GACD Implementation Science e-Hub

ADVANCED PROGRAMME

GLOBAL ALLIANCE FOR CHRONIC DISEASES
AN ALLIANCE OF HEALTH RESEARCH FUNDERS

MODULE 2 | AT SCALE IN THE REAL WORLD

Frameworks and context at scale in the Kerala Diabetes Prevention Program

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Selected health indicators for Kerala and India

Indicators	Kerala	India
Infant Mortality Rate	6	28
Crude Birth Rate	13.2	19.5
Life Expectancy	75	70
Diabetes Prevalence	25.5	11.4

Indian Sample Registration System 2022; Lancet Diabetes & Endocrinology 2023

Introduction

Diabetes prevention programs in Finland, USA, and China have demonstrated a reduction in type 2 diabetes incidence between 42–58%

In the Kerala Diabetes Prevention Program (KDPP), after a **median follow-up of 24 months**:

- Diabetes developed in 17.1% of 507 control participants and 14.9% of 500 intervention participants (p = 0.36)
- The **incidence of diabetes in the IGT subgroup** was significantly lower in the intervention group (p=0.038)

Compared with the control group, intervention participants had

- A significant reduction in major **cardiovascular risk factors**
- A significant increase in **physical functioning score** of the Health Related Quality of Life scale (p = 0.016)

Thankappan KR et al. PLOS Medicine 2018; 15(6):e1002575. doi: 10.1371/journal.pmed.1002575 | IGT, impaired glucose tolerance

Cultural adaptation of the KDPP study

The KDPP was adapted to Kerala, India from evidence-based lifestyle interventions implemented in high income countries, namely, Finland, USA, and Australia

The adaptation process:

1. Needs assessment
2. Formulation of program objectives
3. Program adaptation and development
4. Piloting of the program and its delivery
5. Program refinement and active implementation

The objectives of the KDPP study

- To develop a program delivery model for diabetes prevention and related capacity building in the Indian state of Kerala that can be further scaled up to whole of India in the future

- To achieve significant improvements in the behavioral risk factors

Methodology

Conducted in partnership with Kudumbasree State Mission (KSM)

- KSM is the largest women's organization with more than 4.2 million members spread all over Kerala State

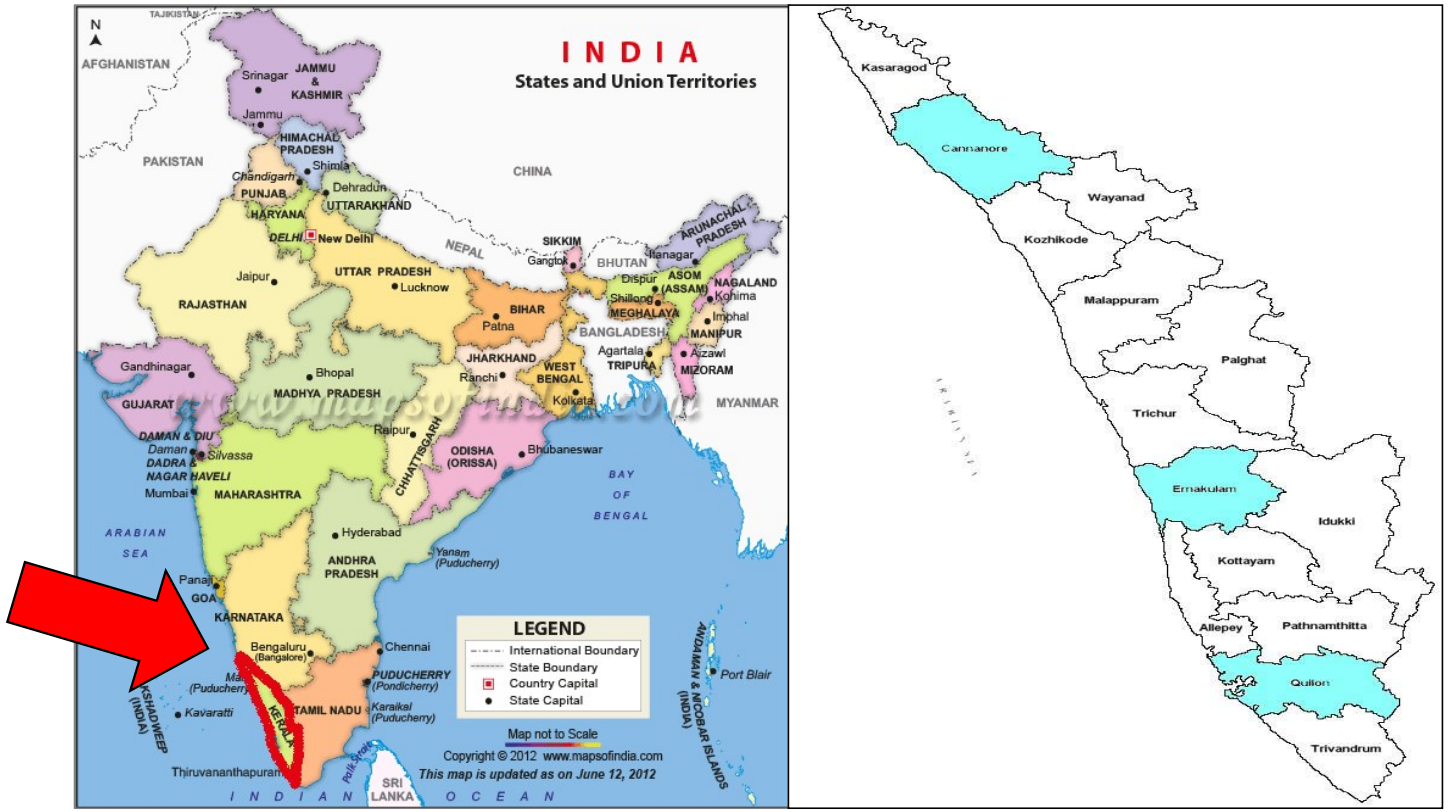
Three geographically and culturally distinct districts were selected

- One each from south, central, and northern Kerala
- Approximately 3 million population each

In each district the plan was to train 40 KSM trainers (total 120)

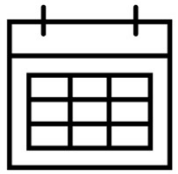
- Each KSM trainer was expected to train 125 peer leaders of Neighborhood Groups
- In each district 5,000 peer leaders were trained making a total of 15,000 in the state

Districts in the KDPP study



Kollam in the south, Ernakulum in the middle and Kannur in North

Methodology continued



Each peer leader was expected to take **12 monthly sessions** to their Neighborhood Groups (NGs) over one year

- An NG consist of nearly 25 women
- Thus, we planned to reach at least 375,000 women and their family members over a period of one year

The **materials for the sessions were adapted from KDPP-RCT** and modified and distributed by the community development chairpersons to the peer leaders

Training framework

	KOLLAM	ERNAKULUM	KANNAR
	150 trainers	180 trainers	200 trainers
	5000+ NGs	5000+ NGs	5000+ NGs
Phase I: *State-level pilot training (May 2016)*			
Training of KSM trainers	4	4	4
Training of peer leaders	12	12	12
	Main program inauguration (August 2016, Kollam)		
Phase II: *District level Training (Sept–Nov 2016)*			
Training of KSM trainers	39	39	40
Phase III: *Block level Training*			
Training of peer leaders	5000 5000 NGs	5143 5143 NGs	5083 5083 NGs

KDPP scale up inauguration, August 2016

Dr KT Jaleel, Hon. Minister for Local Administration inaugurated the KDPP implemented jointly by SCTIMST and the Kerala Kudumbashree Mission in August 2016 at Kottarakara.

Adv P Aisha Potti, MLA, Kottarakkara presided over the function.

Kudumbashree peer leaders and members who attended the inaugural function of the KDPP.

Resources distributed to KDPP study participants

KSM training (train the trainer)	Training manual
	Flip chart
	Measuring tapes
Peer leader training	Training manual
	Flip chart
	Measuring tapes
	Report form for 12 monthly sessions
Participants	Receive classes (no resources)
Data collectors	Weighing scales
	Measuring tapes

Content of small group sessions

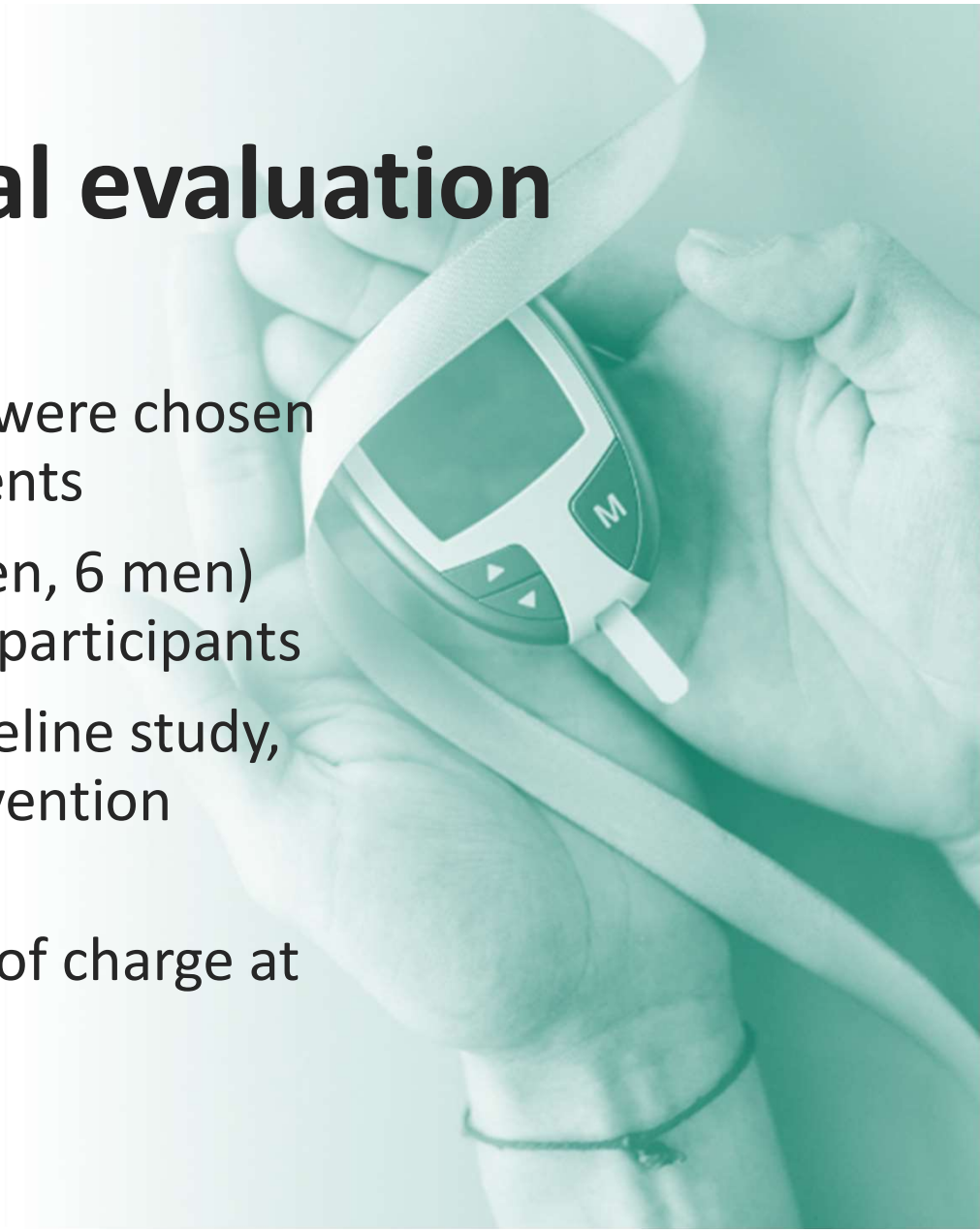
Behavioural evaluation

- 1200 participants (400 per district) were selected using systematic random sampling and interviewed before and after the intervention.
- 60 NGs (20 per district) were selected to collect baseline and one-year post-intervention data.
- All participants (women and family members) from the 60 selected NGOs were invited to participate.

Participants unwilling to provide consent or unable to contact on third consecutive house visit were considered as unavailable to participate in the study.

Clinical and biochemical evaluation

- 24 out of 60 randomly selected NGOs were chosen for blood tests and clinical measurements
- At least 13 individuals per NG (7 women, 6 men) were randomly selected, totalling 312 participants
- 387 individuals participated in the baseline study, and 321 participated in the post-intervention evaluation
- All measurements were provided free of charge at mobile clinics



Measurement domains and survey tools at baseline and 12 months

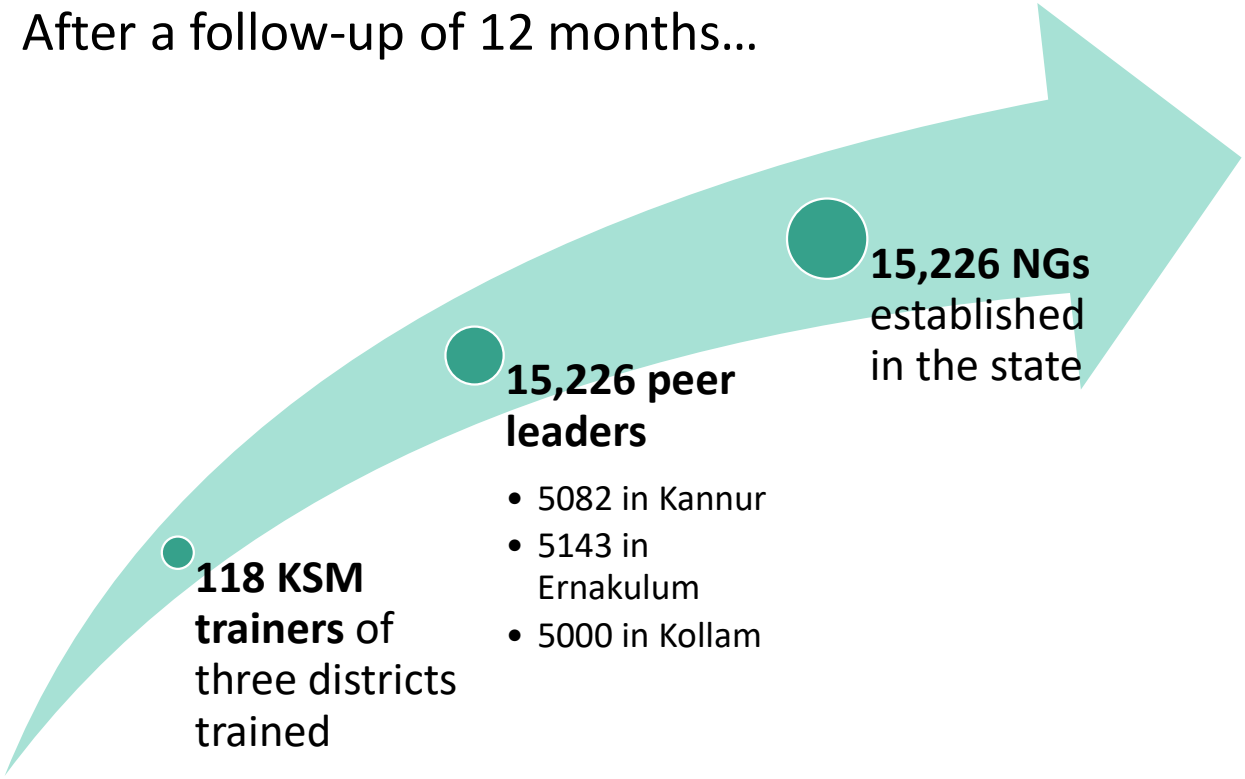
Variable	Components	Measurement tools/questions
Demographic measures		Age, sex, education, occupation, and monthly household expenditure
Scalability		REAIM (Reach, Effectiveness, Adoption, Implementation, Maintenance)
Behavioural measures	Physical activity	Modified Global Physical Activity Questionnaire (GPAQ)
	Tobacco use	WHO STEPS question
	Alcohol use	WHO STEPS question
	Diet	Modified Food Frequency Questionnaire (FFQ)
Clinical measures		Waist circumference; weight
Biochemical measures		Fasting Blood Sugar (FBS),2 hr OGTT, lipid profile (total cholesterol, HDL, LDL, triglycerides)

Outcomes

Outcomes		Variables
Primary	Scale up	REAIM Framework
	Incidence of T2DM	Fasting Blood Sugar (FBS) 2-hour Oral Glucose Tolerance Test (OGTT)
Secondary	Glycemic control	Fasting glucose, post load glucose
	Lipid profile	Total cholesterol, triglycerides, HDL, LDL cholesterol
	Behavioral measures	Diet, physical activity, tobacco use, alcohol use

Major findings

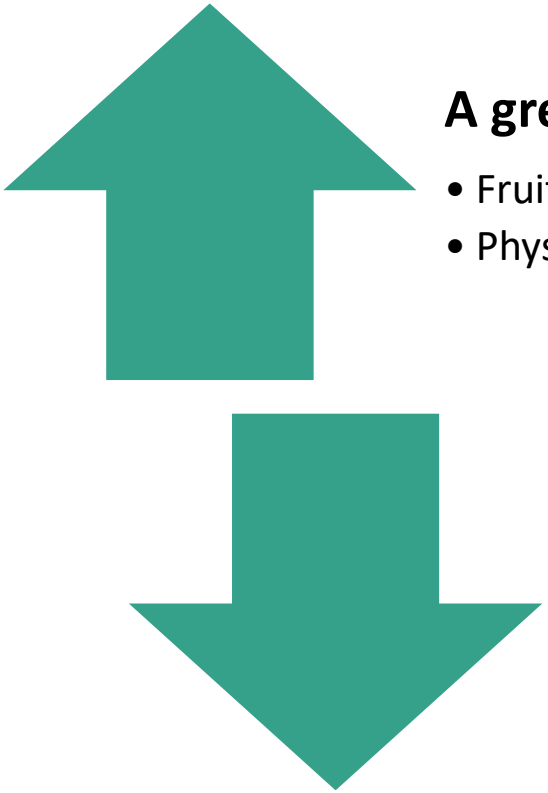
After a follow-up of 12 months…



- Each peer leader provided training to an average of 25 people in a NG, reaching a total of 380,650 women and their families
- Out of the 387 participants in the baseline:
  - 23% had diabetes (fasting blood sugar ≥126 mg/dl)
  - 38.5% had pre-diabetes (fasting blood sugar 100–125 mg/dl)

Major findings continued

Compared with the baseline evaluation, post intervention evaluation showed…



A greater increase in:

- Fruit and vegetable intake (p = 0.038)
- Physical activity (0.03)

A reduction in:

- Alcohol use (p = 0.018, men only)
- Body weight (p=0.05)
- Waist circumference (p=0.03)
- Total cholesterol (p=0.06)

What was adapted to the new context?

Emphasis on peer support through group rather than individual contacts

Group members were mostly women, and the effort was to change behaviour through them

Participation of men was limited

Dietary behaviour can be better improved through women in Kerala

How was the adaptation process conducted?

FORMATIVE EVALUATION
Interviews with professionals, administrators, and those with diabetes

STATE LEVEL STEERING COMMITTEE
Director of medical education, director of health services, KSM state leaders, experts in diabetes management, physical activity, nutrition, tobacco use and alcohol use

DISTRICT LEVEL IMPLEMENTATION COMMITTEE
District Panchayat President, District KSM mission coordinator, KSM district leaders, secretaries of accredited training groups of KSM

How was adaptation and implementation evaluated in the new context?

First level on the effectiveness of scale up

- This was done through the number of peer leaders expected to be trained and actual number trained
- Number of sessions conducted by each peer leader in each of the 15,000 NGs
- Number participated in each of the 15,000 NGs (men and women separately)

Second level on change in risk factors

- Change in behaviour risk factors after one year intervention
- Change in clinical and biochemical risk factors

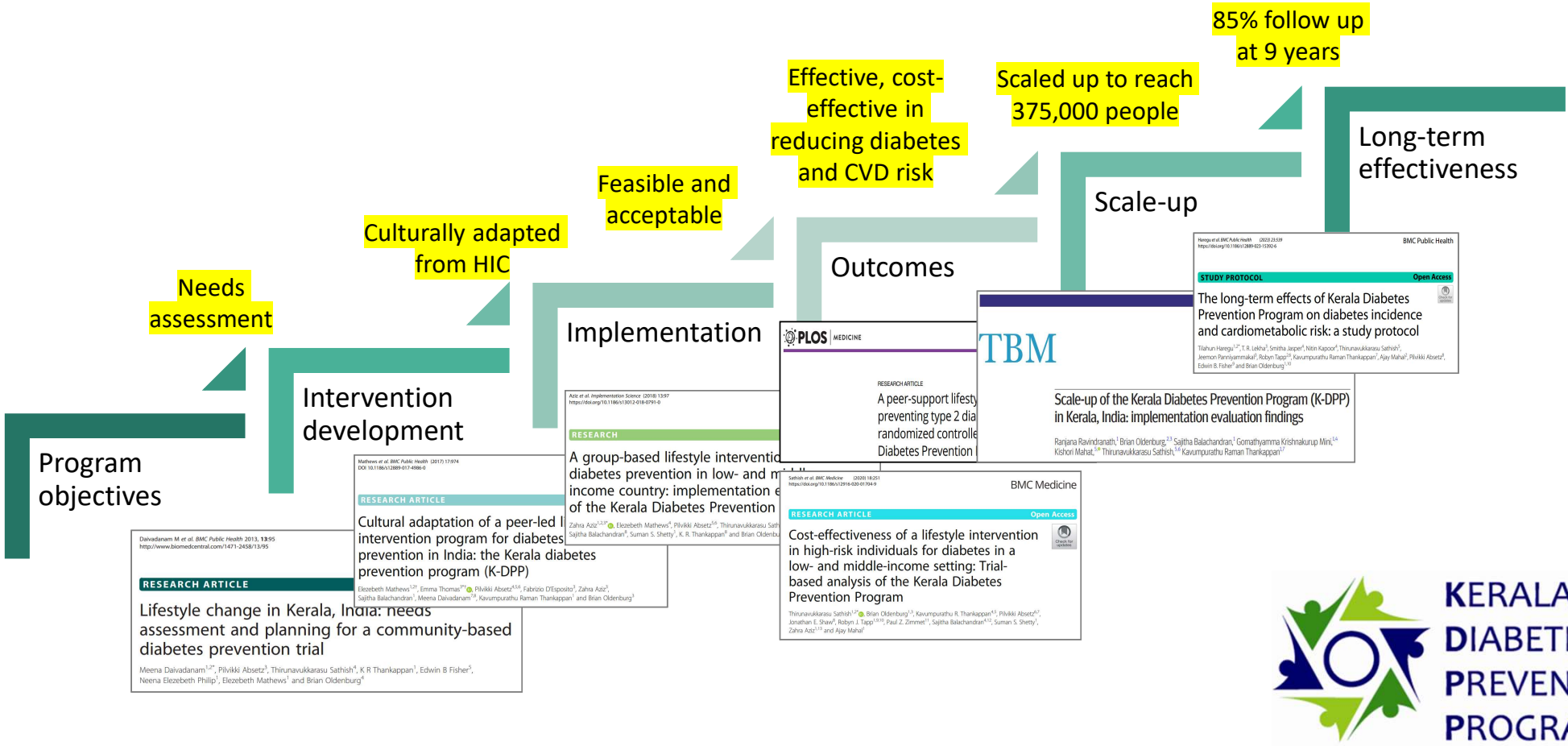
Major learnings so far? How would you do things differently next time?

- Scale-up was successful and reached **15,000 peer leaders and their families**
- Outcome evaluation was difficult as we were unable to collect most of the feedback forms from the field
- The 'Voice Feedback System' to monitor the effectiveness of the monthly sessions was difficult due to low response rates from participants

Next time we should…

- Focus on feedback forms at the beginning and reiterate during the implementation phase
- Integrate the intervention program with the government health system, particularly with the lower-level functionaries such as the accredited social health activists (ASHAs)

K-DPP timeline



KERALA DIABETES PREVENTION PROGRAM

Key messages

1	Diabetes is one of the major NCDs in Kerala (26% adults in Kerala have diabetes) an ideal condition for scale up of prevention
2	One of the largest women's groups in Kerala, the Kudumbasree Mission(KSM) and an Institute of national importance (SCTIMST) collaborated to implement this scale up
3	Important to have political support; Kerala Government supported this program
4	Used existing resources of KSM making it cost effective and sustainable

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