Multidimensional aspects of Fatigue and associations with Quality of Life in Type 2 Diabetes

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Overview

**Learning Objectives:**

- To learn about the impact of fatigue on quality of life for individuals with T2DM.
- To better understand the impact of fatigue on the perceived burden of diabetes.
Purpose of this Study

- The present study examines multidimensional aspects of fatigue in Type 2 Diabetes and their associations with physical and mental components of Quality of Life
Depression and Diabetes

- Diabetes can be physically and behaviorally demanding, requiring multiple daily self-care activities.

- Depression is also prevalent and impacts numerous health and behavioral outcomes.
Fatigue

- Fatigue has been identified as a burdensome overlapping construct between depression and diabetes (Edege, 2003).

- This construct has been well-documented in the chronic disease literature, specifically Cancer and Multiple Sclerosis. This is less well studied in diabetes.
Fatigue

- Simon & von Korff (2006): Health-related fatigue may be an independent construct in chronic disease.

- Assessment of fatigue could provide information above and beyond that of depression or other disease-specific distress measures alone.
Quality of Life can be defined as the ways in which health, illness, and medical treatment effect an individual’s perception of their daily functioning and well-being (Guyatt, Feeny, & Patrick, 1993).

- **Physical**: Functional Status
- **Mental**: Level of emotional interference with daily functioning.
<table>
<thead>
<tr>
<th>Observed Construct</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depressive Symptomatology</strong></td>
<td>Center for Epidemiological Studies of Depression Scale-10 (CESD-10 total score)</td>
</tr>
<tr>
<td><strong>Diabetes-Specific Distress</strong></td>
<td>Problem Areas In Diabetes Scale (PAID total score)</td>
</tr>
<tr>
<td><strong>Fatigue</strong></td>
<td>Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF total score)</td>
</tr>
<tr>
<td><strong>Diabetes Self-Care Behavior</strong></td>
<td>Summary of Diabetes Self-Care Activities (SDSCA diet and blood glucose testing subscales)</td>
</tr>
<tr>
<td><strong>Quality of Life</strong></td>
<td>Medical Outcomes Study Short Form 1 (SF-12 physical and mental component subscales)</td>
</tr>
</tbody>
</table>

- Covariates were collected via chart review and include: age, gender, BMI, duration of diabetes, and use of medication (exogenous insulin, oral diabetes agents, and antidepressants)
Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF)

- 5 factors:
  - (1) general fatigue;
  - (2) physical;
  - (3) emotional;
  - (4) mental; and
  - (5) vigor.

- Total Score = Sum (Factors 1-4) - Vigor
Inclusion Criteria

- Participants included in this study were men and women who met the following eligibility criteria:
  - (1) a diagnosis of type 2 diabetes mellitus,
  - (2) were over the age of 21,
  - (3) could read, write, and understand English.
  - (4) could successfully complete the MINI-COG

- Participants were also screened for treatment regimen (diet only, insulin, oral agents, or both).
Participants

Participants (N = 151)
- Drawn from Floyd Memorial Hospital in New Albany, IN
- Asked by research personnel if they were willing to participate in study while waiting for clinic appointment.
- Questionnaires could be returned on site or via mail (pre-paid postage will be provided).

Consent
- Participants received questionnaire packet upon consent.
- Consent form and HIPAA forms were completed on site.

Screening
- Participants were screened for inclusion (MINI-COG, inclusion criteria).
- Participants were given questionnaire packet.
Recruitment

Total Invited to Participate
N= 246

Not Eligible to Participate
N= 21

Declined Participation
N= 18

Consented and Given Packet
N= 207

Did not complete study
N= 56

Completed Study
N= 151
Demographics

- 48% Male
- 93.2% Caucasian
- Age: $M = 60.68$ (SD=11.24)
- 23.1% Antidepressant
- 78.2% Hypertension
- 88.7% Hyperlipidemia
- 42.3% Peripheral Neuropathy
- 92.3% DM Oral Agents
- 34.8% Exogenous Insulin
<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of DM</td>
<td>143.64 (11.97)</td>
<td>102.54 (8.54)</td>
</tr>
<tr>
<td>BMI</td>
<td>35.38</td>
<td>6.83</td>
</tr>
<tr>
<td># of Complications</td>
<td>4.23</td>
<td>1.74</td>
</tr>
<tr>
<td>HbA1c</td>
<td>7.33</td>
<td>1.45</td>
</tr>
</tbody>
</table>
# Hierarchical Regression

<table>
<thead>
<tr>
<th></th>
<th>Demographics</th>
<th>Age, Gender, BMI</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Diabetes Variables</td>
<td>Insulin use, duration of DM, oral rx use</td>
</tr>
<tr>
<td>3</td>
<td>Medication</td>
<td>Anti-dep. Use</td>
</tr>
<tr>
<td>4</td>
<td>Outcome</td>
<td>Dep. Sx, PAID, fatigue</td>
</tr>
</tbody>
</table>
Results: Quality of life Outcomes
<table>
<thead>
<tr>
<th>Variables</th>
<th>R²</th>
<th>ΔR²</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, BMI, gender</td>
<td>.092</td>
<td>.092</td>
<td>4.23*</td>
</tr>
<tr>
<td>DM Variables</td>
<td>.126</td>
<td>.034</td>
<td>1.60</td>
</tr>
<tr>
<td>Anti-Depressants</td>
<td>.160</td>
<td>.035</td>
<td>5.04*</td>
</tr>
<tr>
<td>MFSI-SF</td>
<td>.267</td>
<td>.107</td>
<td>17.68**</td>
</tr>
</tbody>
</table>

*p < .05; **p < .001
# Fatigue and Mental Quality of Life

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>$\Delta F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, BMI, gender</td>
<td>.047</td>
<td>.047</td>
<td>2.06</td>
</tr>
<tr>
<td>DM Variables</td>
<td>.057</td>
<td>.011</td>
<td>.468</td>
</tr>
<tr>
<td>Anti-Depressants</td>
<td>.122</td>
<td>.055</td>
<td>7.55*</td>
</tr>
<tr>
<td>MFSI-SF</td>
<td>.483</td>
<td>.371</td>
<td>86.81**</td>
</tr>
</tbody>
</table>

*p < .05; **p < .001
Conclusions

- Fatigue has significant negative impact on mental and physical quality of life when controlling for depressive symptomatology and diabetes-specific distress.

- Fatigue scores may reflect both the physical and daily demands of living with T2DM.

- Fatigue is often a persistent symptom of individuals on pharmacotherapy for MDD.
Limitations

- Cross-sectional data limits causality.
- Shared measurement variance.
- Self-report limitations
- Retrospective Recall.
Future Directions

✓ Explore associations with a sample of poorly controlled diabetes.

✓ Explore depressed individuals against normal controls.

✓ Longitudinal Data

✓ Further exploration of the impact of CVD risk and obesity.
Thank you!

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