Development and Effectiveness of Breast Awareness Mobile App for Health Education and Promotion among Women in Kota Bharu, Kelantan

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Abstract

Breast cancer (BC) is the most common type of cancer among Malaysian women with reported incidence increased in trend according to data from 2012 to 2016 [1]. Moreover, compared to the data from 2007 until 2011 and 2012 until 2016, Malaysian women are more likely to present with late-stage BC [1]. Breast self-examination (BSE) was found to be more effective when combined with a mobile app intervention in promoting early detection [2]. Even though smartphone app users were increasing, there is a lack of culturally appropriate content, health providers’ support and accessibility to reliable information [3].

The objective of this study was to develop BrAware, a breast awareness mobile app based on the Health Belief Model (HBM) and evaluate the effectiveness of BrAware for health education and promotion. The HBM-based requirement analysis was used to develop BrAware, which includes elements including the risk factors infographic, survival statistics, BSE video, reminders, support groups and ‘myths and facts’ content. An approval from the Human Research Ethics Committee (HREC) Universiti Sains Malaysia was obtained (USM/JEPeM/18080380) prior to data collection.

A quasi-experimental pre and post-test research design were conducted from 1st October until 1st December 2021. The recruitment of participants was done through media social platforms such as the Facebook page of ‘Penduduk Kota Bharu’ and the WhatsApp group. It utilized an online survey using an adapted Bahasa Malaysia version of the Breast Cancer Awareness Measurement Tool (B-CAM) [4]. The post-test was administered after the participants were familiar with and used BrAware for two months. The data analysis was done using the Statistical Package for Social Sciences (SPSS) version 26.0. The raw scores of knowledge were summed up to 100% with a high score indicating high knowledge. A paired t-test was used to analyze the effectiveness of BrAware on knowledge in BC and BSE. The null hypothesis was rejected if the p-value is <0.05 at the 5% level of significance.

A total of 41 women were recruited in this study to assess the effectiveness of BrAware in terms of BC knowledge and BSE practice. The analysis’s findings revealed that the participants’ mean age was 39.71±8.80. At a <0.001 level of significance, the mean BC warning signs knowledge score significantly increased from 70.62 (SD 11.74) to 79.83 (SD 10.15). Meanwhile, the BC risk factors knowledge rose from 65.79 (SD 14.63) to 77.07 (SD 16.57) (p-value 0.005). Also rising from 73.66 (SD 18.94) to 83.41 (SD 10.63) at a level of significance of 0.007 was the BSE knowledge means score.

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Table 1. Comparison of knowledge before and after 2 months of using the BrAware

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean±SD</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After*</td>
<td></td>
</tr>
<tr>
<td>BC knowledge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warning signs</td>
<td>70.62±11.74</td>
<td>79.83±10.15</td>
<td>-4.07</td>
</tr>
<tr>
<td>Risk factors</td>
<td>65.79±14.63</td>
<td>77.07±16.57</td>
<td>-2.97</td>
</tr>
<tr>
<td>BSE knowledge</td>
<td>73.66±18.94</td>
<td>83.41±10.63</td>
<td>-2.84</td>
</tr>
</tbody>
</table>

*2 months after using the BrAware mobile app

The pre-and post BrAware intervention significantly showed improvement in participants' knowledge that could affect their health behaviour and promote early detection of BC. In mobile app development, an interactive learning approach such as an infographic was included to facilitate user engagement and memorability [5] and survival statistic information provided was more likely to urge users to take action after recognising the seriousness of the condition [6]. Moreover, in other studies, video intervention could attract users and promote understanding [7] whereas the reminder feature was reported to encourage self-checked [7]. Besides, features such as support groups included offered access to emotional or spiritual help, experience sharing, material and knowledge [8]. The education related to myth and facts was included as previous research found that it could reduce the rate of late diagnosis [9]. In conclusion, this intervention improves the knowledge of BC risk factors, awareness of warning signs and BSE confidence among the participants.

Keywords
Breast awareness, Mobile app, Health Belief Model, Health promotion, Health education

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References


