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Author/s:

Sanchez, K;Morgan, AT

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KATHERINE SANCHEZ (Orcid ID : 0000-0003-2857-8835)

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The ChOMPS, a new tool to measure oromotor and motor skills for eating and drinking

Authors: K Sanchez^{1,2} and AT Morgan^{1,2,3}

Affiliations: ¹Department of Audiology and Speech Pathology, the University of Melbourne, Parkville, Australia; ²Murdoch Children's Research Institute, Parkville, Australia; ³Royal Children's Hospital, Parkville, Australia

Corresponding author: K Sanchez (katherine.sanchez@mcri.edu.au), Murdoch Children's Research Institute, Parkville, Australia 3054. Tel +613 9936 6153

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Paediatric eating and drinking problems are highly prevalent, and associated with dietary adequacy, growth, and parent mental health (1–3). Oral motor skills – coordinated movements of the oral structures that facilitate sucking, biting, chewing and swallowing – are an essential component of oral eating and drinking. Thus evaluation of oral motor skills in children with eating and drinking problems is critical to delineate specific eating and drinking problems to develop targeted intervention programs. Yet eating and drinking assessment tools, in particular parent questionnaires, frequently omit information about oral motor skills, focusing instead on the behavioural components of eating and drinking (4).

The Child Oral and Motor Proficiency Scale (ChOMPS) fills this gap, providing a validated parent questionnaire that evaluates the motor and oral motor skills underlying eating and drinking ability for children aged from 6 months to 7 years (5). While content validation and further psychometric data are forthcoming, in this issue Pados et al (5) report the norms for this new tool, derived from an international sample of 1057 healthy, typically-developing children across 11 age groupings (6-9 months, 9-12 months, 12-15 months, 15-18 months, 18-24 months, 24-30 months, 30-36 months, 3-4 years, 4-5 years, 5-6 years and 6-7 years). The narrower age grouping amongst younger children

reflects a relatively faster rate of developmental change in feeding abilities. Parents of eligible participants (children aged 6 months to 7 years, being offered solid foods to eat by mouth, without diagnoses of significant developmental or medical issues that may affect feeding, and without feeding problems; parents >18 years, with internet access and English literacy) completed the 63 item questionnaire, answering questions about specific eating and drinking behaviours, and supportive motor skills such as postural control. Answers were allocated two points for 'yes', one for 'sometimes' and no points for 'not yet,' and scores for four subscales (Basic Movement Patterns, Fundamental Oral Motor Skills, Oral-Motor Coordination, and Complex Movements Patterns) and a total score were calculated. The authors reported the means, standard deviations, medians, ranges and 5th and 10th percentiles for each age group across the four subscales as well as the total score. The 5th and 10th percentile scores were interpreted as cut-offs, identifying children who require further assessment. The authors highlighted that the ChOMPS can be used in conjunction with their behavioural eating questionnaire, the Pediatric Eating Assessment Tool (PediEAT), to obtain a more complete picture of a child's eating and drinking.

The ChOMPS is a novel development in a field that has lacked an assessment tool of this type. Strengths include its large normative sample, and the consideration of reliability and validity that were clearly intrinsic to its development. The publication of this paper suggests a number of implications for clinical practice, research and future directions.

For clinicians, the ChOMPS may be used in multiple ways. Primary health care practitioners, such as paediatricians and child health nurses, may find the ChOMPS and/or PediEAT useful to interrogate clinical or parental concerns about eating or drinking, and to help determine whether referral to a specialised feeding therapy service is warranted. This may assist in reducing unnecessary referrals, and facilitate early intervention for children whose presentation warrants it. Given that eating and drinking problems are frequently the earliest clinical signs of more pervasive developmental issues (6), the benefits of obtaining an early referral may extend beyond the feeding domain. Within specialised services, the lack of quantitative measurement tools presents a challenge for outcome measurement and documentation for insurers or funding bodies. This situation could be improved via access to numerical scores using a tool such as the ChOMPS, with its large normative sample and forthcoming psychometric data.

In a research context, psychometrically robust tools evaluating eating and drinking ability are sorely needed (4). The ChOMPS may facilitate research exploring oral motor outcomes for a range of at-risk clinical populations, including children born preterm, children who have sustained neurologically damage from a stroke or traumatic brain injury, children with craniofacial abnormalities or trauma,

and children with developmental disabilities. Further, an ongoing problem in developing and measuring interventions for oral motor eating and drinking problems has been the lack of psychometrically robust tools to identify these problems, and track progress. Pending further psychometric data, the ChOMPS could prove useful in these contexts.

One limitation of the tool, which Pados et al (5) acknowledge, is that the families comprising the normative sample were mostly white, tertiary educated, based in the United States of America and inclusive of two parents. Furthermore, the questionnaire was only published in English, further limiting the diversity of the sample. Culture, ethnicity/race and socioeconomic status are known to affect parents' reporting of their children's eating and weight (7); and while this may be less likely in a questionnaire focussed on motor skills for eating and drinking, this potential source of bias cannot be discounted. Further work will be needed to establish the ChOMPS' utility in a more diverse population, across other countries, and ultimately in translation.

A feature of these norms for consideration, which the ChOMPS norms have in common with norms for many other developmental assessments, is Pados et al's (5) decision to select a non-feeding impaired, limited risk population. By excluding children with eating and drinking problems, and conditions commonly associated with eating and drinking problems, the norms reported in this paper are skewed towards more able children (8). As a result, using the ChOMPS to diagnose children with oral motor eating and drinking problems would be likely to result in over identification. In a research context, where continuous scores and control groups are more likely to be used, or in the setting of pre- and post-therapy outcome measurement, this may not be of substantial concern. However any use of the cut-off scores should acknowledge the high risk of over identification. Investigation of the sensitivity and specificity of the ChOMPS (as the authors suggest (5)) and re-development of the tool in response to this investigation may be of benefit.

More detailed psychometric data for the ChOMPS is pending publication. Upcoming papers will report content validation, internal consistency and test-retest reliability; and construct validity with measures of gross and fine motor development (5). These will need to be evaluated once published to establish the strength of the ChOMPS' psychometric properties. In addition, as the authors suggest, establishing sensitivity and specificity, inter-rater reliability (e.g. between parents), and construct validity with a robust observational measure of oral motor skills for eating and drinking (e.g. the Schedule for Oral Motor Assessment (9)) will ensure that this tool provides a rigorous, accurate and clinically useful assessment of motor and oral motor skills.

Pending the publication of further psychometric data, this promising new tool has the potential to facilitate timely and selective referrals, robust outcome measurement, quantitative clinical

reporting, and further research into aetiologies and interventions for oral motor eating and drinking problems in a range of clinical populations. The use of such tools with established reliability and validity is essential in enabling researchers and clinicians to help advance knowledge and management of children with eating and drinking problems.

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