the students – (FGD)



Clean and sanitised plates to consume meals and snacks (Sukhadi)



Meal serving area (school dining hall)



Mid-day Meal programme [Akshaya Patra Foundation]

Balkrishna Industries Limited Impact Assessment for FY23-24

February 2026





Upgradation of Centralised Kitchen Project [The Akshay Patra Foundation]

Balkrishna Industries Limited
Impact Assessment for FY23-24

February 2026



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- In accordance with its policy, KPMG advises that neither it nor any of its partner, director or employee undertakes any responsibility arising in any way whatsoever, to any person other than BKT in respect of the matters dealt with in this report, including any errors or omissions therein, arising through negligence or otherwise, howsoever caused.
- In connection with our report or any part thereof, KPMG does not owe duty of care (whether in contract or in tort or under statute or otherwise) to any person or party to whom the report is circulated to and KPMG shall not be liable to any party who uses or relies on this report. KPMG thus disclaims all responsibility or liability for any costs, damages, losses, liabilities, expenses incurred by such third party arising out of or in connection with the report or any part thereof.
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Executive Summary

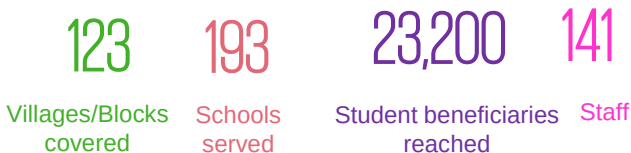
Implementing Partner- The Akshaya Patra Foundation

Period under assessment: April 2023– March 2024

Project objective:

- The Centralised Kitchen upgradation initiative was designed to upgrade the kitchen with capital expenditure that would expand its capacity to prepare **approximately 50,000 meals each day**.
- Through BKT Tires, the Akshaya Patra Bhuj kitchen was supported with the following items: 5 electric vehicles, gas fired boiler, vehicle parking area shed and fabrication, ETP area shed and fabrication, PNG gas skid station shed and fabrication, and miscellaneous kitchen utilities.

Project Outreach



Impact Assessment (IA) Study Outreach



Key Summary Findings

Impact on environment and operational efficiency

Findings suggest a 57.2% and 63.8% decrease reduction in electricity units consumed and cost savings due to it, respectively.

The introduction of new EVs also resulted in an annual diesel cost savings of INR 3,51,867 and about 10 tonnes/year reduction in CO₂ emissions.

Improved safety and project sustainability

The vehicle parking shed constructed with BKT's support has significantly improved the maintenance and longevity of the vehicles. With the availability of the covered shed, vehicles are now securely parked under proper shelter. Overall, the support has contributed to better asset protection, enhanced vehicle lifespan, improved appearance, and reduced maintenance costs over time.

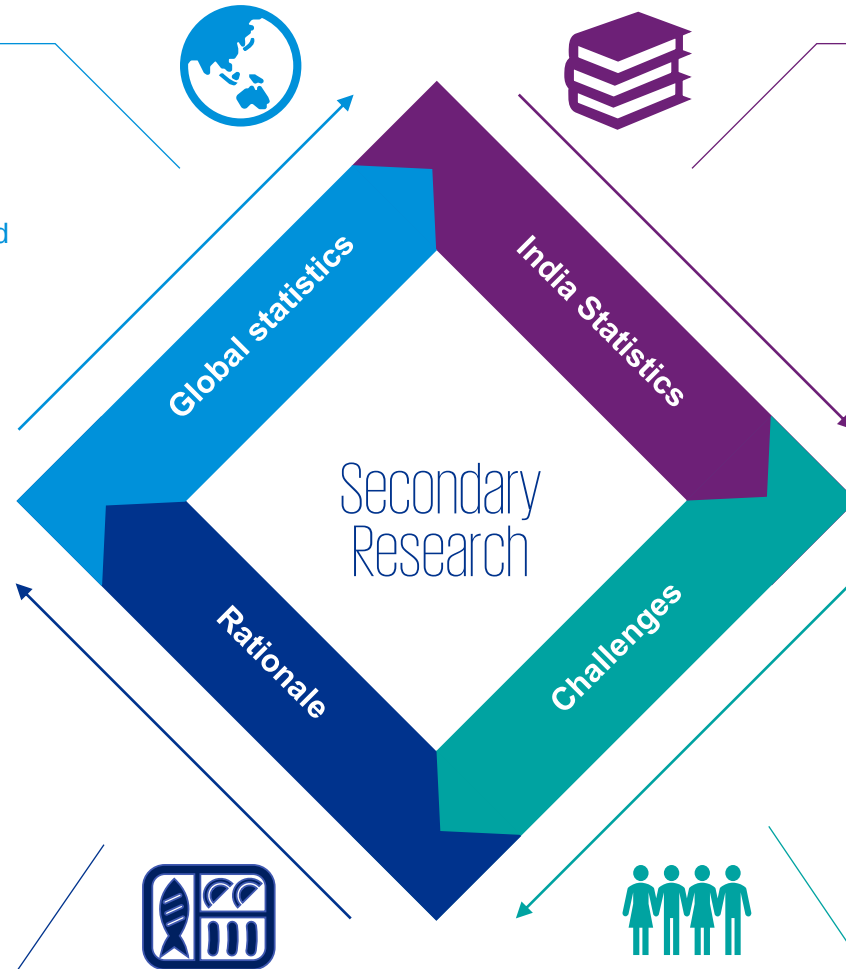
Improved student impact

Due to improved organizational efficiency and resulting cost savings, the projects was able to expand its capacity to reach an additional 600 students.

Recommendations: Incorporate maintenance costs during program design, conduct 3rd part studies for precise estimation of carbon credits generated, inbuilding advocacy activities and costs during program design, and maintain a regular feedback with project stakeholders

Overview of the problem statement

- As many as **828 million** people were affected by hunger in 2021 – 46 million people more from a year earlier and 150 million more from 2019.
- After remaining relatively unchanged since 2015, the proportion of people affected by hunger jumped in 2020 and continued to rise in 2021, to 9.8% of the world population. This compares with 8% in 2019 and 9.3% in 2020.
- An estimated 45 million children under the age of five were suffering from wasting, the deadliest form of malnutrition, which increases children's risk of death by up to 12 times..
- **Impact on Child Development** – Proper nutrition is essential for physical growth, brain development, and maintaining a strong immune system. Malnourished children are more susceptible to falling ill, and struggle with learning.
- **Educational Outcomes** – Hunger affects concentration and energy levels, leading to lower school attendance and reduced learning capacity, affecting academic performance.
- **Sustainable Development Goals (SDGs)** – Addressing childhood hunger aligns with SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being), reinforcing the need for global action.



- According to the United Nations' 'The State of Food Security and Nutrition in the World 2022' report, people's struggle for survival has increased sharply after the 2019 Corona period. In 2021, 768 million people in the world were found to be undernourished, of which **224 million** (29%) were Indians. This is a quarter of the total number of undernourished people in the world.
- Today, malnutrition is one of the most serious problems in India, yet it has received the least attention. Today, **India has 4.66 million underweight and 2.55 million height-for-age children** in the world.
- More than half 51% of children from the lowest income group families are stunted and stunted. And 49% are underweight.
- **Economic Disparities** – Many families struggle to afford nutritious meals, leading to reliance on low-cost, nutrient-deficient foods for daily sustenance.
- **Impact of Climate Change** – Extreme weather events affect the quantity and quality of agricultural produce, reducing availability of nutritionally rich and diverse food.
- **Food Distribution Inefficiencies** – Supply chain disruptions prevent food from reaching vulnerable populations
- **Economic Inequality** – Poverty remains a major barrier to accessing nutritious food, disproportionately affecting children in low-income regions.

<https://www.who.int/news/item/06-07-2022-un-report--global-hunger-numbers-rose-to-as-many-as-828-million-in-2021>

<https://www.globalhungerindex.org/india.html>

<https://countercurrents.org/2022/08/indias-position-on-the-world-hunger-index-has-fallen-and-malnutrition-and-unemployment-rising/>

About the project

Project objective

- The objective of the Government's Mid-Day Meal Scheme (PM-POSHAN) is to provide nutritious mid-day meals to school-going children daily.
- The Centralised Kitchen upgradation initiative was designed to upgrade the Akshaya Patra Bhuj kitchen with capital expenditure that would expand its capacity to prepare approximately 50,000 meals each day, thereby expanding the reach to more beneficiaries.

Type of beneficiaries:

- Children from lower socio-economic background receiving mid-day meals at schools and Anganwadis, and staff employed in the Kitchen

23,000

Average number of children reached

141

Staff employed at the Akshaya Patra Kitchen

Project components

- The centralised kitchens have the capacity to undertake large-scale feeding, typically up to **100,000 meals a day**, whilst ensuring safe handling, preparation, and delivery of the food.
- These units manage all operations from a **single point of control**. These include receiving and storing raw material, preparation and delivery of meals, and periodic maintenance of all equipments and transport vehicles.
- The **scale and operational efficiency** of these semi-automated kitchens help to maximise the impact of the school feeding programme.

- Cooking in the **centralised kitchens** begins early each morning. All the kitchens are equipped with cauldrons, trolleys, rice chutes, dal/sambhar tanks, cutting boards, knives and other similar equipment, which are thoroughly sanitised before use.
- Each rice cauldron has a capacity of **500 litres and each dal/sambhar cauldron has the capacity to cook 1,200 to 3,000 litres of dal**. The menu is designed in accordance with the local palate.
- As Roti is an integral part of the North and North-Western Indian menu, the kitchens in these regions are equipped with Roti-making machines, which have the capacity to prepare **2,00,000 rotis from 6,000 kg of wheat flour**.
- All the vessels are made of **304 food-grade** stainless steel material.

Project location - Bhuj, Gujarat



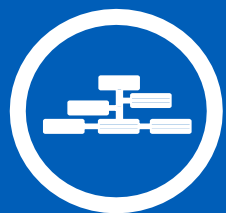
SDG Alignment



Impact Map

Activities/ Inputs	Outputs	Outcomes	Impact
One time grant for purchase of kitchen utilities: • 5 Electric Vehicles • Gas fired boiler (including piping and installation) • Branding activities on existing fleet • Vehicle parking area shed and fabrication • ETP area shed and fabrication • PNG gas skid station shed and fabrication • Miscellaneous kitchen utilities etc.	• Efficient Meal Distribution: Addition of electric vehicles ensure timely delivery of meals. • Gas fired boiler replacing conventional fuel systems • Enhanced Sustainability: Weather protected, compliant sheds for vehicles, ETP, and gas infrastructure • Optimised kitchen and utility facilities with energy-efficient equipment • 30,000+ meals prepared daily in a hygienic and standardised environment. • 30,000+ meals delivered to multiple government schools through the designated GPS-tracked vans. • New staff members employed	• Increase in the number of daily meals served. • Enhanced food safety and hygiene ensuring students receive high-quality meals. • Better meal distribution leading to improved student attendance and nutrition accessibility. • Stable and continuous employment opportunities in a safe working environment (i.e. the kitchen and ancillary operations), especially for people from local communities including women. • Reduction in electricity costs due to use of solar power • Enhanced equipment life and operational reliability • Improved safety and compliance in gas handling, vehicle parking and ETP operations • Better hygiene and energy efficiency in kitchen operations	• Increased meal production capacity with a potential to further expand outreach. • Greater operational efficiency and economic sustainability of the kitchen due to reduced meal preparation and meal delivery time, and reduction in food wastage, and use of solar power. • Sustained reduction in greenhouse gas emissions contributing to climate action • Promotion of clean energy & sustainable infrastructure in industrial operations • Local communities experience gradual poverty alleviation due to stable employment in safe working conditions.

Approach and Methodology of the study



Phase 1: Consultation & Scoping

- Establish clear scope of the assessment
- Review project documents to develop a preliminary understanding of the projects



Phase 2: Review of existing Theory of Change

- Conduct interactions with implementing agency to understand the projects, geographies, modes of implementation, and intended impacts
- Strengthen Impact Map of the programme in consultation with partners



Phase 3: Sampling and Tool Designing

- Finalise the sampling plan for stakeholders, design tools for stakeholder interactions



Phase 4: Stakeholder Interaction and data collection

- Conduct stakeholder interactions (on a sample basis) through field visits to programme locations



Phase 5: Analysis & Impact Assessment Report Preparation

- Conduct data analysis and prepare report on Impact Assessment basis information gathered through stakeholder interactions

Sampling

Stakeholders	Tools Utilised
Staff	Focused group discussion
Students	Structured questionnaire

School	Students	Staff
Shree primary school, Samatra	10	
Shree Girls primary school, Mirjapar	10	
Shree Boys primary school, Mirjapar	10	
Kitchen staff		15
Total	30	15
Grand Total	45	

Sampling and data collection approach

Study design: A primary study involving a mixed-methods research approach, involving both quantitative and qualitative tools, was adopted for this study.

Sample size: 15 Kitchen staff members, 30 students

Sampling method: Stratified random sampling was used to select study participants from the database shared. 80% confidence level and 16% margin of error was utilized for selection of 15 kitchen staff; 80% confidence level and 16% margin of error was utilized for selection of 30 students.

Mode of data collection: In-person and focused group interactions were held with participants from all the school locations and in the kitchen to ensure a representative sample. Care was also taken to ensure equitable representation from both male and female.

The location **Bhuj, Gujarat** was selected for the visit due to the higher percentage of beneficiaries in this area, in addition to discussions with the **BKT team**.

Interactions were also conducted with Akshaya Patra staff members to understand the benefits and areas of improvement evidenced by them.



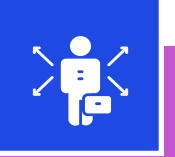
Outcome 1: Reduction in Environmental Footprint and Emissions (1/2)

Support provided: The operations at the Bhuj Centralised kitchen have been made more efficient due to provision of 1 gas-fired boiler. These systems utilize natural gas to provide heat, offering significant energy savings and environmental benefits. The following details were found from the kitchen records:

Parameter	FY 22-23	FY 23-24	% Reduction in FY 23-24
Electricity units utilised	88,377	37,816	57.2% decrease
Bill amount (in INR)	8,58,465	3,11,360	63.8% decrease

- There has been a significant reduction in the amount of electricity consumed in FY 23-24 after the installation of the gas fired boiler. These have reduced greenhouse gas emissions and dependence on conventional fossil fuels.
- Support infrastructure such as ETP and utility sheds ensures environmentally responsible waste and resource management.

Impact findings



Outcome 1: Reduction in Environmental Footprint and Emissions (2/2)

Support provided: The 5 electric vehicles supported by BKT have also had a considerable reduction in cost savings. As per the EV records and using estimates, about 3,867 litres of diesel was avoided during FY 23-24. This leads to an annual diesel cost savings of INR 3,51,867 considering diesel's present actual price. The total CO₂ emissions avoided in tonnes per year is 10.

Savings on 5 EV's		
Item	Value	Notes
EV avg km/day	200	User input for EVs
EV operating days/year	232	User input for EVs
Annual distance covered (km)	46,400	Calculated
Baseline diesel mileage (km/L)	12	Assumed diesel vehicle mileage
Diesel avoided (litres/year)	3,867	Calculated
Diesel price (₹/L)	91	Recent diesel price assumption
Annual diesel cost savings (₹)	3,51,867	Calculated
Diesel emission factor (kg CO ₂ /L)	2.6	Standard emission factor
CO ₂ emissions avoided (kg Co ₂ /year)	10,054	Calculated (Diesel avoided in L x Diesel emission factor)
CO ₂ emissions avoided (tonnes/year)	10	Calculated

Deployment of electric vehicles, transition to PNG gas infrastructure, and installation of a gas-fired boiler significantly reduced electricity consumption as well as reduced the CO₂ emissions.

Impact findings

Outcome 2: Improved Operational Safety and Infrastructure Sustainability

Support provided: ETP area shed and fabrication for vehicles, and PNG gas skid stations shed enhance equipment safety, weather protection, and longevity of assets.

As reported by the Kitchen Coordinator,

- The vehicle parking shed constructed with BKT's support has significantly improved the maintenance and longevity of the vehicles. Prior to this intervention, vehicles were parked outside the kitchen premises, which exposed them to direct sunlight, rain, and other environmental factors. This resulted in accelerated paint deterioration, branding wear and tear, and an increased risk of rusting.
- With the availability of the covered shed, vehicles are now securely parked under proper shelter. This has substantially reduced exposure to adverse weather conditions, thereby minimizing paint damage, preventing rust formation due to rainwater, and preserving vehicle branding quality. Overall, the support has contributed to better asset protection, enhanced vehicle lifespan, improved appearance, and reduced maintenance costs over time.
- The frequency of using water to clean vehicles has also reduced, leading to additional environmental and economic benefits.

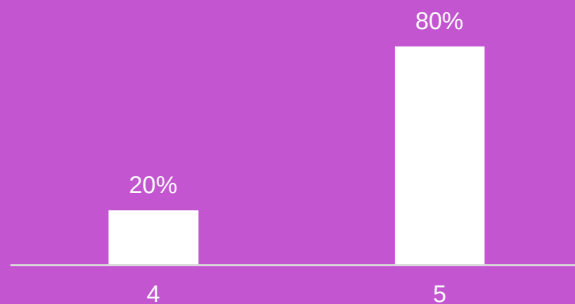
Impact findings



Outcome 3: Improved student outreach

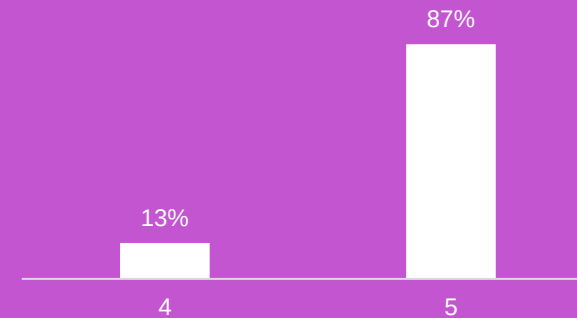
- Due to the financial costs saved because of reduction in electricity bills and diesel costs, Akshay Patra is able to utilise those savings to prepare meals for a greater number of students. The total cost saved due to the provision of gas boiler and EV in FY 23-24 was INR 8,98,972. With a per student cost of INR 1500/year, the project expanded its capacity to **reach an additional 600 students**, approximately.
- Students were also found to be satisfied with the meals from the below findings:

Student Ratings on Meal Distribution Hygiene



Student respondents have rated hygiene and cleanliness during meal distribution highly positive. 80% of students marked the hygiene level as 5, reflecting strong food safety and cleanliness standards. These ratings demonstrate the kitchen staff's dedication to maintaining sanitary conditions, ensuring that students receive safe and hygienic meals daily.

Student Ratings on Meal Quality and Taste



Student respondents have provided overwhelmingly positive feedback on the quality and taste of meals. 87% rated the food as 5, highlighting high standards in meal preparation. This reflects strong food preparation and cleanliness standards.

The positive rating from students reflects their confidence in the quality of food preparation and kitchen maintenance.

Case study

Overcoming Adversity: An Inspiring Journey



**The name Simran is used to protect the identity of the beneficiary*

A detailed interaction was held with Simran* from Shree Dhaneti Kanya School in Bhuj, Gujarat. Her husband works as a labour and mother is a housewife. With a family of 5 members, proper nutrition for everyone often becomes a challenge due to limited income.

Due to the midday meal support, Simran now feels enthusiastic to come to school daily. Children are provided with dal, rice, chapati, chana chat in the midday meal depending on the meal planned for the day. When at home, Simran mentions having dal-dhokla, plain rice, etc. during lunch time. Contrary to earlier, she now feels energetic even after attending 3-4 classes at school.

Simran aspires to become a doctor in future. She loves coming to school and enjoys her classes very much.

Recommendations



Maintenance of vehicle and equipment

Cost of maintenance of the EV vehicles and other machinery procured should be incorporated into the project budget to ensure their safety and durability.



Impact Documentation

Third party study of the operational efficiency and environmental impact of the project would help to validate and estimate the value of the carbon credits generated through the project.



Advocacy efforts

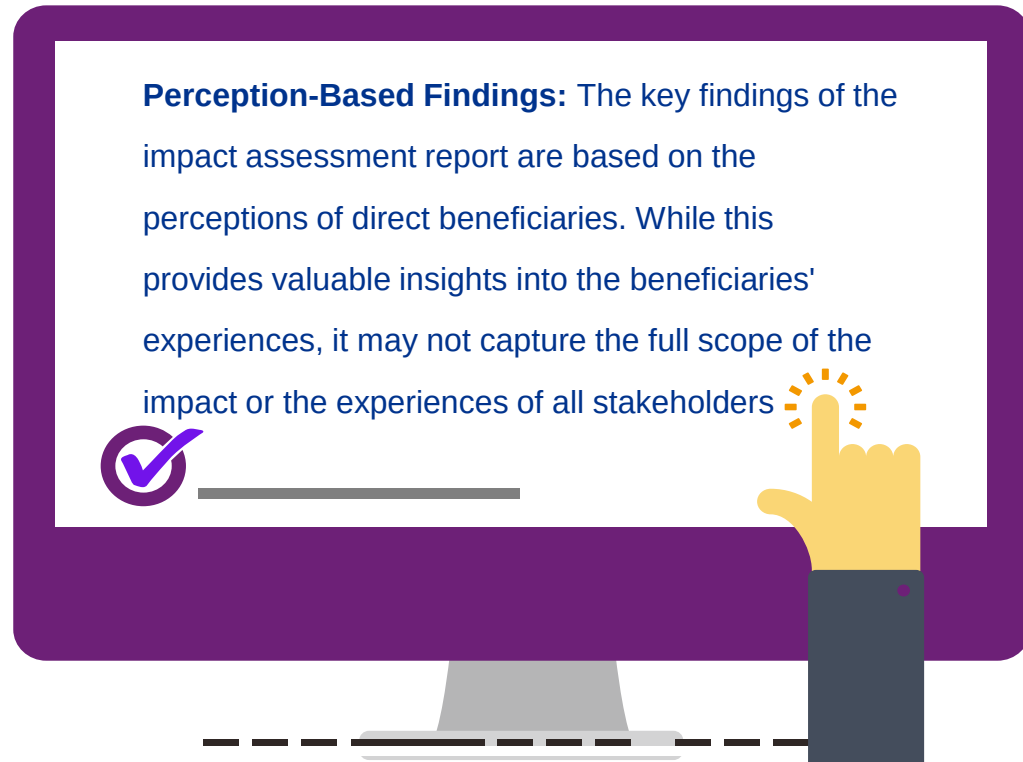
Inbuilding advocacy efforts into the project would help fast-track the full utilisation of the kitchen's capacity i.e. of 50,000 meals per day.



Feedback process

Regular feedback from staff, supervisors, students, teachers, parents, Government and other stakeholders can help enhance meal quality, hygiene, operations, and efficiency. A review system with surveys, assessments, and open communication would improve service and satisfaction.

Limitations of the study



In reference to the data collection few limitations are mentioned below:

- Due to language barriers in Bhuj, Gujarat, some of the points might have been missed out while collecting the data
- Some of the night shift employees were not a part of the study, since the study was conducted during the morning shift.
- Some of the employees who were on leave were not covered.

Annexure A



Gas Boiler at the kitchen (different angles)

Annexure A



ETP Shed with fabrication (different angles)

Annexure A



EV vans at the kitchen

Annexure A



Solar panel





Upgradation of Centralised Kitchen Project [The Akshay Patra Foundation]

Balkrishna Industries Limited
Impact Assessment for FY23-24

February 2026





Expansion of Hospital Infrastructure project

Dr. Hedgewar Hospital,
Chhatrapati Sambhaji Nagar

Balkrishna Industries Limited
Impact Assessment for FY23-24

February 2026



Disclaimer

- Our report shall be prepared solely for Balkrishna Industries Limited (BKT). KPMG does not accept or assume any liability, responsibility, or duty of care for any use of or reliance on this report by anyone, other than our Client, to the extent agreed in the Agreement.
- Impact assessment is limited to the projects allocated by BKT
- No framework has been used in preparing the report as detailed herein. No professional assurance standards ex. ISAE, SSAE etc. have been applied while preparing this report and accordingly the rigors applicable under such standards are not applicable for the scope covered by our report.
- Procedures, analysis and recommendations, if any, are advisory in nature basis the information collected from various sources both publicly and those provided by the client.
- Our observations represent our understanding and interpretation of the facts based on reporting of beneficiaries and stakeholders.
- Our report, by its very nature, may involve numerous assumptions, inherent risks, and uncertainties, both general and specific. The conclusions drawn shall be based on the information available with us at the time of preparing the report.
- We shall not perform an audit and shall not express an opinion or any other form of assurance. Further, comments in our report are not and shall not be intended, nor should they be interpreted to be legal advice or opinion. BKT shall be fully and solely responsible for applying independent judgment, with respect to the findings included in the report, to make appropriate decisions in relation to future course of action, if any. We shall not take responsibility for the consequences resulting from decisions based on information included in the report.
- While information obtained from the public domain or external sources has not been verified for authenticity, accuracy, or completeness, we have obtained information, as far as possible, from sources generally considered to be reliable. However, it must be noted that some of these websites/third party sources may not be updated regularly. We assume no responsibility for the reliability and credibility of such information.
- Our work shall be limited to the specific procedures described in this Engagement Letter and shall be based only on the information and analysis of the data obtained through interviews of beneficiaries supported under the programme, selected as sample respondents and discussions with BKT team and stakeholders of the programme. Accordingly, changes in circumstances or information available after the review could affect the findings outlined in our report.
- In no circumstances shall we be liable, for any loss or damage, of whatsoever nature, arising from information material to our work being withheld or concealed from us or misrepresented to us by any person to whom we make information requests.
- In accordance with its policy, KPMG advises that neither it nor any of its partner, director or employee undertakes any responsibility arising in any way whatsoever, to any person other than BKT in respect of the matters dealt with in this report, including any errors or omissions therein, arising through negligence or otherwise, howsoever caused.
- In connection with our report or any part thereof, KPMG does not owe duty of care (whether in contract or in tort or under statute or otherwise) to any person or party to whom the report is circulated to and KPMG shall not be liable to any party who uses or relies on this report. KPMG thus disclaims all responsibility or liability for any costs, damages, losses, liabilities, expenses incurred by such third party arising out of or in connection with the report or any part thereof.
- By reading our report, the reader of the report shall be deemed to have accepted the terms mentioned hereinabove



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			K	Annexures (Pictures from the field)	19



Executive Summary

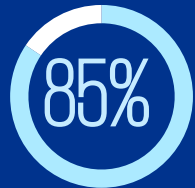
Implementing Partner - DR. Babasaheb Ambedkar Vaidikiya Pratishthan (BAVP): Dr Hedgewar Hospital.

Period under assessment: FY 2023-24

Project objective:

- To improve bed capacity and create a multi-use facility, for use by various hospital departments, by way of expansion of 4th floor.
- To create a self-sustaining service-oriented model without a profit motive.
- To provide quality medical treatment at affordable rates to the underserved and economically weaker sections of society.

Key Summary Findings:



Patients faced no waiting time in the hospital

Patients interviewed shared no and minimal waiting time in the hospital which may be attributed to the expansion of the fourth floor and increase in bed capacity.

The most cited reason for selecting Hedgewar Hospital was a combination of accessibility, affordability, and quality of treatment 48%.



Patients shared positive rating for overall experience at the hospital

Beneficiary count

Referred patients	Direct Patients	Total Patients
12455	8804	21,258

Note: Beneficiary count is from April 2023 to March 2024

Impact Assessment (IA) Study Outreach

25

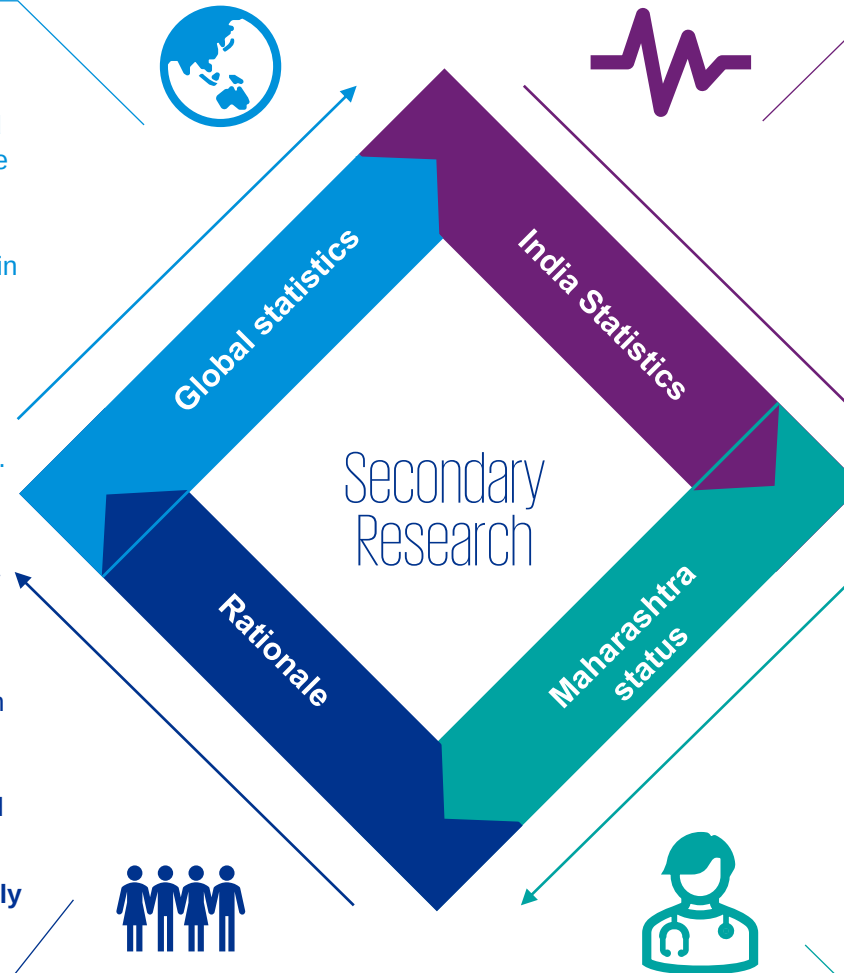
Patients

Key recommendations

- Acquiring more beds for secure patient transfers from one bed to another.
- Rigorous cleaning of toilets and room fresheners in General Wards
- Air Conditioning Support for hospital staff and patients
- Provision for accommodating additional visitors in the night (especially for women patients)

Overview of the problem statement

- **The Universal Health Coverage (UHC - SDG target 3.8)** service coverage index score increased from 45 to 68 between 2000 and 2021 globally but **progress has slowed since 2015**, especially during the COVID-19 pandemic. The proportion of the population not covered by essential health services decreased by about 15% between 2000 and 2021, with minimal progress made after 2015. This indicates that in 2021, about 4.5 billion people were not able to access essential health services.
- WHO notes that **scaling up the coverage of effective essential health services is a critical for achieving UHC**.
- As of 2022, India surpassed China becoming the world's largest population. **An increase in life expectancy and a gradually reducing death rate** over the years have actively contributed to India's burgeoning population, specifically the geriatric population.
- To cope with this growth, public health expenditure has been on the rise since 2014, with an **increasing share of the country's GDP being distributed towards public health care**. In 2022, India's expenditure on public healthcare stood at over two percent of the GDP.
- However, the **healthcare system is dominated significantly by private healthcare**. The private health care market occupies a large share of hospitals (75%), hospital beds (50.7%) and medical institutions (54.3%) largely located in urban areas.



- The global SARS-COV2 pandemic showed that the Indian healthcare system is not equipped to face such large-scale medical challenges. Government spending on healthcare, the **gap in demand and supply, and chronic shortages of medical supplies and expertise** are some of the concerns that need urgent attention.
- Data suggests that **India has 1.4 beds per 1,000 people, 1 doctor per 1,445 people, and 1.7 nurses per 1,000 people**.
- Over 75% of the healthcare infrastructure is concentrated in metro cities, where only 27% of the total population resides
- **Rural India (73% of population) accounts for only 37% of the beds** available in all government hospitals across the country.
- As of February 2023, **Maharashtra's rural health facilities fall short of the Indian Public Health Standards (IPHS) requirements**:
 - Sub-Centres (SCs): Shortfall of 3,515 units (25% deficit)
 - Primary Health Centres (PHCs): Shortfall of 417 units (18% deficit)
 - Rural Hospitals (RHs): Shortfall of 216 units (37% deficit)
- This indicates that many rural areas lack adequate basic healthcare facilities, leading to **overburdening of existing centers** and limited access for residents.

WHO World Health Statistics 2024

Healthcare in India - statistics & facts | Statista

Healthcare Infrastructure in India, Challenges, Current Status

About DR. Babasaheb Ambedkar Vaidikiya Pratishtan (BAVP).

About ABAVP

- Dr. Babasaheb Ambedkar Vaidyakiya Pratishtan (BAVP) was established in 1989 by a group of doctors who came together to serve the society by providing **affordable and quality healthcare services** to the underserved and marginalised sections of society.
- BAVP is the parent organization of Sevankurbharat; and its head office is located in Aurangabad, Maharashtra. Since 1989, the trust has treated more than 70 lacs underprivileged patients. **Dr. Hedgewar hospital is the nucleus of this Trust** and is run with an objective of providing excellent medical services at affordable cost to the lower strata of society.
- BAVP runs three secondary and tertiary care hospitals namely, Dr. Hedgewar hospital, Aurangabad, Shri Guruji hospital Nashik and Swargadeo Su-ka-Fa Hospital Shivsagar, Assam. BAVP also runs other social outreach programmes through their sister concerns like Savitribai Phule Mahila Ekatma Samaj Mandal in the domains of rural development, women empowerment, slum health care.

Mission

Dr Hedgewar Hospital's mission is to forge a nationalistic, self-reliant, strong and cohesive society.

Vision

Dr Hedgewar Hospital's vision to provide excellent, transparent, ever growing and compassionate health services to the common man.

Project objective

To provide support for upgrading infrastructure at Hedgewar Hospital, Aurangabad, to enable better health care service delivery to patients from underserved and marginalised communities in the state of Maharashtra.

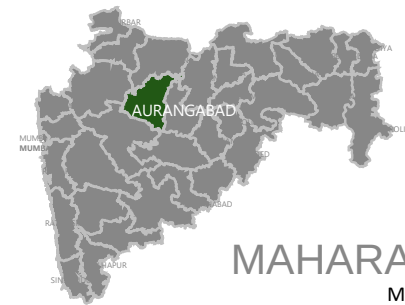
Project components

- To support expansion of the 4th floor to increase bed capacity, thus increasing health access to more patients and increasing patient footfall.
- Aim for a self-sustaining, service-oriented model with a no-profit motive.
- Provide affordable quality medical treatment to the underprivileged.

UN SDG alignment



Project location

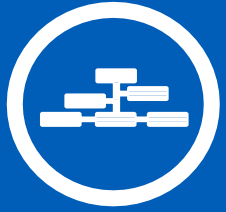


Impact Map

Activities/ Inputs	Outputs	Primary Outcomes	Impact
• Expansion of 4th floor – Construction support • 120 Beds for OPD added across 4 general wards	• Increased space for healthcare services, accommodating new facilities	• Improved infrastructure enabled the hospital to accommodate more patients and staff	• Improved patient experience due to reduction in overcrowding and shortened waiting times across the hospital • Improved accessibility to healthcare services for community at large



Approach and Methodology of the study



Phase 1: Consultation & Scoping

- Establish clear scope of the assessment
- Review project documents to develop a preliminary understanding of the projects



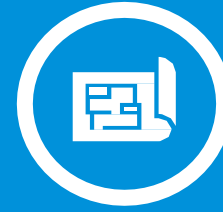
Phase 2: Review of existing Theory of Change

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Phase 3: Sampling and Tool Designing

- Finalise the sampling plan for stakeholders, design tools for stakeholder interactions



Phase 4: Stakeholder Interaction and data collection

- Conduct stakeholder interactions (on a sample basis) through field visits to programme locations



Phase 5: Analysis & Impact Assessment Report Preparation

- Conduct data analysis and prepare report on Impact Assessment basis information gathered through stakeholder interactions

Sampling

Stakeholders	Tools Utilised
Patients	Structured questionnaire Focused group discussion
Medical Staff	Structured questionnaire Focused group discussion
Administrative Staff	Structured questionnaire

Stakeholders	Target sample
Patients	25
Medical Staff and Administrative Staff	10
Caregivers of patients	6
TOTAL	41

Sampling and data collection approach

Study design: A primary study involving a mixed-methods research approach, involving both quantitative and qualitative tools, was adopted for this study

Sample size: Basis 80% confidence level and 9% margin of error for the universe of beneficiaries, the sample size calculated was 41

Sampling method: Stratified random sampling was used to select study participants from different wards basis their availability and consent to participate in the study

Mode of data collection: In-person interactions were held with patients, medical staff, and the hospital's administrative staff to ensure a representative sample. Care was also taken to ensure representation of both male and female patients.

1 location – Ch. Sambhaji Nagar, Maharashtra

To capture qualitative insights, one-on-one surveys and focused group discussions, designed specifically for the intended outcomes of the programme, were administered to participants

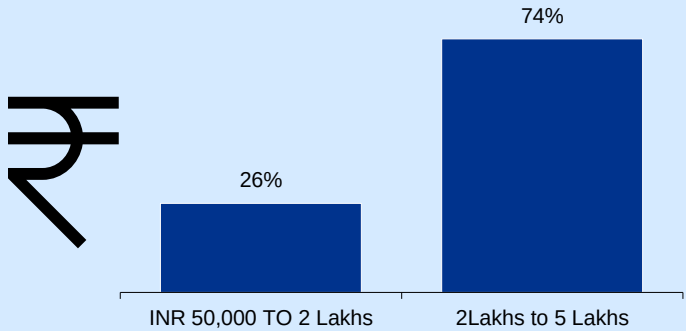
Demographic Profile of Respondents - Patients (1/5)

Gender :



In total, interviews were conducted with 27 admitted patients in the hospital. Out of these, **85%** were male and remaining **15%** were females.

Annual Family Income



A significant majority of respondents (74%) reported earning between ₹2 lakhs to ₹5 lakhs, while a smaller segment (26%) falls within the ₹50,000 to ₹2 lakhs income bracket. This suggests that the respondent group is predominantly composed of individuals in the mid-income range

Distance of the hospital from the place of residence of admitted patients

51.5 kms

The average distance of the hospital from the place of the residence of patients.

200 kms

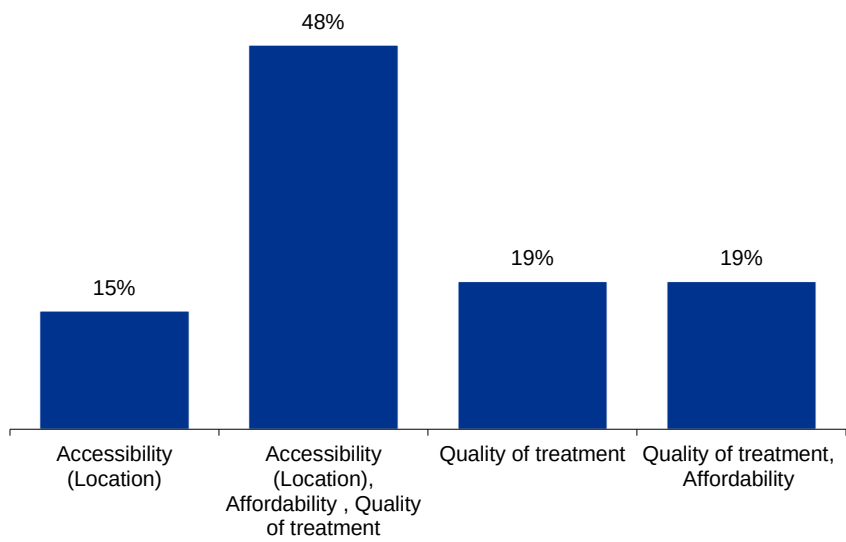
Was noted as the maximum distance of the hospital from the place of residence of the interviewed patients. It was noted that patients come from Marathwada region, and also from different districts like Yawatmal and Buldhana which are the part of Vidarbha region.

5 kms

Minimum distance of the hospital from the place of residence noted from the patients interacted with.

Key Findings - Patients (2/5)

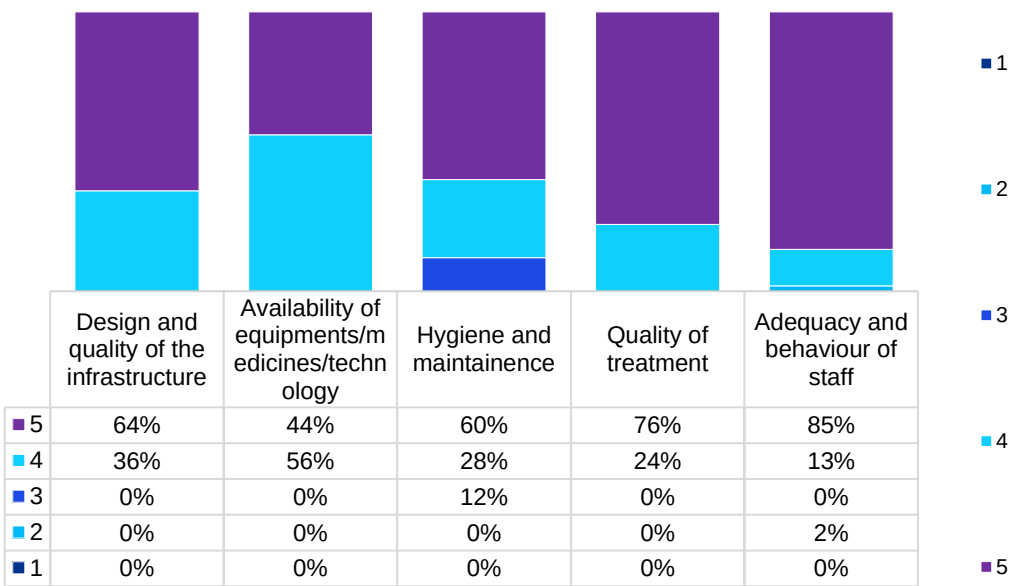
Reason for selecting this hospital for their treatment:



The majority of respondents (48%) selected the hospital due to a combination of accessibility, affordability, and quality of treatment, highlighting the importance of a well-rounded healthcare experience. Quality of treatment alone was a deciding factor for 19%, while another 19% valued both quality and affordability. Only 15% chose the hospital primarily for its location, indicating that while proximity matters, it is often secondary to the perceived value and cost of care.

Key Findings- Patients (3/5)

Patient's rating of the 4th-floor expansion [as per the category] :



Design and Quality of Infrastructure: The infrastructure received favorable feedback, with 100% of respondents rating it either 4 or 5, indicating a high level of satisfaction with the design and construction quality.

Availability of Equipment, Medicines, and Technology: This category was positively rated by all respondents, with 48% assigning a score of 4 and 52% assigning a score of 5, reflecting strong confidence in the hospital's technological and medical readiness.

Hygiene and Maintenance: While the majority of respondents (89%) rated this aspect positively, 11% provided a neutral rating, suggesting that there may be minor areas for improvement in cleanliness and upkeep.

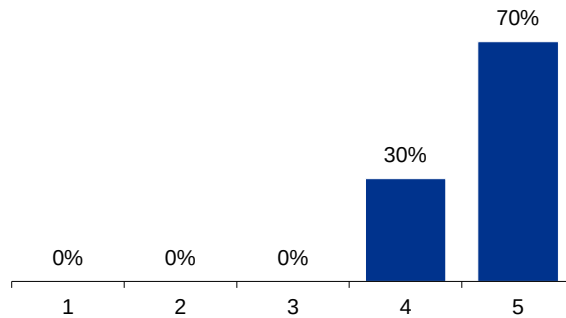
Quality of Treatment: The quality of medical care was highly appreciated, with 74% of respondents giving the highest rating and 26% rating it 4. No respondents rated this category below 4, indicating consistent satisfaction.

Adequacy and Behaviour of Staff: This category received the most commendation, with 85% of respondents rating it 5 and an additional 13% rating it 4. Only 2% rated it below 4, underscoring the professionalism and courteousness of the hospital staff.



Key Findings- Patients (4/5)

Overall experience



The overall experience with the hospital services was rated very positively by all respondents. A significant majority (70%) assigned the highest rating of 5, while the remaining 30% rated it 4. Notably, there were no ratings below 4, indicating a uniformly high level of satisfaction among patients regarding their experience with the hospital.

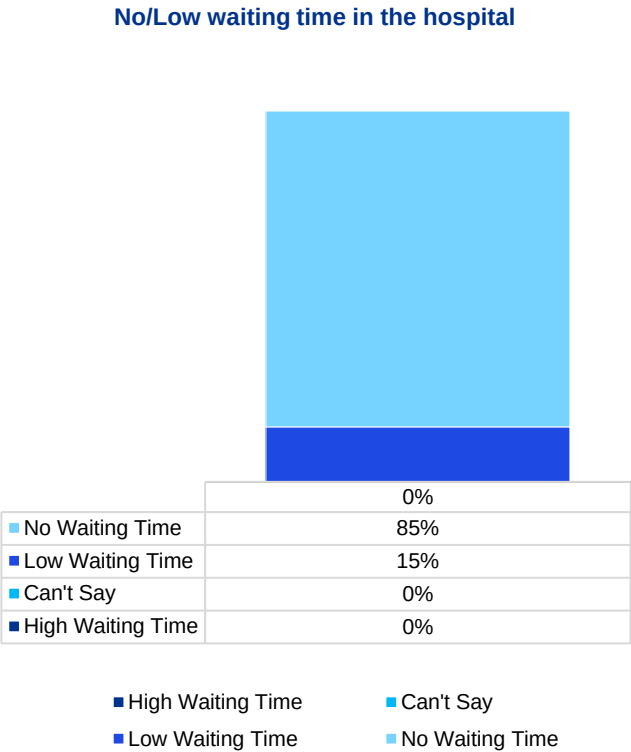
Floor expansion contributed to providing specialised care and better patient outcomes for this locality

During the interactions, when patients were asked about their perceptions about the contributions made by the hospital, 100% indicated that they attribute between 61% and 80% of their positive experiences to the hospital's efforts and the result of 4th floor expansion.

61-80%

**Enhancement of
specialised care in
the locality**

Key Findings- Patients (5/5)



The responses from the respondents reflects a highly efficient patient management system within the hospital. An overwhelming 85% of respondents reported experiencing no waiting time, while the remaining 15% indicated low waiting time. Importantly, there were no responses indicating moderate, high, or very high waiting durations, which underscores the hospital's effectiveness in streamlining patient flow and minimizing delays. This level of operational efficiency not only enhances patient satisfaction but also reflects positively on the hospital's administrative and clinical coordination.

80% of the patients attributed their recovery, following the treatment received there, to the hospital staff.

This highlights the significant role that the medical and support staff play in patient care and recovery.

Key Findings- Admin Staff (2/2)



Hospital Staff

All the interviewed staff shared that the hospital staff is **responsive and helpful** in the expanded facilities, and according to them, the 4th floor facility is **very convenient**, and they had not received any complaints related to the infrastructure on the 4th floor



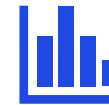
Visitors and family members

The hospital administration has confirmed that **visitors and family members are allowed during visiting hours**. However, during the night, only one family member is permitted to stay with admitted patients. This has been noted to be an obstacle when the attending family member is a female as she cannot go outside at night if an exigency necessitates it.



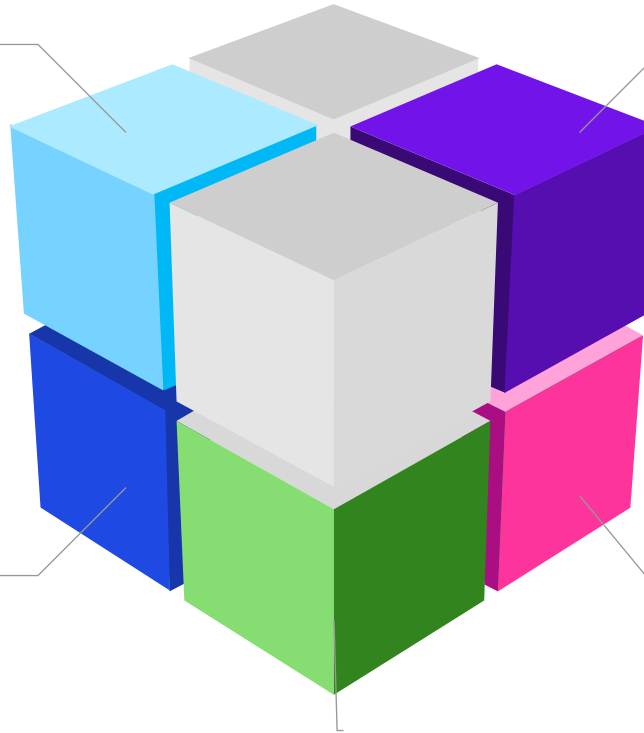
Patient waiting time and emergency

All administrative staff members have reported that the enhanced facilities have **significantly improved** their ability to accommodate additional patients without increasing waiting time for treatment. Additionally, the admin staff expressed that the hospital is now equipped to **better manage emergency situations** on account of enhanced facilities.

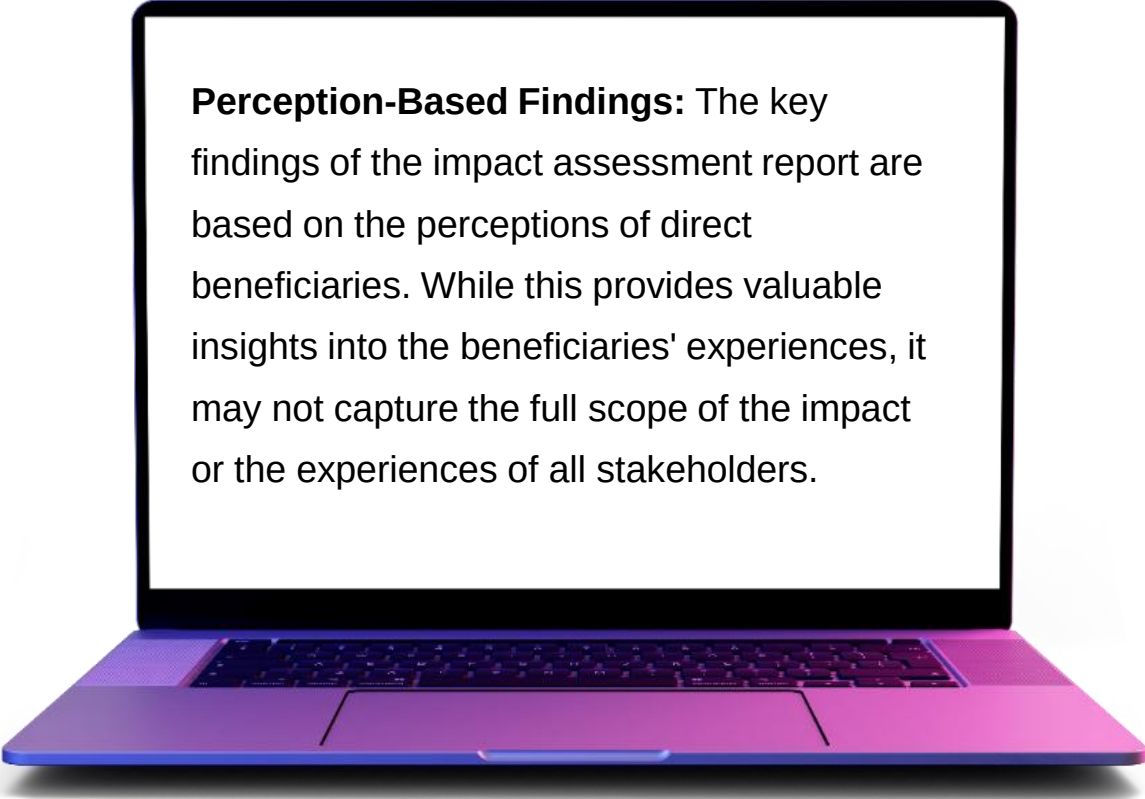


Hygiene at the hospital

All the interviewed admin staff shared that the hospital has **prioritised hygiene**, and management does regular operational checks to ensure hygiene standards are maintained as per NMC norms.



Limitations of the study

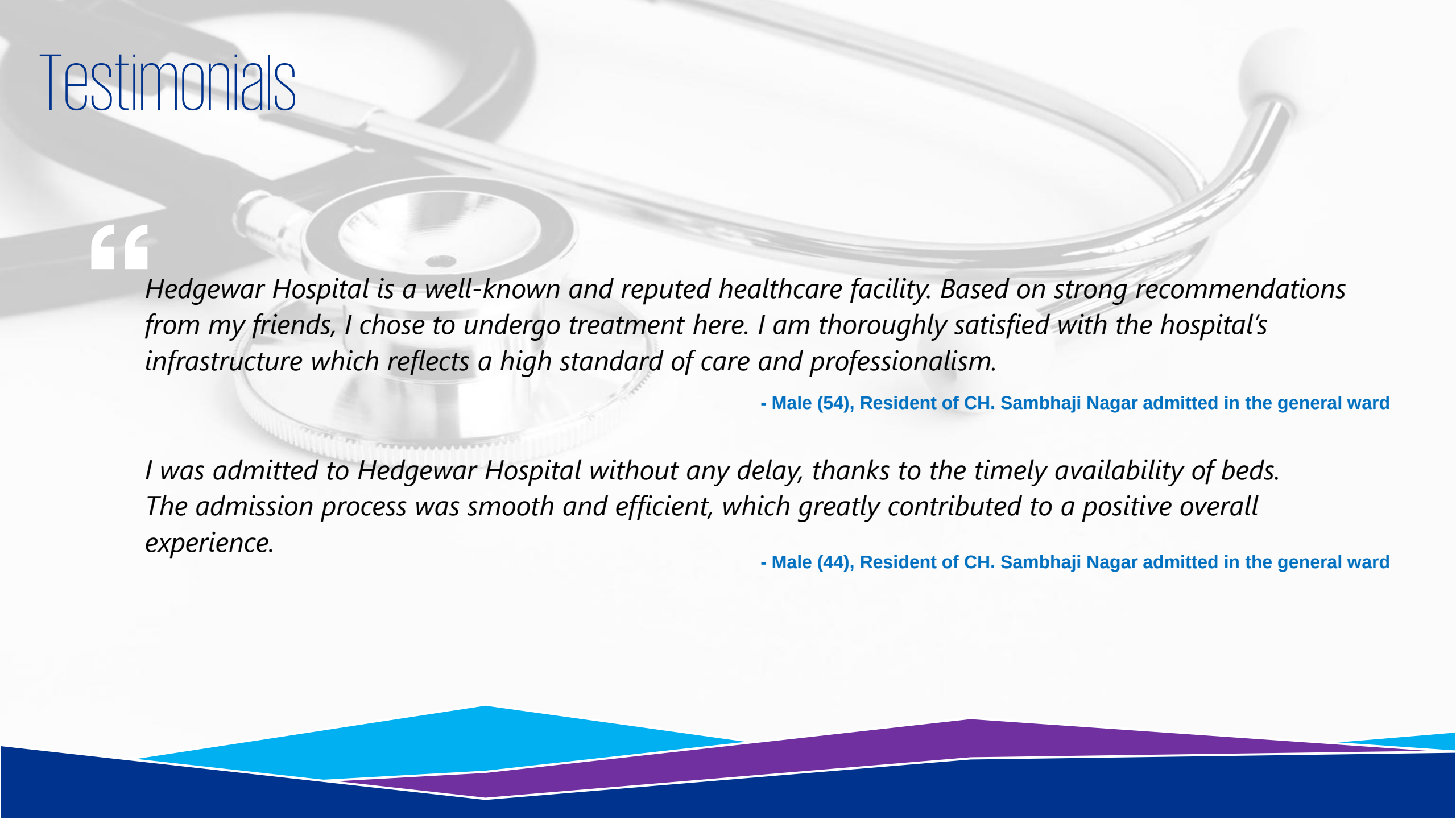
A laptop with a black bezel and a silver body is shown from a slightly elevated front angle. The screen is white and displays a paragraph of text. The laptop is positioned on the left side of the slide.

Perception-Based Findings: The key findings of the impact assessment report are based on the perceptions of direct beneficiaries. While this provides valuable insights into the beneficiaries' experiences, it may not capture the full scope of the impact or the experiences of all stakeholders.

In reference to the data collection few limitations are mentioned below:

- **Quality of infrastructure construction:** The quality of the constructions that took place in the hospital have not been observed. As a result, the report does not include an objective assessment of the physical infrastructure improvements. This means that the evaluation of the constructions' effectiveness and adherence to standards is not covered under the scope of the report.
- **First-Time Visitors:** A majority of the respondents were first-time visitors to the hospital. This may influence their perceptions and feedback, as they may not have a comprehensive understanding of the hospital's services and improvements over time.

Testimonials



“

Hedgewar Hospital is a well-known and reputed healthcare facility. Based on strong recommendations from my friends, I chose to undergo treatment here. I am thoroughly satisfied with the hospital's infrastructure which reflects a high standard of care and professionalism.

- Male (54), Resident of CH. Sambhaji Nagar admitted in the general ward

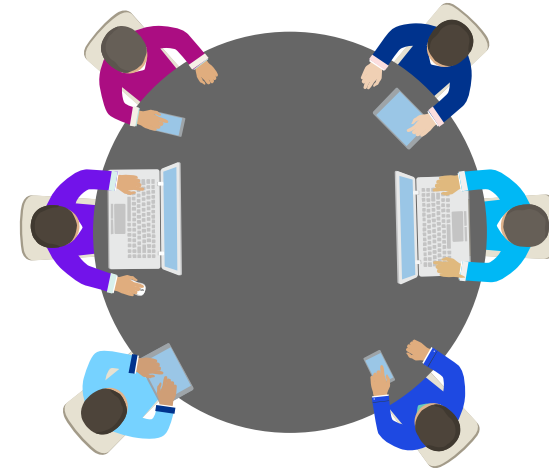
I was admitted to Hedgewar Hospital without any delay, thanks to the timely availability of beds. The admission process was smooth and efficient, which greatly contributed to a positive overall experience.

- Male (44), Resident of CH. Sambhaji Nagar admitted in the general ward



Way Forward

- **Rigorous Cleaning of Toilets in General Wards:** Implement a rigorous cleaning schedule for the toilets in the general wards to ensure high standards of hygiene. This will help in maintaining a clean and sanitary environment for patients, their family members/visitors, and the staff.
- **Room Fresheners in General Wards:** Introduce the use of room fresheners in the general wards to improve the overall ambiance and ensure a pleasant environment for patients and visitors.
- **Air Conditioning Support:** Provide air conditioning support during the summer for the nursing staff and in the general wards. This will ensure a comfortable working environment for the staff and a more pleasant recovery period for the patients during their time in the hospital.
- **Additional visitors in the night:** Allow two family members or relatives to stay if a female is admitted or if the primary attendant of patient is a female. This will help to ensure the safety of the female if there is an exigency and supplies need to be procured for the patient from outside the hospital.



Annexure A



Interaction with male patients admitted in general ward of the 4th Floor



Interaction with relative of an admitted patient in the general ward of the 4th Floor



Interaction with male patients admitted in general ward of the 4th Floor



Expansion of Hospital Infrastructure project

Dr. Hedgewar Hospital,
Chhatrapati Sambhaji Nagar

Balkrishna Industries Limited
Impact Assessment for FY23-24

February 2026





Impact Assessment of Muktangan Project

Balkrishna Industries Limited
Impact Assessment for FY23-24

February 2026



Disclaimer

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- Impact assessment is limited to the projects allocated by BKT
- No framework has been used in preparing the report as detailed herein. No professional assurance standards ex. ISAE, SSAE etc. have been applied while preparing this report and accordingly the rigors applicable under such standards are not applicable for the scope covered by our report.
- Procedures, analysis and recommendations, if any, are advisory in nature basis the information collected from various sources both publicly and those provided by the client.
- Our observations represent our understanding and interpretation of the facts based on reporting of beneficiaries and stakeholders.
- Our report, by its very nature, may involve numerous assumptions, inherent risks, and uncertainties, both general and specific. The conclusions drawn shall be based on the information available with us at the time of preparing the report.
- We shall not perform an audit and shall not express an opinion or any other form of assurance. Further, comments in our report are not and shall not be intended, nor should they be interpreted to be legal advice or opinion. BKT shall be fully and solely responsible for applying independent judgment, with respect to the findings included in the report, to make appropriate decisions in relation to future course of action, if any. We shall not take responsibility for the consequences resulting from decisions based on information included in the report.
- While information obtained from the public domain or external sources has not been verified for authenticity, accuracy, or completeness, we have obtained information, as far as possible, from sources generally considered to be reliable. However, it must be noted that some of these websites/third party sources may not be updated regularly. We assume no responsibility for the reliability and credibility of such information.
- Our work shall be limited to the specific procedures described in this Engagement Letter and shall be based only on the information and analysis of the data obtained through interviews of beneficiaries supported under the programme, selected as sample respondents and discussions with BKT team and stakeholders of the programme. Accordingly, changes in circumstances or information available after the review could affect the findings outlined in our report.
- In no circumstances shall we be liable, for any loss or damage, of whatsoever nature, arising from information material to our work being withheld or concealed from us or misrepresented to us by any person to whom we make information requests.
- In accordance with its policy, KPMG advises that neither it nor any of its partner, director or employee undertakes any responsibility arising in any way whatsoever, to any person other than BKT in respect of the matters dealt with in this report, including any errors or omissions therein, arising through negligence or otherwise, howsoever caused.
- In connection with our report or any part thereof, KPMG does not owe duty of care (whether in contract or in tort or under statute or otherwise) to any person or party to whom the report is circulated to and KPMG shall not be liable to any party who uses or relies on this report. KPMG thus disclaims all responsibility or liability for any costs, damages, losses, liabilities, expenses incurred by such third party arising out of or in connection with the report or any part thereof.
- By reading our report, the reader of the report shall be deemed to have accepted the terms mentioned hereinabove



Contents



Picture source: Avasara Academy's Facebook Page

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Executive Summary

About the project: The Mukhtangan programme bridges gaps in mainstream education by connecting children with nature for holistic development, while empowering underserved women as educators to deliver culturally relevant, community-rooted learning.

Assessment highlights

Project location-

Sayani Road MPS, Prabhadevi, Mumbai

Total number of students: 489

Total number of teachers: 69

Sample covered in impact assessment:

15

Students

7

Teachers

Students

64%

reported they feel happy and enjoy coming to school



79%

reported overall satisfaction with the experience of teaching and learning methods



71%

reported improvement in their confidence level



Teachers

100%

noted enhanced student engagement



100%

reported improvement in personal development



100%

reported increased confidence in lesson delivery



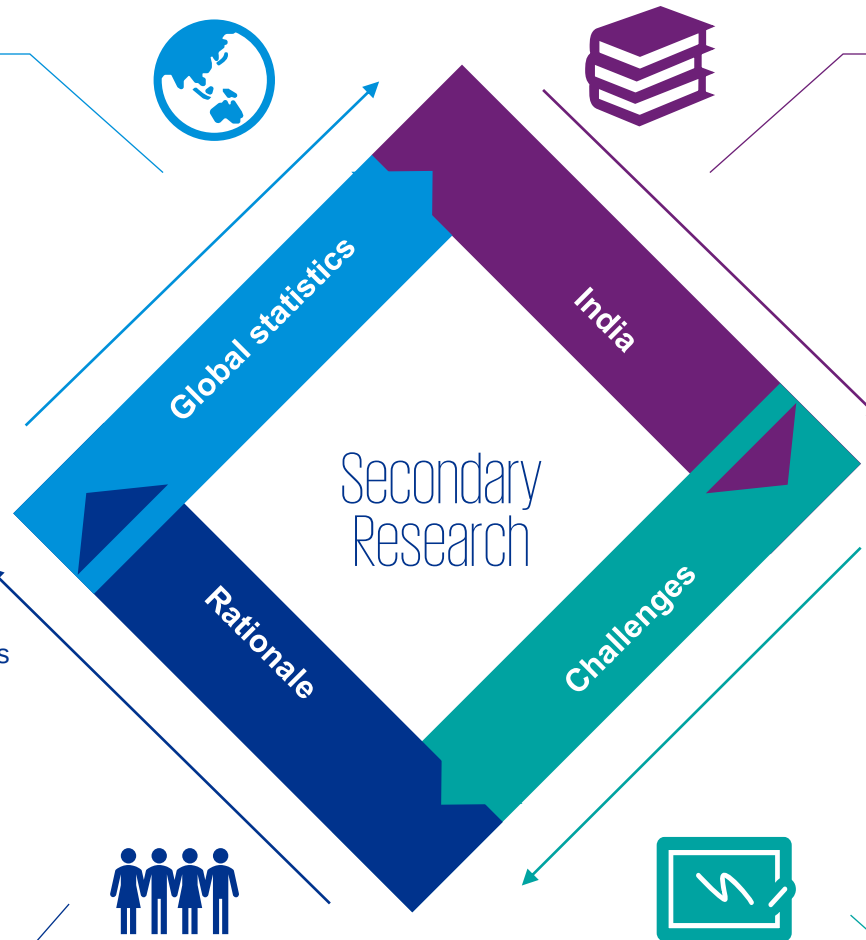
Way forward: The Mukhtangan programme positively influences students and families by fostering career awareness and community well-being. To scale and strengthen the initiative, more frequent interactive activities, outdoor play facilities, and access to educational toys are recommended.

Overview of the problem statement

- Global access to education has expanded significantly in recent years.
- Primary school enrollment rose from approximately 655 million children in 2000 to nearly 770 million in 2023.
- However, **access diminishes as education levels rise.**

Improving Maharashtra's education indicators requires a multi-pronged approach that tackles key problem areas.

- **Strengthening Enrollment and Retention:** Improving infrastructure especially in rural schools can make learning environments more attractive and functional.
- **Enhancing Teacher Training:** Investing in teacher development programs will ensure educators are well-equipped with modern teaching methods, making classes more engaging and effective.
- **Leveraging Technology:** Expanding digital learning initiatives and improving internet accessibility in underprivileged areas can make education more inclusive and help bridge learning gaps.
- **Targeted Interventions for Out-of-School Children:** Personalised support, special education programs, and direct financial aid for economically weaker students can help reintegrate them into schools.



- As of 2023, roughly 94.94% of primary school teachers in India have received the minimum required professional training, marking a rise from 88.68% in 2022 according to UNESCO report.
- However, in rural areas, nearly one-third of teachers in elementary government schools do not possess the required teaching degree. Only 46% of primary school teachers in smaller towns possess appropriate qualifications, such as a Diploma in Education or Bachelor of Education.

Maharashtra faced several challenges in its education sector during the 2022-23 academic year:

- **School Closures:** A total of 643 primary schools were shut down between 2019 and 2022, as revealed in the state's economic survey. The COVID-19 pandemic and financial struggles contributed to these closures.
- **Rising Dropout Rates:** The dropout rate in secondary schools increased to 10.7% in 2021-22, up from 4.6% in 2020-21. The upper primary dropout rate remained at 1.53% in 2021-22, compared to 1.17% in 2019-20.
- **Out-of-School Children:** Maharashtra had 15,707 children (8,478 boys and 7,229 girls) who were out of school in 2022-23.

About the project

Project objective

- The programme objective is to **bridge gaps in mainstream schooling** by creating an enriching learning environment that connects children with nature through sensory experiences.
- It focuses on **holistic development**-physical, emotional, psychological, and social, especially for underserved communities.
- By training women from these backgrounds as skilled teachers and educators, they ensure **culturally relevant education that meets community needs**. This approach not only enhances learning but also empowers women, providing them with livelihoods and strengthening education through real-life community experiences.

Project components

- A key component of the Muktangan model is **the 'Integrated School and Teacher Education Programme'**.
- They believe that learning is a process which occurs through experience and reflections.
- Children are not just passive receivers of information but also active contributors in the classroom.
- Their extensive school programme aims at addressing major gaps in the mainstream education system by providing **conductive learning environments**.

Type of beneficiaries:

- Student and teachers from lower socio-economic background
- **Total number of students: Male = 242, Female = 247**
- **Total number of teachers and educators: 69**

49%

Male students reached

51%

Female students reached

Project location-

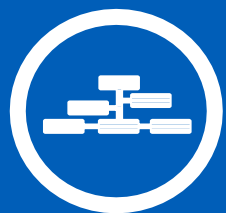
Sayani Road MPS, Prabhadevi, Mumbai



UN SDGs alignment



Approach and Methodology of the study



Phase 1: Consultation & Scoping

- Establish clear scope of the assessment
- Review project documents to develop a preliminary understanding of the projects



Phase 2: Review of existing Theory of Change

- Conduct interactions with implementing agency to understand the projects, geographies, modes of implementation, and intended impacts
- Strengthen Impact Map of the programme in consultation with partners



Phase 3: Sampling and Tool Designing

- Finalise the sampling plan for stakeholders, design tools for stakeholder interactions



Phase 4: Stakeholder Interaction and data collection

- Conduct stakeholder interactions (on a sample basis) through field visits to programme locations



Phase 5: Analysis & Impact Assessment Report Preparation

- Conduct data analysis and prepare report on Impact Assessment basis information gathered through stakeholder interactions

Impact Map

Activities/Input	Output	Outcome	Impact
Active Constructivism	Hands-on lessons and self-guided learning sessions delivered to students	- Students try to construct their own knowledge through experiences and activities as opposed to being lectured on abstract concepts as in traditional settings. - Improvement in grade-level achievement	- Improvement in students' satisfaction with the learning methods and enhanced enjoyment level - Improvement in students' confidence in classroom discussions - Improvement in students' conceptual understanding - Improvement in teachers' knowledge and approaches in holistic development of children - Improvement in teachers' personal and professional development through trainings
Summative and formative assessment	Conducted summative and formative assessment to assess the learning levels and needs to children	- Improvement in teaching decisions and increased learning abilities of students - Improvement in the numeracy and literacy skills of students	
Holistic Education activities	Conducted events and celebrated days of national importance through activity-based programmes	- Improvement in awareness about other socio-cultural aspects rather than just the course curriculum - Holistic development of students	
Training to teachers	Pre-service and In-service teacher trainings provided to teachers	- Improvement in the pedagogy skills of teachers - Improvement in students' engagement levels during the classroom sessions	



Sampling

Sr. No	Stakeholders	Universe	Sample covered	Rationale	Type of questionnaire
1	Students	489	15 students from 2 nd std to 8 th std	Students were directly impacted by the programme as they are the end beneficiaries of the activities undertaken.	Structured questionnaire
2	In – service teachers	69	8 teachers	Teachers were impacted by the programme as they acted as a key driver to implement the activities along with the supporting the assessments of students in improving their numeracy and literacy skills	Structured questionnaire
3	School headmaster	1	1 school headmaster	School headmaster has an indirect impact on the project outcomes as he provides administrative support to the operations and is the signatory authority for conducting the activities as the school is associated with the MCGM.	Semi - structured questionnaire
			Total = 24		

Sampling Methodology

Study design: A primary study involving a mixed-methods research approach, involving both quantitative and qualitative tools, was adopted for this study.

Sample size: Basis 80% confidence level and 13% margin of error for the universe of beneficiaries, the sample size calculated was 24.

Sampling method: Stratified random sampling was used to select study participants where each state represented a strata and beneficiaries were randomly selected from the database shared.

Mode of data collection: In-person interactions were held with students, Teachers, and the school administrative staff to ensure a representative sample. Care was also taken to ensure equal representation for both men and women.



Impact findings – Student engagement and confidence

Student Engagement and enjoyment

100 percent students rated to the aspect of enjoyment while coming to school as 4/5 (**36** percent) and 5/5 (**64** percent), due to the various activities conducted on weekly basis like sessions on gender equity, celebration of international literacy day etc.



64%

Of the student respondents reported they feel extremely happy and enjoy coming to school

Participation in extracurricular activities

Among the total student respondents, **78** percent reported they participate in extracurricular activities like sports, music, dance, drama, etc. As part of the daily timetable, these activities are conducted weekly.



78%

Of the student respondents reported they regularly participate in extracurricular activities

Increase in confidence to ask questions:

Among the total student respondents, **71** percent reported an increase in confidence when asking questions during interactions with teachers. This boost in confidence is attributed to the friendly nature of teachers while teaching the concepts, which has reduced students' apprehensions.



71%

Of the student's respondents reported improvement in their confidence level

Ease in studying assistance

100 percent students rated to the aspect of ease in studying assistance as 4/5 (**43** percent) and 5/5 (**57** percent). They feel comfortable while approaching teachers for support.

Impact findings – Learning and support

Subject Understanding

Instructors encourage students to construct their own knowledge through experiences and activities rather than being lectured on abstract concepts. Educators who employ a constructivist pedagogy promote skill and subject mastery through hands-on lessons and self-guided learning. The improvement in activity-based learning through active constructivist pedagogy has a significant impact on students.

According to student respondents, **79 percent** reported an **80 - 100 percent improvement** in their understanding of subjects through activity-based learning, while **21 percent** reported a 40 - 60 percent improvement.

Student perspective: Teachers support in learning journey

Among the total student respondents, **64 percent** reported that teachers are a strong source of inspiration and that their support is crucial in the students' learning journey to achieve success.



79 %

More than half of the student respondents reported high improvement in their understanding the subjects



64 %

Of the student respondents reported teachers support is important in their learning journey

Inclusive learning environment

Among the total student respondents, **71 percent** reported that the learning environment at the school is playful and safe.

*"The **classrooms provided at the school are divided by subject**. There is movement of students from one classroom to another, which keeps the children engaged throughout the day and increases their attention to learning. The subject-specific classes are well-equipped with activities and various teaching and learning materials, which have **improved student learning levels**."*

-Teacher

Impact findings – Personal development and future aspirations

79%

Creativity and independent thinking

Respondents felt that the teaching methods provided them activities that enhance their creativity and independent thinking

64%

Reported clarity on career aspirations

Opportunities to interact with well-qualified educators and mentors has enabled them to better understand their preferred field of study and plan a desired career trajectory.

100%

Reported overall satisfaction

Respondents felt that school has provided them with an opportunity for development beyond academics. They expressed that there are sufficient extra-curricular activities conducted at school to aid them in their personality and skill development.

Impact findings – Teachers personal development

- In-service teacher training played an important role for teachers in learning new pedagogy methods.
- Given below are percentage of teachers who felt that Teacher Training helped them build a strong foundation in the given areas:



- LSRW (Listening, Speaking, Reading, Writing) skills have improved through the training sessions.
- The involvement of lead faculty and subject faculty in the orientation meetings to discuss the CUDD meetings with teachers helps them understand the learning levels of students and how to enhance student engagement.

Impact findings -Teaching Strategies and Classroom Management

100%

**Reported enhanced
student
engagement**

Due to implementation of pedagogy methods taught in training sessions

86%

**Reported better
classroom
management**

Through formative assessment to identify the learning level of students across all grades

100%

**Reported
increased
confidence in
lesson delivery**

Due to the improvement in communication skills and understanding the students' behaviour patterns

Impact findings -Teaching Strategies and Classroom Management

71%

**Incorporating
innovative
methods**

Respondents felt that incorporating innovative methods like engage and participate has enhanced students' conceptual understanding.

57%

**Reported improved
interaction &
communication
with students**

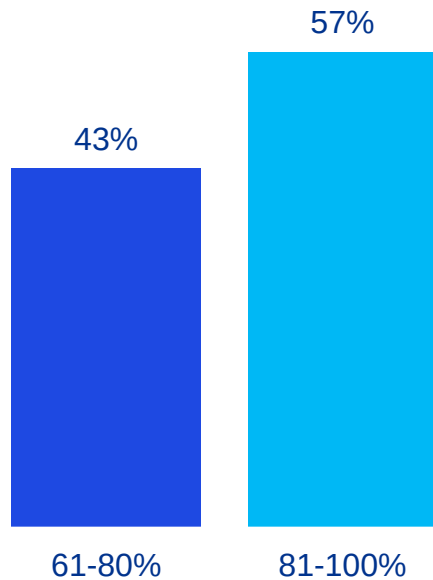
Through CUDD meetings that played an important role in sharing the strategies implemented by other teachers.

43%

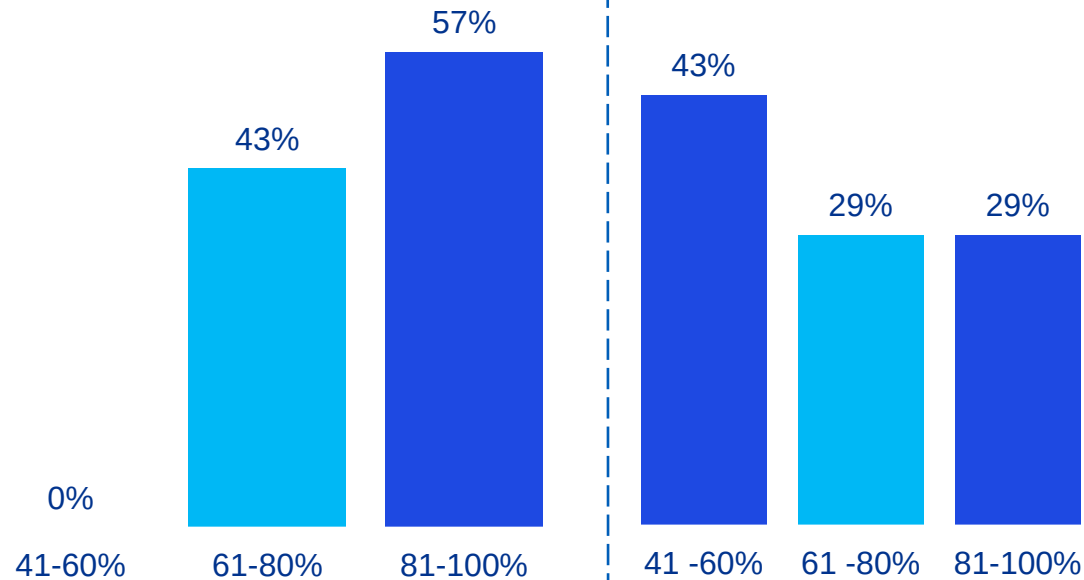
**Improvement in
understanding of
student needs &
learning styles**

Due to the assessment conducted to analyse how each student has performed in their previous classes, it has helped teachers to develop a constructive feedback report.

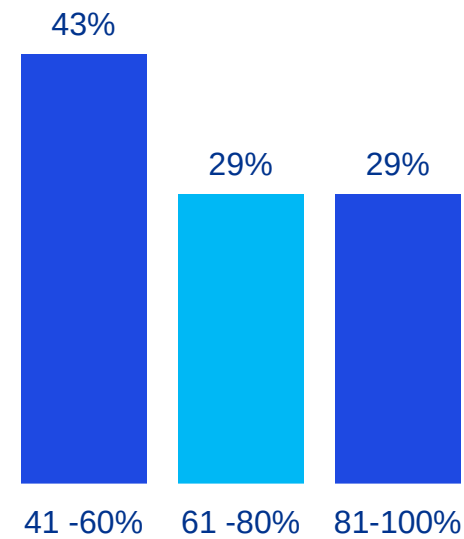
Impact findings – Overall satisfaction



**Enhanced
learning level of
the students**



**Improvement in
teaching (knowledge,
attitude, and skills)**



**Helped in becoming
financially
independent**

**Attribution to the
overall programme:
Teachers**

81%

Of the teachers felt
that the project
contributed to their
success as a
teacher

Case study



Cultivating Academic Engagement and Emotional Well-being

Sanskruti, a bright student in Standard 8, began showing signs of academic and emotional withdrawal due to limited parental attention. Her class teacher noticed her exhibiting disengagement, missing assignment submissions, and general lack of participation. Concerned by this change in her outlook and behaviour, the teacher initiated one-on-one interactions to understand her what was causing her to withdraw.

Discovering Sanskruti's interest in art and craft, the teacher collaborated with the art teacher to re-engage her creatively. Home visits were conducted to understand family dynamics and involve her parents to support her. The teacher provided holistic support by way of cognitive, emotional, and behavioral feedback to boost Sanskruti's confidence and enthusiasm. This emotional encouragement and recognition of her strengths helped her to rebuild her self-esteem.

Gradually, Sanskruti began participating in classes and submitting assignments on time. Her enthusiasm for learning returned, and she showed noticeable overall improvement. The teacher's personalized, empathetic approach proved transformative. Sanskruti's academic and personal growth highlighted the positive effect of providing holistic education. The case underscores the importance of teacher intervention and parental involvement. It showcases how tailored support can reignite a student's potential.



Limitations of the study

The key findings of the impact assessment report are based on the perceptions of direct beneficiaries: While this provides valuable insights into the beneficiaries' experiences, it may not capture the full scope of the impact or the experiences of all stakeholders.

Non-comparability of findings: The outcomes of this project should not be directly compared with those of other initiatives, as contextual differences may affect the results.

Limited generalisability: The findings are specific to the regions and populations involved in the study and may not be applicable to other settings without adaptation.

Short-term evaluation: The assessment reflects short-term impacts; long-term outcomes on student learning and teacher effectiveness remain to be studied.

Lack of control group: The absence of a control group limits the ability to attribute observed changes solely to the intervention.



Way forward

Keep it up!

Findings from the study are evident that the Muktangan programme is creating a positive impact in the lives of the students and their families. The range of impact can be seen in increased awareness of future career aspirations and contribution to family welfare.

100%

All students reported being satisfied with Muktangan.



Scalability

Some activities like lesson through role play were noted to be very well received among the teachers and should be conducted more frequently to create a community of individuals with a problem-solving mindset.



Strengthening the Programme

- Respondents felt that physical education could be strengthened by providing ground facilities to play more outdoor games.

Annexure A - Pictures



Teacher seen doing activity of Motion



Children seen performing the activity of motion and tracing the path



Teacher undertaking hands-on experiment

Annexure A - Pictures



A faculty explaining their lesson through role play



Grandparents' day celebration



Students learning practical skills in the "21st century Skills" activity sessions



Impact Assessment of Muktangan Project

Balkrishna Industries Limited
Impact Assessment for FY23-24

February 2026





Impact Assessment of CUVIS Joints robotic equipment at King Edward Memorial Hospital, Mumbai

Balkrishna Industries Limited
Impact Assessment for FY 2023-24

February 2026



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- By reading our report, the reader of the report shall be deemed to have accepted the terms mentioned hereinabove



Executive summary



The primary advantage of robotic assistance lies in achieving a well-balanced knee, which may positively influence implant survivorship in the long term. Currently, robotic-assisted surgery has become the standard of care, and it is encouraging that the general public now has access to such world-class technology in government hospitals.”

- Orthopedic Surgeon, KEM Hospital

Medical professionals see potential benefits in using assistive technologies like CUVIS Joints robots for performing medical procedures on patients as such technology can help with longevity of implant, precision, time efficiency, safety and recovery, reduced surgeon fatigue etc.

BKT Tires, under its CSR focus on promoting education, health, and rural development, has supported the installation of the advanced CUVIS Joint Robotic System for knee replacement surgeries at Seth GS Medical College and King Edward Memorial Hospital, Parel, Mumbai. This cutting-edge robotic technology enables precise, pre-planned, and fully automated surgical procedures. Meril Life technicians trained surgeons to operate the system. The initiative aims to provide free, high-quality treatment to 100-150 economically disadvantaged patients annually.



Patients from lower economic strata have received knee replacement surgeries through state-of-the-art CUVIS joint robotic system at KEM.

- During 2023-24, 218 knee replacements were done and 173 patients were treated.
- Out of the patients treated 54 were males and 119 Females
- PMJAY scheme covers the entire cost of the knee replacement surgery.



Key findings include:

- The 3D preplanning feature exhibits greater accuracy as compared to traditional methods
- The Bone Motion Monitor (BMM) helps ensure patient safety during surgery.
- Surgeons have observed improved prosthesis alignment using this robotic system which ensures that the implanted joint restores normal biomechanics and distributes forces evenly across the patient's joint.



Key findings include:

- Surgeons have noted that the recovery time is generally faster than traditional methods, though it varies on a case-by-case basis depending on many health parameters.
- The patients who have been operated on using CUVIS, versus the traditional non-robotic methods, sometimes experience fewer post-surgical complications.

Contents

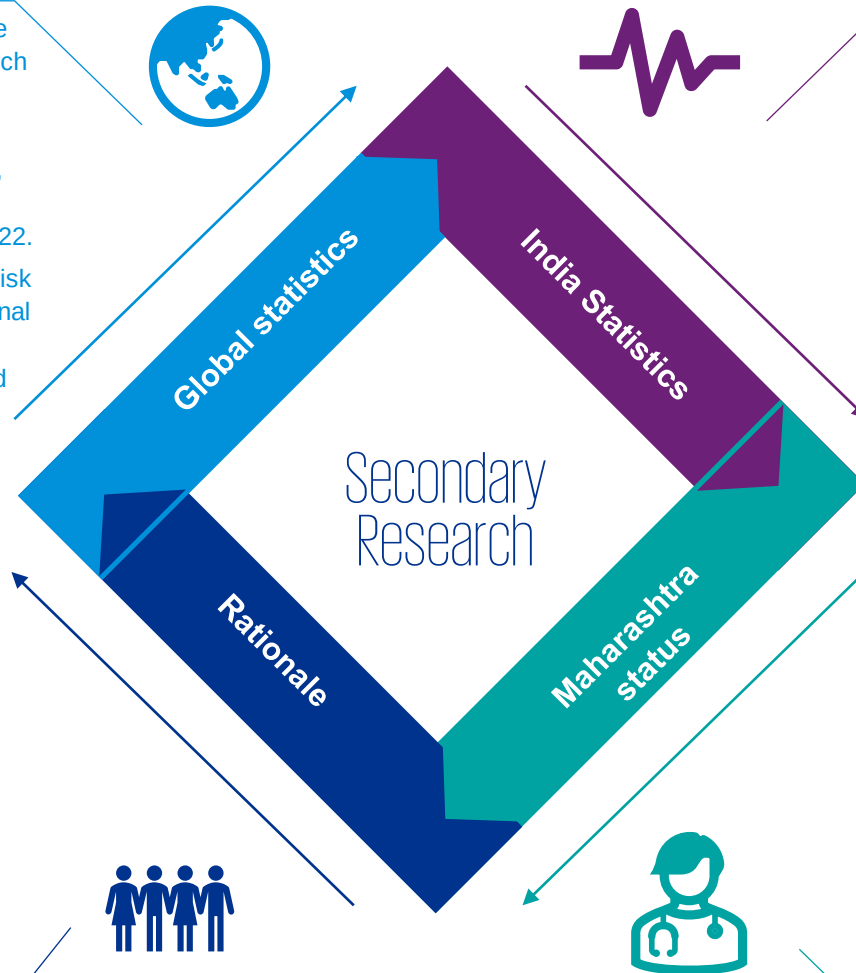


Image 1: CUVIS Joints robotic arm

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Overview of the problem statement

- Hip and knee replacements are among the most common and effective surgical procedures globally, primarily indicated for **osteoarthritis**, which significantly impairs mobility, function, and quality of life.
- **Global burden** of a degenerative condition: Osteoarthritis is a degenerative joint disease-causing pain, stiffness, and loss of function, particularly in the hip and knee; it is among the leading causes of disability worldwide, affecting an estimated 528 million people as of 2022.
- Risk factors and affected populations: Increasing age is the strongest risk factor, with **higher prevalence in women and adults over 50**; additional contributors include obesity, inactivity, lifestyle factors, and joint injury, with joint replacement most commonly performed in those aged 60 and above, though not exclusively.
- Knee replacement surgery is generally recommended when a patient experiences: Chronic knee pain that limits daily activities like walking, climbing stairs, or getting out of a chair; Severe joint damage due to osteoarthritis, rheumatoid arthritis, or injury; Reduced range of motion in the knee joint; Difficulty performing normal activities due to knee stiffness and pain; or Failure of other treatments, such as medication, physical therapy, or injections.
- The Cuvis Joint system has been designed to offer significant advantages through its comprehensive **pre-operative planning**, **real-time intra-operative monitoring**, and **patient-specific surgical execution**, enabling **highly accurate implant placement** that feels more natural post-surgery. Its precision minimizes injury to surrounding tissues, lowers infection risk, reduces blood loss, and allows for smaller incisions, resulting in less pain, faster recovery, shorter hospital stays, and earlier rehabilitation. Collectively, these benefits can contribute to improved safety, enhanced quality of life, better long-term joint function, and sustained implant function and longevity.



- Rapid technological and procedural advancement: Surgical orthopaedics, particularly **joint replacement surgery**, has undergone significant innovation over recent decades, contributing to improved techniques and procedural capacity.
- Marked growth in joint replacements in India: India has seen a sharp rise in joint replacement surgeries in recent years, driven in part by government initiatives targeting economically weaker sections and the introduction of implant price caps that have improved ease of access for patients.
- As of June 2020, the Indian Joint Registry database recorded 712 registered surgeons. The number of total knee replacements (TKRs) reported to the registry increased substantially from 1,019 in 2006 to 27,000 in 2019.
- In a significant number of cases, Osteoarthritis of the knee was the diagnosis (98.5%). Analysis of implant usage shows that Johnson & Johnson DePuy accounted for the largest market share, representing over 37% of implants used.
- Rising demand and encouraging outcomes: Maharashtra is experiencing a **significant increase in total knee replacement surgeries**, in line with national trends, reflecting growing demand for effective management of knee disorders, with reported success rates of **95–99%**.
- Access to advanced care at variable costs: Patients can seek advanced surgical care from experienced centres and surgeons in Maharashtra, with the cost of knee replacement surgery in the state typically ranging from ₹1.4 lakh to ₹3 lakh per knee. This cost is covered under the Ayushman Bharat Yojna.

Overview of the project

About CUVIS Joint Robotic System

As part of its CSR vision “**Promotion of Education, Health and Rural Development**”, BKT Tires has facilitated the provision of **CUVIS Joint Robotic System** equipment. This is a fully automated artificial joint surgery robot with automatic cutting function based on Navigation System. This equipment assists the surgeon in conducting the knee replacement surgery with pre-operative planning of the knee arthroplasty process.

Cuvis Joint Robotic System is the most **advanced surgical cutting-edge robotic technology** supporting surgeons with personalised pre-planning and precise cutting for predictable and consistent results. ([Meril Cuvis Robotic Knee Replacement System](#)).

([Meril Cuvis Robotic Knee Replacement System](#)).

Project components

- The main component of this project is the **‘CUVIS Joints’ Robotic System** which performs knee replacement surgery.
- Equipment technicians from Meril Life provided training to the surgeons on how to navigate the robot.
- This equipment has enabled persons from economically disadvantaged sections to seek technologically advanced treatment options completely free of cost.

Type of beneficiaries:

- The project was envisioned to treat about 100-150 patients in a year from lower socio-economic background across all ages.
- **Total number of patients treated : Male = 54, Female = 119**
- **Total number of knee replacement done = 218**

31 %

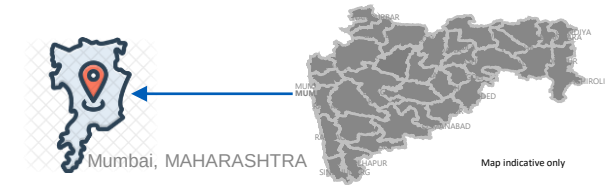
Of the total patients who received Knee Replacement Surgery were males

69 %

Of the total patients who received Knee Replacement Surgery were Female

Project location-

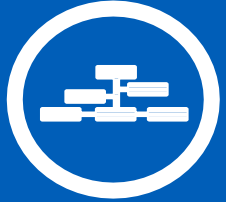
Seth GS Medical College and King Edward Memorial Hospital, Parel, Mumbai



UN SDGs alignment



Approach and Methodology of the study



Phase 1: Consultation & Scoping

- Establish clear scope of the assessment
- Review project documents to develop a preliminary understanding of the projects



Phase 2: Review of existing Theory of Change

- Conduct interactions with implementing agency to understand the projects, geographies, modes of implementation, and intended impacts
- Strengthen Impact Map of the programme in consultation with partners



Phase 3: Sampling and Tool Designing

- Finalise the sampling plan for stakeholders, design tools for stakeholder interactions



Phase 4: Stakeholder Interaction and data collection

- Conduct stakeholder interactions (on a sample basis) through field visits to programme locations



Phase 5: Analysis & Impact Assessment Report Preparation

- Conduct data analysis and prepare report on Impact Assessment basis information gathered through stakeholder interactions

Impact Map

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	IMPACT
❖ CUVIS Joints and its navigation system (robot-assisted knee replacement technology). ❖ Orthopedic surgeons and trained medical staff working in the Hospital. ❖ Hospital's infrastructure (its operation theaters, recovery wards). ❖ Outreach and patient identification support from the Hospital.	❖ Capacity Building: Train orthopedic surgeons and support staff on how to operate the CUVIS joints equipment for maximum success. ❖ Patient Identification: Recommend eligible patients belonging to economically weaker sections. ❖ Surgical Procedures: Conduct free knee replacement surgeries using CUVIS technology for identified patients. ❖ Post-Operative Care: Deliver follow-up consultations and provide instructions to patients and their caregivers on proper care after surgery.	❖ 7 orthopedic surgeons trained in operating the equipment (only those specializing in knee replacement surgeries were trained on this). ❖ 173 patients belonging to economically weaker sections of society screened and selected for surgery. ❖ 218 knee replacement surgeries completed. ❖ 173 patients received post-operative care.	❖ Reduced pain and improved mobility for beneficiaries. ❖ Increased awareness about advanced orthopedic care among economically weaker section communities. ❖ Improved quality of life and independence for patients. ❖ Increased ability to work and earn livelihood, especially for those patients who are younger and in active working-age groups. ❖ Reduction in disability-related poverty. ❖ Establishment of a sustainable model for the provision of free advanced surgeries for EWS (Economically Weaker Sections) across India.	❖ Enhanced social equity and health outcomes by bridging the gap in access to advanced medical technology for marginalized populations, and, consequently, improving their physical and mental wellbeing as they are no longer limited by the impediments existing before the knee replacement was made possible.

Sampling

Stakeholders	Universe	Sample covered	Rationale	Type of tool used
Doctors – Orthopedic surgeons	8 Doctors	7 Doctors	All 7 doctors are orthopedic surgeons who specialize in knee replacement surgeries. While there are many orthopedic surgeons in the department, only 7 of them specialize in knee replacement surgeries. Thus, they were selected for interaction.	Structured questionnaire
		1 Doctor	Interviewed one of the doctors who has received training on how to navigate the equipment and has performed several surgeries using the equipment. He is also the informal liaison with the Meril Life representative assigned to KEM Hospital.	Key Informant Interview [Semi-structured interview]
Designated representative of Meril Life for KEM Hospital	1 Representative	1 Representative	Meril Life is a pioneering Indian MedTech company focused on transforming global healthcare through innovative medical devices, education initiatives, and precision-driven technological solutions. The CUVIS Joints equipment was purchased through them. Interaction with him provided insights into the MedTech landscape in India, its growth potential, and its scope for improvement.	Semi-structured interview

Sampling Methodology

Study design: A primary study involving a mixed-methods research approach, involving both quantitative and qualitative tools, was adopted for this study.

Sample size: Due to the nature of the project, inputs were sought from **all 8** doctors who have been trained on the CUVIS Joints system.

Sampling method: Purposive Sampling has been undertaken owing to the nature of the project.

Mode of data collection:

- A structured questionnaire was shared with all the doctors to gauge their experiences and seek their inputs and recommendations.
- An Interview with a doctor who has operated the CUVIS Joints
- An interview with Meril Life SPOC to understand the MedTech landscape in India.



Impact findings - Profile of the surgery recipients

- During the period covered under this study, a total of **218 joints** were replaced using the CUVIS Joints equipment.
- A total of **173 people** benefitted from this advanced technology by undergoing either **TKR** (Total Knee Replacement) or **UKR** (Unicompartmental Knee Replacement), and which were either **Unilateral** (only 1 knee) or **Bilateral** (both knees) replacements.

100%

Of the recipients of the surgery belonged to economically weaker sections of society and received the treatment for free under PMJAY

173

People received the robotic knee replacements .

119 of these were **Women** and **54** were **Males**

45

People out of 173 received **Bilateral** knee replacements.

33 out of these were **Women** and **12** were **Males**

166

Out of the total 173 received **Total Knee Replacements (TKR)**

7 people received **Unicompartmental Knee Replacements (UKR)**

60 Years

Was the average age of the surgery recipients. The youngest person was a **27** year-old male and the oldest were two **82** year-old males

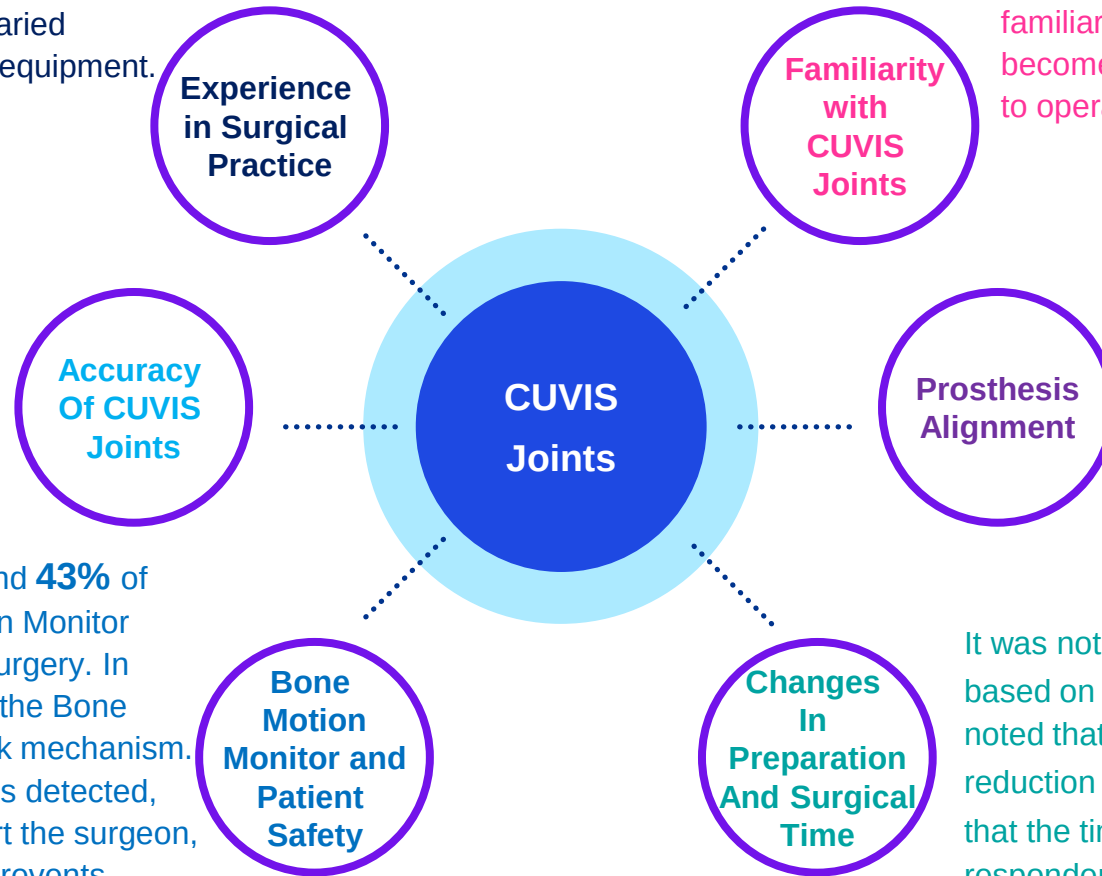
- Global statistics infer that more women find themselves in need of joint replacements. Based on the data shared by KEM hospital, 69% of the surgery recipients were women. Out of the people who needed both knees replaced (ie Bilateral), 73% of the surgery recipients were women. This affirms the global findings that women are more likely to need knee replacements over the course of their lives.
- Total Knee Replacement (TKR) replaces all three compartments of the knee (medial, lateral, and patellofemoral); Unicompartmental Knee Replacement (UKR) replaces only the affected compartment (most commonly medial), preserving the rest of the knee.

Impact findings

71% of the respondents (orthopaedic surgeons) have up to 5 years of experience in orthopaedic surgical practices, while **29%** of the respondents had upwards of 10 years' experience. This shows that surgeons with varied experiences are operating the CUVIS Joints equipment.

43% of the respondents have rated the accuracy of the CUVIS-joint's 3D preplanning feature, when compared to traditional methods, as **"5 out of 5"**. **57%** of the respondents have rated it as **"4 out of 5"**. This indicates that, while the 3D preplanning feature exhibits greater accuracy as compared to traditional methods, there is some scope for improvement in this feature of CUVIS Joints equipment.

57% of the respondents **'strongly agree'** and **43%** of the respondents **'agree'** that the Bone Motion Monitor (BMM) helps ensure **patient safety** during surgery. In robotic-assisted knee replacement systems, the Bone Motion Monitor acts as a safety and feedback mechanism. If excessive or unexpected bone movement is detected, the system can pause the robotic action, alert the surgeon, and recalibrate the reference position. This prevents unintended bone cuts or implant malposition.



86% of the respondents stated that they are highly familiar with the CUVIS joints system, while the remaining **14%** stated that they are moderately familiar. This indicates that the respondents have become familiar with the CUVIS Joints and know how to operate it.

86% of the respondents stated that they have **'always'** observed improved prosthesis alignment using this robotic system., while **14%** of the respondents stated that they **'often'** noted improved prosthesis alignment. This is a significant observation as proper alignment ensures that the implanted joint restores normal biomechanics and distributes forces evenly across the patient's joint. It also reduces complications and pain and improves longevity of the implant.

It was noted that respondents gave varying responses based on their experiences. **57%** of the respondents noted that there was either no or minimal (up to 10%) reduction in Preparation and Surgical Time, **29%** found that the time reduced by 40% to 50%, while **14%** of the respondents noted that it had increased compared to traditional/conventional methods.

Impact findings

User-friendliness of the CUVIS - Joints Robotic system

29% of the respondents gave the user friendliness of the CUVIS joints system the highest rating of **5**, while the remaining **71%** of the respondents rated it **4 out of 5**. This highlights that the robotic system and its components are relatively easy and comfortable to maneuver without causing any confusion or frustration or requiring extensive training on the part of the surgeons.



Faster recovery times in patients

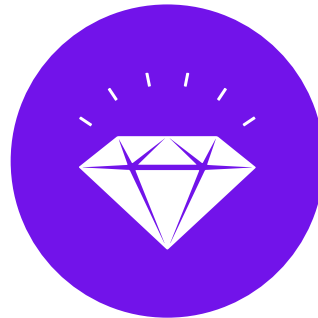
14% of the respondents stated that, in their experience, the recovery time of patients who have been operated on using CUVIS, versus the traditional non-robotic methods, is **'always'** faster. **71%** of the respondents stated **'often'** and **14%** have found that it is faster only **'sometimes'**. This mixed response explains that while the recovery time is generally faster than traditional methods, it varies on a case-by-case basis depending on many parameters - patient-related (age, overall health), surgical, and post-operative factors.

Robotic system integration into surgical practices

71% of the respondents **agreed** that robotic systems, like CUVIS joints, should be integrated more widely into surgical practice, while **29%** of them stated that they **'strongly agree'** with such a statement. This indicates that medical professionals see potential benefits in using assistive technologies like CUVIS Joints robots for performing medical procedures on patients as such technology can help with longevity of implant, precision, time efficiency, safety and recovery, reduced surgeon fatigue etc.

Post-surgical complications in patients

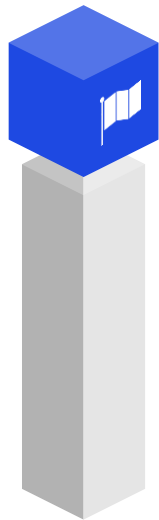
71% of the respondents stated that, in their experience, the patients who have been operated on using CUVIS, versus the traditional non-robotic methods, **'often'** experience fewer post-surgical complications (e.g., fractures or misalignments), while the remaining **29%** rated it as **'sometimes'**. This indicates that usage of a robotic system like CUVIS Joints can not always ensure reduction in post-surgical complications. However, an important factor to note is that in medical procedures there are several factors that may contribute to complications.



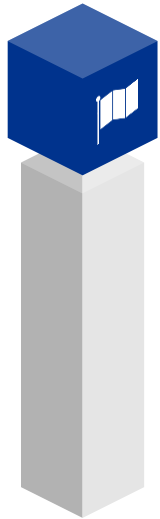
Way Forward

Based on the insights gathered from interactions with various stakeholders, following measures may be undertaken as a way forward to maximise the impact created by the robotic system:

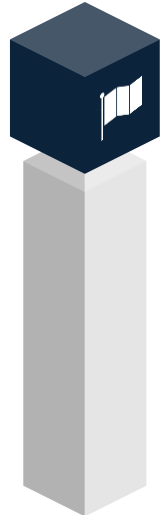
Improving features on the equipment to enhance functionality and efficacy – This can improve both the number of cases undertaken by the CUVIS Joints equipment, as well as improve surgical and medical outcomes for the patients undergoing the knee replacement surgery. This has been postulated based on the following findings:



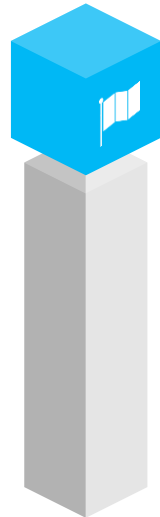
57% of the respondents expressed that the precision feature on the CUVIS Joints can be further improved for better surgical and medical outcomes for the patients.



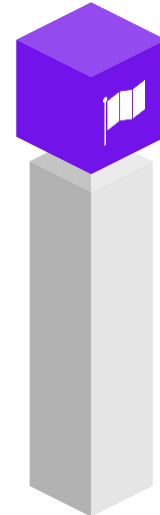
14% of the respondents stated that cost-efficiency is a key area where the robotic system can be improved for better outreach and reducing access gaps.



14% of the respondents expressed that the Safety Features on the CUVIS Joints can be further strengthened for improved safety of the patients undergoing the surgery.



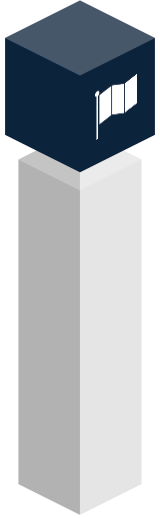
28% of the respondents expressed that, in their opinion, improving the speed feature of the robot can help improve its overall purpose and efficacy of the procedure being performed.



28% of the respondents expressed that the user interface of the robotic system can be smoothened out to make it more accessible and efficient.

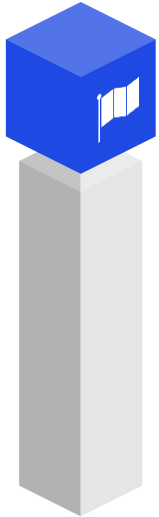
Monitoring mechanism – In terms of assessing long-term impact created by using robotic equipment in the orthopedic sphere, developing a systematic method of **monitoring** patients and creating a repository of the evaluation of their (and their caregivers') feedback will help in furthering the **integration of more robotic equipment** in the hospital. This in turn may assist the medical professionals in delivering more medical outputs and generating better health and medical outcomes to a greater number of patients without contributing to fatigue or burnout of the medical professionals.

Way Forward



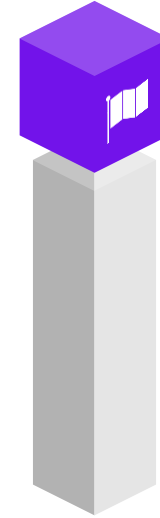
Strengthened provision for a regular and timely supply of 'Burrs' and joint implants to ensure that patients are not required to wait or reschedule their surgery due to logistical constraints on account of the CUVIS Joints equipment:

"Burrs" are orthopedic or neurosurgical cutting tools used in drills and are **critical surgical consumables**. Burrs become dull, clogged, or inefficient if reused beyond their intended lifespan or if the correct size/type is unavailable. **Timely supply** ensures clean, smooth bone cuts, reduced thermal damage to bone, lower risk of microfractures etc. A sharp and appropriate burr directly influences surgical quality, patient safety, and hospital operations. CUVIS Joint is a proprietary device developed by 'Curexo' and procured and distributed in India by Meril. The device is a "close-system" one and, thus, is only compatible with MERIL's **implants** i.e., it cannot use implants from other companies to perform the surgery.



Expanding the use of the equipment through integration with different software to perform other orthopedic surgeries :

The machine is designed in such a way that different software can be installed onto the machine to perform **other orthopedic surgeries** such as - Hip replacement, ACL reconstruction, Spinal surgeries, Hand and wrist surgeries, and Shoulder or elbow repairs. KEM is a government hospital located in Mumbai and has a heavy footfall of patients from all over the country (and abroad) seeking orthopedic surgeries. Thus, since the hardware remains the same, integrating appropriate software can help the hospital meet the **surgery requirements of more patients**. Although no concrete software has yet been developed, **funding research** in these areas can add to **concrete impact** over the long run.



More technical staff to handle any technical difficulties that may arise during a surgery:

Surgeons have noted that gap balancing is sometimes haphazard. Values do not expectedly change after component alterations. This adds to technical difficulties. Surgeons have also explained that maintenance and other cost-related concerns pose challenges in day-to-day management of the device and its components. The CUVIS Joint relies on an optical navigation system to perform autonomous bone cutting. This requires consistent spatial tracking and exact correlation between the patient's anatomy and the robot's movements, and this requires highly accurate calibration. Any disturbance in the robotic line-of-sight can pause surgery or affect precision. Thus, robotic systems like CUVIS Joints increase setup time and demand trained personnel. Although Meril deploys 2 technicians in every surgery – a "Biomechanical Engineer" and an assistant who supports with preparation and scrubbing of the machine, the machine's maintenance is done once every 2 months only. This **frequency** as well the **number** of technicians involved can be increased as it will support the medical staff in prepping for **more surgeries** leading to **better patient outcomes**.

Limitations of the study

The key findings of the impact assessment report are based on the perceptions of indirect beneficiaries: While this provides valuable insights into the primary and secondary beneficiaries' experiences, it may not capture the full scope of the impact or the experiences of all stakeholders.

Non-comparability of findings: The outcomes of this project should not be directly compared with those of other initiatives, as contextual differences may affect the results.

Limited generalizability: The findings are specific to the regions and populations involved in the study and may not be applicable to other settings without adaptation.

Short-term evaluation: The assessment reflects short-term impacts; long-term outcomes on patient's health and wellbeing remain to be studied.

Lack of control group: The absence of a control group limits the ability to attribute stated changes solely to the program intervention.



Annexure A - Pictures



The Navigation system of CUVIS Joints and CT-Based 3D Surgical Planning Module - Integrates with the robotic arm to guide bone resection and enables automatic cutting with sub-millimeter accuracy



Optical Tracking Sensor System of CUVIS Joints - Tracks patient anatomy and instrument positions in real-time and ensures optimal alignment and accurate imitation of the planned cuts.

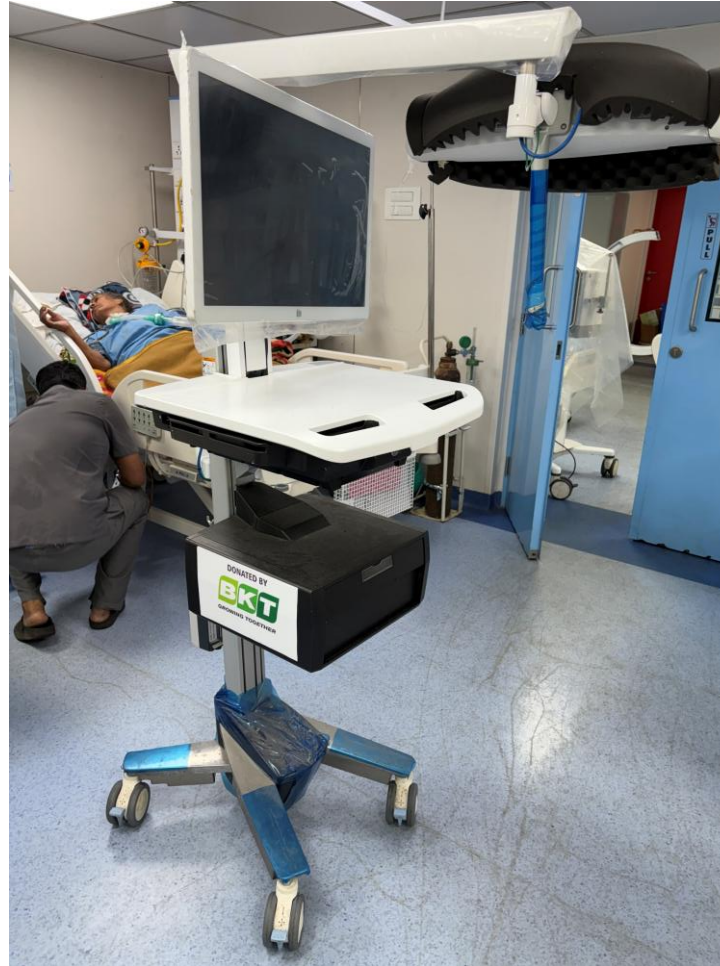


Robotic arm of the CUVIS Joints - Performs automatic and precise bone cutting based on the surgical plan.

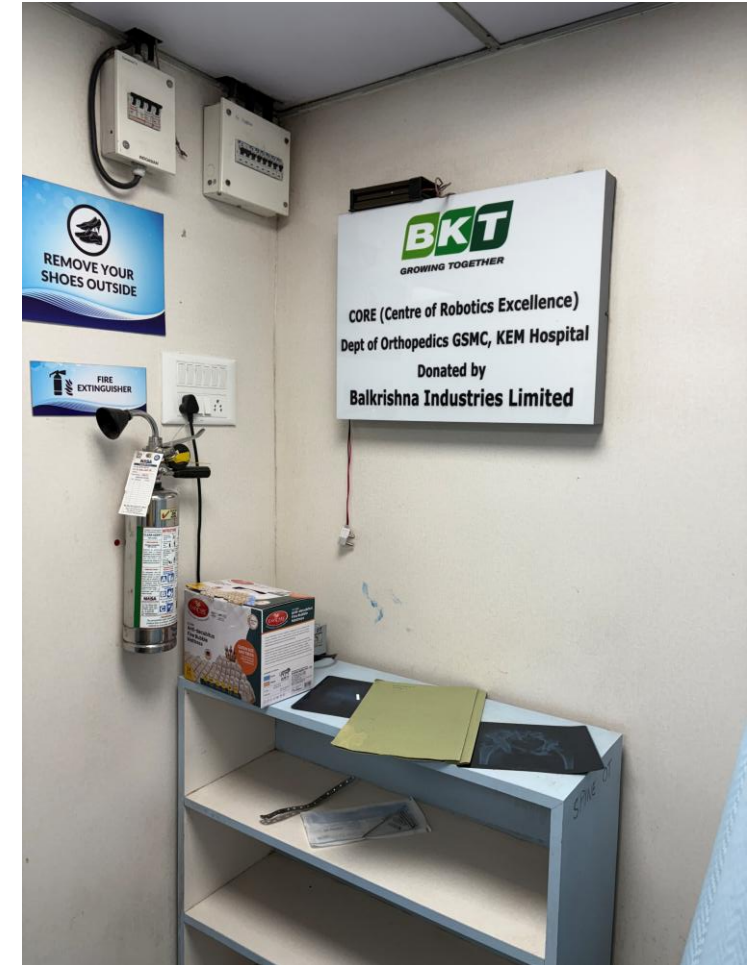
Annexure A - Pictures



Burr - A burr's function in a robotic knee system like CUVIS Joint is to precisely remove and shape bone so that the implant fits perfectly and the alignment matches the surgical plan.



BKT Tires branding on the CUVIS Joints equipment



BKT Tires branding outside the orthopedics department at KEM Hospital



Impact Assessment of CUVIS Joints Equipment at King Edward Memorial Hospital

Balkrishna Industries Limited
Impact Assessment for FY 2023-24

February 2026





Impact Assessment of CUVIS Joints robotic equipment at Lokmanya Tilak Municipal Medical College and General Hospital, Mumbai

Balkrishna Industries Limited
Impact Assessment for FY 2023-24

February 2026



Disclaimer

- Our report shall be prepared solely for Balkrishna Industries Limited (BKT). KPMG does not accept or assume any liability, responsibility, or duty of care for any use of or reliance on this report by anyone, other than our Client, to the extent agreed in the Agreement.
- Impact assessment is limited to the projects allocated by BKT
- No framework has been used in preparing the report as detailed herein. No professional assurance standards ex. ISAE, SSAE etc. have been applied while preparing this report and accordingly the rigors applicable under such standards are not applicable for the scope covered by our report.
- Procedures, analysis and recommendations, if any, are advisory in nature basis the information collected from various sources both publicly and those provided by the client.
- Our observations represent our understanding and interpretation of the facts based on reporting of beneficiaries and stakeholders.
- Our report, by its very nature, may involve numerous assumptions, inherent risks, and uncertainties, both general and specific. The conclusions drawn shall be based on the information available with us at the time of preparing the report.
- We shall not perform an audit and shall not express an opinion or any other form of assurance. Further, comments in our report are not and shall not be intended, nor should they be interpreted to be legal advice or opinion. BKT shall be fully and solely responsible for applying independent judgment, with respect to the findings included in the report, to make appropriate decisions in relation to future course of action, if any. We shall not take responsibility for the consequences resulting from decisions based on information included in the report.
- While information obtained from the public domain or external sources has not been verified for authenticity, accuracy, or completeness, we have obtained information, as far as possible, from sources generally considered to be reliable. However, it must be noted that some of these websites/third party sources may not be updated regularly. We assume no responsibility for the reliability and credibility of such information.
- Our work shall be limited to the specific procedures described in this Engagement Letter and shall be based only on the information and analysis of the data obtained through interviews of beneficiaries supported under the programme, selected as sample respondents and discussions with BKT team and stakeholders of the programme. Accordingly, changes in circumstances or information available after the review could affect the findings outlined in our report.
- In no circumstances shall we be liable, for any loss or damage, of whatsoever nature, arising from information material to our work being withheld or concealed from us or misrepresented to us by any person to whom we make information requests.
- In accordance with its policy, KPMG advises that neither it nor any of its partner, director or employee undertakes any responsibility arising in any way whatsoever, to any person other than BKT in respect of the matters dealt with in this report, including any errors or omissions therein, arising through negligence or otherwise, howsoever caused.
- In connection with our report or any part thereof, KPMG does not owe duty of care (whether in contract or in tort or under statute or otherwise) to any person or party to whom the report is circulated to and KPMG shall not be liable to any party who uses or relies on this report. KPMG thus disclaims all responsibility or liability for any costs, damages, losses, liabilities, expenses incurred by such third party arising out of or in connection with the report or any part thereof.
- By reading our report, the reader of the report shall be deemed to have accepted the terms mentioned hereinabove



Executive summary



Accurate surgery with the help of Robot. It has improved functional outcome of surgery, patients are more happy, and it's going to increase longevity of implant. Likely to decrease the revision rate."

- Orthopedic Surgeon, LTMGH Hospital

Medical professionals see potential benefits in using assistive technologies like CUVIS Joints robots for performing medical procedures on patients as such technology can help with longevity of implant, precision, time efficiency, safety and recovery, reduced surgeon fatigue etc.

BKT Tires, under its CSR focus on promoting education, health, and rural development, has supported the installation of the advanced CUVIS Joint Robotic System for knee replacement surgeries at Lokmanya Tilak Municipal Medical College and General Hospital in Sion, Mumbai. This cutting-edge robotic technology enables precise, pre-planned, and fully automated surgical procedures. Meril Life technicians trained surgeons to operate the system. The initiative aims to provide free, high-quality treatment to ~150 economically disadvantaged patients annually.



Patients from lower economic strata have received knee replacement surgeries through state-of-the-art CUVIS joint robotic system at LTMGH.

- During 2023-24, 44 knee replacements were done and 44 patients were treated.
- Out of the patients treated 18 were males and 26 Females
- PMJAY scheme covers the entire cost of the knee replacement surgery.



Key findings include:

- The 3D preplanning feature exhibits greater accuracy as compared to traditional methods
- The Bone Motion Monitor (BMM) helps ensure patient safety during surgery.
- Surgeons have observed improved prosthesis alignment using this robotic system which ensures that the implanted joint restores normal biomechanics and distributes forces evenly across the patient's joint.



Key findings include:

- Surgeons have noted that the recovery time is generally faster than traditional methods, though it varies on a case-by-case basis depending on many health parameters.
- The patients who have been operated on using CUVIS, versus the traditional non-robotic methods, sometimes experience fewer post-surgical complications.

Contents

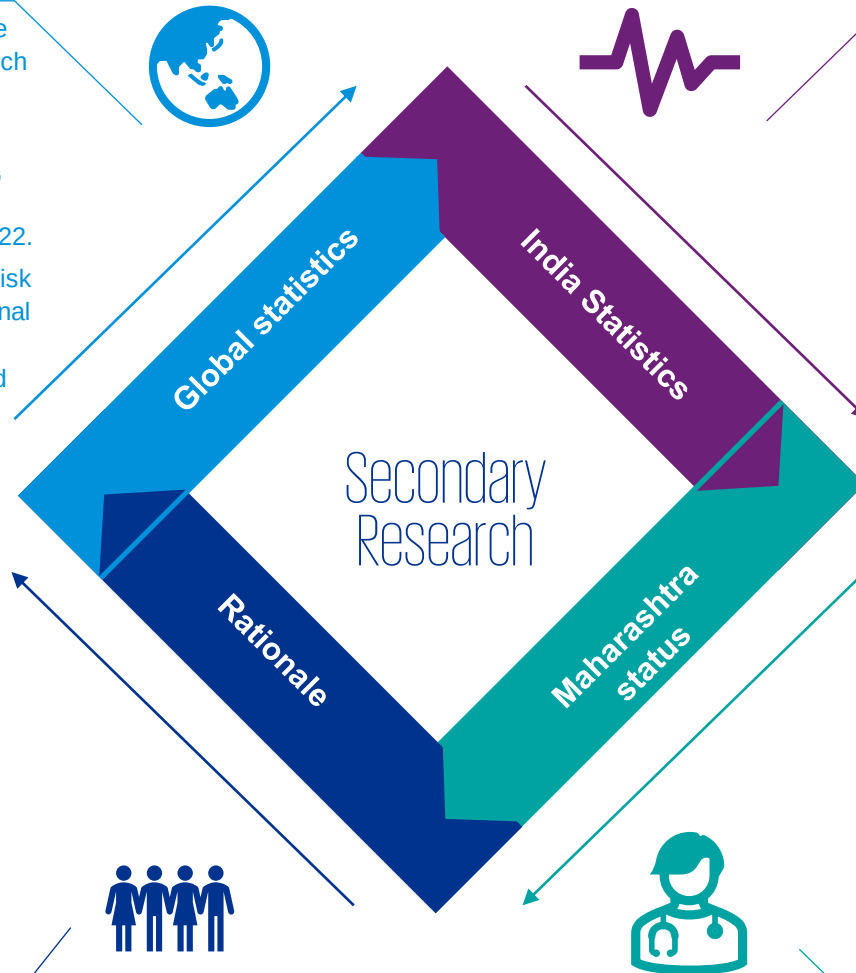


Image 1: CUVIS Joints robotic arm

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Overview of the problem statement

- Hip and knee replacements are among the most common and effective surgical procedures globally, primarily indicated for **osteoarthritis**, which significantly impairs mobility, function, and quality of life.
- **Global burden** of a degenerative condition: Osteoarthritis is a degenerative joint disease-causing pain, stiffness, and loss of function, particularly in the hip and knee; it is among the leading causes of disability worldwide, affecting an estimated 528 million people as of 2022.
- Risk factors and affected populations: Increasing age is the strongest risk factor, with **higher prevalence in women and adults over 50**; additional contributors include obesity, inactivity, lifestyle factors, and joint injury, with joint replacement most commonly performed in those aged 60 and above, though not exclusively.
- Knee replacement surgery is generally recommended when a patient experiences: Chronic knee pain that limits daily activities like walking, climbing stairs, or getting out of a chair; Severe joint damage due to osteoarthritis, rheumatoid arthritis, or injury; Reduced range of motion in the knee joint; Difficulty performing normal activities due to knee stiffness and pain; or Failure of other treatments, such as medication, physical therapy, or injections.
- The Cuvis Joint system has been designed to offer significant advantages through its comprehensive **pre-operative planning**, **real-time intra-operative monitoring**, and **patient-specific surgical execution**, enabling **highly accurate implant placement** that feels more natural post-surgery. Its precision minimizes injury to surrounding tissues, lowers infection risk, reduces blood loss, and allows for smaller incisions, resulting in less pain, faster recovery, shorter hospital stays, and earlier rehabilitation. Collectively, these benefits can contribute to improved safety, enhanced quality of life, better long-term joint function, and sustained implant function and longevity.



- Rapid technological and procedural advancement: Surgical orthopaedics, particularly **joint replacement surgery**, has undergone significant innovation over recent decades, contributing to improved techniques and procedural capacity.
- Marked growth in joint replacements in India: India has seen a sharp rise in joint replacement surgeries in recent years, driven in part by government initiatives targeting economically weaker sections and the introduction of implant price caps that have improved ease of access for patients.
- As of June 2020, the Indian Joint Registry database recorded 712 registered surgeons. The number of total knee replacements (TKRs) reported to the registry increased substantially from 1,019 in 2006 to 27,000 in 2019.
- In a significant number of cases, Osteoarthritis of the knee was the diagnosis (98.5%). Analysis of implant usage shows that Johnson & Johnson DePuy accounted for the largest market share, representing over 37% of implants used.
- Rising demand and encouraging outcomes: Maharashtra is experiencing a **significant increase in total knee replacement surgeries**, in line with national trends, reflecting growing demand for effective management of knee disorders, with reported success rates of **95–99%**.
- Access to advanced care at variable costs: Patients can seek advanced surgical care from experienced centres and surgeons in Maharashtra, with the cost of knee replacement surgery in the state typically ranging from ₹1.4 lakh to ₹3 lakh per knee. This cost is covered under the Ayushman Bharat Yojna.

Overview of the project

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Project components

- The main component of this project is the **‘CUVIS Joints’ Robotic System** which performs knee replacement surgery.
- Equipment technicians from Meril Life provided training to the surgeons on how to navigate the robot.
- This equipment has enabled persons from economically disadvantaged sections to seek technologically advanced treatment options completely free of cost.

Type of beneficiaries:

- The project was envisioned to treat about 150 patients in a year from lower socio-economic background across all ages.
- **Total number of patients treated : Male = 18, Female = 26**
- **Total number of knee replacement done = 44**

41 %

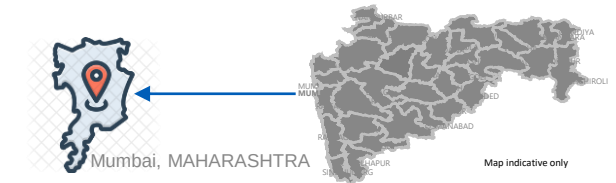
Of the total patients who received Knee Replacement Surgery were males

59 %

Of the total patients who received Knee Replacement Surgery were Female

Project location-

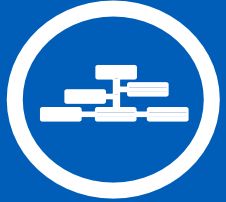
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UN SDGs alignment



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- Conduct stakeholder interactions (on a sample basis) through field visits to programme locations



Phase 5: Analysis & Impact Assessment Report Preparation

- Conduct data analysis and prepare report on Impact Assessment basis information gathered through stakeholder interactions

Impact Map

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	IMPACT
❖ CUVIS Joints and its navigation system (robot-assisted knee replacement technology). ❖ Orthopedic surgeons and trained medical staff working in the Hospital. ❖ Hospital's infrastructure (its operation theaters, recovery wards). ❖ Outreach and patient identification support from the Hospital.	❖ Capacity Building: Train orthopedic surgeons and support staff on how to operate the CUVIS joints equipment for maximum success. ❖ Patient Identification: Recommend eligible patients belonging to economically weaker sections. ❖ Surgical Procedures: Conduct free knee replacement surgeries using CUVIS technology for identified patients. ❖ Post-Operative Care: Deliver follow-up consultations and provide instructions to patients and their caregivers on proper care after surgery.	❖ 10 orthopedic surgeons trained in operating the equipment (only those specializing in knee replacement surgeries were trained on this). ❖ 44 patients belonging to economically weaker sections of society screened and selected for surgery. ❖ 44 knee replacement surgeries completed. ❖ 44 patients received post-operative care.	❖ Reduced pain and improved mobility for beneficiaries. ❖ Increased awareness about advanced orthopedic care among economically weaker section communities. ❖ Improved quality of life and independence for patients. ❖ Increased ability to work and earn livelihood, especially for those patients who are younger and in active working-age groups. ❖ Reduction in disability-related poverty. ❖ Establishment of a sustainable model for the provision of free advanced surgeries for EWS (Economically Weaker Sections) across India.	❖ Enhanced social equity and health outcomes by bridging the gap in access to advanced medical technology for marginalized populations, and, consequently, improving their physical and mental wellbeing as they are no longer limited by the impediments existing before the knee replacement was made possible.

Sampling

Stakeholders	Universe	Sample covered	Rationale	Type of tool used
Doctors – Orthopedic surgeons	10 Doctors	10 Doctors	All 10 doctors are orthopedic surgeons who specialize in knee replacement surgeries. While there are many orthopedic surgeons in the department, only 10 of them specialize in knee replacement surgeries. Thus, they were selected for interaction.	Structured questionnaire
		1 Doctor	Interviewed one of the doctors who has received training on how to navigate the equipment and has performed several surgeries using the equipment. He is also the informal liaison with the Meril Life representative assigned to LTMGH Hospital.	Key Informant Interview [Semi-structured interview]
Designated representative of Meril Life for LTMGH Hospital	1 Representative	1 Representative	Meril Life is a pioneering Indian MedTech company focused on transforming global healthcare through innovative medical devices, education initiatives, and precision-driven technological solutions. The CUVIS Joints equipment was purchased through them. Interaction with him provided insights into the MedTech landscape in India, its growth potential, and its scope for improvement.	Semi-structured interview

Sampling Methodology

Study design: A primary study involving a mixed-methods research approach, involving both quantitative and qualitative tools, was adopted for this study.

Sample size: Due to the nature of the project, inputs were sought from **all 10** doctors who have been trained on the CUVIS Joints system.

Sampling method: Purposive Sampling has been undertaken owing to the nature of the project.

Mode of data collection:

- A structured questionnaire was shared with all the doctors to gauge their experiences and seek their inputs and recommendations.
- An Interview with a doctor who has operated the CUVIS Joints
- An interview with Meril Life SPOC to understand the MedTech landscape in India.

Impact findings - Profile of the surgery recipients

- During the period covered under this study, a total of **44 joints** were replaced using the CUVIS Joints equipment.
- A total of **44 people** benefitted from this advanced technology by undergoing either **TKR** (Total Knee Replacement) or **UKR** (Unicompartmental Knee Replacement), and which were **Unilateral** (only 1 knee). No **Bilateral** (both knees) replacements were done during the period under assessment.

100%

Of the recipients of the surgery belonged to economically weaker sections of society and received the treatment for free under PMJAY

44

People received the robotic knee replacements .

26 of these were **Women** and **18** were **Males**

44

Unilateral knee replacements done

31 out of these were **Left TKR** and **13** were **Right TKR**

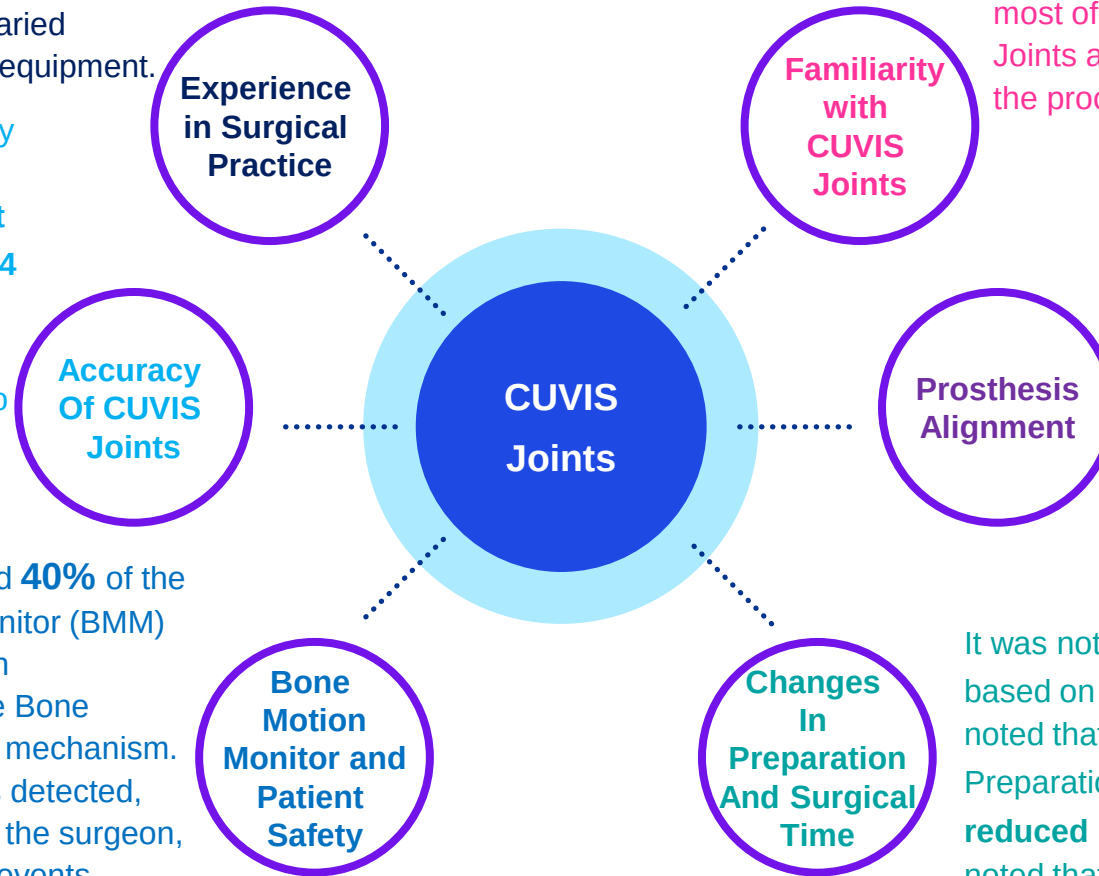
- Global statistics infer that more women find themselves in need of joint replacements. Based on the data shared by LTMGH hospital, **59%** of the surgery recipients were **women**. This affirms the **global findings** that women are more likely to need knee replacements over the course of their lives.
- **Total Knee Replacement** (TKR) replaces all three compartments of the knee (medial, lateral, and patellofemoral); **Unicompartmental Knee Replacement** (UKR) replaces only the affected compartment (most commonly medial), preserving the rest of the knee.

Impact findings

60% of the respondents (orthopaedic surgeons) have up to 5 years of experience in orthopaedic surgical practices, while **40%** of the respondents have upwards of 10 years' experience. This shows that surgeons with varied experiences are operating the CUVIS Joints equipment.

30% of the respondents have rated the accuracy of the CUVIS-joint's 3D preplanning feature, when compared to traditional methods, as "**5 out of 5**". **60%** of the respondents have rated it as "**4 out of 5**", and **10%** have rated it as "**3 out of 5**". This indicates that, while the 3D preplanning feature exhibits greater accuracy as compared to traditional methods, there is scope for improvement in this feature of the equipment.

60% of the respondents '**strongly agree**' and **40%** of the respondents '**agree**' that the Bone Motion Monitor (BMM) helps ensure **patient safety** during surgery. In robot-assisted knee replacement systems, the Bone Motion Monitor acts as a safety and feedback mechanism. If excessive or unexpected bone movement is detected, the system can pause the robotic action, alert the surgeon, and recalibrate the reference position. This prevents unintended bone cuts or implant malposition.



40% of the respondents stated that they are highly familiar with the CUVIS joints system, while the remaining **20%** stated that they are moderately familiar, and **40%** rated that they are somewhat familiar. This indicates that most of the respondents are familiar with the CUVIS Joints and know how to operate it while some are still in the process of familiarising.

20% of the respondents stated that they have '**always**' observed improved prosthesis alignment using this robotic system, **70%** of the respondents stated that they '**often**' noted it and **10%** have stated '**sometimes**'. This is a significant observation as proper alignment ensures that the implanted joint restores normal biomechanics and distributes forces evenly across the patient's joint. It also reduces complications and pain and improves longevity of the implant.

It was noted that respondents gave varying responses based on their experiences. **30%** of the respondents noted that there was **65% to 80% reduction** in Preparation and Surgical Time, **50%** found that the time **reduced by 25% to 50%**, while **20%** of the respondents noted that it took **longer** compared to traditional methods, **but improved accuracy**.

Impact findings

User-friendliness of the CUVIS- Joints

Robotic system

10% of the respondents gave the user friendliness of the CUVIS joints system the highest rating of **5 out of 5**, **70%** of the respondents rated it **4 out of 5**, and the remaining **20%** gave it 3 out of 5. This highlights that the robotic system and its components are relatively easy and comfortable to maneuver without causing any confusion or frustration or requiring extensive training on the part of the surgeons.

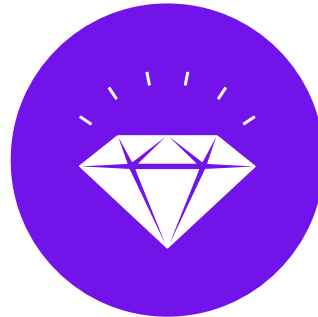


Faster recovery times in patients

10% of the respondents stated that, in their experience, the recovery time of patients who have been operated on using CUVIS, versus the traditional non-robotic methods, is **'always'** faster. **70%** of the respondents stated **'often'** and **20%** have found that it is faster only **'sometimes'**. This mixed response explains that while the recovery time is generally faster than traditional methods, it varies on a case-by-case basis depending on many parameters - patient-related (age, overall health), surgical, and post-operative factors.

Robotic system integration into surgical practices

80% of the respondents **agreed** that robotic systems, like CUVIS joints, should be integrated more widely into surgical practice, while **20%** of them stated that they **'strongly agree'** with such a statement. This indicates that medical professionals see potential benefits in using assistive technologies like CUVIS Joints robots for performing medical procedures on patients as such technology can help with longevity of implant, precision, time efficiency, safety and recovery, reduced surgeon fatigue etc.



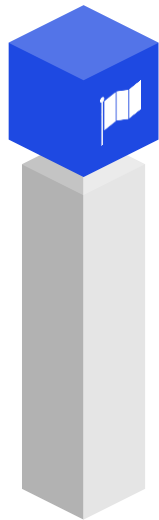
Post-surgical complications in patients

10% of the respondents noted that in their experience, the patients who have been operated on using CUVIS, versus the traditional non-robotic methods, **'always'** experience **fewer** post-surgical complications (e.g., fractures or misalignments), **70%** stated **'often'**, while the remaining **20%** have noted it as **'sometimes'** or **'rarely'**. This indicates that usage of a robotic system like CUVIS Joints can not always ensure reduction in post-surgical complications. However, an important factor to note is that in medical procedures there are several factors that may contribute to complications.

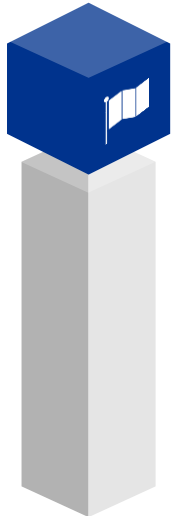
Way Forward

Based on the insights gathered from interactions with various stakeholders, following measures may be undertaken as a way forward to maximise the impact created by the robotic system:

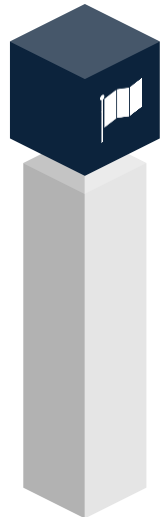
Improving features on the equipment to enhance functionality and efficacy – This can improve both the number of cases undertaken by the CUVIS Joints equipment, as well as improve surgical and medical outcomes for the patients undergoing the knee replacement surgery. This has been postulated based on the following findings:



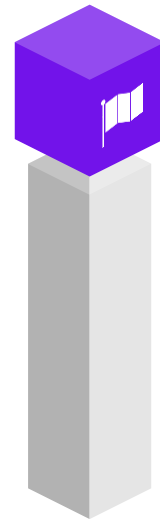
60% of the respondents expressed that the **precision** feature on the CUVIS Joints can be further improved for better surgical and medical outcomes for the patients.



30% of the respondents stated that **cost-efficiency** is a key area where the robotic system can be improved for better outreach and reducing access gaps.



10% of the respondents expressed that the **Safety Features** on the CUVIS Joints can be further strengthened for improved safety of the patients undergoing the surgery.

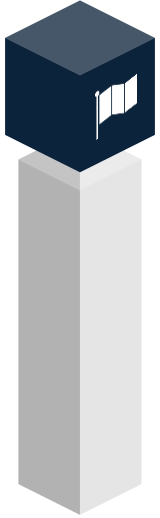


50% of the respondents expressed that the **user interface** of the robotic system can be smoothed out to make it more accessible and efficient.

Monitoring mechanism – In terms of assessing long-term impact created by using robotic equipment in the orthopedic sphere, developing a systematic method of **monitoring** patients and creating a repository of the evaluation of their (and their caregivers') feedback will help in furthering the **integration of more robotic equipment** in the hospital. This in turn may assist the medical professionals in delivering more medical outputs and generating better health and medical outcomes to a greater number of patients without contributing to fatigue or burnout of the medical professionals.

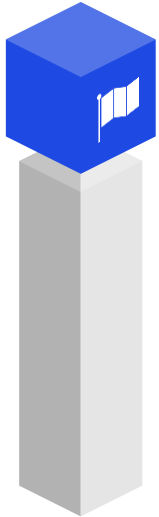
Feature to remove 'Osteophytes' – The robot performs the cuts which are decided on CT scan and implant's available sizes. However, it is unable to remove osteophytes (bone spurs). Although its removal is not always necessary, in certain situations, it is essential for restoring function, relieving pain, and preventing long-term damage.

Way Forward



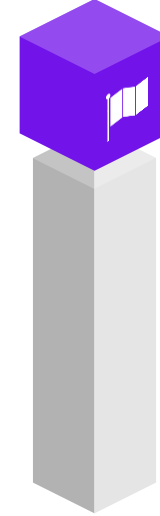
Strengthened provision for a regular and timely supply of 'Burrs' and joint implants to ensure that patients are not required to wait or reschedule their surgery due to logistical constraints on account of the CUVIS Joints equipment:

"Burrs" are orthopedic or neurosurgical cutting tools used in drills and are **critical surgical consumables**. Burrs become dull, clogged, or inefficient if reused beyond their intended lifespan or if the correct size/type is unavailable. **Timely supply** ensures clean, smooth bone cuts, reduced thermal damage to bone, lower risk of microfractures etc. A sharp and appropriate burr directly influences surgical quality, patient safety, and hospital operations. CUVIS Joint is a proprietary device developed by 'Curexo' and procured and distributed in India by Meril. The device is a "close-system" one and, thus, is only compatible with MERIL's **implants** i.e., it cannot use implants from other companies to perform the surgery.



Expanding the use of the equipment through integration with different software to perform other orthopedic surgeries :

The machine is designed in such a way that different software can be installed onto the machine to perform **other orthopedic surgeries** such as - Hip replacement, ACL reconstruction, Spinal surgeries, Hand and wrist surgeries, and Shoulder or elbow repairs. LTMGH is a government hospital located in Mumbai and has a heavy footfall of patients from all over the country (and abroad) seeking orthopedic surgeries. Thus, since the hardware remains the same, integrating appropriate software can help the hospital meet the **surgery requirements of more patients**. Although no concrete software has yet been developed, **funding research** in these areas can add to **concrete impact** over the long run.



More technical staff to handle any technical difficulties that may arise during a surgery:

Surgeons have noted that gap balancing is sometimes haphazard. Values do not expectedly change after component alterations. This adds to technical difficulties. Surgeons have also explained that maintenance and other cost-related concerns pose challenges in day-to-day management of the device and its components. The CUVIS Joint relies on an optical navigation system to perform autonomous bone cutting. This requires consistent spatial tracking and exact correlation between the patient's anatomy and the robot's movements, and this requires highly accurate calibration. Any disturbance in the robotic line-of-sight can pause surgery or affect precision. Thus, robotic systems like CUVIS Joints increase setup time and demand trained personnel. Although Meril deploys 2 technicians in every surgery – a "Biomechanical Engineer" and an assistant who supports with preparation and scrubbing of the machine, the machine's maintenance is done once every 2 months only. This **frequency** as well the **number** of technicians involved can be increased as it will support the medical staff in prepping for **more surgeries** leading to **better patient outcomes**.

Limitations of the study

The key findings of the impact assessment report are based on the perceptions of indirect beneficiaries: While this provides valuable insights into the primary and secondary beneficiaries' experiences, it may not capture the full scope of the impact or the experiences of all stakeholders.

Non-comparability of findings: The outcomes of this project should not be directly compared with those of other initiatives, as contextual differences may affect the results.

Limited generalizability: The findings are specific to the regions and populations involved in the study and may not be applicable to other settings without adaptation.

Short-term evaluation: The assessment reflects short-term impacts; long-term outcomes on patient's health and wellbeing remain to be studied.

Lack of control group: The absence of a control group limits the ability to attribute stated changes solely to the program intervention.



Annexure A - Pictures



The Navigation system of CUVIS Joints and CT-Based 3D Surgical Planning Module - Integrates with the robotic arm to guide bone resection and enables automatic cutting with sub-millimeter accuracy



Optical Tracking Sensor System of CUVIS Joints - Tracks patient anatomy and instrument positions in real-time and ensures optimal alignment and accurate imitation of the planned cuts.



Robotic arm of the CUVIS Joints - Performs automatic and precise bone cutting based on the surgical plan.

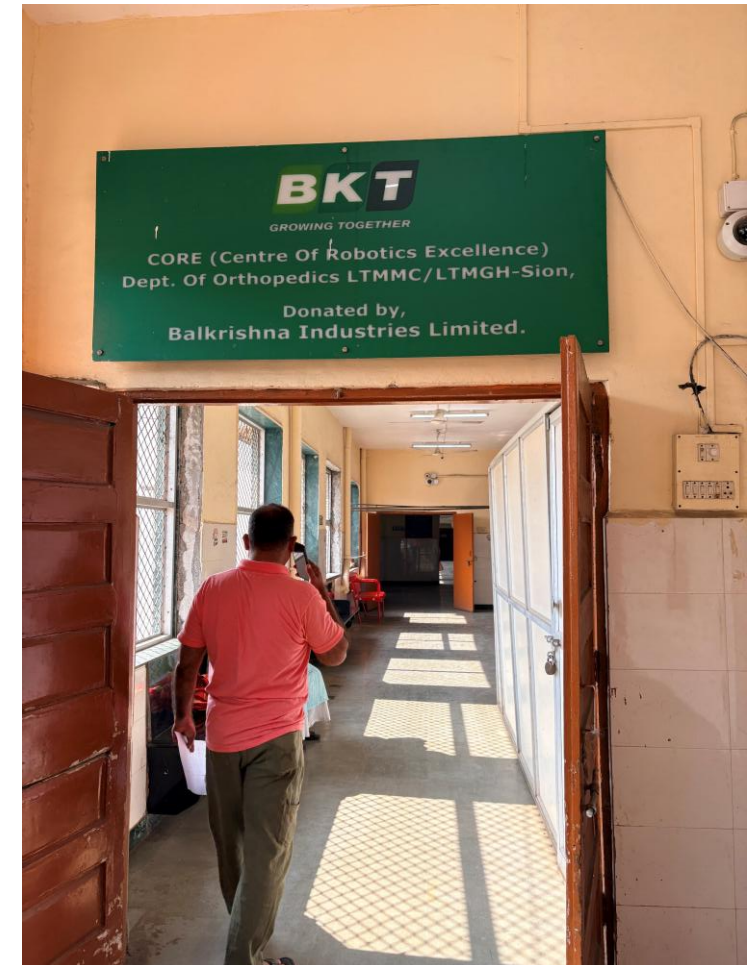
Annexure A - Pictures



Burr - A burr's function in a robotic knee system like CUVIS Joint is to precisely remove and shape bone so that the implant fits perfectly and the alignment matches the surgical plan.



BKT Tires branding on the CUVIS Joints equipment



BKT Tires branding outside the orthopedics department at LTMGH Hospital



Impact Assessment of CUVIS Joints Equipment at Lokmanya Tilak Municipal Medical College and General Hospital

Balkrishna Industries Limited
Impact Assessment for FY 2023-24

February 2026

