Reviewer’s report

Title: Construct Validity of the Dining Environment Audit Protocol: A Secondary Data Analysis of the Making Most of Mealtimes (M3) Study

Version: 0 Date: 04 Oct 2017

Reviewer: Sandra Simmons

Reviewer’s report:

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This study utilizes data from a large cross-sectional study of 32 long-term care facilities in 4 Canadian provinces. The authors reference a published protocol paper of the larger study, which is helpful; however, some of those Methods need to be included in this paper as well. This study makes a significant contribution to the literature via a structured tool that can be used to assess the quality of the dining environment, but more specificity needs to be provided as to the operational definitions for tool items to allow reproducibility by care providers, researchers and regulators.

The authors also need to review the manuscript in its entirety for incomplete sentences. Several are noted in the below comments.

Abstract: Conclusions - incomplete sentence, "The construct validity of the DEAP was supported through significant correlations with a variety of measures that are theoretically related to the homeliness and functionality [of]."

Introduction and/or Discussion sections - Significance of this study: In the United States, there have been culture change initiatives and newer dining practice standards for nursing homes, both of which have emphasized the importance of "resident-centered care practices" and a more "home-like environment" to enhance resident autonomy, choice and quality of life. The value of a tool, such as the DEAP, is that it offers nursing home care providers, federal and state regulators and researchers a more structured way to evaluate the extent to which an individual facility has made improvements in this area, at least as it relates to dining and the mealtime experience. Currently, most assessments rely instead on staff self-report and/or the subjective opinion of a select few to make this determination. The DEAP tool also could be useful in evaluating the impact of dining environments in specialized care settings, such as dementia care units in nursing homes or dementia care within residential care settings, on residents' oral intake and mealtime experience.
Measures, DEAP Tool: The majority of my comments are related to the need for a much more detailed description of the DEAP tool itself, in terms of individual items, operational definitions and clarification of assessment methods. Because this paper is focused on the utility and validity of the tool, it should be described in a manner that allows for reproducibility in a separate study. I suggest including the tool and assessment instructions as an appendix in addition to providing further clarifications in the Methods section.

(a) It is stated that the observer completed the DEAP tool "once at the beginning of data collection for each home, when the dining room was empty". However, it seems that a number of DEAP components, particularly those related to functionality, could only be assessed during an actual mealtime when both residents and staff were present (e.g., noise level, staff response to resident requests, clutter/open pathways that may be blocked by wheelchairs, staff and/or meal tray carts during an actual meal service). Also, while staff and/or residents may have access to options within the environment itself (e.g., mixture of seating arrangements, seating in view of garden, adjustable tables, a place for beverage refills), they may (not) actually utilize these in daily care practice (e.g., staff may still seat all residents together in far corner and let others remain in their rooms for ease of care provision or still go to the kitchen for refills). Thus, a valid assessment of how the dining space is actually used when residents/staff are present during mealtime seems more important to capture in the observations to determine the validity of the tool.

(b) What was the rationale for conducting only one observation per dining room when meal service is known to vary across meals and days of the week? In fact, one or more of the other assessments that were included for construct validity required assessments across multiple meals when residents/staff were present. Thus, it seems odd to compare this type of assessment with the DEAP if it was only conducted once in the absence of residents/staff.

(c) Why isn't there a component within the tool to capture how conducive the environment is to providing residents with assistance to eat? For example, whether staff is seated at the table with residents during the meal; whether staff leave the dining room to retrieve substitutions or drink refills, whether staff have sufficient space in the dining room / tables to provide assistance to all residents in need or if some residents still have to dine in their rooms due to limited space, etc…

(d) Inter-rater reliability for each of the two DEAP scales and the total score across the 4 trained observers should be reported in the Measures section.

(e) Measures, DEAP Tool, last sentence, check wording: "For analysis only, researchers derived a total score by tallying individual variables/characteristics using the above item coding [for], resulting…"

(f) Operational definitions need to be provided for each item and/or an appendix of DEAP tool with specific scoring instructions for each item. Right now, it is unclear to the reader how items are actually evaluated and/or scored. For example,
"percent of residents with a clear view of the garden" - Could it be any type of view outside or did it have to be a garden area? Were residents directly asked during a mealtime period or did the observer assume that if s/he could see the garden from each table, all of the residents could too?

"Responding to resident opinion on light, noise and temperature": how was this determined? Again, were residents asked if staff were responsive or did the observer simply document whether residents complained about any of these features during mealtime and then monitor staff response?

'Pathway length': between tables? From entryway to exit? From resident rooms to dining room? Was this measured objectively or estimated by the observer?

How does physical environment 'support supervision'? Presumably, just having residents eat in the dining room rather than their rooms allows for ease of staff supervision. How is this different from dining room size as it seems a larger dining room might be more challenging to supervise relative to a smaller area.

Were observations conducted between meals to determine if the dining room was accessible or were staff simply asked if residents could access it?

Theoretical Constructs for Comparison, Lines 184-185, check sentence wording: "...[was] assessed staff's perceptions with respect to..." Line 188: "...it was completed [by] 10-20 staff..."

MTS measure: "Scans were completed 4-6 times in each unit's dining room (n=82) with observations at breakfast, lunch and dinner; the mean of scales was used in analyses." What is meant by "scans"? Does this mean that the observer conducted a brief time-sampled observation across 4 to 6 mealtime periods or 4-6 times per meal for each of three meals? What was the approximate length of time and/or was the length of time standardized across observers and meals?

Food intake data collection across three days: Clarify whether all three scheduled meals were included per day (for a total of 9 meals per resident). Were the 3 days within the same week or month or across what timeframe? Was intake between meals also monitored?

Check sentence wording: "...average energy and protein intake was estimated [intake]..."

Results:

Report numbers for each type of staff participant (e.g., proportion licensed nurses, nurse aides, dietary, etc...)

Add a table summarizing the demographic and functional characteristics of the 639 resident participants. Please also add ethnicity, length of stay, and history of weight loss and/or need for
staff assistance with eating for participants. It seems that these measures were collected as part of the larger study. Also report the proportion who endorsed symptoms of depression via the DRS.

Home characteristics: Please report bed size, occupancy rate at the time of the study, staffing level, and total number of units and/or dining rooms per site as well as the other "special characteristics" noted in the sampling procedures. Again, it seems that more facility characteristics were collected as part of the larger study for the 32 sites.

Table 1 correct formatting (n)

Homeliness sub-scale: 'short distance from most rooms' and 'dining room visually accessible from most rooms' - weren't these two variables inter-correlated and why were neither in the final model?

Functionality sub-scale: why were 'dining room visually accessible from most rooms' and 'number of exits' not in final model?

Overall, this is a promising paper that requires further clarifications to be a significant contribution.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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I am able to assess the statistics

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