

Segment 1: Pain Relievers and Gain Creators

Key pains related to process and results in developing methods and materials, summarized from 4Q analysis:

- Small, likely unrepresentative samples
- Low response rates
- Researcher bias in selection of questions or issues to study
- Time and costs to adjust in response to problems in the field
- Responses not reliable

→ **Pain relievers** from involving crowds?

- People with SUD/caregivers may have ideas about how to identify and recruit diverse study participants, and how to overcome nonresponse
- People with SUD/caregivers may point out topics that we have not thought about, helping us ask the "right" questions
- People with SUD may tell us when and under what conditions they can provide valid and reliable responses
- Involving study participants early in process can reduce need to revise data collection instruments, reducing overall time and costs required

Key gains related to process and results in developing methods and materials, summarized from 4Q analysis:


- Low participation barriers for diverse and potentially vulnerable patients
- Method will deliver valid and reliable results
- Method development process enables learning and project improvement

→ **Gain creators** from involving crowds?

- People with SUD/caregivers can help with developing ideas for reducing study participation barriers
- People with SUD/caregivers can help with formulating questions in an easy-to-understand way
- Interacting with people with SUD/caregivers may shape the project focus towards more novel, relevant, or impactful aspects
- Higher participation rates if people know that study method was co-developed by peers
- Qualitative insights emerging from workshop discussions

Feasibility check: Can the design really address the pains/gains you identified?
Opportunity check: Can crowd involvement address pains/gains not considered before?

Segment 2: Strategic Design Choices

Crowd Science Paradigm Diamond (Why involve a crowd?)	AKRD Crowd Contribution Matrix (What does the crowd contribute?)	Six Crowd Characteristics (Who is the crowd?)								
<ul style="list-style-type: none"> • Crowd volume: Somewhat relevant • Broadcast search: Less relevant • User crowd: Very relevant • Community production: Very relevant • Crowd wisdom: Less relevant 	<table border="1"> <tr> <td>Activities</td> <td>Participate in series of offline workshops to co-design methods; participate in offline or online workshops; provide online input on method drafts after meetings</td> </tr> <tr> <td>Knowledge</td> <td>Experiential knowledge from being substance user or caregiver; or knowledge from leading self-help groups and other support programs</td> </tr> <tr> <td>Resources</td> <td>Travel to workshop meetings – paid for by me; computer and internet connection for online participation</td> </tr> <tr> <td>Decisions</td> <td>Generate decision options for recruiting and data collection approach, instruments, and process; evaluate and select options</td> </tr> </table>	Activities	Participate in series of offline workshops to co-design methods; participate in offline or online workshops; provide online input on method drafts after meetings	Knowledge	Experiential knowledge from being substance user or caregiver; or knowledge from leading self-help groups and other support programs	Resources	Travel to workshop meetings – paid for by me; computer and internet connection for online participation	Decisions	Generate decision options for recruiting and data collection approach, instruments, and process; evaluate and select options	<ul style="list-style-type: none"> • Location: USA • Knowledge and skills: Experiential knowledge as substance user/caregiver; or organizers of support groups • Time commitment: High (1–2 days per workshop including travel) → medium (offline or online workshops of 2 hours each, 1 hour feedback on methods draft) • Resources: Access to travel → internet/computer • Size: Medium (approx. 50) → 200 • Diversity: Location (different states, urban/rural), demographics, substance use patterns (light vs. severe), comfort level with SUD
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Feasibility check: Is the design realistic?
 What adjustments need to be made?

Segment 3: Implementation Challenges and Solutions

Key challenges and solutions specific to this particular stage of the project:

- Knowledge on prior research and scientific methods: **Will mostly be brought in by us/ method expert; training module at beginning of workshops; open-access tutorial**
- Management of expectations with respect to timelines and requirements: **Upfront disclosure and explanation (in open call)**
- Representativeness of participants: → **Switch from offline workshops at my hospital to offline workshops at location of self-help groups; online workshops with support group organizers and online feedback option**

Organizational challenges and solutions that cut across all stages (see chapters 13–14):

- Dividing and allocating tasks: **Emergent during workshops, guided by workshop facilitators**
- Coordinating crowd members: **Emergent during workshops, guided by facilitators; online tools**
- Training and enabling learning: **Training modules; open-access tutorial**
- Increasing quality and evaluating contributions: **Structured templates for facilitating methods development; feedback based on pre-defined quality criteria**
- Motivating crowd members: **Rely on motivation to improve healthcare for themselves and others; gift cards or health-related resources they need**
- Recruiting crowd members: **Open call for participation to support groups (identified via registers, websites); outreach via colleagues**

Research integrity and ethical issues that cut across all stages (see chapter 15):

- Ensuring quality and preventing misconduct: **Discuss as part of training module; researchers and method experts participate in workshops**
- Recognizing effort and sharing project outputs: **Small honoraria; presentation of project results; acknowledge crowd in paper**
- Role of AI: **Augmentation (use AI to help create ideas and structure discussions during workshops)**
- Privacy, safety, institutional oversight: **Consent forms; everyone agrees not to disclose details from the meetings**