Improving Infection Prevention and Control in the Home Environment: Development of Scales Measuring Home Clutter and Cleanliness among Home Healthcare Patients in New York State

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BACKGROUND

- ✓ Homebound older adults often receive home health care (HHC) services to improve function and prevent adverse outcomes.
- ✓ Few tools exist for investigating environmental and other factors impacting infection prevention and control (IPC) practices among HHC patients and caregivers.
- ✓ We developed a questionnaire assessing **IPC-related knowledge, attitudes, and practices of HHC patients and caregivers,** administered by trained interviewers.
- ✓ There was also a home observational component where we assessed environmental and other factors that may impact IPC practices, including clutter and cleanliness

OBJECTIVE

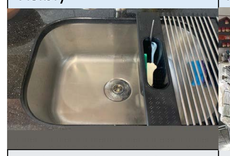
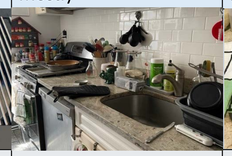
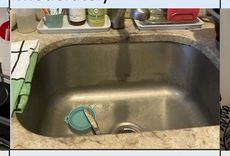
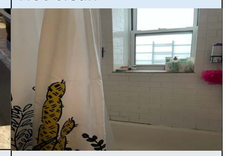
To develop **clutter and cleanliness scales** for use in HHC patient homes.

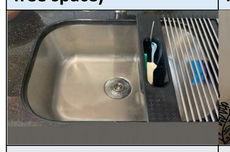
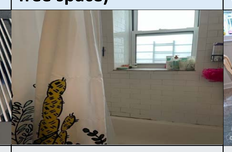
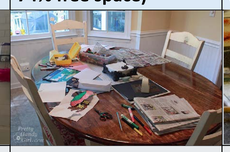
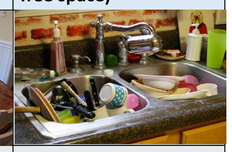
METHODS

- ✓ We reviewed existing clutter and cleanliness scales; most validated options focused on hoarding.
- ✓ Drawing upon those scales, we developed questions specifically for IPC in the home environment.
- ✓ During pilot testing with 15 HHC patients and caregivers, the same rating scale was used for our clutter and cleanliness questions which posed challenges due to variable home environments and interviewer biases.
- ✓ After piloting, we iteratively refined the questions after collecting team feedback and used **Mentimeter to review images demonstrating different cleanliness and clutter levels** (see photos to right)**.**
- ✓ To improve coding consistency, interviewers received procedural manual training and completed a home observation quiz with example pictures.

RESULTS

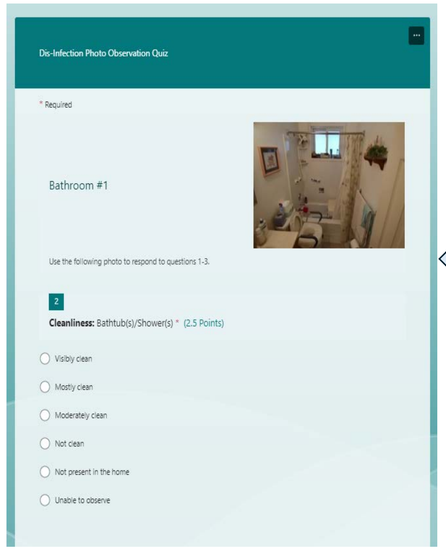
The images below reflect what interviewers would code under each category using the final cleanliness and clutter scales.

Cleanliness Visibly	Mostly	Moderately	Not Clean
			
Kitchen sink is visibly clean, no dirt or marks on the sink itself. What you can see of the counter and sponge appear to be visibly clean.	Kitchen counter and sink appear to be mostly clean. Some dirty items present around sink (milk carton and dirty knife). Sink appears to be clean/ free to dirty dishes.	Kitchen sink is mostly free of items but appears stained/ streaked and only moderately clean.	Visible dirt or mold/ discoloration around tub/tile grout which means automatic 4 (not clean).

No clutter **(90-100% free space)**	Some Clutter **(75-89% free space)**	Moderate Clutter **(50-74% free space)**	Very Cluttered **(0-49% free space)**
			
Kitchen sink is visibly clean, no dirt or marks on the sink itself. What you can see of the counter and sponge appear to be visibly clean.	Some items present but nothing appears to restrict tub/shower use. No items visible (in photo) within the tub itself.	Many items present, some space still available to sit and eat without moving these items.	Dishes piling out of sink and onto counter. Kitchen sink itself is unable to be used because of the number of dirty dishes in the sink.

DISCUSSION

- ✓ Prior to finalizing the scale for the clutter ratings, **researchers had a high level of inconsistency among ratings**, with some rating a clutter image as a 1 (no clutter) and others rating the same photo as a 3 (moderately cluttered).
- ✓ The research team decided to **add objective ratings of percentages of free-space to the scale** in order to reduce bias and achieve more consistent ratings among interviewers.
- ✓ After scale revisions and interviewer trainings, home observation quiz answers among interviewers were **consistent at least 80% of the time.**



The research team participated in a training exercise utilizing the software Mentimeter. This allowed the team to view everyone's responses in real time and discuss why they selected a certain rating.

CONCLUSION

- ✓ Our scales represent the first tools specifically designed to assess home cleanliness and clutter related to IPC.
- ✓ Pilot testing in HHC patient homes revealed **variable home environments** and **interviewer biases**.
- ✓ Following scale use with a broader audience, we aim to develop an intervention to **enhance IPC practices and improve HHC patient outcomes.**

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