Diabetes and Obesity: A Global Health Challenge

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Global Facts

382 Million People

80% from low-and middle income

Diabetes deaths will double between 2005-2030
Figure 1 World map showing diabetes prevalence as percent of population (colour scale), and absolute morbidity for the years 2000 and 2030 (projected). There are geographical, and socioeconomic trends. (King et al., 1998).
Obesity
In Our Nation

Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among U.S. Adults Aged 18 years or older

Obesity (BMI ≥30 kg/m²)

- 1994
- 2000
- 2010

Diabetes

- 1994
- 2000
- 2010

CDC’s Division of Diabetes Translation, National Diabetes Surveillance System available at http://www.cdc.gov/diabetes/statistics
High Diabetes Prevalence Zip codes in Dallas
# DFW Hospital Council’s Data

<table>
<thead>
<tr>
<th>Diabetes related Complications¹</th>
<th>Dallas County²</th>
<th>75227</th>
<th>75217</th>
<th>75150</th>
<th>75149</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Kidney Failure</td>
<td>45.4%</td>
<td>57.4%</td>
<td>55.9%</td>
<td>42.1%</td>
<td>38.5%</td>
</tr>
<tr>
<td>Septicemia</td>
<td>38.7%</td>
<td>33.3%</td>
<td>47.9%</td>
<td>34.4%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>33.6%</td>
<td>40.9%</td>
<td>42.6%</td>
<td>41.9%</td>
<td>33.9%</td>
</tr>
<tr>
<td>Other Rehabilitation</td>
<td>30.9%</td>
<td>43.1%</td>
<td>50.8%</td>
<td>32.4%</td>
<td>39.3%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>29.3%</td>
<td>33.0%</td>
<td>24.0%</td>
<td>22.5%</td>
<td>31.2%</td>
</tr>
</tbody>
</table>
How do we start?

- Prevention
- Management
- Treatment
North Texas Community Health Collaborative

Bringing Resources Together
Community Health Needs Assessment to Identify Disparities

Publication:
Environmental Disparities Present a Challenge for Diabetes Prevention and Management Efforts in Dallas County.
Mendoza et al. 2014
Journal of Health Disparities Research and Practice
Few Facts

In Texas

• An estimated cost of diabetes is $12 billion each year
• Annually, more than 200,000 diabetes related hospital admissions
• The cost of hospitalizations exceeds $3.5 billion (Texas Diabetes Council)

In Dallas

• In 2012, 35% of the top five inpatient diagnoses in Dallas County had diabetes as an underlying condition (DFWHCF)

By 2025

• Our state will be home to 4 Million Diabetes patients
• DFW area may be home to well over 1 Million Diabetes patients (Rowley W, 2011)
# Diabetes Strategic Plan

## Needs Assessment/Data Analysis
- Data Inventory
- Assessment of metrics
- Geospatial Mapping
- Prioritization

## Key Stakeholder Strategic Retreat
- Development of Strategic Direction
- Identification of Group Assets
- Develop coordinated approach

## Strategic Plan Implementation
- Develop and execute activities
- Engage and collaboratively partner with others
- Monitor and evaluate
Diabetes Strategic Plan Model

Year 1

Community Development
Health Promotion
Consciousness Raising

Year 2

Year 3

Prevention & Early Detection

High Risk Populations
Health Systems & Providers
Community Meetings
Diabetes Prevention Program for Overweight and Obese Children

Sushma Sharma, PhD
The Dr. Robert C and Veronica Atkins Center for Weight and Health, University of California Berkeley
“Taking Action Together”

8-11 year old

50% African American descent

> 85th percentile for BMI matched for age and gender

And, willing to participate!
Theoretical Model
“Taking Action Together”

- Self-esteem
  - Family environment

Self-efficacy regarding:
- Eating a healthy diet
- Being physically active

- Diet quality
  - Physical activity

- Body fatness

- Insulin Resistance

- Pubertal Stage

- Family food habits
- Family PA habits
- Family SES

- Family history of T2DM
- Intrauterine history of T2DM
## Differences Between the 2 Intervention Groups

<table>
<thead>
<tr>
<th>Frequency of intervention</th>
<th>Low intensity intervention (Lo-II)</th>
<th>High intensity intervention (Hi-II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach</td>
<td>Educational material mailed</td>
<td>Engaging fun activities, modeling</td>
</tr>
</tbody>
</table>

Intervention components include:

- Promoting ‘physical activity and fitness’
- Advocacy of a ‘healthy diet’
- Improving ‘self-esteem and self-efficacy’

For more information visit: [http://clinicaltrials.gov/ ct2/ NCT01039116](http://clinicaltrials.gov/ ct2/ NCT01039116)
Study Aim:
To stabilize or reduce Insulin Resistance (HOMA-IR)

Main Outcome Variable
Insulin Resistance

\[
\text{HOMA-IR} = \frac{\text{fasting glucose (mmol/l)} \times \text{insulin (μU/ml)}}{22.5}
\]
Data Collection

Child:
- Hematological
- Anthropometry
- Dietary intakes
- Physical activity & fitness
- Knowledge – nutrition & physical activity
- Psychobehavioral characteristics
- Family food & physical activity habits

Covariates – age, pubertal stage, SES.
Mean Change in Insulin Resistance (HOMA-IR) After 1 Yr

Adjusted for age, pubertal stage, family SEI and baseline HOMA-IR.
Conclusions from Study

- The intervention reduced insulin resistance in boys.
- Decreases in insulin resistance were associated with higher attendance in both boys and girls.
- Intakes of sugars from many food groups was associated with increased metabolic risk.
- Children from the treatment group have better psychobehavioral profiles than controls.
- Insulin resistance was associated with worse psychobehavioral profiles in children.
California Healthy Beverage Policy AB 2084

- Only lowfat (1 percent) milk or nonfat milk
- 100% juice to not more than one serving per day
- No beverages with added sweeteners
- Clean and safe drinking water readily available and accessible for consumption throughout the day
Thanks

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