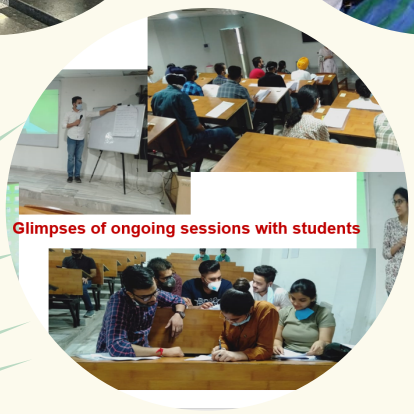
IAPSM BEST PRACTICES COMPENDIUM 2023-24



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IAPSM Best Practices Committee

IAPSM Best Practices Compendium 2023-24

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IAPSM Best Practices
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Indian Association of
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(IAPSM)

FOREWORD

It is with immense pleasure and pride that I extend my heartfelt greetings to all members and stakeholders of the Indian Association of Preventive and Social Medicine (IAPSM) on the occasion of the release of the Best Practices Compendium. As the President of IAPSM, it is my honor to introduce this compilation that encapsulates the pinnacle of excellence in teaching and field practices within our esteemed association.

The establishment of the Best Practices Committee by IAPSM was driven by our commitment to recognize and celebrate outstanding contributions in the domains of teaching and fieldwork across the nation. Today, we unveil the result of an exhaustive evaluation process that shortlisted the top 10 initiatives from a pool of exceptional applications.

This compendium is a testament to the innovative spirit and dedication of our members, whose remarkable efforts are reshaping the landscape of preventive and social medicine. The 10 showcased best practices, five in teaching and five in the field category, embody the principles of excellence, impact, and innovation that are at the core of IAPSM's mission.

I extend my deepest appreciation to all contributors whose initiatives are featured in this compendium. Your work serves as a source of inspiration for our community, reflecting the extraordinary commitment to advancing public health and social well-being.

As we release this compendium during the inauguration of our forthcoming conference, we mark a momentous occasion where the collective wisdom and best practices of our members come to the forefront. This publication is not just a record of achievements but a guiding light for the future of preventive and social medicine in our country.

I would like to express my gratitude to the Best Practices Committee for their diligent efforts in meticulously evaluating the applications and curating this compendium. Your dedication has ensured that we showcase the very best in our field to the wider community.

May this Best Practices Compendium serve as a source of inspiration, fostering a culture of continuous improvement, collaboration, and excellence within our association. I invite all members and conference attendees to delve into these pages, learn from the experiences shared, and collectively strive for a healthier and more equitable society.

Dr. A. M Kadri

Prof. (Dr.) Purushottam Giri
Secretary General
Indian Association of
Preventive and Social Medicine
(IAPSM)

IAPSM Best Practices
Committee
Indian Association of
Preventive and Social Medicine
(IAPSM)

PREFACE

It is with great pleasure and a sense of accomplishment that I endorse this compendium featuring the exemplary work of Committee of Best Practices of the Indian Association of Preventive and Social Medicine (IAPSM). As the Secretary General of National IAPSM, I am honoured to witness the dedication and innovation demonstrated by our esteemed colleagues in the field of preventive and social medicine / public health / community medicine.

The creation of the Best Practices Committee, with the specific mandate to assess and acknowledge outstanding initiatives in teaching and fieldwork, aligns seamlessly with the core values of the IAPSM. We recognize that the pursuit of excellence in preventive and social medicine / public health / community medicine goes beyond theoretical knowledge. It encompasses a commitment to practical, effective methodologies that address the evolving healthcare challenges of our nation.

This compendium showcases the top ten initiatives selected from a pool of remarkable applications received from across the country. These initiatives, divided equally between teaching and fieldwork categories, represent the pinnacle of innovative practices that significantly contribute to the advancement of preventive and social medicine / community medicine.

I extend my heartfelt congratulations to the Best Practices Committee for their meticulous work in evaluating and selecting these outstanding initiatives. I also express my gratitude to all the applicants who shared their commendable work, contributing to the collective growth of our field.

May this compendium serve as a beacon, guiding us toward a future where preventive and social medicine / community medicine in India stands as a shining example of excellence, compassion, and unwavering commitment to the well-being of our communities.

Long live IAPSM……..!!!

Prof. (Dr.) Purushottam Giri

Dr. Meenal Madhukar Thakare
Chairperson, IAPSM Best Practices Committee

IAPSM Best Practices Committee
Indian Association of Preventive and Social Medicine (IAPSM)

MESSAGE

It is with great enthusiasm and pride that I extend my warmest greetings on the occasion of the release of the Indian Association of Preventive and Social Medicine (IAPSM) Best Practices Compendium. As the Chairperson of the IAPSM Best Practices Committee, I am honored to introduce this compilation that showcases the exemplary initiatives in teaching and field practices across our nation.

The IAPSM Best Practices Committee, established with a vision to recognize and propagate innovative approaches in the realm of preventive and social medicine, embarked on the monumental task of evaluating numerous applications. Our nationwide call for submissions resulted in an overwhelming response, with commendable initiatives vying for recognition.

After meticulous evaluation and rigorous scrutiny, the committee shortlisted the top 10 initiatives, with five outstanding practices in teaching and five in the field category. These selected best practices epitomize the dedication, creativity, and impact that our members are making in advancing the field of preventive and social medicine.

This compendium serves as a testament to the collective commitment of our esteemed colleagues who, through their groundbreaking initiatives, contribute significantly to the enhancement of healthcare delivery, community engagement, and medical education. Each showcased practice reflects a beacon of inspiration, embodying the principles of excellence, innovation, and a community-centric approach.

I express my heartfelt appreciation to all the contributors who shared their outstanding work with us. Your commitment to excellence and your tireless efforts are not only acknowledged but also celebrated in this compendium.

This compendium will be officially released during the inauguration of our upcoming conference, where the wider community of preventive and social medicine professionals will have the opportunity to learn, discuss, and be inspired by these best practices.

Dr. Meenal Madhukar Thakare

Dr. Dhrubajyoti J Debnath
Member Secretary, IAPSM
Best Practices Committee

IAPSM Best Practices Committee
Indian Association of Preventive and Social Medicine (IAPSM)

MESSAGE

As the Member Secretary of the Indian Association of Preventive and Social Medicine (IAPSM) Best Practices Committee, it is both an honour and a privilege to introduce this compendium of exemplary initiatives in Teaching and Field practices. This collection reflects the culmination of rigorous evaluation, collaborative efforts, and a shared commitment to advancing Community Medicine in India.

In our dynamic and ever-evolving healthcare, it is important to disseminate the best practices both in Teaching and Field. The innovations in Teaching practices signify the dedication & commitment of our teachers towards the subject Community Medicine. Similarly, the diverse range of field initiatives underscores the versatility and resilience of our professionals in addressing the multifaceted challenges that our communities face which also include the public health emergencies. From innovative community-based interventions to groundbreaking research methodologies, each entry in this compilation represents a unique contribution to the enhancement of teaching and public health outcomes.

The Best Practices Committee, comprised of dedicated professionals within the IAPSM, undertook the meticulous task of reviewing, and selecting initiatives that exemplify excellence in Preventive and Social medicine. By releasing this compendium of top 5 field and top 5 teaching Best practices, we aim to foster a culture of continuous improvement and knowledge exchange within the IAPSM community and beyond.

I extend my heartfelt appreciation to all the contributors, whose unwavering dedication and passion have brought forth these remarkable initiatives. The diversity of experiences and perspectives presented here reflects the richness of our collective expertise. I also express gratitude to the committee members for their diligence and expertise in evaluating and selecting the featured best practices.

May this compilation inspire further collaboration, innovation, and transformative action in the realm of Preventive and Social medicine/Community Medicine, ultimately contributing to the betterment of Teaching and Public health in our Nation and beyond.

Dr. Dhrubajyoti J Debnath

Contents

Teaching practice 1

Value added course on Water Quality Monitoring for Laboratory Technicians at Dr.Balasaheb Vikhe Patil Rural Medical College, Loni

Dr.Mrs.Vaishali Phalke[1*], Dr.Sujata Muneshwar[2], Dr.Anup Kharde[2], Dr.Mandar Baviskar[2], Dr.Varsha Mahavarkar[2], Dr.Anand Bhide[2]

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Introduction

There can be no state of positive health and wellbeing without safe water. Water is an integral part of life and healthy living. Physical, chemical and bacteriological parameters of water quality need continuous monitoring in order to prevent waterborne diseases. Our institute runs DMLT/CMLT course. As tests on water quality are not included in their syllabus, department of Community Medicine at our institute thought of introducing value added course in water quality monitoring, without disturbing academic schedule of these students. Two batches have successfully completed this course.

Need and rationale

Much of the ill-health which affects humanity especially in developing country can be traced to lack of safe and wholesome water supply. However water analysis is not included in the syllabus of Laboratory Technicians(DMLT & CMLT). Hence this value added course was designed to develop trained manpower for Water Quality Monitoring

Novelty

Such value added course is not existing in other medical colleges. So it was designed with following objectives:

At the end of the course students will be able to:

- Define safe and wholesome water give sources , causes of pollution and water related/borne disease.
- Understand methods for purification of water.
- Collect water sample from different sources
- To understand various methods for water treatment

- Perform disinfection of wells , overhead tanks, household reservoirs and swimming pools.
- Perform Horrocks test and OT test.
- Analyse and interpret water sample for Physical ,chemical and microbiological aspect.

Collaboration or multi-stakeholder involvement

Pathology, microbiology and biochemistry were collaborated to select DMLT/CMLT students. This practice helps to work in group as eight faculty members were involved in conduction of this course. Help of microbiology department was sought. We collaborated with Pravara Education Society for swimming pool visit and civil department of institute for water purification plant. Department of Community Medicine is doing water testing of samples within the campus as well as samples from outside institutions/hotels/community.

Implementation details

Duration of course is Total Seven months Which includes notification ,induction ,enrolment ,course total 30 hours (Theory-6 hours & Practical-24 hours), practice, examination ,feedback & distribution of certificates).

Course description:

Unit I: Water sources, pollution and water related diseases 03 -hours

What is safe and wholesome water, requirement of water, uses , sources, difference between ground and surface water. Sanitary and insanitary well. Causes for water pollution ,water related diseases , criteria for Problem village and water quality standards.

Unit II: Treatment of water 12 hours

Disinfection of well ,tank and swimming pool .Purification of water at household level, purification of water on large scale and community level. Principles of chlorination .Different disinfectants used for water with their advantages and disadvantages.

Unit III: Collection of sample and estimation of chlorine demand 05hours

How to collect water sample ? How much amount to be collected ? How to transport and store?

Horrock's test for estimating chlorine demand.

Unit IV: Analysis of water & estimation of Chlorine in Hypochlorite solution

10 hours

Analysis of water for turbidity pH, hardness, chloride, iron, nitrate, fluoride, residual chlorine ,TDS and Bacteriological quality .

Day / Date	Time	Topic	Venue
Saturday	Lecture 9:00to 10:00am Practical 10:00am to 1:00pm	Water sources, pollution, diseases, criteria for safe water and problem village Collection of water sample	Community Medicine Department
Saturday	Lecture 9:00-10:00am Practical 10:00am to 1:00pm	Disinfectants for water, Principles of chlorination, Horrock's and OT test Horrock's and OT Test	Community Medicine Department
Saturday	Lecture 9:00 to 10:00am Practical 10:00am-1:00pm	Purification of water on large scale Disinfection of well	Community Medicine Department Field visit for demonstration
Saturday	Lecture 9:00am to 10:00am Practical 10:00am 1:00pm	Methods for collection of water sample ,amount ,storage and transportation Visit to water purification plant	Community Medicine Department Field Visit
Saturday	Lecture 9:00am - 10:00am Practical 10:00am-1:00pm	Water quality standards and water conservation Visit to swimming pool	Community Medicine Department Field Visit
Saturday	Lecture 9:00am-10am Practical 10:00am-1:00pm	Test for residual chlorine ,turbidity, ph ,hardness ,iron, nitrate ,fluoride ,TDS ,chloride and bacteria Collection of water sample from varies sources	Community Medicine Department

Saturday	Practical 10:00am-1:00pm	Analysis of Water sample	Community Medicine Department
Saturday	Practical 10:00am-1:00pm	Estimation of Chlorine in bleaching powder/ hypochloride solution	Community Medicine Department

Teaching learning activities

a)Methods of teaching: Lectures ,Demonstration, Discussion and field visits**.**
b)AV aids: Black board, PPT and smart phone
c)Essential skills: collection and Analysis of water for drinking , doing disinfection of well, tank and swimming pool.
Timetable for lectures & practical:

Students were engaged on alternate Saturday afternoon for four hours (1 hour lecture & 3 hours practical) without disturbing their academic schedule.

Outcome/impact

At the end of course student were able to:

- Collect water sample from different sources
- Perform disinfection of wells , overhead tanks, household reservoirs and swimming pools.
- Perform horrocks test and OT test.
- Analyse and interpret water sample for Physical ,chemical and microbiological aspect.
- Feedback was taken from students on completion of course through Google-form posted in their WhatsApp group. After feedback from first batch we received suggestion that educational material should be developed. So we developed module with contribution from course faculty. Other suggestion was to reduce course fees, which was forwarded to authorities

Two trained technicians have been appointed in Community Medicine department and Center for Biotechnology of our institute. In last one year they have analyzed more than 350 water samples independently.

Sustainability & replicability

Practice can be repeated periodically as we have completed two batches so far. In 2021 total eleven students successfully completed the course. In 2022 thirteen students completed the course. Course fees is Rs.1000/- There is structured SOP approved and notified by University.

It can be easily replicated in other institutes as infrastructure required is available in most medical colleges eg Lecture hall, laboratory with water testing facility , faculty from Community Medicine are already having knowledge and skills, vehicle for visit to water purification plant, swimming pool, well disinfection.

Conclusion

Water is an integral part of life and healthy living. Physical, chemical and bacteriological parameters of water quality need continuous monitoring in order to prevent water borne diseases. Thus, we can use our expertise to create trained manpower which in turn will improve water quality.

Photographs

Faculty with second batch:

Visit to water purification plant:

Trained Faculty for Course

Field Demonstration of Disinfection of Well

Estimation of Chlorine in Hypochloride Solution

Field Demonstration of Disinfection of Well

Analysis of water sample in research lab by students

Release of booklet on water quality monitoring-educational resource:

Distribution of certificates

Dr. Balasaheb Vikhe Patil Rural Medical College,
Pravara Institute of Medical Sciences
(Deemed to be University), Loni Bk

NAAC Accredited "A" Grade

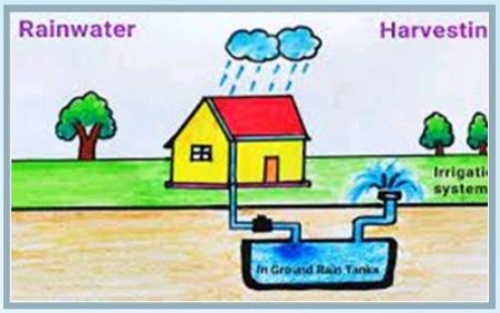
Department of Community Medicine

Module for Value Added Course on

"Water Quality Monitoring"

Photographs

First batch of water quality monitoring course



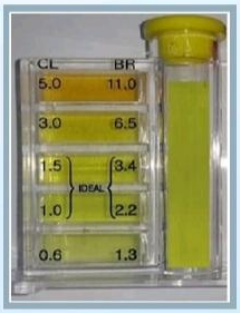
Rain Water Harvesting

Collection of water sample

Visit to water purification plant

Visit to water purification plant

Visit to swimming pool



Orthotolidine Test

Horrock's Apparatus

Practice sessions:

Visit to swimming pool:

Teaching practice - 2

Inculcating research skills in undergraduate medical students by using a structured validated module

Dr Tanvir Kaur Sidhu[1*], Dr Varun Malhotra[2], Dr Shyam Mehra[3], Dr Gurkirat Singh[4], Dr Harshpreet Singh[4], Dr Jagriti[4]

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* Nodal person

Introduction

Evidence based research aids in decision making in the health sector for developing health policies for prevention, diagnosis and treatment of diseases.[1] Promoting health-oriented research is crucial for national progress and prosperity. [2]

Even though medical research is a mandatory part of post-graduation curriculum; it is not a part of regular undergraduate (UG) curriculum in India. With the introduction of CBME curriculum, Electives have been introduced, wherein one suggested elective to be offered is Research. The research learning experiences will provide the learner with an opportunity to gain immersive experience of a career stream or research project.[3] Inculcation of research aptitude among UGs will not only add to global scientific evidence but also change their outlook and awareness regarding health issues.[4]

Studies conducted among medical students' state that despite some research knowledge, awareness is low and practical involvement in research has been comparatively lower. This can be attributed to certain barriers like vast curriculum, inadequate exposure and experience and lack of adequate mentorship, lack of motivation along with paucity of funds.[5-9] Minimal number of publications and presentations as well as applications for grants is the usual scenario. There is also a lack of awareness of avenues of research opportunities in the UG phase. In addition, the research skills are not being taught to the UGs in a structured manner.

Need/Rationale

With this background in mind, data was reviewed for past ten years of my institute i.e. 2010-2019, and it was seen that-

Only 49 research projects involving UG students

Out of these 49- only 28 published

7 were presented at conferences

8 had applied for grants

Only 1 had received a grant

Hence, problem was identified that there was a lack of research aptitude and activities among undergraduate students in the institute. It is not wrong to presume that this is a usual scenario in most of the Medical colleges barring a few central and research institutes, as far as undergraduate research is concerned.

The present intervention was planned with-
Aim - To impart Structured training to inculcate research skills among medical UGs and promote research environment in the institute.
Objectives-

1. To use a structured pre-validated Module for routine training of research skills
2. To evaluate the impact of this training in research skills

Novelty

No structured methodology for training UG students in research skills was being adopted by the institute. Hence, the module was developed by the Core-committee suiting to the requirements and has now been formally adopted in the Adesh University Undergraduate MBBS Curriculum. The research skills training is now being imparted as a 40 credit hours Value-added Course with assessment of research skills.

Very few colleges all over India are taking up the formal Research Skills training for all UG students.

Collaboration or multi-stakeholder involvement

The educational project was started as a part of FAIMER fellowship program by the main author under CMC Ludhiana FRI in January 2020.

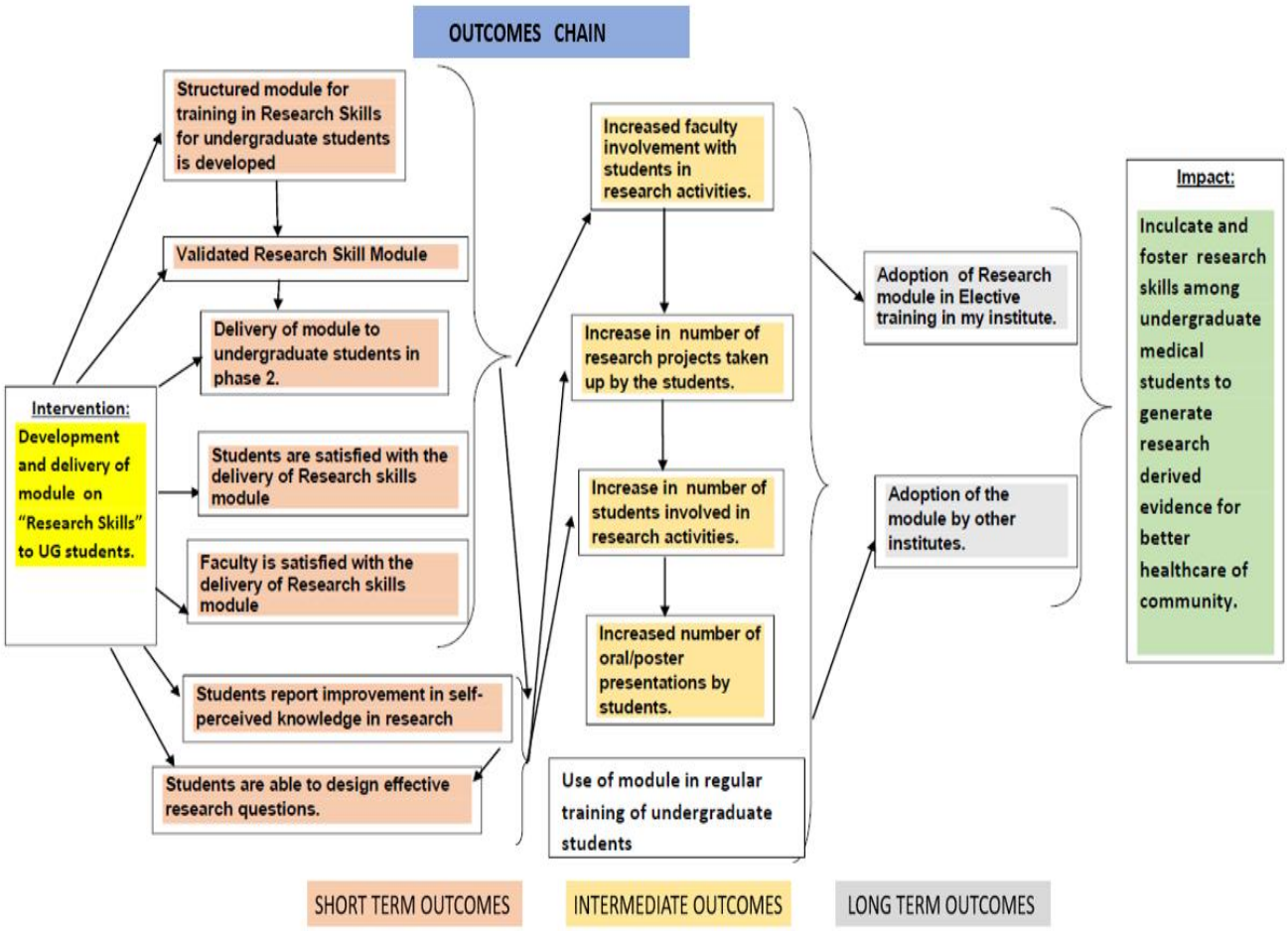
The Research Skills training is being imparted by the Department of Community Medicine alongwith volunteer faculty from all departments of the Institute under the Value Added Course.

A program of Faculty-Student Research Mentorship has been launched with a pool of Faculty Mentors from all disciplines.

The University has started an Intramural Research Grant for students and is a partner to strengthen this initiative.

Implementation details & outcomes/impact

Following matrix was used to plan the Intervention to achieve the desired outcomes:-

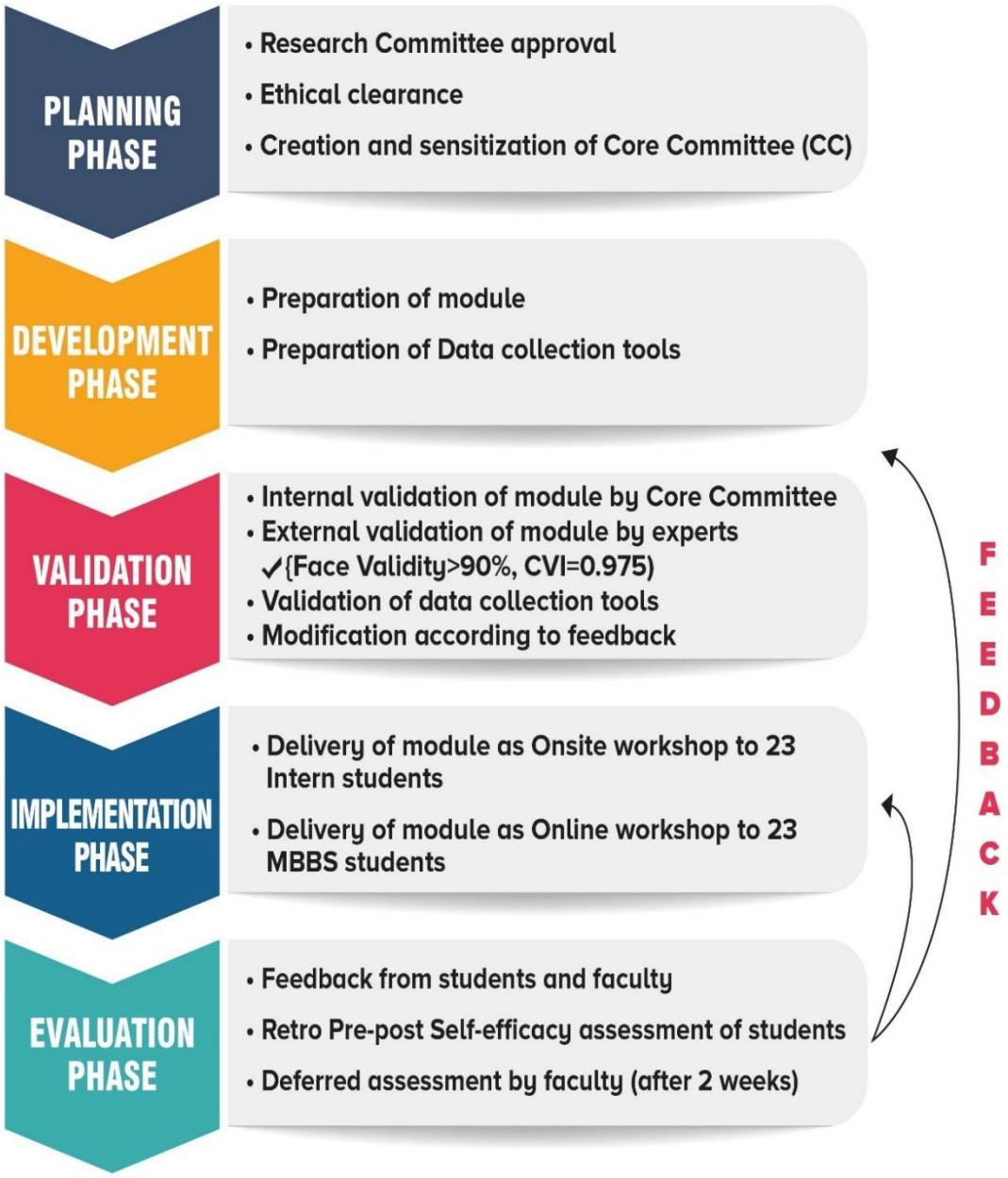


The project was initiated in Year 2020 and is continuing till date. The detailed plan and outcomes have been represented below:

Year 2020

What was done

The project was planned as an educational interventional study with mixed methods approach. The various phases have been depicted in the Methodology flowchart below. Pilot run was conducted on 46 students.



To decide the contents of the module, inputs were received from alumni students (who had completed MBBS) on requirements for topics and teaching learning methodology by e-delphi, two rounds of which were conducted to get consensus. Inputs were received from Institutional Research Committee members for topics and methodology by Focused Group Discussion.

A Core Committee (CC) consisting of eleven members was constituted including faculty members from the Dept. of Community Medicine and 06 FAIMER fellows in the institute. The CC was sensitized and individual consent was sought. Each member of the CC was allotted different topics and preliminary drafts were made which were compiled.

This was followed by internal validation of the module by the Core Committee members and compilation was done by the main researcher. The final module 'Module for Undergraduate Medical Research' (MUMR) was sent to ten experts for External validation (Subject experts in Community Medicine and FAIMER fellows outside the institution). The module: 'MUMR'- 'Module for Undergraduate Medical Research' was modified according to the feedback received through external validation. The module was also modified later on by the CC to suit the online delivery. The final module was then shared amongst resource faculty.

The data collection tools consisting of feedback questionnaires and assessment forms were prepared using the extensive literature search and validated first by the CC internally and then externally.

Pilot study- Administration of module through workshop was done by recruiting two groups – One of Intern students posted in the department for Onsite delivery and One group of MBBS students of 2nd year for Online delivery. For Onsite-workshop: Interns posted in Community Medicine were briefed through WhatsApp prior to the start of the workshop. Workshop using the module was conducted for 23 students from 4th to 7th August 2020 (3 hours daily for 4 days) in the Anatomy Lecture Theatre after observing all the social distancing and COVID norms. The resource material in form of 'MUMR' module was given to all students as hard copies. Data collection forms were also administered as hard copies and collected back. For Online-workshop: The MBBS students rotating in online clinical classes for Community Medicine were recruited for this workshop from 20th to 29th August 2020 (2 hours daily for 6 days-It had to be extended to one more day to complete the delivery). The institutional online Zoom platform was used. A Google classroom was created to share the resource material. Data collection was done through Google forms shared through Google classroom. A total of 23 students who attended the entire workshop were considered for data analysis.

A total of 11 resource faculty who were part of the CC were involved in delivering the workshop.

Feedback was collected from the students on the last day of the workshop after explaining about the study and getting written informed consent. The retrospective pre-post self-efficacy questionnaire was administered to the students after a briefing, underscoring the importance of their honest and critical feedback. The deferred assessment forms were distributed to the students, after explaining the purpose and were asked to be returned back after completion after 2 weeks which was later graded by the faculty. Feedback was collected from the resource faculty and core-committee by administering faculty feedback questionnaire at the completion of the workshop after getting written informed consent.

Challenges

Due to onset of COVID the Module was delivered offline to one batch of interns and via online mode to the volunteer students of MBBS.

However, this was an opportunity which enabled the Module based workshop to be conducted in Hybrid mode.

Results

The structured and validated module 'MUMR' was created for training of UG students in Research skills. The module was found to have face validity of >90% and overall Content Validity Index of module was established at 0.975 and Universal Agreement at 0.75.

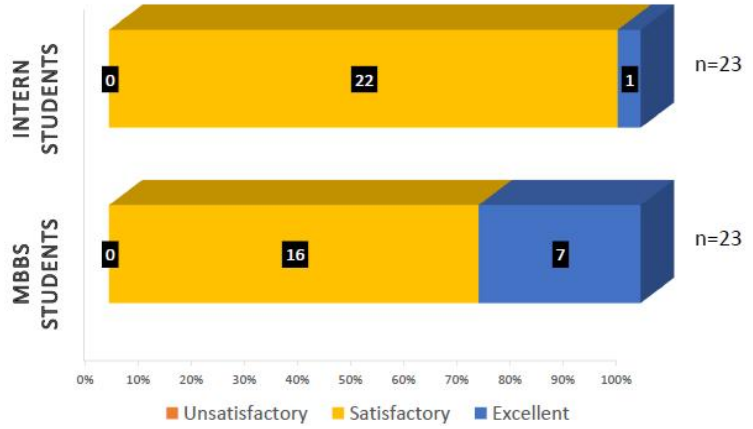
The overall satisfaction with the workshop was 91% and 100% for interns and MBBS students while the overall rating of module was 74% and 91% by interns and MBBS students respectively.

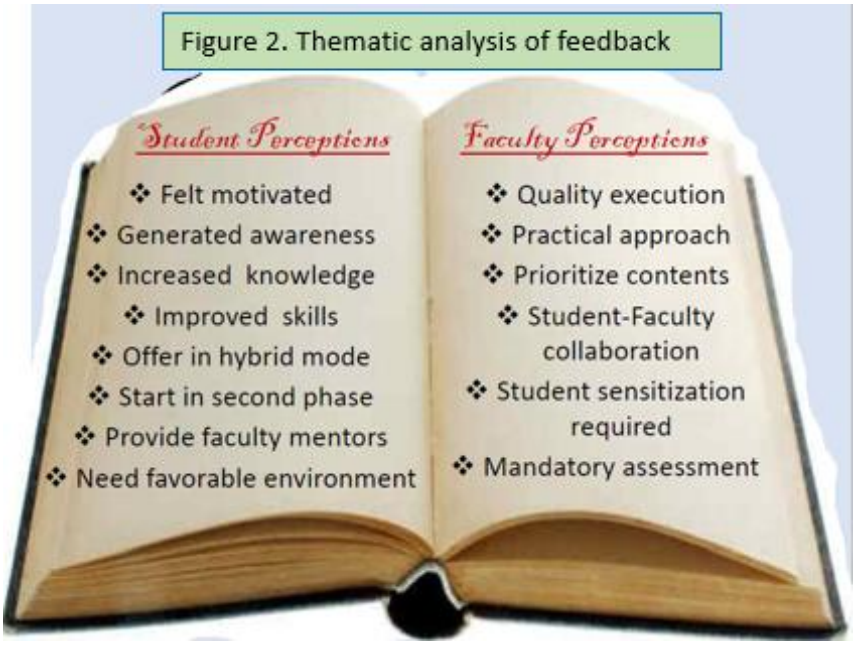
The overall satisfaction with the workshop as well as rating of module was 100% by faculty.

The students reported that preferred mode of delivery was onsite (only 4% preferring for online platform) while it was suggested that a combination of onsite and online mode i.e. hybrid model can be tried. The preferred timing for delivery was reported to be Second phase.

The performance of students and feedback by students and faculty is depicted below in Fig 1 and Fig 2.

Figure 1. Performance of students on developing research question/hypothesis for selected research topic





Year 2021

What was done

Module was delivered to all 150 students of Batch 2019 in their Phase 2 in Onsite mode.

Module delivery was in the form of 6 workshops with 25 students in each session conducted by Core committee members during the Clinical posting period over a period of 5 months.

Feedback was obtained from students and faculty for further improvisations of the module and the program.

TRAINING SESSIONS IN PROGRESS

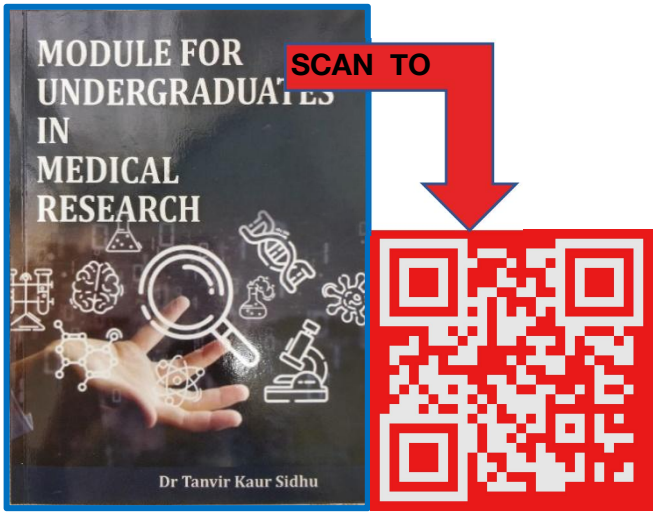
Results

High satisfaction reported from both students and the resource faculty.

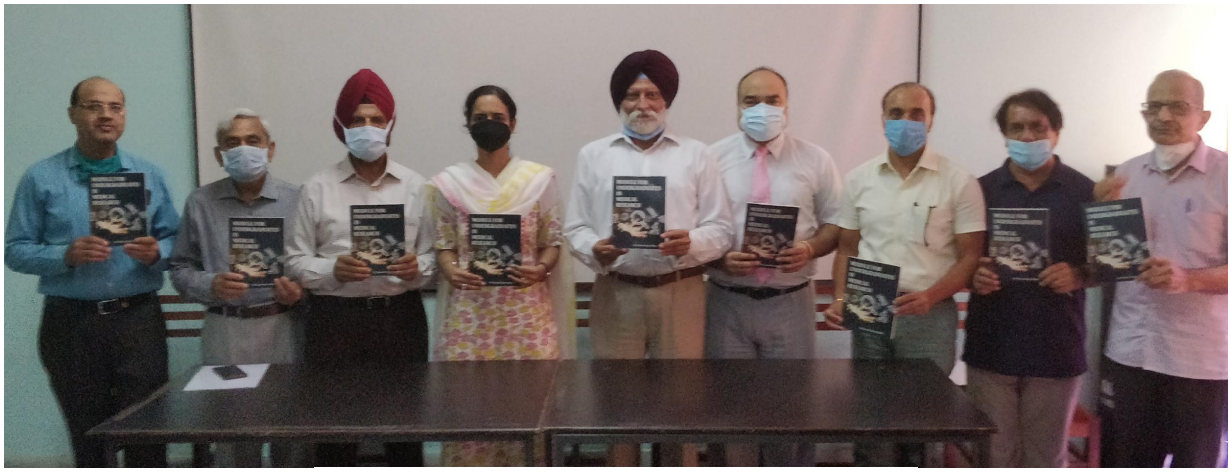
The scores of research knowledge and skills were found to be significantly higher on all variables post workshop with $p<0.001$ and large effect size (>0.5).

Research paper entitled "Development of Structured Validated Module to Inculcate Research Skills in the Medical Undergraduates" accepted for publication in NMJI. Under production.

Module was published and permission was obtained to train further batches at the institute. (ISBN 978-93-5205-490-9, Unistar Books Pvt Ltd. 2021)



MODULE “MUMR” RELEASE



दैनिक भास्कर बठिंडा भास्कर 22-09-2021

मेडिकल रिसर्च में अंडर ग्रेजुएट छात्रों को प्रशिक्षण देना समय की आवश्यकता : डॉ. तनवीर कौर

मेडिकल प्लस

बठिंडा | नेशनल मेडिकल कमिशन एमबीबीएस की शिक्षा प्राप्त कर रहे मेडिकल ग्रेजुएट की योग्यता के आधारित यूजी पाठ्यक्रम आरंभ किया है। आदेश इंस्टीट्यूट आफ मेडिकल साइंसेज एंड रिसर्च बठिंडा में कम्युनिटी मेडिसिन विभाग के प्रोफेसर डॉ तनवीर कौर सिद्धू द्वारा शिक्षण सिखलाई के लिए संचित वर्कशॉप और विद्यार्थियों को स्रोत सामग्री मुहैया करवाने के लिए मॉड्यूल तैयार किया गया है। 15 सितंबर को वाइस चांसलर, कर्नल जगदेव सिंह और यूनिवर्सिटी के सभी अधिकारियों द्वारा इस मॉड्यूल को जारी किया गया है।

Year 2022

What was done

The students of Batch 2019 , now in Phase 3 part 1,

- Mentored by Community Medicine faculty mentors (25 students allotted 1 mentor)
- Developed research protocols and then conducted the research projects.
- The students constituted 36 groups each with around 2-5 student members as per their choice and 1 faculty mentor.

- Continuous monthly sessions during Community Medicine SGL sessions were held with the faculty mentors to address the issues of students and guide them further on the projects, round the year.
- These students were further trained and mentored to Scientific writing in form of Project Reports and preparation of Research Posters.

Simultaneously, this year all the 150 students of next Batch i.e. 2020(now in their Phase 2) were trained in research skills using the same approach.

Results

At the end of the year

All 36 groups submitted Project reports which were evaluated and group feedback was given by faculty.

A full day Poster exhibition was held in the College Auditorium.

The students were awarded with best 1st, 2nd and 3rd posters by the Dean.

The students of all other batches visited the exhibition and provided peer-learning opportunity.

Total Student Projects conducted-36

On the opening of STS-ICMR applications, 08 students submitted their applications and 01 was Selected for ICMR-STS scholarship.

This initiative was awarded "Best Practices award in Community Medicine" at NZ-IAPSMCON 2022 held at AIIMS, Bathinda.

1st UG RESEARCH EXHIBITION at Adesh University

Research Exhibition held in College Auditorium


Social media addiction among
MBBS students


UG RESEARCH
WORK EXHIBITION
BATCH 2019
DEPARTMENT OF COMMUNITY MEDICINE, AIMSR
ADESH UNIVERSITY

Students awarded

Year 2023

What was done

- The students of Batch 2020 , now in Phase 3 part 1,
  - Mentored by Community Medicine faculty mentors (25 students allotted 1 mentor)
  - In addition, 20 Faculty mentors from all disciplines were inducted and allotted to students as per their chosen area of research work.
  - Developed research protocols and then conducted the research projects.
  - The students constituted 42 groups each with around 2-5 student members and 1-2 faculty mentors.
  - Continuous monthly sessions during Community Medicine SGL sessions were held with the faculty mentors to address the issues of students and guide them further on the projects, round the year.
  - These students were further trained and mentored to Scientific writing in form of Project Reports and preparation of Research Posters.

- Simultaneously, this year all the 150 students of next Batch i.e. 2021(now in their Phase 2) were trained in research skills using the same approach.

Results

- Total Student Projects conducted-42
- On the opening of STS-ICMR applications, 28 students submitted their applications and 03 were Selected for ICMR-STS scholarship.
- Module has been adopted as Value Added Course GRI.300 in the University Curriculum for UGs with 40 credit hours at Adesh University.
- Launched Faculty-student research mentoring program (a pool of around 40 faculty mentors created)
- UG Research Exhibition/Conference approved annual event
- 2nd UG Research Exhibition held , students awarded best poster awards for 1st , 2nd and 3rd positions.
- The University has launched Intramural grants for Undergraduate Research Work and 3 Projects were awarded Rs 5000/- each after selection by Expert Committee.
- E-certificates to all students for poster presentations awarded.
- Module suitably adopted for Electives Research Block 1 to further train the students for Academic writing.
- This work was awarded “Best Poster award” at CMCL-FAIMER Alumni Conference held at CMC Ludhiana in May 2023.

2nd UG RESEARCH EXHIBITION at Adesh University


14
13
12
11


UG RESEARCH
WORK EXHIBITIO
12th October 2023
DEPARTMENT OF COMMU MEDICIN

Year 2024

What is being done

The training of the students of Batch 2022 , now in Phase 2 has started.

The Module had been undergoing revision and updating as per the feedback and experiences over the past 4 years. The Second Edition of the module has been prepared and is under publication, shall be launched soon.

Sustainability and replicability

"Undergraduate Medical Research" has been adopted as Value Added Course (GRI.300) in the Curriculum of MBBS in the University (Credits=40)

Henceforth, all MBBS Undergraduates shall be trained in research skills using the "MUMR" in Phase 2 followed by Research Mentoring by faculty in Phase 3 part 1. Voluntary faculty from all the departments have been identified for research mentoring of UG students.

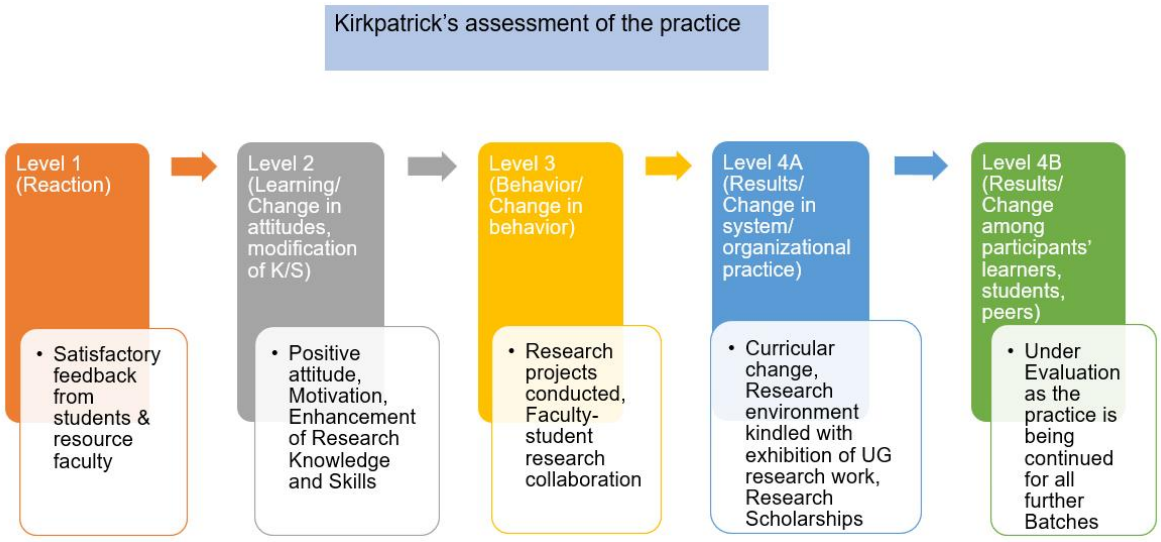
The module "MUMR" is available to be utilized for UG training in any medical institute upon request to the Main author. The second edition of the module is currently under publication and shall be available soon.

An Undergraduate Research Exhibition/Conference has been made a regular event every year and three best research projects shall be awarded under UG Research Cell.

An Intramural Research Grant has been declared for UG Research Work by the University to be awarded to 03 students' projects per year.

The module is being used for effective training in Electives Research Block 1 "Research Methodology & Biostatistics" .

Further as committed, the program has been under continuous evaluation since inception by various stakeholders. The following figure depicts the Program evaluation using Kirkpatrick's model :-



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Teaching practice - 3

Dumtionary (Dumb charades + Pictionary): An innovative Pedagogical approach

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Author's affiliation during the initiative

Introduction

Gamification involves incorporating elements of game design (fundamental components crucial for creating effective games) into contexts that are typically not associated with games.(1–3) Extensive research has focused on the psychological principles of human behavior in relation to games and the concept of gamification. Numerous principles and frameworks have been developed to elucidate the foundations of interactions within games. Some authors have identified up to 36 distinct game design principles.(4) Despite the diversity of these frameworks, they all share a common theme, the idea that engaging in gaming fosters an inherent motivation for success.(5) The voluntary nature of playing games, as it is not mandatory but optional for players, contributes to this intrinsic motivation. This motivation prompts millions of gamers to willingly invest time and money in studying and acquiring new skills to excel in various domains. Harnessing this form of investment for educational purposes holds significant potential.

In the dynamic landscape of medical education, where information retention and engagement are paramount, innovative pedagogical approaches have gained prominence. Gamification strategies, like integration of popular games such as Dumb Charades and Pictionary, within the context of small group teaching in undergraduate medical education has the potential to emerge as a compelling tool for enhancing the learning experience.

Rationale

The utilization of gamification strategies, such as Dumb Charades and Pictionary, in small group medical education serves a pivotal purpose. These engaging games inject an element of fun and interactivity into the learning process, which is particularly vital in a field as rigorous as medicine. By tapping into students'

intrinsic motivation and challenging them to actively participate, these games enhance knowledge retention, foster critical thinking, and promote effective communication skills that are indispensable for future healthcare professionals. Additionally, the collaborative nature of these activities mirrors the teamwork required in clinical practice, making them an invaluable addition to the medical education toolkit.

Novelty

Different types of game-based learning/ gamifications were tried by multiple researchers in medical education and during conferences/ events.(6) Our literature search suggests that application of game-based learning is minimal in small group teaching as part of undergraduate medical education.

Collaboration/ multi-stakeholder involvement

This unique educational method fosters engagement not only among students but also requires the active participation and support of faculty, residents, administration. Faculty, residents plays the role in developing curriculum integration strategies, creating relevant word lists, and assessing the educational impact enhances the overall effectiveness of Dumtionary as a pedagogical tool. Administration plays a crucial role in providing the necessary resources and infrastructure for Dumtionary sessions. Their support in creating a conducive environment and integrating the approach into the broader educational framework is essential for its sustained success. Minimum two people are needed to conduct the session. During our sessions also, the team of one faculty, one Senior Resident and two post graduates had managed the sessions, with prior permission from the Head of the Department.

Implementation details

Two sessions of Dumtionary were conducted for each of the small groups (group consists of 16 students) of 7th semester MBBS students, during clinical posting. Topic for the two sessions were “Environment” (here onwards will be referred to as ‘First session’) and “Epidemiology & Demography” (here onwards will be referred to as ‘Second session’). Rules were customised based on the topic on which the Dumtionary was conducted. In the first session, students were required to deposit their mobiles and bags before the commencement. The entire batch was then divided into two groups. From each group, a volunteer was selected, let's call them "Group A & B." These volunteers were assigned a word related to the environment, such as "Hard water." They had a two-minute period to contemplate how to enact or draw the given word. Subsequently, the same group must decipher the enactment or drawing within a five-minute time frame. If they successfully deciphered the word, one person from the group is tasked with answering it. After the deciphering process, an additional two minutes are allotted for the group to present various important points related to the given topic or word. However, if the initial group fails to decipher the word, the opportunity is then passed to the other group, with no extra thinking time granted. For the second session, students were required to deposit their mobiles and bags before participating. The entire batch was then divided into two groups. Each group was assigned a word related to either Epidemiology (Epi) or Demography (Demo), for instance, "Case Fatality Rate." The group given the word, let's call them "Group A," has a five-minute period to discuss and strategize on how to enact the concept among

themselves. After this preparation time, one person from Group A comes forward to enact the chosen word. The other group, "Group B," is then given two minutes to decipher the enactment, with one person providing the answer. Following the deciphering process, Group B is granted three minutes to discuss among themselves, define the concept in words, present the correct formula (using chalk and board), and add any additional information about it. If Group B was unable to define the concept correctly or state the correct formula, the opportunity was passed back to Group A, with one minute given for them to provide the concept or state the formula. Second session was different from the first one, in the way the marks got awarded. If the other group could tell the answer correctly, then the group who explained the answer non-verbally would get 20points. Details for each session were given in the Panel 1 & 2. After the sessions, feedback was collected from students verbally regarding what they like/ dislike in the activity and also digitally through a self-developed, semi-structured questionnaire through google form, attached as appendix file. As the practice is mainly intended for quality improvement in small group teaching of Medical Education, prior IEC approval was not taken.

Outcome/ impact

Impact was assessed from the verbal feedback and feedback survey from the students who participated in these sessions. Oral feedback indicated that the successful execution of the activity was attributed to active involvement, effective communication, teamwork, strategic planning, leadership, pre-existing knowledge, and a positive competitive atmosphere (Figure 1). Feedback survey showed that 97% of the students gave the overall rating of 8 and above (for maximum score of 10), mean and median being 9 with range from 7 – 10. Mean, Median, range of different aspects of the feedback are given in the Table 1.

Sustainability and Replicability

The sustainability and replicability of integrating gamification strategies like Dumb Charades and Pictionary into small group teaching in medical education are highly promising. These games are cost-effective, requiring minimal resources, making them accessible for institutions with varying budgets. Furthermore, their adaptability allows instructors to tailor the content to specific learning objectives and medical specialties. As effective pedagogical tools, these strategies can be easily incorporated into various medical curricula, ensuring that the benefits of gamification reach a wide range of learners. With the potential to engage and empower students across diverse settings, the sustainability and replicability of these methods offer a scalable solution for enhancing medical education, while promoting active and enjoyable learning experiences.

Acknowledgement

We express our sincere gratitude to Prof. (Dr.) Sonu H. Subba, Professor and Head, Departent of Community Medicine and Family Medicine, AIIMS Bhubaneswar for consistently supporting the conduct of these sessions. Our appreciation extends to Dr. Ambarish and Dr. Akshaya, post-graduate students in the Department of Community Medicine and Family Medicine, for their valuable assistance during the sessions. Furthermore, we extend our thanks to the students of the 2017 batch for their active participation in the sessions.

Panel – 1

Session – 1

Topic: Environment

Duration: 1 hour

Batch: 07th Semester students (16 students' batch)

Methods: Dumb charades + Pictionary

Time for each question: 7 – 12 minutes

Rules:

- Students have to deposit their mobiles, bags
- Total batch will be divided in to 2 groups
- Each group will send a volunteer (Let's suppose "Group A")
- The volunteer will be given a word related to Environment (Eg: Hard water)
- He will be given time of 2 minutes to think about how to enact or draw.
- The same group has to decipher it. They will be given time of 5 minutes to decipher. (Group A). One person has to answer it.
- After deciphering 2 minutes time will be given to tell various important points related to the topic/ word.
- If the group was not able to decipher, chance will be passed to other group and other group will not be given any extra time to think.

Marks:

- If Group A is able to decipher, Group A will be given 10 marks
- For every extra point with in 1 minute, 10 marks for each extra point
- If question is passed on to Group B, and Group B was able to answer it, Group B will be given double the marks (20 marks)

Sample questions:

- Hard water
- Slow sand filter
- Chlorine tablet
- Biohazardous waste
- Horrocks apparatus
- Yellow bag/ bin

Panel – 2

Session - 2

Topic: Epidemiology & Demography
Duration: 1 hour
Batch: 07th Semester students (16 students' batch)
Methods: Dumb charades + Pictionary
Time for each question: 7 – 12 minutes
Rules:

- Students have to deposit their mobiles, bags
- Total batch will be divided in to 2 groups
- Each group will be given a word related to Epi or Demo (Eg: Case Fatality Rate)
- Group which was given the word will be given time of 5 minutes to discuss among themselves on how to enact. (Let's suppose "Group A")
- After 5 minutes, 1 person from the group will come & enact (From "Group A")
- The other group has to decipher it. They will be given time of 2 minutes to decipher. (Group B). One person has to answer it.
- After deciphering 3 minutes time will be given to discuss among themselves, to define it in words and tell the correct formula (using chalk & board) (Group B) and to add any extra about it. One person has to answer it.
- If they were not able to define it correctly or tell correct formula, chance will be passed to Group A and time of 1 minute will be given to answer.

Marks:

- If Group B is able to decipher, Group A will be given 20 marks
- If Group B is able to define & tell the formula correctly, Group B will be given 20 marks
- For every extra point with in 1 minute, 10 marks for each extra point
- If question is passed on to Group A for definition and formula, and Group A was able to answer it, Group A will be given 10 marks
- If Group B answers only definition / formula, Group B will be given 10 marks
- If either definition or formula is passed to Group A, and group A was able to answer it, Group A will get 5 marks

Sample questions:

- Prevalence rate
- Case fatality rate
- Standardised mortality rate
- Maternal mortality rate
- Positive predictive value
- Relative Risk

Table 1: Feedback scores of the students participated in the Dumtionary sessions

Characteristic	Mean	Median	Range
Overall score	9	9	7-10
Understanding rules	9	9	7-10
Enough time for preparation	9	9	4-10
Usefulness of the session for knowledge domain	8	8	7-10
Usefulness of the session for attitude domain	8.5	8	5-10
Usefulness of the session for skills domain	9	9	4-10
Complexity to enact	7	7	2-10

Figure 1: Figure showing the verbal feedback from the participants

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Teaching practice - 4

Championing Inclusivity: Implementing Disability Competencies among Medical Undergraduates

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Introduction

Proportion of Persons with Disabilities (PWD) varies from 2% to 16% in various parts of the world. In India, there are 2.68 crore disabled persons, with the highest percentages facing movement, visual, and hearing impairments. The World Report on Disability reported that PWD are two times as likely to find healthcare provider skills and equipment inadequate to meet their needs; thrice as likely to be denied care; and four times as likely to be mistreated by healthcare providers. PWD often face numerous barriers when accessing healthcare, including attitudinal, physical, and systemic challenges.

It is crucial for medical professionals to possess the necessary knowledge, skills, and attitudes to effectively address the unique healthcare needs of this population. These individuals often encounter social and occupational discrimination and have distinct healthcare needs, typically facing more health issues than the general population. Despite the substantial presence of disabled individuals in society, medical education often lacks comprehensive training on their specific healthcare needs, indicating a significant gap in the system. In response, several countries have developed innovative disability curricula for medical education. In India, activists and researchers advocate for the inclusion of disability competencies in medical curricula, leading to the National Medical Council

introducing these competencies in its foundation course since August 2019. Recognizing disability as part of human diversity early in medical education is crucial. Research shows that specific educational interventions, like regular interactions with disabled persons, can significantly enhance medical students' understanding, attitudes, and competencies in providing care to this population. Interactive teaching and sensitization are key to improving physicians' competence in healthcare provision for persons with disabilities.

Need/Rationale

Disability is part of human diversity. An Indian Medical Graduate is expected to have disability competence which is the skills and attributes essential to provide quality health care to patients with disabilities. India being one of the first countries to ratify the United Nations Convention on the Rights of the Persons with Disabilities (UNCRPD), incorporated a human rights approach to the Rights of Persons with Disabilities Act, 2016 (RPWD). The Act mandates inducting disability content into all professional courses including the medical field. In response to this imperative, the National Medical Commission (NMC) in August 2019 has undertaken an important initiative to include Eight disability competencies into the new Competency-Based Medical Education (CBME) curriculum.

Novelty

Disability education is underdeveloped in medical school curriculum. Disability training is needed, yet there is little agreement about what should be taught. However current teachers are not formally trained in this competency and a detailed guide will assist them in implementing effectively. While the new curriculum incorporates disability competencies, it currently does not offer formal training for existing medical professionals. We have developed a module for seven- hour teaching learning methods including eight disability competencies prescribed by NMC, which can be implemented at any medical college.

Collaboration or multistakeholder involvement

Medical Education department along with Department of Community Medicine and Physical medicine and Rehabilitation who were passionate and interested in creating a workable curriculum for disability competencies worked together for a month. We collaborated with Non-governmental Organizations working in the field of disability and invited PWDs, doctors with disabilities and caregivers of children with disabilities for imparting the competencies.

Implementation details

The educational intervention took place in the medical college December 2022. it comprised 7 hours of teaching learning activities as seen in table 1 spread over 3 days.

Table 1: Lesson plan of curriculum to implement disability curriculum among medical students.

Table 1: Lesson plan for 3 days of Disability Curriculum

Day 1 – 120 minutes

Introduction & Pretest – 2 facilitators; Google forms for Pretest - 20 mins

Competency – FC 4.5.1 & 4.5.4

Description of competency –

- FC 4.5.1- [Clinician] - Describe disability as per United Nations Convention on the Rights of Persons with Disabilities while demonstrating respect for the differences and capacities of persons with disabilities as part of human diversity and humanity.
- FC 4.5.4- [lifelong learner] - Demonstrate awareness of the disabilities included in the Rights of Persons with Disabilities Act,2016

Domain & level **-** Knows & Knows How

Specific Learning Objectives –

- At the end of the interactive lecture, students will be able to describe disability as per United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) while demonstrating respect for the differences.
- At the end of the interactive lecture, the student will be equipped to exhibit an inclusive mindset to appreciate unique abilities of persons with disability with a sense of respect & empathy towards them as a part of human diversity & humanity.
- At the end of interactive lecture & Self-Directed Learning, student should be able to enlist 21 disabilities & their provisions under RPWD Act, 2016

TL Methods - Interactive Lecture**,** Doctors Narratives of Treating PWD, SDL on Rights of persons with disability in India

Lesson plan –

- Set Induction: Doctors Narratives – Two stories of the patients treated by the doctor, 10 mins – 1 facilitator
- Definition of disability as per United Nations Convention on the Rights of Persons with Disabilities, resource material PowerPoint slides, 15 mins.
- Rights of persons with Disability 2016 – Milestones in disability acts of India Introduction to the 21 disabilities under the act, resource material PowerPoint slides, 15 mins.
- SDL about the provision Rights of persons with Disability 2016 act, class divided into 6 groups and asked them to browse information on their mobiles, 6 facilitators, 15 mins.
- Summarizing salient features of the RPWD act, 2016 by one facilitator, 15 mins – Interactive Discussion

Competency – FC 4.5.2

Description of competency -FC 4.5.2-[Clinician] Compare and contrast medical and social model of disability.

Domain & level – Knows & Knows How

Specific Learning Objectives - At the end of interactive lecture & discussion to distinguish

effectively between medical and social models of disability in real life situations.

Teaching Learning methods – Interactive Lecture, Buzz Groups (They are simply small groups of 3-4 students formed to discuss a topic for a short period. They help students develop collaborative and group problem solving skills and can provide students with opportunities to integrate material, as well as formulate applications and generalizations or principles. Students can get responses to their ideas from others and can learn a lot from other students).[31]

Lesson Plan -

- Medical & social Models of Disability & definitions with real life examples, resource material PowerPoint slides, 1 facilitator,15 mins.
- Buzz groups formation & discussing exercises on understanding models of disability, 1 facilitator,15 mins.

Day 2 – 120 minutes

Competency - 4.5.3 & 4.5.5

Description of competency –

- Build an understanding on the disability etiquettes while addressing PWD
- Demonstrate the use of verbal and non-verbal empathetic communication techniques while communicating with PWD

Domain & Level – Shows/Attitude & Shows How

Specific Learning Objectives -

- At the end of the session the student should be able to understand the disability etiquettes while addressing PWD.
- At the end of the session, students should be able to demonstrate the use of verbal and nonverbal empathetic communication techniques while communicating with PWD.

Teaching Learning methods – Role Play, interactive lecture followed by Small Group Discussions

Lesson Plan

- Role play , demonstrating both acceptable & unacceptable disability etiquettes followed by identification & discussion about suitable and acceptable disability etiquettes, 6 facilitators,15 mins
- Lecture on acceptable disability etiquette to be followed by health care workers & verbal & non-verbal communication techniques, resource material PowerPoint slides , 1 facilitator– 15 mins
- Small Group Discussion (SGD) 6 groups – Discussion Guide was provided to the students, 6 facilitators, 30 mins

  2 groups with persons with disability

  2 groups with – parents of persons with disability

  2 groups with doctors with disability

Presentation of findings by each group – 1 facilitator, 15 mins

Competency - 4.5.7

Description of competency - FC 4.5.7 [lifelong learner] Have an understanding of accessible healthcare settings for patients with disabilities, including Universal design.

Domain and level – Knows/ Knows How

Specific Learning Objectives-

- At the end of the lecture the student should be able to enlist the components of universal design.
- At the end of the survey of the campus, the student should identify accessible healthcare for PWD, including Universal design and bring pictures of any 5 infrastructural facilities for PWD.

Teaching Learning Methods – Interactive Lecture & field visit for surveying accessibility checklist by students.

Lesson plan

- Introduction to accessibility & concept of universal design, resource material PowerPoint slides, 1 facilitator 15 mins.

6 different areas of the campus were identified & students were given an accessibility observer checklist for them to identify universal design & document the findings with photographs, 6 facilitators, 30 mins.

Day 3 – 180 minutes

Competency – 4.5.6

Description of competency – FC 4.5.6 [Professional] Demonstrate a non-discriminatory behavior towards patients or caregivers with disabilities

Domain & Level - Attitude & Shows How

Specific Learning Objectives - At the end of forum theater, the student should demonstrate a non-discriminatory behavior towards patients or caregivers with disabilities.

Teaching Learning Methods - Forum theater for the oppressed Classroom Session.

Lesson plan

Forum theater – Resource persons: 8, 60 mins

- Introduction of the concept of the theater of the oppressed by a facilitator
- Warm up activities
- Three Facilitators' version of forum theater
- Students' version of forum theater
- Two students repeating Summarization

Competency – 4.5.8

Description of Competency - FC 4.5.8, Leader Advocate social inclusion by raising awareness of the human rights of persons with disabilities.

Domain & level – Knows & Knows How

Specific Learning Objectives -

- To understand the concept of social inclusion and its importance in promoting the rights of persons with disabilities.
- Evaluate the role of advocacy in raising awareness about the human rights of persons with disabilities.
- Design and conduct an advocacy plan to raise awareness of the human rights of persons with disabilities in a medical college

TL Methods – interactive Lecture & Poster display by students

Lesson Plan –

- An interactive talk by disability social activist running an NGO addressing the students

and answering their questions – 1 facilitator 60 mins Poster display on social inclusion of persons with disability & reflection by students in the hospital (To be announced 2 days in advance) 2 facilitators, display area where people can see – 60 mins

Students were assessed with a validated questionnaire containing 25 questions before, immediately after and after 3 months of completion of curriculum covering topics on Disability laws and their rights, models of disability, inclusive behaviour which included disability etiquette, verbal and non-verbal communication, non-discriminatory behaviour and accessibility was administered. Questions were designed at different levels to test participants at multiple levels within Bloom's taxonomy of educational objectives.

The questionnaire was face validated with two experts in MEU. The questionnaire was piloted on 10 students and all items scored Cronbach's alpha of more than 0.7. Students were asked to write reflections on "what happened", "perspectives developed", "link between existing knowledge and their experience or practice" "attitudinal changes" and 'what next.'

Feedback on sessions for each competency was collected which was graded on a 5-point Likert scale where 0 means "needs a lot of improvement" to 5 being "excellent". Feedback on the entire module was also collected. The overall module impact was assessed by a graded rating scale of 1 to 10, where 1 being the least impact and 10 being the highest impact. Feedback was also collected on things most appreciated and things that need improvement. Feedback was collected from all 75 students and a few faculties who were involved in curriculum formation.

Outcome or impact

Overall pretest score was 10.92 ± 1.75 which significantly increased to 19.24 ± 2.63 following the course and the scores were sustained at 18.67 ± 2.72 even after 3 months following training.

Table 2 presents the feedback on the disability competency curriculum from students. More than 94% of the students said that the objectives of the course were met, concepts were explained clearly, suitable examples were given, queries were answered & clarification was provided which helped in experienced active learning. Students scored an average of 9.35 on implementation of the module while teachers scored an average of 9.50 on a maximum score of 10. There was a palpable shift in the attitude and happiness of learning something useful in the students. There were 9 faculty who provided feedback on the sessions and more than 95% of them provided positive feedback for the disability competency curriculum implemented.

Tabe 2: Overall Feedback of disability competency curriculum from students

Feedback content	Yes n (%)	Some what n (%)	No n (%)
1. Were the OBJECTIVES of the course met?	71 (94.7)	4 (5.3)	0 (0)

2. Were the CONCEPTS explained clearly?	75 (100)	0 (0)	0(0)
3. Were suitable EXAMPLES given wherever necessary?	73 (97.3)	2 (2.7)	0(0)
4. Did you experience ACTIVE LEARNING during course?	71 (94.6)	2 (2.7)	2 (2.7)
5. Were the queries answered & Clarification was provided?	71 (94.7)	4 (5.3)	0 (0)

Table 3 shows feedback on individual disability competencies showed that implementation of competencies were more than satisfactory in more than 90% in most competencies.

Table 3: Student Feedback on individual competencies

Competency	**Excellent n (%)**	**Good n (%)**	**Satisfactory n (%)**	**Needs Improvement n (%)**	**Needs a lot of improvement n (%)**
FC 4.5.1 & 4.5.4	29 (38.7)	26 (34.7)	16 (21.3)	4 (5.3)	0 (0)
FC 4.5.2	37 (49.3)	24 (32.0)	10 (13.3)	2 (2.7)	2 (2.7)
FC 4.5.3	46 (61.3)	20 (26.7)	7 (9.3)	2 (2.7)	0 (0)
FC 4.5.5	51 (68.0)	19 (25.3)	3 (4.0)	2 (2.7)	0 (0)
FC 4.5.7	23 (30.7)	16 (21.3)	13 (17.3)	19 (25.3)	4 (5.3)
FC 4.5.6	44 (58.7)	26 (34.7)	3 (4.0)	2 (2.7)	0 (0)
FC 4.5.8	50 (66.7)	15 (20.0)	6 (8.0)	2 (2.7)	2 (2.7)

Following are the feedback from the reflections received from students

Positive Reflections:

- Clear understanding of definition, allowances and rights for PWD.
- Better understanding of PWDs and developing a good mindset about them.
- To be humble, empathetic and kind with PWDs.
- Examples and illustrations made the session interesting.
- Understood that disability has to be treated as a social problem.
- Understood that it's the responsibility of nondisabled persons to create an inclusive environment for PWDs.
- Learned how to be with a PWDs.
- Doctors need to learn verbal and nonverbal communication with PWDs.
- Learning from PWDs enhanced learning and
- Understood accessibility and its need for the first time.
- Most places need an accessible environment and can identify universal design for accessibility.
- Entire activity was engaging and thought provoking.
- PWDs should be treated as normal people.
- Putting ourselves in the role of the oppressed was interesting.

- It was inspiring to learn about the success story of the guest.
- I have developed a positive attitude in life after understanding PWDs.

Recommendations for improvement:

- More time for interaction should be given
- Visit to a place which is completely accessible for PWDs.
- Language problem for discussion as some discussions happened in the local language.

Sustainability and Replicability

A detailed module on each competency, with teaching learning methodology is prepared which we wish to circulate among interested faculties. We have replicated this module in 2023 October foundation course for the second time. The module is simple, with proper planning execution in any part of the country among first year medical student is feasible. Incorporating disability training into interprofessional healthcare education is of utmost importance, as all healthcare professionals inevitably encounter PWDs and are expected to demonstrate competence in their care. Implementing disability-competent care has the potential to significantly improve healthcare services for individuals with chronic health conditions and functional limitations. Establishing a disability-competent healthcare workforce calls for the comprehensive integration of disability competencies into healthcare education.

Figure 1: Lecture Sessions by Faculty

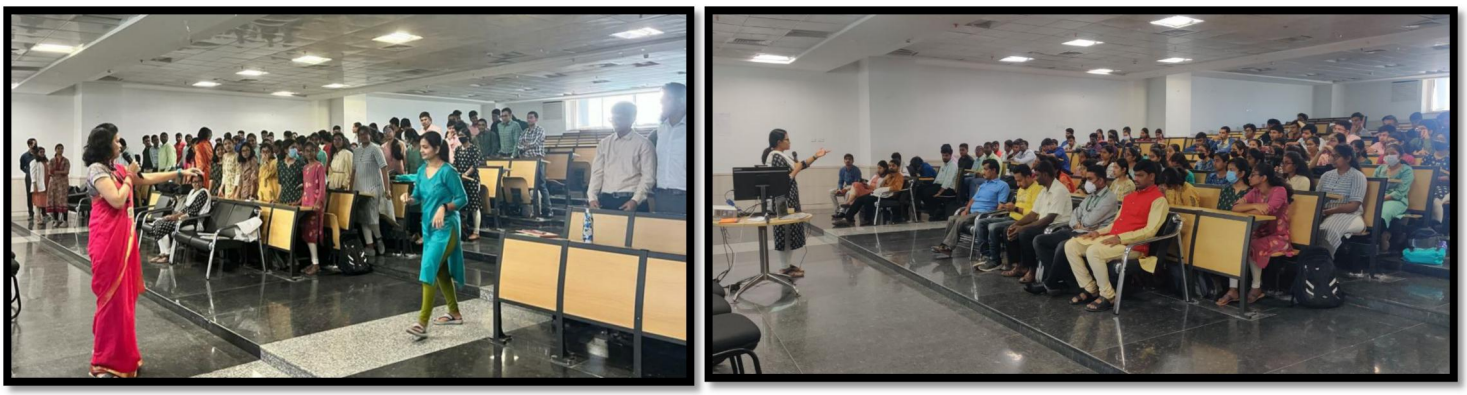

Figure 2: Disability Etiquette Role

Figure 3: Poster Competition

Figure 4: Forum Theatre.

Figure 5: PWDs who volunteered to talk to Undergraduate

Figure 6: Small Group Discussion of students with PWDs.

Figure 7: Feedback by Students.

Figure 8 Group Picture with all the students.

Teaching practice - 5

Data Science for Public Health: Transformative Training Model for the Next Generation Public Health Champions

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Introduction

In an era defined by unprecedented technological growth, the field of public health stands at a crucial crossroads, necessitating the active participation of the next generation of public health professionals through interdisciplinary approaches.[1,2] As an academic researcher specializing in public health, the imperative for embracing technological advances becomes evident when considering the transformative impact on the efficacy of public health interventions, policy formulation, and overall health outcomes. The potential impact of data in revolutionizing the public health landscape of India is also becoming increasingly clear.[3,4] The rising tide of data in public health demands a new breed of professional – the public health data scientist. Vertical programs and siloed systems are no longer efficient in addressing public health problems.[5–7] Today, navigating the complexities of infectious disease outbreaks, chronic disease management, and healthcare policy requires fluency in both public health and data science.[8–10] And, leaving this crucial intersection solely in the hands of IT professionals poses a dangerous gamble. An IT professional, despite their prowess in data wrangling and modeling, might interpret an unexpected spike in hospital admissions as a statistical anomaly, neglecting the underlying community or environmental factors that could be driving the trend. A public health data scientist, however, understands these nuances. The would be better equipped with the knowledge to interpret the data within the context of public health frameworks, recognizing the complexities behind the numbers and crafting interventions that address the root causes of the issue.[11–14] This necessitates bridging the gap between data science and public health and prioritizing public health data science education for present and future of Indian public health system.

Need for Public Health Data Science

A recent review published in the Harvard Data Science Review [15] of 164 existing public health data science courses in 2022 highlighted the lack of any public health data science courses for public health professionals. It recommended making these courses available to public health students and professionals with and without a background in data science and analytics while ensuring they are multi-disciplinary and diverse in the field of public health. These courses may need to offer opportunities for lifelong learning to keep up with the latest advances in the field.

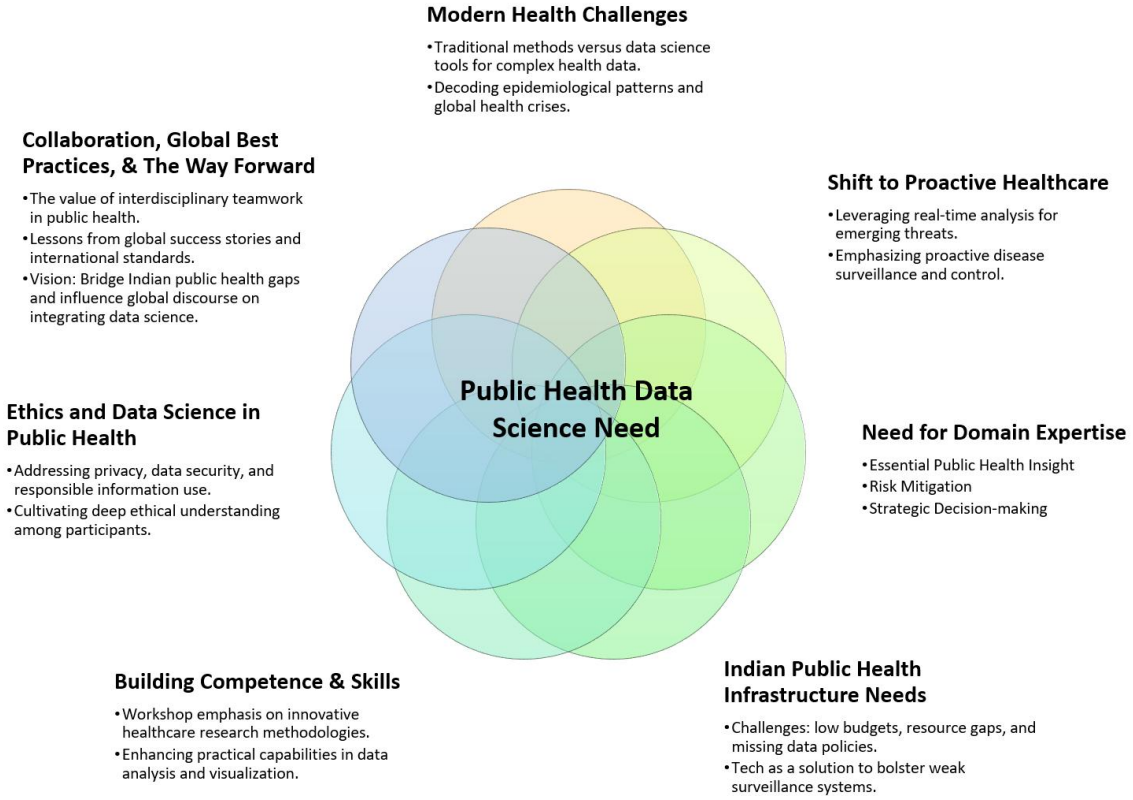

Figure 1: The Need for Public Health Data Science Training in the Indian Context

Novelty

Our initiative was born in September 2021 from a profound conviction in the transformative power of public health data, open science, and its indispensable role in shaping public healthcare's future. In the rapidly evolving landscape of global health challenges, the fusion of data science with public health emerges as a beacon of innovation and resilience. The data science team at the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum have spearheaded the Transformative Training Model (TTM) in Public Health Data Science, a series of training and mentorship initiatives aimed at inspiring a new generation of public health professionals skilled in harnessing the immense potential of this emerging field. These programs go beyond mere instruction, encouraging the participants to engage in collaborative, multi-disciplinary research, and fostering interactions among public health professionals, informaticians, biostatisticians, and clinicians. Furthermore, it emphasises the importance of transparent and open engagements to develop and nurture public trust— a cornerstone of effective public health initiatives. We explore the global significance of integrating technological advances into public health, emphasising the potential for proactive disease surveillance, prevention, and control. Through this initiative, we address the limitations of the current public health infrastructure in India and align with international best practices in leveraging data science for public health research and policy.

The novel approaches employed in the transformative training model (TTM) are listed below:

- Integrates global relevance, innovative teaching and learning techniques, collaboration, and continuous improvement.
- Over 200 professionals from diverse backgrounds (at different levels of careers) from 75 national and international institutions underwent these trainings.
- Utilizes active learning techniques.
- Innovative approaches addressing the growing importance of data in public health.
- Multifaceted approach ensuring effective communication of research findings.
- Utilizes interactive workbooks, visualisation tools and reproducible research methods.

The novelty of this training has been reinforced through an evidence-based research review of 69 courses, meticulously designed group activities, and case studies based on real-world data.[13,16]

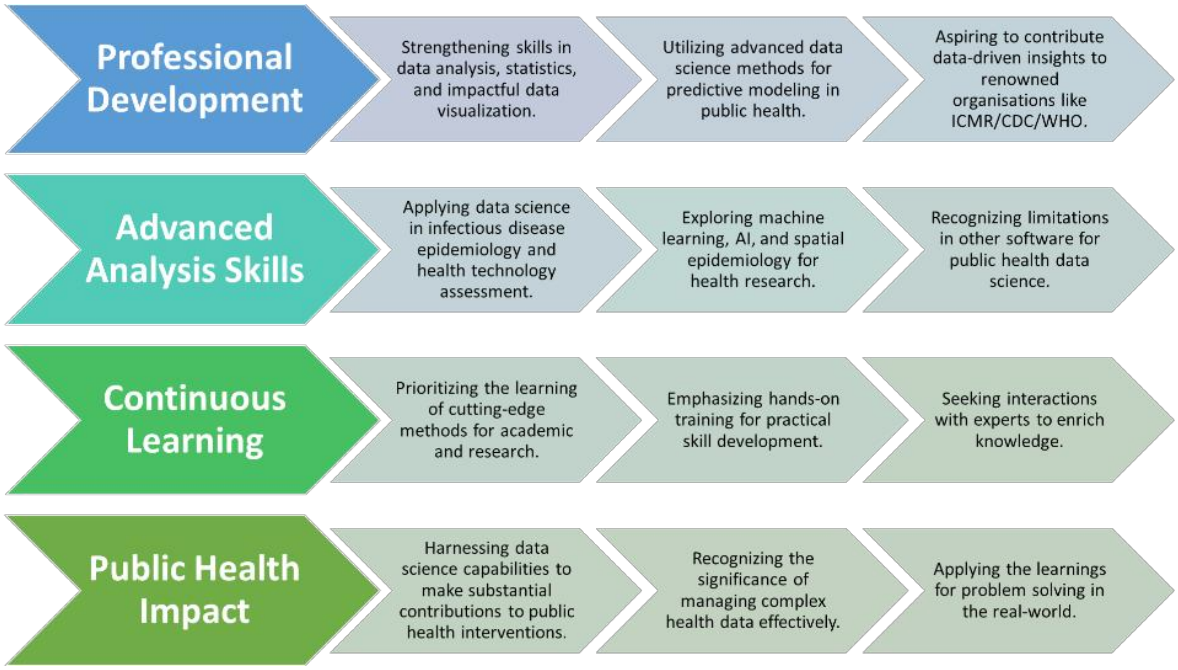

Figure 2: Aspirations of the 200 participants (from 5 cohorts) considered during iterative curriculum design

Collaboration

Our initiative is not limited to a single faculty or institution. We have and continue to foster cross-collaborations with diverse academic institutions, both nationally and internationally. Therefore, exposing participants to a range of perspectives and methodologies in public health data science while also tailoring the training based on the needs of the individuals/institutions.

We have collaborated with national and international institutes for the development and organisation of these training initiatives such as:

- Department of Informatics, University of Oslo, Norway.[17]

- Institute for Mathematical Modeling, Rheinland-Pfälzische Technical University, Kaiserslautern-Landau, Germany.[18]
- South Asia Field Epidemiology and Technology Network (SAFETYNET)
- Centre for Disease Control, India Office
- World Health Organization, India Office
- National Centre for Disease Control, New Delhi
- National Institute of Electronics & Information Technology, New Delhi
- Indian Institute of Information Technology, Guwahati, Assam
- Armed Forces Medical College (AFMC), Pune

We are extending the transformative training model (TTM) to develop a course on Data Science for Public Health: Managing Outbreaks and Epidemics in collaboration with the University of Oslo, Norway along with,

- Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh;
- Jawaharlal Nehru University (JNU), New Delhi,
- Society of Health Information Systems Program (HISP), New Delhi,
- Centre for Sustainable Healthcare Education (SHE), University of Oslo, Norway.

We also collaborate with the Governments of Andhra Pradesh, Gujarat, and Kerala to provide training based on our model. More than 15 Medical Officers and District Health Officers from these places have attended these training programs.[19–21]

We are also involved with the R Epidemics Consortium (RECon) which is an international not-for-profit, non-governmental organisation based at Imperial College of London, United Kingdom gathering experts in data science, modelling methodology, public health, and software development to create the next generation of analytics tools for informing the response to disease outbreaks, health emergencies and humanitarian crises, using the R software and other free, open-source resources.[22] We also provide free, open-access training material on various online platforms on outbreak analytics and data science.

Implementation Details:

We have tailored the curriculum to be delivered in multiple formats based on the institution's requirements. These include the following modes:

- In-person workshops (5 cohorts)
- online workshops
- faculty development programs
- short courses
- pre-conference workshops
- short term training programs (STTP)
- long term mentorship programs [23]
- collaborative international course development [17]
- develop open and free educational resources [18]
- recorded sessions on various online platforms [24]
- blog posts and websites [25,26]

- interactive tutorials

One of the salient features of the transformative training model (TTM) is that it allows for tailoring the course material based on the needs and feedback of the participants.

A tentative schedule of the workshop is provided below:

Date	Timings	Topic
06 Dec 2022	0900-1300	Introduction and Concepts
	1400-1700	Getting Comfortable with RStudio
07 Dec 2022	0900-1300	Fundamentals of Working with Data
	1400-1700	Data Visualization and Exploration
08 Dec 2022	0900-1300	Introduction to RMarkdown
	1400-1700	Advanced Concepts
09 Dec 2022	0900-1300	Introduction to Spatial Epidemiology
	1400-1700	Point Pattern and Areal Data Analysis
10 Dec 2022	0900-1300	Geostatistical Methods in R
	1400-1700	Advanced Concepts / Feedback / Valedictory

Figure 3 (a): The list of topics covered in a 5-day in-person workshop

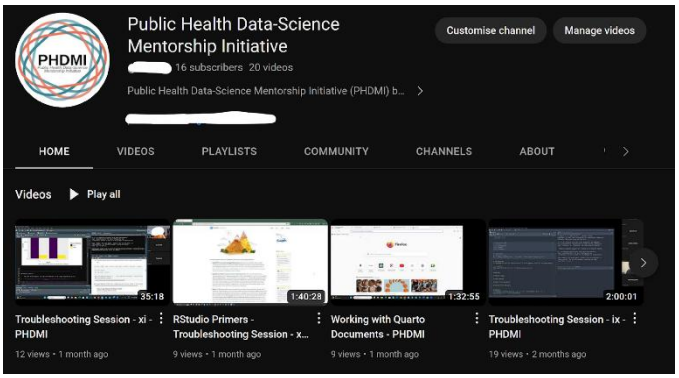

Figure 3 (b): Screenshot of the Online Feedback and Troubleshooting sessions

A figure showing the profile of participants of the in-person workshops is provided below (Fig. 4). Majority of the participants are from a research background and from Community Medicine / Public Health specialities working at early/mid levels of their career, though there are a few senior faculties and program managers as well.

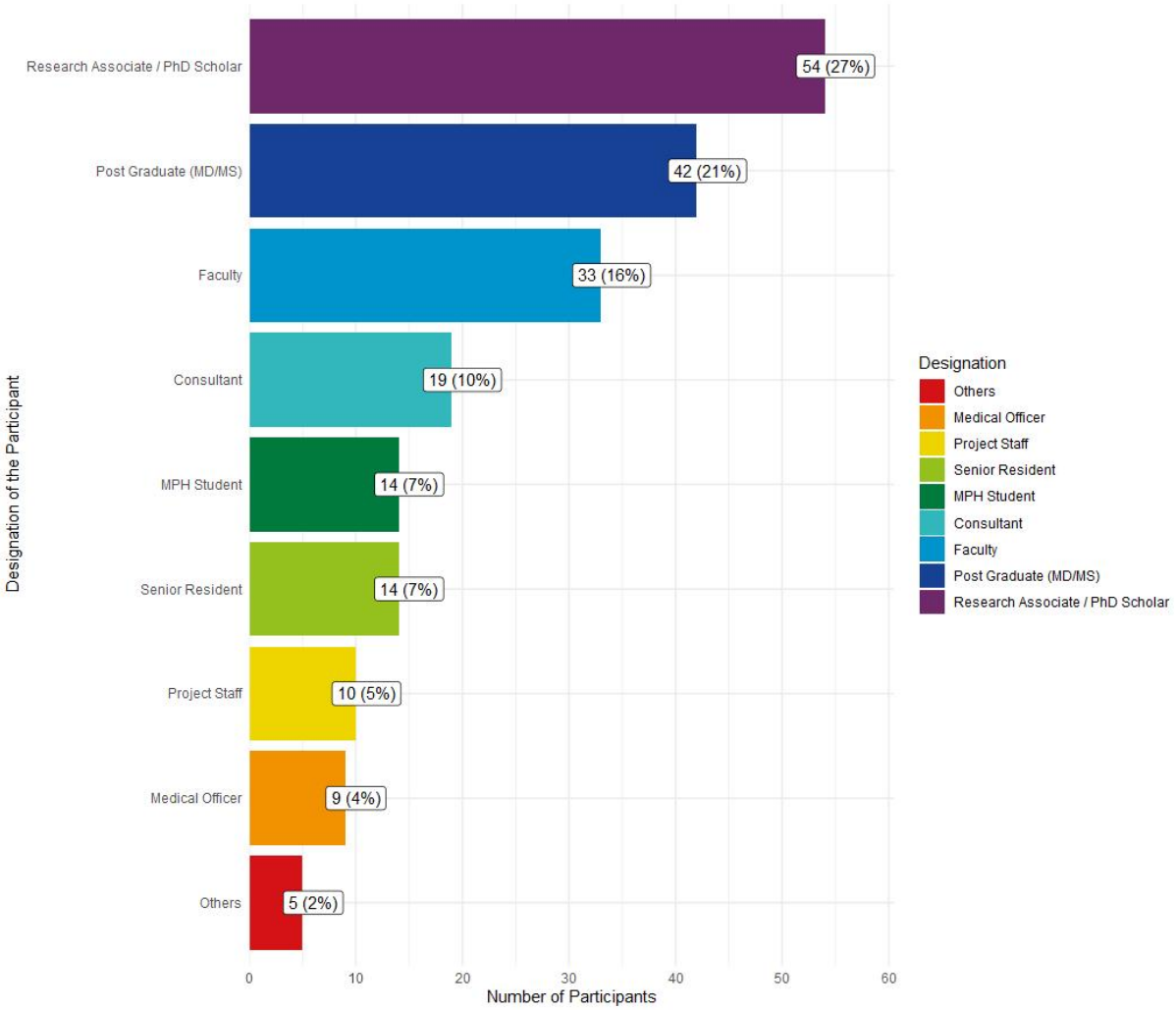

Figure 4: Profile of the participants of the training programs (all 5 cohorts from the in-person workshop series)

Feedback & Follow-up System:

Feedback is central to our program's continuous improvement. A detailed table of methods of collecting feedback is provided below:

Table 1: Methods of collecting feedback and providing follow-up to the participants of the trainings.

Mode of Delivery	Outcome Assessment Methods
In-session Feedback	Direct, verbal insights during the learning process
Daily Evaluations	Anonymous feedback, ensuring genuine and unfiltered perspectives
End-of-Cohort Feedback	An in-depth review on the last day, helping us refine future iterations

Figure 5: Snippets of some of the comments from the participants, based on which subsequent trainings were revised.

Extending Learning beyond Workshops:

Our continuous communication and support mechanisms through WhatsApp, YouTube, online doubt clearing and troubleshooting sessions helps sustain a post-workshop engagement and follow-up.

Outcome Assessment:

The outcome assessments were based on the different modes of delivery of the TTM. Below is a table showing some of the outcome assessment methods our team has been undertaking.

Table 2: Methods of Outcome Assessment of the training model

Mode of Delivery	Outcome Assessment Methods
In-person workshops	• Pre-and-post self-assessment surveys • Group projects & presentations • Peer Assessment • Evaluation by instructors

Online workshops	• Online quizzes and assignments • Participation in discussion forums • Submission of a final project or case study
Faculty development programs and Short term training programs (STTP)	• Quizzes and Assignments • Peer feedback • Reflections • Participation in discussions and activities
Short courses	• Post-course quiz or test • Course feedback surveys • Hands-on exercises and projects
Pre-conference workshops	• Evaluation of practical exercises • Group activity & presentations • Engagements in interactive sessions
Long term mentorship programs	• Regular check-ins and updates with mentors • Portfolio or project submissions • Reflection and goal-setting activities
Collaborative international course development (ongoing)	• Feedback from international partners and stakeholders • E-Learning Platform Moodle based assesments

Sustainability and Replicability:

Our transformative training model (TTM) can be viewed as a catalyst for a flourishing ecosystem of data-informed public health professionals. Recognized and replicated on national and international platforms, the TTM's reach extends far beyond its initial workshops. The sustainability of our model has been evidently demonstrated through the number of collaborations with diverse academic institutions, government agencies, and international partners. From developing a course on outbreak management with the University of Oslo to providing training to Medical Officers in states like Andhra Pradesh, the model can be adapted and expanded to the needs of the participants.

We also have initiated a Public Health Data Science Mentorship Initiative (PHDMI) at IPHACON2023 which is going on currently (See Fig 6).[23] The program aims to identify, train and provide learning opportunities to ten early and mid-career public health professionals to

develop the necessary skills and practical expertise in data science applications in public health. By focusing on early-career professionals, PHDMI ensures that the seeds of data-driven public health can take root and flourish in the years to come.

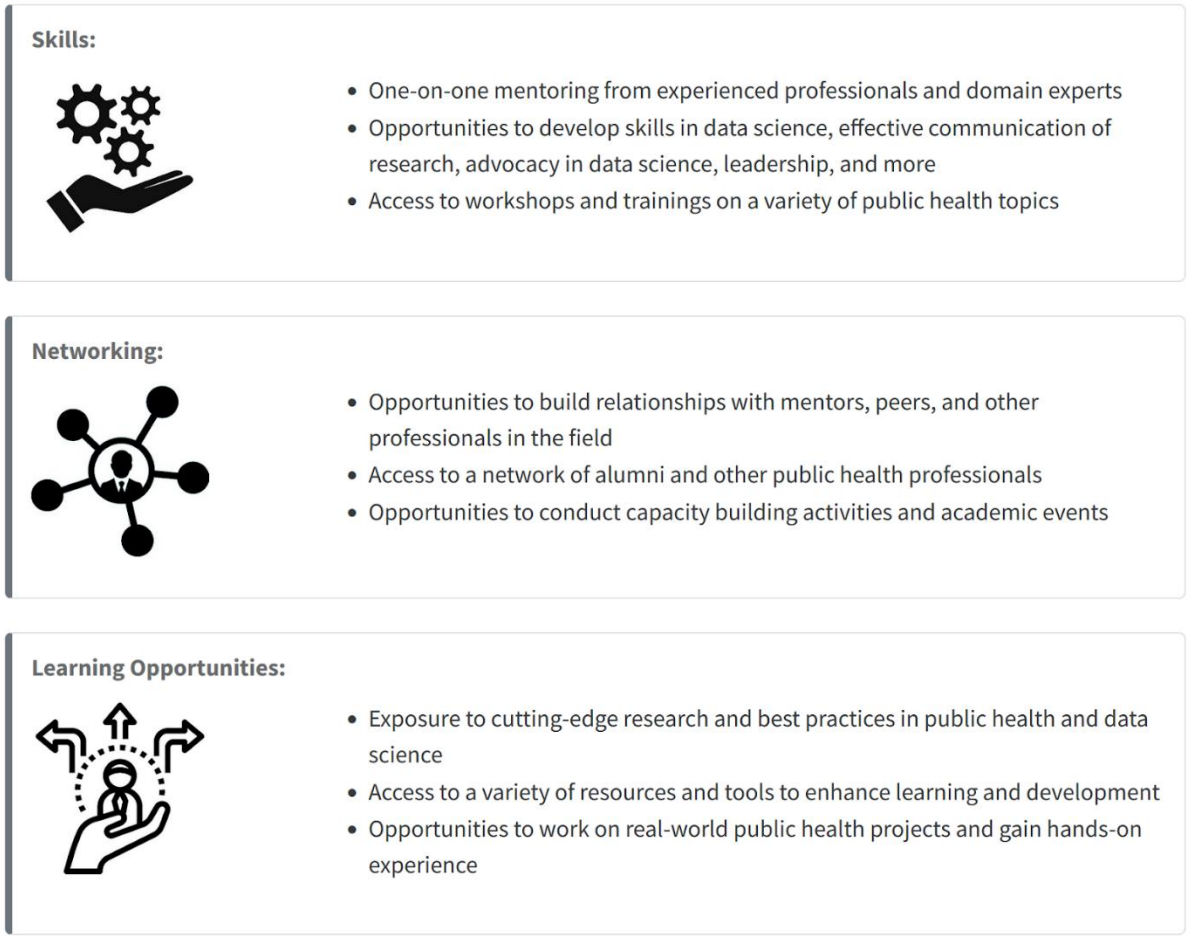

Figure 6: Some of the Key Features of the ongoing Public Health Data Science Mentorship Initiative (PHDMI)

- All the resource material we developed are Open Educational Resources (OER) based on principles of reproducible research, which makes scalability and replicability foundational tenets of the transformative training model (TTM).

- A Data Science Lab has been initiated at our institute and to further legitimise this initiative and provide learning opportunities through trans-disciplinary collaborations.

- We are also actively exploring additional opportunities to present our transformative training model at various venues (conferences, public health institutions, central

government and state government medical colleges) and collaborate with other data science educators in taking this model forward.

By nurturing future generations of data-driven public health professionals, fostering collaboration, and embracing open access, our model lays the groundwork for a healthier, data-driven future for all.

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Field practice - 1

Expanding the horizon of Supportive Supervision: Role of Medical College in hand-holding the tribal district allotted for RMT

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Introduction

Under the initiative of Regional Monitoring Team (RMT), every Medical College in Gujarat is assigned different districts for supportive supervision regarding Maternal and Child Health (MCH) related services. The main focus of this activity is process evaluation of Village Health and Nutrition Day - VHND (which is known as Mamata divas in Gujarat) through form filling and on-site suggestions as needed to improve immunization practices. Our team expanded the vision to go beyond this routine format filling and act as a mentor for the tribal district.

Need/Rationale

The district allotted to our department (since February 2020) is predominantly tribal (approximately 98% tribal population) in Southern Gujarat. It is also least populous district in state (current population – 309610 in 310 villages distributed in 3 blocks) with hilly and forest terrain, making it hard-to-reach area. The private health care facilities are almost negligible in this district and the community depends mainly on government health set up to avail health related services.

Data of service delivery and outcome related indicators (NFHS- 5 and secondary data obtained from district) reflect the need for improvement in MCH services such as home delivery proportion- 25.5%, prevalence of anaemia among pregnant females- 66.6%, under-5 years children with severe wasting- 22.2%.

RMT provides an excellent opportunity whereby Medical College (academia) can provide a fresh perspective and recommendations to the District Health department (implementers) to improve the existing system. Medical College acts as a channel for flow of information/ evidence two ways - from community and field level workers to PHCs to District and State in identification of barriers and facilitators of service delivery and resolutions of barriers.

Novelty

RMT has been in existence in Gujarat for the last two and half decades almost, and role of Community Medicine faculties has remained confined to format filling as a part of supportive

supervision during VHND. Structured ready-made quantitative formats are available in supportive supervision mobile application software for process evaluation of different types of health facilities and outreach session which the RMT member has to fill. Once the filled forms are submitted online, the supervision activity is over. Currently there is no explicit in-built component of qualitative exploration or follow up after the visit. In depth search for reasons of low coverage of services or community perspective which are essential for suggesting feasible recommendations are lacking in current RMT activities.

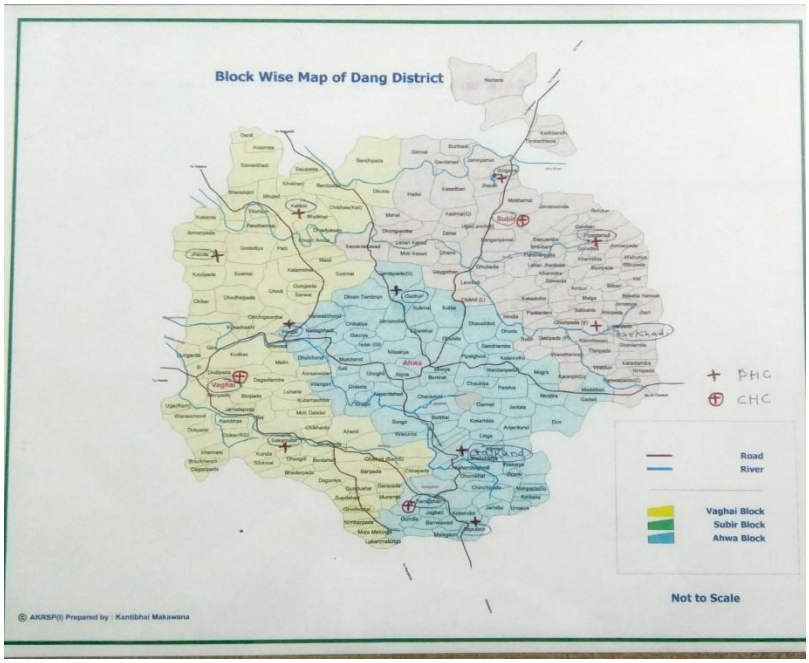
So, the activity is concise i.e. RMT visits for VHND supervision, but the initiative which we undertook is multifaceted with comprehensive approach. It involved secondary data analysis from district up to Health and Wellness Center (HWC) including detailed inquiry of adverse events such as maternal and child deaths for root cause analysis. Persistent follow up for recommended solutions rather than one-time cross-sectional supervision visit has led to dual advantage- 1. It ensured actual implementation of locally feasible and doable solutions, 2. Buildup of mutual trust between both departments i.e. Community Medicine and district health department.

Collaboration/multistakeholder involvement

Gradual collaborative efforts have been made with district administrators- District Collector, DDO, district and block level health officials up to PHC and HWC level health care providers, which has aided enormously in actual implementation of innovative ideas till grass root level. ICDS functionaries, NGOs working in this area, development partners such as UNICEF and community influencers like local dais, traditional healers were also involved. During Medical College visits, team's efforts were to provide a single platform to all stakeholders working in the same area under leadership of Medical College. In some areas such involvement was successful while in some areas the collaboration is still under process with partial accomplishment.

Implementation details

This initiative through RMT visits for monitoring and evaluation of health systems strengthening (MCH services) was based on different building blocks of the WHO health systems framework.



Duration: From February 2020 to till date (4 years)

District profile:

Total blocks- 3

District hospital- 1

No. of CHCs- 3

No. of PHCs- 10

No. of HWCs- 68

Based on secondary data, RMT started visiting poor performing PHC per block and then expanded visits to all PHCs. To assess the continuum of care, team expanded visits to CHCs, District Hospital along with Nutrition Rehabilitation Center (NRC) and to address administrative barriers Block health office and District Health department were visited as required.

Chronological steps of method adopted for this initiative:

Details of the activities conducted:

Desk review of	Data review was done for all the health facilities.

secondary data (MCH indicators)	It included- • Techo, • HMIS, • Adverse events review i.e. maternal deaths, child deaths • HBNC, HBYC reports
Semi-structured discussion	It was conducted from district till grass root level. Interaction was done with following staff- • District health officials • Block Health officer • PHC Medical Officers • Community Health Officers • ANMs • ASHAs, ASHA facilitators • Community influencers like traditional healers, local dai
Process evaluation	Planned VHND supervisory visits with base of secondary data- • Secondary data such as recent Techo reports, maternal and child death reviews etc. were obtained from every health facility (compiled PHC data as well as subcenter wise data) prior to the supervisory visit. • This helped in identifying priority issues and areas of need specific to that particular health facility before the visit- leading to optimal utilization of limited time of visit. • During the visit, RMT member could thus focus on identified issues, discuss in depth with field level workers to know the ground reality and could formulate and suggest feasible solutions in consensus with them. This method improved compliance from field level.
Technical inputs	District health officials invite RMT member regularly to attend the district level meetings and trainings of various health care functionaries. • Technical inputs as required are given to district administrators and health dept. during those review meetings organized by district such as Jilla Arogya Sankalan Samiti (JASS) meetings.
Follow up of actions	Minor corrections were done on site only as needed but for major observations, after every supportive supervision visit of VHND, diligent follow up is done by the RMT member to obtain compliance/action taken reports from individual health facility. It was done through multiple channels- telephonically, by email and physical verification in next visit of that facility. RMT communicated the recommendations and role of State by sharing reports of each visit to state officials as well as during state level RMT meetings. Thus, RMT acted as bridge/ communication point between

	district and state also.

Domain-wise observations, recommendations along with outcome are as follows:

1. **Domain: Infrastructure**

Key observation	Recommendation	Outcome
Space for DVS (District Vaccine Store) – **No separate DVS building in existence.** Currently vaccines are stored in a small space adjacent to offices of district officials. The space is not sufficient or proper to serve as DVS.	Represented to District and State health authorities for separate DVS infrastructure with adequate dry space for vaccine related logistics storage.	District has sent the demand letters along with all required specifications, last demand sent in October 2023. Approval from state level is in process.
Population norms/facility: PHCs and subcenters are catering far greater population in such hard-to-reach areas with vast variations in population/center. There is need for 5 PHCs and 34 subcenters more than the current ones.	Represented to district and state health authorities in every report submitted	District has taken into consideration to put the demand in next Project Implementation Plan for new PHCs. Demand letters along with justification have also been sent by the district to state authorities.
No separate Block office for Subir block: This is the block with worst health indicators as compared to rest of the blocks in district, requiring more focus.	Representation to district and State health authorities	District has initiated the process for new block office.

2. **Domain: Healthcare workforce**

Key observation	Recommendation	Outcome
No separate THO (Taluka Health Officer) for Subir block: Though Subir is identified as a separate block but the post of THO was not sanctioned for that block.	Representation to State health authorities	Separate THO post is sanctioned by state in 2023.

THO of nearby block was given charge of this block. Considering the need of this remote block with adverse health indicators, administrative post exclusive for this block is needed for focused approach.		
DVS: Full time CCT (Cold Chain Technician) at district level was not available. Whenever any issue arised, CCT from nearby district was called.	Repeated representation to district for appointment of full time CCT	District initiated the process of recruitment and in January 2022 full time Cold Chain & Vaccine Logistics Assistant was appointed at district level.
Need for capacity building of field staff: During process evaluation of VHND, ASHA's skills for effective delivery of MCH services was found unsatisfactory at all the PHC areas.	Instead of relying on yearly refresher trainings only, the weekly staff meetings at the PHCs can be utilized to build capacity of ASHAs by MO and supervisors.	ADHO issued letter to all PHCs with week-wise list of topics to be taught to the ASHAs in weekly meetings by the Medical Officers. All PHCs have already started implementing it.

3. <u>Domain: Coverage of services</u>

Key observation	Recommendation	Outcome
Migration: Seasonal migration is a major issue hampering continuum of care in MCH service delivery and utilization. This seasonal migration occurs for 5-6 months every year (October to March). So the beneficiaries of MCH care go out of net of service coverage for half of the year, necessitating implementation of some innovative, locally feasible and sustainable solution for long term that can be practiced every	<u>Step 1.</u> Exact mapping of migrated population to be created regarding place of migration, exact number of beneficiaries migrating (ANC, PNC mothers, under 5 years age children etc.)	Mapping of migrated population initiated by ASHAs in all 310 villages of the district in 2023

year by the field level healthcare providers.		
	Step 2. Once the mapping of migrated population is completed, next step is follow up of the migrated beneficiaries through migration register. **Migration register** is to be maintained by ASHA in every village with guidance from FHW for tracking the migrated ANC, PNC and infants.	The format for migration register in local language was designed and provided by the RMT member to the district officials who disseminated it till the village level. ASHAs of all villages in the district have prepared the migration register based on the format and monthly telephonic tracking along with its documentation in registers is initiated.

4. Domain: Governance

Key observation	Recommendation	Outcome
Stratification of HWCs: Each HWC need not be supervised in similar manner. There is vast variation between HWCs of PHCs and of different blocks with regards to indicators, population distribution etc.	Based on secondary data, HWCs can be stratified and those centers with weaker indicators should be identified. Such HWCs should be focused first for supportive supervision.	ADHO of district has issued letter with HWC wise list of different district and block level officers who should be visiting such centers regularly for hand holding and guidance.

Other service delivery or quality improvement measures:

Few such improvement measures included cold chain management as per guidelines which were not observed at few facilities, microplanning suggested for supportive supervision by at PHC level which is not made as per poor performing area need etc. Anthropometric measurement system was suggested at district hospital in pediatric OPD and we linked it with the NRC existing within the same facility. This led to improvement in the NRC admission. Referral related issues were also identified from CHCs and district hospital.

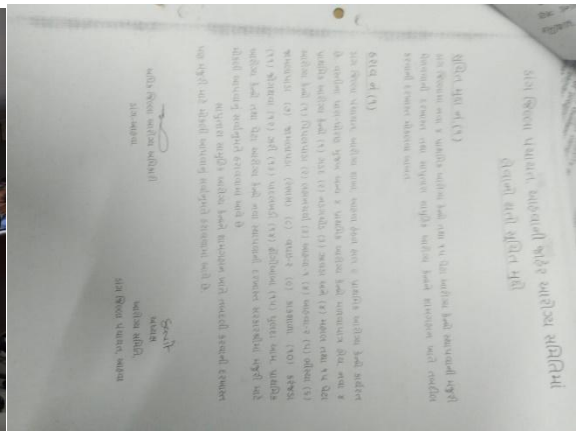
Sustainability and Replicability

Supportive supervision through RMT provides an excellent opportunity for exploring the strengths and issues of the district. Gradual build-up of cooperation with district and block

level health officials by regular RMT visits helps in field level implementation of locally feasible recommendations. Based on experience of working in close collaboration with the tribal district for the last 4 years, this model can certainly be considered sustainable and replicable in other districts through the existing system of supportive supervision.

What makes this model unique is its inherent simplicity. Supportive supervision is an activity that is conducted by almost every department of Community Medicine across the nation. Working in close continuous collaboration with the district is replicable as well as sustainable. A conceptual module can be developed with explicitly elaborate the steps to support districts for service delivery and utilization based on Dang district model and that can be implemented for all districts as RMT guidebook.

Photo gallery:



જા.નં.જપ૩/અરગ/NHM/Cold Chain & Vaccine Logistic Assistan/નિમણુંક આદેશ/વાંશી/ ૬૩૯૧ ૬૪/૨૦૨૨
આરોગ્ય શાખા, ડાંગ જિલ્લા પંચાયત આહવા
તા.૬૩ /૦૧/૨૦૨૨

વંચાણે લીધુ:
(૧) ડિસ્ટ્રીક્ટ હેલ્થ સોસાયટી, આરોગ્ય શાખા, ડાંગ જિલ્લા પંચાયત, આહવા હેઠળ જાહેરાત ક્રમાંક: માહિતી/ડાંગ/૬૯/૨૦૨૧, તા.૨૬-૦૮-૨૦૨૧.
(૨) તા.૧૫-૧૧-૨૦૨૧ પસંદગી યાદી તેમજ રોજકામ.
(૩) કચેરી નોંધ તારીખ: ૬૩/૦૧/૨૦૨૨.

કાર્યાલય આદેશ:

ડિસ્ટ્રીક્ટ હેલ્થ સોસાયટી, આરોગ્ય શાખા, ડાંગ જિલ્લા પંચાયત, આહવા અંતર્ગત નેશનલ હેલ્થ મિશન (NHM) સને ૨૦૨૧-૨૨ હેઠળ અંતર્ગત જિલ્લા કક્ષાએ કરાર આધારીત Cold Chain & Vaccine Logistic Assistan માટે માસિક ફીક્સ પગારમાં ૧૧ (અગીયાર) માસ માટે આ સાથે સામેલ શરતો/બોલીઓને આધીન કરારના ધોરણે નિમણુંક કરવા આથી આદેશ કરવામાં આવે છે.

આમુખ (૧) અને (૨) અન્વેય આમુખ (૩) થી મળેલ મંજુરી અન્વયે Cold Chain & Vaccine Logistic Assistan ને પરિશિષ્ટ મુજબ નિમણુંક સ્થળે કરારની બોલીઓ/શરતોને આધીન દિન-૩૬૫ જિલ્લા કક્ષા ખાતે હાજર થવાનું રહેશે. જો તેમ કરવામાં નિષ્ફળ જશો તો આપેલ નિમણુંક રદ ગણવામાં આવશે. સદર મુદત પૂર્ણ થયેથી આપોઆપ છુટા થયેલ ગણાશે. સરકારશ્રીના પ્રવર્તમાન નિયમો/જોગવાઇ મુજબ આ જગ્યા ભવિષ્યમાં કાયમી થવાને પાત્ર થતી નથી.

-પરિશિષ્ટ-

અ.નં.	ઉમેદવારનું નામ	કરારનો સમયગાળો	માસિક ફિક્સ મહેનતાણું	નિમણુંકનું સ્થળ
(૧)	અંકિત વિનોદભાઇ મહેતા, મુ.પો.વાંસકુઇ, તા.મહુવા, જિ.સુરત	તા.૬૩ /૦૧/૨૦૨૨ થી તા.૧૬ /૧૨/૨૦૨૨	રૂ.૧૦,૦૦૦/-	આરોગ્ય શાખા, ડાંગ જિલ્લા પંચાયત, આહવા

નિમણુંકની શરતો:-
(૧) NHM કરાર નિમણુંકની શરતો અને બોલીઓ આ સાથે સામેલ છે. જેનો અમલ કરવાનો રહેશે અને હાજર થયેથી ૬૨ મહિનાના અંતે કામગીરીની વિગત - ડાયરી રજુ કરવાની રહેશે.
(૨) રૂ.૧૦૦/-ના નોન જ્યુડીશીયલ સ્ટેમ્પ પેપર ઉપર હાજર થયેથી દિન-૫ માં કરારની શરતો અને બોલીઓ અંગેનું કરારનામું રજુ કરવાનું રહેશે.
(૩) રજાના નિયમો મિશન ડાયરેક્ટરશ્રી, ગાંધીનગરના પત્ર નં. એન.આર.એચ.એમ./એસ.પી.એમ.યુ./કરાર આધારીત સ્ટાફ/ પરીપત્ર/૨૦૧૮/૨૦૩૧, તા.૨૭-૦૩-૨૦૧૮ ના પરિપત્ર મુજબ રહેશે.

સહી/-
સર્વે અધિકારી
ડિસ્ટ્રીક્ટ હેલ્થ સોસાયટી અને
અધિક જિલ્લા આરોગ્ય અધિકારી
ડાંગ-આહવા

પ્રતિ,
અંકિત વિનોદભાઇ મહેતા, મુ.પો.વાંસકુઇ, ઘર નં.૫૩૧, રાધે બંગ્લોઝ, MRF ટાયર સર્વિસની બાજુમાં, સુમુલ ડેરી પાર્લરની સામે, ચોકડી-બામણીયા, તા.મહુવા, જિ.સુરત – ૩૯૪૨૪૬ (પાછળ)


Acknowledgement: Actual effective implementation of the model depends upon the stakeholders. We extend our sincere gratitude towards district health administrators and all health functionaries up to grass root level of Dang district for their kind cooperation in making this model successful one. We are thankful to state health officials for giving us this opportunity of RMT and providing the technical and financial support. Institute level support to us in carrying out this activity on consistent basis is also highly appreciated.

Field practice - 2

IRIS (Identify, Respond, Inform & Support): An innovative Community Mental Health Care Delivery model for empowering communities towards integrated rural mental health services in India

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*Nodal person

Introduction

Mental health problems emerge as major public health concern. Recent findings from India suggest that only about 10% of people with mental disorders are thought to receive evidence-based treatments in India.[1] This huge treatment gap is found to be disproportionately more in rural India.[2] Uneven distribution of limited resources, non-existent mental health services, localization of specialist services in urban areas, poverty and lack of financial support often limits the accessibility and affordability of mental health services to rural population.[2,3] Further, large number of people in rural region remains untreated because of fear, stigma and misconceptions.. It is observed that large number of people from rural India approach faith healers as they are easily accessible and culturally acceptable. These further delays the initiation of appropriate treatment which are crucial for better recovery in mental health problems. Thus, there is a need to reduce the stigma and enhance self-efficacy in help seeking through an optimistic mental health environment created by educating and empowering the community.

Rationale

To reduce the disproportionate treatment gap in rural India, mental healthcare needs restructuring, emphasizing integration into primary care and empowering non-specialist

health workers like Accredited Social Health Activists (ASHAs).[4] ASHAs, deeply connected with rural communities, brings hope and acts as guide to families who need assistance. ASHAs outstanding contribution towards protecting and promoting health is well recognized globally.[5] Empowering ASHAs with the knowledge and skills to recognize, refer, and support those with mental disorders benefits both the community and healthcare system. However, ASHAs have limited mental health knowledge and competencies. Previous studies have trained ASHAs alongside other non-specialist healthcare workers,[3,6] This may not be appropriate, as the training needs of ASHAs for their given role and competency will not be the same as compared to other non-specialist primary health care workers (Multipurpose workers, health assistants, nurses, doctors). Thus, a specific training program tailored to ASHAs is needed to match their responsibilities and competence.

Novelty

To our knowledge, there hasn't been a dedicated mental health training program tailored specifically for ASHAs, considering their unique competencies, roles, and responsibilities, as reported in the available literature. Developing such a program posed several challenges: (1) ASHAs have limited skills compared to other health workers (2) The training needed to simplify complex psychiatric concepts (3) It should be based on manual which is distinct from existing mental health materials, (more than conventional hand-outs/leaflets but lesser than those for health professionals), (4) The training should be motivating without overburdening ASHAs, (5) It should align with the Government of India's training for general medical practitioners, following a stepped care approach, (6) The training should be based on strategic delivery model that had to be user-friendly with easy applicability during routine home visits by ASHA. We addressed these challenges innovatively through systematic approach grounded in epidemiological principles and public health methods. Firstly, mental health problems were prioritised based on community needs, relative importance, burden, and impact for given age-groups. We then developed a strategic health-care delivery model called "**IRIS**" (**I**dentify, **R**espond, **I**nform, & **S**upport) through focus group discussions with ASHAs, ASHA-mentors, expert's consensus meeting/workshop, desk-review, and field-experience., The prioritized mental health problems were then organized under life-course framework and explained using IRIS model. Priority mental disorders fitted into **IRIS model and life course framework (figure 1)** and translated into resource manual was the first of its kind in India developed exclusively for ASHAs.

Collaboration or multistakeholder involvement

We adopted a multi-stakeholder collaboration in both design and implementation phases to enable effective sharing of information, collaborative planning, and strategic implementation. **Design phase:** We had a two-level integrated collaboration. At Level I, we engaged experts in psychiatry, child psychiatry, clinical psychology, psychiatric social work, addiction medicine, speech pathology, and public health, along with representatives from community organizations, government health department decision-makers, and general medical practitioners. At Level II, we involved ASHA mentors, community members, individuals

with lived experience, their families, and ASHAs. Level I gathered input from experts to identify priority mental health issues and define ASHAs' roles, taking into account their unique perspectives, experiences, skills, and organizational mandates. Level II focused on understanding community needs and contextually adapting interventions for feasibility and relevance. Outputs from both levels were integrated, reviewed by experts, and field-tested. This integrated approach (combined top-down and bottom-up) enabled us to fit technical aspects with pragmatic mental health needs of community. **Implementation phase:** we closely collaborated with local community, ASHAs, ASHA mentors, ANMs, PHC doctors, District Mental Health Program Officer, and District Commissioner in Kolar district, Karnataka. As we expanded statewide, our collaboration extended to include Health Secretary of Government of Karnataka, State Mental Health Program Officer, District Mental Health Program Officers, health system administrators, and representatives from health and social services. This collaborative effort facilitated resource pooling, shared issue understanding, joint action plan development, and collective accountability for effective implementation. We replicated this approach in other states as well, ensuring a consistent and robust model.

Implementation details

We developed a draft manual (where each of the prioritized disorders were described using the life-course framework and IRIS model), finalizing it through expert workshop. The manual was then translated into local language, and then back-translated to English by two individuals not involved in the study. Additionally, we used translation checkers for conceptual translation to tap contextual and culturally appropriate concepts for the settings with different culture, and its local dialect **(Fig 2)**. The final translated version was given to two local community leaders to check for comprehensibility and readability before piloting with ASHA-mentors. (a) ***Development of pedagogy:*** Following this, the teaching pedagogy, objectives, plan, content and key messages were designed for one-day training programme as outlined by "UNESCO Training Guide and Training Techniques".[7] Due emphasis was provided to group activities and discussions to allow participants to apply their knowledge and experience. ***(b) Training-of-trainer:*** A non-specialist health professional was trained as a trainer at NIMHANS based on the manual and pedagogy. This choice of non-specialist health professional as trainer was deliberate to reflect the real-life scenario of limited specialist mental health professionals in rural settings, ensuring scalability and replicability. Subsequently, a one-day mental health training programme was conducted in 4 batches in 2015 among 74 ASHAs from Kolar district. The training followed a structured schedule derived from translated manual and included audio-visual aided lectures and interactive discussions using case vignettes and real-life scenarios.

Outcome or impact

The training's effectiveness was assessed using a pre and post-test quasi-experimental design, following three aspects of Kirkpatrick model (Reaction, Learning, and Behavior). The

simplified manual, based on this model-framework, significantly improved mental health literacy. There was strong evidence of improved knowledge and beliefs regarding mental health issues post-training. The mental health literacy mean score increased from with a large effect size of Cohen's d=3.6 (unpublished thesis).[8] The training enhanced participants' ability to recognize mental disorders in vignettes and led to a reduction in stigmatizing attitudes. Most ASHAs found the mental disorder fitting into IRIS model and life course framework, to be highly useful in understanding the complexities of psychiatry. Additionally, the training complemented the mental health training for PHC doctors in Karnataka by improving case finding, referral, and follow-up.

Sustainability and Replicability

The training program initially launched in two PHCs was expanded to cover entire district and eventually the entire state of Karnataka. Upon observing its effectiveness, the training manual was released by the District Commissioner for training of over 950 ASHAs across Kolar District, Karnataka. Subsequently, the Kannada manual received approval from the Health Secretary of the Government of Karnataka in 2016, allowing its use in District Mental Health Programme to train ASHAs statewide. Finally, the manual based on the IRIS model gained national recognition when unveiled by the Hon'ble Minister for Health and Family Welfare of Government of India on April 7, 2017 (https://pib.gov.in/newsite/PrintRelease.aspx?relid=160688). Over seven years, the manual was translated into three Indian languages (Odia, Bengali, & Malayalam) using a robust conceptual translation process as explained earlier, demonstrating its feasibility and effectiveness in improving the mental health literacy among ASHAs in diverse socio-cultural settings (unpublished theses).[9,10] Currently, the manual has been translated into Hindi, and preparations for mental health training in Hindi are underway. In a noteworthy and impactful initiative, we adapted the mental health training program in Malayalam for general community, demonstrating a significant improvement in participants' knowledge and beliefs about mental health problems, with a large effect size ($r^2 = 0.93$; $p < 0.001$) and reduction in stigmatizing attitudes and behaviors among the general community (unpublished thesis).[11] Currently, the manual, based on IRIS model and life course framework, is being used to raise awareness among school children and teachers as part of our mental health awareness campaign in Anekkal Taluka, Bangalore district.

The consistent findings across various states and populations underscore the need to scale up this model to empower communities toward mental health and reduce associated stigma and treatment gaps. The well-tested IRIS model-framework-manual package serves as a robust framework for transformation into a digital and technological platform for large-scale implementation. This would complement ongoing mental health initiatives in India, provides a model for developing and adopting acceptable and scalable digital health solutions to promote global mental health and well-being, especially in Low-middle income countries with severe human resource constraints. This platform also paves the way for exploring the establishment of **digital mental health clinics** in the future.

Validation:

The IRIS model-life course framework-manual package **received the prestigious BMJ awards- South Asia 2016 under the category healthcare innovation of the year.** IRIS model was published in the featured article of prestigious **BMJ journal** (https://doi.org/10.1136/bmj.i5612).

Notable recognitions:

(1) IRIS model was published in the featured article of prestigious **BMJ journal** (https://doi.org/10.1136/bmj.i5612).

(2) A DBT grant was received to present IRIS model-framework-manual package in the 10th Indian Medtech International Summit 2016, New Delhi, 3 December 2016.

(3) The prestigious **BMJ awards- South Asia 2016** under the category healthcare innovation of the year for the IRIS model-framework-manual package on mental healthcare delivery by ASHA. The award is lauded as Oscars of medicine in India.

https://www.youtube.com/watch?v=NAHNWy_I_cE

(https://www.newindianexpress.com/states/karnataka/2016/nov/20/doctors-from-nimhans-win-british-medical-journal-award-1540600.html).

https://health.economictimes.indiatimes.com/news/industry/bmj-recognises-the-stars-of-south-asian-healthcare/55523634

(4) The prestigious "**Dr Sushila Nayar Memorial Young Public Health Leader oration**" titled "From Ideas to innovation and implementation: Taking Mental health literacy to the rural communities "at IAPSM Young Leaders' National Conclave 2021, MGIMS, Wardha, 27th March 2021.

https://www.youtube.com/watch?v=l2gYpvtPBBU&t=720s

(5) "Scaling up of mental health literacy among ASHAs in West Bengal (Project SUMA)" at IAPSM Young Leaders' National Conclave 2021, MGIMS, Wardha 26-27 March 2021. (**Best scientific paper**).

(6) "Evaluating the effectiveness of a one-day mental health training program for ASHAs: A quasi-experimental study " KACHCON-2020, MS Ramaiah Medical College Bengaluru. 21-23 December 2020." (**Best Oral presentation**)

(7) "Community Mental Health Care Delivery for a Self-reliant India". India International & Science Festival-2020, Ministry Of Science And Technology, Ministry Of Earth Sciences, Ministry Of Health & Family Welfare Government Of India, New Delhi .23-24 December 2020." (**Best Poster-3rd prize**)

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Field practice - 3

Ni-kshay SETU, a digital learning platform: Igniting Healthcare Excellence with Digital Learning for TB Care

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* Nodal person

Introduction

The current intervention involves the implementation of a mHealth knowledge management platform known as **Ni-kshay SETU (Support to End Tuberculosis)**. This platform was meticulously crafted through an initial evidence-generation phase characterized by extensive intervention efforts in the field of public health. Subsequently, it was systematically deployed nationwide in collaboration with State TB Departments, encompassing the comprehensive engagement of their entire healthcare workforce dedicated to the care and management of TB patients. It is a digital solution providing support to health care providers in decision making and transforming knowledge into empowerment to manage persons with TB. This is an innovative and interactive learning tool enhancing the efforts to make TB free India and developed by Indian Institute of Public Health, Gandhinagar under "Closing the gaps in Tuberculosis (TB) care cascade" Project supported by USAID.

Despite being preventable and treatable, TB, caused by Mycobacterium tuberculosis, is a major health concern in countries like India. According to Global TB Report 2022, 10.6 million people worldwide contracted TB, with India having the highest incidence at an estimated 2.1 million cases. To address this, India aims to eliminate TB by 2025, five years earlier than the global goal, through its National TB Elimination Program (NTEP). The healthcare workers within the National TB Elimination Program (NTEP) are critical in addressing TB challenges, but staying current with evolving guidelines and healthcare service delivery presents ongoing difficulties. This is especially prominent for general healthcare workers indirectly involved in TB elimination and new NTEP recruits. The new health infrastructure of Health and wellness centers (HWC) and additional manpower of community health officers (CHO); would require extensive knowledge support to ensure the continuum of care for the TB patients.

The current intervention, Ni-kshay SETU (Support to End Tuberculosis), was specifically designed to mitigate knowledge gaps among healthcare workers involved in the TB care cascade, with a primary focus on providing easy access of the content of all NTEP guidelines with digital interface.

Rationale

Rationale for the Digital Platforms: While continuous training is vital, the COVID-19 pandemic disrupted physical capacity building. However, the pandemic has accelerated the adoption of digital technology platforms in healthcare. The digital mHealth knowledge

management platforms hold great promise for capacity building among healthcare workers. Digital tools also facilitate health education, assess training needs, and empower healthcare providers to offer primary care remotely, reducing knowledge transfer delays. Despite several digital health platforms in TB care, like Ni-kshay, TB Aarogya Sathi, Swasth e-Gurukul, and the WHO TB Guide, there is a lack of easy access to readily available tool that can be used for day-to-day patient / program management practices.

Rationale for Ni-kshay SETU App Development: The baseline research was conducted on 450+ health care workers to identify the knowledge gaps and 900+ persons with TB to identify the service delivery gaps. The intense efforts were made to gather feedback from the State and District TB officials, experts, front line workers such as CHO, MO PHI, STS, STLS, GHS staff, and private doctors of the project intervention states (Gujarat and Jharkhand). During the baseline research, majority of the healthcare professionals raised the need for trainings on different parameters of TB management and newer information on diagnostic and treatment modalities. The baseline assessment highlighted deficiencies in need-based, cadre-specific training and limited e-learning adoption by the health system. Consequently, consensus emerged to develop a digital solution to reduce the access gaps and avail the newer information without the delay.

As a result, **NI-KSHAY SETU, a web and mobile app (available on Android and iOS)**, was created. It serves as a digital platform, disseminating program guidelines and the latest TB patient management insights to healthcare workers.

Novelty

- The application was meticulously crafted with personalized login credentials tailored to various health cadres, encompassing over 75,000 healthcare facilities and 6,200+ tuberculosis units across India's diverse states and union territories. It covers the login support to all cadres of the Government and Private health system, that are around 50+ cadres.
- The application was crafted with the latest technology backend where the dashboard and app content management can be undertaken by the admin login credentials. So, the software developer is required only to create a major change in the visual stacks. The State and District officials can develop the State specific contents in the application and also create the knowledge assessment questionnaire to assess the training need/ knowledge gaps.
- The app condenses content from extensive reviews of the national TB guidelines, totalling over 10,000 pages and provide continuous flow from case findings to diagnostic algorithm to treatment options for the persons with TB. This makes easy understanding for the newly joined healthcare workers or professional to adhere standard protocols for TB management.
- The app provides the decision making and solutions to the operational queries arises from the day-to-day work of the frontline health care workers to clinicians and also program managers with interactive visual interface. It features an interactive voice-assisted AI enabled chatbot capable of addressing question patterns with multiple languages formats.
- The app has built interface of gamification and leaderboard for the users where they can achieve medals, received by the usage of the different modules and completion of the tasks. This was designed to generate the interactive environment for the knowledge upgradation.

- The application possesses an in-built functionality that enables linkage with third-party applications through API linkage. The source code is available on open-source GitHub repositories under creative commons license GPL-3.0 license, which allows developers to structure the similar built to Ni-kshay SETU. This feature provides wider benefits to agencies working for persons with tuberculosis.
    - Frontend Apps: [GitHub Link]
    - Backend Administration: [GitHub Link]

Implementation details

Development of the Application:

The overall development process was designed in a study form where it was conducted in two phases. As described, a baseline assessment for the training needs, content specifications and mode of the delivery was undertaken by the Indian Institute of Public Health, Gandhinagar. The evidence generated from baseline directed the subsequent stages of the development of the application. After baseline, the landscaping of existing solutions was carried out through reviewing journal articles, testing web and app platforms, knowledge platforms created by the development partners, NGOs, and private limited companies.

A series of prototypes were created to understand the workflow of different modules and demonstrated with extensive participatory process during the initial phase and then it was rolled out to all States across the country by providing the orientation of its functions, use of the application and backend dashboard management. The State and district TB officers were given the admin credentials for their respective States and Districts.

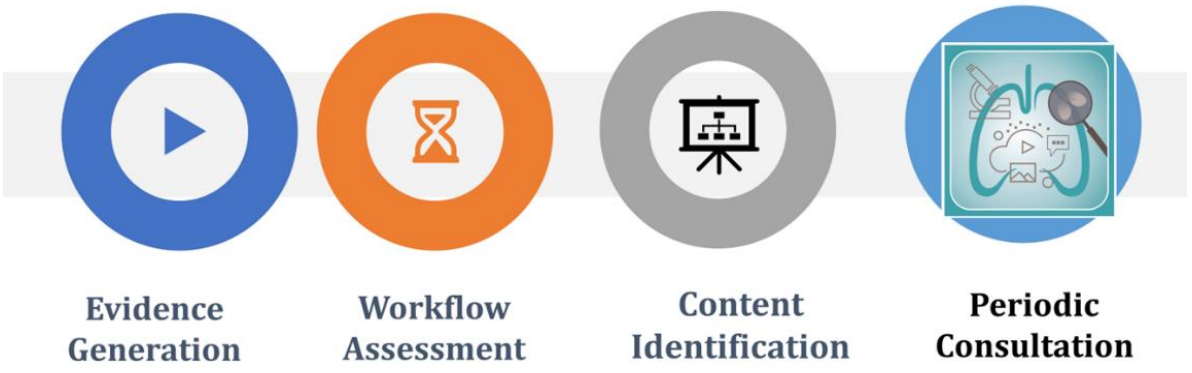


Figure 1 App Development Process

The query response and online tickets generation module were also developed to ensure the complete resolutions within a strict timeframe. The institutional level support center was developed at Indian Institute of Public Health, Gandhinagar and provided support under following segments:

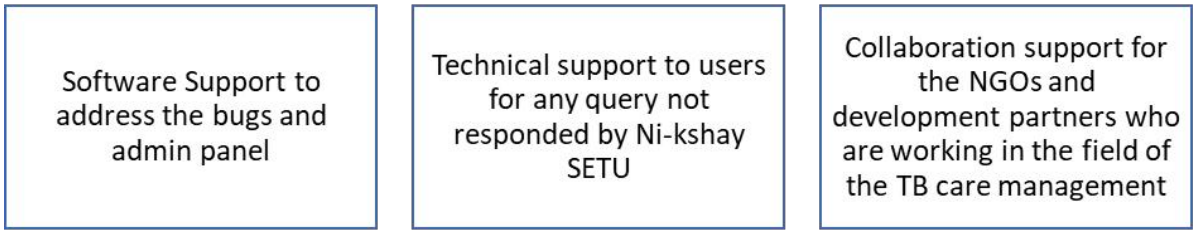


Figure 2 Support Units Established at IIPHG for Ni-kshay SETU.

Application Details

Basic Structure

The app is comparatively easy to use, readily navigable, and intuitive with a clean interface. The content is distributed into six sections, i.e., Learn, Manage, Referral, Assess, Chatbot and Resource Materials. The app features an artificial intelligent (AI) driven chatbot that delivers over 70,000+ practical responses to the daily queries of healthcare personnel, spanning from front line workers to program managers to clinicians.

App Interface

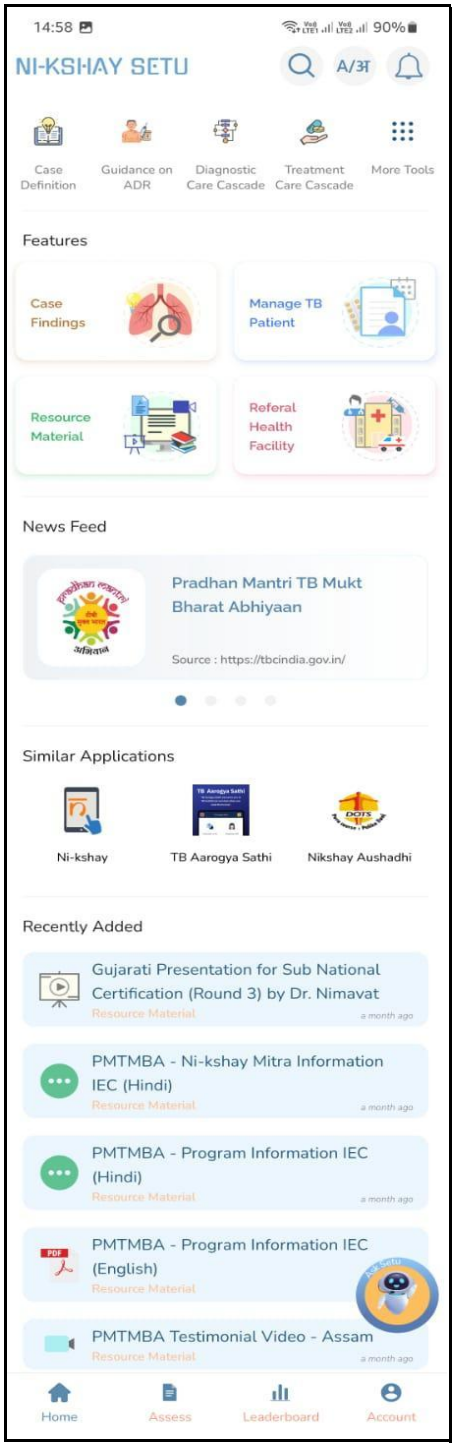
The application interface is designed to have brief directional learning in the form of algorithm-based decision-making interface, which takes user from the identification of presumptive TB patients to confirmation of the diagnosis to treatment completion. The modules are developed based on the national guidelines with the latest updates and contents landscaped in a precise manner in a way that supports the decision-making in TB patient management. The application is also equipped with repositories of all guidelines, global and India TB reports with learning videos on diagnostics and patient-centric care. It has quick assessment components to support the government health managers in accessing the training needs and designing the methods and modules. The learning modules align with national guidelines, providing up-to-date, concise content to facilitate informed decision-making. The platform caters to different healthcare roles, enhancing service delivery at health facilities.

Backend Dashboard and Leaderboard

The back-end analytical dashboard with its assortment of reports greatly contributes to enhancing the capacity-building component of the NTEP interventions. The analytical dashboard, part of the application's backend, provides valuable reports to the State and National NTEP officials to strengthen NTEP capacity-building initiatives. Each user can track module completion, receive updates, and engage in knowledge sharing within their cadres via an interactive platform.

The application also includes the user leaderboard for the completion of the modules, newer updates, app notifications and an interactive platform where a user can see the progress

among their cadres. Its user-friendly interface offers algorithm-based decision-making, covering the entire TB patient management process from identification to treatment completion.



AI-driven Chatbot: SETU

Furthermore, an **AI-driven chatbot: SETU** addresses daily queries, benefiting healthcare staff from ASHA workers to clinicians. The application also serves as a repository for guidelines, global and Indian TB reports, and educational videos on diagnostics and patient-centric care. Quick assessment tools aid in identifying training needs and module design.

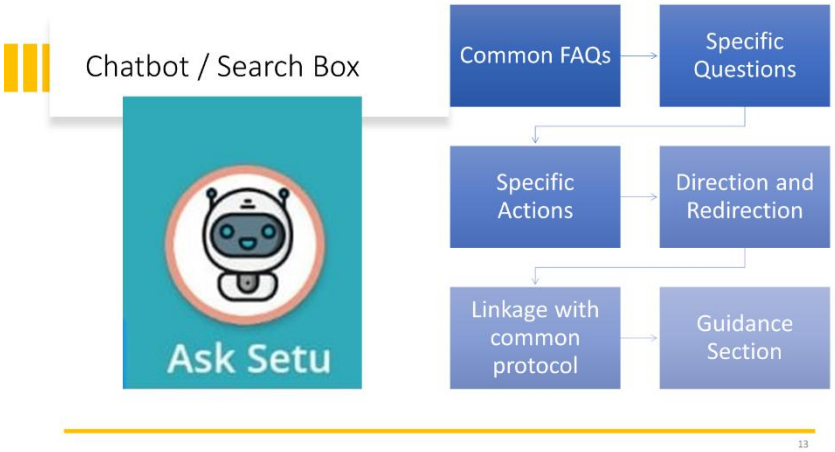


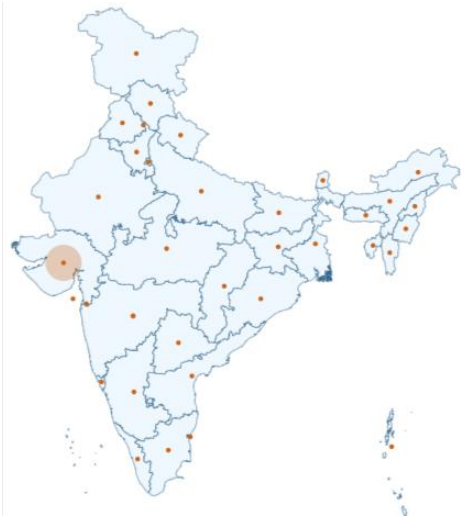
Figure 4 Chatbot Functional Process

Data Privacy and Secured Data Transmission

The app ensures data privacy and secure data transmission by implementing best practices. End-to-end encryption is a powerful method of ensuring the privacy and integrity of data during transmission. It encrypts data on the sender's device and decrypts it only on the recipient's device, ensuring that only the intended recipients can view the message content.

Key Features & Components

Outcome / Achievements of the technology innovation



- 42250+ Subscribers in one year of roll out across 28 States of India. Per day 150+ new users and 400+ visits per day, subscribers are in more than 70% districts of India.
- 72% subscribers are front line workers (ASHA, ANM, Male MPHW, CHOs, Lab tech, Pharmacist, Staff nurses)
- 40+ technical modules based on NTEP guidelines and validated by technical experts and pulmonologists. Timeline to solve query is average 48 hrs with provision of technical content addition within application.
- Artificial Intelligence enabled chatbot: 1000+ FAQs and 70,000+ Patterns that works with provision of practical solutions of the NTEP program queries.

- 15000+ assessment undertaken by the health staff of the public and private institutions.
- Provision of 30+ videos on technical content of diagnosis of TB and 20 around videos on program public health actions of NTEP.

Sustainability and Replicability

Ni-kshay SETU, is at the stage where its sustainability and replicability made easy with a robust framework, it ensures enduring impact:

1. Technical Sustainability: We've established secured backend admin control, guaranteeing continuous support, updates, and enhancements with the development of new modules or sections in Ni-kshay SETU without much software developers involvement.
2. Integration with Health Systems: Ni-kshay SETU is seamlessly integrated into healthcare infrastructure as its inbuilt capacity for mapping and tagging health facilities based on any national health portals, becoming an indispensable part of the healthcare delivery system.
3. Training and Capacity Building: It has easy access content and wide range of technical guidelines, protocols, operational guidance repositories to equip healthcare workers with the skills to manage TB patients effectively.
4. User Feedback and Data Security: Our feedback mechanisms ensure constant refinement, aligning Ni-kshay SETU with user needs and expectations. Stringent data security measures protect user information, fostering trust in the app. Secure user authentication process (OTP based) enhances access controls for safeguarding sensitive information.

Replicability and Scalability for Wider Impact: Ni-kshay SETU isn't limited by borders. It's designed for broader reach:

1. Multi-lingual Support: Ni-kshay SETU speaks the language of healthcare workers, offering multi-lingual support to reach diverse communities. (as of now 8 languages of India)
2. Device flexibility: Ni-kshay SETU is device-friendly, optimized for smartphones, tablets, and basic mobile phones, ensuring accessibility for all. It is also allowing customization to meet the unique requirements and guidelines of different regions and healthcare systems.
3. Collaborative Partnerships: Ni-kshay SETU thrives on collaboration with having open-source codes and easy API linkages with other software platforms. The non-commercial license agreement (GPL 3.0, creative commons) also drives its main cause for public health usage. We have partnered with national and international organizations, pooling resources, and expertise for wider deployment.

Beyond TB with Broader Objectives: Versatile Framework: Ni-kshay SETU's adaptable framework can be harnessed for other healthcare programs or health interventions, expanding its impact. It paves the way for the digital transformation of healthcare, making quality healthcare accessible to all.

Resources for Ni-kshay SETU applications:

S. N	Particulars	Links
1.	Web App	https://nikshay-setu.in/
2	Android App	https://play.google.com/store/apps/details?id=com.iiphg.tbapp
3	iOS App	https://apps.apple.com/in/app/ni-kshay-setu/id1631331386
4	What is Nikshay SETU? App information Video	https://www.youtube.com/watch?v=OVsw13KnyMg
5.	Nikshay SETU Registration and Operations Video	ttps://www.youtube.com/watch?v=iB5p09rqMwY
6.	Ni-kshay SETU – Use case Scenario	https://www.youtube.com/watch?v=-zFhRL_K5sY

Field practice - 4

Prevention and drastic Mitigation of the Influenza A H1N1 Epidemic in the Field practice Area of Rural Health Training Centre through Surveillance and proactive Interventions

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Introduction

Influenza A pandemics are known for an estimated 20 million deaths globally during the year 1918 to 1919. In the United States, the influenza pandemics of 1957 and 1968 were associated with an attack rate of up to 50% and an estimated 100,000 deaths (1). In March and early April 2009, a new swine-origin influenza virus (S-OIV), A (H1N1), emerged in Mexico and the USA (2). In April 2009 the World Health Organization declared a "public health emergency of international concern (PHEIC)," which eventually marked the start of an international public health response to the first influenza pandemic of the 21st Century (3). The virus quickly spread worldwide through human-to-human transmission. The World Health Organization (WHO) further raised the influenza pandemic alert to the highest level (level 6) on 11th June, 2009, in view of the number of countries and communities which were reporting human cases. The Pandemic Influenza A H1N1 virus was commonly known as swine flu. This article explores how well-designed action plan, active and passive surveillance, collaborative team efforts, and community oriented innovative strategies played a pivotal role in preventing and mitigating the influenza A H1N1 epidemic in the field practice area of Rural Health Training Centre.

In June-August 2009, Pune district, in the western Indian state of Maharashtra, found itself at the epicentre of the influenza A H1N1 epidemic. On 22nd June 2009, Pune city reported the first case of Pandemic influenza A (H1N1) 2009. On 3rd August 2009, the first pandemic death in Pune was reported which caused panic in the general public. Subsequently, widespread transmission was reported in community(4) (5). The epidemic was characterized by a sudden surge in cases marked by a rapid and alarming spread of the virus causing widespread concern and public health challenges. Pune was worst hit by the pandemic Influenza A H1N1. The epidemic led to a series of immediate responses from health authorities, including the establishment of dedicated isolation wards, increased surveillance and testing, and an extensive public awareness campaign to educate the population about preventive measures. Schools, colleges, shopping malls were temporarily closed, large gatherings were restricted, and public transportation was closely monitored. Tragically, the epidemic claimed lives and placed immense burden on the healthcare system. The present experience at the field practice area of Rural Health Training Centre (RHTC) Kusgaon, Department of Community Medicine, Smt. Kashibai Navale Medical College (SKNMC), Pune underscored the importance of an early effectively designed intervention, early case detection, rapid response, and dedicated team collaboration in managing an infectious disease which was a global health crisis.

Need/Rationale

There was a need for an immediate proactive intervention to mitigate the Pandemic Influenza A H1N1 since it was a global emergency. The Pandemic Influenza A H1N1 virus had rapidly spread to multiple countries across the world within a short period, indicating its potential to cause widespread illness, potentially severe consequences and mortality. The pandemic had affected several countries on different continents, and there was a need for international coordination to monitor and respond to the pandemic effectively. Certain populations, such as pregnant women and individuals with underlying co-morbid health conditions, were at higher risk of severe illness and complications from Pandemic Influenza A H1N1(6). The rationale for this initiative was to protect the health and well-being of the rural population in RHTC Field practice area and minimize the impact of the Pandemic Influenza A H1N1 on the community's economic and social life.

Novelty

What sets this initiative apart was its focus on combining active surveillance, passive surveillance, community-driven, dedicated team work and sustained planned approach. Several sessions were conducted at regular intervals to generate awareness in the community regarding the preventive measures of swine flu. Public communication also dealt with removing panic from the minds of people regarding the pandemic. The sessions included practicing good hygiene by washing hands frequently with soap and water, avoiding close contact with sick individuals, covering mouth and nose when sneezing or coughing, seeking early medical advice if suffering from fever, use of a medical mask if someone in family has influenza like illness (ILI). The strategy involved training and mobilizing medical social workers to actively go in the community and find out cases of ILI daily from Monday to

Saturday. It innovatively used existing community structures to disseminate information, identify potential cases of ILI early, and provide timely medical assistance. Early implementation of infection control precautions minimized the nosocomial or household spread of disease. Administration of prompt treatment to ILI cases prevented severe illness & death. Contacts of ILI cases were followed up for development of fever and any other clinical feature. Those cases identified as ILI were referred to the RHTC and were examined by the Medical Officer. After clinical examination and necessary medications, these ILI cases were referred to nearest Government Health Facility for management as per the recommended and established protocol – clinical case evaluation, clinical specimens' collection, laboratory diagnosis, isolation and treatment.

Collaboration or Multistakeholder Involvement

The success of the Pandemic Influenza A H1N1 prevention and mitigation efforts in the rural field practice area of RHTC can be attributed to the robust collaboration among various stakeholders:

Local Healthcare Providers: Doctors and Health care workers at RHTC were trained to recognize ILI cases, provide advice on isolation measures, care of the contacts of ILI cases, and immediate referral of the ILI cases to the nearest Government Health care facility managing swine flu cases.

Community participation: No public health intervention can succeed without community support and participation. Community leaders, local Accredited Social Health Activist (ASHA) workers and Anganwadi workers were actively involved in the planning and implementation of the activity. The people were advised to seek prompt medical consultation and immediately report to the RHTC if they suffer from fever or ILI. Several sessions on the preventive measures of swine flu were conducted on a regular basis. This brought a behavioural change in the community resulting in desired health behaviour. This helped in the mitigation of the epidemic.

Active and Passive surveillance: A team of trained health care workers and medical officers carried out active and passive surveillance for ILI cases.

Government Health Facility: Guidelines for treating swine flu cases was issued by the Government authorities. The nearest government health care facility provided access to diagnostic facilities and antiviral medications.

Implementation Details

The intervention and implementation of Pandemic Influenza A H1N1 prevention and mitigation efforts in the rural field practice area of RHTC, Smt. Kashibai Navale Medical College (SKNMC), Narhe, Pune is summarized as follows:

Early Intervention: Time is a precious component and probably the most important deciding factor regarding the intensity of the epidemic. With the WHO moving the influenza pandemic alert level to the highest level 6, preparation for prevention and mitigation of epidemic started and as soon as the first case of swine flu was reported in Pune, immediately the intervention

was implemented in the rural field practice area of RHTC with the guidance and support of senior faculties from the Department of Community Medicine, Smt. Kashibai Navale Medical College, Narhe, Pune.

Active Surveillance: A network of social workers was established to actively monitor for potential cases of swine flu in the community on all working days Monday to Saturday from 22nd June 2009 to June 2010 for a population 22132 approximately. They conducted house-to-house surveys, screened individuals with symptoms of influenza like illness (ILI), and reported these ILI cases to RHTC daily. All the ILI cases were advised to seek health care without any delay at RHTC clinic and were clinically examined by the medical officer.

Case definition of influenza-like illness (ILI): Fever with an acute respiratory infection presenting with clinical features such as cough, running nose, sore throat. Clinical presentation also included headache, bodyache, fatigue, diarrhea and vomiting (7) (8)**.**

Passive Surveillance: The clinic facility of RHTC was operational on a 24x7 basis on all 365 days. The Outpatient department (OPD) and Inpatient department (IPD) cases of RHTC were also screened for ILI cases. A separate dedicated OPD for ILI cases was set up in the RHTC with a separate entrance/exit and pharmacy so that ILI cases do not come in contact with other cases at the health centre.

Those cases which were clinically diagnosed by the medical officer as ILI were immediately referred to the nearest Government Health Facility for the laboratory diagnosis and confirmation of Pandemic Influenza A H1N1. These cases were administered treatment according to the protocol (8).

Care of close contacts of ILI cases: The contact tracing was done for close contacts of ILI cases which included household contacts, social contacts, workplace, school contacts, fellow travellers. The close contacts of ILI cases were advised to remain at home (voluntary home quarantine) for at least 7 days after the last contact with the case. Monitoring of fever was advised for at least 7 days. If symptoms developed, prompt testing and treatment was recommended based on the test result. Pharmaceutical interventions was as per guidelines issued by the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India (8).

The work of medical officers, medical social workers, staff nurses and all health care workers were closely supervised by the Assistant Professor In-charge RHTC with respect to the day-to-day situation of the ILI and Pandemic Influenza A H1N1 cases.

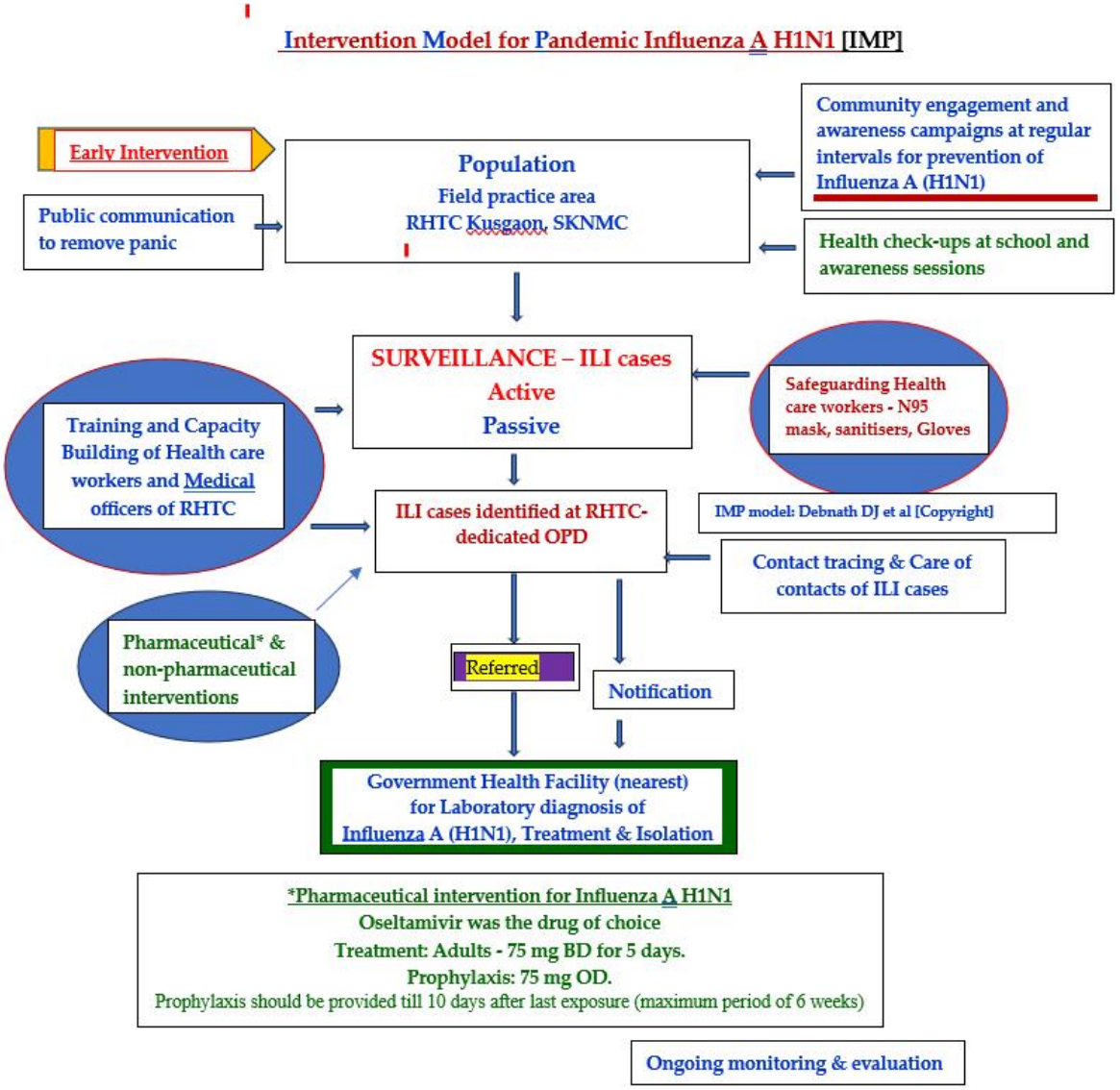
Training and Capacity Building: The health care workers were trained in the identification of ILI cases based on the guidelines provided by health authorities.

Safeguarding Health care workers (HCW): Triple layered medical mask, N95 mask, sanitisers, disposable gowns, medication supply were provided to protect the health of medical officers, medical social workers, staff nurses and all HCW at RHTC.

Community Engagement: Awareness campaigns in the community were conducted through awareness sessions on the prevention of swine flu on a regular basis. The community responded promptly to a desired behaviour pattern for prevention of swine flu.

Health check-up at schools: The health check-up of students was regularly conducted in the schools by the team of doctors from the Department of Community Medicine, SKNMC. Awareness sessions regarding prevention of swine flu were also conducted at regular intervals in the school.

Establishing Referral services for diagnosis, Isolation and Treatment Centres for ILI cases: This ensured timely access to diagnostic facility, isolation and treatment. This also prevented further transmission within households and communities.



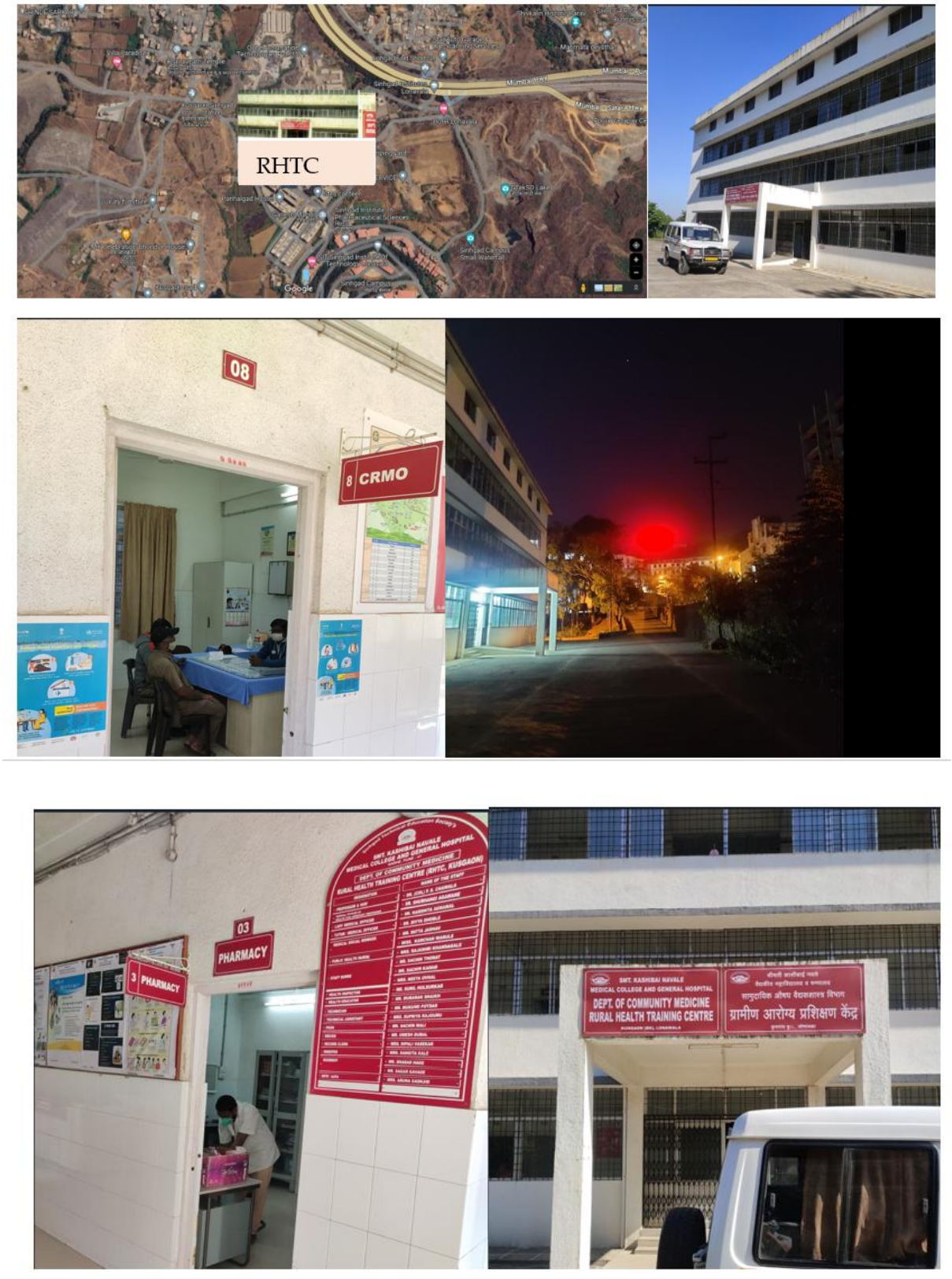


Figure 1: Photographs of RHTC, Kusgaon, Smt. Kashibai Navale Medical College, Narhe, Pune

Outcome or Impact

The outcomes and impact of this initiative were substantial:

The primary outcome measures examined were the Attack rates, case fatality risk (CFR) of Pandemic Influenza A H1N1.

The total number of Pandemic Influenza A H1N1 cases were determined by estimating the total number of cases of Pandemic Influenza A H1N1 per week and summing across all weeks for a defined period as given in Table 1.

Case definition of Attack rate:

The Attack Rate of Pandemic Influenza A H1N1 was calculated by dividing the number of confirmed Pandemic Influenza A H1N1 cases by the total number of the population under surveillance.

The attack rate of Pandemic Influenza A H1N1 is depicted in Table 1.

One measure of the seriousness of infection is the case fatality risk "CFR," classically known by the case fatality rate or ratio (9). Many International publications preferred the term "risk" to describe this probability, namely the conditional probability of mortality among classified "cases" (3). These publications stated that the case fatality risk is neither a rate (because there is no unit of time in the denominator) nor a ratio (3).

Definition of the case fatality risk (CFR): CFR for Pandemic Influenza A H1N1 in a population was estimated as the number of Pandemic Influenza A H1N1 associated deaths divided by the number of Pandemic Influenza A H1N1 cases in that population (3).

Preventing the rise of Pandemic Influenza A H1N1 Cases: Active surveillance led to the early identification and referral of ILI cases for laboratory diagnosis, isolation and treatment. Contact tracing of ILI cases was done and were advised preventive measures as mentioned above in the implementation section. Prompt action curbed the spread of the virus. There were 42 cases of ILI. There was just one confirmed case of Pandemic Influenza A H1N1 in a child aged about 11 years. The child completely recovered from the illness.

Community Empowerment: Communities became more proactive in managing their health and seeking healthcare for ILI.

Social and Economic Resilience: By minimizing the impact of the epidemic, communities were better able to maintain their livelihoods, economic stability and social interactions.

Table 1 Comparison of Attack rates of Pandemic Influenza A H1N1

Period	22nd June 2009 - 31st Dec 2009	22 June 2009 - 31st Dec 2009	16th May 2009- 31st Dec 2009	1st Jan 2010- 30th June 2010	1st Jan 2010- 31st Aug 2010	Year 2010
Place	Field practice area, RHTC, Kusgaon, Pune district	Area-Pune Municipal corporation	India	Field practice area, RHTC, Kusgaon, Pune district	Area-Pune Municipal corporation	India
Attack rate for Pandemic Influenza A H1N1	0.004% (1/22132)	0.049% (1495/3013 409) Purohit V et al (10) (11)	0.002% Kulkarni SV et al (12) (13) (14)	0%	(0.048%) (1497/3072 776) Purohit V et al (10) (11)	0.001% Kulkarni SV et al (12) (14)

Table 2 Comparison of CFR of Pandemic Influenza A H1N1

Period	22 June 2009 - 31st Dec 2009	1st Aug 2009 – 31st Oct 2009	16th May 2009- 31st Dec 2009	1st Jan 2010- 30th June 2010	Year 2010
Place	Field practice area, RHTC, Kusgaon, Pune district	Pune	India	Field practice area, RHTC, Kusgaon, Pune district	India
CFR for Pandemic Influenza A H1N1	0%	0.86% Mishra AC et al (4)	3.6% Kulkarni SV et al (12)	0%	8.55% Kulkarni SV et al (12)

The attack rate of Pandemic Influenza A H1N1 cases in our rural field practice area was lower than that of Pune city as shown in Table 1. However, the attack rate of Pandemic Influenza A H1N1 in our rural field practice area and Pune city was higher as compared to national figures due to the reason that there was widespread community transmission of Influenza A H1N1 and Pune district was the worst affected being the epicentre of the 2009 H1N1 influenza pandemic in India (10). It is pertinent to note that with our continued

intervention efforts, the attack rate of Pandemic Influenza A H1N1 was 0% during 1st Jan 2010 to 30th June 2010. As seen in Table 2, CFR for Pandemic Influenza A H1N1 was 0% in our field practice area as compared to 0.86% in Pune region. For overall country, the CFR was 3.6% during 16th May 2009 to 31st Dec 2009 and 8.5% during the year 2010 respectively. Thus, our planned intervention could be effectively implemented at field level.

The active surveillance for ILI cases in our rural field practice area was ceased after 30th June 2010 after there was no reported case of ILI during the past several months. However, beyond 30th June 2010, the vigilance for ILI cases was continued by the team of medical social workers, all health care workers, and the doctors at RHTC. On 10th August 2010, WHO declared the pandemic was over (10) (15).

Sustainability and Replicability

This **I**ntervention **M**odel for **P**andemic Influenza A (H1N1) at RHTC **(IMP)** is sustainable with the determined efforts and dedicated team work. The health care workers need to assigned specific tasks and adequately trained for that task at the very beginning of the epidemic situation. Daily monitoring by the health authorities (Medical officer and Assistant Professor) is crucial. When the health care workers perform their tasks in a well-defined manner with the desired measurable outcome, the intervention becomes easily sustainable. The IMP intervention was sustained in the field for a year until there was no reported cases of ILI for several months. The IMP model is also replicable with the following strategies:

a. Local Capacity Building: Training and re-training of the medical officers and health care workers and make them competent for the assigned specific tasks. Guidelines provided by the government health authorities to tackle the epidemic needs to be adhered.
b. Administrative support: Necessary support from the administration to procure the medications, personal protective equipment (PPE) like N95 masks, triple layered medical masks, sanitisers, disposable gowns etc, equipment for hospital, ambulance service for transportation of sick ILI cases.
c. Public-private partnership: Building collaborative efforts for training of health care workers, diagnostic support, isolation, and treatment.
d. Community Engagement: Sustained community engagement should be encouraged to maintain preventive measures, awareness, and vigilance regarding the ILI cases. School children, their parents and school authorities also need to be involved in the awareness sessions.
e. Research and Evaluation: Continuous ongoing research and evaluation should recommend improvements in epidemic preparedness and response strategies.

In conclusion, the prevention and mitigation of the Pandemic Influenza A H1N1 in the rural field practice area of RHTC exemplify the effectiveness of sustained surveillance (active & passive), exemplary collaborative dedicated team efforts and strategies according to the IMP model. This initiative not only minimized the impact of the epidemic but also strengthened the resilience and preparedness of the community. The success of IMP model provides a valuable model for future epidemics, emphasizing the importance of community engagement,

local capacity building, research, dedicated team work and sustained collaboration among stakeholders.

Limitations: In spite of the best effort to detect ILI cases by surveillance, there could be possibility of missing out few cases.

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Field practice - 5

MediCamp360: An indigenous efficient Camp Data Management and Utilization system

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Introduction

Tertiary level teaching hospitals conduct medical camps to take specialist care to the doorsteps of marginalized populations. Medical camps also help in the training of medical students and interns in community health.[1,2]

The medical camps are also portrayed as outreach activities of the medical college and are necessary administratively. Further, camps may also be used to explore communities and as research tools.[3] Efficient collection of data from health camps, along with seamless reporting and patient follow-up is crucial for delivering quality healthcare services. Though there is guidance regarding how a camp must be organized,[4] data collection and its utilization remain a challenge.

In most medical colleges, the Department of Community Medicine organizes these camps in their District, as well as in the neighbouring areas. The camps are conducted in collaboration with local Panchayat bodies, the corporate sector, NGOs and Departments of the College.

For instance, in the ***Department of Community Medicine, Sri Devaraj Urs Medical College, Kolar, Karnataka,*** where we have implemented the Practice described below, we conduct 200-250 camps in different villages and towns of Kolar district in a year.

The data generated in camps are utilized in the following manner:

1. Patients who attend camps are contacted to facilitate referral, admissions and follow-up.
2. Camp locations and number of beneficiaries are mapped to identify regions that have not been covered previously and plan health camps in future.
3. The Department and symptom-wise data is used to plan logistics for camps in the region.
4. Camp reports are mandatory requirements administratively.

Data generated in camps are of two categories:

1. *Individual patient-level data:* Sociodemographic details of the patient (name, gender, address, phone number), chief complaints, diagnosis, and referral department. In case of admission, the final diagnosis, treatment given and the outcome is also recorded.
2. *Individual camp level data:* Type of camp, location of the camp, number of patients, visiting specialists of each Department, number of referrals and admissions from the camp.

Reports are generated in different formats:

1. Camp report (word document) of the details and photographs of each event

2. Aggregate reports of the number of camps, and beneficiaries (by demographic details/complaint/ referrals/admissions), at various intervals (weekly, monthly etc.)
3. Summary reports, provide a quick overview of data (including graphs and maps)

Hence the camps are planned meticulously, and data management is given utmost importance in this regard. However, most Departments meet with some difficulties in camp data management which are described in the following section.

Need/Rationale

Camp data management includes patient-level data collection, reporting of camp details, report preparation, inpatient flow management and discharge management. In each step, camp data plays an important role in planning and service delivery. There were several challenges in camp data management.

Firstly, data is collected in large volumes, by different personnel, at frequent intervals. Hence, this data is error-prone and non-uniform. Secondly, at the campsite, the data is collected in hard copies, since handwritten records are mandated for document purposes. This leads to duplication of efforts in digitalizing the data. In some instances, Electronic Health Record software is made available at the campsite and is found useful.[5] However, lack of internet services, logistics or trained staff to enter camp data in the field, results in non-utilization of the software. Thirdly, data cleaning, analysis and report generation is time-consuming. Finally, the data must be made available in an easily analyzable format to prepare aggregate reports at various levels. This demanded a platform which could act as a uniform and robust camp data management system.

Thus, we developed an in-house AppSheet-based mobile application and integrated it with Google Sheets and Microsoft Office for Web features to create a semi-automized system for camp data management. This camp data management system, which covered all 360º of the requirements of data collection, analysis, report generation and monitoring was named ***MediCamp360.***

Novelty of MediCamp360

- MediCamp360 is entirely built in-house, by faculty at Community Medicine Department at zero cost, rather than relying on costly external solutions.
- It was piloted in the field and has been used by multiple users with ease.
- This system has now been in use consistently over the past 1 year.
- MediCamp360 has been equipped with features to allow monitoring at all supervisory levels.
- Data safety has been ensured at all levels by providing restricted levels of access to users.

Collaboration/multistakeholder involvement

MediCamp360 is being used by medico-social workers, ANM, interns, postgraduates and faculty of the Department, over the past 1 year.

Implementation details

MediCamp360 is a merger of three platforms – a mobile application developed in-house, Google Sheets and Microsoft Office for Web.

The implementation process (Figure 1) is described below:

- *Building the mobile-based application*: Inputs were gathered from the other faculty and previous reporting systems. AppSheet is a no-code platform, through which mobile applications can be built. The mobile-based application has been built on the AppSheet platform and used as a prototype. The application is used by social workers, interns and postgraduates to capture the details of Individual camp-level data and admitted patients.
- *Summary reports in the mobile-based Application:* The Application has been provided with different views, such as Calendar views (to view all the camps conducted in a period) and Summary views (to view individual camp details, details of patients who attended the camps and admitted patients). These views provide real-time updates of camp data.

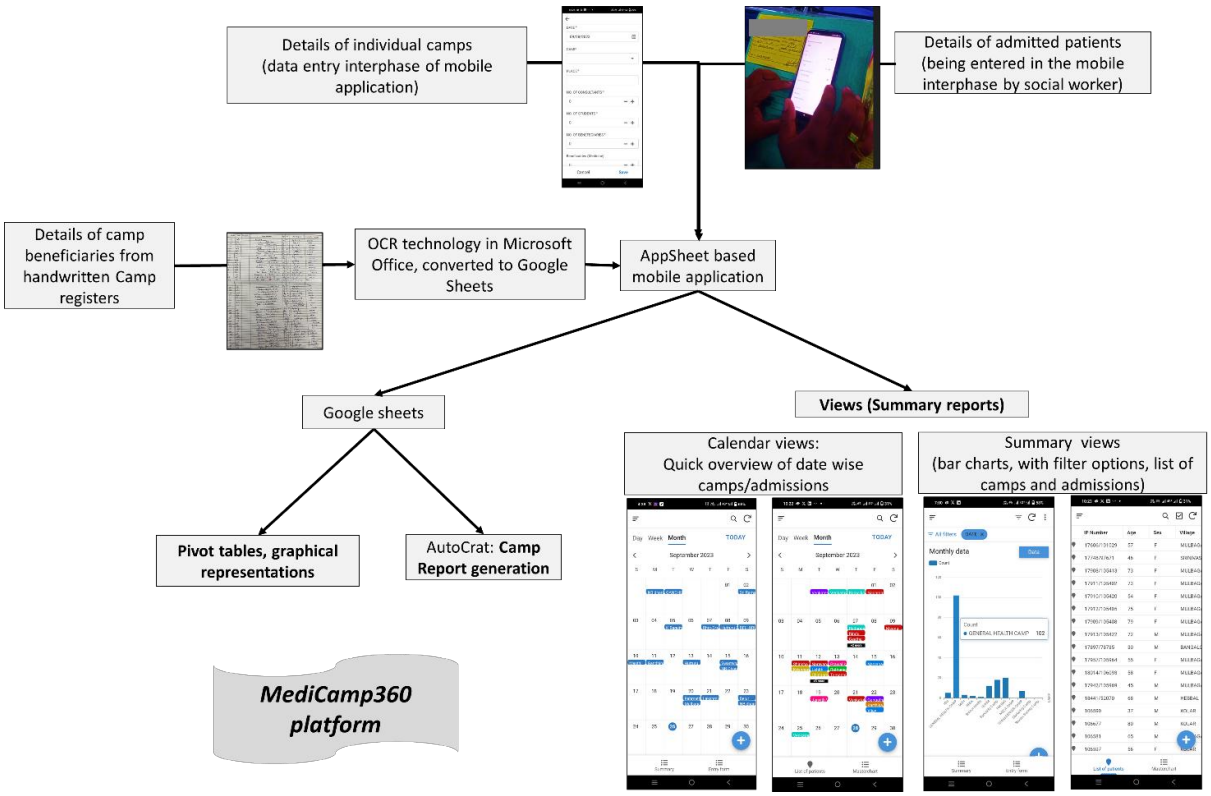

Figure 1. Data flow in MediCamp360: an indigenous, efficient Camp Data Management and Utilization system

- *Integrating with the Google Sheet features:* The individual camp level data and data of admitted patients obtained through the mobile application is linked to Google Sheets. The Google sheet, thus obtained, is automized using Autocrat Add-ins to auto-

build the camp reports. Further, Pivot table features are used to build aggregate reports.

- *Integrating with Microsoft Office features:* The Individual patient-level data collected in hard copies are digitalized using OCR technology (Optical Character Recognition) of Microsoft Office in which the photographs of the handwritten records are converted to Excel tables. This is in turn made available over the mobile application.
- *Training:* Access to the mobile application is restricted to up to 10 persons at a time. Since the application is mobile-based and user-friendly, the training of any new user takes up to 5-10 minutes. Access to the rest of the platform is restricted to three, for monitoring and to protect against any data breach.
- *Upgradation:* Over the past 1 year, based on the requirements, the App has been updated thrice.
- *Data safety:* There are three levels of protection, which restrict the view and use of data. The data collector at the field will only be able to enter the details, but not edit previous entries. The faculty in charge of monitoring will be able to view the aggregate reports but not edit or delete them. The faculty in charge of data analysis at the back end will be able to view and edit the data but has to log in to the system to do so. Further, the entire data set is linked to a password-protected email, which requires logging in for use. The data is downloaded every alternate month to ensure that there is no data loss.

Outcome/impact

The indigenous Camp Data Management system, MediCamp360, has ushered in the following transformative outcomes:

- *Cost-effective solution:* The system was built entirely in-house, at zero cost, with existing resources. The maintenance is also done at no cost.
- *Time-saving:* The usual time required to digitalize hard copies of camp details and generate individual camp reports was reduced from about 12 hours to less than 1 hour. Further, there were delays in preparing the reports as well. The time taken to generate aggregate reports was reduced from 3 hours to less than 10 minutes.
- *Efficiency Amplified:* Compared to manual entry and analysis, the MediCamp360 has significantly improved data collection, reporting, and patient follow-up. The output is a clean, robust database and error-free reports.
- *Streamlined Data Management*: The application's intuitive design enhances data retrieval and analysis, empowering our team with data-driven decision-making capabilities. Camp details and patient details are available readily so that the staff may retrieve them at any time of the day, without any delay, to follow up on patients or view the camp reports.
- *Continuous monitoring system:* Different views available in MediCamp360 allow monitoring of data collected in the field at a single glance. It also allows supervisors to make edits whenever required, before authorizing the final data analysis and report generation.

- *Utilization:* Between January to September 2023, 170 camps had been conducted. The data from these camps have been analyzed and mapped quarterly to plan for camps in the subsequent quarter.

Sustainability and replicability

MediCamp360 has stood the test of time and practice over the past 1 year. To ensure the longevity of this best practice we ensure the following:

- *Continuous Evolution*: We regularly update the application to seamlessly adapt to evolving requirements. We also integrate the new features of AppSheet, Google Sheets and Microsoft Office as and when the need emerges.
- *Training:* Every new user (social worker, intern or post-graduate) is given a 5-10 minute demo regarding the use of the Mobile interface of MediCamp360.
- *Replicability:* MediCamp360 can be replicated in various settings and customized according to the needs by optimal integration of different tools, such as AppSheet, Google Sheets and Microsoft Office.

Conclusion

MediCamp360 is an initiative that epitomizes resourcefulness, collaboration, and innovation while ensuring data security, ease of use, and cost-effectiveness. It has contributed to effective data collection, monitoring and error-free report generation. Further, it can be replicated in other Hospitals and Medical Colleges in a variety of settings as an efficient system to address data management issues.

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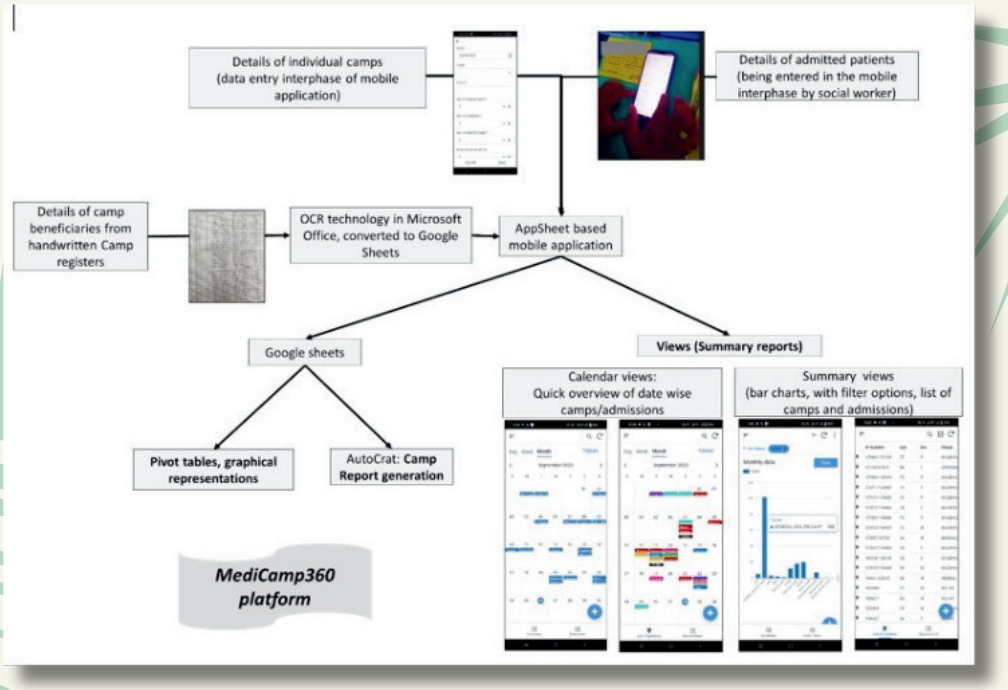

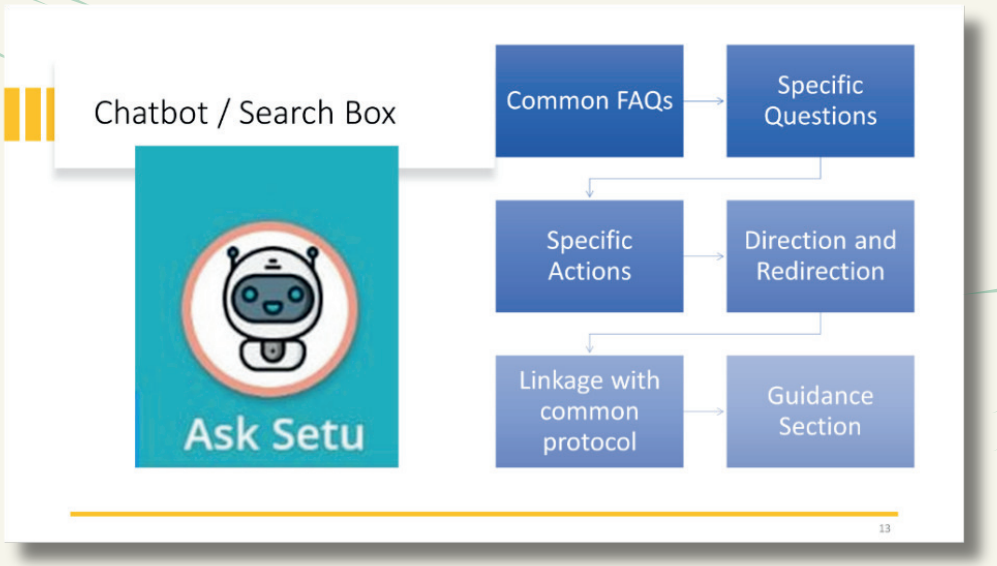

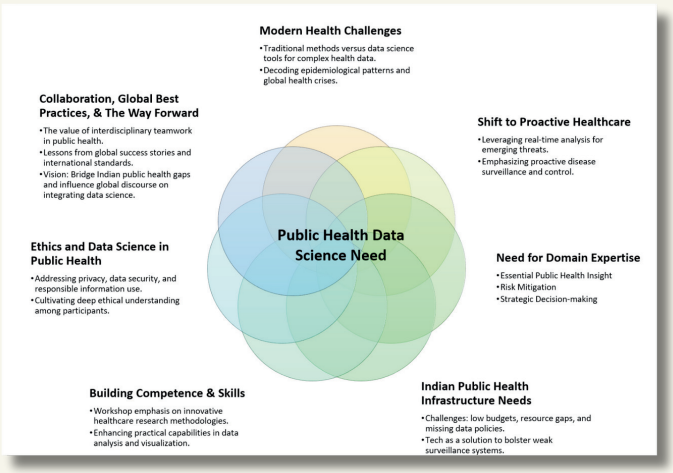

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