Contextualizing models for chronic care to improve care for chronic conditions in low- and middle-income countries: the First Line Diabetes Care (FiLDCare) Project

Grace Marie V. Ku
Chronic Conditions

Eight out of top 10 causes of mortality

Top 10 causes of morbidity:
- 2004-2008: Hypertension (#4)
- 2010: Hypertension (#4) and Diseases of the Heart (#10)
Diabetes Mellitus Type 2

One of the top 10 countries worldwide predicted to have the highest numbers of DM2 by 2030 (Wild et al. 2004)

Prevalence (newly diagnosed and known)

- 2003 – 4.6%
- 2008 – 7.2%
The Question

“Can the quality of care for chronic conditions in first line health services of LMICs be improved?”
Models for Chronic Care: Wagner’s Chronic Care Model

Health System
- Organization of Health Care
  - Support from senior leaders
  - Benefits support chronic illness care
- Decision Support
  - Specialty consultation built into primary care
  - Guideline-based care
- Clinical Information Systems
  - Registry in place and routinely updated; population-based care
- Delivery System Design
  - Pt Needs assessed
  - Programs in place to support self care
  - Planned visits
  - Routine follow-up with patients

Community
- Resources and Policies
  - Strong linkages to formal community programs for improving chronic illness care

Informed, Activated Patient

Productive Interactions

Prepared, Proactive Practice Team

Functional and Clinical Outcomes
General Objective

Provide evidence on how to improve the quality of chronic care in first line health services in the Philippines by

• adapting chronic care models to the context; and

• implementing applicable elements of a context-adapted chronic care model (CACCM)

• diabetes mellitus type 2 (DM2) as representative chronic condition

(the FiLDCare project)
Improving the quality of care for DM2 in primary care

How do we implement the solution?

Recipients of care

- People with DM2
- Residents of the LGU

Care providers

- LGHU staff

Care “financiers”

- Local government officials
The “project theory”
Integration of care for DM2 in primary care

- Increased support of LGU officials
- Increased access to medications, places for exercise
- Capacity building of LGHU staff
- Increased perceived self-efficacy of LGHU staff to deliver DM2 care
- Redistribution of some DM2 care tasks

Improved self-care (proper diet, exercise, adherence to meds)

- Improved satisfaction with LGU officials
- Better outcomes:
  - glycemic control
  - BMI
  - ‘well-being’

Prompt attention to & control of risk factors in general population & pop at risk

Delivery of better care to people with DM2

Increased satisfaction with LGU officials

Increased access to medications, places for exercise

Increased support of LGU officials
...and so, models for chronic care were adapted to the context.
The context-adapted chronic care model (CACCM)

PERSON WITH CHRONIC CONDITION & FAMILY
1. Self-care management skills
2. Self-management tools
3. Family support system

ENVIRONMENT
Local Community
1. Local policies
2. Health support groups
National Government
1. National policies
Local & National Industries

PRIMARY HEALTH CARE PROVIDER
1. Knowledge & skills development
2. Continuing education / refresher training

HEALTH SERVICE ORGANIZATION
1. Organizational structure
2. Service delivery
   a. Design
   b. Human resources
   c. Medications
   d. Equipment
3. Health information systems
4. Quality assurance
The CACCM-based service delivery model

HEALTH PROMOTION & PREVENTION IN GEN. POP.
(General health education including risk factor identification, lifestyle modification)

Population at Risk

Specific screening, confirmatory tests; identification of comorbidities

Individualized counseling, health education

High Risk (obesity, prediabetes, prehypertension)

Controlled disease, stable comorbidities

Periodic testing and reclassification as needed; including comorbidities

Uncontrolled disease

No or stable comorbidities

Unstable comorbidities

LOW EXPERTISE
COMMUNITY BASED HEALTH WORKER / LAY HEALTH WORKER / VOLUNTEER HEALTH WORKER / EXPERT PATIENT

HIGH EXPERTISE
FORMAL HEALTH CARE PROVIDERS (PARAMEDIC/AUX GENERAL PRACTITIONER SPECIALIST)
Selected chronic care elements that were operationalized
Specific Objectives

1. Community sensitization, **health promotion** and **primary prevention**

2. **Decision support** to local government healthcare workers

3. **Reorganization** of the local government health services and **re-design** of health service delivery

4. **Patient enablement** towards self-management
1. Community sensitization, health promotion and primary prevention
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1. **Community sensitization, health promotion and primary prevention**

### DM2 prevalence

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Highly urbanized area (Quezon City)</th>
<th>Urban area (Batac City)</th>
<th>Rural areas (Vintar &amp; Pagudpud)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM type 2</td>
<td>7.11%</td>
<td>5.94%</td>
<td>8.67%</td>
<td>6.15%</td>
</tr>
<tr>
<td>Prediabetes</td>
<td>8.25%</td>
<td>8.74%</td>
<td>6.42%</td>
<td>8.81%</td>
</tr>
<tr>
<td><strong>∑</strong></td>
<td><strong>14.68</strong></td>
<td><strong>15.09</strong></td>
<td><strong>14.96</strong></td>
<td></td>
</tr>
</tbody>
</table>
The Finnish Diabetes Risk Score

- Diabetes risk predictor

- Pre-screening tool ➔ who should undergo blood glucose testing?
1. Community sensitization, health promotion and primary prevention

FINDRISC & MODIFICATIONS

“best compromise between sensitivity & specificity”

Simplified:

- Waist circumference
- Age
- History of
  - Hypertension
  - High blood sugar
  - Diabetes in the family
2. Decision support

- skills pertinent to the enhancement of patient enablement towards self-management.
- diabetes knowledge
- primary diabetes care
2. Decision support

CONTENTS

A. Module 1: Interacting with people

① the biopsychosocial approach;

② active listening;

③ patient empowerment

④ family empowerment; and

⑤ social mobilization
2. **Decision support**

B. **Module 2**

Basic *pathophysiology* of diabetes and current Philippine *clinical practice guidelines* on the diagnosis and management of diabetes mellitus
2. Decision support

C. Module 3

lecture, demonstration and hands-on training on:
① **anthropometric measurements** (weight, height, waist and hip circumference)

② **Anthropometric computations** (body mass index, waist-hip ratio)

③ **blood pressure** determination

④ **capillary blood glucose** testing

+ interpretation of these anthropometric and clinical parameters following international guidelines and standards
2. Decision support

D. Module 4

lecture on foot care and foot care advice

+ workshop on foot examination based on international standards for foot care
2. Decision support

E. Module 5

lecture on the diabetes diet, food exchanges and glycemic indices

+ a workshop on dietary counseling
2. Decision support

E. Module 6

lecture on exercise

+ a workshop on exercise counseling
## 2. Decision support

### Assessment learning

<table>
<thead>
<tr>
<th></th>
<th>All (n=110)</th>
<th>Formal healthcare workers (n=23)</th>
<th>BHW (n=87)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes knowledge test, % correct answers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td>Median (confidence intervals)</td>
<td>Wilcoxon signed rank test p value</td>
<td></td>
</tr>
<tr>
<td></td>
<td>54.2 (50.0-58.3)</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td>75.0 (70.8-78.3)</td>
<td>87.5 (79.2-87.8)</td>
<td>70.8 (66.7-75.0)</td>
</tr>
</tbody>
</table>
Self-assessment of Skills

- Biopsychosocial approach
- Active listening skills
- Attending skills
- Leading skills
- Bracketing
- Focusing
- Attentive silence
- Closing skills
- Family empowerment
- Patient empowerment
- Social mobilization
- Nutrition
- Dietary
- Diabetic diet
- Physical
- Foot care
- IBW
- TCR
- CBG
- Foot exercises
- Pre-test
- Post-test
- Pre-test
- Post-test
- Weight measurement
- Height measurement
- BMI computation
- BMI interpretation
- WC measurement
- WHR measurement
- HC measurement
- WHR interpretation
- WC-BMI risk strat
- Pre-test
- Post-test
- Pre-test
- Post-test
- Pre-test
- Post-test
3. Reorganization of the local government health services and re-design of health service delivery

- creation of the First Line Chronic Care Team
- allocating specific (standardizable) tasks to selected human resources
3. Reorganization of the local government health services and *re-design of health service delivery*
4. Patient enablement towards self-management

- collaborative self-management education and support to people with diabetes in the selected communities
4. Patient enablement towards (full) self-management
One year after full implementation of the FiLDCare Project
## THE FiLDCare PROJECT RESULTS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before implementation</th>
<th>After implementation</th>
<th>P value</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median values, (binomial interpolation of confidence intervals)</td>
<td></td>
<td>Wilcoxon signed-rank test</td>
<td>Mean change</td>
</tr>
<tr>
<td>HbA1c, % mmol/mol</td>
<td>7.7 (7.2-8.2)</td>
<td>6.9 (6.8-7.5)</td>
<td>&lt;0.001</td>
<td>-0.49</td>
</tr>
<tr>
<td></td>
<td>61 (55-66)</td>
<td>52 (51-58)</td>
<td></td>
<td>-5.4</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td>23.7 (23.1-24.1)</td>
<td>23.3 (22.6-23.8)</td>
<td>0.075</td>
<td>-0.40</td>
</tr>
<tr>
<td>Waist circumference, in cm</td>
<td>85.0 (83.9-86.4)</td>
<td>83.0 (82.0-85.0)</td>
<td>0.007</td>
<td>-1.37</td>
</tr>
<tr>
<td>Waist-hip ratio</td>
<td>0.90 (0.89-0.91)</td>
<td>0.89 (0.88-0.90)</td>
<td>&lt;0.001</td>
<td>-0.02</td>
</tr>
</tbody>
</table>
Also, increase in ...

- Diabetes knowledge, \( p<0.001 \)
- Perceived ability to control blood glucose, \( p=0.036 \)
- Perceived ability to do the things needed to be done for diabetes, \( p=0.022 \)
- Patient’s assessment of chronic illness care, \( p=0.009 \)
- Fear of diabetes, \( p<0.001 \)
<table>
<thead>
<tr>
<th>N (proportion, %)</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proportion adherent to medications</strong></td>
<td>108 (65.9%)</td>
<td>134 (81.7%)</td>
</tr>
<tr>
<td><strong>Proportion adherent to exercise regimen</strong></td>
<td>68 (41.5%)</td>
<td>110 (67.1%)</td>
</tr>
<tr>
<td><strong>Proportion adherent to prescribed diet</strong></td>
<td>99 (60.4%)</td>
<td>66 (40.2%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Test of proportions</th>
<th>Change n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proportion adherent to medications</strong></td>
<td>0.001</td>
<td>+26 (+15.8%)</td>
</tr>
<tr>
<td><strong>Proportion adherent to exercise regimen</strong></td>
<td>&lt;0.001</td>
<td>+42 (+25.6%)</td>
</tr>
<tr>
<td><strong>Proportion adherent to prescribed diet</strong></td>
<td>&lt;0.001</td>
<td>-33 (-20.2%)</td>
</tr>
</tbody>
</table>
# THE FILDCARE PROJECT

## Pre-implementation

<table>
<thead>
<tr>
<th>Change in HbA1c</th>
<th><strong>Good control HbA1c&lt;7%</strong></th>
<th><strong>Not in good control HbA1c≥7%</strong></th>
<th><strong>Total (post-implementation)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Post-implementation</strong></td>
<td><strong>decreased</strong></td>
<td><strong>increased</strong></td>
<td><strong>unchanged</strong></td>
</tr>
<tr>
<td><strong>Good control HbA1c&lt;7%</strong></td>
<td>35</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td><strong>Not in good control HbA1c≥7%</strong></td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>35</td>
<td>20</td>
<td>6</td>
</tr>
</tbody>
</table>

Pre-implementation: 61

Total: 103
Quo vadis?

→ PATIENT ENGAGEMENT & PERSON-CENTERED CARE

<table>
<thead>
<tr>
<th>Levels</th>
<th>Continuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation &amp; activation</td>
<td>Involvement</td>
</tr>
<tr>
<td>Shared leadership</td>
<td></td>
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</tbody>
</table>

- **Direct patient care**
- **Health service / health system organizational design and governance**
- **Policy-making**

![Diagram](image-url)
Maraming salamat po!

https://www.facebook.com/FILDCAREProject