SUPPLEMENTARY FILE 2

Practical tips for making bean bags sets for estimating amorphous food volumes

	Do ✔	Beware / Avoid ✖
Size & shape	• Match filler volume to bag size. For guidance: https://www.cdc.gov/nchs/nhanes/measuring_guides_dri/99-00/beanbags.htm • Remember seam allowances when cutting fabric circles. Clip allowances so that edge is smooth when turned around. • Choose participant-relevant volumes: Align to target group eating habits, e.g. small bags for infants and young children, large volumes for staple foods (e.g. porridge, pasta). • If also to be used for nutrition education, include relevant serving size/ exchange list volumes (Fig 1a). • Make >1 bag of commonly consumed volumes, e.g. 125mL (for stacking, see Fig 1c). • Shape: Round (to remain generic).	• Bag too large for filler volume: visually misleading. • Bag too tight for filler volume: not malleable and cannot fill a household utensil. • Practitioner/ researcher "convenience" is a secondary consideration. • Shape: Squares: not food-relevant; "empty" corners mislead. • Inappropriate shape and filling volume:
Materials	Bag fabric: • Firm, smooth finish construction, yet supple. • If washability is important, choose easy care (no crinkle) fabrics. Filler: • Small grains & beans. • If washability is important, use plastic pellets. Polystyrene bubbles are lightweight, but filling into synthetic bag fabric is challenging (static electricity).	• Knits (bulging). • Felt (not washable). • Leather (not supple enough).
Colour	• Monochrome. • If also intended for nutrition education and meal/ dish proportion assessments: consider bean bags sets of food-appropriate, contrasting colours (e.g. beige for starches, brownish-red for meats and green for vegetables/fruit: Fig 1c).	• Prints (distracting). • See sub-study 5 (visual illusion).

	Do ✓	Beware / Avoid ✗
Finish	Volume identification: • Per bag: coded (e.g. A, B, C etc.) or quantity (household measures [e.g. 1c] or volume [e.g. 250mL]). • If bean bags are part of a larger PSEA kit, use the same coding for aids (e.g. household measures) with the same volume, e.g. "A" would always refer to the same volume. • Apply in a way that participants cannot see the code (e.g. written/ embroidered underneath or on a tag which can be turned away), yet it cannot get lost. • Include a storage container (e.g. bag) and code conversion information (if bags are coded) for the set to aid on-site interpretation; see example. 	• Over-coding and decorating: Functionality should be primary consideration. • Use "fancy" sewing technique; it may not serve the purpose.