



UNIVERSITY OF ILLINOIS CHICAGO

Mixed-Method Exploration of Visual Analogue Scale Variations to Measure Health, Social Care, and Carer-Related Quality of Life

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November 10th, 2025



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The Department of Pharmacy Systems,
Outcomes and Policy

Acknowledgements and Disclosures

Maja Kuharic, MPharm, MSc, PhD – Assistant Professor, Northwestern University Feinberg School of Medicine, Department of Medical Social Sciences

Justin Yu, PharmD – University of Illinois Chicago Retzky College of Pharmacy, Department of Pharmacy Systems, Outcomes and Policy

A. Simon Pickard, PhD – Professor, University of Illinois Chicago Retzky College of Pharmacy, Department of Pharmacy Systems, Outcomes and Policy

The EuroQol Research Foundation – *The EuroQol Research Foundation provided funding which supported this work (Grant # 1927-RA; PIs: Kuharic, M and Finch, A) and travel to present findings (Grant # 2264-EO)*

I was previously supported by an HEOR fellowship with UIC and Pfizer Inc from 2021-2023

Views are my own and do not represent those of my co-authors or EuroQol

Preference-Based Measure

Descriptive System

Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY	
I have no problems in walking about	<input checked="" type="checkbox"/>
I have some problems in walking about	<input type="checkbox"/>
I am confined to bed	<input type="checkbox"/>
SELF-CARE	
I have no problems with self-care	<input checked="" type="checkbox"/>
I have some problems washing or dressing myself	<input type="checkbox"/>
I am unable to wash or dress myself	<input type="checkbox"/>
USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)	
I have no problems with performing my usual activities	<input type="checkbox"/>
I have some problems with performing my usual activities	<input checked="" type="checkbox"/>
I am unable to perform my usual activities	<input type="checkbox"/>
PAIN/DISCOMFORT	
I have no pain or discomfort	<input type="checkbox"/>
I have moderate pain or discomfort	<input type="checkbox"/>
I have extreme pain or discomfort	<input checked="" type="checkbox"/>
ANXIETY/DEPRESSION	
I am not anxious or depressed	<input type="checkbox"/>
I am moderately anxious or depressed	<input checked="" type="checkbox"/>
I am extremely anxious or depressed	<input type="checkbox"/>

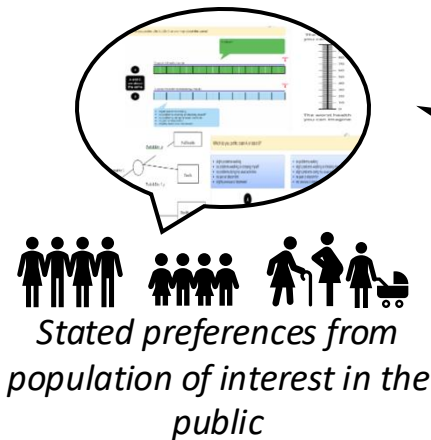
Levels of perceived problems are coded as follows:

- ☒ Level 1 is coded as a '1'
- ☐ Level 2 is coded as a '2'
- ☐ Level 3 is coded as a '3'

Defines finite number of health states

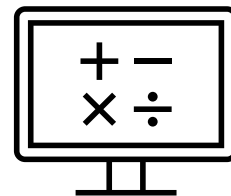
Valuation Study

Valuation of Subset of Health States



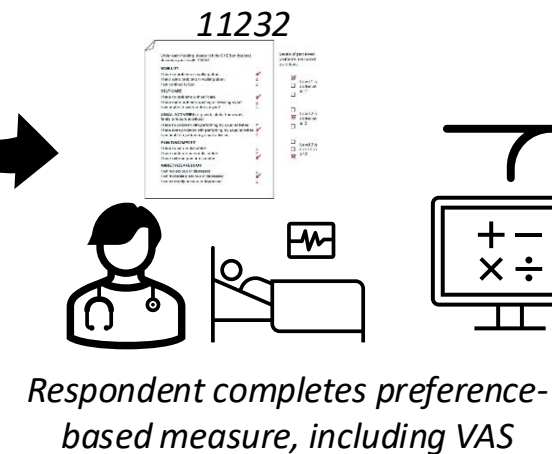
Statistical Modeling

Create scoring algorithm ("value set") to estimate utilities for all described health states



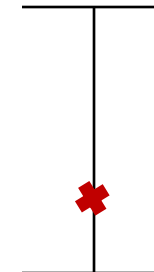
Applications

Completion of the Instrument



Scoring

Health State Utility



Preference-Based Measure

Descriptive System

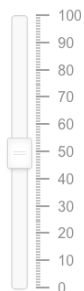
Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY	
I have no problems in walking about	<input checked="" type="checkbox"/>
I have some problems in walking about	<input type="checkbox"/>
I am confined to bed	<input type="checkbox"/>
SELF-CARE	
I have no problems with self-care	<input checked="" type="checkbox"/>
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I am unable to wash or dress myself	<input type="checkbox"/>
USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)	
I have no problems with performing my usual activities	<input checked="" type="checkbox"/>
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I am not anxious or depressed	<input checked="" type="checkbox"/>
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Defines finite number of health states



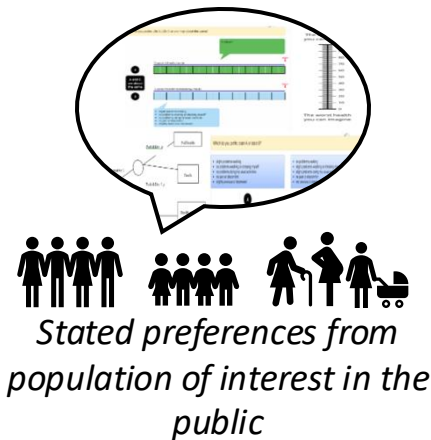
Visual Analogue Scale (VAS)



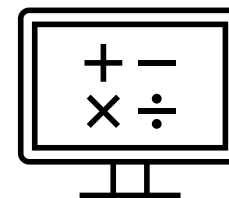
Non-preference-based, self-rated assessment

Valuation Study

Valuation of Subset of Health States



Statistical Modeling



Create scoring algorithm ("value set") to estimate utilities for all described health states

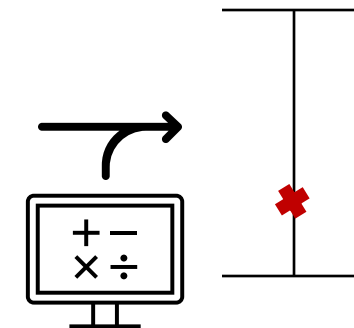
Applications

Completion of the Instrument

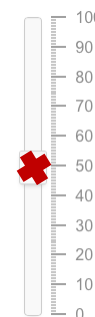


Respondent completes preference-based measure, including VAS

Scoring



Health State Utility



VAS rating directly from respondent

Background

Existing EuroQol instruments include a VAS (EQ-VAS)

- Brief yet informational: yields interval-level data without influence of population preferences
- Data used in nearly 70% of HTA, particularly when preference-based scoring is not considered patient-centric (e.g., Germany)

EQ-HWB is a developing measure of broader health and wellbeing constructs over a 7-day period, for adults with chronic illness, caregivers, or social care users

- 25 items; a subset of 9 items comprise the EQ-HWB-9, which is intended as a preference-based measure
- The EQ-HWB does not currently include the EQ-VAS (or any VAS)

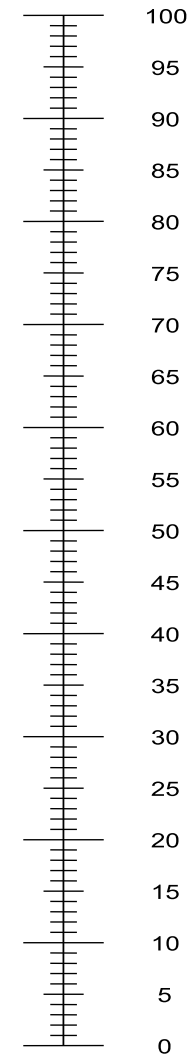
Unclear if the EQ-VAS is fit for purpose given the broader scope of the EQ-HWB; fundamental questions about the extent to which a VAS should align with and complement a measure's descriptive system, determining the choice of how to specify the construct and recall period

Visual Analogue Scale (EQ-VAS)

- We would like to know how good or bad your health is TODAY.
- This scale is numbered from 0 to 100.
- 100 means the best health you can imagine.
0 means the worst health you can imagine.
- Please mark an X on the scale to indicate how your health is TODAY.
- Now, write the number you marked on the scale in the box below.

YOUR HEALTH TODAY =

The best health
you can imagine



The worst health
you can imagine

The EQ-HWB-9 Descriptive System



Health and Wellbeing

Construct



The Last 7 Days

Recall Period

9 Items

Difficulty Doing Day-to-Day Activities

Physical Pain

Difficulty with Mobility (Getting Around)

Exhausted

Lonely

Thinking Clearly

Anxious

Sad or Depressed

Lack Control

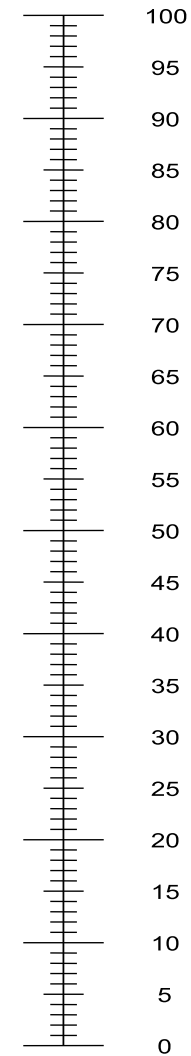
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0 means the worst health you can imagine.
- Please mark an X on the scale to indicate how your health is TODAY.
- Now, write the number you marked on the scale in the box below.

YOUR HEALTH TODAY =

Construct

The best health
you can imagine



The worst health
you can imagine

Study Design

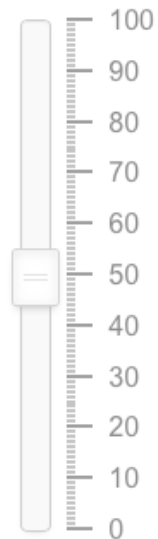
Identification and Contact via ResearchMatch

Online Qualtrics Survey (screening and consent; 3 VAS versions)

Scheduling interview via Calendly

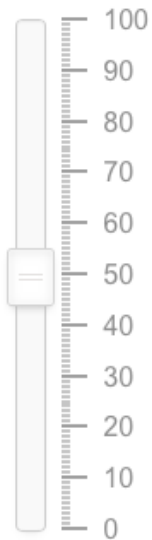
1:1 Zoom Interview with JLN

The best quality of life you can imagine



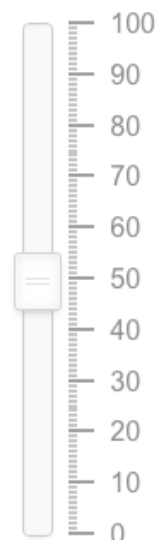
The worst quality of life you can imagine

The best health you can imagine

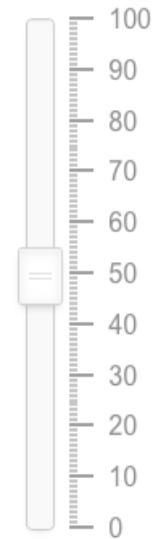


The worst health you can imagine

The best health and well-being you can imagine



The worst health and well-being you can imagine



X 9

Recall Period



[No Recall]

Today

Last 7-Days

Health

Health and Wellbeing

Quality of Life

Construct

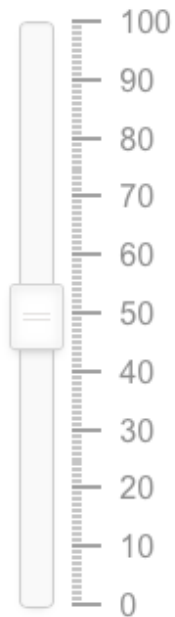
VAS Versions (Quantitative and Qualitative)

We would like to know how you rate your quality of life. The scale is numbered from 0 to 100. 100 means the best quality of life you can imagine. 0 means the worst quality of life you can imagine.

Please tap on the scale to indicate your **QUALITY OF LIFE**

YOUR
QUALITY OF LIFE
=

The best quality of
life
you can imagine



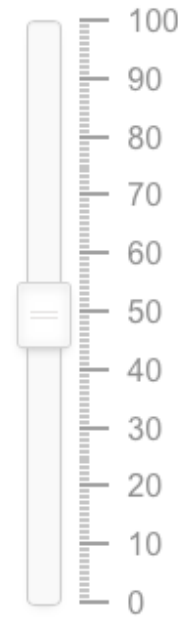
The worst quality of
life
you can imagine

We would like to know how you rate your health. The scale is numbered from 0 to 100. 100 means the best health you can imagine. 0 means the worst health you can imagine.

Please tap on the scale to indicate your **HEALTH**

YOUR
HEALTH
=

The best health
you can imagine



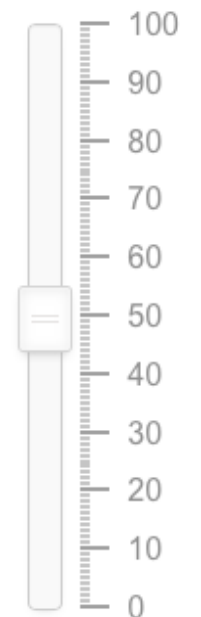
The worst health
you can imagine

We would like to know how you rate your health and well-being. The scale is numbered from 0 to 100. 100 means the best health and well-being you can imagine. 0 means the worst health and well-being you can imagine.

Please tap on the scale to indicate your **HEALTH AND WELL-BEING**

YOUR
HEALTH AND
WELL-BEING
=

The best health and
well-being
you can imagine



The worst health and
well-being
you can imagine

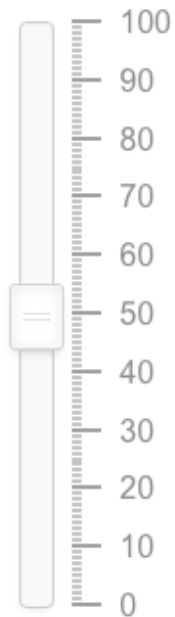
VAS Versions (Qualitative)

We would like to know how you rate your quality of life. The scale is numbered from 0 to 100. 100 means the best quality of life you can imagine. 0 means the worst quality of life you can imagine.

Please tap on the scale to indicate your **QUALITY OF LIFE TODAY**

YOUR
QUALITY OF LIFE
=

The best quality of
life
you can imagine



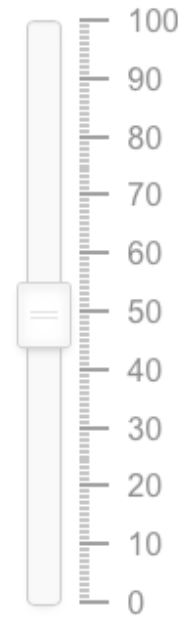
The worst quality of
life
you can imagine

We would like to know how you rate your health. The scale is numbered from 0 to 100. 100 means the best health you can imagine. 0 means the worst health you can imagine.

Please tap on the scale to indicate your **HEALTH TODAY**

YOUR
HEALTH
=

The best health
you can imagine



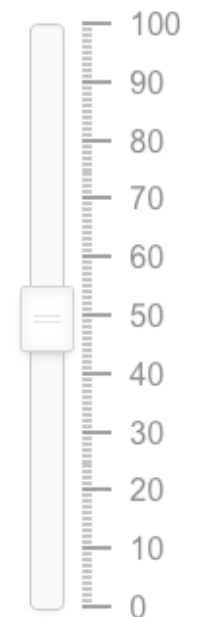
The worst health
you can imagine

We would like to know how you rate your health and well-being. The scale is numbered from 0 to 100. 100 means the best health and well-being you can imagine. 0 means the worst health and well-being you can imagine.

Please tap on the scale to indicate your **HEALTH AND WELL-BEING TODAY**

YOUR
HEALTH AND
WELL-BEING
=

The best health and
well-being
you can imagine



The worst health and
well-being
you can imagine

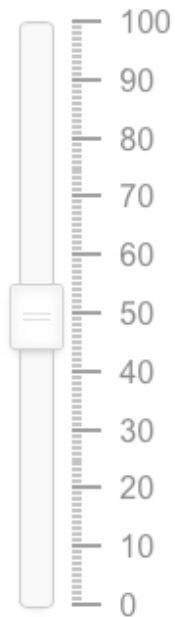
VAS Versions (Qualitative)

We would like to know how you rate your quality of life. The scale is numbered from 0 to 100. 100 means the best quality of life you can imagine. 0 means the worst quality of life you can imagine.

Please tap on the scale to indicate your **QUALITY OF LIFE** THE LAST 7 DAYS

YOUR QUALITY OF LIFE =

The best quality of life you can imagine



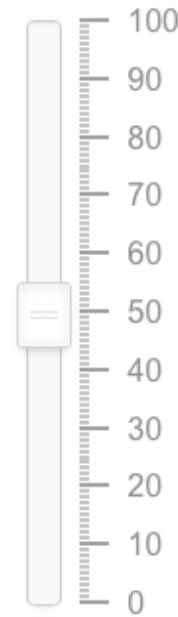
The worst quality of life you can imagine

We would like to know how you rate your health. The scale is numbered from 0 to 100. 100 means the best health you can imagine. 0 means the worst health you can imagine.

Please tap on the scale to indicate your **HEALTH** THE LAST 7 DAYS

YOUR HEALTH =

The best health you can imagine



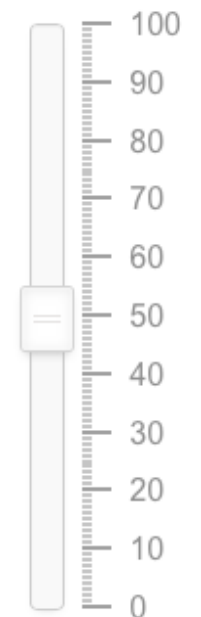
The worst health you can imagine

We would like to know how you rate your health and well-being. The scale is numbered from 0 to 100. 100 means the best health and well-being you can imagine. 0 means the worst health and well-being you can imagine.

Please tap on the scale to indicate your **HEALTH AND WELL-BEING** THE LAST 7 DAYS

YOUR HEALTH AND WELL-BEING =

The best health and well-being you can imagine



The worst health and well-being you can imagine

Inclusion Criteria



Chronic Illness

Physical or mental illness, impairment, or disability diagnosed by a healthcare provider, lasting ≥ 12 months



Informal Caregivers

Providing unpaid, informal help with personal/medical needs, household chores, finances, etc. to an adult friend or family member either living with them or not

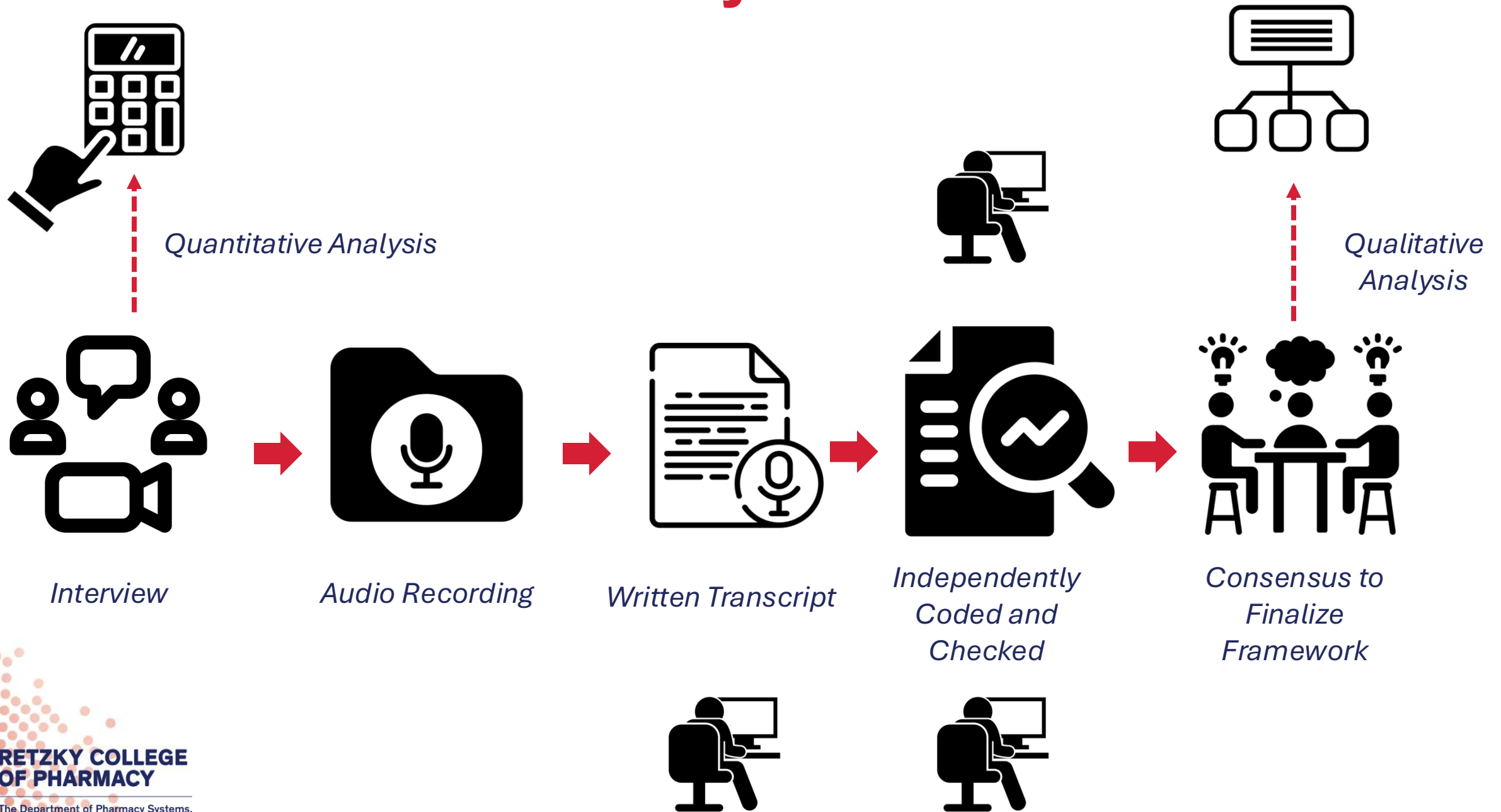


Social Care Users

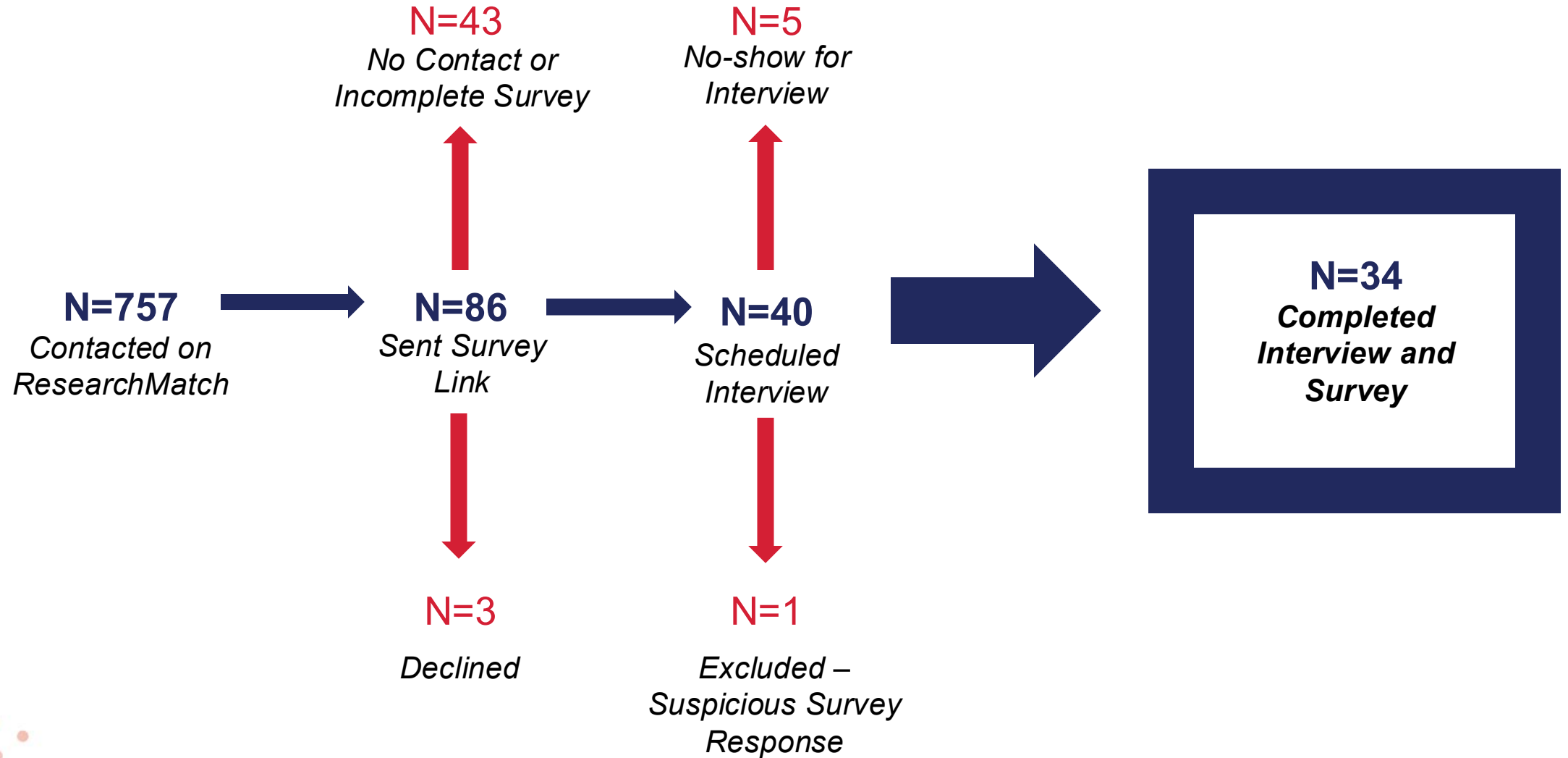
Receiving support to help function in daily life over ≥ 12 months, including paid or unpaid caregiving, home healthcare, residing in a care facility, assistance with personal care, home, or medical transportation needs, etc.



Analysis

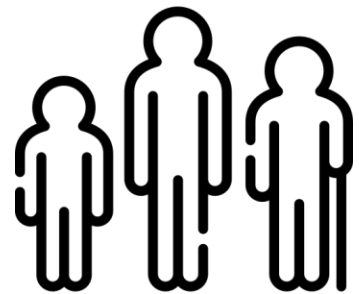


Participant Recruitment



Sample Characteristics

N=34



70% Female

18-34	5 (15%)
35-64	14 (41%)
≥65	15 (44%)

Range: 25-81

Age



Graduate or Professional	16 (47%)
College Degree	15 (44%)
No or Some College	3 (14%)

Education Level

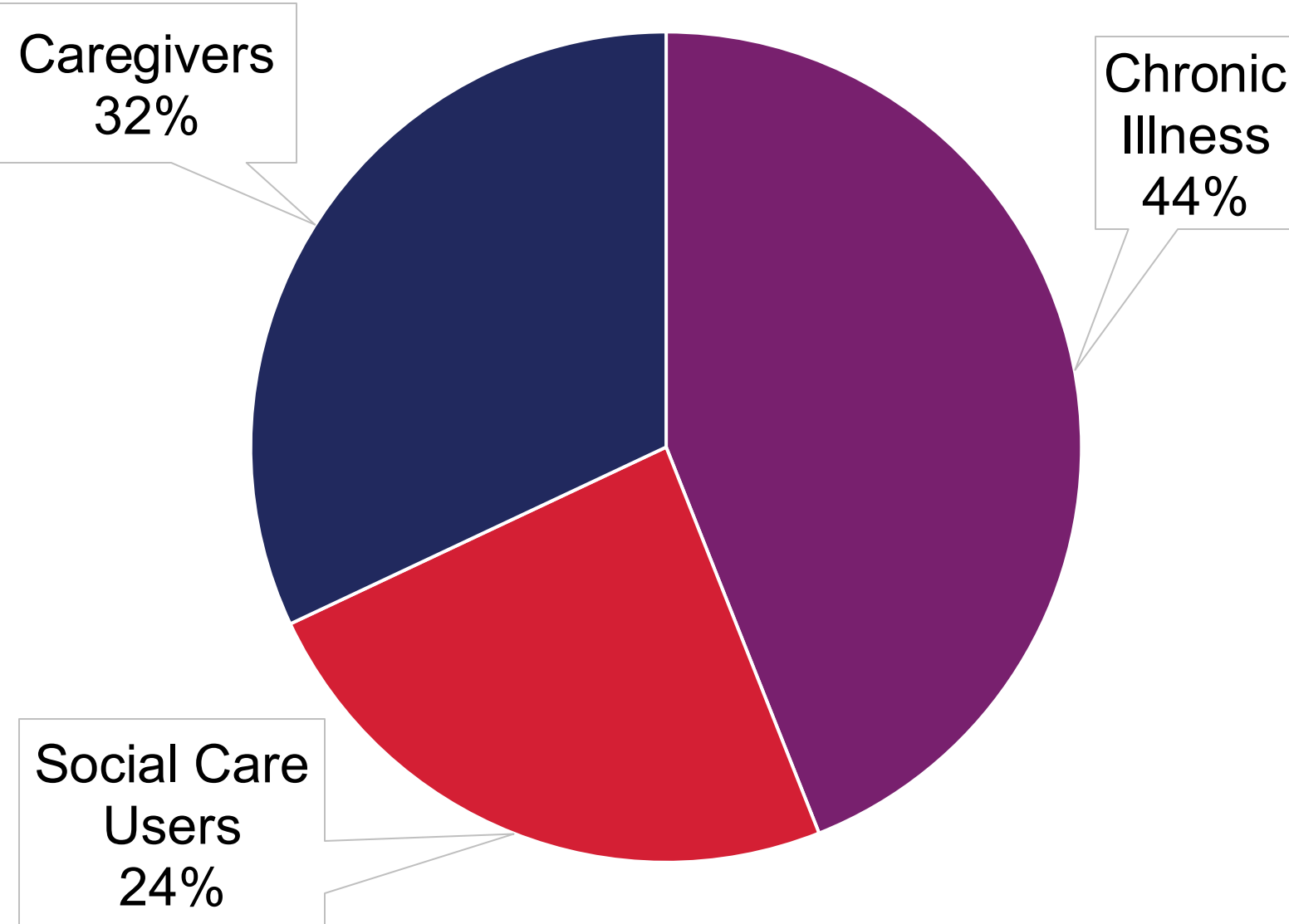


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Sample Characteristics

N=34



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Quantitative Results

Quality of Life VAS

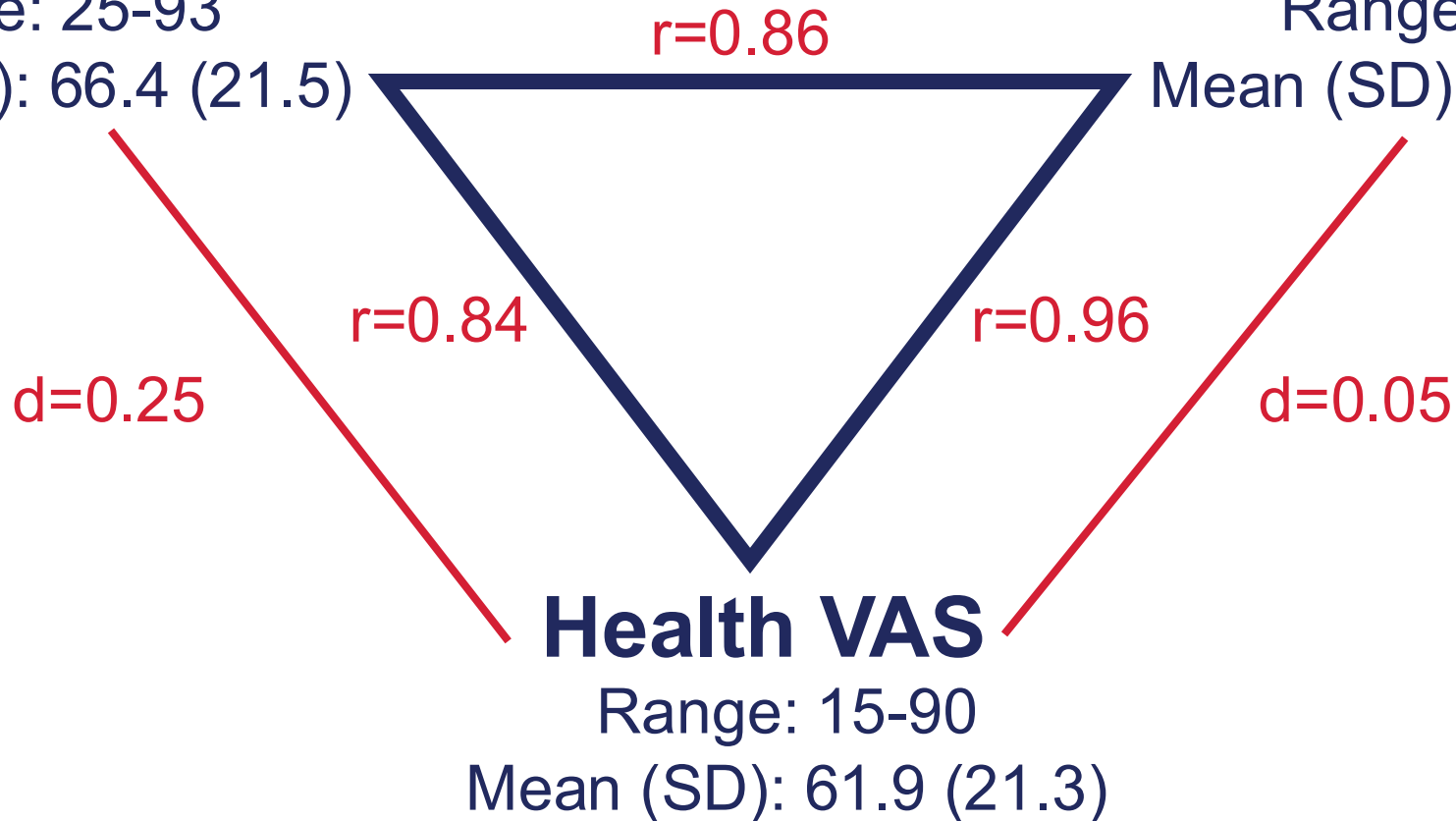
Range: 25-93

Mean (SD): 66.4 (21.5)

Health and Wellbeing VAS

Range: 15-90

Mean (SD): 60.9 (21.8)



r: Pearson correlation

d: Cohen's *d* effect size

ICC: Intraclass Correlation
Coefficient (2-way mixed effect)

Qualitative Results

Interpreted **Health** as mostly physical **functioning** and the **absence of clinical conditions**

Some considered **Health** as mental health, especially caregivers

*“Probably **just physical and not necessarily including mental health**...do I have some type of **physical pain or some type of illness?**”*

(#30: 47, female, chronic illness)

Wellbeing added mental and emotional components or attitudes and satisfaction with Health

Wellbeing viewed as a **confusing term** either **redundant with, or distinct from, Health**

*“I'm not starving. I have a roof over my head...**I think my wellbeing is intact.** However, **my health is not so.** I think **if you ask one over the other, it would probably get different responses**”*

(#33: 66, female, social care user)

Qualitative Results

Quality of Life viewed as **broad representation of lived experiences**, including purpose, lifestyle, health, ability to care for self and loved ones, **finances**, and **social relationships**

*"I'm happy. I have a really supportive environment. I have a lot of socioeconomic resources. I have hobbies. **I have people who value what I contribute to society** – even though it's not the traditional things – **I have meaning in life. And I'm someone who would rate my health at the bottom.**"*

(#20: 36, female, social care user)

With **No Recall** period, assessments ranged from “**now**” to “**the past 10 years**”, usually encompassing “**several months**”

Most preferred No Recall period: it allowed for **more contextualized, individual responses aligned with the course of their illnesses or recent life events**

*“But **quality of life, probably the last year, as family members’ health has changed in the last year.***

(#29: 37, female, caregiver)

Qualitative Results

The recall period of **Today** was viewed as **too restrictive and unrealistic**

Concern that the assessment **might catch them on a “bad day”** and provide an **inaccurate view** of their health, wellbeing, and quality of life

*“**Today is not just today**, right? It is **everything from the past that made my today.**”*

(#02: 33, female, chronic illness)

A recall period of **7 days** was easy to remember and reflect upon

7 days potentially long enough to give an overall rating, though may still be too restrictive for wellbeing and quality of life

*“It would **narrow it down a lot**. I would still be able to answer them. But I feel like that **doesn't give you the big picture**”*

(#24: 48, female, chronic illness)

Discussion and Conclusions

Consider the equipoise between measurement properties and input from respondents for more patient-centricity

The concurrent discussion of VAS versions artificially heightened distinctions between constructs and recall periods, which might be less salient in real-world administration of a measure

Further mixed-methods research is necessary, including in international settings





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