

Comparing Public Quality Ratings for Joint Commission Accredited and Non-Joint Commission Accredited Home Health Agencies: A Replication Study



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Abstract

This was a descriptive replication study comparing 2,083 home health agencies accredited by The Joint Commission (TJC) and 8,695 non-TJC-accredited home health agencies over a 3-year period using the Centers for Medicare and Medicaid Services Home Health Compare data set. Metrics included the star ratings and 17 quality measures. A longitudinal model was used to determine differences between TJC-accredited and non-TJC-accredited organizations on the quality measures. Categorical differences in star ratings were analyzed using a Cochran-Mantel-Haenszel test. TJC-accredited home health agencies had better average ratings than non-TJC-accredited home health agencies for each of the three years (3.4 vs. 3.2, $p < .001$). When categories were collapsed to evaluate differences, the analysis revealed that a significantly larger proportion of TJC-accredited facilities were clustered within the higher ratings (41% for TJC-accredited versus 32% for non-TJC-accredited), and fewer TJC-accredited organizations were clustered within the lower ratings (22% for TJC-accredited versus 30% for non-TJC-accredited; $p < .001$). Two claims-based outcome measures (hospitalization and emergency room visits) were consistent with the original study in which TJC-accredited home health organizations had statistically significant lower rates across all three years studied, compared to non-TJC-accredited HHAs. This replication study validates and extends the generalizability of the findings from the original study.

Introduction

Home health care (HHC) utilization is a commonly used strategy for transitioning patients from hospital to home. The Centers for Medicare & Medicaid Services (CMS) use quality measures to quantify HHC processes, outcomes, patient perceptions, and organizational systems that are associated with the ability to provide high-quality patient care.¹ To show how a home health agency (HHA) performs and how it compares to other HHAs, CMS created the Five-Star Quality Rating System and built a “Care Compare” website using star ratings as a key tool to show how often each HHA used best practices when caring for its patients and whether patients improved in certain important areas of care.²

Accreditation is regarded as the primary mechanism for promoting quality and patient safety in health care. There are three main accrediting bodies for HHC: Community Health Accreditation Program (CHAP), Accreditation Commission for Health Care (ACHC), and The Joint Commission (TJC), which is the oldest and largest health care accreditor in the United States and the focus of this study. Joint Commission accreditation standards are designed to help health care organizations measure, assess and improve quality.³ Numerous studies across healthcare settings, including hospitals, nursing homes, and behavioral health care organizations, have found accreditation to be a predictor of quality.^{4,9} However, studies involving accreditation as a predictor of quality in the HHC setting are sparse. One such study, Williams et al. (2017), found that TJC-accredited HHAs had statistically higher star ratings than non-TJC-accredited HHAs, and were more likely to be categorized 4, 4.5, and 5 star organizations.¹⁰

CMS measures evolve and are refined over time, and in 2017, several process measures were removed due to having low priority and clinical relevance for quality improvement, and several outcome measures were removed due to being “topped out” with limited variance and high median value.¹¹ In 2018, the “Improvement in Management of Oral Medications” measure was added to the star rating methodology; and in 2019, the “Improvement in Pain Interfering with Activity” and “Drug Education on all Medications Provided to Patient/Caregiver” measures were dropped from the star rating methodology.¹² In 2018, CMS also removed 70 data elements collected from the Outcome and Assessment



Information Set (OASIS), the standardized assessment tool used to plan care, determine reimbursement, and measure quality. Some of the data elements removed were used in the risk adjustment models, which subsequently required recalibration.¹³

Given the changes to measures and subsequent changes to the star rating methodology, we sought to replicate the original study by Williams et al. (2017) that compared the performance of TJC-accredited HHAs with non-TJC-accredited HHAs using CMS measure data from 2013-2015.¹⁰ The current replication study uses CMS measure data from 2016-2018. This replication study was conducted to assess whether the impact of TJC-accreditation could still be observed after CMS modified measures and star rating calculations. It also provided the potential to empirically support the results of the original study thereby extending its generalizability.

Methods

Population

We downloaded data sets from the CMS HHC website in August 2021 that contained HHA performance results for each of the years 2016, 2017, and 2018. The three yearly data sets were merged into one data set for the analysis. These data included performance results from the OASIS and claims-based measures. Out of 12,324 HHAs submitting data for the years 2016-2018, there were 10,778 identified that had data spanning all 3 years (87%). Accreditation status, as of the end of 2018, was determined by matching a HHA's accreditation history records in TJC's database using the CMS Certification Number (CCN). Nine HHAs in the TJC database (0.3%) could not be matched based upon missing or invalid CCN numbers. The accreditation status of the 2,083 accredited HHAs were successfully merged into the 3-year HHC data set. The final data set used in the analysis included 2,083 (19%) TJC-accredited HHAs and 8,695 (81%) non-TJC-accredited HHA. To explore the impact of ownership on performance, agencies were grouped into three broad categories that have been used in the original study¹⁰: for-profit, not-for-profit, and public (i.e., government). Using the HHC variable "type of ownership," for-profit agencies were identified based upon the "Proprietary" designation. Government agencies were identified based upon multiple ownership subtype values including "Government," "Combination GOVT & Voluntary," or "State/County," or "Local." The remaining agencies were grouped as "Not-for-Profit," including the categories of "Private" or "Religious Affiliation" or "Other."



Measures

Star ratings. The primary outcome of interest within the HHC data set is the star rating, which was available in all three data sets. The methodology for calculating the quality of patient care star ratings is based on a combination of individual measure rankings generated from seven process and outcome quality measures. These include (1) Timely Initiation of Care, (2) Improvement in Ambulation, (3) Improvement in Bed Transferring, (4) Improvement in Bathing, (5) Improvement in Shortness of Breath, (6) Improvement in Management of Oral Medications (added for 2018 and 2019; excluded from our analysis because we only analyzed measures with data available for all three years); in 2017 the "Drug Education on all Medications Provided to Patient/Caregiver" measure was used), and (7) Acute Care Hospitalization. Additional details associated with the CMS methodology are available online.¹⁴





Star ratings associated with a given year actually reflect aggregate quality measurement data, derived from the Outcome and Assessment Information Set (OASIS), from the previous year (e.g., the 2018 star ratings are based upon measure data representing January 1, 2017 to December 31, 2017), and claims data (associated with the acute care hospitalization measure), from a 12-month period that is one quarter behind the OASIS data (e.g., the 2018 star ratings use claims data from October 1, 2016, to September 30, 2017).

Quality measures. The secondary measures of interest were the individual quality measures in the HHC data set. These measures are derived from OASIS quality measures which are submitted by HHAs and data submitted in Medicare claims. This study includes 17 of these quality measures, based upon their availability across all three years of the study period. Of the 17 measures, eight are OASIS process measures (i.e., they report a HHA's use of specific evidence-based processes of care) and seven are OASIS outcome measures (i.e., measures that reflect change/improvement in a patient's ability to perform a specific task or level of functioning). The remaining two measures are risk-adjusted claims-based outcome measures that address potentially avoidable events (how often home health care patients needed urgent, unplanned care in the emergency room, and how often home health care patients needed to be admitted to the hospital).



Statistical Analysis

Researchers had access to adequate information related to the original study to be able to design and conduct a replication analysis.¹⁰ The same methods were used to evaluate these data except for the grouped star ratings data. A general linear model, with accreditation, ownership type, year and year by accreditation interaction as fixed effects, was used to analyze the quality measures. From each measure model, least squares means estimates were used to compare rates of TJC-accredited organizations versus non-TJC-accredited organizations. For the analysis of the star ratings, the ratings were grouped into 3 categories (1, 1.5, 2, 2.5 stars; 3 and 3.5 stars; 4, 4.5 and 5 stars).



In the original study, a chi-square test was used to evaluate the difference in group star ratings. For this study, to evaluate the relationship between accreditation and this grouped rating category, a Cochran-Mantel-Haenszel (CMH) test was used to evaluate differences between accreditation status and grouped rating after controlling for year. Similarly, the CMH test was used to evaluate accreditation differences between the risk-adjusted outcome categories (designation as performing “better than,” “the same as,” or “worse than” expected) for both claims-based outcomes measures using these outcome categories. Organizations with fewer than 20 complete quality episodes or who had been certified by CMS for less than 6 months did not have rates reported in the CMS HHC data set. An alpha level of 0.05 was used to determine statistical significance.

Results

Star Rating Differences by Ownership and Accreditation Status

Compared to the original study, there has been an increase in the proportion of accredited organizations. In the current study, 19.3% of organizations in the home health compare data set were accredited by TJC. In contrast, only 13.6% of organizations were accredited in the previous time period.¹⁰ Using the ownership designations in the HHC data set, TJC-accredited HHAs were less likely to be for-profit and more likely to be not-for-profit ($p < .001$) compared to non-TJC-



accredited HHAs (see Table 1). The distribution of star ratings by ownership and accreditation status is provided in **Figure 1**. Government-owned HHAs had a lower proportions of high ratings (4, 4.5, and 5 star) and a greater proportion of low ratings (1, 1.5, 2, and 2.5 star) than both for-profit and not-for-profit HHAs. Not-for-profit HHAs had a lower proportion of high-performing HHAs compared to for-profit HHAs (27% versus 36%), although they were similar in their proportions of low-performing HHAs (25% for not-for-profit versus 29% for-profit).

TJC-accredited HHAs had better average ratings than non-TJC-accredited HHAs for each of the three years (3.4 vs. 3.2, $p < .001$). When categories were collapsed to evaluate differences, the analysis revealed that a significantly larger proportion of TJC-accredited HHAs were clustered within the higher ratings (41% for TJC-accredited versus 32% for non-TJC-accredited), and fewer TJC-accredited HHAs were clustered within the lower ratings (22% for TJC-accredited versus 30% for non-TJC-accredited; $p < .001$).

Table 1. Accreditation status by ownership type



Accreditation status	Ownership type	%	n
Non-TJC-accredited (n=8,788)	For-profit	83.2%	7235
	Government	3.9%	341
	Not-for-profit (or Other/Proprietary)	12.9%	1119
TJC-accredited (n=2,083)	For-profit	74.6%	1553
	Government	2.4%	50
	Not-for-profit (or Other/Proprietary)	23.0%	480

Note. Results are for organizations reporting all 3 years.

Differences in distribution of ownership type are statistically significant ($p < .001$). For-profit defined as organizations with “type-of-ownership” = “Proprietary”; Government defined as organizations with “type-of-ownership” = “Government,” “Combination GOVT & Voluntary”, “State/County”, or “Local”; Not-for-profit defined as organizations with “type-of-ownership” = “Private,” “Religious Affiliation,” or “Other.” TJC = The Joint Commission.





Figure 1. Star rating distribution by ownership type and accreditation status

% of Home Health Facilities with Star Rating									
	(n)								
Ownership Type	1	1.5	2	2.5	3	3.5	4	4.5	5
For-Profit	0.6%	4.5%	9.8%	13.7%	17.1%	18.1%	16.2%	12.8%	7.2%
	(103)	(824)	(1776)	(2485)	(3093)	(3278)	(2933)	(2323)	(1307)
Government	0.4%	2.6%	14.1%	23.6%	25.4%	18.5%	8.6%	4.9%	1.9%
	(4)	(26)	(139)	(232)	(250)	(182)	(85)	(48)	(19)
Not-For-Profit	0.3%	1.5%	7.2%	15.8%	23.2%	25.0%	17.1%	8.1%	2.0%
	(11)	(65)	(301)	(662)	(974)	(1050)	(718)	(339)	(83)
Accreditation Status									
Non-TJC-Accredited	0.6%	4.4%	10.4%	15.0%	18.9%	19.4%	16.0%	10.7%	4.9%
	(107)	(784)	(1866)	(2691)	(3393)	(3483)	(2873)	(1924)	(873)
TJC-Accredited	0.2%	2.5%	6.6%	12.9%	17.4%	19.3%	16.2%	14.8%	10.1%
	(11)	(131)	(350)	(688)	(924)	(1027)	(863)	(786)	(536)

Figure 1. Distribution of home health agency star ratings by accreditation status (combined for all years).

Note. The distribution of star ratings is based upon a combination of star ratings from 2016, 2017 and 2018.

Organization counts are “tripled” as each organization is counted three times (once in each year) to account for any movement between/across star rating categories over time. For-profit defined as organizations with “type-of-ownership” = “Proprietary”; Government defined as organizations with “type-of-ownership” = “Government”, “Combination GOVT & Voluntary”, “State/County”, or “Local”; Not-for-profit defined as organizations with “type-of-ownership” = “Private,” “Religious Affiliation,” or “Other.” TJC = The Joint Commission. Abbreviations NFP-O/P=“Not for profit-Other/Proprietary”, Govt=“Government”, FP=“For profit”.

OASIS Quality Measure Differences by Accreditation Status

Table 2 presents a comparison of 14 OASIS quality measures (7 process measures and 7 outcome measures) included in the HHC data set. TJC-accredited HHAs performed consistently better across all 3 years studied than nonaccredited HHAs on 11 of 14 measures (5 process measures and 6 outcome measures; $p < .05$); non-TJC-accredited HHAs performed better on a single process measure (How often the home health team made sure that their patients have received a pneumococcal vaccine; $p < .001$). Differences observed between TJC-accredited and non-TJC accredited HHAs were consistent across the reporting years for all 14 measures. Using a similar analysis, TJC-accredited HHAs had statistically significant lower rates across all 3 years studied, compared to nonaccredited home health agencies, on both claims-based outcomes measures ($p < .05$ for both measures) (See Table 3).





Table 2. Comparison of OASIS process and outcome measures by accreditation status and year

Metric	Accreditation status	n	2016	2017	2018	p value
OASIS process measures						
How often the home health team began their patients' care in a timely manner*	Non-TJC-accredited	6662	91.99	92.35	93.18	0.001
	TJC-accredited	1847	92.93	93.23	93.93	
How often the home health team taught patients (or their family caregivers) about their drugs	Non-TJC-accredited	6648	95.21	95.95	96.43	<.001
	TJC-accredited	1846	96.48	96.76	97.32	
How often the home health team checked patients' risk of falling	Non-TJC-accredited	6476	99.09	99.16	99.23	0.001
	TJC-accredited	1823	99.35	99.40	99.40	
How often the home health team checked patients for depression	Non-TJC-accredited	6650	97.06	96.89	96.66	0.004
	TJC-accredited	1846	98.14	97.97	98.06	
How often the home health team made sure that their patients have received a flu shot for the current flu season	Non-TJC-accredited	6350	72.78	74.38	75.66	0.39
	TJC-accredited	1797	72.24	73.95	75.33	
How often the home health team made sure that their patients have received a pneumococcal vaccine (pneumonia shot)	Non-TJC-accredited	6617	78.90	79.87	80.70	<.001
	TJC-accredited	1842	75.05	76.89	78.50	
With diabetes, how often the home health team got doctor's orders, gave foot care, and taught patients about foot care	Non-TJC-accredited	5677	95.60	96.08	96.56	<.001
	TJC-accredited	1686	96.67	97.19	97.48	
OASIS outcome measures						
How often patients got better at walking or moving around*	Non-TJC-accredited	6013	67.01	69.75	72.70	<.001
	TJC-accredited	1777	70.22	72.52	75.20	
How often patients got better at getting in and out of bed*	Non-TJC-accredited	5929	64.48	68.82	73.44	<.001
	TJC-accredited	1772	66.23	70.00	74.31	
How often patients got better at bathing*	Non-TJC-accredited	6035	69.58	71.84	74.17	<.001
	TJC-accredited	1781	72.52	74.23	76.09	
How often patients had less pain when moving around**	Non-TJC-accredited	5942	67.89	70.37	72.66	<.001
	TJC-accredited	1758	75.29	77.15	78.69	
How often patients' breathing improved*	Non-TJC-accredited	5819	67.84	70.69	73.59	<.001
	TJC-accredited	1734	71.41	73.41	76.20	
How often patients' wounds improved or healed after an operation	Non-TJC-accredited	2687	90.58	90.93	91.24	0.27
	TJC-accredited	875	91.02	91.46	91.74	
How often patients got better at taking their drugs correctly by mouth***	Non-TJC-accredited	5804	56.19	59.53	63.46	0.005
	TJC-accredited	1757	57.88	61.10	65.00	

Note. Adjusted means are least square means; p values based upon comparison of rates aggregated across all 3 years; bold format on p value indicates < .05; yellow highlight indicates better performance for TJC-accredited home health agencies where statistically significant differences exist; blue highlight indicates better performance for non-TJC-accredited home health agencies where statistically significant differences exist. OASIS = Outcome and Assessment Information Set; TJC = The Joint Commission.

*Measure included in the star rating calculation.

** Measure included in the star rating calculation in 2017 and 2018

*** Measure included in the star rating calculation in 2018 and 2019



Table 3. Comparison of claims-based outcome measures by accreditation status and year

Metric	Accreditation status	n	Adjusted means (by year)			
			2016	2017	2018	p value
How often home health patients had to be admitted to the hospital*	Non-TJC-accredited	5,727	16.88	15.82	15.85	0.002
	TJC-accredited	1,721	16.37	15.33	15.36	
How often patients receiving home health care needed urgent, unplanned care in the ER without being admitted	Non-TJC-accredited	5,734	13.43	13.85	13.90	<.001
	TJC-accredited	1,725	12.48	12.84	13.01	

Note. Adjusted means are least square means; p values based upon comparison of rates aggregated across all 3 years; bold format on p value indicates <.05; yellow highlight indicates better performance for TJC-accredited home health agencies where statistically significant differences exist.

ER = emergency room; TJC = The Joint Commission. *Measure included in the star rating calculation.

Discussion

Analysis of the 14 OASIS HHC quality measures, as well as the two claims-based measures, revealed that TJC-accredited HHAs performed better on 11 of the 16 measures, whereas non-TJC-accredited HHAs had superior performance on one of 16 measures. All eight of the measures included in the CMS star rating calculation were associated with statistically significant differences related to accreditation. In addition, TJC-accredited HHAs performed better on a greater proportion of measures (11 of 14) than the original study (13 of 20).¹⁰ Also consistent with the original study is a larger proportion of TJC-accredited home health organizations clustered within the higher star ratings and fewer TJC-accredited organizations clustered within the lower star ratings. Findings for two claims-based measures, “How often home health patients had to be admitted to the hospital” and “How often patients receiving home health care needed urgent, unplanned care in the ER without being admitted,” were consistent with the original study in which TJC-accredited home health organizations had statistically significant lower rates across all three years studied, compared to nonaccredited HHAs.



Researchers conducting the original study noted a significant decrease in influenza vaccination rates of TJC-accredited home health agencies between 2014 and 2015 but were unable to find a published explanation for the decrease.¹⁰ Subsequent to their study, CMS removed the “Influenza Vaccination Ever Received” process measure from the calculation algorithm to improve the star rating system. The rationale for removal was generally due to differences across states regulations regarding transporting and administering vaccinations, no exclusion made for patients who were offered the vaccination and refused or could not receive the vaccination due to contraindications.¹⁵ It is possible that these factors help explain the original study findings. While removal of the measure from the star rating system occurred in April 2018, the “Influenza Immunization Received for Current Flu Season” process measure continues to be reported on Home Health Compare to encourage vaccination.¹⁵

The continuing evolution of CMS measures provides opportunity for future research on the relationship of accreditation and HHC quality. In 2019, subsequent to the current study, claims-based outcome measures “Medicare Spending per Beneficiary” and “Discharge to Community” were added as publicly reported measures on Home Health Compare. The incorporation of socio-demographic variables in risk models is under consideration and may be explored for the “Acute Care Hospitalization” measure in the future. CMS is also proposing that HHAs begin collecting data on the “Transfer

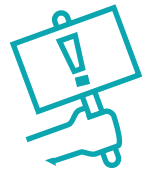


of Health Information to Provider-Post Acute Care” measure, and the “Transfer of Health Information to Patient-PAC” measure effective January 2023. The focus of these measures is ensuring safe and effective patient transitions from one health care setting to another.¹⁶

The Joint Commission helps health care organizations build a foundation for quality and safety through its accreditation standards. While previous studies have found accreditation to be a predictor of quality,⁴⁻⁹ more research is needed to better understand why TJC-accredited HHAs perform better than non-TJC-accredited HHAs. One possible explanation to explain observed differences is that HHAs seeking accreditation already have a propensity toward quality improvement, increasing the likelihood that patient safety and high-quality patient care are established organizational priorities.

Limitations

This study had limitations. The OASIS quality measure data in the CMS HHC data set did not include denominator counts, therefore the rates could not be weighted by the number of cases in the analysis. Performance measure data is self-reported by HHAs to CMS without formal audit for accuracy and completeness. This could bias our results in unpredictable ways.



Conclusion

TJC-accredited HHAs continue to demonstrate consistently better performance than non-TJC-accredited agencies on CMS star ratings and across a broad range of process and outcome measures. TJC-accredited HHAs also showed better performance on more measures in 2016-2018 as compared to their performance in 2013-2015. These results provide support of the original study findings that suggest a relationship between accreditation and HHC quality. Furthermore, this replication study validates and extends the generalizability of the findings from the original study and provides a contribution to the body of literature on accreditation in the home health care setting which is currently lacking.



Declaration of Conflicting Interests

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