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Preventing type 2 diabetes: from RCT to a state-wide diabetes prevention program

James A Dunbar
Director
GGT UDRH
Flinders University & Deakin University
Australia

Tristate Conference 2010

Type 2 Diabetes
- Leading cause of morbidity and mortality worldwide
- 2% of health expenditure
- 4x rise between 2003-2033
- At least 30% of adults have a high risk
- Main risk factor - increased body weight

RCT to Group Implementation
Finland
- DPS
- GOAL
Australia
- GGT DPP
- Life!

Diabetes Prevention Study
Finland
2003 (duration 3.2 years)
- N = 522, overweight with impaired glucose tolerance, 67% women
- Control group received limited advice on diet and exercise
- Intervention group given tailored, detailed advice on diet, weight reduction, and exercise
  - Relative risk reduction of T2DM vs control
  - 58%

Diabetes Prevention Program
USA

2002 (duration 3 years)
N = 3234, with impaired glucose tolerance,
Min BMI 24, 68% women
Interventions:
1 Standard lifestyle recommendations + placebo
2 Standard lifestyle recommendations + metformin (850 mg twice daily)
3 Intensive program of lifestyle modification

Relative risk reduction of T2DM vs control
- 58%  Lifestyle modification
- 31%  Metformin


Finland and the GOAL Program
demonstration area Päijät-Häme Province

GGT DPP Intervention
Structured group program
6 x 90 mins sessions over 8 months
- Provide information
- Goal setting, planning and implementation
- Regular self-assessment and performance monitoring
- Feedback and reinforcement
- Enhanced social support

Structure of group sessions: The Health Action Process Approach (HAPA) model

<table>
<thead>
<tr>
<th>Session 1-2</th>
<th>Session 3-4</th>
<th>Session 5-6</th>
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<tbody>
<tr>
<td>Perceived self-efficacy</td>
<td>Outcome expectancies</td>
<td>Planning</td>
</tr>
<tr>
<td>Intention</td>
<td>Initiative</td>
<td>Maintenance</td>
</tr>
<tr>
<td>Recovery</td>
<td>Action</td>
<td>Barriers and resources</td>
</tr>
</tbody>
</table>

Improvement (%) in anthropometric measurements baseline and 12 months

* p value for the difference <0.01
Improvement (%) in lipid and glucose measurements baseline and 12 months

* p value for the difference <0.01

Diabetes Prevention programs results compared

DPS – Finland
58% relative risk reduction in diabetes incidence over 3.2 years

DPP – USA
56% relative risk reduction in diabetes incidence over 2.8 years

DPP – Australia
40% relative risk reduction in diabetes incidence based on % waist reduction
23% relative risk reduction based on % weight reduction with linear relationship – worst case scenario

Completers & Non-completers

• 311 started intervention
• 237 (76%) completed intervention
• At baseline non-completers had
  - higher waist circumference
  - lower levels of education
  - higher scores on measures of psychological distress, anxiety and depression

High Number of sessions attended

<table>
<thead>
<tr>
<th>BASELINE MEASURE</th>
<th>High</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (years)</td>
<td>High</td>
<td>p=.004</td>
</tr>
<tr>
<td>Distress (K-10)</td>
<td>Low</td>
<td>p=.001</td>
</tr>
<tr>
<td>Anxiety (HADS)</td>
<td>Low</td>
<td>p=.001</td>
</tr>
<tr>
<td>Depression (HADS)</td>
<td>Low</td>
<td>p=.001</td>
</tr>
<tr>
<td>Optimism (LOT)</td>
<td>High</td>
<td>p=.009</td>
</tr>
<tr>
<td>Self-efficacy Nutrition</td>
<td>x</td>
<td>p=.380</td>
</tr>
<tr>
<td>Self-efficacy Physical Activity</td>
<td>x</td>
<td>p=.427</td>
</tr>
<tr>
<td>Intention implementation</td>
<td>x</td>
<td>p=.427</td>
</tr>
<tr>
<td>Coping with barriers</td>
<td>x</td>
<td>p=.427</td>
</tr>
</tbody>
</table>

Follow up of 160 completers

Statewide Diabetes Prevention Program

Victoria is about the same size as Britain; population 5 million, 70% in Melbourne. Victorians come from over 200 countries, speaking over 180 languages, follow 110 different faiths; 44% born overseas.
Designing the Life! program

Purchaser provider arrangement

Funding:
- Department of Health + Diabetes Australia Victoria (Government) + (Non-Government Organisation)
- $ per participant in 6-session group program
- Target >25,000 residents
- Recruitment (> 50 years, > 15 AUSDISK, No diabetes)

Provider:
- Assess risk, confirm risk score, enrol into program
- Provide venue, accredited facilitators, expert exercise physiologist & expert dietician

Life! Public health intervention

- Target: people over the age of 50 years at high risk of diabetes
- Goal: prevention of diabetes in this high risk group

Timeline for one Life! program

Training Day 1

- Group facilitation
- Effective communication
- Health behaviour change
- Positive and negative thinking
- Goal setting
- Problem solving

Training Day 2: Life sessions

- Introduction to diabetes prevention
- Risk perception outcome expectation and self-efficacy
- Self-monitoring of physical activity
- Physical activity goal setting
- Self-care activities as rewards for lifestyle change
- Social support
- Physical activity goal setting
- Self-care activities as rewards for lifestyle change
- Long-term goals
- Healthy eating goal setting
- Healthy shopping card
- Physical activity goal setting
- Self-care activities as rewards for lifestyle change
- Maintaining lifestyle changes

Operational & Administration
1 day

Self-learning
14 days

Development & Review
1 day

Facilitator Training
2 days

Refresher
1 day

Open book
exam

A trained facilitator conducts the sessions
A physiotherapist/exercise physiologist co-facilitates session 3
A dietitian co-facilitates session 4
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A dietitian co-facilitates session 4
Goals and action plans

**Intervention goals**
- ≤ 30% of energy from fat
- ≤ 10% of energy from saturated fats
- ≥ 15g / 1000 kcal fibre
- ≥ 30 min / day moderate physical activity
- At least 5% weight reduction

Who joins Life! programs?

**Baseline measures**

Commenced Session 1 (n=2269)
- Women: 63%
- Age: av 64.06 years
- ≤ High School: 68.7%
- Low income: 62.6%
- Risk score: 19.2
- Smoking: 6.4%
- Existing CVD: 20.2%
- BMI: 32.5 kg/m²
- Waist: 106.07 cm
- Weight: 89.19 kg
- >mod depression: 6.2%
- >mod anxiety: 18.2%

Training facilitators

- Self-learning 14 days
- Operational & Administration 1 day
- Facilitator Training 2 days
- Refresher 1 day
- Development & Review 1 day
- Open book exam

Life! Taking action on diabetes.

The largest systematic diabetes prevention program in the world.