

Area of focus

# Comprehending Chronic Pain through Evocative Objects.



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# Comprehending Chronic Pain through Evocative Objects.

## Why Chronic Pain?

Chronic Pain has multiple residual effects like depression, sleep disturbance, fatigue, and decreased cognitive and physical abilities as well as overall reduced quality of life in terms of physical, psychological, and social well-being.

Evocative Objects?

## **Why should we comprehend pain?**

As pain is a subjective experience, reporting pain is considered essential to assessing and, in turn, treating it.

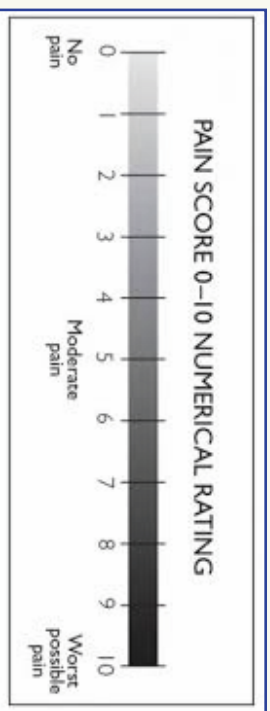
## **What Specific Problem would we be looking at?**

Express pain intensity where the interaction is pliable and second, the possibility to communicate the same to a caregiver.

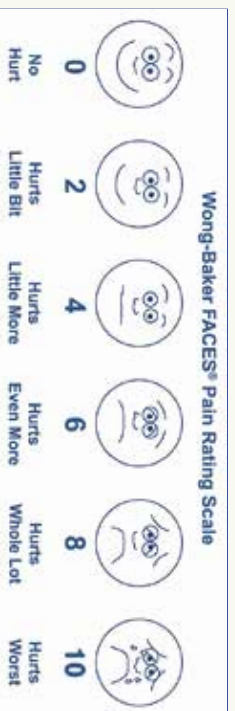
## Existing Pain scales.

During doctor visits, pain intensity is commonly measured according to patient recall using one of standard pen-and-paper or verbal self-report measures.

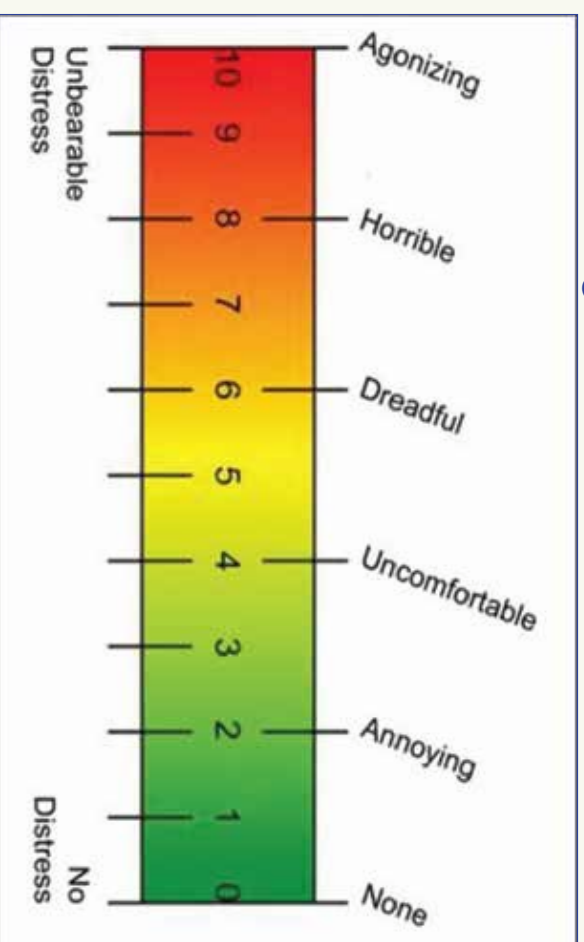
### Numeric Scale 1-10



### Face Scale



### Visual Analogue Scale



## mHealth

“mHealth” is an abbreviation for “mobile health” and refers to the use of mobile technologies to support healthcare. mHealth represents an opportunity to greatly improve the self-management of pain through self-assessments.



# Why Do Some Pain Scales Fall Short?

## Most scales are Uni-Dimensional

Numeric Scale scale may leave patients at which number relates to what?

FaceScale – Not everyone can equate their pain level to certain emotions or facial expressions. For example, “If I'm not crying, is my pain not severe?”

# What about the mHealth?

## **They Fail, but there isn't an alternative.**

Current available pain self-management apps for patients are simplistic, lack the involvement of healthcare professionals in their development, and have not been rigorously tested for effectiveness on pain-related health outcomes.

Still, the vast majority of available apps include only a few self-reporting functionalities.

# Social Factors with Pain Reporting

## Uncertainty in Social Situations

How people adapt self-care is influenced by social factors.

Healthcare is personal, so privacy can be important to people.

They perceive a social stigma from their community groups.

## Goffman's Theoretical Framing

“Sometimes the individual will act in a thoroughly calculating manner, expressing himself in a given way solely in order to give the kind of impression to others that is likely to evoke from them a specific response he is concerned to obtain”.

# Is There Evidence of Responsiveness?

Repeated assessment of a potentially traumatic experience draws more attention to the negative perception of being in pain.

Recalling and coping strategies can lead to positive outcomes of being in control over the pain.

# Comprehending Chronic Pain through Evocative Objects.

## What is an Evocative object?

How we make objects part of ourselves that offers us a language for interpreting the intensity of our connections to the world of things, and for discovering the similarities in how we relate to the animate and inanimate.”

They are Objects that evoke emotions and in-turn start to think with them.



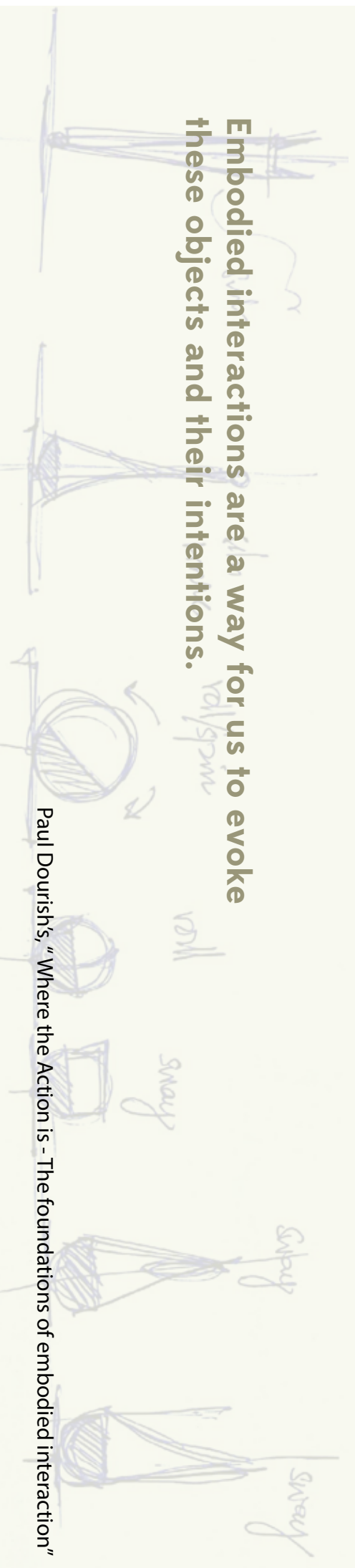
Sherry turkle's "Evocative Objects: Things We Think With"

## Why Explore Embodied Interactions?

The key property essential for an embodied interaction, is the ability to take meaning from action.

This type of interaction is not a set of rules but offers a perspective on the relationship between people and systems.

Embodied interactions are a way for us to evoke these objects and their intentions.



Paul Dourish's, "Where the Action is - The foundations of embodied interaction"

## What makes an Object Evocative?

So, an object could be called evocative if it finds associations with the following questions:

Where does it take you?

What do you feel?

What do you understand?

Do you trust the object?

Do you have a sense of control over these objects?

Is There conflicts between meanings and the objects?



Sherry Turkle's "Evocative Objects: Things we think with"

## Experiment: Wizard of Oz Prototyping

Without Ethical clearance it is very difficult to approach participants that live with chronic pain. But on the contrary most of us have a high possibility of ending up with chronic pain due to certain incidents or lifestyle characteristics.

Hence, recruiting participants for the study is an act, where they are given three or four scenarios that they would place themselves in. We then observe the choices they make. Followed by a semi-structured interview.

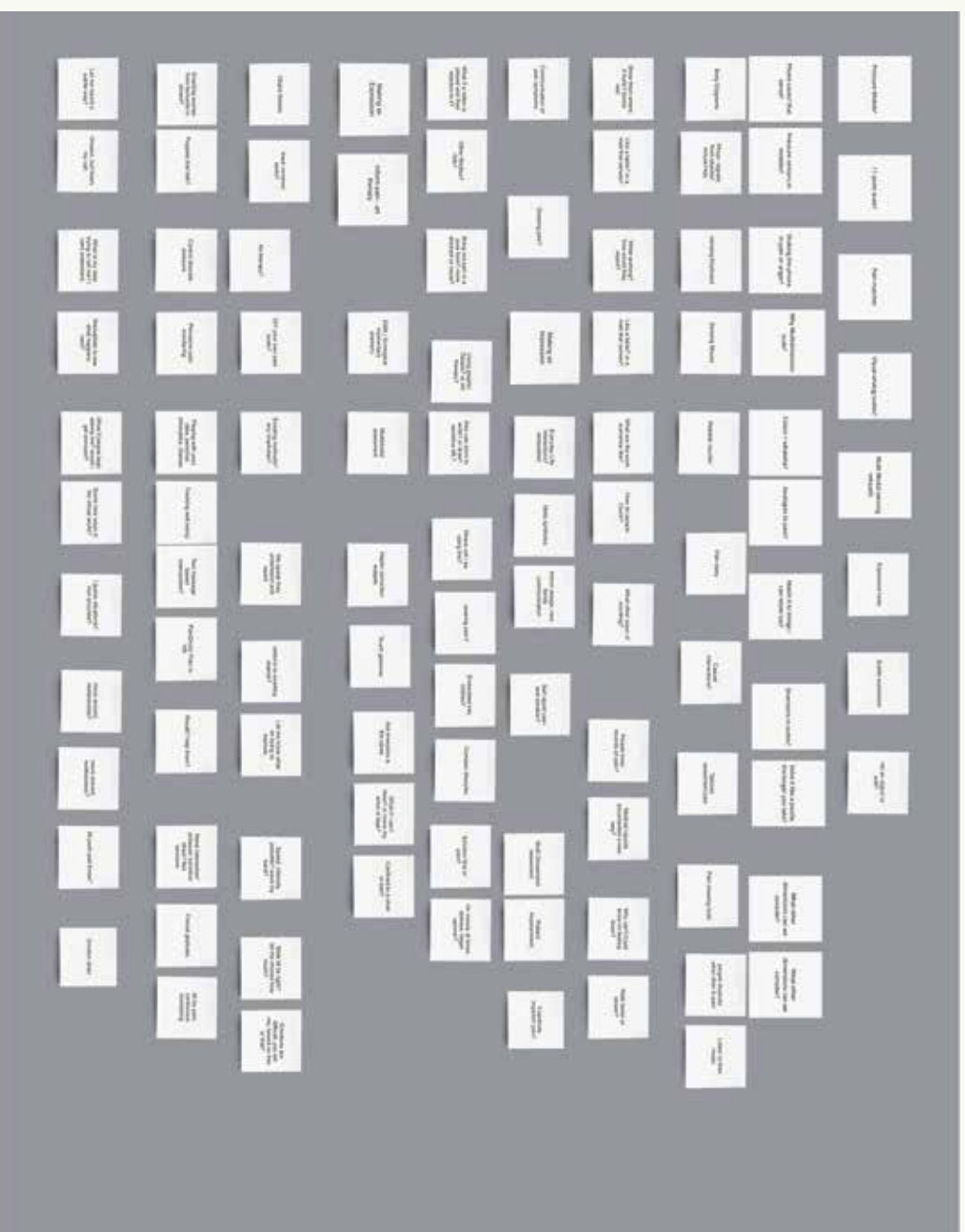


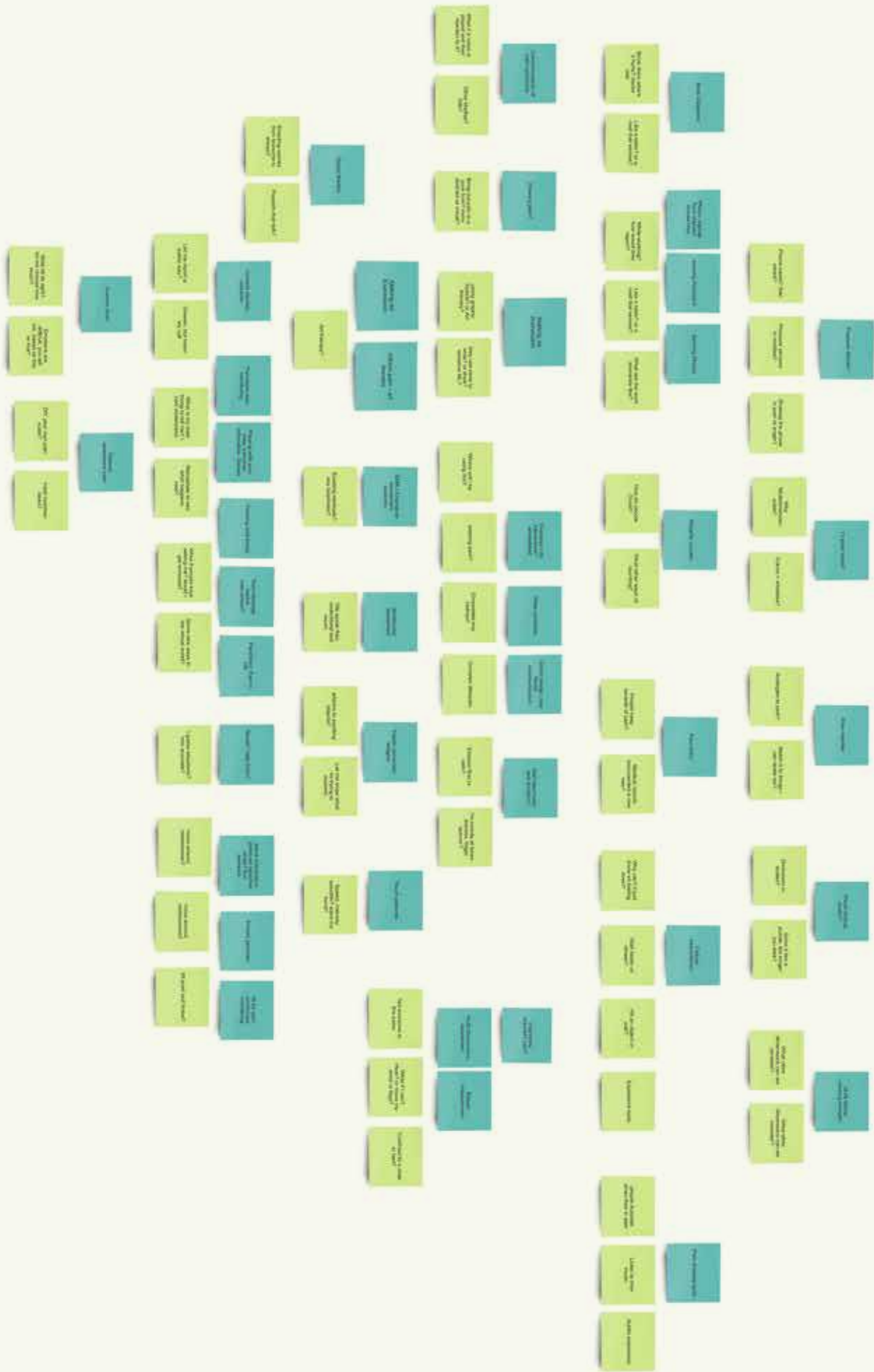
## **This study seeks to answer the following questions:**

1. What characteristics, or features that are critical for users to express their pain levels?
2. What is appropriate to express pain, based on their context of use?



# Looking at what we have now.





# Challenges.

This project sees to express pain through a medium that considers the multi-dimensions of pain. Here are a few constraints the study has brought about while creating prototypes for future work.

The most import factor would be the context of use.

1. Medium to express intended pain level
2. Mediums resolution to capture
3. Discretion and Disclosure
4. Continuous tracking task
5. Form factor affordance
6. Intuitive
7. Confirmation and feedback
8. Possibilities of Unintentional Reporting
9. Portability
10. Embodied Interaction
11. Insensitive to participant
12. Repeated use
13. Cognitive translation/Difficulty interpreting
14. Pliable Interactivity
15. unobtrusive reporting
16. sharing with a Doctor/caregiver
17. Impractical or socially inappropriate
18. Time consuming
19. Cognitive impairments
20. Low-to-little Digital competency
21. Functional limitations (vision, motor skills)
22. Uncomfortable reactions

# Evaluating Ideas

## Harris Profile

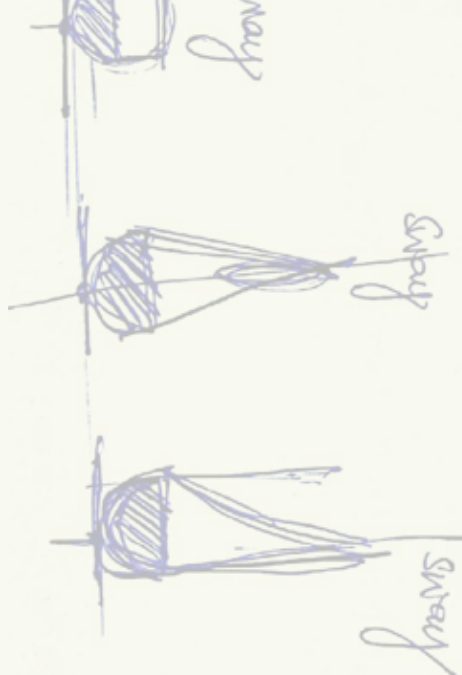
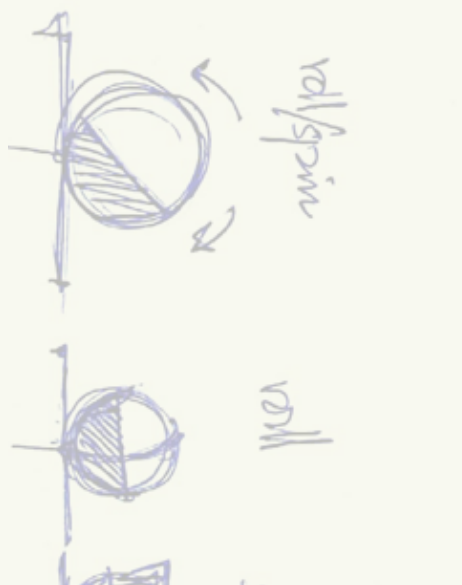
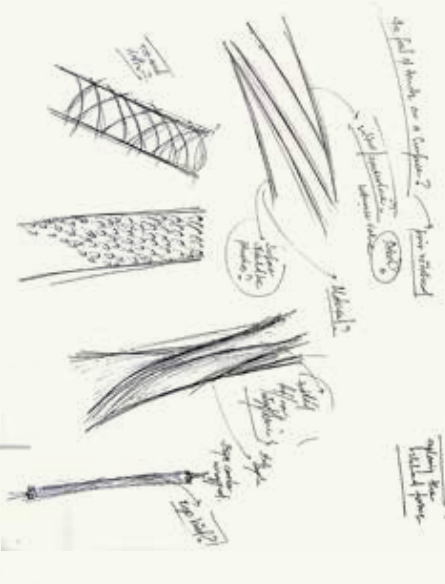
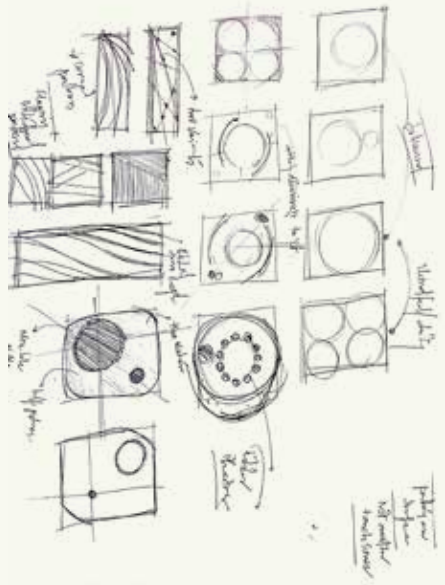
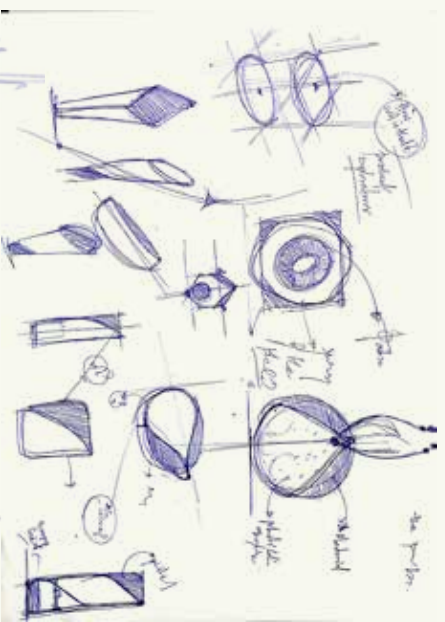
Ideas that evolved from the sessions, results in multiple directions that a designer would want to take up. But this leads to the biases that might emerge. While looking at pain it is essential to place yourself away.

To counter this, The Harris profile provides a good framework to evaluate and assess ideas that come up after a brainstorming session.

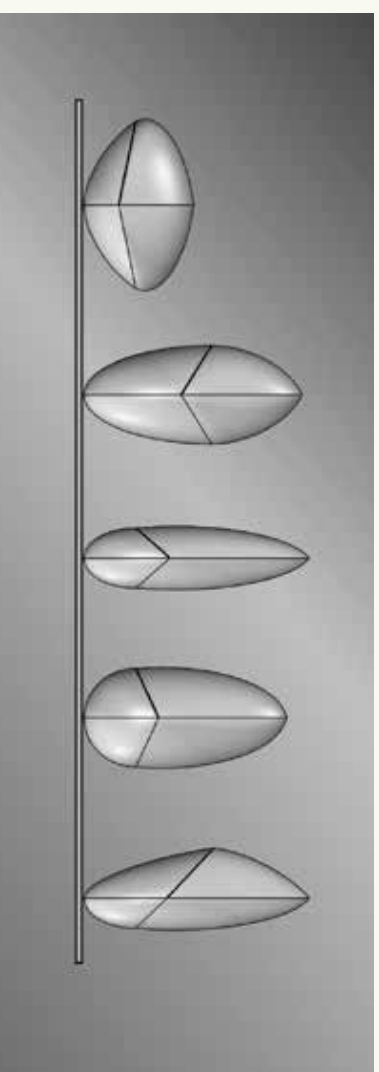




# Explorations



# Object Explorations



# Final Concept



# Final Concept

The Final Idea revolves around two key challenges.

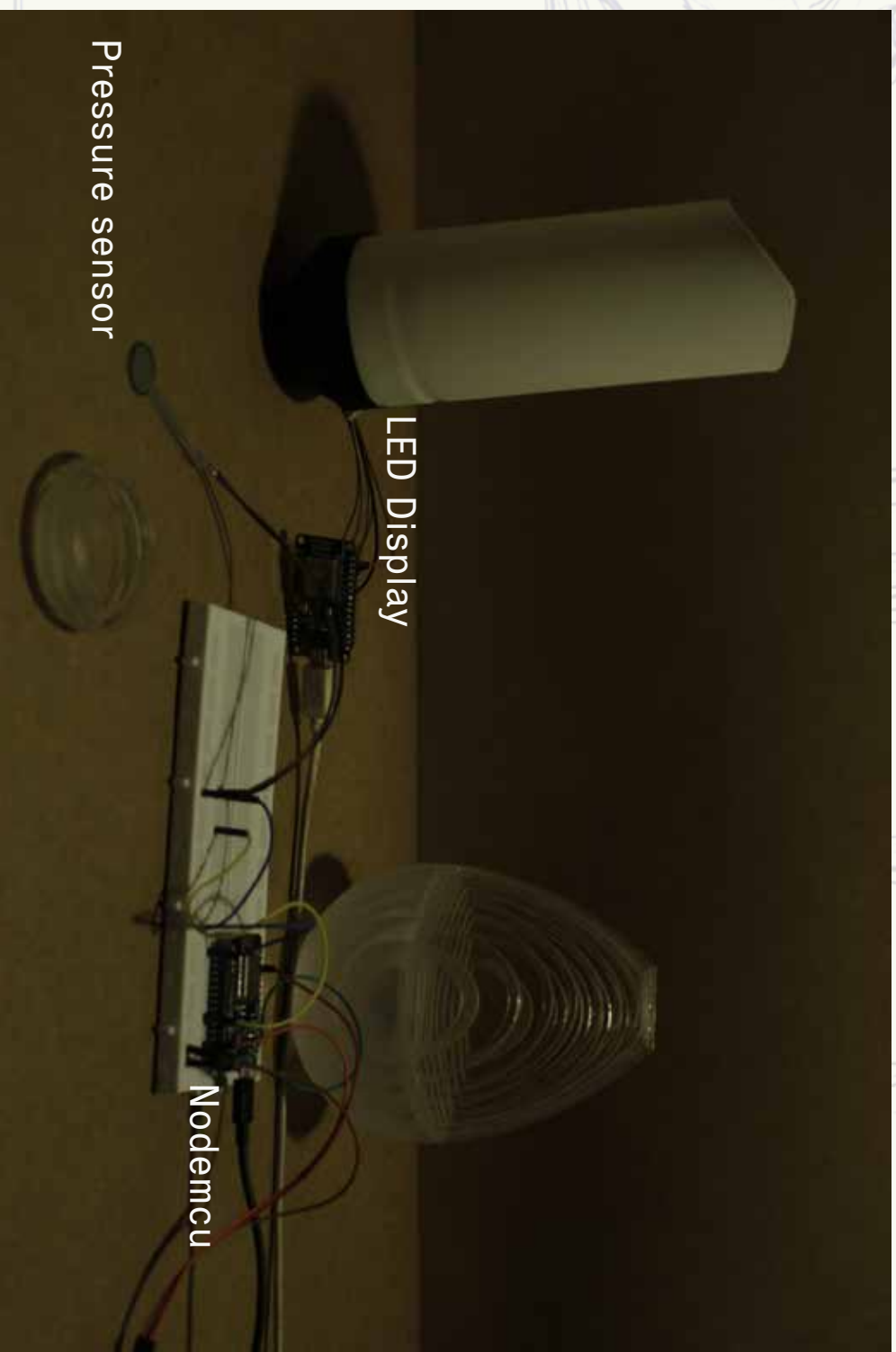
1. To express pain intensity where the interaction is pliable.

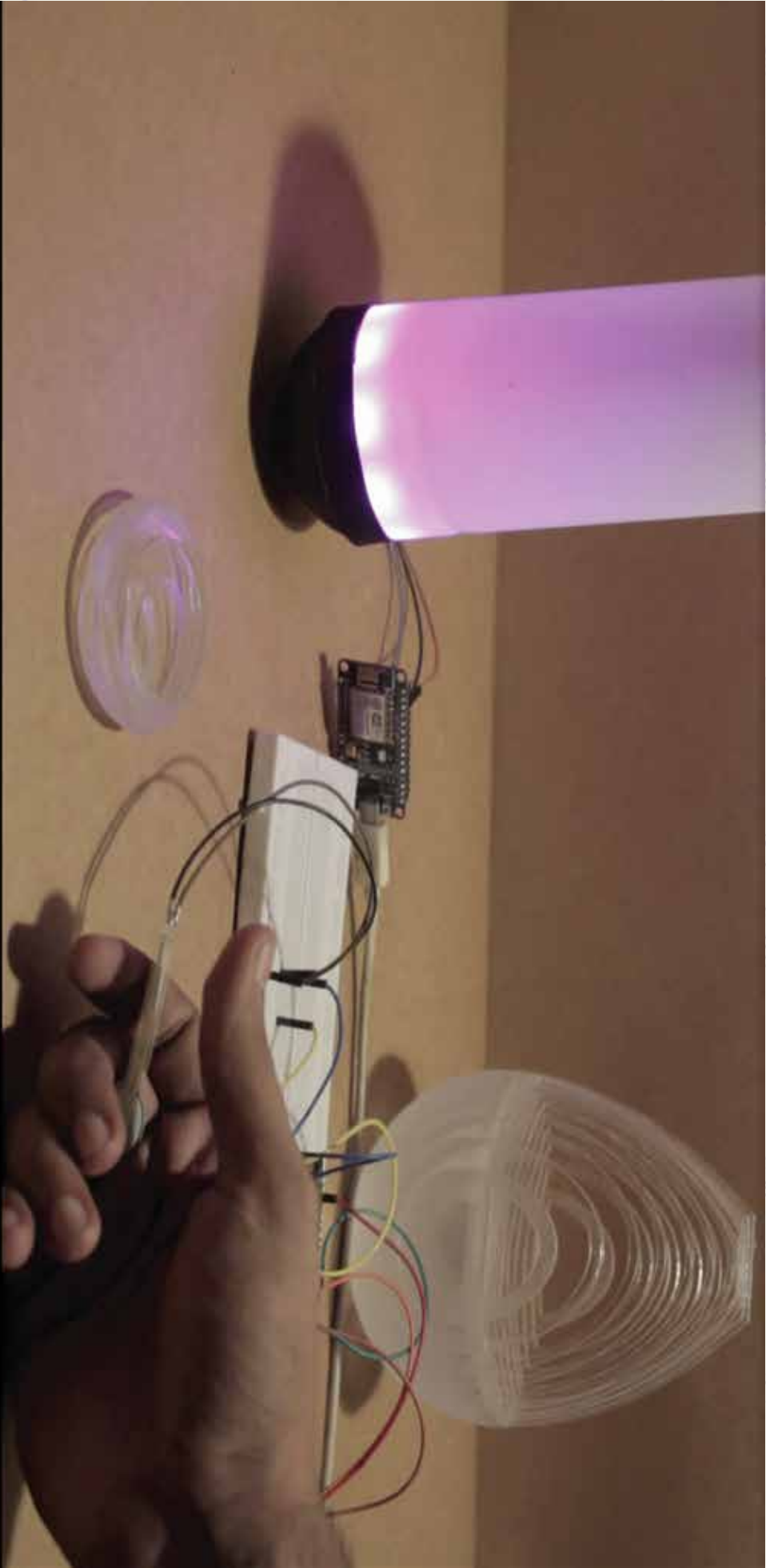
2. Possibility to communicate and the other to understand.





# Prototype

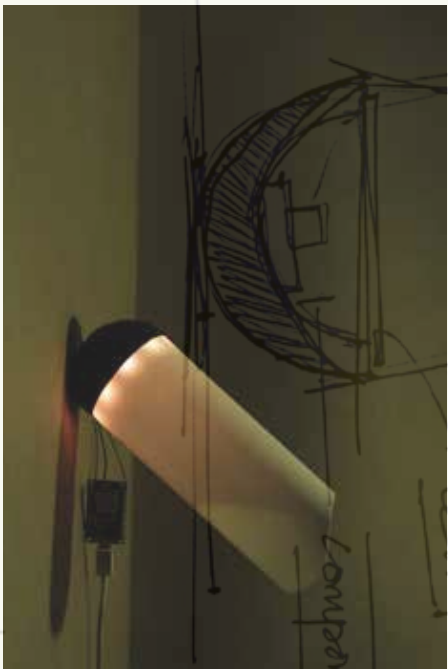
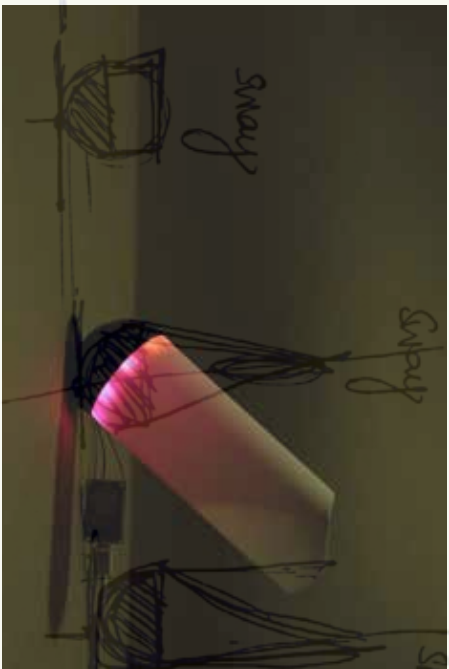
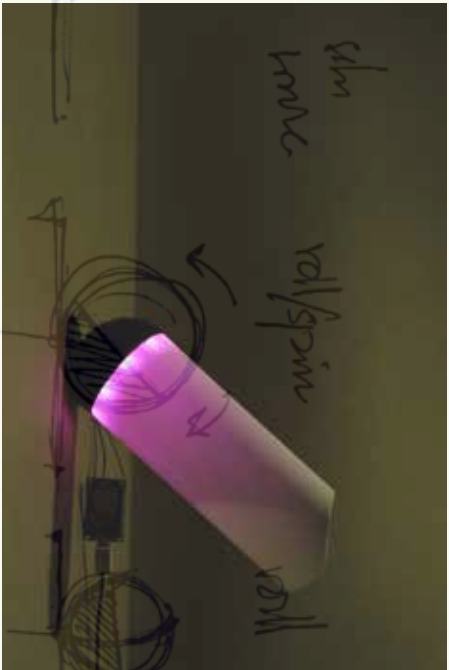




Handwritten text: "Handwritten text" (partially obscured)

Handwritten text: "Sms"

Handwritten text: "morechn"



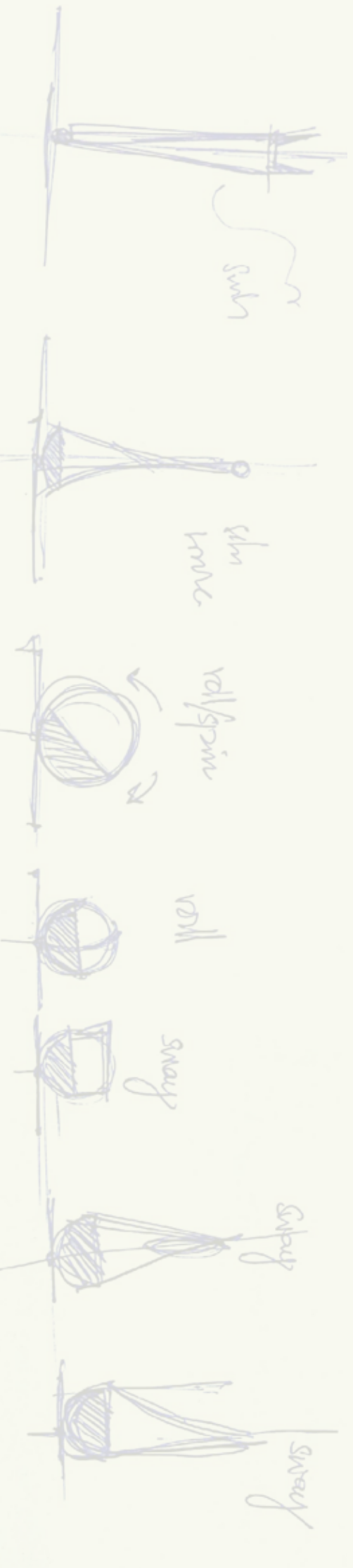
sway

lower part



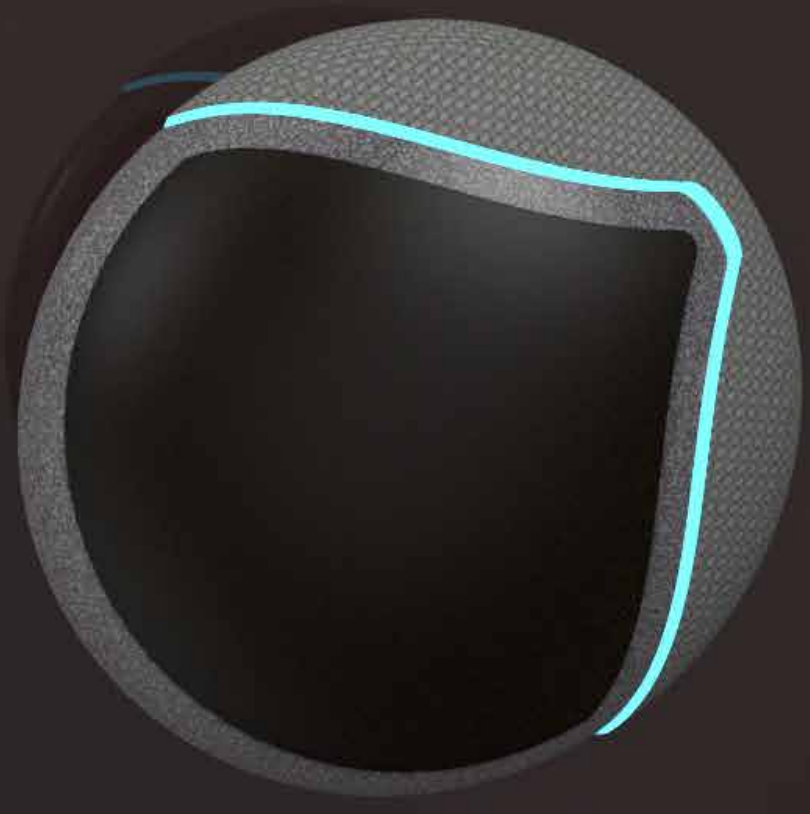
# Final Design.

**A Pair of Objects that user's use to report their pain and help caregivers understand the same.**



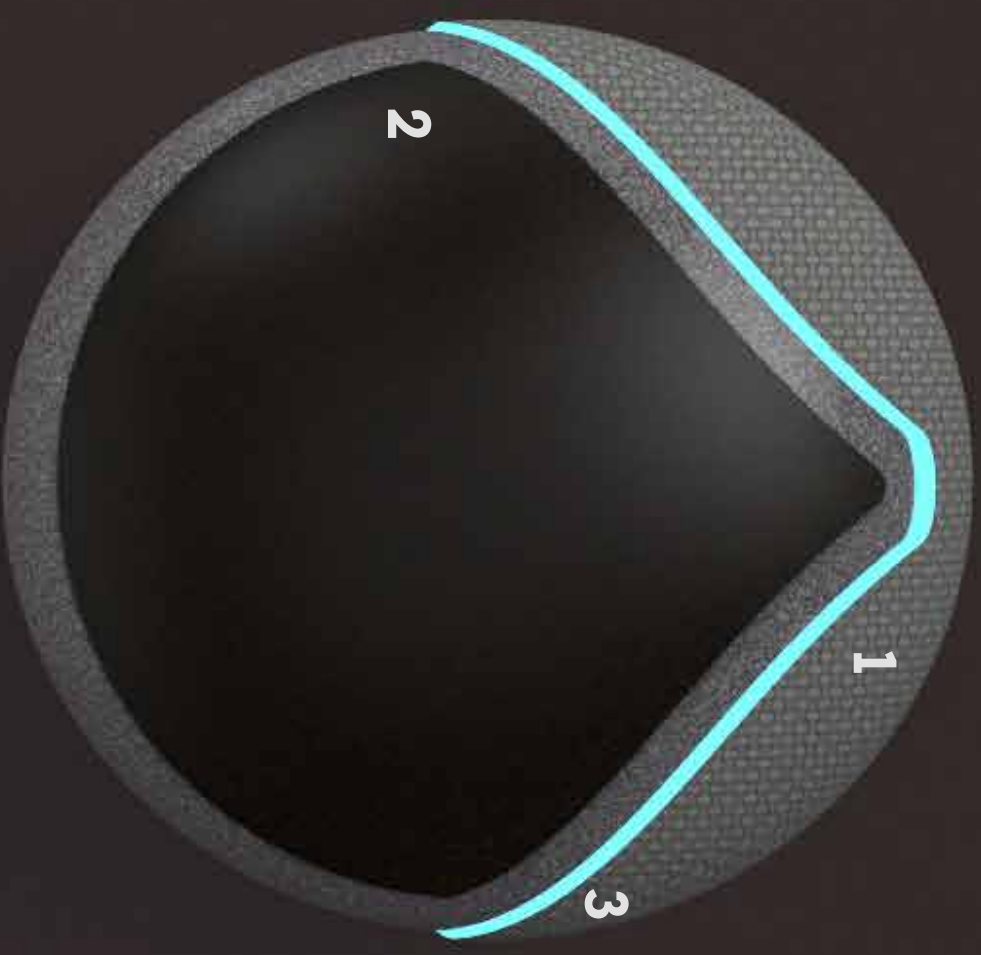
# Object one

The Embodied Interaction of this object animates itself when pressed. The Object Vibrates as if it resonates with your pain. Giving a user a sense of familiarity while reporting pain.



The LED Difusser is Mapped to the pain intensity input by the user.

1. Force Resistive sensor coupled with U-foam.
2. Housing Part, LED Diffuser , PCB and the Micro Vibrators.
3. Indicator LED Strip.

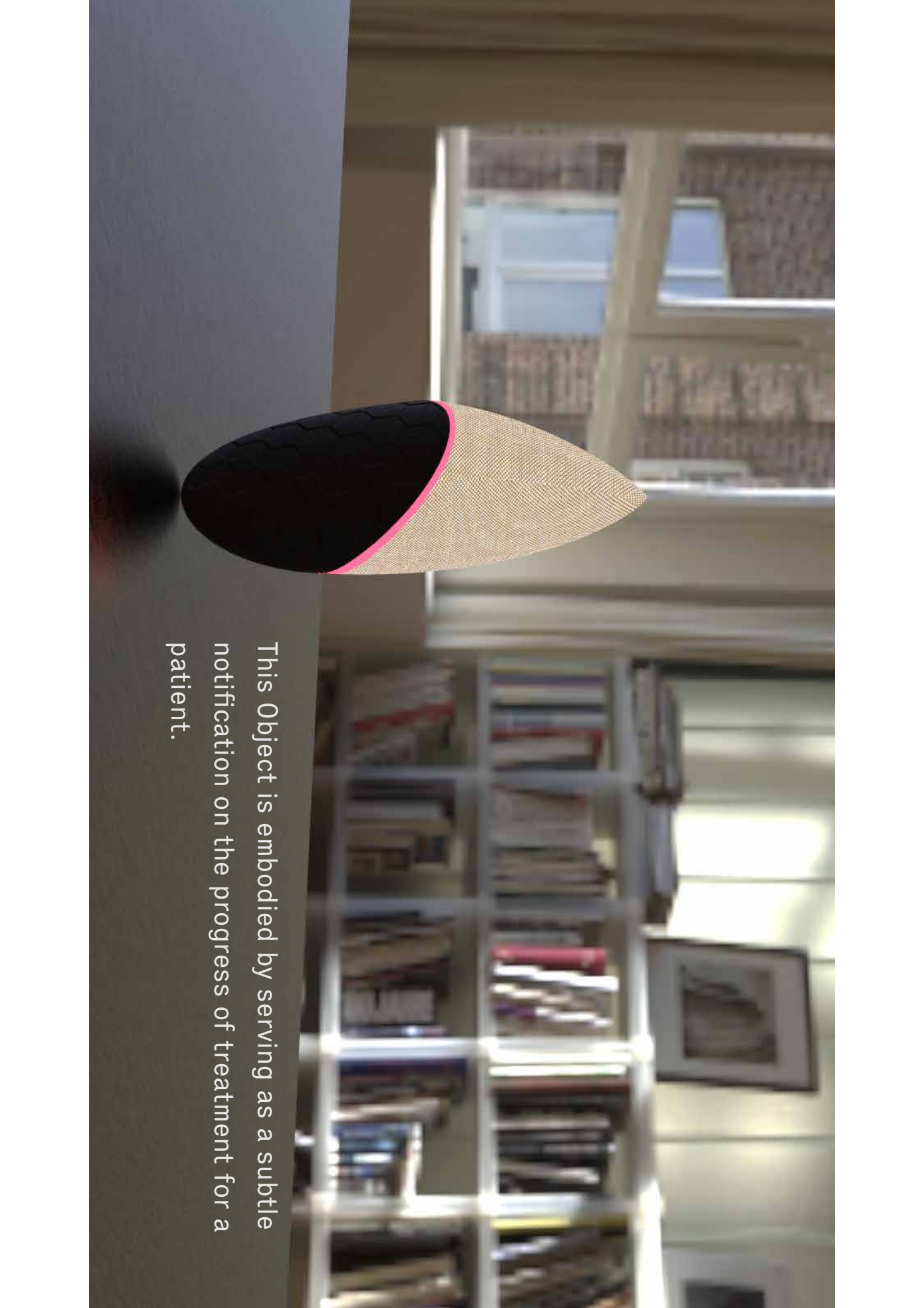


# Communicating their Pain

## Soliciting Social Support is key in patient recovery.

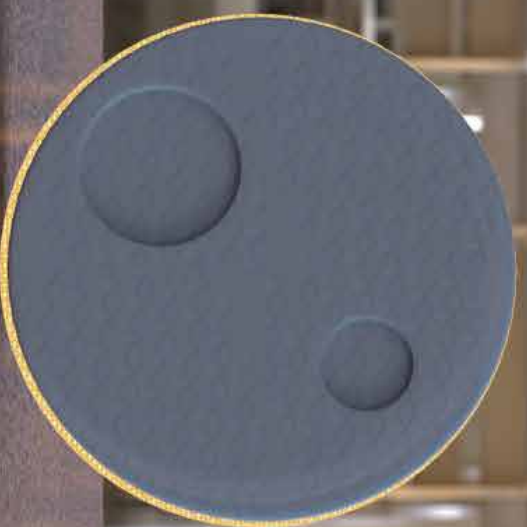
This object seeks to evoke the sense of empathy by serving as a reminder for caregivers or loved ones.



A photograph of a room with a bookshelf and a window. In the foreground, a dark grey surface holds a cone-shaped object. The object is divided into two sections: a black, textured top section and a tan, woven-texture bottom section, separated by a thin pink line. The background shows a white bookshelf filled with books and a window with a view of a brick building.

This Object is embodied by serving as a subtle notification on the progress of treatment for a patient.

# Another Variation of the embodied interaction of the object



These objects are designed to be unobtrusive that blend in with everyday interactions.



# Evaluation

Qualitative study with semi-structured interviews with participant.

Each interview/session lasts about 15-20 min.

Participants have encountered a close relationship with people living with chronic pain.

The Key Questions:

1. Do these objects become evocative?
2. What kind of relationship would they exist in?
3. Would there be recurrent use?

Handwritten notes on a printed document:

Handwritten in the project:  
Doesn't undergo use  
But it  
Seen the Visual Storyboard

1) What did you think about the object?  
I don't think there is anything that makes me remember how much pain a person is in. So the object is a good step towards it.  
Does it evoke? If yes or No, why? *next page*

2) The Hand device. Does it help in context of user? *PT-10*

3) Why would people use these devices? *PT-10*

4) Specially to Doctors?  
Personally, I feel that we should let others <sup>once</sup> know how we are feeling, we should not feel awkward of the disease that we have. It would help.  
What kind of relationship would this exist in?  
For people who are interested or concerned about their pain. Or a good device to help them make in a different way.  
I am you aware of how much you are expressing?  
I think adults are aware of it. But children might not be aware.

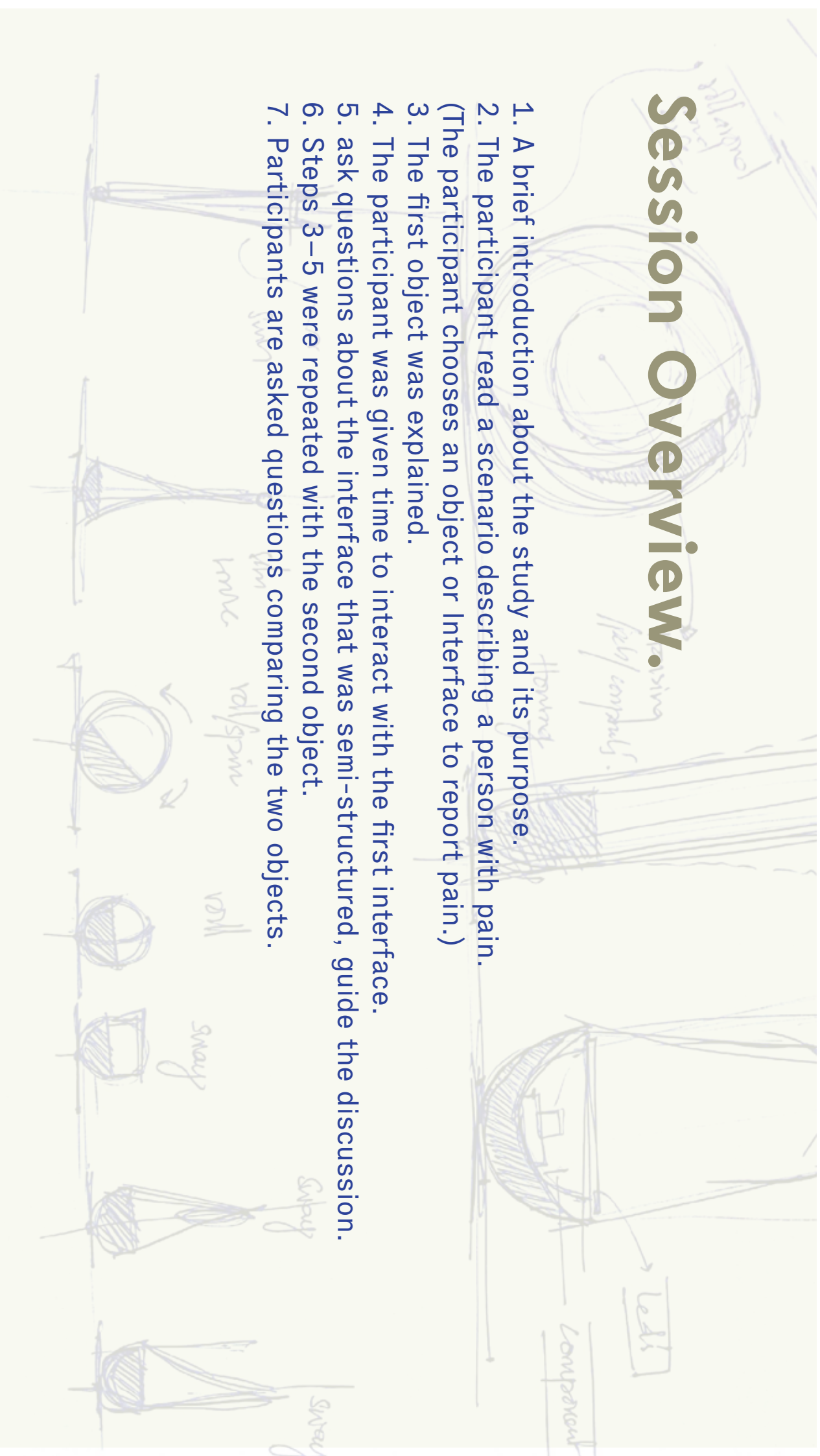
5) How many people would be involved in the context of use relationship (Expressing Pain)?  
Exact group? Or more?  
The more, the better. And it depends on the personal choice of user.  
I think more people will help in spreading awareness to the sensitivity of the issue.  
Would there be Technical Difficulties?  
*PT-10*

6) Feedback from the user group. What could be the expectation of the user, emoting?  
The best they device will perform. If it lets another person know how much pain they feel, that is a. If that person is helping, then the device is ~~more~~ a success.  
What could be the expectation of the person using that?  
I will expect that the device should be used simply and without any problems. So, other words, the device should be designed in such a way that people can use it for problems.  
12) Is the overall feeling of the product positive or negative?  
*Yes. It is for problems.*

As the device is very simple to use, it has lots of problem possibilities that can be explored in the medical field. So, for a short, its or good thing that something is under works for helping a person in field.

# Session Overview.

1. A brief introduction about the study and its purpose.
2. The participant read a scenario describing a person with pain. (The participant chooses an object or Interface to report pain.)
3. The first object was explained.
4. The participant was given time to interact with the first interface.
5. ask questions about the interface that was semi-structured, guide the discussion.
6. Steps 3–5 were repeated with the second object.
7. Participants are asked questions comparing the two objects.



## **Result.**

1. Some Participants found the Novelty of the object “Creepy” by serving as a subtle notification.
2. The Objects are not evocative, due to the prototyping constraints.
3. Objects could be used in closed group relationships.
4. Participants did evoke empathy through these objects.
5. The lack of participation from their closed group would lead to less recurrent use.

This Test was conducted with a small sample size of 7 users. A more large and diverse sample could lead to different outcomes.

**Thankyou.**