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DISPARITIES IN PREVENTION OF INCONTINENCE IN OLDER ADULTS ADMITTED TO NURSING HOMES

Hypothesis / aims of study

The aims of the study were to (1) determine the prevalence of older continent adults who received incontinence prevention at nursing home (NH) admission, (2) assess whether there were disparities in incontinence prevention based on race or ethnicity, and (3) describe multi-level factors associated with disparities in prevention of incontinence.

Study design, materials and methods

The study had a cross-sectional design. Factors at multiple levels influence whether prevention for incontinence is instituted; therefore, data from four large U.S. datasets were analysed: (1) the Minimum Dataset v. 2.0 (MDS) that provided demographic and health assessment data of individual residents in a national chain of proprietary NHs, (2) practitioner (physician and nurse practitioner) orders for all treatments and care of each resident including physical therapy, activity, programs for toileting, medications, diet, laboratory tests, and procedures, (3) the Online Survey, Certification, and Reporting (OSCAR) records that contained measures of the staffing , the care environment, and deficiencies in quality of care of the NHs (all years 2000-2002), and (4) U.S. Census data that provided socio-economic and socio-demographic data about the Census tract of the community in which each NH was located (year 2000). Practitioner orders (2.3 million) were coded for incontinence prevention. Inter-rater reliability of 101,884 POs coded showed an agreement of 98-99%.

A cohort of older adults (aged 65 years or more) who were free of any incontinence.at NH admission (n=42,693) was identified from all admissions (n=111,640) using MDS records (items H1a and H1b). NH admissions with an indwelling urinary catheter or ostomy were excluded as incontinence could not be determined. Interventions for prevention of incontinence were identified using data from both the MDS (items H3a,b: any scheduled toileting plan and bladder retraining program) and the practitioner orders.

Variables thought to be associated with prevention of incontinence were identified using the literature, team expertise, and clinical consultation and included in the models after screening using bivariate associations when $p \leq .05$. Because multiple items in the data files can define the same variable, published scales of composite variables with good psychometric properties were used whenever possible. Factors entered in the model were age, limitations in activities of daily living (ADL) score, cognitive deficits (MDS-COGS score), comorbidities (Charlson score), vision problems, poor nutrition, presence of a perineal pressure ulcer, deficits in quality of NH care, and the percentage of NH residents receiving Medicaid (government assistance for healthcare).

Racial and ethnic disparities in incontinence prevention were assessed using the Peters-Belson method, which tested whether observed outcomes of a minority group differed from their expected outcomes had they been part of the White group. In this two-step method, a logistic regression analysis was first used to analyze factors at the resident and NH/community levels that were associated with incontinence prevention in Whites only. The estimates of the coefficients from the model for Whites were then applied to those factors in each minority group (Blacks, Hispanics, Asians, and American Indians) separately. The models provided estimates of the proportion of the minority group expected to receive incontinence prevention had they been in the White group; this expected proportion was compared to the proportion that was actually observed to receive prevention using a one sample log-rank test. Significance was set at $p<.05$. Because residents are clustered within NHs, unmeasured NH effects were controlled for during modeling by insuring that residents of each racial/ethnic minority group were in the same NHs as the Whites whose modeling coefficients were applied to their group. The Peters-Belson method also quantified the percentage of the observed disparity that is explained and unexplained by the factors in the model. The unexplained disparity estimates how close the observed outcome of each racial/ethnic group is to its expected outcome had the group been part of the White group.

Results

Older adults who were free of any incontinence at admission (n = 42,693) comprised 38% of all NH admissions. They were located in one of 451 NHs in 27 U.S. states and all 9 Census divisions. The characteristics of the cohort by race/ethnicity are presented in Table 1.

Table 1. Characteristics of Continent Older Adults Admitted to Nursing Homes

	Black n=2615	White n=38698	Asian n=530	American Indian n=229	Hispanic n=618
Age (years)*	79.1(8.2)	81.3 (7.5)	81.6 (7.3)	77.9 (8.2)	78.8 (8.1)
Female	62%	69%	66%	57%	59%
ADL score* range 0-28	9.7 (6.6)	10.1 (6.3)	12.9 (5.4)	8.3 (6.5)	10.6 (6.6)
Cognition score* range 0-10	2.3 (2.3)	1.7 (2.2)	1.7 (1.9)	1.7 (2.1)	1.8 (2.3)
Comorbidity score* range 0-30	2.1 (1.6)	1.6 (1.5)	1.9 (1.7)	1.9 (1.5)	2.0 (1.7)
Admissions with a perineal pressure ulcer	2.0%	2.7%	6.6%	3.9%	3.7%

*mean (sd); higher values of scores indicate a worse condition

The overall prevalence of incontinence prevention at NH admission was 12%. The overall percent disparity between the Whites (10.6%) and Blacks (8.6%) who were observed to receive incontinence prevention was 2%. There was a significant disparity in incontinence prevention for Black NH residents. 217 Blacks (8.6%) were observed to receive incontinence prevention while 266 (10.6%) were expected to receive prevention had they been in the White group ($p<.001$). Factors in the model significantly

associated with receiving incontinence prevention (odds ratio, 95% CI) were older age (1.01 (1.01, 1.02)), limitations in ADLs (1.05 (1.05, 1.06)), cognitive deficits (1.15 (1.13, 1.17)), more comorbidities (1.04 (1.01, 1.07)), and a lower percentage of NH residents receiving Medicaid (0.99 (0.994, 0.996)). The percent of disparity unexplained by covariates in the model was 97.5%. There were no significant disparities in incontinence prevention for the other race groups.

Interpretation of results

Prevention of incontinence was not common in NHs as only 12% of older NH admissions received prevention interventions. Although odds ratios of individual factors associated with incontinence prevention may be small, viewed together, they suggest that adults with greater frailty/disability are more likely to receive prevention. Results show that Black individuals admitted to a NH free of incontinence were less likely to receive incontinence prevention than would be expected had they been in the White group. In our method, when the characteristics of Black admissions were used in the model developed in Whites to estimate the odds of receiving incontinence prevention, it was as if we were examining a hypothetical population of Black admissions with the same clinical and care characteristics as the Whites. The percentage of the disparity in prevention for Blacks unexplained by factors in the model was large (97.5%) suggesting the disparity was due to race or other unmeasured factors. The unexplained disparity shows that incontinence prevention was less than expected considering the clinical and care characteristics of Blacks admissions. For example, Black admissions had greater cognitive deficits but even after adjusting for this factor, fewer Blacks received incontinence prevention.

Concluding message

Prevention of incontinence in NHs is understudied. Maintaining continence of older adults in NHs is essential to promote their health and well-being, prevent greater morbidity such as incontinence associated skin damage, and contain health care costs.[1] Results suggest that NHs should increase the implementation of incontinence prevention strategies at NH admission. This is the first study to our knowledge to reveal disparities in incontinence prevention, which were found for Black NH admissions. Elimination of health disparities is a priority of US health policy.[2] The relatively small overall disparity in incontinence prevention for Blacks suggests that its eradication may be feasible with appropriate staff training, organizational commitment, and monitoring of progress in toward equity in incontinence prevention outcomes.[3]

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