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Relevance of Health-Related Hashtags on Twitter: A Text Mining Approach

Mauli Dalal  
*Virginia Commonwealth University*

Kweki-Muata Osei-Bryson

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ABSTRACT

Intro:
• Social media platforms facilitate user interaction and impact decision making.
• Users prefer to use hashtags while sharing posts.
• Knowing the sentiment towards diabetes, blood pressure, and obesity is fundamental to understanding the impact of these information on patients and their families.
• The study seeks to determine the relevance of health-related hashtags on Twitter and analyze sentiments about diabetes, obesity, blood pressure.

Methods:
• Tweets retrieval using #Hashtags
• Overall 10,881 tweets retrieved
• 3 Analytical Approaches:
  • Text Topic Modeling
  • Clustering
  • Decision Trees (DTs)

Results:
• The important topics identified vary across clustering and DTs.
• Using ‘10 crossfold validation’ for each DT with ‘misclassification rate’ demonstrated good accuracy

Topic Modeling identified multi-term topics of relevance to:
• Blood Pressure (BP)
• Diabetes
• Obesity

Clustering node captured broader range of topics as compared to each disease specific DT.

Health related information - checkups, remedies, prevention, surgical procedures are actively discussed on such platforms.

Important Topics for Clustering & DT

<table>
<thead>
<tr>
<th>Clustering Range</th>
<th>DT_BP_x1</th>
<th>DT_Diabetes_x1</th>
<th>DT_Obesity_x1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes-Nutrition</td>
<td>BP-Remedy</td>
<td>Diabetes-Nutrition</td>
<td>Healthcare-Burden</td>
</tr>
<tr>
<td>Diabetes-Risk-Woman</td>
<td>BP-Prevention</td>
<td>Different-Diabetes-Type</td>
<td>BP-Remedy</td>
</tr>
<tr>
<td>Health-Awareness</td>
<td>Lung-Accumulation</td>
<td>Diabetes-Checkup</td>
<td>Food-Prevent</td>
</tr>
<tr>
<td>Bariatric-Surgery-Woman</td>
<td>Food-Prevent</td>
<td>BP-Obesity</td>
<td>Lung-Accumulation</td>
</tr>
</tbody>
</table>

CONCLUSION
• Combination of different data mining and text mining approaches can enhance our understanding about hashtag relevance on social media platforms.
• It can thus increase our understanding about user engagement on such platforms and potentially help improve managing public health strategically.

Contact Information: Mauli Dalal
Email: dalalmb@mymail.vcu.edu