The Main Sources of Anxiety and Dissatisfaction of Gestational Diabetes Mellitus Patients as Determined by Content Analysis of Their Blogs

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Gestational Diabetes Mellitus (GDM)

- perinatal mortality and morbidity
- obesity or impaired glucose tolerance in the offspring
- developing type 2 diabetes in later life

<table>
<thead>
<tr>
<th></th>
<th>Women with GDM (n = 50)</th>
<th>Control subjects (n = 50)</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mental health (MHI-5)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 30</td>
<td>13.9 ± 4.8</td>
<td>11.4 ± 3.8</td>
<td>8.53</td>
<td>0.004*</td>
</tr>
<tr>
<td>Week 36</td>
<td>10.9 ± 3.8</td>
<td>11.7 ± 4.0</td>
<td>1.06</td>
<td>0.31</td>
</tr>
<tr>
<td>Postpartum</td>
<td>11.5 ± 4.5</td>
<td>11.7 ± 4.0</td>
<td>0.07</td>
<td>0.79</td>
</tr>
<tr>
<td><strong>State anxiety (STA1)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 30</td>
<td>40.6 ± 13.3</td>
<td>34.2 ± 9.9</td>
<td>7.55</td>
<td>0.007*</td>
</tr>
<tr>
<td>Week 36</td>
<td>33.7 ± 10.9</td>
<td>35.3 ± 9.1</td>
<td>0.63</td>
<td>0.43</td>
</tr>
<tr>
<td>Postpartum</td>
<td>31.7 ± 10.6</td>
<td>34.1 ± 10.9</td>
<td>1.19</td>
<td>0.28</td>
</tr>
<tr>
<td><strong>Trait anxiety (STA1)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 30</td>
<td>39.5 ± 10.3</td>
<td>38.3 ± 10.2</td>
<td>0.31</td>
<td>0.58</td>
</tr>
<tr>
<td>Week 36</td>
<td>36.0 ± 9.0</td>
<td>37.8 ± 10.4</td>
<td>0.88</td>
<td>0.35</td>
</tr>
<tr>
<td>Postpartum</td>
<td>34.4 ± 10.5</td>
<td>36.7 ± 9.5</td>
<td>1.37</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Data are means ± SD. *P < 0.05.
GDM & Anxiety

Increased stress/anxiety related to

GDM diagnosis and the perception of a high risk pregnancy

Fear of maternal and infant complications

Losing control of GDM during the process of dietary management

Initiation of insulin therapy

Hui AL et al. *The Diabetes EDUCATOR*. Volume 40, Number 5, September/October 2014
Gaps in Patient-Physician Interaction

- Perceived physician authority
- Strictly Professional Relationship
- Physician dominated consult
- Physician dismissal of ‘minor complaints’

Korsch BM et al. PEDIATRICS, Vol. 42, No. 5, November 1968
None in GDM
Objectives

Primary Objective

• To determine the sources of anxiety and dissatisfaction of patients with GDM in relation to their disease by content analysis of their blogs
Objectives

Sub-Objectives

• To characterize the profiles of the bloggers who have GDM
• To characterize the blogs of patients with GDM through sentiment analysis (positive or negative)
Methodology
Study Design

• Content analysis
• Internet
• No direct patient interaction
Definition of Terms

• largest database of healthcare related Twitter conversations
• Use of hashtag for diseases
Definition of Terms

• Linguistic analytic tool
• Sentiment analyser – positive or negative sentiment
Definition of Terms

Content Analysis

• Research method for objective, systematic and quantitative examination of communication content

• Coding system
**Phase 1**

**Characterization**
Identifying blogger profiles and blog characteristics using *Linguakit Tool*

**Phase 2**

**Content Analysis**
Determining sources of anxiety and dissatisfaction in blogs

**Phase 3**

Inclusion: Blogs by GDM Patients
Exclusion: Inaccessible; Non-English Language
Results
#Gestationaldiabetes transcript

Healthcare Social Media Transcript

From: Tue Mar 21 0:00:00 PST 2006
To: Fri Jul 31 23:59:00 PDT 2015

What is #Gestationaldiabetes? Who were the influencers during this period? #Gestationaldiabetes analytics

Healthcare Conference - Healthcare Tweet Chats - Healthcare Analytics

bohodork
"Woman Gives Birth to 16-Pound Baby" by @ntellectual http://ow.ly/5E9bi via @TheRoot247 #diabetes #gestationaldiabetes

eating42dotcom
#Bloodclots #highbloodpressure #pre-eclampsia #gestationaldiabetes @Telegraph http://t.co/VlU7J1up

mhtf
A system-based intervention to improve postpartum #diabetes screening among #women w/ #gestationaldiabetes http://t.co/Jh
Tweet Activity on #Gestationaldiabetes

- 3,315 Tweets
- 1,868 Twitter Users
- 56 Blogs
Phase II (Characterization of Bloggers)

Country of Origin

- USA 70%
- UK 16%
- Australia 5%
- Canada 4%
- Spain 2%
- Philippines 2%
- Korea 2%
Phase II (Characterization of Bloggers)

Trimester when blog was written

- undisclosed: 64%
- 3rd trimester: 32%
- 2nd trimester: 4%
- 1st trimester: 0%
Phase II (Characterization of Bloggers)

Trimester at diagnosis

- undisclosed 59%
- 3rd trimester 16%
- 2nd trimester 21%
- 1st trimester 4%
Phase II (Characterization of Bloggers)

- Diet Alone: 59%
- Diet + Insulin: 13%
- Undisclosed: 13%
- Diet + Glyburide: 9%
- Diet + Metformin: 7%
Phase II (Characterization of Blogs)

SENTIMENT ANALYSIS

- Positive: 46.4%
- Negative: 53.6%
<table>
<thead>
<tr>
<th>Code</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Notification of disease/Initial diagnosis of disease</td>
</tr>
<tr>
<td>2</td>
<td>Outpatient consult/procedures</td>
</tr>
<tr>
<td>3</td>
<td>Hospitalization/Hospital discharge</td>
</tr>
<tr>
<td>4</td>
<td>Diagnostics/Laboratory tests</td>
</tr>
<tr>
<td>5</td>
<td>Initiation of Treatment</td>
</tr>
<tr>
<td>6</td>
<td>Facility/Equipments in clinics and hospitals</td>
</tr>
<tr>
<td>7</td>
<td>Relationship with medical staff</td>
</tr>
<tr>
<td>8</td>
<td>Symptoms/Side effects/complications of disease and/or drugs</td>
</tr>
<tr>
<td>9</td>
<td>Way of living, view of life, reasons for living, lifestyle</td>
</tr>
<tr>
<td>10</td>
<td>Work/financial burdens</td>
</tr>
<tr>
<td>11</td>
<td>Relationships with family and members of society except medical staff</td>
</tr>
<tr>
<td>12</td>
<td>Perception of the disease</td>
</tr>
<tr>
<td>13</td>
<td>Anxiety, dissatisfaction not otherwise specified</td>
</tr>
</tbody>
</table>
Similar Studies

• Hui et al stress is related to GDM diagnosis and treatment inadequacy and fear of maternal and infant complications.

• DAWN study by Lapolla et al, increased anxiety with diagnosis of GDM.

• These correlation between studies suggest that the most pressing concerns of patients with GDM are related to symptoms/side effects, treatment and notification of disease.
Subanalysis by Region

- North America: 41 blogs
- Europe: 10 blogs
- Asia Pacific: 5 blogs
## Subanalysis by Type of Treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number of Blogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet Only</td>
<td>33</td>
</tr>
<tr>
<td>Diet + OHA</td>
<td>9</td>
</tr>
<tr>
<td>Diet + Insulin</td>
<td>7</td>
</tr>
</tbody>
</table>
Limitations

• limitation of search of blogs through Twitter using Symplur
• blog authors talk about the same sources anxiety/dissatisfaction in more than one instance
• patients may emphasize more the anxiety that is significant
Conclusions

• This study provides insight into the different sources of anxiety and dissatisfaction in GDM patients through blogs.

• Regional and treatment type differences in the main sources of anxiety/dissatisfaction occur in GDM patients.
Thank You!