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A revised MISSCARE survey: Results from pilot testing

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ABSTRACT

Background: Missed nursing care has been recognized as a universal patient care issue that affects outcomes for patients, nurses, and healthcare institutions. The *MISSCARE Survey* was developed to measure and determine the reasons for missed nursing care episodes. An extensive literature review and expert nurse opinion revealed five additional reasons for missing care that the authors utilized to revise the *Survey*.
Methods: The revised *MISSCARE Survey* was pilot tested with a group of 145 nursing staff from a public, non-profit, acute care hospital in the Midwestern U.S.
Results: Analysis indicated favorable results for the revised *Survey's* acceptability, reliability, and construct validity.
Conclusion: Based on the initial pilot study results, the authors recommend further use and study of the revised *MISSCARE Survey* with other nursing populations and additional psychometric testing.

1. Introduction

Missed nursing care is a universal nursing issue that affects outcomes for patients, nurses, and healthcare institutions. First coined in 2006, the term *missed care* refers to any aspect of required patient care that is omitted (either in part or in whole) or delayed (Kalisch, 2006; Kalisch, Landstrom, & Hinshaw, 2009). Kalisch and Williams (2009) developed the *MISSCARE Survey* (hereafter referred to as the *Survey*) to measure and determine the reasons for missed nursing care episodes. This survey has been used widely with diverse nursing staff (Kalisch, 2015).

Evaluation of the *Survey's* performance over the past 10 years reveals that it consistently performs well (Kalisch, 2015). However, statistical analysis correlating the amount of missed care with the collective group of reasons for missed care, along with feedback from users of the tool led the originator to conclude that the full scope of reasons for missing nursing care was not fully captured. An extensive literature review and interviews with nurses identified five additional causes of missed care: caregivers emotional or physical exhaustion or fatigue (Bruyneel et al., 2015; Dhaini et al., 2016; Rochefort & Clarke, 2010); inadequate supervision of nursing assistants (Gravlin & Phoenix Bittner, 2010; Iezzoni & Ogg, 2012; interruptions and multitasking (Kalisch & Aebersold, 2010; Myers & Parikh, 2019; Tubbs-Cooley, Pickler, Younger, & Mark, 2015; Winters & Neville, 2012); a lack of cues or care reminders (Piscotty Jr. & Kalisch, 2014; Piscotty, Kalisch, Gracey-Thomas, & Yarandi, 2015; Yap et al., 2013); and inadequate leadership support (Papastavrou, Andreou, Tsangari, Schubert, & De Geest, 2014). In the present study, we propose a revised *MISSCARE Survey* which includes these five additional contributing factors and present the results of pilot testing with a sample of nursing staff. The purpose of this pilot study was to test the psychometric soundness of a revised *MISSCARE Survey*.

2. Methods

This pilot survey study was approved by the hospital institutional review board. A convenience sample of nurses and nursing assistants was recruited from a 433-bed, public, non-profit, acute care hospital in the Midwestern U.S. Eligible subjects were regular nursing staff who provided direct patient care. Temporary nursing staff were excluded.

A recruitment email was sent to all regular nursing staff ($N = 725$) explaining the reason for the study and why they were invited to participate. Participants self-administered the *Survey* using an anonymous Qualtrics survey link made available for a period of 3 weeks. Twenty-four nurses volunteered to take the survey twice, one week apart, to measure test-retest reliability. The test-retest participants were also recruited via email.

2.1. Instrument

In the present study, we used a revised *MISSCARE Survey* tool. The revisions were made based on a review of the literature and expert nurse input. Electronic databases searched included MEDLINE, CINAHL, and

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PubMed. Search terms included missed nursing care, unfinished nursing care, rationed nursing care, and care left undone within. Primary research and literature reviews published between the years of 2009–2018 were included. The expert nurses consisted of nurse researchers, administrators, and experienced bedside nurses who provided either verbal or written reasons for missed nursing care. Part A of the original *Survey* (Kalisch & Williams, 2009) contained 24 items asking participants to report how frequently specific nursing care elements were missed using a 5-point Likert scale (1 = never missed, 2 = rarely missed, 3 = occasionally missed, 4 = frequently missed, and 5 = always missed). Based on the review of the literature, a 25th item was added to part A: *Adequate surveillance of patients*. Further, one item was revised: *Ambulation three times per day or as ordered* was changed to *ambulation/mobilization three times per day or as ordered* to reflect the terminology used in the literature.

Part B of the original *Survey* contained 17 items asking participants to indicate the reasons for missing nursing care using a 4-point Likert scale (1 = not a reason for missed care, 2 = minor reason, 3 = moderate reason, 4 = significant reason). Five additional reasons for missed care were added to part B: *emotional or physical exhaustion*, *inadequate supervision of nursing assistants*, *interruptions/multitasking*, *lack of cues/reminders*, and *inadequate support from leadership*.

2.2. Data analysis

Factor analysis was performed in order to determine item structure and reliability and was completed with psych package in R (Revelle, 2018). Specifically, construct validity was tested with exploratory factor analysis, with each potential factor representing a potential underlying construct of missed care. Different factor solutions utilizing differing numbers of factors were compared. Reliability was examined via standard measures for internal consistency and test-retest reliability for the 24-nurse group.

Table 1
General fit.

RMSR	RMSEA	RMSEA lower	RMSEA upper	TLI	Variance Acct.
0.058	0.079	0.059	0.086	0.847	44.0%

RMSR = Root Mean Standardized Residual, RMSEA = Root Mean Square Error of Approximation, TLI = Tucker-Lewis Index.

3. Results

3.1. Demographics

The sample of 145 nursing staff included 134 RNs and 11 nursing assistants. Ages ranged from 22 to 60 years (M = 36.38, SD = 9.34). Most were female (85%), had a bachelor's degree (45%), and worked 12-h shifts (69%). The average years of nursing experience was 8.42 (SD 8.11), with an average of 5.77 (SD 5.55) years on their current unit.

3.2. Acceptability

Most participants completed the online survey in 10 min or less. The percentage of participants completing the survey without omitting any items was 90.3% for part A and 93.0% for part B. The percentage of items completed ranged from 48.0 to 100.0% for part A and 40.9 to 100.0% for part B.

3.3. Reliability

Reliability for part A was 0.94 for coefficient α, and 0.95 for ω, the latter of which is more appropriate for this multidimensional factor setting (Zinbarg, Revelle, Yovel, & Li, 2005). Test-retest reliability was available for the assessment of 24 individuals. Regarding subject reliability (how individuals correlate across time), the range of item correlations for test A was 0.70 to 1.00, with a mean item correlation of 0.95. Regarding item reliability (how items correlate across individuals), the range of person correlations for test A was 0.38 to 1.00, with a mean person correlation of 0.94. The percentage of identical responses for part A was 94%. Ninety-nine percent were within one value on the item. The average squared distance of responses from time 1 to time 2 was 0.09 (0 would mean identical responses).

Reliability for part B was 0.90 for coefficient α, 0.92 for ω. For test-retest reliability for assessment of the 24 individuals in terms of subject reliability, the range of item correlations for test B was 0.83 to 1.00, with a mean item correlation of 0.95. In terms of item reliability, the range of person correlations for test B was 0.47 to 1.00, with a mean person correlation of 0.94. The percentage of identical responses for part B was 94%, while 100% were within one value on the item. The average squared distance of responses from time 1 to time 2 was 0.08.

3.4. Construct validity

Factor analysis was deemed not appropriate for part A because it

Table 2
Factor Loadings.

Item	Factor 1	Factor 2	Factor 3
Tension or communication breakdowns with the nursing team	0.77		
Tension or communication breakdowns with ancillary/support departments	0.72		
Lack of back-up support from team members	0.71		
Nursing assistant did not communicate that care was not provided	0.60		
Caregiver off unit or unavailable	0.59		
Inadequate hand-off from previous shift or sending unit	0.58		
Tension or communication breakdowns with the medical staff	0.55		
Inadequate supervision of nursing assistant	0.45		
Lack of cues/reminders	0.43		
Other departments did not provide the care needed	0.41		
Unbalanced patient assignments	0.41		
Inadequate number of staff		0.78	
Inadequate number of assistive and/or clerical personnel		0.71	
Unexpected rise in patient volume and/or acuity on unit		0.55	
Emotional or physical exhaustion		0.52	
Interruptions/Multitasking		0.45	
Inadequate support from leadership		0.44	
Urgent patient situations	–	–	–
Heavy admission and discharge activity	–	–	–
Supplies/equipment not available when needed			0.87
Supplies/equipment not functioning properly when needed			0.86
Medications were not available when needed			0.51

contains a list of independent nursing actions. Exploratory factor analysis was conducted on part B using maximum likelihood, and different factor solutions were compared. A three-factor solution was found to be the best result via Bayesian information criterion (BIC). The amount of variance accounted for by the three factors was 44.0%. General fit is shown in Table 1.

Factor loadings are displayed in Table 2. Values greater than or equal to 0.4 are highlighted to minimize cross-loadings and ascertain structure. While most loaded adequately on at least one factor, two items loaded weakly on any factor: urgent patient situations, and heavy admission and discharge activity. The remaining items loaded highly on only one factor. In general, factor one represents the level and quality of communications among the healthcare team. Factor two indicates labor resources such as staffing and multitasking. Finally, factor three reflects material resources such as supplies and medications.

4. Conclusion

Evaluating contemporary reasons for missing nursing care provides critical information about what is happening in the nursing workplace. Each of the additional Part B questions resulted in factor loadings above 0.40. Based on the favorable pilot study results for acceptability, reliability, and construct validity, the authors recommend further use and study of the revised *MISSCARE Survey*. Administering the revised *Survey* to larger and diverse nursing populations and performing additional confirmatory factor analysis and tests of reliability and validity are the next steps in the tool development.

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Declaration of competing interest

The authors declare no conflict of interest.

Appendix A. Distribution of Part A missed nursing care items (*N* = 145)

	Mean(SD)
Ambulation/mobilization three times per day or as ordered	3.13 (1.14)
Attending interdisciplinary care conference whenever held	2.98 (1.17)
Mouth care	2.84 (1.06)
Teaching patients about illness, tests and diagnostic studies	2.74 (0.86)
Medications administered within 30 min before or after scheduled time	2.65 (0.90)
PRN medication requests acted on within 15 min	2.62 (0.92)
Feeding patient when the food is still warm	2.58 (1.06)
Full documentation of all necessary data	2.58 (0.93)
Assisting with toileting needs within 5 min of request	2.49 (0.94)
Turning patient every 2 h	2.48 (0.95)
Monitoring intake/output	2.47 (0.97)
Patient bathing/skin care	2.47 (0.90)
Assessing effectiveness of medications	2.46 (0.94)
Response to call light is initiated within 5 min	2.42 (1.04)
Adequate surveillance of patients	**2.37 (0.95)**
Setting up meals for patient who feeds themselves	2.36 (0.96)
Patient discharge planning and teaching	2.35 (0.88)
Providing emotional support to patient and/or family	2.27 (0.85)
Skin/wound care	2.06 (0.73)
Assessing vital signs as ordered	2.04 (0.92)
Hand washing	1.99 (0.80)
Focused reassessments according to patient condition	1.98 (0.87)
IV/central line site care and assessments according to hospital policy	1.93 (0.96)
Bedside glucose monitoring as ordered	1.72 (0.71)
Patient assessments performed each shift	1.62 (0.73)

A 5-point Likert scale was used. (1-never missed, 2-rarely missed, 3-occasionally missed, 4-frequently missed, 5-always missed).

References

Bruyneel, L., Li, B., Ausserhofer, D., Lesaffre, E., Dumitrescu, I., Smith, H. L., & Sermeus, W. (2015). Organization of hospital nursing, provision of nursing care, and patient experiences with care in Europe. *Medical Care Research and Review, 72*(6), 643–664.

Dhaini, S. R., Zuniga, F., Ausserhofer, D., Simon, M., Kunz, R., De Geest, S., & Schwendimann, R. (2016). Are nursing home care workers' health and presenteeism associated with implicit rationing of care? A cross-sectional multi-site study. *Geriatric Nursing, 38*(1), 33–38.

Gravlin, G., & Phoenix Bittner, N. (2010). Nurses' and nursing assistants' reports of missed care and delegation. *The Journal of Nursing Administration, 40*(7–8), 329–335.

Iezzoni, L. I., & Ogg, M. (2012). Patient's perspective: Hard lessons from a long hospital stay. *The American Journal of Nursing, 112*(4), 39–42.

Kalisch, B. J. (2006). Missed nursing care: A qualitative study. *Journal of Nursing Care Quality, 21*(4), 306–313.

Kalisch, B. J. (2015). *Errors of omission: How missed nursing care imperils patients.* Silver Springs, Md: American Nurses Association.

Kalisch, B. J., & Aebersold, M. (2010). Interruptions and multitasking in nursing care. *Joint Commission Journal on Quality and Patient Safety, 36*(3), 126–132.

Kalisch, B. J., Landstrom, G. L., & Hinshaw, A. S. (2009). Missed nursing care: A concept analysis. *Journal of Advanced Nursing, 65*(7), 1509–1517.

Kalisch, B. J., & Williams, R. A. (2009). Development and psychometric testing of a tool to measure missed nursing care. *Journal of Nursing Administration, 39*(5), 211–219.

Myers, R. A., & Parikh, P. J. (2019). Nurses' work with interruptions: An objective model for testing interventions. *Health Care Management Science, 22*(1), 1–15.

Papastavrou, E., Andreou, P., Tsangari, H., Schubert, M., & De Geest, S. (2014). Rationing of nursing care within professional environmental constraints: A correlational study. *Clinical Nursing Research, 23*(3), 314–335.

Piscotty, R. J., Jr., & Kalisch, B. (2014). The relationship between electronic nursing care reminders and missed nursing care. *CIN, 32*(10), 475–481.

Piscotty, R. J., Kalisch, B., Gracey-Thomas, A., & Yarandi, H. (2015). Electronic nursing care reminders: Implications for nursing leaders. *The Journal of Nursing Administration, 45*(5), 239–242. https://doi.org/10.1097/NNA.0000000000000192.

Revelle, W. R. (2018). *psych: Procedures for psychological, psychometric, and personality research* (R package, version 1.8.12). Evanston, Illinois: Northwestern Universityhttps://cran.r-project.org/web/packages/psych/index.html.

Rochefort, C. M., & Clarke, S. P. (2010). Nurses' work environments, care rationing, job outcomes, and quality of care on neonatal units. *Journal of Advanced Nursing, 66*(10), 2213–2224.

Tubbs-Cooley, H. L., Pickler, R. H., Younger, J. B., & Mark, B. A. (2015). A descriptive study of nurse-reported missed care in neonatal intensive care units. *Journal of*

Advanced Nursing, 71(4), 813–824. https://doi.org/10.1111/jan.12578.
Winters, R., & Neville, S. (2012). Registered nurse perspectives on delayed or missed nursing cares in a New Zealand hospital. *Nursing Praxis in New Zealand, 28*(1), 19–28.
Yap, T. L., Kennerly, S. M., Simmons, M. R., Buncher, C. R., Miller, E., Kim, J., & Yap, W. Y. (2013). Multidimensional team-based intervention using musical cues to reduce odds of facility-acquired pressure ulcers in long-term care: A paired randomized intervention study. *Journal of the American Geriatrics Society, 61*(9), 1552–1559.
Zinbarg, R. E., Revelle, W., Yovel, I., & Li, W. (2005). Cronbach's α, Revelle's β, and McDonald's ωH: Their relations with each other and two alternative conceptualizations of reliability. *Psychometrika, 70*(1), 123–133.