A Randomized Controlled Trial of SMS Text Messages as Appointment Reminders in the Pediatric Dental Setting

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In 2008 an estimated total of 2.3 trillion texts were sent worldwide
301 billion were sent in the US

The number of texts sent in the US in 2008 surpassed the number of calls made
Children Most Likely to Miss Appointments:

- Young parents
- High caries scores
- Medicaid Insurance
“The majority of surveyed dentists have stated that broken appointments among the Medicaid population was very important in their decision not to accept these patients into their practice.”
HYPOTHESIS

H1: No-show attendance among patients who receive text message reminders will be no different than those among patients receiving standard telephone reminders in the pediatric dental population.

H2: Most study participants will prefer text reminders over conventional voice reminders.
METHODS

STUDY DESIGN: RCT

Survey Administered

Survey Subjects Assessed for Eligibility

Excluded:
- Did not meet eligibility criteria
- Declined to participate

Enrollment

Random Allocation

SMS Text Reminder
  48 hrs prior to apt

Mobile Phone Voice Reminder
  48 hrs prior to apt

Analyze (Show/No Show)

Analyze (Show/No Show)
STUDY POPULATION

Caregiver/Child pairs of the UW Pediatric Dental Clinic

- Willing to receive a text reminder OR a voice reminder

N = 318 (158 text, 160 voice)
CONTROL ARM

Control patients received a verbal telephone reminder from clinic reception staff.
Patients assigned to the Text reminder group received a computer generated text message on their cell phone 48 hours prior to their appointment.

INTERVENTION ARM
DATA ANALYSIS

○ Descriptive Statistics

○ Chi² tests
  - Used to compare the distribution of the study variables by:
    - appointment reminder type (voice versus SMS text)
    - appointment status (Show/canceled versus No-Show)

○ Logistic regression
  - Used to model appointment status as a function of reminder type and the study variables

Critical value for all tests was established at 5% (α=0.05)
## RESULTS

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n)</th>
<th>Text Message (n = 158)</th>
<th>Voice Reminder (n = 160)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caregiver Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>24</td>
<td>13 (63.4)</td>
<td>11 (7.0)</td>
<td>0.046</td>
</tr>
<tr>
<td>26-30</td>
<td>47</td>
<td>31 (65.8)</td>
<td>16 (33.3)</td>
<td></td>
</tr>
<tr>
<td>31-40</td>
<td>175</td>
<td>76 (43.4)</td>
<td>89 (55.6)</td>
<td></td>
</tr>
<tr>
<td>40+</td>
<td>66</td>
<td>34 (21.4)</td>
<td>32 (20.3)</td>
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<tr>
<td><strong>Child Age</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.16</td>
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<tr>
<td>12-15</td>
<td>181</td>
<td>53 (29.3)</td>
<td>78 (48.8)</td>
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</tr>
<tr>
<td>16+</td>
<td>96</td>
<td>46 (29.3)</td>
<td>50 (31.3)</td>
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<tr>
<td><strong>Type of Insurance</strong></td>
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<tr>
<td>Private/Self Pay</td>
<td>46</td>
<td>22 (14.0)</td>
<td>24 (15.0)</td>
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<tr>
<td>Medical Coupon</td>
<td>271</td>
<td>135 (52.2)</td>
<td>136 (55.0)</td>
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<tr>
<td><strong>Persons Who Live at Home</strong></td>
<td></td>
<td></td>
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<td>0.611</td>
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<tr>
<td>&lt;4</td>
<td>160</td>
<td>82 (51.3)</td>
<td>79 (49.4)</td>
<td></td>
</tr>
<tr>
<td>&gt;4</td>
<td>155</td>
<td>75 (47.7)</td>
<td>80 (50.6)</td>
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<tr>
<td><strong>Primary Language at Home</strong></td>
<td></td>
<td></td>
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<td>0.522</td>
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<tr>
<td>English</td>
<td>258</td>
<td>130 (82.8)</td>
<td>128 (80.0)</td>
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<tr>
<td>Other</td>
<td>59</td>
<td>27 (17.2)</td>
<td>32 (20.0)</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<td>0.806</td>
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<tr>
<td>White</td>
<td>181</td>
<td>90 (50.0)</td>
<td>91 (56.3)</td>
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<tr>
<td>Black</td>
<td>46</td>
<td>23 (14.7)</td>
<td>23 (14.6)</td>
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<tr>
<td>Asian</td>
<td>48</td>
<td>22 (14.0)</td>
<td>29 (18.1)</td>
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<tr>
<td>Other</td>
<td>39</td>
<td>22 (14.0)</td>
<td>17 (10.6)</td>
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<tr>
<td><strong>Caregiver Relationship</strong></td>
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<tr>
<td>Mother</td>
<td>259</td>
<td>134 (51.9)</td>
<td>125 (48.6)</td>
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<tr>
<td>Father</td>
<td>42</td>
<td>16 (35.7)</td>
<td>27 (68.3)</td>
<td></td>
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<td>Other</td>
<td>10</td>
<td>5 (35.7)</td>
<td>5 (35.7)</td>
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<tr>
<td><strong>Type of Telephone Used</strong></td>
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<td></td>
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<td>0.692</td>
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<tr>
<td>Cell Phone</td>
<td>155</td>
<td>84 (53.9)</td>
<td>81 (50.9)</td>
<td></td>
</tr>
<tr>
<td>Landline and Cell Phone</td>
<td>152</td>
<td>74 (48.6)</td>
<td>78 (49.1)</td>
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</tr>
<tr>
<td><strong>Most suitable reminder type</strong></td>
<td></td>
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<td>0.024</td>
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<tr>
<td>Text</td>
<td>56</td>
<td>45 (80.0)</td>
<td>41 (73.6)</td>
<td></td>
</tr>
<tr>
<td>Voice</td>
<td>131</td>
<td>64 (48.6)</td>
<td>67 (45.3)</td>
<td></td>
</tr>
<tr>
<td>Either</td>
<td>100</td>
<td>48 (30.5)</td>
<td>52 (33.8)</td>
<td></td>
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<tr>
<td><strong>total</strong></td>
<td>167</td>
<td>154</td>
<td>158</td>
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</tr>
</tbody>
</table>
Type of Telephone Used

- 52% Cell Phone
- 48% Landline and Cell Phone
RESULTS OF RANDOMIZATION

No statistically significant differences between control/intervention groups for any variable except Caregiver Age

Caregiver Age

<table>
<thead>
<tr>
<th></th>
<th>Text</th>
<th>Voice</th>
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</thead>
<tbody>
<tr>
<td>Age 26-30</td>
<td>31</td>
<td>16</td>
</tr>
<tr>
<td>Age 31-40</td>
<td>76</td>
<td>99</td>
</tr>
</tbody>
</table>

P = 0.046
Attendance improved with increasing caregiver age.
Text Message reminder patients were more likely to No-Show

OR Unadjusted = 2.41
OR Adjusted for Caregiver Age = 2.12
DISCUSSION

Our Findings Differed From Previous Studies:

- Previous research was outside the US
- Most other research was for non-dental visits
- Others Used *Historical Control* or *No Reminder*
DISCUSSION

Why Was A Voice Reminder More Successful?

- Reception staff has personal relationships with patients
- Voice reminders may be more interactive
- Text may be more easily ignored
DIRECTIONS FOR FUTURE RESEARCH

- Examine effect outside university-based clinic
- Allow patients to select preferred reminder type

http://www.mchoralhealth.org/
CONCLUSION

- Text messages are not likely to be a good standard reminder in university-based Pediatric Dentistry clinics
- In this study more participants would prefer a voice message reminder than a text message reminder
ACKNOWLEDGEMENTS

- Healthy Smiles, Healthy Children: The Foundation of the American Academy of Pediatric Dentistry

- 3M ESPE

- Henry Schein; Special Thanks to Tammy McHood and Russell Whitchurch

- UW Pediatric Dental staff: Carol Harvey, Molly Galway, and Glory Frodeson as well as student workers Catherine Rimorin, and Tod Davidson
REFERENCES


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