The Effectiveness of SET based Foot Care Education Intervention Programme in Vietnamese Patients with Type 2 Diabetes: Preliminary results

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Diabetic foot ulcers – Facts and figures

1 in 4 adults with diabetes will develop a foot ulcer

Every 20 sec., a limb is lost as a consequence of diabetes

1 Million Lower limbs lost among diabetics annually

(Bartus & Margolis, 2004; RNAO, 2013b).
Diabetic foot ulcers – Facts and figures

↑ Depression $  
↓ Quality of life $  

Amputation $  
Infection $  
Deaths $  
Hospitalization $  

medical health care services $  
rehabilitation $  
time lost from work $  

social support services $  

(Valk, Kriegsman, & Assendelft, 2002; Williams & Airey, 2000, NHMRC, 2011; Ray et al., 2005, G. Reiber, 2001)
Diabetic foot ulcers – Facts and figures (cont)

The prevalence of diabetic foot ulcers

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALGERIA</td>
<td>1998</td>
<td>11.9%</td>
</tr>
<tr>
<td>UK</td>
<td>2002</td>
<td>1.7%</td>
</tr>
<tr>
<td>KENYA</td>
<td>2003</td>
<td>4.6%</td>
</tr>
<tr>
<td>AU</td>
<td>2004</td>
<td>1.9%</td>
</tr>
<tr>
<td>TANZANIA</td>
<td>2008</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

Poverty

Lack of sanitation and hygiene

Economic status & geographic factors

Inaccessibility to adequate health care

Bare-foot walking habit

(AIHW, 2008b; A. J. Boulton et al., 2005; Chiwanga, 2008; Nyamu, Otieno, Amayo, & McLigeyo, 2003)
Diabetic foot ulcers – Vietnamese picture
Diabetic foot ulcers – Vietnamese picture

• Prevalence of diabetic foot ulcers: ???

>40% -85% foot ulcers ➔ Lower extremity amputation (LEA) (AASD, 2010)

• 34.7% had diabetes < 5 yrs

• 11.1% had undiagnosed diabetes.

• only 1.4% of the patients got diabetes over 20 years

Hospitalisation: 25% to 35%
Burden or Freedom
What is our program is trying to do?

LEA+deaths +low QoL
Family burden
Health care service burden
Social burden

Diabetic foot ulcers

Self-efficacy enhancing foot care education intervention program
Foot self-care knowledge & practice
RESEARCH QUESTION

What is the impact of Self-efficacy theory (SET) based foot care education intervention program on

• foot self-care practice

• the occurrence of minor foot problems

of people with type 2 diabetes at low risks in Ho Chi Minh city, Vietnam?
What is the impact of SET based foot care education intervention program on:

- foot self-care knowledge
- foot self-care practice
- foot care self-efficacy
- foot care outcome expectations
- the occurrence of minor foot problems of people with type 2 diabetes at low risk of developing a foot ulcer in Ho Chi Minh city, Vietnam?
Modified framework

Person with low risk of DFU

Self-efficacy enhancing foot care intervention program

Socio-structural factors
Facilitators
Impediments

Goals

Foot care Behaviour

Outcome expectations (FCOES)

Outcomes Preventing DFU

(Bandura, 2004)
Methodology

- Quasi-experimental design (2x3)
- Convenient sampling

Patients with type 2 DM at HCMC Nutrition centre

Recruit sample
Participants will sign in the consent forms, then complete pretest

Routine examination

Ineligible
Not satisfy inclusive criteria (via screening test)

Refuse

Convenient sampling based on admission date

Control group

Intervention group

Convenient sampling based on admission date
Inclusion criteria:
- Pts DM, >=18 years old
- >=2 months follow-up treatment history
- Normal results of screening test (ALL items):
  - Normal protective sensation
  - Normal lower extremities circulation
  - No foot deformity
  - No history of previous or current foot ulcer(s)
- Vietnamese literacy
- Be contactable by phone follow-up

Exclusion criteria:
- Unable or unwilling to give the informed consent
- Abnormal results of screening test (ANY item)
- Cognitive impairment/ serious co-morbidity
- Can not hear/ speak Vietnamese
Intervention process

Control group
- Foot care brochure
- Post-test 1
- Post-test 2
- Post-test 3

Intervention group
- Foot care kit + documents + education
- Post-test 1
- Post-test 2
- Post-test 3
Những dấu hiệu cần lưu ý

Nếu phát hiện những dấu hiệu sau, cần đến khám bác sĩ ngay

» Vết thương, vết trợn xuyên, tổn thương ở bàn chân
» Mất cảm giác ở bàn chân
» Thay đổi màu sắc bàn chân
» Có nốt, cục chai ở bàn chân, ngón chân
» Thay đổi hình dạng bàn chân, ngón chân

Hỗ trợ thông tin

Hãy đến gặp bác sĩ ngay nếu có bất kì vấn đề lo lắng về bàn chân!

Diễn thoại liên lạc:

Tai liệu tham khảo:

- National Evidence-Based Guideline on Prevention, Identification and Management of Foot Complications in Diabetes. Melbourne Australia 2011
- Registered Nurses’ Association of Ontario (RNAO) Assessment and Management of Foot Ulcers for People with Diabetes. Toronto: RNAO 2005
- McIntosh A et al. Prevention and Management of Foot Problems in Type 2 Diabetes. Sheffield: University of Sheffield: NICE 2003
- Preventing Foot Complications—A guide for people with diabetes (type 1 or type 2) (brochure). The National Health and Medical Research Council (NHMRC) 2011

Chăm sóc bàn chân

Đái tháo đường

Hãy hành động trước khi quá muộn!

TRUNG TÂM DỊNH DƯỠNG
TP. HỒ CHÍ MINH

180 Lê Văn Sỹ, P.10, Q. Phú Nhuận, TPHCM
DT: 84 8 3445 990 - Fax: 84 8 38448 405 - 105
Email: tt.dinhduong@tp.hcm.gov.vn
Website: www.tt.dinhduong.org
Loét bàn chân dài thoái đường

- Loét bàn chân là nguyên nhân nhập viện hàng đầu của người bệnh dài thoái đường.
- Loét bàn chân thường xảy ra ở lòng bàn chân, nhưng cũng nhỏ xung quanh mặt cá chân.
- Nguyên nhân: chấn thương, đế ép, trầy xước da (khi mang giày dép chất).
- Các vết loét không điều trị tốt có thể dẫn đến cát cut chỉ.
- Hậu hết các trường hợp loét bàn chân đều CÓ THỂ PHÒNG NGỪA được.
- Loét bàn chân có thể là dấu hiệu đầu tiên và điều trị sớm.

✅ 12 điều nên làm

- Kiểm tra bàn chân và ngón chân hàng ngày.
- Đọc cơ sở y tế để được khám và tư vấn nếu phát hiện các vùng đỏ da, bông nước, vết cắt, trầy xước hay vết loét.
- Rửa và lau khô bàn chân cần thận, đặc biệt ở ngón chân.
- Kiểm tra nhiệt độ nước trước khi tắm, rửa chân.
- Thoa kem, dầu dưỡng ẩm ở bàn chân. Không thoa ở kẻ ngón chân.
- Cắt móng chân cần thanh, không cắt khô móng.
- Kiểm tra giày dép trước khi mang.
- Thay vỏ mỗi ngày.
- Kiểm soát đường huyết thường xuyên. Đường huyết ổn định giúp phòng ngừa loét.
- Tuân thủ chế độ dinh dưỡng hợp lý.
- Không hút thuốc lát.
- Tài khám định kỳ để được khám bàn chân và tư vấn về cách chăm sóc bàn chân.

➡️ 5 điều nên tránh

- Không đi chân đất (trản) kẻ cát trong nhà.
- Không tự ý sử dụng các loại thuốc dân, dao để loại bỏ vết chai.
- Không dùng tước chum hay chai nước nóng để làm ấm chân.
- Không nên mang giày dép, vớ quá chặt hoặc quá rộng.
- Không mang vớ có nhiều mối ráp.
INTENSIVE EDUCATION + HANDS ON PRACTICE

- Small groups (8-10 pts)
- Provide knowledge + practice
- Foster participants’ self-motivation
- Identify and correct misconceptions
- Teaching plan: objectives, contents, teaching strategies and time frame for each activity
Discussion session and sharing experiences
Demonstration: practice session
Telephone follow-up

- Purposes:
  - Reviewing & Reminding & motivating
  - Identify issues and problem solving
  - Provide support

performance accomplishments, verbal persuasion and psychological information
### FORMAT OF TELEPHONE BOOSTER FOLLOW-UP

**Pt’s name:**

**CODE:**

**Phone number:**

**Minor foot problems at baseline:**

<table>
<thead>
<tr>
<th>No</th>
<th>Content</th>
<th>Time 1 (Date__/<strong>/</strong>)</th>
<th>Time 2 (Date__/<strong>/</strong>)</th>
<th>Time 3 (Date__/<strong>/</strong>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Time</strong></td>
<td>From:_____ to:______</td>
<td>From:_____ to:______</td>
<td>From:_____ to:______</td>
</tr>
<tr>
<td></td>
<td>Mins: _____</td>
<td>Mins: _____</td>
<td>Mins: _____</td>
<td>Mins: _____</td>
</tr>
<tr>
<td>2</td>
<td>- Asking about patient’s health status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>- Answers any queries related to last education session</td>
<td>Q:</td>
<td>Q:</td>
<td>Q:</td>
</tr>
<tr>
<td></td>
<td>A:</td>
<td>A:</td>
<td>A:</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>- Remind steps of foot care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>- Exploring about pt’s foot care practice: frequency, level of</td>
<td>Frequency:</td>
<td>Frequency:</td>
<td>Frequency:</td>
</tr>
<tr>
<td></td>
<td>getting objectives (any</td>
<td>Pt’s practice and Barriers:</td>
<td>Pt’s practice and Barriers:</td>
<td>Pt’s practice and Barriers:</td>
</tr>
<tr>
<td></td>
<td>improvement of foot problems from baseline), any difficulties or</td>
<td>=&gt; Solving:</td>
<td>=&gt; Solving:</td>
<td>=&gt; Solving:</td>
</tr>
<tr>
<td></td>
<td>barriers in performing foot care and giving consultations or</td>
<td>Improvement?</td>
<td>Improvement?</td>
<td>Improvement?</td>
</tr>
<tr>
<td></td>
<td>suggestion for pts to those</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>problems if having any</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>- Goals for next stage (Eg:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Maintaining the foot care (if their</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>foot care behavior was good))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>- Encourage pts to continue performing foot care behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Remind the next appointment and persuade pts come to see doctor as</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>the appointed time.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RESULTS

• Sample characteristics
• Behaviors
• Minor foot problems
### Sample Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Control (n=60)</th>
<th>Intervention (n=59)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (yrs± mean, sd)</strong></td>
<td>61.51 ± 8.68</td>
<td>61.93 ± 9.97</td>
<td>0.74</td>
</tr>
<tr>
<td><strong>Gender, n(%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23 (38.3%)</td>
<td>10 (16.9%)</td>
<td>0.02</td>
</tr>
<tr>
<td>Female</td>
<td>37 (61.7%)</td>
<td>49 (83.1%)</td>
<td></td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower high school</td>
<td>37 (61.7%)</td>
<td>19 (32.2%)</td>
<td>0.001</td>
</tr>
<tr>
<td>High school or higher</td>
<td>23 (38.3%)</td>
<td>40 (67.8%)</td>
<td></td>
</tr>
<tr>
<td><strong>Income adequacy</strong></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Insufficient/ just right</td>
<td>23 (39%)</td>
<td>51 (86.4%)</td>
<td></td>
</tr>
<tr>
<td>≥ enough</td>
<td>36 (61%)</td>
<td>8 (13.6%)</td>
<td></td>
</tr>
</tbody>
</table>

- **Assessed for eligibility (n=175)**
  - Excluded (n=56)
  - Participated the study (n=119)
- **Control group (n=60)**
- **Intervention group (n=59)**
  - Did not come back for T1 examination with no reason n=2/group
  - Control group (n=58)
  - Intervention group (n=59)
## SAMPLE CHARACTERISTICS (cont)

<table>
<thead>
<tr>
<th>Characteristics (Min – Max)</th>
<th>Control (n=60)</th>
<th>Intervention (n=59)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Median, IQR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FBG (4.2 – 16.28)</td>
<td>8.05 (7.03 - 9.20)</td>
<td>7.72 (6.8-9.1)</td>
<td>0.53</td>
</tr>
<tr>
<td>HbA1C (4.7-11.20)</td>
<td>6.9 (6.3 - 7.5)</td>
<td>7 (6.38-7.53)</td>
<td>0.52</td>
</tr>
<tr>
<td>Duration of diabetes ( 1-30)</td>
<td>10 (7 – 14.75)</td>
<td>10 (5-12.25)</td>
<td>0.24</td>
</tr>
<tr>
<td><strong>N (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;18.5</td>
<td>1 (1.7%)</td>
<td>1 (1.7%)</td>
<td>0.13</td>
</tr>
<tr>
<td>25-29.9</td>
<td>19 (32.2%)</td>
<td>9 (15.5%)</td>
<td></td>
</tr>
<tr>
<td>≥ 30</td>
<td>1 (1.7%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td>Control diet</td>
<td>54 (90%)</td>
<td>38 (64.4%)</td>
<td>0.002</td>
</tr>
<tr>
<td>Retinopathy</td>
<td>6 (10%)</td>
<td>18 (30.5%)</td>
<td>0.01</td>
</tr>
</tbody>
</table>
## FOOT SELF-CARE BEHAVIORS

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Control (n=60)</th>
<th>Intervention (n=59)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventive behaviors - BL</td>
<td>26.80 (6.32)</td>
<td>28.97 (7.14)</td>
<td>0.08</td>
</tr>
<tr>
<td>Damage behaviors - BL</td>
<td>30.15 (3.36)</td>
<td>31.24 (4.29)</td>
<td>0.13</td>
</tr>
<tr>
<td>Preventive behaviors – T1</td>
<td>29.79 (5.71)</td>
<td>35.32 (4.18)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Damage behaviors – T1</td>
<td>30.43 (3.30)</td>
<td>32.98 (3.58)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>P value (before – after)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventive</td>
<td>&lt;0.001</td>
<td>Preventive</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Damage</td>
<td>0.60</td>
<td>Damage</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*a T-test  
*b paired T-test
## FOOT SELF-CARE BEHAVIORS ~ FOOT CARE SELF-EFFICACY

<table>
<thead>
<tr>
<th></th>
<th>FCSE ~ Preventive behaviors</th>
<th>FCSE ~ Damage behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td>0.57</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>T1</strong></td>
<td>0.6</td>
<td>0.08</td>
</tr>
</tbody>
</table>

*Pearson correlation* | *P value (2-tailed)*
----------------------|----------------------
0.57                  | **<0.001<sup>a</sup>** |
0.14                  | 0.13                  |
0.6                   | **<0.001<sup>b</sup>** |
0.08                  | 0.42                  |

*Significantly in 2 groups*

*Significantly in Intervention group only*
## MINOR FOOT PROBLEMS

<table>
<thead>
<tr>
<th>Minor foot problems</th>
<th>BASELINE</th>
<th>T1</th>
<th>p value (χ²)</th>
<th>Control n (%)</th>
<th>Intervention n (%)</th>
<th>p value (χ²)</th>
<th>Control n (%)</th>
<th>Intervention n (%)</th>
<th>p value (McNemar test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Intervention</td>
<td>p value</td>
<td>Control</td>
<td>Intervention</td>
<td>p value</td>
<td>Control</td>
<td>Intervention</td>
<td>p value</td>
<td>Control</td>
</tr>
<tr>
<td>Dry skin</td>
<td>35 (58.3%)</td>
<td>38 (66.7%)</td>
<td>0.46</td>
<td>39 (67.2%)</td>
<td>13 (22.8%)</td>
<td>&lt;0.001</td>
<td>0.13</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Cracked skin</td>
<td>17 (28.3%)</td>
<td>12 (20.3%)</td>
<td>0.42</td>
<td>17 (29.3%)</td>
<td>7 (12.3%)</td>
<td>0.04</td>
<td>0.73</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Corns/callus</td>
<td>14 (23.3%)</td>
<td>23 (39%)</td>
<td>0.1</td>
<td>12 (20.7%)</td>
<td>7 (12.3%)</td>
<td>0.23</td>
<td>0.73</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Suitable length</td>
<td>42 (70%)</td>
<td>32 (54.2%)</td>
<td>0.11</td>
<td>39 (67.2%)</td>
<td>44 (77.2%)</td>
<td>0.23</td>
<td>~1</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Abnormal thickness</td>
<td>13 (21.7%)</td>
<td>10 (16.9%)</td>
<td>0.68</td>
<td>21 (36.2%)</td>
<td>7 (12.3%)</td>
<td>0.003</td>
<td>0.13</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

➢ Results:
  • Consistent to results of other studies

➢ Strengths:
  • Comprehensive model
  • Low attrition rate (3.4% - 13.4%)

➢ Limitations:
  • Design: control biases
  • Evaluation: actual behaviors?, scale for minor foot problems assessment ?
Effectiveness of the SET based foot care education intervention program on:

- ↑ foot self-care behavior
- ↓ common minor foot problems (skin dry, skin cracked, corns/callus)

Further: RCT design, larger sample, longer time ~ incidence rate of foot ulcers
Prevention is better than cure
THANK YOU FOR LISTENING
References

Apelqvist, J., & Larsson, J. (2000). What is the most effective way to reduce incidence of amputation in the diabetic foot? *Diabetes/Metabolism Research and Reviews, 16*(S1), S75-S83.


NHMRC. (2011). *The National Evidence-Based Guideline: Prevention, Identification and Management of Foot Complications in Diabetes*


