Effective engagement strategies in digital interventions for mental health promotion: A scoping review

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Introduction

Globally every 1 in 3 persons suffers from mental disorder

Mental health disorders have increased over time globally, highlighting the need for prevention

Quarantine measures during COVID-19 pandemic are associated with increased risk of experiencing mental health issue.

To face challenge of the increasing burden of mental disorders, and to address the demand for mental health promotion digital technologies provide one solution
Digital interventions for mental health

Can target prevention or treatment of mental health disorders.

Have potential to overcome the availability, accessibility barriers (geographical location and time) and stigmatization.

Proven effective for reducing clinical symptoms of mental health disorders and enhancing mental health promotion.

Are prone to attrition due to their self-help and unguided nature.

User’s engagement in digital technologies is critical for their effectiveness.
Engagement

Engagement with digital interventions can be defined as “i) the extent of usage, and ii) a subjective experience during usage”.

Engagement is described as a multidimensional construct with seven features:

- **Frequency, Duration, and Amount:** these features refer to the temporal usage.
- **Attention, Interest, and Affect:** these features refer to users’ experience and behavioral aspects.
- **Depth:** this feature can be described as variety of content used.
Aim

To identify engagement strategies that facilitates user's engagement with digital intervention for mental health promotion.

To explore features of engagement measured in digital intervention for mental health promotion.
Methods

Method/ Approach

• This review was registered in OSF (https://osf.io/9xyg7) and it adheres to the PRISMA-ScR guidelines for scoping reviews

Eligibility criteria.

• The inclusion criteria were:
  • adult (18 years+) users of digital interventions for mental health promotion;
  • any digital intervention for mental health promotion;
  • user engagement strategies described in intervention design.

• The exclusion criteria were:
  • clinical populations;
  • digital interventions for the treatment of mental health disorders;
  • no or inadequate information on the engagement strategies used in the intervention;
  • no primary data (reviews).
Methods

Search

- The search was conducted in seven electronic databases: MEDLINE, the Cochrane Central Register of Controlled Trials (CENTRAL), the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Social Science Citation Index (SSCI), the Science Citation Index (SCI), the Emerging Sources Citation Index (ESCI) and PsycINFO.
- Databases were searched from inception to April 2020.

Data items

- Study characteristics (citation, design, country of data collection);
- Digital intervention (type, engagement strategy);
- Evaluation of engagement strategy (method and result specifying if the strategy was effective);
- Features of engagement (usability measures and subjective measures).

Data synthesis

- Data was narratively synthesized.
Results

Records identified through data-base search k=4585

Records after duplicates removed k=2766

Records screened for title and abstracts k=2766

Records for full text screening k=112

Full text articles screened for eligibility k=112

Articles included in scoping review k=16

Excluded k=96
### Study Characteristics

#### Study Design
- Randomized control trials $k=6$
- Process data studies $k=5$
- Observational Studies $k=3$
- Qualitative studies $k=2$

#### Location
- Europe $k=6$
- North America $k=6$
- Australia $k=5$

#### Type of digital intervention
- Web-based $k=8$
- Mobile app $k=4$
- Both $k=4$
### Engagement strategies identified and design features to implement them

<table>
<thead>
<tr>
<th><strong>Personalization</strong></th>
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<tbody>
<tr>
<td>Personalized feedback on content/ user’s mental health status</td>
<td></td>
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<tr>
<td>Personalization of content</td>
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<thead>
<tr>
<th><strong>E-coaching</strong></th>
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<tr>
<td>Content focused e-coaching</td>
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<tr>
<td>Adherence focused e-coaching</td>
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<tr>
<th><strong>Reminders</strong></th>
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<tr>
<td>Personalized reminder text message/ email</td>
<td></td>
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<tr>
<td>Passive reminder text message email</td>
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<tr>
<td>Push notifications</td>
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<table>
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<tr>
<th><strong>Social support</strong></th>
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<tbody>
<tr>
<td>Social Forum</td>
<td></td>
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<tr>
<td>Allowing interactivity with peers</td>
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<thead>
<tr>
<th><strong>Gamification</strong></th>
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<tbody>
<tr>
<td>Content gamification</td>
<td>Reward for complete goal</td>
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<tr>
<td>Goal setting</td>
<td>Daily new content</td>
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<tr>
<th><strong>Flexibility and easy to use</strong></th>
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<tbody>
<tr>
<td>Bright and neat graphic</td>
<td>Substitute for offline help</td>
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<tr>
<td>Flexibility in content use</td>
<td>Accessibility anytime</td>
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</tbody>
</table>
Qualitative studies $k=2$

- Qualitative studies $k=2$ (36 participants)

### Results

#### Design features
1. Personalization of content $k=1$
2. Provision of daily new content $k=2$
3. Flexibility of content $k=1$
4. A substitute for offline help $k=1$

#### Bar chart

- **Strategies used in intervention design**
  - Personalisation: 1
  - E-coaching: 0
  - Reminders: 1
  - Social forum: 0
  - Gamification: 0
  - Easy to use: 0

- **Strategies recommended by users**
  - Personalisation: 2
  - E-coaching: 0
  - Reminders: 0
  - Social forum: 2
  - Gamification: 2
  - Easy to use: 0
Observational and Process data studies $k=8$

- Observational studies $k=3$ (total of 592 participants)
- Process data studies $k=5$ (total of 7000 participants)

**Results**

**Strategies used in intervention design**

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**Strategies recommended by authors**

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**Design features**

1. Personalized feedback on content/mental health status $k=4$
2. Content and adherence focused guidance $k=2$
3. Personalized reminders text message/ email $k=2$
Randomized trials

- Experimental studies k=6 (15 arms)

Results

Strategies used in intervention design
- Personalisation
- E-coaching
- Reminders
- Social forum
- Gamification
- Flexibility/ Easy to use

Strategies recommended by authors
- Personalisation
- E-coaching
- Reminders
- Social forum
- Gamification
- Flexibility/ Easy to use

Design features
1. Personalized feedback on content/mental health status k=2
2. Content personalization k=2
3. Social forum k=1
4. Interactivity with peers k=1
5. Accessibility anytime k=1
Features of engagement measured.

Results

- Frequency: 7
- Duration: 13
- Amount: 8
- Attention: 7
- Affect: 3
- Interest: 7
- Depth: 7
Discussion

Engagement strategies

- Personalized support during the intervention, access to social support and personalized feedback may work best to promote engagement.
- Sole two out of sixteen studies evaluated engagement strategies systematically
- Engagement was explored heterogeneously

Engagement features

- Engagement was not explored in depth
- Objective feature of technology usage > subjective features of user experience

Recommendation for future design and research

- Harmonization of research and evaluation methodology for exploring engagement
- All features of engagement should be explored
- Various engagement strategies and their combinations should be evaluated systematically
Thank you!
Co-authors: Lisa Kühne, Karina Karolina De Santis, Tilman Brand & Heide Busse

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www.lsc-digital-public-health.de
References:


• Rudd BN, Beidas RS. Digital mental health: The answer to the global mental health crisis? JMIR Ment Heal 2020 Jun;7(6):e18472. PMID:32484445
