

# Clinician Versus Caregiver Ratings of Pediatric Stool Consistency

Susan M Dallabrida<sup>1</sup>, Melissa K Trieu<sup>2</sup>, Nikki Jamshidbaigi<sup>2</sup>, Jamie Chen<sup>2</sup>, Pavle Medvidovic<sup>2</sup>, Austin Lamb<sup>2</sup>, Hillel Naon<sup>3</sup>, Raza A Patel<sup>4</sup>, Jaya Punati<sup>3</sup>, Tanaz F Danialifar<sup>3</sup>, and Brian A Cohn<sup>2</sup>

- 1. SPRIM Inc
- 2. Obvio Health USA, Inc
- 3. Children’s Hospital of Los Angeles, Division of Gastroenterology, Hepatology, and Nutrition
- 4. Intermountain Healthcare & Primary Children's Hospital

## Objectives

Caregiver ratings of pediatric stool consistency in a diaper can be challenging and they often use tools such as the Bristol Stool Scale (BSS) to impute a rating of stool consistency. However, the BSS features vague descriptions, which can be problematic for their validity in studies.

## Methods

This study compared the stool consistency ratings provided by caregivers using the BSS (n=12, 215 images) to ratings conducted by pediatric gastroenterologists (n=4). Caregivers provided both a stool consistency rating and then provided a smartphone photo of the stool in a diaper.

## Results

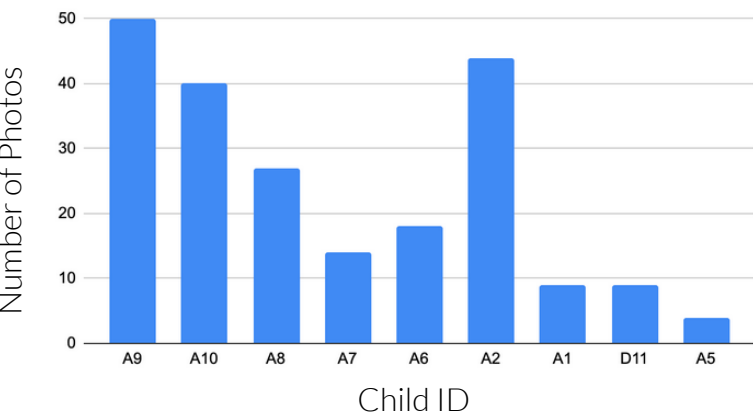


Figure 1. Contributed study photos used in our analyses, grouped by child.

The distribution of stool consistency from the panel of clinical experts was considerably different than the caregivers. Complete watery stool BSS type 7) was over-reported by caregivers (35%, 76/215) compared to clinical experts (22%, 48/215).

Whereas for intermediate loose stool consistencies (BSS type 5 and type 6), there was underreporting by caregivers (21%, 45/215) compared to clinical experts (46%, 99/215). Caregivers over-reported stool consistencies in the BSS type 3 and type 4 range (40%, 87/215) compared to clinical experts (27%, 57/215). Lastly caregivers under-reported (3%, 7/215) stool consistencies reflective of constipation (BSS type 1 and type 2) compared to clinical experts (5%, 11/215). Our inter-rater analysis of the clinical experts indicates parity in BSS scores for 42/215 of the stool photos (19.5%), and when clustered to three categories (1-2,3-5, and 6-7), the clinical experts rated the same scores for 106/215 (49.3%).

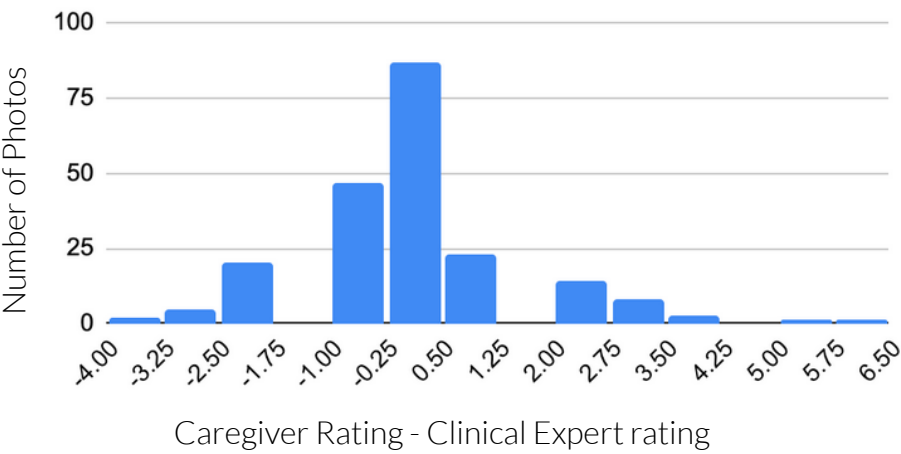


Figure 2. Bristol Stool Scale comparison between careprovider rating and the central expert rater. (mean=0.91, SD = 1.48); the middle 50% of photos had differences between -1 and 0.

## Conclusions

These findings show that caregiver ratings of pediatric stool consistency in a diaper differ considerably from that of ratings provided by clinical experts. Caregivers tended to overreport pure liquid and normal stools, while under-reporting on constipation and stools consistency in between normal stool consistency and liquid consistency. These results suggest that caregivers demonstrated a ceiling effect, overusing the extreme scale anchor of complete liquid consistency once a stool became softer than normal. Caregivers also demonstrated a tendency to report an event as normal rather than high or low and struggled to report on the extreme end of the scale indicative of constipation. This work motivates further study of the strategies used to train careproviders, central experts, and clinical raters to reduce inter-rater variability. Together, these findings suggest that a methodology to provide standardized assessments of infant stool characteristics, such as digital capture, could provide an improved methodology for assessments of treatment efficacy and health status for pediatric gastrointestinal studies and clinical care.

## References

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