

MASTER OF PUBLIC HEALTH

Johns Hopkins Bloomberg School of Public Health & IIHMR University

Practicum Report

By

CHERYL D PONNACHAN

Cohort-10

(2022-24)

Under the Guidance of

Dr Dhirendra Kumar,

Professor, IIHMR University, Jaipur, Rajasthan

&

Dr P. Ganeshkumar

Scientist-E (Division of Epidemiology & Biostatistics), NIE-ICMR, Chennai

CERTIFICATE FROM FACULTY ADVISOR

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Cheryl D Ponnachan**, student of Master of Public Health Program offered by IIHMR University, Jaipur in cooperation with Johns Hopkins Bloomberg School of Public Health, Baltimore has undergone Practicum Training at the Indian Council of Medical Research- National Institute of Epidemiology (ICMR-NIE), Chennai, Tamil Nadu, India from November 20, 2023, to December 22, 2023.

The candidate has effectively conducted the assigned study during practicum training and demonstrating a sincere, scientific, and analytical approach.

The Practicum Training fulfills the requirements of the course.

I extend my best wishes for success in all her future pursuits.



Dr Dhirendra Kumar,
Practicum Advisor
Professor, IIHMR University, Jaipur

SCHOLAR'S CERTIFICATION

This is to confirm that I, **Cheryl D Ponnachan**, bearing Enrolment No: IIHMR-U/07/2022-2024/0059 and Hopkins ID: 5F2299 have completed the Practicum Project for the **Master of Public Health** program under the guidance of Dr Dhirendra Kumar as my practicum advisor and Dr P Ganeshkumar as my preceptor. The practicum was conducted from November 20, 2023, to December 22, 2023. I affirm that the work presented in this project is original and has not been used for the fulfillment of any other degree, diploma, fellowship, or similar titles in this or any other institution of higher learning.

Cheryl D Ponnachan
MPH Cohort- 10
2022-2024

ORGANIZATION'S CERTIFICATION

	
INTERSHIP CERTIFICATE	
This is to certify that	
<u>CHERYL D PONNACHAN</u>	
<u>CIPH, Jhumsa & IIMR, Jaipur</u>	
has successfully completed the ICMR-NIE Internship program	
in <u>PUBLIC HEALTH & EPIDEMIOLOGY</u>	
between <u>20-11-23</u> and <u>22-12-23</u>	
 Coordinator Internship program, ICMR - NIE, Chennai	 Director ICMR - NIE, Chennai

ACKNOWLEDGEMENT:

I am extremely grateful to Dr Dhirendra Kumar for his constant guidance and support throughout this practicum project. I also extend my sincere gratitude to Dr P Ganeshkumar for providing me an opportunity to do my practicum training under his guidance. I also intend to express my sincere thanks to Dr Seema Mehta for her unwavering support through the entire course period. I would also like to convey my heartfelt gratitude to each faculty at IIHMR, JHU and also ICMR for enriching my knowledge with their excellent teaching and wisdom. I also thank Ms. Richa for providing constant administrative support during the course.

Finally, I would like to acknowledge with gratitude, my beloved family for having supported me and believed me.

Date: 22/03/2024

Cheryl D Ponnachan
MPH (IIHMR-JHU)
Cohort X (2022-2024)

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ABBREVIATIONS:

GACD	Global Alliance for Chronic Disease
INDIAB	India Diabetes
NPCDCS	National Program for prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke
ASHAs	Accredited Social Health Activists
CHWs	Community Health Workers
PDSA	Plan-Do-Study-Act
VHN	Village Health Nurse
MLHP	Mid-Level Health Providers

PRACTICUM DETAILS:

1. Duration: 20th November 2023 to 22nd December 2023
2. Hours: 160 hours
3. Name of the Institute: Indian Council of Medical Research – National Institute of Epidemiology (ICMR-NIE), Chennai
4. Name of the Area of Internship: Public Health and Epidemiology
5. Supervisor: Dr P Ganeshkumar
6. Faculty Advisor: Dr Dharendra Kumar, Professor, IIHMR University, Jaipur.

PRACTICUM TITLE:

“Implementation Feasibility of Scaling up the Model Among NPCDCS Screened Individuals in Villupuram district, Tamil Nadu”

1. LEARNING OBJECTIVES:

1. To understand the Epidemiological concepts including study design, sampling methodologies and analytical techniques to analyze health related data.
2. To acquire the project management skills through the ongoing project, including planning and monitoring of the project.
3. To develop collaboration and teamwork skills

2. ABOUT THE ORGANIZATION:

Background: The ICMR- NIE is a premier institute under the Indian Council of Medical Research, formed in 1999 by merging the Central JALMA institute for Leprosy and the Institute for Research in Medical Statistics. It focuses on epidemiological studies, human resource development, national-level networking, and consultancy ¹.

Vision: “To be a catalyst for a vibrant national health system through responsive research, education and training in epidemiology and public health” ¹.

Mission: “To effectively contribute to enhancing the quality of life of Indian citizens and influencing public health practice and policies through research, education and training” ¹.

PROJECT OVERVIEW:

The **GACD¹ project**, entitled *"Scaling up Interventions to Improve the Control of Hypertension and Diabetes in Partnership with the Government of Kerala and Tamil Nadu."*

2.1 INTRODUCTION:

In LMICs, an urgent action is needed to mitigate the health and economic impact of diabetes and hypertension ²⁻⁴. Scaling up interventions for chronic NCDs in these

¹ GACD: Global Alliance for Chronic Diseases

countries faces challenges such as limited evidence, resource constraints, and health workforce shortages ⁵. This proposal focuses on demonstrating the feasibility of structured lifestyle modification (SLM) programs in Kerala and Tamil Nadu (Indian States), aiming to improve diabetes and hypertension outcomes. Collaborating closely with state governments and health institutions, the project integrates prevention with disease management, strengthening existing efforts and enhancing health workforce capacity ⁵. Previous trials in India have shown the benefits of SLM support, community engagement, lay health worker involvement, and technology enabled decision support in reducing cardiometabolic risk and improving outcomes for those with hypertension and diabetes. The proposed research aims to build an evidence-based approach for effective integration at both community and system levels ⁵.

2.2 REVIEW OF LITERATURE:

Health patterns in Kerala and Tamil Nadu (TN) diverge, given the distinct stages of epidemiological transition across various regions and states within the nation. The southernmost states of India, namely Kerala and TN, are positioned at a more progressed stage owing to elevated socioeconomic development and comparatively increased life expectancy. However, they also confront a significantly greater load of Non-Communicable Diseases (NCDs) ⁶. Kerala, with a population of 35 million, constitutes almost half of Tamil Nadu's population of 75 million. Despite the demographic difference, the socio-demographic characteristics of the two states are comparable, as approximately 50% of the population in both states is aged over 30, and around half still resides in rural areas. Both Kerala and Tamil Nadu are experiencing a significant increase in the occurrence of diabetes and hypertension. Nearly 25% of years of life lost and years lived with disability can be attributed to elevated blood pressure and high fasting plasma glucose in both states, indicating a growing health burden⁷.

According to the findings from the INDIAB study ⁸, the prevalence of diabetes among adults in Tamil Nadu was 10.4%, showing an upward trend (compared to the national average of 7.3%). In a representative survey conducted statewide in Kerala ⁹, the prevalence of diabetes and hypertension among adults is reported as 19.8% and 30.6%, respectively. Approximately half of the individuals affected are undergoing some form of treatment. However, control rates for both conditions remain low in both states, with only around one-third of individuals under treatment achieving effective control ⁹.

The primary health challenge facing the Indian healthcare system revolves around preparing both the system and healthcare workforce to combat the Non-Communicable Diseases (NCDs) epidemic. As a reaction, the country has initiated the ambitious National Program for prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) ⁵. Initially launched as pilot project in 2008, it expanded to encompass over 100 districts in 2010. The key objective of NPCDCS is implementing comprehensive measures to prevent and control NCDs,

incorporating screening, detection, disease management, and primary prevention activities such as health promotion and education.

National efforts have led to the establishment of district NCD clinics, with further expansion plans in progress. However, concerns are raised regarding the financial and human resources limitations associated with this model. In the states of Kerala and Tamil Nadu, NPCDCS implementation has primarily concentrated on opportunistic screening, case detection, referral, and elevating NCD awareness among the general population⁵. To enhance the outcomes of hypertension and diabetes management in Kerala and Tamil Nadu, it is imperative to implement and expand a model that integrates screening, secondary prevention, and disease management strategies. This approach will fortify the existing workforce and bolster the capacity of the health systems in both states, ensuring the long-term sustainability of new strategies at community and state levels. Presently, in rural areas of both states, there exists a health sub-center for every 3000-5000 people. Each sub-center has at least one community health worker, with two in Kerala, employed by health system. These workers are equipped with resources, tools, and, in the case of Kerala, computer tablets to measure blood pressure and blood glucose in each sub-center.

Additionally, in Kerala (unlike in Tamil Nadu), there are accredited social health activists (ASHAS) at a ratio of one per 1000 population. In Tamil Nadu, there is also a workforce of Anganwadi workers for every 1000 people operating under the statewide Integrated Child Development Services Scheme, focusing on childhood nutrition. Despite approximately 50% of healthcare services in Kerala and Tamil Nadu being provided by the private sector, the proposed intervention will predominantly occur in the public sector, thereby augmenting its capacity. However, both public and private sector patients will engage in the suggested community-based program, with a slightly higher participation from the public sector.

2.3 AIMS OF THE PROJECT:

1. To evaluate the efficacy of a peer support initiative and a community mobilization approach in improving the prevention and control of diabetes and hypertension, the evaluation will employ the RE-AIM² Framework and Theoretical Framework of Acceptability⁵.
2. To recognize and tackle contextual elements in both the community and healthcare system that facilitate or hinder the expansion of a program, utilizing the Normalization Process Theory⁵.
3. To ascertain the program's worth and return on investment by evaluating both program expenses and cost-effectiveness⁵.

2.4 PROJECT PLAN AND EVALUATION METHODOLOGY:

Stage 1: Involving stakeholders and securing their commitment.

Stakeholder involvement will persist throughout the project. A planning workshop in July 2018 brought together research and implementation partners, including the Indian National Institute of Epidemiology, Sree Chitra Tirunal Institute of Medical Sciences and Technology, and the governments of Tamil Nadu and Kerala. Key

² RE-AIM: R: Reach, E: Effectiveness, A: Adoption, I: Implementation, M: Maintenance

takeaways included recognizing state-specific differences, strong government commitment to NPCDCS rollout, dedication to implementing evidence-based strategies, and identifying barriers and solutions for scaling up⁵.

Stage 2: Designing Adaptation and Implementation Strategies for the NPCDCS

A second Stakeholder Forum in March 2019 aims to finalize a scalable model integrating new strategies with disease management, screening, and secondary prevention to enhance health system capacity in both states. The design will be developed collaboratively with user groups, such as Community Health Workers (CHWs) and Accredited Social Health Activists (ASHAs), through participatory workshops following Plan-Do-Study-Act (PDSA) cycles. The RE-AIM framework will guide planning, implementation, and evaluation, ensuring effectiveness and sustainability⁵.

Stage 3: Implementation Feasibility of Scaling up the Model Among NPCDCS Screened Individuals in Kerala and Tamil Nadu⁵.

The viability of the adapted intervention model intervention will be assessed in 300 communities across both Tamil Nadu and Kerala, where screening for hypertension and diabetes has already taken place through sub-centers. These sub-centers, serving population of 3000-5000, are supervised by a Junior Public Health Nurse or Auxiliary nurse Midwife, and may include additional Community Health Workers (CHWs) like ASHAs (only in Kerala) or Village Health Nurse (VHNs, Tamil Nadu). Sub-centers in Kerala also have an additional male health worker (Junior Health Inspectors)⁵.

In each sub-center, a minimum of 100 individuals with hypertension or diabetes will be recruited to form at least 6 peer support groups facilitated by frontline CHWs/ASHAs. This trial directly benefits over 60,000 individuals. Estimations suggest that in each sub-center area, the population above 30 years (the target group for NPCDCS) is around 2,500, with approximately 1,000 individuals having hypertension or diabetes (40% prevalence). Only 50% of those with these conditions are aware, and from this group, 50% are on treatment, with 30-40% participating in NPCDCS⁵. The implementation phase will target these patients, employing a train-the-trainer model with CHWs to train community actors like ASHAs or VHNs. These community actors will, in turn, provide training and practical support to lay community members leading each peer group and community mobilization efforts.

Stage 4: Scale-up – Transition to population- based screening and implementation:

During the upcoming phase (Years 3-5), the initiative will expand to include all individuals with hypertension or diabetes in a chosen sub-center, as well as those with a moderate to high risk of cardiovascular disease (CVD) using a self-administered risk assessment based on our K-DPP trial (with a sample size of 1000 per sub-center, including both known and newly identified cases). Building on the evaluation results from stage 3, the intervention model and its implementation will be further refined (refer to fig.1)⁵. Community Health Workers (CHWs) will be involved in door-to-door screenings and case identification as a component of National Programme for Prevention and Control of Diabetes, Cardiovascular Disease, Stroke (NPCDCS). Capacity-building efforts, including Plan-Do-Study-Act (PDCA) cycles, training programs, and quality assurance measures, will also focus on refining screening procedures. However, during this stage, the intervention itself will largely follow the

implementation procedures from the previous stage. Each sub-center will have a minimum of 40-50 peer groups supervised by CHWs ⁵.

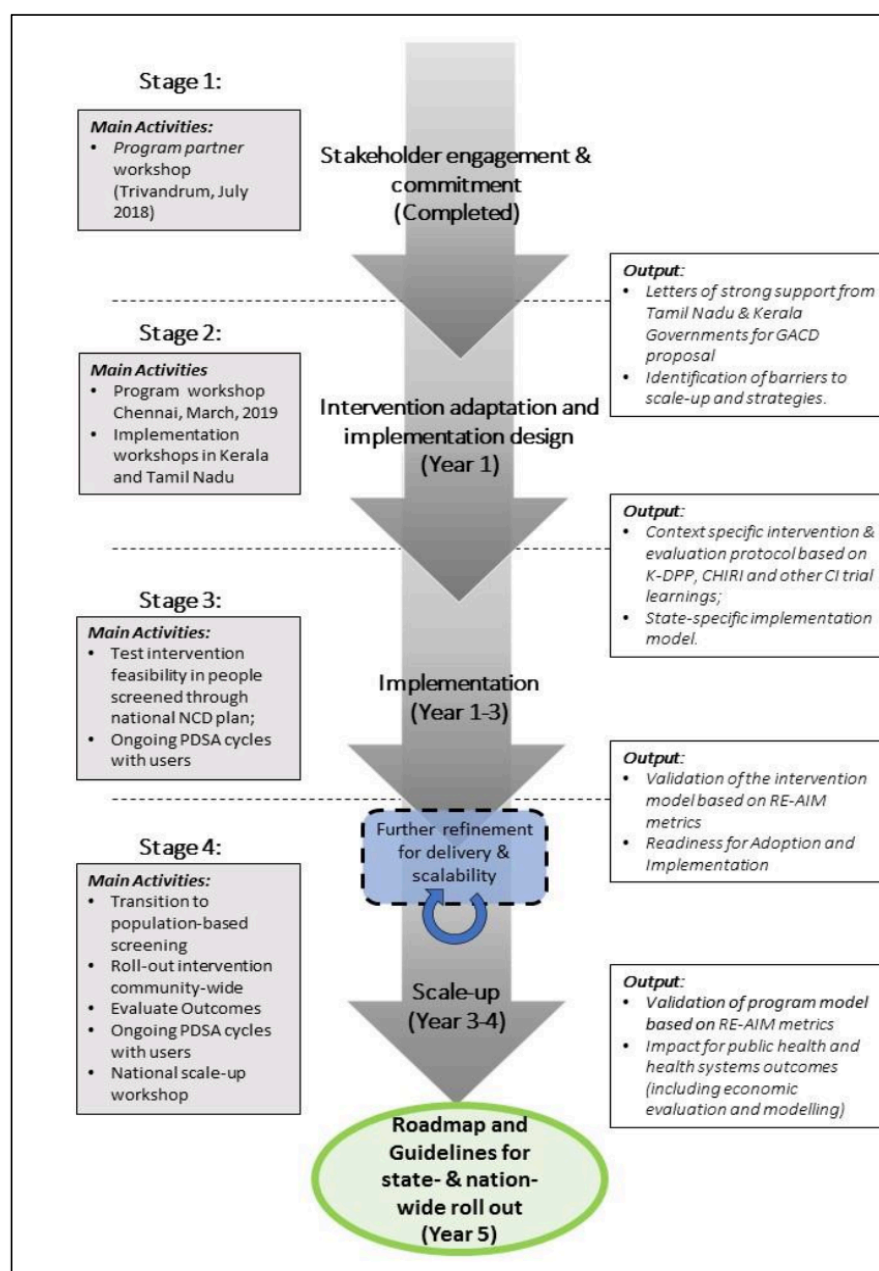


Figure 1: Timeline for Project Stages and Outline ⁵

3. PRACTICUM FOCUS:

3.1 In GACD Project:

“Implementation feasibility of Scaling Up Model Among NPCDCS Screened Individuals in Villupuram district, Tamil Nadu.”

During a three-day field work in Villupuram district, roles and responsibilities were designated by the advisor Dr P Ganeshkumar and the project consultant, Dr Lavanya

with the objective of data collection processes and evaluating the execution of intervention strategies. The visit was organized into distinct teams, each tasked with specific mandates across the district's 13 villages.

Methodology adopted during this visit includes:

- 1) Facilitating the collaboration between MLHPs and Nursing Students for the survey and physical assessment.
- 2) MLHP- guided household visits: MLHPs guided the process of locating and identifying households within the designated block.
- 3) Engagement of Nursing students and assessing their performance: Nursing students were principally engaged in conducting physical assessments and collecting and concurrently their performance was evaluated through a structured supervision questionnaire.
- 4) Concurrent Data Collection Utilizing Open Data Kit (ODK) App: It contained several sections including Demographic information.

3.2 METHODOLOGY :

Baseline Survey And Cross- Sectional Study:

To evaluate the feasibility of implementing the adapted intervention model among individuals screened under NPCDCS, a *baseline survey* and *cross- sectional study* were conducted. A *two-stage cluster sampling* approach was used in which:

Stage 1: 192 villages were selected through *probability proportional to size (PPSS)* method. Subsequently, 40 clusters, each representing a single village out of the total 192 clusters, were selected.

Stage 2: 40 patients from each cluster were randomly selected by *Simple Random Sampling (SRS)*, resulting in a *total sample size* (n) = 1600 individuals (800 HTN and 800 DM). Within the DM subgroup, 747 out of the targeted 800 samples were successfully collected. The analysis was conducted with a confidence interval of 95%.

Variables for the analysis:

Demographic variables: Age and Gender

Health service utilization: Frequency of healthcare visits, adherence to medication

Anthropometric measurements: Height, weight, waist circumference

Blood Pressure: Both Systolic and Diastolic pressure measurements

HBA1C levels

Statistical Analysis:

The statistical analysis was done by *STATA*. Prevalence study was performed to determine the prevalence rate of hypertension and diabetes mellitus in the sampled population

The *design effect*, accounting for the potential increase in variance due to clustering, was estimated at 1.20. Moreover, a *response rate of 10%* was factored into the design effect from baseline to endline surveys.

3.3 LIMITATION:

While there were opportunities for hands-on experience and data collection, it is important to note that interns were not granted access to the results or data analysis findings conducted by the ICMR. Therefore, this report is limited in its ability to provide comprehensive insights into the analysed data and findings of the study.

4. OTHER ROLES AND RESPONSIBILITIES:

1. Data extraction for Systematic Review of Cervical Cancer being done in ICMR, Chennai
2. Data extraction for Systematic Review of Breast Cancer being done in ICMR, Chennai.

The data extraction process involved the extraction of data from each included study using the standardized data extraction form. The extracted data encompassed various aspects, including study characteristics such as first author's name, study design, publication year and study duration and sample size. It also included sampling method, study setting, diagnosis, type of screening test and criteria for diagnosing breast/ cervical cancer. Moreover, it included demographic characteristics like age and gender, and details of conclusion, recommendation, and limitation.

5. CHALLENGES FACED:

One of the challenges encountered during the internship was that the data presented various discrepancies, particularly concerning the influence of the MLHPs on patient's responses. This concern was brought into by Dr Ganeshkumar (Scientist-E, ICMR and the practicum advisor). To address this issue, a decision was made to conduct a resurvey of a small sample of patients. This involved reaching out to them again, either through calls or in-person visits, to verify their responses regarding medication adherence. This additional step was crucial in ensuring the accuracy and reliability of the data which was to be collected, to facilitate a more appropriate analysis and understanding of the findings.

6. MY LEARNINGS FROM THE PRACTICUM:

Through my involvement in the field work in Villupuram district and data extraction for systematic reviews, my learnings can be listed as below:

- Learned about various study designs and their applications in epidemiological research.
- Gained knowledge of different sampling methodologies including random sampling, stratified sampling, and cluster sampling, and understood their implications on study outcomes.
- Gained experience in stakeholder communication.
- Enhanced communication skills by effectively conveying ideas and discussing strategies.

- Learned to collaborate with diverse team members, including researchers, healthcare professionals and community stakeholders, to achieve common goals.
- Guiding MLHPs in household visits underscored the significance of community engagement and rapport-building in data collection process.
- Extracting data for systematic review of cervical and breast cancer studies provided practical experience in evidence synthesis and critical appraisal of scientific literature.
- Focusing on study characteristics, sampling methods, and diagnostic criteria underscores the importance of standardized data extraction protocols in ensuring consistency and reliability in research findings.
- Documenting conclusions, recommendations, and limitations emphasized the significance of contextualizing research findings and acknowledging potential biases in study interpretations.

Overall, these experiences have deepened my understanding of research methodologies, data analysis techniques, and the complexities of implementing healthcare intervention in real world settings. They have equipped me with valuable skills and knowledge applicable to epidemiological research and public health practice.



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8. Annexure

8.1 Annexure I

Image 1: Open Data Kit (ODK) Survey Questionnaire developed by ICMR team.

Scaling up interventions to improve control of hypertension and diabetes in partnership with the governments of Kerala and Tamil Nadu
"GACD- Community Baseline survey (November 2023)"

Qn o	Variable	Options	Remarks	
Q1	General Data Collector ID			
Q2	District மாவட்டம்	01- Villupuram 02- Cuddalore		கடலூர் விழுப்புரம்
Q3	Block Choose the specific block	01- Radhapuram 02- Ayyangudi		ஆயங்குடி ராதாபுரம்
Q4	Village இராபம் Choose your allotted village			- உயர் இரத்த அழுத்தம் - நீரிழிவு நோய் - இரண்டும்
Q5	Current diseases status (Pressure/ Ratha azhutham) (Sakkara noli)	01- HTN 02- DM 03- BOTH	If HTN, skip DM questions If DM, skip HTN questions	
Q6	Patient Id தனித்துவமான அடையாளம்		As per the list	
Q7	Individual status தனி நபர் நிலை	01- Willing to participate 02- Incomplete due to midway refusal 03- Selected individual was later determined to be ineligible 04- Selected respondent not at home 05- Selected respondent refusal 06- Selected respondent incompetent 07- Other / Non-response		
Q8	Whether consent obtained ஒப்புதல் கிடைத்ததா?	01- Yes 02- No		
Q9	Participation consent for blood sample collection ஒப்புதல் கிடைத்ததா?	01- Yes 02- No		
Q10	Phone number Write only ten-digit number. (Don't add +91)			
Q11	Age (years) வயது (முடிந்த ஆண்டுகளில்)			

Q1 2		Gender Do not ask, Mark it by appearance	01- Male 02- Female 03- Transgender 04- Prefer not to say		
Q1 3		Marital status Ask for "how many members in your family?" If they mention spouse then, mark for married. If they did not mention spouse, ask the reason and mark appropriately உங்க வீட்டில் எத்தனை பேரு? உங்க வீட்டு அம்மா/ ஐயா என்ன பன்றார்கள்?	01- Unmarried 02- Married 03- Widowed 04- Separated or Divorced 05- No response /Do not want to answer		
Q1 4		Education கல்வி 01- படிக்கவே இல்லை 02- 5 வது வர படிச்சிருக்கேன்	01-No formal schooling 02-Less than Class 6 03-less 6 or 7 or 8 completed 04-Class 9 or 10 completed 05-Class 11-12 completed/ITI 06-Graduation or diploma completed 07-Postgraduate		

			degree 08-No response		
Q1 5		What is your current employment status? உங்கள் தற்போதைய வேலை நிலை என்ன? Professional: Doctor, Engineer, Lawyer, Teacher, Architect Medium to Large Business: Manufacturing Company, IT Services Company Middle / Senior Executive Officer in Organization: Financial Officer, Marketing, Human Resources Agriculture Land Owner: Farmer, Vineyard Owner, Owner	01-Professional 02-Medium to large Business 03-Middle / Senior Executive officer in organization. 04-Agriculture land owner 05-Sales and Marketing executives/ Clerical 06-Self-employed and small business 07-Skilled manual laborer 08-Unskilled manual/agricultural laborer 09-Student 10-Homemaker 11-Retired 12-Unemployed (able to work) 13-Unemployed (unable to work) 14-No response		

		Sales and Marketing Executives / Clerical: Sales Manager, Marketing Coordinator, Administrative Assistant, Data Entry Clerk, Receptionist Self-employed and small business- Petti kadal, Flower shop, Maavu kadal, any own shop Skilled Manual Labour: Carpenters, Electricians, Plumbers, Welders, Masons, Tailors, Mechanics, Cooks and Chefs, Jewelry Artisans, Technicians (e.g., HVAC, Medical, IT), Painters and Decorators, Graphic Designers, Tilers, Blacksmiths, Instrument Makers Unskilled: Coolie, Mason (kothanai), 100 days' work, Driver who work under owner, load workers (mootai thookam nabor)			
Q1 6		Blood pressure reading (1): Systolic BP in mm Hg Write only in numbers. Do not use words.			

Q1 7		Blood pressure reading (1): Diastolic BP in mm Hg Write only in numbers. Do not use words.			
Q1 8		Blood pressure reading (2): Systolic BP Write only in numbers. Do not use words.			
Q1 9		Blood pressure reading (2): Diastolic BP Write only in numbers. Do not use words.			
Q2 0	HTN specific questions	In the past 2 weeks, were you taking any medication or drugs for raised blood pressure that had been prescribed/ given by a doctor or other health worker? Try to use the following sequence for identifying the answers: - இன்னொரு மாதிரி சாப்பிட்டிருக்கிறீர்களா? • நெக்கு - மாதிரி சாப்பிட்டிருக்கிறீர்களா? - இந்த வாரத்துல மாதிரி சாப்பிட்டிருக்கிறீர்களா?	01- Yes 02- No If yes skip Q21		

		போன வாரத்துல மாதிர சாப்பிடாம இருந்திருக்கீங்க னா ? (please choose no)			
Q2 1		What is the reason for not taking medication for raised blood pressure prescribed by a doctor or other health worker? எதனால் நீங்க மாதிர எடுத்துக்கல?	01-Not prescribed 02-Too expensive/Could not afford 03-I feel sick 04-Side effects 05-Drugs weren't working 06-No health provider /pharmacy nearby 07-No one to help me to reach health facility 08-Too long a wait in health facility 09-Too sick to make the trip 10-Do not trust medical care 11-Do not know where to go 12- Drug not available with me 13- Others (Specify)		
Q2 2		If you are currently taking any medication (past two weeks) or drugs for high blood pressure, from where you received the drugs? நீங்க எடுத்துகிட்ட மாதிர எங்க வாங்கினது? Please orient with MLHP and note down PHC name, GH (location) for easy understanding For e.g. if patient says "I will take medicine from Muttam Government Hospital" You need to be familiar that Muttam is a Primary Health Centre and not Government Hospital as such,	01-Private doctor's clinic 02-MTM, Primary Health center / Community health Center 03- Public/Government (district/taluk) hospital 04-Govt. Medical college/state referral Hospital 05-Private AYUSH clinic 06- Traditional healer 07-RMP 08-Pharmacy 09-Sub centre 10-Health and wellness centre 11-Other facilities 12-Don't know 13-Refused/No response		
Q2 3		For how long were the drugs (medication) issued for raised blood pressure? உங்களுக்கு எவ்வளவு நாளானது மாதிர குடுத்திருக்காங்க? / உங்க கைல மாதிர எவ்வளவு நாளானது வெச்சிடுப்பீங்க?	01- <1 month 02- 1 month 03- 2 months 04- 3 months 05-More than 3 months		
Q2 4		Names of the issued tablets (Multiple responses possible) Please verify with MTM card in the drug box and MLHP	01-Amlodipine 5 mg 02-Amlodipine 10 mg 03-Telmisartan 40 mg 04-Telmisartan 80 mg 05-Chlorthalidone 12.5 mg 06-Chlorthalidone 25 mg 07-Atenolol (any dosage) 08-(Any dosage) Losartan /Losar-H 09-Hydrochlorothiazide 12.5 mg 10-Hydrochlorothiazide 25 mg 11-Aspirin 12-Statin 13- If any other medication related to hypertension, Please specify with dose		
Q2 5		When was your recent visit to a doctor to consult for high blood pressure?	01- Within 1 month 02- Between 1 - 3 months 03- Between 4 - 6 months 04- Between 7 - 12 months		
Q2 6		In the last 3 months have you ever had your BP measured by a doctor or health care worker? இந்த மூன்று மாதத்துல டாக்டர் இல்லாட்டி வேற யாராவது உங்களுக்கு BP பார்த்தாங்களா?	01- Yes 02- No		
Q2 7		When was your blood pressure last measured by a health professional/workers? கடைசியா உங்களுக்கு டாக்டர் இல்லாட்டி வேற யாராவது BP பார்த்தாங்களா? எப்போ?	01- Within 1 month 02- Between 1 - 3 months 03- Between 4 - 6 months 04- Between 7 - 12 months 05- Did not visit/measured in the past one year		
Q2 8	DM specific questions	In the past 2 weeks, were you taking any medication or drugs for blood sugar that had been prescribed/ given by a doctor or other health worker?	01- Yes 02- No	If yes skip Q29	

			wait in health facility 09- Too sick to make the trip 10- Do not trust medical care 11- Do not know where to go 12- Drug not available with me 13- Others (Specify)		
Q3 0		If you are currently taking any medication (past two weeks) or drugs for high blood sugar, from where you received the drugs? நீங்கள் எடுத்துகொண்ட மாதிர எங்கள் வாங்கினது? Please orient with MLHP and note down PHC name, GH (location) for easy understanding For e.g. if patient says "I will take medicine from Muttam Government Hospital" You need to be familiar that Muttam is a Primary Health Centre and not Government Hospital as such.	01- Private doctor's clinic 02- MTM, Primary Health center / Community health Center 03- Public/Government (district/taluk) hospital 04- Govt. Medical college/state referral Hospital 05- Private AYUSH clinic 06- Traditional healer 07- RMP 08- Pharmacy 09- Sub centre 10- Health and wellness center 11- Other facilities 12- Don't know		
			13- Refused/No response		
Q3 1		For how long were the drugs (medication) issued for blood sugar? Drug availability உங்களுக்கு எவ்வளவு நாள்களுக்கு மாதிர குடுத்திருக்காங்க? / உங்க கைல மாதிர எவ்வளவு நாள்களுக்கு வெச்சிடுறப்பீங்க?	01- <1 month 02- One month 03- 2 months 04- 3 months 05- More than 3 months		
Q3 2		Names of the issued tablets (Multiple responses possible) Please verify with MTM card in the drug box and MLHP	01- T.Metformin 02- T.Glibenclamide 03- T.Glibenclamide 04- T.Glipizide 05- T. Sitagliptin 06- T. Vidagliptin 07- T. Glycomet - GP1 08- T. Gmer 2 09- T. Rozavel 10- T. Rozagold 11- T. Neurobion Forte 12- T. Glucalazide 13- T. voglibose 14- T. Becosules 15- T. Clopidogrel 16- If any other medication related to hypertension, Please specify with dose		
Q3 3		When was your recent visit to a doctor to consult for high blood sugar? சமீபத்துல எப்போ டாக்டர் அ பாத்தீங்க	01- Within 1 month 02- Between 1 - 3 months 03- Between 4 - 6 months 04- Between 7 - 12 months 05- Did not visit/measured in the past one year	If not visited go to Q24, if not skip Q24	
Q3 4		In the last 3 months have you ever had your BP measured by a doctor or health care worker?	01- Yes 02- No		

		இந்த மூன்று மாதங்களுக்கும் டாக்டர் இல்லாட்டி வேறு யாராவது உங்களுக்கு சக்கர அளவு பார்த்தாங்களா?			
Q3 5		When was your blood sugar last measured by a health professional/workers? கடைசியா உங்களுக்கு டாக்டர் இல்லாட்டி வேறு யாராவது சக்கர அளவு பார்த்தாங்களா? எப்போ?	01- Within 1 month 02- Between 1 - 3 months 03- Between 4 - 6 months 04- Between 7 - 12 months 05- Did not visit/measured in the past one year		
Q3 6		HbA1c reading To be filled as per Lab Findings			
Q3 7	General	Blood pressure reading (3): Systolic BP Write only in numbers. Do not use words.			
Q3 8		Blood pressure reading (3): Diastolic BP Write only in numbers. Do not use words.			

Q3 9		Height in Cms Write only in numbers. Do not use words.			
Q4 0		Weight in Cms Write only in numbers. Do not use words.			
Q4 1		Waist in Cms Write only in numbers. Do not use words.			

8.2 Annexure II



Image 2: Field work: Data is being recorded through ODK app and physical measurement (weight) is being taken by nursing students. MLHP has guided the team to this selected house in Ayyur Agaram village in Villupuram district, Tamil Nadu .



Image 3: Cross checking the measurements: Measuring Height and Blood Pressure respectively in individuals with HTN or DM in Ayyur and Mundiampakkam village in Radhapuram block, Tamil Nadu



Image 4 Data collection process in selected household in Sangamedu Village, Radhapuram block, Villupuram district, Tamil Nadu. Project consultant, intern (myself), nursing student and MLHP can be seen here.