

Qualitative research in children and parents of children with achondroplasia: Medical challenges and impacts and their assessment using patient-reported outcome measures

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Introduction

- Achondroplasia (ACH) is the most common form of short-limbed skeletal dysplasia, affecting between 1 in 15,000 to 1 in 30,000 live births.^{1,2}
- Individuals with ACH experience various medical and physical symptoms and impacts, which may affect their quality of life.
- As part of this qualitative research study, combined concept elicitation (CE) and cognitive debriefing (CD) interviews were conducted in children/adolescents with ACH and parents of children with ACH to:
 - Better understand the symptoms and impacts experienced by individuals with ACH.
 - Evaluate the clarity, relevance, and appropriateness of three patient-reported outcome (PRO) measures and one clinician-reported outcome measure for use in ACH studies.

Methods

- Participants in the US were identified by patient advocates and patient advocacy groups.
- Health Outcomes Solutions (HOS) screened and obtained written informed consent/assent/parental permission from all participants.
- Children/adolescents who took part in the study were 8–17 years of age, with a confirmed molecular diagnosis of ACH. Parents were required to have a child 2–17 years of age with a confirmed molecular diagnosis of ACH.
- Parents completed a background questionnaire containing demographic and clinical questions.
- Interviews were conducted by HOS via Zoom using a semi-structured interview guide developed specifically for the study (one for children, one for adolescents, and one for parents):
 - During the CE portion of the interview, participants were asked about medical and physical challenges experienced and how those challenges impacted their life or their child’s life.
 - During the CD portion of the interview, participants were asked to complete and provide feedback on the Pediatric Quality of Life Inventory (PedsQL), the Quality of Life of Short Stature Youth (QoLISSY), and the Pain-Numeric Rating Scale (NRS).
- Advocates, advocacy groups, and key opinion leaders provided input on the study protocol and interview guides.
- Concepts identified during the CE portion of the interview were mapped to the PedsQL, QoLISSY, Pain-NRS, and a clinician-administered measure, the Functional Independence Measure for Children (WeeFIM).
- The following proportions were calculated for each item to determine coverage:
 - Percent scoring at least “sometimes” on the PedsQL (responses: never, almost never, sometimes, often, almost always).
 - Percent scoring at least “moderately” on QoLISSY (responses: not at all/never, slightly/seldom, moderately/quite often, very/very often, and extremely/always).
 - Percent reporting ≥3 on Pain-NRS (responses: 0 [no pain] to 10 [worst pain possible]).
- The study was approved by a central institutional review board, the WCG IRB.

Demographic/clinical characteristics

- Eight children/adolescents with ACH were interviewed. All were Caucasian, 50% were female, and mean age was 13 years; 63% reported back pain, 50% reported hydrocephalus, and 50% had undergone a tonsillectomy / adenoidectomy (Table 1).

Table 1. Demographic and clinical characteristics – children/adolescents (n=8)

| Characteristic | No. of participants (%) |
|--|-------------------------|
| Sex | |
| Female | 4 (50) |
| Mean age, years (SD) [range] | 13.3 (2.0) [11–16] |
| Race | |
| Caucasian | 8 (100) |
| Most common comorbid conditions | |
| Back pain | 5 (63) |
| Hydrocephalus | 4 (50) |
| Obesity | 3 (38) |
| Spinal stenosis | 3 (38) |
| Type of surgery | |
| Tonsillectomy/adenoidectomy | 4 (50) |
| Pressurization equalization tube placement | 3 (38) |

- Eighteen parents of children with ACH were interviewed. Most were female, Caucasian, married, and had a college degree or higher; mean age was 42 years. Half were working full-time or part-time for pay. Parents had three children on average, and one child with ACH (see Table 2).

Table 2. Demographic characteristics – parents (n=18)

| Characteristic | No. of participants (%) |
|---|-------------------------|
| Sex | |
| Female | 16 (89) |
| Mean age, years (SD) [range] | 42.2 (6.4) [33–58] |
| Race | |
| Caucasian | 16.5 (92) |
| Asian | 1.5 (8) |
| Work status | |
| Working full-time for pay | 6 (33) |
| Working part-time for pay | 3 (17) |
| Not working for pay/other | 9 (50) |
| Mean no. of children (SD) [range] | 2.7 (6.4) [1–5] |
| Mean no. of children with ACH (SD) | 1 (0) |

Concept elicitation results

- Parents were asked what medical or physical challenges their child experienced as a result of having ACH. Children/adolescents were asked what medical or physical challenges they experience:
 - Parents and children reported similar medical/physical challenges with some exceptions. For example, 50% of parents reported their child had sleep apnea, whereas only 13% of children reported this. Furthermore, 63% of children reported experiencing fatigue, although only 33% of parents reported this (see Figure 1).
 - In general, children (8-12 years of age) and adolescents (13-17 years of age) reported similar symptoms with some exceptions. More children reported balance issues (100% vs 50%) and muscle fatigue/loose joints (100% vs. 25%) compared with adolescents.
- Parents and children/adolescents were also asked how these challenges/symptoms impact them and their child/adolescent:
 - Parents and children reported similar impacts, with some exceptions. For example, 63% of parents reported their child had difficulty with toileting, but only 25% of children reported this difficulty (see Figure 2).
 - In general, children and adolescents reported similar impacts with some exceptions. More children reported problems with bathing (75% vs 0%), walking (100% vs. 50%), and dressing (50% vs 0%) compared with adolescents.

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Figure 1. Most common medical/physical challenges reported

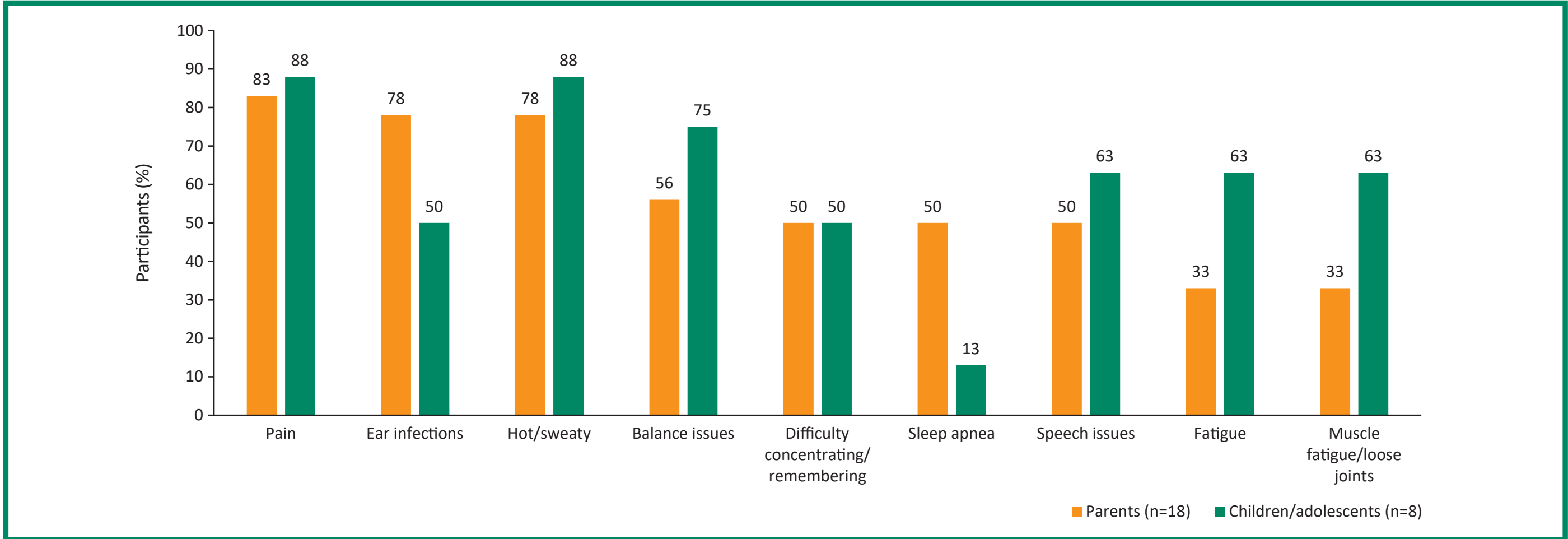
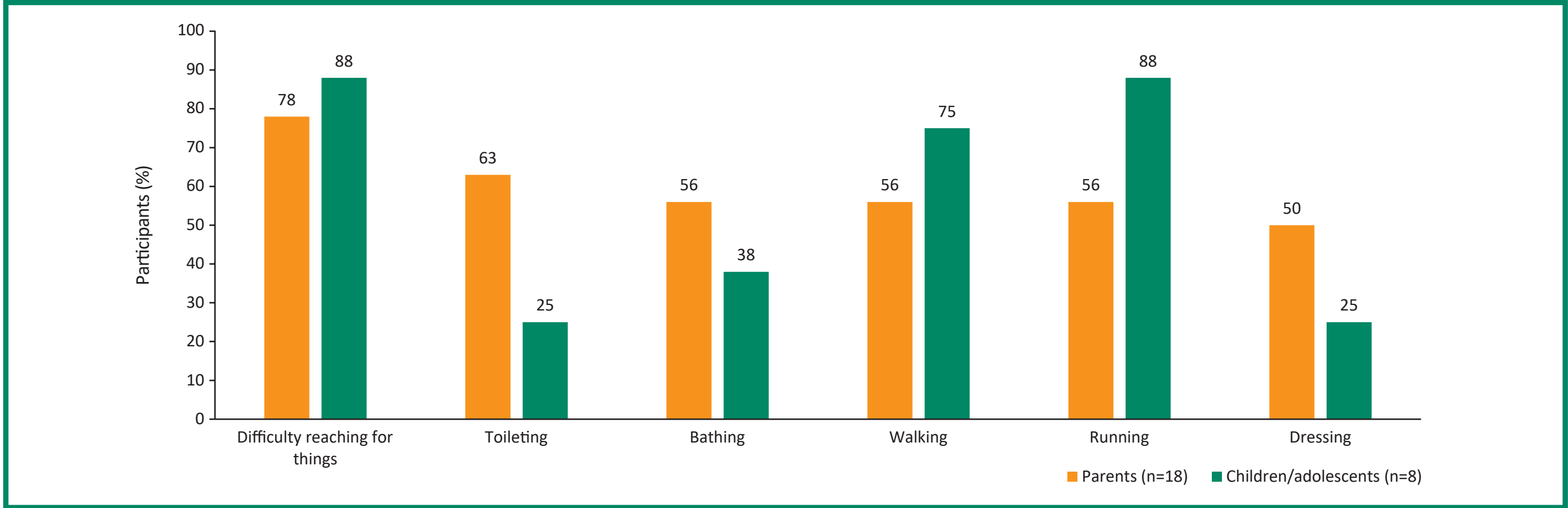


Figure 2. Most common impacts reported



Cognitive debriefing results

PedsQL and QoLISSY

- The PedsQL and QoLISSY were found to be content valid, comprehensive, clear, and relevant:
 - 67% of participants found the PedsQL easier to understand than the QoLISSY. However, 61% of participants found the QoLISSY to be more relevant.
 - Roughly equal numbers of participants would recommend the QoLISSY and the PedsQL if given a choice (42% and 46%, respectively), and 79% of participants would include both questionnaires in ACH studies (see Figures 3 and 4).

Pain-NRS

- The mean (± SD) score for the Pain-NRS was identical for adults and children (1.6 ± 1.9; score ranges from 0 [no pain] to 10 [worst pain possible]).
- 83% of parents reported that their child experienced pain at some time and 88% of children/adolescents reported experiencing pain at some time.
- All participants were able to accurately paraphrase the Pain-NRS and its response options. In general, participants found the Pain-NRS to be clear, relevant, and easy to complete (see Figure 3).

Figure 3. Cognitive debriefing findings – PedsQL, QoLISSY, and Pain-NRS

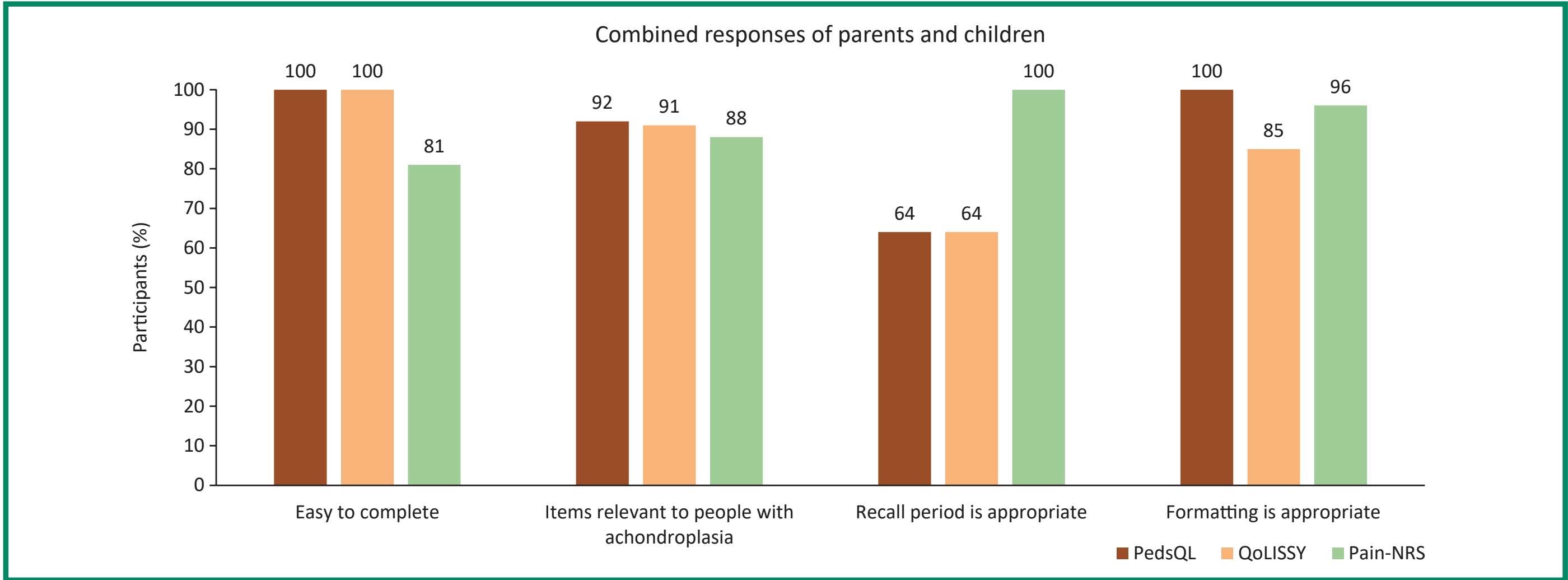
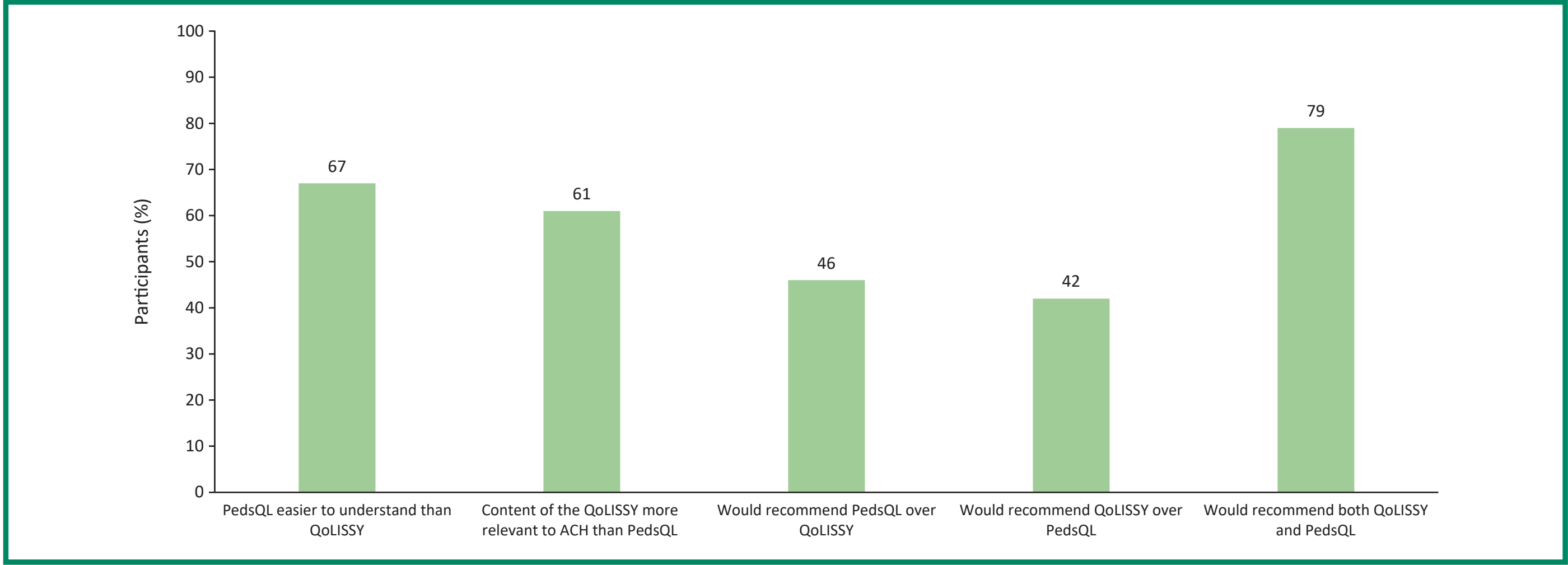


Figure 4. Comparison of PedsQL versus QoLISSY



Mapping to questionnaires

- Results indicate that the QoLISSY, PedsQL, Pain-NRS, and WeeFIM cover most of the important concepts:
 - ≥20% of parents (range: 21–100%) and ≥25% of children (range: 25–75%) responded with at least “moderately/ quite often” on most QoLISSY items.
 - ≥20% of parents (range: 22–78%) and ≥25% of children (range: 25–88%) responded with at least “sometimes” on most PedsQL items.
 - Pain was reported by ≥83% of participants; 38% of children and 28% of adults reported a score of ≥3 on the Pain-NRS.
 - WeeFIM covers important concepts such as difficulty bathing (reported by 56%/38% of parents/children, respectively), difficulty dressing (50%/25%), difficulty toileting (61%/25%), and difficulty remembering/memory (50%/50%). However, WeeFIM items such as bladder/bowel management were not relevant.
 - Representative quotes provided additional support for the relevance of the three PROs and the WeeFIM.

Conclusions

- Data from children/adolescents with ACH and parents of children with ACH confirm the content validity of the PedsQL, QoLISSY, Pain-NRS, and WeeFIM measures.
- In general, the PedsQL, QoLISSY, and Pain-NRS were found to be clear, comprehensive, and relevant for use in studies of children with ACH. The WeeFIM covers important functional concepts not covered by the three PRO measures.
- Potential limitations of this research are that mostly Caucasians were represented, and interviews were conducted in the US only.

References

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