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The link between mental health and safe drinking water collection behavior in a vulnerable population in rural Malawi

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Why mental health is important in WASH context?

- Mental disorders are common long-term psychological outcomes in emergency contexts arising from conflicts, natural disasters or other challenging environmental conditions.

- In emergencies, people suffer not only from the lack of external resources, such as scarcity of drinking water or food, but also from poor mental health.

- Mental disorders can impair daily activities in vulnerable individuals (WHO, 2018).

- WASH behavior, such as safe drinking water collection is daily activity that requires effort, time, and strong internal motivation.
The RANAS-Model: Risk, Attitudes, Norms, Ability and Self-regulation

- **Information behavior change techniques**
- **Persuasive behavior change techniques**
- **Norm behavior change techniques**
- **Infrastructural, skill & ability behavior change techniques**
- **Planning & relapse prevention behavior change techniques**

**Risk factors:**
- Health knowledge
- Vulnerability
- Severity

**Attitude factors:**
- Beliefs about costs and benefits
- Feelings

**Norm factors:**
- Others' behavior
- Others' (dis)approval
- Personal importance

**Ability factors:**
- How-to knowledge
- Confidence in performance
- Confidence in continuation
- Confidence in recovering

**Self-regulation factors:**
- Action planning
- Action control
- Barrier planning
- Remembering
- Commitment

**Social context**

**Physical context**

**Personal context**

**Behavior A**
- Habit

**understanding and awareness of the health risk**

**positive or negative attitude about a behavior**

**perceived social pressure**

**confidence in ability to practice a behavior**

**Intention Use**

**attempts to plan and self-monitor a behavior and to manage conflicting goals and distracting cues**

The RANAS-Model: Risk, Attitudes, Norms, Ability and Self-regulation

RQ1. Is there a relationship between mental health and safe drinking water collection behavior?

RQ2. Which psychosocial factors are behavioral drivers for the safe drinking water collection?

RQ3. Does mental health moderate safe drinking water collection behavior?

RQ4. Are there differences between individuals with good and poor mental health in psychosocial factors influencing safe drinking water collection?
Malawi’s vulnerability due to:

- Poverty
- Hunger, lack of drinking water and food
- Poor water, sanitation and hygiene conditions in many communities
- High prevalence of mental disorders (29.9%) and depression (30.3%) (Stewart et al., 2008; Udedi, 2014)
Methods: procedure and sample

- A quantitative survey with 641 households
- Structured face-to-face interviews in a local language (Chichewa) on tablet devises
- A quantitative questionnaire based on the RANAS approach to measure safe drinking water collection behavior and psychosocial factors
- Mental health assessment using the validated Chichewa version of the self-reporting questionnaire (SRQ-20, WHO, 1994)
- Selection of households using random-route method
Mental health: 26.8% of respondents scored equal or above 7 on the SRQ-20 scale (cutoff point ≥ 7)

Almost a third (!) of the respondents reported poor mental health

RQ1: Significant negative association between poor mental health and safe drinking water collection (p = .01, r = -.104)
Results: linear regression (RQ2)

RQ2: The most important predictors for safe water collection behavior were:

- Belief distance (far away)
  - Difficult water
  - Remembering (pay attention)
  - Remembering (forg. last 24h)
  - Communication

- Others’ behavior household
  - Others’ behavior village

Note. *p ≤ .05, **p ≤ .01, ***p ≤ .001. Adj. $R^2=.746$, N=621

E.g. if people perceive that the water point is far away, they collect safe water less often.

E.g. if people think that a lot of others in village collect safe drinking water, they also collect more safe water.
## Results: moderation (RQ3)

Interaction effects between Mental Health (poor vs good) and RANAS psychosocial factors on self-reported safe drinking water collection behavior

<table>
<thead>
<tr>
<th>Interactions of RANAS psychosocial factors with Mental Health</th>
<th>$b$, 95% CL</th>
<th>$t$</th>
<th>Conditional effects at values of Mental Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others’ behavior village</td>
<td>.100*</td>
<td>2.09</td>
<td><em>927</em>**, .827***</td>
</tr>
<tr>
<td>Remembering (pay attention)</td>
<td>.153*</td>
<td>2.17</td>
<td><em>749</em>**, .596***</td>
</tr>
<tr>
<td>Remembering (forgetting last 24h)</td>
<td>.178*</td>
<td>−2.24</td>
<td>−613***, −.435***</td>
</tr>
<tr>
<td>Commitment (important)</td>
<td>−.250*</td>
<td>−2.18</td>
<td>−316***, −.067</td>
</tr>
</tbody>
</table>

Notes. *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$. $N$=634-636, confidence intervals = 95%. E.g. Persons with poor mental health tend to forget more to perform safe water collection. E.g. Persons with poor mental health have to pay more attention to not forget safe water collection.
In 26.8% of the assessed people with a score higher or equal to 7 on SRQ-20 scale (group with poor mental health), **commitment** (the importance of water collection behavior and guilt when safe drinking water collection is not performed) had negative (!) effect on safe drinking water collection behavior.
Results: differences in RANAS factors (RQ4)

ANOVA mean comparison of RANAS psychosocial factors explaining safe drinking water collection behavior by Mental Health condition (good vs poor).
Conclusions and practical implications

• Our study results confirmed
  
  • The direct link (negative association) between poor mental health and safe drinking water collection behavior.
  
  • The interaction effects of mental health condition (good versus poor) with some psychosocial factors influencing safe water collection behavior.
  
  • The differences between people with poor versus good mental in some psychosocial factors influencing safe water collection.
  
  • The eight most important motivational drivers for safe water collection.
Conclusions and practical implications

• The study findings are important for policy makers and NGO’s for several reasons:

  1) First, we strongly recommend to include mental health measurements (e.g. SRQ-20) in surveys addressing behavior change in safe drinking water collection behavior.

  2) Second, vulnerable people with poor mental health should receive interventions targeting poor mental health before or parallel with interventions targeting behavior change in water collection behavior.

  3) Next, if poor mental health treatment is not possible for some reason, our study results can be used to decide which interventions should be implemented with the whole population irrespective of the mental health condition of the individual.
Conclusions and practical implications

- These results imply
  - that populations in emergency contexts and with a significant proportion of individuals with poor mental health will benefit from interventions focusing on mental health implemented before or parallel to behavioral change interventions for WASH.

- There is evidence
  - that specific population-level interventions (e.g. narrative exposure therapy – NET, Neuner et al., 2008; or group based interpersonal therapy – IPT-G, Gwozdziewycz & Mehl-Madrona, 2013) have a positive effect on mental health, and they have been successfully applied at scale in African settings.

- This research
  - is especially relevant in emergency contexts, as it indicates that mental health measures will make any WASH interventions more effective if implemented before or parallel to them.
Thank you for your attention!!!

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