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Examining Racial and Ethnic Differences in Nursing Home Quality

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Background: Identifying racial/ethnic differences in quality is central to identifying, monitoring, and reducing disparities. Although disparities across all individual nursing home residents and disparities associated with between–nursing home differences have been established, little is known about the degree to which quality of care varies by race//ethnicity within nursing homes. A study was conducted to measure within-facility differences for a range of publicly reported nursing home quality measures.

Methods: Resident assessment data on approximately 15,000 nursing homes and approximately 3 million residents (2009) were used to assess eight commonly used and publicly reported long-stay quality measures: the proportion of residents with weight loss, with high-risk and low-risk pressure ulcers, with incontinence, with depressive symptoms, in restraints daily, and who experienced a urinary tract infection or functional decline. Each measure was stratified by resident race/ethnicity (non-Hispanic white, non-Hispanic black, and Hispanic), and within-facility differences were examined.

Results: Small but significant differences in care on average were found, often in an unexpected direction; in many cases, white residents were experiencing poorer outcomes than black and Hispanic residents in the same facility. However, a broad range of differences in care by race/ethnicity within nursing homes was also found.

Conclusion: The results suggest that care is delivered equally across all racial/ethnic groups in the same nursing home, on average. The results support the call for publicly reporting stratified nursing home quality measures and suggest that nursing home providers should attempt to identify racial/ethnic within-facility differences in care.

It is commonly acknowledged that black and Hispanic older adults reside in lower-quality nursing homes and, as a result, experience lower-quality care.[1–8] Less is written about the extent to which care differs across race/ethnicity in the same facility. Two studies found evidence of within-facility racial disparities when examining measures for influenza vaccination[9] and use of feeding tubes.[10] Other studies found no differences in care by race in the same facility when examining measures of hospice use and in hospital death,[11] pressure ulcers,[12] and use of physical restraints, catheters, and antipsychotics.[10] Thus, to date only a few quality measures have been studied for racial/ethnicity differences within facility, and results appear to be mixed.

Identifying, understanding, and monitoring differences in quality of nursing home care by race/ethnicity is an important step in working toward equity in care. In calling for a national health care disparities report in 1999, US Rep. Danny K. Davis (D-IL) emphasized the need for such measurement, stating that it is would help to determine "whether we are making progress in ending racial disparities in health care and improving the quality of life for all Americans."[13(p. 23042)] Researchers have called for the stratification of quality measures as a way for health care organizations to develop quality improvement programs targeting disparities reduction.[14–16] More recently, the Centers for Medicare & Medicaid Services (CMS) recognized the need for separate measures by race/ethnicity and is currently sharing stratified Medicare health plan quality and satisfaction data by race/ethnicity;[17] it is considering doing so for publicly reported quality measures for care settings such as physician and group practices on Physician Compare.[18] Stratified measures might make nursing homes, even well-performing nursing homes, aware of inequities in the quality of care that they provide. Publicly reporting such measures can alert nursing home consumers of quality differentials by race/ethnicity.

In our study, we sought to fill in gaps in the study of race/ethnicity differences in quality of care; namely, to investigate whether there are such differences with respect to within-nursing home care. Using resident care, functioning, and clinical data from CMS–certified nursing homes across the United States, we reproduced eight standard quality measures adopted by CMS and published publicly on Nursing Home Compare (NHC) report cards—the CMS consumer reporting website of nursing home quality.[19] We stratified the measures to show the quality of care provided to non-Hispanic white, non-Hispanic black, and Hispanic (any race) residents within the same nursing home (hereafter referred to as white, black, and Hispanic residents, respectively).

Our work used the conceptual framework developed by Kilbourne and colleagues, which was intended to help guide health services researchers in undertaking health care disparities studies.[20] The framework breaks down disparities research into three phased components: detection, understanding, and

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reducing. Our study addresses the first phase in this model—detection—and uses the Kilbourne et al. definition of *disparities*[20] to examine differences between black and white, as well as Hispanic and white residents, in the same nursing home.

METHODS

Design and Population Studied

We used resident assessment data (described in "Data Sources") to reconstruct a set of publicly reported quality measures and to stratify them by race/ethnicity to determine whether there were within-facility differences in care across groups. We defined our populations as black and Hispanic nursing home residents, and our comparison group consisted of white nursing home residents. All analyses were specified at the facility level.

Data Sources

We use data from the Minimum Data Set (MDS), which consists of information from the nursing home assessments conducted on all nursing home residents in all Medicare/Medicaid-certified nursing homes across the United States. Assessments are completed by nursing home staff and gather information on resident clinical conditions, functional and cognitive abilities, mood and mental states, and care processes used by the nursing home. Our main analysis used 2009 data, in which quality measure scores from 2009 were used to analyze and report on within-facility racial and ethnic differences. Although more recent data were available at the start of this study, the MDS instrument went through substantial changes in late 2010, which likely resulted in potential biases that would have affected our analyses. Therefore, we chose this earlier period to protect against those biases. We also used data from 2006 through 2009 to test the stability of the stratified measures. We chose this time frame to capture a minimum of four years of data, which would be sufficient to use for examining year-over-year measure stability. We present 2009 results only to most closely reflect the purpose of the original NHC report cards, which is to provide consumers, providers, and policy makers with informative and actionable information on quality. To this end, NHC presents only the most recent time period of data, reflecting the most recent performance of facilities. Although we do not intend for these results to be publicly presented on NHC, we do want the results to closely adhere to the intent and methods of the NHC measures as much as possible.

To describe the sample of nursing homes that meet the minimum criteria for measure comparison (having at least 30 residents in the two racial/ethnic groups being compared, as we describe in "Measures"), we used data from a public data set on nursing home characteristics from LTCFocus.org.[21]

Measures

We applied standard measure specifications used for consumer reporting to re-create quality measures stratified by race and ethnicity. Annual stratified scores were calculated using the MDS resident assessment data. Our analyses examined eight long-stay quality measures that are included in NHC.[19] The NHC measures we used are the percentage of residents: (1) with bladder or bowel incontinence, who were at low risk (Incontinence) during this reporting period; (2) who have lost too much weight (Weight loss) since the previous assessment; (3) with urinary tract infections (UTI) during this reporting period; (4) in physical restraints (Restraints) during this reporting period; (5) with pressure ulcers, who were at high risk during this reporting period (High-risk PU); (6) with pressure ulcers, who were at average risk during this reporting period (Low-risk PU); (7) with worsening depression or anxiety (Worsening depression) since the previous assessment; and (8) with a decline in late-loss activities of daily living function since the previous assessment (Functional decline).

Each measure is based on an assessment of whether a resident meets the criteria for the condition. The number of each nursing home's residents who meet the criteria is then divided by the total number of residents eligible to be considered for inclusion in the measure; each measure has specific exclusion criteria, such as whether the resident is comatose. Thus, each facility-level measure represents the proportion of a nursing home's eligible residents who experience the condition (see Table 1 for details). In our analyses, the measures were reverse coded to represent positive quality (for example, higher values indicate better quality) for ease of interpretation.

On the basis of a deliberate decision of the CMS, NHC measures use minimal risk adjustment. To control for certain high-risk situations, the measures exclude residents with certain conditions (for example, residents in end-stage or who are comatose) in their calculation. However, additional risk adjustment is not undertaken for the measures we present, as nursing homes should maintain resident care/function regardless of resident health status, age, or physical function.[22]

This is the largest set of NHC quality measures yet used in a study to examine within-facility differences across race/ethnicity. These 8 measures are a subset of the 15 long-stay measures currently reported on NHC. We chose these measures because they had been used and reported in numerous other studies, represented varied aspects of quality of care, and were reproducible using the time periods of data available in this study. All but one measure (Low-risk PU) continue to be used and available in current NHC report cards.

In effort to follow the NHC calculation of quality measures as closely as possible, we required assessment data from at least 30 eligible residents in the race or ethnicity group being assessed in a calendar year. In other words, a within–nursing home measure for a race/ethnicity group was calculated if relevant assessments were captured for at least 30 members of the group in the course of a year.

Stratified measures are, of necessity, based on smaller group sizes than measures based on all residents in a facility and,

Table 1. Description and Risk Exclusion of the Eight Quality Measures

	Description	Risk Exclusions
Incontinence	Proportion of residents who do *not* lose control of their bowels or bladder during this reporting period	Residents with catheterization, who are totally dependent in the mobility functioning, have severe cognitive impairment, or who have an ostomy
Weight loss	Proportion of residents *without* unexplained weight loss since previous assessment	Residents receiving hospice care
UTI	Proportion of residents who did *not* experience a urinary tract infection during this reporting period	No exclusions
Restraints	Proportion of residents *not* in physical restraints daily during this reporting period	No exclusions
High-risk PU	Proportion of residents at high risk for a pressure ulcer who did *not* develop one during this reporting period	No exclusions
Low-risk PU	Proportion of residents at low risk for a pressure ulcer who did *not* develop one during this reporting period	Residents who are at high risk for pressure ulcers (comatose, malnourished, impaired ability to transfer or move in and about their bed)
Worsening depression	Proportion of residents who did *not* become more depressed or anxious since previous assessment	Residents who scored at the highest level on the depression/anxiety scale or who are comatose
Functional decline	Proportion of residents who did *not* experience an increase in the need for help with activities of daily living (ADL), in the areas of eating, toileting, transferring, and bed mobility since previous assessment	Residents who are comatose, receiving hospice care, totally dependent in these areas already, or identified as end-stage

UTI, urinary tract infection; PU, pressure ulcer.

as such, are subject to wider random variation and fluctuation, which could negatively affect measure stability. However, examination of within-facility variation in annual measures from 2006 through 2009, after controlling for overall time trends, revealed levels of variation similar to those of the reported NHC measures, which led us to conclude that they demonstrated an acceptable level of stability. For the remaining assessment of within-facility differences in NHC measures, we limited our analysis to using just 2009 data, as this would most closely reflect how such measures would be presented on NHC (that is, it would present the most recent performance data and not data over several years).

Statistical Analysis

After race and ethnicity stratified scores for all groups at a facility were calculated, we used the most recent year of data (2009) to calculate the absolute difference scores between groups at each facility. For example, if a facility could report a score for white residents and a score for black residents (or Hispanic residents), we subtracted the value computed for the facility's white residents from the value for the facility's black residents (or its Hispanic residents). If the difference was negative, the quality of care is judged worse for the latter group than for the former group (for example, the quality of care for black residents would have been judged worse than the quality of care for white residents). Conversely, if the resulting difference was positive, the quality of care for the latter group would have been judged to be better. We chose the absolute difference measure over another common alternative, the relative difference measure, because our main concern involved the level of care quality itself, not merely equality of care among race/ethnicity groups. In such situations, the absolute difference is preferable.[23]

We followed Kilbourne et al.'s definition of *disparities*: "observed clinically and statistically significant differences in health outcomes or health care use between socially distinct vulnerable and less vulnerable populations that are not explained by the effects of selection bias."[20(p. 2114)] We implemented this definition and used the population selection and risk exclusion specifications adopted by and used consistently by CMS. As discussed in the "Measures" section, these measures use only minimal risk adjustments. In this sense, nursing home examinations of racial/ethnic differences deviate from many studies conducted in the community. However, it is fitting for this setting, as nursing homes are considered "total institutions," in which residents live all aspects of life and receive all aspects of care.[24]

Within-facility absolute differences (between black and white residents and between Hispanic and white residents) made up the basic data values for our analyses. Distributions of absolute differences were examined, and pairwise comparisons of means were conducted to identify differences in quality of care and to determine if expanded implementation of stratified measures was justified.

RESULTS

Population and Sample Description

Table 2 presents a brief description of long-stay resident-stays (that is, includes all resident observations, accounting for new admissions and discharges) in nursing homes in the United States, the population from which we assessed nursing home eligibility for measure examination. Results are shown for the overall population and by race/ethnicity and provide a general understanding of how residents who are white, black, and Hispanic differ from each other. The results show that black and Hispanic residents were more likely to be male, as compared with white residents (58.8% and 55.6% compared with 66.0%, respectively). Black and Hispanic residents were also far more likely to be younger than 65 years of age, as compared with white residents (29.1% and 23.2% compared with 12.2%, respectively). They were also less likely to be among the oldest category of residents—80 years of age and older (36.9% and 42.4% compared to 59.5%, respectively).

Table 3 presents characteristics on nursing homes that, on average, had at least 30 black and 30 white or 30 Hispanic and 30 white residents, which is the minimum criteria for measure comparisons (note that the nursing home sample changes for each specific measure, given the varied eligibility/exclusion and time frame criteria). As the table indicates, the nursing homes that had the minimum number of residents in comparison groups differed in all respects from the average nursing home. Most notably, these nursing homes tended to be much larger and were more likely to be for-profit as compared to national averages. They also tended to have a greater proportion of residents who are male, younger than 65 years of age, and to use Medicaid as their source of payment, and had different racial compositions of residents. The nursing homes with at least 30 black and 30 white residents accounted for 50% of all black residents, and the nursing homes with at least 30 Hispanic and 30 white residents accounted for 30% of all Hispanic residents.

Nursing Home Quality by Race/Ethnicity Across All Nursing Homes

Figure 1 presents a bar graph of measure means by race and ethnicity group, using the scores of all facilities for which measures could be computed. These mean scores were based on all facilities with at least 30 residents in the racial/ethnic group being measured. Facilities used in the calculations were not limited to those in which a comparison could be made across two or more groups. Although nursing home decisions on acceptable payment method, hospital-to- nursing home referral patterns, and the demographic composition of underlying catchment areas led to many nursing homes not having the minimum 30 residents per group to generate reliable stratified measures, Figure 1 does provide some sense of the variations in facility-level quality of care by race/ethnicity. For many of the measures, mean quality scores significantly differed by race/ethnicity, but not always in the expected direction. In most cases, the differences across the

Table 2. Sample Description of All Long-Stay Nursing Home Resident-Stays, 2009

	All	White	Black	Hispanic
Number (%)	3,748,105	3,038,885 (81.1)	424,780 (11.3)	16,1238 (4.3)
% Female	64.3	66.0	58.8*	55.6*
% Age < 65 years	14.8	12.2	29.1*	23.2*
% Age 65–79 years	29.3	28.3	34.0*	34.4*
% Age ≥ 80 years	55.9	59.5	36.9*	42.4*

*Indicates that the difference between black/Hispanic and white value is statistically significant at the $p < 0.05$ level.

Table 3. Descriptive Characteristics of Nursing Homes (NHs) with 30+ Black and White and 30+ Hispanic and White Long-Stay Residents, Compared to All United States NHs, 2009

	All NHs	NHs with 30+ Black & 30+ White Residents	NHs with 30+ Hispanic & 30+ White Residents
Number of NHs	15,090	1,406	284
Mean Number of Beds	110.07	165.10*	190.60*
% For-Profit	72.61	82.43*	81.34*
% Chain Affiliated	56.24	59.46*	41.90*
% Residents Who Are Black	9.82	40.80*	14.23*
% Residents Who Are Hispanic	3.03	3.33	32.25*
% Residents Who Are Under 65	10.74	23.46*	19.99*
% Medicare-Pay Residents	14.06	12.56*	11.96*
% Medicaid-Pay Residents	62.10	73.84*	73.19*

*Indicates that the difference from value for all NHs is statistically significant at the $p = 0.05$ level or lower.

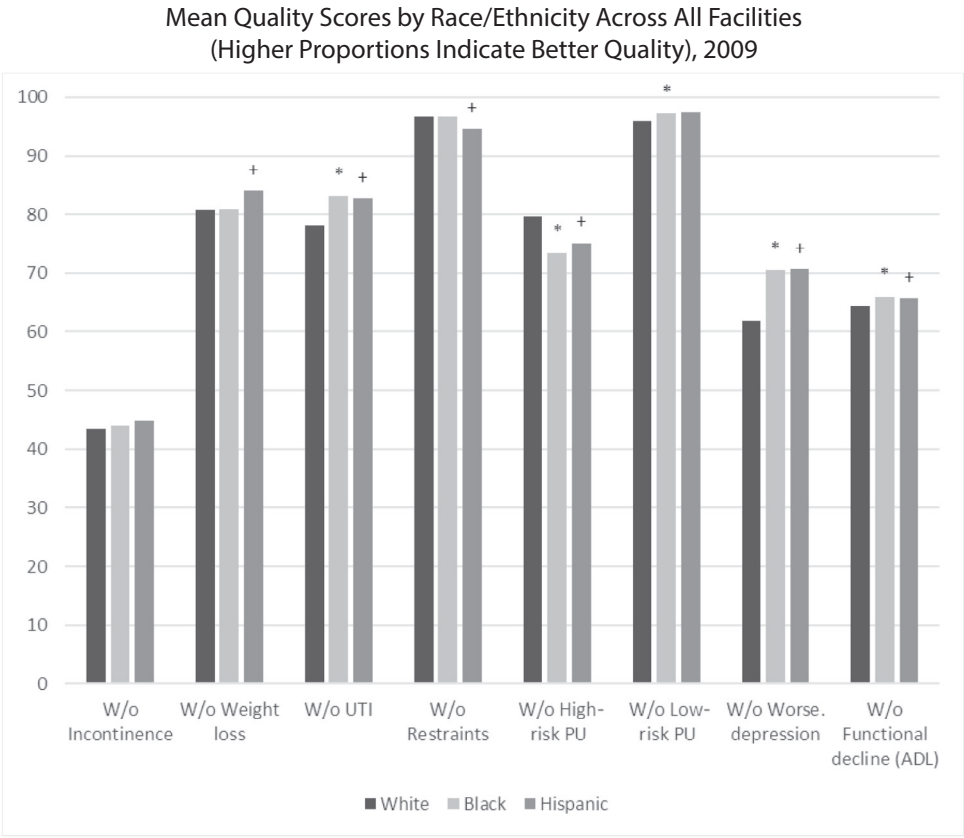

Figure 1: This figure shows how stratified quality scores differ on average across all nursing homes and indicates that most measures show statistically significant but small differences by race/ethnicity. * Indicates that the score for black residents is significantly different than the score for white residents at the $p = 0.05$ level or lower. + Indicates that the score for Hispanic residents is significantly different than the score for white residents at the $p = 0.05$ level or lower. W/o, without; UTI, urinary tract infection; PU, pressure ulcer; ADL, activities of daily living.

race/ethnicity-specific measures, while statistically significant, were usually smaller than 5%. The exceptions were the measures showing proportion of residents without high-risk pressure ulcers (mean score for black residents was worse than for whites by 6.4 percentage points, and for Hispanics, worse by 4.6 percentage points) and without decrease in depression status (mean score for black residents was better than for whites by 8.6 percentage points, and for Hispanics, by 8.8 percentage points).

Within–Nursing Home Differences in Quality between Racial/Ethnic Groups

Table 4 shows mean within-facility differences between racial/ethnicity groups among nursing homes for which comparisons were possible. We generated these within-facility comparisons for between 49 and 3,062 facilities (between < 1% and 19% of all facilities). Contrary to expectation, perhaps, on most measures, black and Hispanic residents had higher mean scores than did white residents in the same facility, indicating higher levels of quality.

Although Table 4 results indicate that mean within-facility differences between race/ethnicity groups were small, the variation of within-facility differences was quite broad. Figure 2 shows box-and-whisker plots for within-facility differences between black and white residents in the same facility, with differences below the zero line showing worse care for black residents than for whites. Figure 3 provides similar plots for Hispanic residents and whites. On these charts, the solid block represents the middle 50% of within-facility differences—those with differences from the 25th through 75th percentile. The lower extending bar represents the bottom quartile of differences, generally where homes perform substantially worse for the minority group than for whites on that measure of care. The upper extending bar represents the top quartile of differences, where the minority group receives substantially better care than whites on that measure of care. Results indicate that the differences in quality scores for black and white and for Hispanic and white residents in the same facility were as much as 20 and 30 percentage points. For example, for the measure "Proportion of residents who did not contract a UTI," the 75th percentile for within-facility differences in black-white scores was 7 percentage points (blacks having higher scores, or better quality within a facility), and the 25th percentile was -3 percentage points (blacks having lower scores, or poorer quality within a facility). In other words, for 50% of facilities in the sample,

Table 4. Within-Facility Differences Between Minority and White Residents in the Same Facility (Pairwise Comparison), 2009

	Black		Hispanic	
	Absolute Disparity Measure (Black Score Minus White Score)	No. of NHs	Absolute Disparity Measure (Hispanic Score Minus White Score)	No. of NHs
W/o Incontinence	–3.42*	1,155	2.80*	232
W/o Weight loss	0.82*	1,796	1.15*	422
W/o UTI	2.63*	1,866	1.40*	446
W/o Restraints	0.37*	3,062	–1.21*	910
W/o High-risk PU	–3.35*	1,011	0.56	193
W/o Low-risk PU	0.55*	219	0.38	49
W/o Worsening depression	4.38*	1,854	2.06*	440
W/o Functional decline (ADL)	0.24	1,568	0.42	345

A negative value indicates that, on average, the minority group in the comparison is doing worse on that measure as compared to white residents in the same facility.
A positive value indicates that, on average, the minority group in the comparison is doing better on that measure as compared to white residents in the same facility.
*Indicates that the difference was found to be statistically significant at the $p < 0.05$ level.
W/o, without; NH, nursing home; UTI, urinary tract infection; PU, pressure ulcer; ADL, activities of daily living.

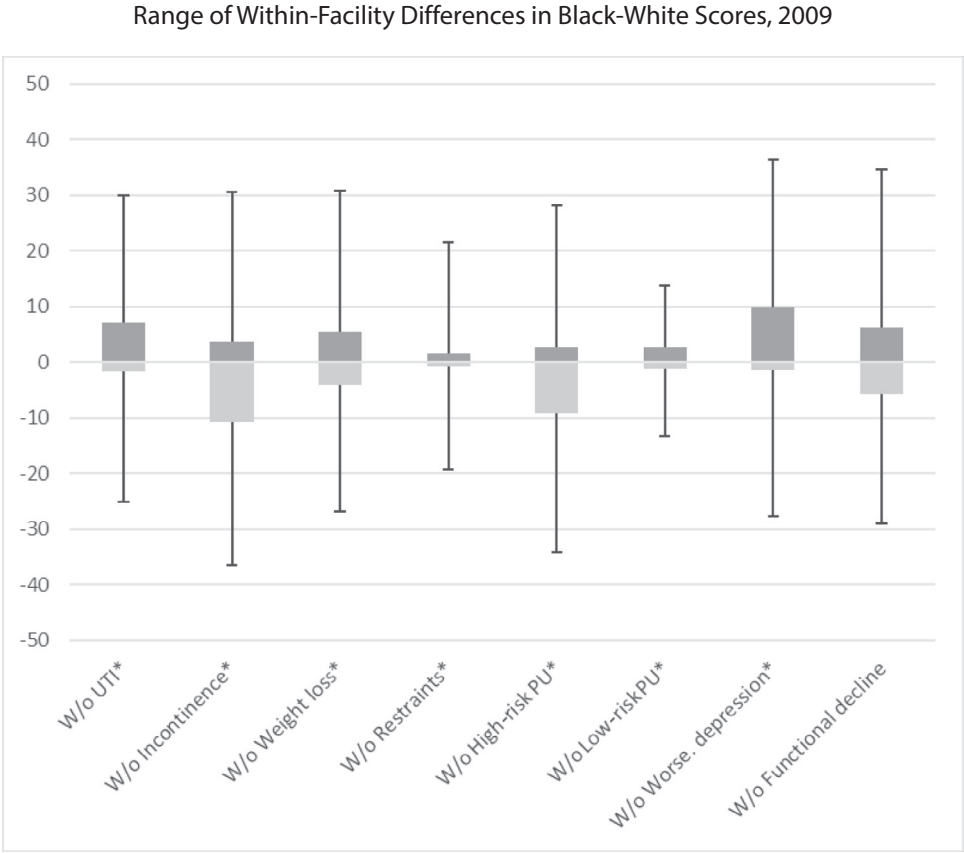

Figure 2: This chart presents the range of within-facility differences in quality between black and white residents. Results indicate that while half of the nursing homes assessed for each measure tend to fall within a narrow range of differences, the full range of differences is quite broad, suggesting alarmingly different care received by residents of different races/ethnicities within the same nursing home. (Number of facilities included in each measure comparison shown in Table 4.). * Indicates that the difference is significant at the $p = 0.05$ level or lower. W/o, without; UTI, urinary tract infection; PU, pressure ulcer.

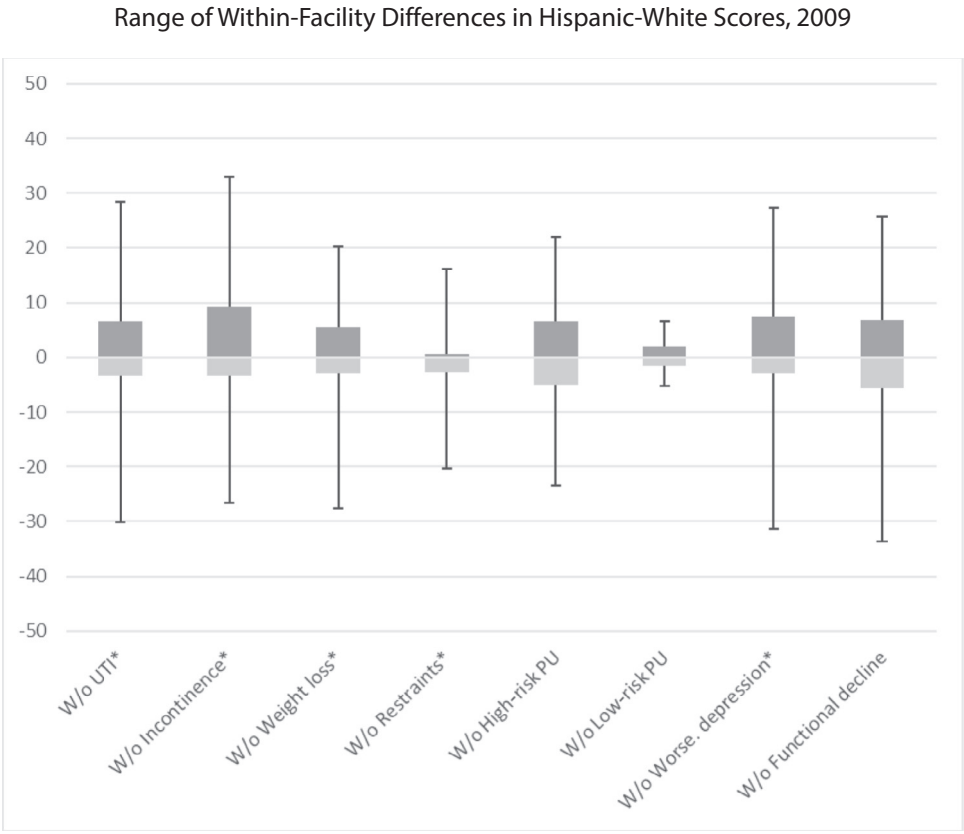

Figure 3: This chart presents the range of within-facility differences in quality between Hispanic and white residents. Similar to results from Figure 2, results show that half of all nursing homes fall within a narrow range, but the other half fall into a much broader range, indicating some nursing homes deliver very different care to members of different races/ethnicities. (Number of facilities included in each measure comparison shown in Table 4.). * Indicates that the difference is significant at the $p = 0.05$ level or lower. W/o, without; UTI, urinary tract infection; PU, pressure ulcer.

black-white differences ranged from 7 percentage points to -3 percentage points. To illustrate the full range of disparities, we can also see that in an extreme illustration, a facility may show a difference as high as 30 percentage points. This could be a facility, for example, in which 80% of black residents did not contract a UTI, but only 50% of white residents in that same facility did not contract a UTI. Looking at the other extreme, the within-facility difference for this measure was as low as -25 percentage points. An example of such a facility would be one in which 75% of white residents did not contract a UTI, but only 50% of black residents did not. The number of facilities showing substantially different quality levels varies from measure to measure as a function of the overall number of facilities for which we could create stratified measures. For example, the number of facilities with differences outside the middle 50th percentile on the black-white comparisons ranges from just over 100 nursing homes on the Low-risk PU measure to approximately 1,500 nursing homes on the Restraints measure.

DISCUSSION

Our results show that, by and large, quality measures varied little across race/ethnicity within the same nursing home. Most differences were small and may very well have been related to random fluctuations in sample size or resident population. However, the extremes in within-facility differences were often quite large and, in some cases, covered a non-negligible number of facilities.

This is the first study to examine within-facility differences in nursing home quality by race/ethnicity for a large set of publicly reported nursing home quality measures. Although the majority of measures did show statistically significant differences across racial/ethnic groups, most differences were less than 2 percentage points. Grabowski and colleagues confirmed that, as required by law and regulation, nursing homes provide essentially the same quality of care to all residents regardless of payment source.[25] Similarly, Gaskin and colleagues found that, on average, hospitals deliver the same quality of care to patients regardless of race.[26] Our findings extend this further, providing evidence that, on average, the quality of care in nursing homes is essentially the same regardless of race and ethnicity. Yet some facilities had scores for residents of different races and ethnicities that differed by as much as 30 percentage points.

Our study had the unexpected finding that across most quality-of-care measures, scores for white residents were slightly

worse than for black and Hispanic residents in the same facility. Although this finding may accurately reflect true differences in care quality, possible alternative explanations may point to either instrument or assessor bias. It may be that nursing home scores are subject to bias in favor of identifying poor care among white residents. Supporting this, previous literature shows that black residents are less likely to be diagnosed with depression.[27] This may be due to racial/ethnicity differences in reporting mental health problems or to care providers' assessment bias, or it might be that the symptoms used for assessing depression are only fully valid for the majority group (that is, white residents). Biases, in which the race/ethnicity of the patient influences provider diagnosis and treatment, have been found in other areas of health care.[28] The possibility that within–nursing home score variation by race/ethnicity is due to bias recommends further validation and interrater reliability testing of the assessment instrument used for calculating nursing home measures.

Observed differences in within–nursing home scores by race/ethnicity may be due to differences in residents' health status or the ability to accurately report changes. For example, one measure reports the proportion of residents without a decline in function for activities of daily living (ADL). If black residents of a nursing home have worse ADL function on average to begin with, a ceiling effect leaves less room for worsening. Similarly, ceiling effects may also influence measures noting the proportion of residents who are not newly incontinent or who have not experienced unexpected weight loss. Our sample description of residents showed that black and Hispanic residents varied on basic demographics, such as sex and age. Elsewhere, there is some evidence that minority elders indeed are in poorer health on admission compared with white elders.[29,30] Further research is needed to explore racial and ethnic differences in illness and impairment to understand how such differences affect the calculation of measures and subsequent comparisons among groups.

Even though within-facility differences in quality between racial/ethnic groups were small for the most part, there were alarmingly large differences at some facilities, and these differences emphasize the need to regularly examine stratified measures. The annual National Healthcare Quality and Disparities Report provides a good example of this kind of monitoring.[31] Our findings also support the call for publicly reporting stratified measures. Although most facilities appear to provide equivalent care among all racial and ethnic groups, consumers and policy makers should be able to identify facilities that do not. Knowing that racial and ethnic differences in quality will be reported provides facilities just the incentive they need to make sure that significant differences do not exist. Further, stratified measures can help providers identify gaps in quality and develop targeted quality improvement programs to reduce disparities.[15] However, additional analysis to determine the causes and contributing factors of these differences should be conducted before CMS considers reporting stratified nursing home measures.

Our ability to make comparisons was limited to facilities with sufficient numbers of both black and white residents (or both Hispanic and white residents) to ensure reliability. Because only 11.3% of long-stay nursing home residents were black and 4.3% were Hispanic in our sample, this minimum size requirement led to the exclusion of the majority of facilities. Our results show that facilities that meet the minimum criteria needed for racial/ethnic comparisons differ from the average nursing home. This is inherently a result of facility differences in where black and Hispanic residents tend to reside, which has been well documented.[3,6,7] Given that many larger nursing homes are still included, the calculations cover half of all black residents and nearly a third of all Hispanic nursing home residents in the United States. Also, given the growth of the nonwhite population, which is estimated to increase from 20% in 2010 to more than 40% by 2050, the proportion of nursing home facilities that will be included in stratified measure calculations should increase quickly,[32] making race/ethnicity specific care measures all the more relevant.

Community race and ethnicity composition also plays a role in our ability to make comparisons. Smith and colleagues have shown the degree of nursing home black-white segregation to be highly correlated with residential segregation.[7] To some extent, this issue plays out differently across geographic regions; we could not make any facility-level black-white comparisons in 11 states, and likewise could not make any Hispanic-white comparisons in 29 states. At first glance, a lack of racial/ethnic diversity in so many nursing homes would seem to undermine our results. Yet this is not the case, as our purpose was to identify and compare differences in the facilities that serve racial and ethnic minorities, as well as whites, and for this set of nursing homes, our results do generalize.

Limitations

This study is not without limitations. To start, the data for the analyses were from 2009 and earlier. Although these data may seem on the surface to be too old to be of use, this is not necessarily the case. If the purpose of this study was to identify currently low-performing facilities, then that would have been problematic. Instead, the study's actual purpose was to demonstrate how valuable calculation of nursing home quality measures by race and ethnicity would prove to be, and to consequently recommend, as a fundamental change in nursing home measure development and reporting, that all new nursing home quality measures being developed should be validated by race/ethnicity and that stratified scores be calculated for reliability and validity testing and further researched for the use of public reporting.

Our analyses used 2009 data to construct stratified scores and four years of data (2006 through 2009) to test for stability because this was a time period during which changes in the measures were very limited. As mentioned earlier, the resident assessment instrument—the MDS—changed in late 2010. In 2013, when this study began, the new assessment instrument had been available for only two years, which prompted concern regarding measure validity, as assessors adjusted to the instrument change. Now that the new instrument has been used for several more years, we would recommend excluding data from the first two years to protect against fluctuations associated with the change. As a result, sufficient study data from after the change in instrument are just becoming available.

Although this study represents the largest examination of NHC measures stratified by race/ethnicity yet, it should not be considered complete. Additional measures exist on NHC, and many others are available elsewhere. The National Quality Forum, for example, lists more than 100 quality measures related to nursing homes, and new measures are continually being constructed.[33] Since the time of these analyses, measures have been added to NHC, measure specifications have changed, and even the instrument used to collect the data used in the measures (the MDS) has changed. In addition, the measures used in this study were selected because they are commonly used publicly reported measures. They are not necessarily disparities sensitive, and other endorsed measures may be more susceptible to bias and thus a better choice for picking up disparities. Furthermore, alternate data sources may produce different findings.[34,35] Future studies should examine additional measures of nursing home quality, including new ones included in NHC and those found to be disparities sensitive.

Another potential limitation concerns the racial identification of the nursing home residents. The resident assessment form used for these data allows individuals to identify only as American Indian/Alaskan Native, Asian/Pacific Islander, non-Hispanic black, non-Hispanic white, or Hispanic. There is no option to list multiple categories or the choice of "other." Thus, the options provided in the assessment placed potentially inappropriate limitations on resident self-identification, leading to instances in which resident race was inaccurate.

Implications

While our work provides some answers to questions about whether and how care differs across race/ethnicity, additional important questions remain, pertaining, for example, to the validity of measures across groups, or to the nature of possible patterns in how large differences in care by race/ethnicity occur. For example, are the facilities with large differences poor performers overall? It may also be that large differences are seen only in certain types of facilities, such as very large, or more racially homogenous facilities, or those with fewer financial resources. Answers to these questions may provide insight into the causal and contributing factors for differences in care among various race and ethnicity groups.

Our work provides support for the call to explore the possibility of publicly reporting stratified nursing home measures. Although the chances of selecting a nursing home that delivers wildly different care to residents of different racial/ethnic groups is low, it is clearly a chance that many would rather not take. Further, while the numbers of facilities providing substantially different care by race/ethnicity is fairly small within the population of all nursing homes in the United States, it often represents 10% or more of the nursing homes that serve racially diverse residents. Perhaps more important, consumers are interested in seeing quality by race and ethnicity on nursing home report cards to help inform their placement decisions.[36] Just as the National Healthcare Quality and Disparities Report[31] provides a venue for monitoring differences at the national level, the public reporting of stratified quality measures at the provider level would provide a basis for action for nursing homes, consumers, and policy makers and could increase pressure on the "bad apple" providers to deliver care equitably across all ethnic and racial groups. However, further enquiry into measure validity and causal factors is needed before such reporting takes place.

CONCLUSION

This study is the first to examine a large set of publicly reported nursing home quality measures for within-facility differences by race and ethnicity. We found that most of the eight measures examined showed significant differences in scores for black, Hispanic, and white residents in the same nursing home. Although the mean differences were small on average, the range of differences suggest that care for residents of different races and ethnicities can be alarmingly different in the same nursing home. Our findings support the call for publicly reporting stratified nursing home quality measures, although not before additional in-depth examinations to ensure that differences are not a result of assessment or assessor bias. Previously, suggestions of reporting stratified measures have been met with skepticism regarding statistical stability. Our results show that the stratified measures display similar stability as the original publicly reported measures, further strengthening grounds for publicly reporting stratified measures on NHC. Beyond the implications for future studies and public reporting, our findings suggest that nursing home providers should attempt to identify racial/ethnic within-facility differences in care. Indeed, understanding how care differs within their facility is the first step toward developing culturally competent quality improvement initiatives and effective disparities reduction strategies.

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