EVALUATING THE CONCEPTUAL EQUIVALENCE BETWEEN PAPER AND THREE ELECTRONIC DATA COLLECTION MODES OF THE EQ-5D-5L HEALTH STATUS INSTRUMENT

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INTRODUCTION

• Collection of patient-reported outcome (PRO) data electronically often involves migrating an existing measure to an electronic format, such as a handheld device, tablet, web via personal computer, or telephone, using an interactive voice response (IVR) system.
• The EuroQol Research Foundation and the Electronic Patient-Reported Outcome (ePRO) Consortium jointly funded a project aimed at comprehensively examining the equivalence of different modes of administration of the EQ-5D-5L utilizing both qualitative and quantitative research.
• The results of the project are intended to provide evidence regarding the equivalence of EQ-5D-5L data collected on paper, handheld, tablet, web, and IVR modes of administration.

OBJECTIVES

• The objective of this component of the project was to examine the conceptual equivalence of paper, handheld, web, and IVR modes of the EQ-5D-5L, as well as the usability of the electronic mode, using qualitative methods, in accordance with the ISPOR task force report on evidence needed to support measurement equivalence between paper and electronic-based research.
• The ISPOR Task Force recommends a small qualitative cognitive interview/usability testing (CI/UT) study when only minor modifications are needed to migrate the measure from one mode to another.¹²

RESULTS

Sample Characteristics

Handheld (N=10) | IVR (N=10) | Web (N=10)
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Age, years  
Mean | 43.0 | 36.3 | 43.6
(IQR) | (20.0) | (11.2) | (9.7)
Range | 20-79 | 27-60 | 31-65
Sex, n  
Female | 6 | 8 | 5
Male | 4 | 2 | 5
Race/Ethnicity, n  
White British | 5 | 5 | 7
Black African/Caribbean/Black British | 3 | 1 | 1
Indian | 1 | 1 | 1
Mixed/multiple ethnic groups | 1 | 1 | 1
Pakistani | 1 | 1 | 1
Irish | 1 | 1 | 1
Mixed White and Asian | 1 | 1 | 1
Asian | 1 | 1 | 1
White Other | 2 | - | -
Education, n  
Left school with no qualifications | 1 | - | -
GCSE or equivalent | - | 1 | -
A level or equivalent | 1 | 2 | 1
Technical/vocational qualifications | 2 | 1 | 1
from a college or job University undergraduate degree | 6 | 4 | 5
University postgraduate degree | 3 | 2 | -
Not answered | 1 | 1 | 1
Device familiarity, n  
A little familiar | 1 | 2 | -
Moderately familiar | 5 | 1 | 3
Very familiar | 4 | 8 | 5
Not answered | 1 | 1 | 1
Device confidence, n  
A little confident | 2 | 2 | -
Moderate confidence | 5 | 3 | 2
Very confident | 5 | 7 | 6
Health conditions affecting use (multiple answers possible, n)  
Difficulty in reading | 1 | 1 | -
Difficulty in handing small devices | 3 | 2 | -
No difficulties | 10 | 7 | 9

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METHODS

Conceptual Understanding and Usability Study Procedures

• This was a single-visit, qualitative CI/UT study among participants (n=30) from the general population in the United Kingdom. There was a recruitment target of at least 15 participants with a chronic health condition causing daily pain or discomfort, depression or anxiety, problems dressing/washing, walking or performing usual activities.
• Sample diversity was also sought with respect to age, sex, and education level.
• Before the study visit began, the interviewer explained the purpose of the study and interview methodology to each participant.
• Participants were given the opportunity to ask questions, and then asked to read and sign the informed consent form.

Interviews

• Participants completed the EQ-5D-5L on paper and one of the three electronic modes (handheld [n=10], IVR [n=10], or web [n=10]) followed by an interview about understanding and usability.
• The handheld device used was a BLU Life R1 smartphone with a screen size of 4.7". No stylus was allocated for the handheld.
• The order of completion of the paper and electronic mode was alternated, with half of the participants in each group completing paper followed by electronic and half completing electronic followed by paper. Participants completed the two modes consecutively.
• Interviews were conducted by researchers trained in cognitive interviewing, the use of the electronic devices, and the project-specific objectives and procedures.
• Participants were asked to explain their understanding of the questions being asked and the meaning of each response option provided, whether any of their answers were different due to differences in the layout from paper to electronic mode, and whether they had any difficulty completing the questionnaire on the electronic version being tested.
• At the end of each interview, participants completed a socio-demographic and device familiarity questionnaire. Each interview lasted approximately 45 to 60 minutes. Each participant received £30 reimbursement for his or her participation.

Transcripts

• Interviews were audio-recorded and transcribed verbatim for reference and analysis purposes.
• Transcripts were reviewed, de-identified, and coded.
• Coding was performed using a qualitative software tool, MAXQDA 11.²
• Coding enabled organized responses across participants and modes and allowed for focused evaluation related to conceptual understanding and usability.

Table of Results

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<th>Handheld</th>
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CONCLUSIONS

• A total of 30 participants completed this component of the project, most of whom (n=23; 77%) had a chronic health condition. Overall, participants in all mode groups interpreted the measure content consistently and appropriately for each item of the EQ-5D-5L.
• When asked whether layout differences would impact their answers between paper and electronic formats, most participants (n=23; 77%) indicated there would be no difference. Reported potential discrepancies were mostly related to the 0-100 numeric rating scale (i.e., EQ VAS), where four participants noted answer discrepancies due to difficulty selecting a precise response on the handheld and web.
• All participants in the handheld, web, and IVR (n=30) groups could navigate through the measure on their respective mode without difficulty. A number of participants (n=4) noted answering differently between paper and electronic for the EQ VAS due to difficulty selecting a precise number on the scale.
• Several participants noted possible discrepancies, but the reasons noted were not related to differences in interpretation between paper and ePRO formats but rather that one mode might have resulted in a more accurate response. For example, one participant noted responding more quickly on the electronic version versus paper which could have influenced his/her response, and another participant noted that the instruction to answer based on "today" was less prominent in the paper version, and so he/she may have answered more generally on paper rather than only focusing on "today."

REFERENCES