Paediatric update

Kiran Atwal,
Freelance Paediatric Dietitian

Welcome to our paediatric nutrition column 'Paediatric update'. In each column, Kiran Atwal, Freelance Paediatric Dietitian, will update you on new guidance, tools and current affairs. Here, Kiran takes a look at *'Artificial intelligence (AI): a taster of what to expect'.*

Over a decade ago, search results on *Pubmed* retrieved over 30,000 hits on AI and related terms. Today this almost exceeds a quarter of a million.

The potential of AI in healthcare is continually being unearthed, and its impact is already groundbreaking. In a broad overview of the literature on AI across dietetics recently published in the journal of *Nutrition in Clinical Practice,* some of the possible benefits and risks are summarised.[1]

Benefits may include:
- Aiding screening (e.g. malnutrition risk)
- Detecting disease (e.g. image-based diagnosis)
- Clinical risk prediction (e.g. adverse drug interactions, sepsis or refeeding risk)
- Dietary assessment
- Patient safety (e.g. NGT placement)
- Self-monitoring e.g. (energy expenditure or glycaemic response)
- Supporting workflow (e.g. patient-clinician interface).

Risks may include:
- Improper validation & reliability
- Lack of transparency
- Lack of accountability
- Bias & discrimination
- Information governance
- Autonomy & safety.

When considering paediatric dietetics specifically, developments demonstrate insights into its potential in areas of practice. Registries of clinical trials indicate there are numerous active studies involving the use of AI in areas of paediatric healthcare. The example below is used as a way of demonstrating some considerations when scrutinising such research.

New study: AI-assisted stool analysis in breastfed infants

A smartphone-enabled AI-app designed to evaluate infant stool consistency was investigated in an industry-funded study in China.[2] The AI-app was trained on images of soiled nappies, categorised by the Brussels Infant and Toddler Stool Scale (BITSS). The AI-app analysed the stools of breastfed term infants and compared them to assessments by researchers and mothers of newborn infants, to understand who could benefit from the AI-app. The AI-app demonstrated 95.8% agreement with the BITSS classifications by researchers ($p<0.001$). Whereas for mothers, there was only 66.9% agreement with BITSS classifications by researchers. There was a tendency of mothers to score the consistency of normal stools as watery. Deviations by mothers were significantly higher than those by the AI-app ($p<0.001$), and greatest for mothers who had undergone c-section, had post-partum depression, were unemployed or had lower education.

How could this impact practice?

Whilst this AI-app could aid accurate evaluations of infant stool consistency by parents, the study was exclusive to healthy newborn infants up to 1 month of age, and not studied in wider paediatric populations or clinical scenarios. The use of smartphones to operate the AI-app itself could risk excluding vulnerable groups who are not confident or able to access digital devices. The study aimed to understand who could benefit from the AI-app which could have unintended consequences. The authors did not address how the AI-app was intended for use clinically or publicly. As such, sponsors with financial interests, or products and services, may find ways to beneficially gain from AI.

What does this all mean?

Committing to healthcare innovations that create efficiencies is important for the future of many services, especially in light of funding and resource issues. AI could be the gatekeeper to numerous healthcare solutions, but if mismanaged could undermine or exploit services and users. As with any research, investigating AI in healthcare must take place under robust ethical frameworks and with integrity. Implementation of regulations that prioritise transparent, explainable and people-centred AI is essential so the risk of bias, harm and inappropriate practice can be reduced. As dietitians, we should stand by high standards, addressing these issues in any research proposals and reports involving the use of AI. We must question the purpose, benefits and harmful consequences for our profession, practice and patients. Whilst we may not be computer scientists or technology specialists, we should find ways to better collaborate amongst these experts to achieve best practice in AI developed for healthcare.

References: **1.** Atwal K (2024). Artificial intelligence in clinical nutrition and dietetics: A brief overview of current evidence. Nutr Clin Pract.; doi: 10.1002/ncp.11150. **2.** Wu J, *et al.* (2024). The Effectiveness of Artificial Intelligence in Assisting Mothers with Assessing Infant Stool Consistency in a Breastfeeding Cohort Study in China. Nutrients.; 16(6): 855.

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