Influencing Breastfeeding Behaviour: The use of technology to provide a peer support service

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Typically the tangible support offered for women to support breastfeeding behaviours takes the form of face-to-face advice from health professionals, peer counselling via non-government organisations (NGO) such as the Australian Breastfeeding Association (ABA) and provision of information through websites, pamphlets and books. However with declining breastfeeding duration rates in Australia and with less than 20% of breastfeeding mothers in Australia using NGO support services, there is a need for alternate approaches. With the increasing use of technology-mediated services in health (Lefevbre 2009; Holman, E. (2009)), there is opportunity to investigate how these might be used to improve breastfeeding rates. To date there is little research has investigated the use of other service delivery channels, such as online discussion forums and m-technologies, in improving breastfeeding behaviours. Given the increasing costs associated with the provision of personalised face-to-face professional support and the need for some women to maximise privacy, discretion and judgement-free consultations, there is a gap that could be filled by the use of m-technologies such as text messaging and other social media. To address this gap, a two-way SMS program was piloted in conjunction with the Australian Breastfeeding Association. The program was therefore designed with two key underpinning theories: seeking social support coping theory (Vitaliano, Russo, Carr et al. 1985) and self-efficacy (Bandura 1977) as these have been previously identified as key indicators that influence breastfeeding duration. Participants received weekly text messages delivered over an eight week period requiring them to text reply and indicate how their breastfeeding was progressing. The women used a series of keywords from a set of responses printed on a card. In order to identify any changes in social support seeking behaviour and self-efficacy and to obtain attitudes towards the use of text messaging in breastfeeding, a repeated measures approach was adopted with pre and post surveys administered. Of the 130 women who registered and completed the pre-survey, six withdrew before commencement and four ceased participation after commencement with all remaining women (120) completing the post-survey, achieving a 95% response rate. Standard scales were used to measure self-efficacy, social-support seeking behaviour, emotions experienced and breastfeeding duration. At the end of the eight week period 79% of babies (mean age of 3 months) were being fully breastfed (a decrease of 4% over the period). This is well above the national level of 46% for three month old babies (Australian Institute of Family Studies 2008). There were significant increases in self-efficacy, social support seeking behaviour, intentions to breastfeed positive emotions.

* Presenter
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Introduction

Governments and NGOs are adopting social marketing

- Typically downstream marketing adopted

- What is less discussed and documented in social marketing is how services marketing can support individual behaviour change goals.

Practitioner:

- Behaviour change approach relies on access to services, yet service delivery is often functionally distinct from the marketing program.

- More typically the marketing program is defined as promotion and a mass-media campaign (Domegan, 2008; McDermott, Stead & Hastings, 2005).

Academic

- Services marketing theories can help move social marketing thinking from downstream to upstream

- Need for softening of boundaries between services marketing and social marketing sub-disciplines

The team

- Project leader:
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- Academic team:
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  - Dr Josephine Previte, UQ Business School
  - Creative Director
  - Andre La Porte

- Breastfeeding Expertise
  - Robyn Hamilton, ABA Director

- Research Assistants:
  - Joy Parkinson, QUT
  - Ryan McAndrew, QUT
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Background

- Breastfeeding levels in Australia are well below the World Health Organisation's (WHO) recommended 2 years duration and the NHMRC breastfeeding target of 80% of babies breastfed at 6 months.
- Only 71% of babies are fully breastfed at one month, 62% at two months, 56% at three months, 46% at four months, 28% at 5 months, 14% at 6 months (AIFS 2008).
- The Australian National Infant Feeding Survey (2010-2011) indicated an initiation rate of 96%, but only 47% of infants predominantly breastfed at 3 months dropping to 21% at around the 6 month mark (AIHW 2011).

Typical approaches - Breastfeeding Campaigns

- "Education only campaigns" have failed to increase breastfeeding behaviours.
- Organisations, governments and health professionals typically use awareness/knowledge campaigns to increase breastfeeding rates.
- Promote breastfeeding as a simple "doable" behaviour.
- Women (focus groups) often agree to "rosy images" but this often denies the challenges.
- Failure to "personalise" the message.

What needs to be in place for mum's to breastfeed to six months (modifiable factors)?

- Intention
- Self-efficacy
- Seeking social support
- Exposure to BF
- Perceived social support
Theoretical Background

- Self-Efficacy
  - Confidence in perceived capacity to control their motivation, thought processes, emotional states and social environment in performing specific behaviours (Bandura, 1977; Dennis, 1999).
  - When women feel disempowered and helpless in managing breastfeeding they stop (Dennis & Faux, 1999).
  - When women feel confident, they breastfeed longer (Dennis & Faux, 1999).
- Seeking Social Support
  - Social support usually refers to roles performed for an individual by significant others, such as partners, family members, friends, relatives and neighbours (Thoits, 1985).
  - Support validates behaviour and reduces anxiety.
  - When women do not seek support they experience more difficulties and are less likely to continue breastfeeding.
  - When women have social support, they are more loyal to breastfeeding (Parkinson, Russell-Bennett and Previte forthcoming).

Self-service technology solution

- The need to have a non-education based campaign to improve breastfeeding duration (loyalty) led to the development of an intervention-based research project – Pilot Version.
- The intervention needs to reduce the ‘social price’ of breastfeeding to mothers by increasing self-confidence, access to a social support network and reducing embarrassment and guilt. The intervention needed to be appealing to both women and men.
- A grant application by the ABA and QUT in 2008 led to research funding to develop and pilot a digital based social marketing program and evaluate the outcomes.

Why mobile phones?

- Use of mobile phones as a service delivery channel is one of the few technological options with high coverage and pervasiveness across socioeconomic, age and gender, therefore making it a viable option for broad public health programmes (Holman 2009).
- Access to mobile phone networks is at 90% worldwide.
- The total number of SMS sent globally tripled between 2007 and 2010, from an estimated 1.8 trillion to a staggering 6.1 trillion. In other words, close to 200,000 text messages are sent every second.
- Penetration of mobile phone technologies Australia – 110 subscriptions per 100 people.
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The Digital Service

- A custom-made, fully automated 2-way SMS-based breastfeeding support system (the world’s first).
- The SMS system will use a ‘keyword’ based ‘recognition & response’ algorithm.
- Mothers text a keyword (as stipulated on a ‘Contact Card’) to indicate how they are coping with their breastfeeding and the system will then reply immediately with a response providing tips, compassion and advice.
- The system will incorporate built-in mechanisms to provide reporting and assessment of a participant’s behaviour in ‘real-time’.
- The mbc system will also encourage mothers to call a 24 hour Help Line for further support.
- ABA + Women’s Health QLD wide
The mbc support system was accompanied by:

1. a custom website offering information resources and further links to parenting and government support websites
2. a Facebook page that enables participants to discuss common issues and receive peer based, and Mum Bub Connect based professional support and advice.
3. Support provided by ABA and Women's Health with ABA Counsellor providing outbound calls

Research Question

- Gap: We don’t know if an m-technology service could significantly change social support seeking behaviours and self-efficacy levels for breastfeeding

- RQ: Can an m-technology social marketing service change social support seeking behaviour and self-efficacy levels?

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## Method

### Approach
- Repeated measures approach with pre and post online surveys administered.

### Sample
- Women who were currently breastfeeding
- National sample recruited via radio and print publicity and Facebook site
- 120 of the 130 women, 92% response rate.
- Mean age of 31.2 years
- Mean age of infants was 6.7 weeks (Focus is therefore on the medium to long term postnatal period where biggest drops in breastfeeding occur)
- 95% were married or in a defacto relationship
- 95% born in Australia

### Measures
- Constructs: Social support seeking behaviour (Vitaliano, Russo, Carr et al. 1985), self-efficacy (Dennis and Faux 1999), attitudinal and behavioural breastfeeding loyalty (Parkinson, Russell-Bennett and Previte 2010), emotions experienced - hope, joy, anxiety, guilt, challenge (Passyn and Sujan 2006)
- Demographic variables about the mother and baby
- Measures of process and impact evaluation were included that covered the acceptability of message frequency, timing and content along with the behaviour that resulted from receiving the messages and appreciated the service

### Analysis
- T-Tests were used to analyse differences between the pre and post-measures.
- Open-ended questions used thematic analysis

### Tests for Differences T1 and T2

<table>
<thead>
<tr>
<th>Construct</th>
<th>T1</th>
<th>T2</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility for BF - Maintained</td>
<td>4.36</td>
<td>4.38</td>
<td>ns</td>
</tr>
<tr>
<td>Self-efficacy (increased)</td>
<td>4.06</td>
<td>4.15</td>
<td>.005*</td>
</tr>
<tr>
<td>Coping_positive (increased)</td>
<td>3.38</td>
<td>3.71</td>
<td>.001***</td>
</tr>
<tr>
<td>Coping_negative (decreased)</td>
<td>4.29</td>
<td>4.05</td>
<td>.000***</td>
</tr>
<tr>
<td>Social support (increased)</td>
<td>3.04</td>
<td>3.86</td>
<td>.000***</td>
</tr>
<tr>
<td>Emotions_positive (increased)</td>
<td>4.23</td>
<td>4.35</td>
<td>.03*</td>
</tr>
<tr>
<td>Emotions_negative (decreased)</td>
<td>1.26</td>
<td>1.37</td>
<td>ns</td>
</tr>
<tr>
<td>Challenged (decreased)</td>
<td>2.47</td>
<td>2.08</td>
<td>.002***</td>
</tr>
<tr>
<td>Behavioural loyalty - Maintained</td>
<td>80.91%</td>
<td>82.29%</td>
<td>50(ns)</td>
</tr>
</tbody>
</table>

### Impact on Breastfeeding

- 83% of women were fully breastfeeding at the beginning
- Compared to approximately 62% of women nationally
- 79% of women were fully breastfeeding 8 weeks later (decrease of 4%)
- Compared to approximately 46% of women nationally (decrease of 14%)
- 91% of women were feeding their infants any breastmilk

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Process Evaluation

- As a result of the messages the women felt:
  - Reassured and confident
  - Felt reassured when my bub was feeding constantly, as my response gave me information that told me things were normal
  - Positive affect
  - Looked forward to receiving them, especially on crappy days - they often made me smile
  - Persisted and kept focused
  - A milk pimple made it a bit difficult for a while. But I kept going, just hanging out for the next message.
  - Was asked to assess my breastfeeding situation, which forced me to solve a problem if I had it, or ask a question if I had one. It kept me focussed on breastfeeding.
  - Supported and part of a group
  - Felt as though I was achieving something important by continuing breastfeeding. When I messaged that I had an issue, the message of support was just as important as the suggestion of what to do.
  - Made me feel as though I was a part of a group. Being isolated in the country I had no mothers group, so enjoyed being acknowledged.
  - Good that somebody was interested in my breastfeeding, and not because I asked them to be interested (like family are interested). Being isolated in the country I had no mothers group, so enjoyed being acknowledged.
  - Made me feel as though I was a part of a group. Being isolated in the country I had no mothers group, so enjoyed being acknowledged.
  - Program fitted into their reality
  - Loved the program, found it non-intrusive.

Where to from here?

- Need a larger pilot group with a broader demographic
  - Aim for 29,500 women over a 12 month period (10% of all births in any one year)
- Need a higher level of automation but with more options for replies
- Need to be able to send more detailed information either video, written, oral
- Estimated costs
  - Development $150k +
  - Running $150k per annum – cost of a counsellor, phonecalls, troubleshooting, monitoring, facebook content updating, promotion
- How do we fund it?
  - User-pays – the user pays for the type of response received (based on preliminary costs it could be between $10-12 per family for a service that lasted from birth to six months)
  - Do users subscribe to the service – 2 weeks free service, then subscribe?
  - Government support
  - Philanthropic funding

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