An Implementation Evaluation of the Kerala Diabetes Prevention Program

ZAHRA AZIZ, *UNIVERSITY OF MELBOURNE, AUSTRALIA*

Background

- More than 415 million people currently have type 2 diabetes mellitus worldwide and this number is expected to increase such that by 2040, half a billion people (642 million cases) between the ages 20 and 79 years worldwide will be affected.
- About 75%-80% of people with T2DM live in Low- and Middle-income countries.
- Globally, India has the 2nd largest number of people with T2DM (>69 million) after China, and this is predicted to double by 2040.
- India also has the largest number of individuals (36.5 million) with IGT and prediabetes, conditions with a high risk of progression to T2DM.

Kerala Diabetes Prevention Program

- The Kerala Diabetes Prevention Program (K-DPP) was a NHMRC-funded group-based peer support lifestyle intervention aimed at reducing the risk of T2DM in high-risk individuals.
- The primary outcome was the incidence of T2DM at 24 months.
- Secondary aims included changes in clinical, biochemical and behavioural risks factors known to increase diabetes risk including weight, waist circumference, plasma glucose, HbA1c, cholesterol, tobacco use, alcohol use, diet and physical activity at 24 months.

Study design, setting and recruitment

- The study was a cluster randomised controlled trial, implemented in 60 polling areas in Trivandrum district of Kerala state, India.
- Eligible participants comprised individuals aged 30-60 years, who were able to speak, read and write Malayalam (the local language).
- Participants were excluded if they had a prior diagnosis of T2DM, had other chronic disease(s), were currently using medications known to affect glucose tolerance or were pregnant.
- Participants completed assessments at baseline, 12 and 24 months.

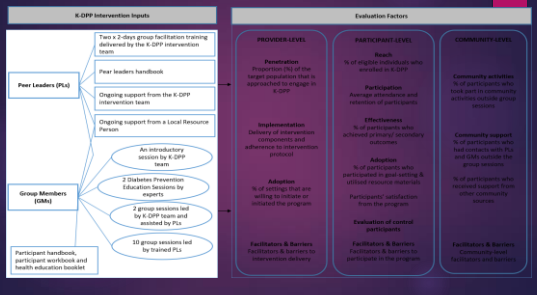
Intervention program

- The intervention arm participants received a 12-month intensive lifestyle intervention program.
- The intervention program involved four core components:
  - 1) a group-based peer support program consisting of 15 sessions for high-risk individuals;
  - 2) peer-leader training and ongoing support for intervention delivery;
  - 3) diabetes education resource materials and;
  - 4) strategies to stimulate broader community engagement.

Implementation Evaluation

- This implementation evaluation assesses:
  - **Provider-level factors** (penetration into target population, implementation, adoption, facilitation and barriers to intervention delivery);
  - **Participant-level factors** (program's reach, participation, adoption, participants' satisfaction, facilitators and barriers to participation); and
  - **Community-level factors** (community activities, community support, and community-level facilitators and barriers).
- The implementation evaluation was guided by the Glasgow's RE-AIM framework and Pronk's PIPE Impact Metric.

Evaluation Logic Model for K-DPP



Provider-level measures - Penetration

- Of the 5,517 individuals identified from the electoral roll of selected polling areas, 3,689 (67%) individuals were contacted during home visits.
- More women (69%) were contactable than men (66%).
- The remaining individuals could not be contacted due to reasons such as incorrect addresses, immigration, deaths or unavailability of participants at the house at the time of contact.

Provider-level measures - Implementation

- 29 out of 30 intervention groups organised all 15 group-based sessions over the 12 months duration.
- Of the 60 peer leaders who were originally identified for training, 51 (85%) leaders attended a 2-day peer-leader training.
- At the end of the training,63% and 34% of peer leaders stated that the training had prepared them for leading the groups from 'very well' to 'somewhat', respectively.
- The LRPs and the K-DPP intervention team provided ongoing support to all peer leaders including telephone contact before and after each group session, face-to-face meetings and assistance in organising the sessions

Provider-level measures - Implementation

- All participants were provided with a Participant Handbook written in the local language (Malayalam).
- All participants were also given Participant Workbook, which was regularly used during group sessions.
- The participants also received a non-elastic measuring tape and were taught to measure their waist circumference.
- To assist participants in attaining behaviour change goals, peer leaders organised various community-based activities outside the peer-group sessions, such as yoga sessions, walking groups, and kitchen garden training.

Provider-level measures - Implementation

- A majority of participants stated that the monthly group sessions have been 'very useful' (55%), 'useful' (32%) and 'somewhat useful' (4%) respectively.
- Almost all participants (98%) reported that they had shared the learnings gained through group sessions with their family members.

Participant-level measures – Reach/Participation

- Of the 3,421 individuals assessed for eligibility, 1,007 (29%) were enrolled in the intervention or control arms.
- On an average, the participants attended 8 sessions (median 9, mode 14). Almost half (49%) of the participants attended 10 or more sessions with 11% attending all 15 sessions.
- 10% participants did not attend any sessions.
- At the end of 12-months, the retention rate was 97% and 98% in the intervention and control arm respectively.

Participant-level measures – Effectiveness

- At 24 months, the overall incidence of T2DM was 14.9% (95%CI 11.9-18.5%) in the intervention arm as compared to 17.1% (95%CI 13.9-20.8%) in the control arm (p>0.05 for difference).
- The intervention participants were:
  - 83% more likely to consume >5 servings of fruit and vegetables per day (p=0.008),
  - 20% less likely to use tobacco, and
  - 23% less likely to consume alcohol compared with the control participants (p=0.018) at 24 months.

Participant-level measures – Adoption

- Of 346 participants who set a goal for improving diet, almost all (99%) indicated that they have made lifestyle changes during the intervention to achieve this goal.
- A majority of participants stated that they have reduced the consumption of oil and fatty food (72%), increased fruit and vegetable intake (60%), reduced rice consumption (57%) and/or made other dietary changes (54%) such as replacing white rice with wheat-based choices and decreasing the reduced meat consumption.

Facilitators to participation

- Among those participants who enrolled in the program and attended one or more group sessions, a majority stated that the location (85%) and timings (77%) of the group sessions were either "very convenient" or "convenient".
- A majority of participants rated their interest in group sessions from "very interested" (68%) to "interested" (28%).

Barriers to participation

- We also assessed the 12-month evaluation data from 48 participants (10% of total enrolled) who were enrolled in the intervention but did not attend any sessions.
- Of these 48 participants (71% male), 44% and 21% stated that the time and location of the group sessions were not convenient for them, respectively.
- 15% stated that they were not interested in attending group sessions, whereas 40% stated that the sessions were not useful for them.

Community-based activities

- 41% of the intervention participants took part in the community-based walking group outside the group session over the duration of the intervention.
- 40% participated in the kitchen garden training with the intention to adopt healthy diet, and
- 31% individuals participated in yoga sessions.
- 75% participants had contacts with their peer leaders outside the group sessions.
- On an average, 11 contacts were recorded between peer leaders and participants.

Community-level facilitators and barriers

- In some intervention communities, the commitment of the local political leaders emerged as one of the major facilitators for high uptake of the program.
- A few peer leaders stated that while they regularly discussed the importance of physical activity, as such, there were no suitable public places for conducting these activities as a group.
- One intervention group that underwent the baseline screening and assessment but did not participate in an intervention program due to lack of support by the local community. Hence, the group did not continue.

Key Success Factors

- Home visits that guaranteed reasonably high reach, made by a trustworthy community-based organisation,
- Peer leader training program that was feasible to deliver, easy enough to receive and relatively short but managed to provide skills needed, as perceived by peer leaders and participants,
- Educational resource materials were perceived useful and actively used by peer leaders and participants,
- Support provided by family and friends,

Key Success Factors

- K-DPP intervention team's ongoing support to peer leaders,
- Local Resource Person with a broad role to support peer leaders in practical arrangements as well as linking with community, and
- Engagement of community organisations and members to practical activities.

Need to Improve

- Timing and venue for peer leaders training to increase accessibility,
- Timing and location for group sessions, possibility to replace/ complement face-to-face meeting with other delivery modes,
- Inclusion of additional group activities such as arranging regular physical activity classes for group participants, and
- Inclusion of additional sessions from diabetes experts.

Thank You