



How Magnet Hospital Status Affects Nurses, Patients, and Organizations: A Systematic Review

Findings support the pursuit of Magnet recognition.

The number of hospitals that have achieved Magnet recognition status continues to rise in the United States and globally. At this writing, there are a total of 509 Magnet hospitals worldwide,¹ a dramatic increase from 401 Magnet hospitals six years ago.² Hospitals that have achieved Magnet recognition status from the American Nurses Credentialing Center (ANCC) are known for providing a positive work environment for nursing practice, resulting in better outcomes for both patients and the nurses who care for them. Yet despite mounting evidence associating Magnet hospitals with superior outcomes, some research has found little difference between Magnet and non-Magnet hospitals,³ suggesting a need for further research. This systematic review explores whether different outcomes exist between Magnet and non-Magnet facilities.

BACKGROUND

The concept of the Magnet hospital originated in 1983 as a result of a study investigating nursing shortages and high turnover rates in American hospitals.⁴ That study, which was carried out by the American Academy of Nursing, identified greater success rates in the hiring, retention, and job satisfaction of nurses in some hospitals compared with others. Those hospitals with better success rates were dubbed “Magnet” hospitals. A total of 41 Magnet hospitals were identified and were found to have 14 organizational characteristics or “forces of magnetism” in common. Based on this knowledge, the ANCC’s Magnet Recognition Program emerged, designed to recognize and certify those

health organizations demonstrating nursing excellence. Updated in 2008, the current program is structured around five essential components that integrate the 14 strengths of the original model: transformational leadership; structural empowerment; exemplary professional practice; new knowledge, innovation, and improvements; and empirical quality results.⁵ Organizations must meet the eligibility requirements stipulated by the Magnet Recognition Program in order to achieve Magnet status.

Overall, the literature links Magnet hospitals with a high quality of care, high nurse retention, and many exceptional outcomes. These include better work environments,^{6,7} higher nurse job satisfaction,⁶ less burnout,⁶ decreased intent to leave,^{6,8} less nurse turnover,⁹ lower hospital mortality,^{10,11} lower patient fall rates,¹² and greater patient satisfaction.¹⁰ But not all researchers observed differences between Magnet and non-Magnet hospitals. Some have reported only slight or no comparative differences.^{13,14} And at least one study reported several worse outcomes in Magnet facilities.¹⁵

These conflicting findings indicate the need for an updated systematic review, in order to obtain a more accurate understanding of how Magnet hospital status affects nursing, patient, and organizational outcomes. Previous systematic reviews have examined the evidence for the impact of Magnet recognition on not only nurses and patients¹⁶ but also health care organizations.¹⁷ We believed that a new review was warranted. First, the number of publications on this topic has grown significantly in the last few years. Second, the most recent review of the impact of Magnet status on nurses, patients,

ABSTRACT

Objective: As the number of Magnet hospitals continues to rise in the United States and abroad, the body of literature regarding various outcomes at Magnet hospitals is increasing also. A systematic review examining and compiling the most recent evidence would be invaluable to those seeking to pursue Magnet recognition for their facility. We conducted this systematic review to investigate how Magnet hospital status affects outcomes for nursing professionals, patients, and health care organizations.

Methods: In January 2018, the databases CINAHL, ProQuest, PubMed, and La Biblioteca Cochrane Plus were searched for relevant studies. The reference lists of selected articles were also examined to identify additional studies. The PRISMA statement was followed, and established methods for systematic review were used to produce a narrative summary. The quality of the reviewed studies was assessed according to the 22-item Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for observational studies.

Results: Of the 163 studies identified, 21 met the eligibility criteria and are included in this review. On the whole, lower rates of nursing shortages, burnout, job dissatisfaction, and turnover were observed at Magnet hospitals compared with non-Magnet hospitals. The rates of patient mortality, falls, hospital-acquired infections, and pressure ulcers were also lower. Nursing work environments were found to be safer and were associated with a higher quality of care in Magnet hospitals than in non-Magnet hospitals, and Magnet hospitals were found to provide more cost-effective care.

Conclusion: This review provides nursing managers and administrators with the most recent evidence demonstrating that Magnet hospitals have better nursing work environments and are associated with better outcomes for nurses, patients, and organizations than non-Magnet hospitals. This evidence should inform future decision-making with regard to pursuing Magnet designation.

Keywords: Magnet hospital, nursing, patients, systematic review, work environment

and organizations was carried out in 2009 by Salmond and colleagues—more than 10 years ago.¹⁷ The latest review, performed by Petit dit Dariel and colleagues in 2015, only covered such impact on nurses and patients.¹⁶ Nursing managers need more conclusive, up-to-date information about Magnet designation and its impact on nurses, patients, and health care organizations to assist them in making decisions about Magnet investment.

Purpose. The aim of this review was to analyze the current evidence regarding the impact of Magnet hospital status on nursing professionals, patients, and health care organizations. We were guided specifically by the following question: compared with non-Magnet hospitals, do Magnet hospitals show different outcomes with regard to nurses, patients, and health care organizations?

METHODS

We conducted a systematic review of studies that compared Magnet and non-Magnet hospital outcomes with regard to nurses, patients, and organizations, in accordance with the PRISMA statement guidelines.¹⁸

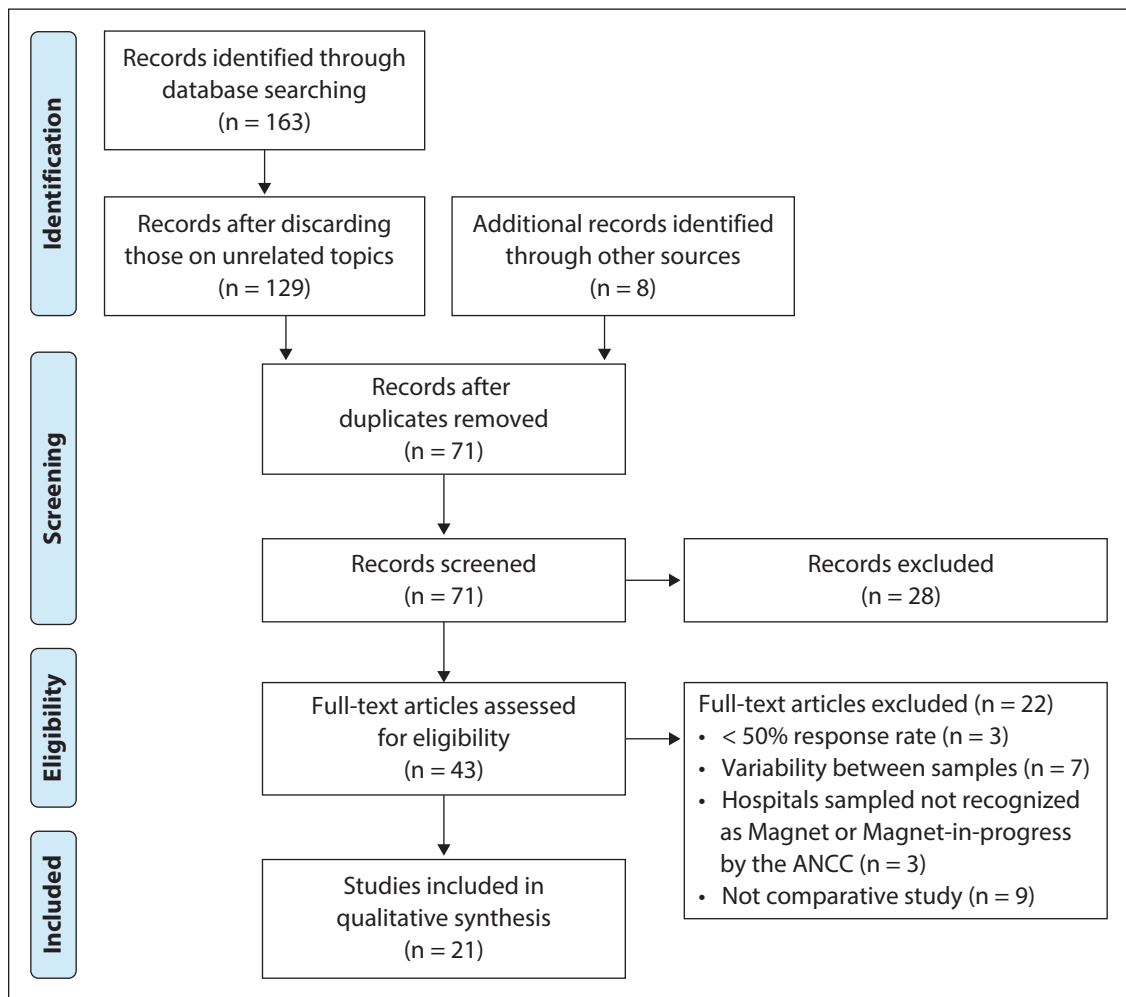
Search strategy. A systematic search was carried out in January 2018. The databases CINAHL, ProQuest, PubMed, and La Biblioteca Cochrane Plus were consulted for the years 2010 to 2018. Search terms included *magnet hospital*, *nurse*, *patient*, and *work environment*. The search was restricted to

studies written in English or Spanish and published in scientific journals. The structure of the search strategy followed the well-known PICO framework. The reference lists of the final selected articles were also consulted to find additional relevant studies.

Eligibility criteria and quality appraisal. Only original comparative studies exploring outcomes in Magnet and non-Magnet hospitals or in Magnet, Magnet-aspiring, and non-Magnet hospitals were included. Studies in which the hospitals sampled didn't include recognized Magnet hospitals or Magnet and Magnet-aspiring hospitals were discarded. To avoid including studies with a selection bias, those with less than a 50% response rate were also discarded, since a lack of response may distort a sample and consequently affect the study's results and conclusions. For the purpose of boosting the reliability of this review's results in relation to Magnet status, rather than in relation to other factors, we excluded research in which the study samples showed high degrees of variability and statistically significant differences, which would make it hard to associate a study's results with the characteristics of Magnet hospitals. For this review, there was no restriction with regard to study design.

The initial resulting yield underwent rigorous review, in this order: verification of the eligibility criteria, elimination of duplicate studies, critical analysis of the title and abstract, critical reading of

Figure 1. PRISMA Flow Diagram of Study Selection



ANCC = American Nurses Credentialing Center; PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

the full text, and recount of the articles finally selected for review. This process was conducted separately by two reviewers (two of us, MCRG and TBG). As noted earlier, the reference lists of these selected articles were also assessed during the process. Any disagreements about the selection of studies were resolved through discussion. For a PRISMA flow diagram showing the study selection process, see Figure 1.

Study quality was assessed according to the 22-item Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for observational studies¹⁹ by one reviewer (MCRG) and confirmed by a second reviewer (TBG).

Data extraction and synthesis. Data were extracted for authors, year of publication, study design, sample, outcomes measured (such as work environment, patient falls, infection rate, mortality rate, failure-to-rescue rate, nurse turnover, nurse job

satisfaction), and main results. Because of the heterogeneity in study designs, samples, and outcomes measured, it was not possible to conduct a meta-analysis; thus, a narrative synthesis was performed instead.

RESULTS

The initial database search yielded a total of 163 studies. Studies about radio-magnetic therapy and other topics unrelated to Magnet status were discarded, leaving 129 studies. At this point, a manual search of the bibliographies of these studies was conducted, yielding eight more studies. After eliminating 66 duplicates, we began the critical analysis of the title and abstract of 71 studies. Another 28 articles about the experience of pursuing and maintaining Magnet recognition did not clearly demonstrate associated results and were also discarded. Of the remaining 43 studies subjected to full-text critical analysis, 22 were excluded for not meeting eligibility

criteria. The remaining 21 studies met all eligibility criteria and are included in this review.

To the degree possible, full details of the findings of these 21 studies, including confidence intervals and *P* values, are shown in Table 1.^{2, 3, 6, 9, 12, 15, 20-34} Additional information, as well as main findings, have been compiled into three tables that show Magnet status and nursing, patient, and organizational outcomes (see Tables 2, 3, and 4). Only statistically significant results are included.

Regarding study design, 14 studies were retrospective,^{2, 3, 6, 12, 15, 20-28} five were cross-sectional descriptive,²⁹⁻³³ one was longitudinal descriptive,⁹ and one was a cost-benefit analysis.³⁴ Sample sizes and characteristics varied across studies. As for study settings, all of the reviewed studies were carried out in U.S. hospitals. Seven studies came from the University of Pennsylvania, of which four relied all or in part on the same sample and data derived from a multistate survey of nurses from California, Florida, New Jersey, and Pennsylvania conducted in 2006 and 2007.^{6, 22, 27, 33}

All of the reviewed studies used secondary data sources. Data collection involved one or more of the following: surveys sent to nurses and early career RNs, data already collected by the hospitals, and review of information in databases such as the National Database of Nursing Quality Indicators, the American Hospital Association's Annual Survey Database, and the Centers for Medicare and Medicaid Services (CMS) Hospital Compare datasets. In each study, the study variables were clearly defined. For example, the educational level of a hospital's nursing workforce was given as the proportion of direct care nurses with a bachelor of science in nursing or higher degree.^{12, 33} The nursing clinical practice environment was measured using the Practice Environment Scale of the Nursing Work Index.^{22, 32}

To identify which hospitals in our study were Magnet hospitals, we consulted the ANCC's Magnet Recognition Program database. The Magnet hospitals in the studies were mainly nonprofit, as were the Magnet-aspiring and non-Magnet hospitals. In most studies, the number of hospital beds was over 100, with the exception of two studies that considered smaller facilities.^{21, 34}

Of the 21 reviewed studies, 18 found better outcomes in hospitals that were Magnet or Magnet aspiring. One study reported no significant differences between hospital categories,²⁴ and two studies found better outcomes in non-Magnet hospitals.^{15, 25}

Nursing-related outcomes. Magnet hospitals were associated with lower levels of job dissatisfaction,^{6, 22} burnout,^{6, 22} nurse turnover,²⁶ and consequent cost savings.³⁴ Compared with nurses in other hospitals, those in Magnet facilities reported better work environments,^{6, 27, 33} as well as better nurse-patient ratios and staffing levels.²⁸ One study found greater retention and satisfaction rates among nurses in Magnet hospitals,

with less intent to leave.²² Another study found that Magnet status was associated with significantly fewer instances of forgotten, omitted, or unfinished nursing care during shifts.³¹ Lastly, Magnet hospital culture was shown to have a preventive effect on bullying and other hostile behaviors between professionals.²⁹

This systematic review explores whether different outcomes exist between Magnet and non-Magnet facilities.

Patient outcomes. The improved nursing work environment that characterizes Magnet hospitals has also led to positive results reported regarding patient health. Compared with non-Magnet hospitals, Magnet hospitals have been associated with 5% fewer falls,¹² 21% fewer pressure ulcers,³² and a 14% reduction in mortality.³³ One study found significantly lower central line-associated bloodstream infection rates in Magnet hospitals compared with non-Magnet hospitals.²⁰ Another study found that Magnet status was associated with lower rates of methicillin-resistant *Staphylococcus aureus* bloodstream infections, but higher-than-expected rates of *Clostridium difficile* infections.²⁵

Not all studies reported more positive patient outcomes linked to Magnet status. One study compared pressure ulcer and failure-to-rescue rates in Magnet and non-Magnet hospitals and found no significant differences.²⁴ And another found better outcomes in non-Magnet hospitals, including lower rates of infections associated with medical care, postoperative sepsis, or postoperative metabolic derangements.¹⁵

In a study exploring patients' experiences with health care, patients in Magnet and Magnet-aspiring hospitals reported better nurse communication, better pain management, and better health-related information than those in non-Magnet hospitals.² Moreover, the patients in Magnet and Magnet-aspiring hospitals reported higher levels of satisfaction with care and services received and would "definitely recommend" such hospitals to others.² Lastly, noting that Magnet status has been associated with reductions in mortality rates and lengths of stay, Higdon and colleagues found that such status is also associated with decreased costs.³⁴

Organizational outcomes. Magnet hospitals employed higher proportions of nurses with bachelor's degrees than non-Magnet hospitals, and this was associated with lower rates of falls¹² and mortality.³³ Overall, clinical nursing practices in

Table 1. Study Characteristics and Main Findings

Study	Design	Sample	Outcomes Measured	Results
Barnes H, et al, ²⁰ 2016	Retrospective	N = 582 hospitals 291 MH (50%) Matched with 291 NMH (50%)	Rate of infection associated with CVC insertion	Compared with the national average, MH showed lower infection rates linked to CVC insertion than matched NMH. ^b
Budin WC, et al, ²⁹ 2013	Cross-sectional descriptive	N = 1,407 early career RNs 305 (22%) MH 230 (16%) HPM 710 (50.5%) NMH 162 (11.5%) DK/DA	Verbal abuse from RN colleagues toward early career RNs	The likelihood of reporting high levels of verbal abuse was lower in MH or HPM than in NMH. ^b
Goode CJ, et al, ¹⁵ 2011	Retrospective	N = 54 hospitals 19 (35%) MH 35 (65%) NMH	Total nursing care HPPD, RN skill mix, patient outcomes	The mean total nursing care HPPD was 11.04 in MH compared with 11.18 in NMH. ^a The RN skill mix on general units was 58% in MH, compared with 61% in NMH. ^a The rates of infection due to medical care, postoperative sepsis, and postoperative metabolic derangements were worse in NMH. ^a
Hess R, et al, ³⁰ 2011	Cross-sectional descriptive	N = 518 RNs 151 (29%) MH 69 (13%) HPM 298 (58%) NMH	Nurse perceptions regarding their profession, work environment, and professional relationships	Nurse staffing levels were better perceived in HPM than in either MH or NMH. ^a RNs working in MH or HPM were more likely to recommend their profession than those working in NMH. ^a Opportunities for participation in decision-making and shared governance were seen as greater in MH and HPM than in NMH. ^a The quality of relationships between RNs and nursing faculty was seen as better in MH and HPM than in NMH. ^a
Higdon K, et al, ³⁴ 2013	Cost-benefit analysis associated with Magnet designation	Prorated assumptions for small MH and NMH (< 100 beds) based on data for larger MH and NMH (> 500 beds)	Cost savings based on two patient indicators (falls, pressure ulcers) and two nurse indicators (nurse turnover, needlestick injuries)	The analysis found that even a small MH would have lower incidences of falls and pressure ulcers among patients, as well as less turnover and fewer needlestick injuries among nurses, than a small NMH.
Jayawardhana J, et al, ²¹ 2014	Retrospective	N = 2,682 hospitals Occupation ≥ 60 beds 141 (5%) MH 2,541 (95%) NMH	Net inpatient costs and net inpatient revenues, controlling for other hospital characteristics	MH showed 2.46% greater net inpatient costs and 3.89% greater net inpatient revenues compared with NMH. The profits generated in MH offset the higher hospitalization costs.
Kalisch BJ, Lee KH, ³¹ 2012	Cross-sectional descriptive	N = 11 hospitals 4 (36%) MH 7 (64%) NMH	Missed nursing care	The level of missed nursing care was lower in MH than in NMH. ^a Nursing staff with a BSN or higher degree identified more missed nursing care than those with associate's or lower degrees. ^b
Kelly LA, et al, ⁶ 2011	Retrospective	N = 26,276 RNs 4,562 (17%) MH 21,714 (83%) NMH	Work environment, staffing, and outcomes related to nursing	MH had better work environments and a more highly educated nursing workforce than NMH. ^b Nurses in MH reported less job dissatisfaction and burnout than nurses in NMH. ^a

Kutney-Lee A, et al, ²² 2015	Retrospective	N = 136 hospitals 11 (8%) MH 125 (92%) NMH	Surgical 30-day mortality and failure to rescue, work environment, nurse-reported quality of care measures, and nursing job outcomes	Compared with NMH, MH had higher percentages of baccalaureate-prepared nurses, ^b lower patient-nurse ratios, ^a and more improved work environments (per total PES-NWI score and each of its subscales). ^b Nurses in MH also experienced lower levels of burnout, ^b job dissatisfaction, ^b and intent to leave. ^b
Lake ET, et al, ¹² 2010	Retrospective	N = 636 hospitals 108 (17%) MH 528 (83%) NMH	Patient falls, Magnet status, and nursing unit staffing	Average fall rates were 8.3% lower in MH than in NMH ^a ; and fall probability was 5% less in MH. ^b Across all unit types, RN HPPD were higher in MH than in NMH, and this was associated with fewer falls. More specifically, each added RN HPPD reduced the fall rate by 2%. ^b
Lasater KB, et al, ²³ 2016	Retrospective	N = 3,021 hospitals 323 (11%) MH Matched with 253 NMH 2,698 (89%) NMH	CMS's Hospital Value-Based Purchasing Program measures	MH performed better on total performance, ^a clinical processes, ^b and patient experience ^b than matched NMH.
Ma C, Park SH, ³² 2015	Cross-sectional descriptive	N = 373 hospitals 118 (32%) MH 255 (68%) NMH	Unit work environment and prevalence of hospital-acquired pressure ulcers	Units in MH had lower rates of hospital-acquired pressure ulcers, ^b better work environments (per total PES-NWI score and each of its subscales), ^b and higher proportions of RN nursing hours ^b than units in NMH.
McHugh MD, et al, ³³ 2013	Cross-sectional descriptive	N = 564 hospitals 56 (10%) MH 508 (90%) NMH	Odds of mortality and failure to rescue	MH had better nursing work environments ^b and higher proportions of nurses with a BSN or higher degree ^b than NMH. Nurse staffing was better in MH than in NMH. ^a Postsurgical mortality rates (within 30 days after surgery) and deaths related to postsurgical complications (failure to rescue) were significantly lower in MH than in NMH. ^b
Mills AC, Gillespie KN, ²⁴ 2013	Retrospective	N = 160 hospitals 80 MH (50%) Matched with 80 NMH (50%)	Hospital rates of pressure ulcers and failure to rescue	No statistically significant differences in rates of pressure ulcers or failure to rescue were found between MH and NMH.
Pakyz AL, et al, ²⁵ 2017	Retrospective	n = 2,266 hospitals with <i>Clostridium difficile</i> infection 340 (15%) MH 1,926 (85%) NMH n = 1,701 hospitals with MRSA bloodstream infections 323 (19%) MH 1,378 (81%) NMH	Health care-associated infections (specifically <i>C. difficile</i> , MRSA)	MH performed better regarding MRSA bloodstream infections ^b but worse regarding <i>C. difficile</i> infections ^b than NMH.

Table 1. Continued

Study	Design	Sample	Outcomes Measured	Results
Park SH et al, ²⁶ 2016	Retrospective	N = 2,958 hospital units 784 (26.5%) MH 2,174 (73.5%) NMH	Nurse turnover	RN turnover rates were higher on NMH units than on MH units. ^a RN turnover rates due to work environment–related reasons overall were higher on NMH units compared with MH units. ^b Specifically, mean RN turnover in relation to staffing/workload issues ^c or obtaining a job with a more desirable work schedule ^b was higher in NMH units. But NMH units had significantly lower mean RN turnover associated with the non-work environment–related reason of spouse/partner’s moving. ^a
Smith SA, ² 2014	Retrospective	N = 2,001 hospitals 160 (8%) MH 99 (5%) HPM 1,742 (87%) NMH	Patient satisfaction	Patients in MH and HPM reported better nurse communication, ^b better pain management; ^c more frequent medication explanation, ^b and more information on recovery time ^b than those in NMH. Greater percentages of patients in MH and HPM rated their hospitals highly ^b and would definitely recommend them. ^b
Staggs VS, Duntton N, ⁹ 2012	Longitudinal	N = 306 hospitals 81 (26.5%) MH 225 (73.5%) NMH	Nursing unit turnover rates	RN and total nurse turnover rates were estimated to be 16% and 13% lower, respectively, in MH than in NMH. ^b
Stimpfel AW, et al, ²⁷ 2014	Retrospective	N = 551 hospitals 56 (10%) MH Compared with all NMH and with 56 matched NMH 495 (90%) NMH	Quality of care	The nurses in MH perceived having better practice environments and reported a higher quality of care than nurses in NMH. ^b
Tai TW, Bame SJ, ²⁸ 2017	Retrospective	N = 396 hospitals 132 MH Compared with 264 NMH	Organizational characteristics associated with Magnet recognition	MH averaged 75% more beds per hospital and 11% more admissions per bed than NMH. ^b The mean RN staffing rate per bed was 23% greater in MH than in NMH. ^b
Trinkoff AM, et al, ² 2010	Retrospective	N = 837 nurses 162 (19%) MH 675 (81%) NMH	Working conditions: work schedule, psychological and physical job demands, practice environment	Physical demands were lower among MH nurses than among those working in NMH. ^a

*P < 0.05; [†]P < 0.01.BSN = bachelor of science in nursing; CMS = Centers for Medicare and Medicaid Services; CVC = central venous catheter; DK/DA = did not know/did not answer; HPM = hospitals in process of Magnet recognition; HPPD = hours per patient day; MH = Magnet hospitals; MRSA = methicillin-resistant *Staphylococcus aureus*; NMH = non-Magnet hospitals; PES-NWI = Practice Environment Scale of the Nursing Work Index.

Table 2. Magnet Status and Nursing Outcomes

Study	Main Findings
Higdon K, et al, ³⁴ 2013	Compared with NMH, MH had less nurse turnover and fewer needlestick injuries.
Kelly LA, et al, ⁶ 2011	Nurses in MH reported less job dissatisfaction and burnout than nurses in NMH. ^a
Kutney-Lee A, et al, ²² 2015	Nurses in MH experienced lower levels of burnout, ^b job dissatisfaction, ^b and intent to leave ^b than nurses in NMH.
Park SH, et al, ²⁶ 2016	RN turnover rates were higher in NMH units compared with MH units. ^a RN turnover rates owing to work environment–related reasons overall were higher in NMH units compared with MH units. ^b Specifically, mean RN turnover rates related to staffing/workload issues or to obtaining a job with a more desirable work schedule were higher in NMH units. ^b But NMH units had lower mean RN turnover rates owing to the non-work environment–related reason of spouse/partner’s moving. ^a
Staggs VS, Dunton N, ⁹ 2012	RN and total nurse turnover rates in MH were estimated to be 16% and 13% lower, respectively, than such rates in NMH. ^b
Trinkoff AM, et al, ³ 2010	Nurses in MH reported fewer physical demands than nurses in NMH. ^a

MH = Magnet hospitals; NMH = non-Magnet hospitals.

^a*P* < 0.05; ^b*P* < 0.01.

Magnet hospitals were better than they were in non-Magnet facilities,^{27, 32, 33} and this was linked to a greater likelihood of significant cost savings by Higdon and colleagues.³⁴ Some research further indicated that Magnet and Magnet-aspiring hospitals offer nurses significantly more opportunities for participation in shared governance and decision-making.³⁰ Nurses working in Magnet hospitals perceived the quality of patient care to be higher than nurses working in non-Magnet hospitals.²⁷ Similarly, patients’ perceptions of nursing professionals and the quality of care received were significantly better in Magnet and Magnet-aspiring hospitals.² Regarding economic aspects, Lasater and colleagues found that Magnet hospitals performed significantly better on the CMS’s Hospital Value-Based Purchasing Program measures, including total performance, clinical processes, and patient experience, than non-Magnet hospitals.²³

DISCUSSION

Overall, the findings of this systematic review indicate that Magnet hospitals are associated with better nursing, patient, and organizational outcomes than non-Magnet hospitals. Out of a total of 21 studies, 18 (86%) found beneficial outcomes linked to facilities with ANCC Magnet status. Just three studies reported only null²⁴ or negative results for Magnet compared with non-Magnet hospital outcomes.^{15, 25} It’s important to remember that, as Kelly and colleagues have stated, “There are multiple reasons for null findings in a particular study that could relate to the study design, sample, measures, and statistical power

and do not necessarily negate the findings” of other studies.⁶

As noted earlier, some studies classified hospitals as either Magnet or non-Magnet, while others added a third category of Magnet aspiring. All of the studies with null or negative findings used the two-category classification.^{15, 24, 25} As Klaus and colleagues have noted, the findings of studies that dichotomize hospitals as either Magnet or non-Magnet should be interpreted with caution, because they may be grouping hospitals in the process of applying for Magnet recognition with non-Magnet hospitals, thus altering the results.³⁵ Similarly, Jayawardhana and colleagues noted that including Magnet hospitals that have lost their Magnet status in the non-Magnet hospitals group could influence the study results.²¹

Out of a total of 21 studies, 18 (86%) found beneficial outcomes linked to facilities with ANCC Magnet status.

Unlike an earlier systematic review,¹⁶ our review did not limit its search to findings related only to patients and nurses, but also considered those related to health care organizations, including the nursing work environment. As such, our

review might be considered an update of the 2009 systematic review by Salmond and colleagues.¹⁷ Some of our findings support findings from these past reviews, such as lower patient–nurse ratios, a more educated nursing workforce, and better nursing work environments in Magnet hospitals compared with non-Magnet hospitals. Indeed, better nursing-related and patient outcomes in Magnet hospitals—including greater job satisfaction, lower turnover, and reduced burnout among nurses, as well as lower rates of falls, pressure ulcers, failure to rescue, and deaths among patients—were confirmed.

This review also produced new information regarding the economic impact of Magnet recognition, an area earlier reviews couldn't explore because of a lack of relevant studies. Recent research has shown that Magnet status is associated with greater profits and cost savings.^{21,34} These results stem in part from the lower mortality and workplace accident rates reported in Magnet hospitals. Moreover, given their lower rates of nurse burnout^{6,22} and turnover,⁹ Magnet hospitals are likely to have reduced staff recruitment and orientation costs. Given the designs of the reviewed studies, we can't expressly state whether the investment needed to achieve

Magnet status is worth it or not. Still, based on their finding of higher net inpatient revenues in Magnet compared with non-Magnet hospitals, Jayawardhana and colleagues concluded that the expense of becoming a Magnet hospital may well be offset by those gains.²¹ We agree. Based on the findings of our review, we further propose that the overall higher quality of care in Magnet hospitals will attract more patients and insurers.

Practice implications. Until this review, the most recent systematic reviews either didn't include the latest studies or didn't consider the impact of Magnet status on organizations. Thus, our review provides a new and valuable resource for nursing leaders, and not only because it confirms associations between Magnet status and many positive nursing and patient outcomes cited in earlier studies. It also suggests associations between Magnet status and improved profitability for organizations. With this updated knowledge, nursing managers and administrators will be better able to participate in future decision-making about whether to pursue Magnet designation for their facility.

Limitations. Given the designs of the reviewed studies, causality in study results could not be established. Nor can the results of this systematic review

Table 3. Magnet Status and Patient Outcomes

Study	Main Findings
Barnes H, et al, ²⁰ 2016	Compared with the national average, MH showed lower infection rates linked to central venous catheter insertion than matched NMH. ^b
Goode CJ, et al, ¹⁵ 2011	The rates of infection due to medical care, postoperative sepsis, and postoperative metabolic derangements were worse in NMH than in MH. ^a
Higdon K, et al, ³⁴ 2013	The analysis showed that even among smaller hospitals (< 100 beds), an MH would have lower incidences of falls and pressure ulcers among patients than an NMH.
Lake ET, et al, ¹² 2010	Average fall rates were 8.3% lower in MH than in NMH, ^b and fall probability was 5% less in MH. ^b Across all unit types, RN HPPD were higher in MH than in NMH, and this was associated with fewer falls. More specifically, each added RN HPPD reduced the fall rate by 2%. ^b
Ma C, Park SH, ³² 2015	Compared with units in NMH, units in MH had lower rates of hospital-acquired pressure ulcers ^b and higher proportions of RN nursing care hours. ^b
McHugh MD, et al, ³³ 2013	Postsurgical mortality rates (within 30 days after surgery) and deaths related to postsurgical complications (failure to rescue) were lower in MH than in NMH. ^b
Mills AC, Gillespie KN, ²⁴ 2013	No statistical differences in rates of pressure ulcers or failure to rescue were found between MH and NMH.
Pakyz AL, et al, ²⁵ 2017	Compared with NMH, MH performed better with regard to MRSA bloodstream infections ^b but worse with regard to <i>Clostridium difficile</i> infections. ^b
Smith SA, ² 2014	Patients in MH and HPM reported better nurse communication, ^b better pain management, ^b more frequent medication explanations, ^b and more information about recovery time. ^b

HPM = hospitals in process of Magnet recognition; HPPD = hours per patient day; MH = Magnet hospitals; MRSA = methicillin-resistant *Staphylococcus aureus*; NMH = non-Magnet hospitals.

^aP < 0.05; ^bP < 0.01.

Table 4. Magnet Status and Organizational Outcomes

Study	Main Findings
Budin WC, et al, ²⁹ 2013	The likelihood of reporting high levels of verbal abuse was lower in MH or HPM than in NMH. ^b
Goode CJ, et al, ¹⁵ 2011	The mean total nursing HPPD was 11.04 in MH compared with 11.18 in NMH. ^a The RN skill mix on general units was 58% in MH compared with 61% in NMH. ^a
Hess R, et al, ³⁰ 2011	Nurse staffing levels were better perceived in HPM than in either MH or NMH. ^a RNs working in MH or HPM were more likely to recommend their profession than nurses working in NMH. ^a Opportunities for participation in decision-making and shared governance were seen as greater in MH and HPM than in NMH. ^a The quality of relationships between RNs and nursing faculty was seen as better in MH and HPM than in NMH. ^a
Higdon K, et al, ³⁴ 2013	Even a small MH was likely to have lower incidences of falls and pressure ulcers than a small NMH.
Jayawardhana J, et al, ²¹ 2014	MH had 2.46% greater net inpatient costs and 3.89% greater net inpatient revenues compared with NMH. The profits generated in MH offset the higher hospitalization costs.
Kalisch BJ, Lee KH, ³¹ 2012	The level of missed nursing care was lower in MH than in NMH. ^a Nursing staff with a BSN or higher degree identified more missed nursing care than staff with an associate's or lower degree. ^b
Kelly LA, et al, ⁶ 2011	MH demonstrated better work environments and a more highly educated nursing workforce than NMH. ^b
Kutney-Lee A, et al, ²² 2015	Compared with NMH, MH had higher percentages of baccalaureate-prepared nurses, ^b lower patient–nurse ratios, ^a and more improved work environments (per total PES-NWI score and each of its subscales). ^b
Lasater KB, et al, ²³ 2016	Per the CMS's Hospital Value-Based Purchasing Program, MH performed better on total performance, ^a clinical processes, ^b and patient experience ^b than matched NMH.
McHugh MD, et al, ³³ 2013	MH had better nursing work environments ^b and higher proportions of nurses with a BSN or higher degree ^b than NMH. Nurse staffing was better in MH than in NMH. ^a
Smith SA, ² 2014	Greater percentages of patients in MH and HPM rated their hospitals highly ^b and would definitely recommend them. ^b
Stimpfel AW, et al, ²⁷ 2014	The nurses in MH perceived having better practice environments and reported a higher quality of care than nurses in NMH. ^b
Tai TW, Bame SI, ²⁸ 2017	MH averaged 75% more beds per hospital and 11% more admissions per bed than NMH. ^b The mean RN staffing rate per bed was 23% greater in MH than in NMH. ^b

BSN = bachelor of science in nursing; CMS = Centers for Medicare and Medicaid Services; HPM = hospitals in process of Magnet recognition; HPPD = hours per patient day; MH = Magnet hospitals; NMH = non-Magnet hospitals; PES-NWI = Practice Environment Scale of the Nursing Work Index. ^a*P* < 0.05; ^b *P* < 0.01.

be generalized to all Magnet, Magnet-aspiring, or non-Magnet hospitals. Among the 21 studies, sample sizes and characteristics varied, which also limits what can be inferred from the results of this review. Although two of us independently used the 22-item STROBE checklist to assess the quality of the reviewed studies and reduce the risk of bias, it's possible that some questions about quality and bias remain. Lastly, the initial analysis was limited to article titles and abstracts, and it's possible that some relevant studies were missed.

Further research. A mixed-methods research approach would be an appropriate and rigorous

means of exploring how ANCC Magnet status influences nursing, patient, and organizational outcomes. Researchers might consider using longitudinal designs to confirm relationships found in cross-sectional studies and to investigate whether Magnet-related outcomes are consistent over time. Indeed, further investigation that would allow researchers to establish causal relationships is essential, in order to clarify whether the Magnet Recognition Program simply recognizes hospitals that already exemplify exceptional practice environments—and already show more positive outcomes—or whether such outcomes follow the achievement

of Magnet status. Moreover, there is little evidence about how Magnet status might be associated with nursing students' educational experiences and outcomes in clinical settings, an important knowledge gap. We suggest further research in this area also.

CONCLUSION

This comprehensive systematic review complements and updates the existing knowledge and understanding of its subject, with some findings contributing to the generation of new evidence. Overall, Magnet hospitals demonstrated better nursing, patient, and organizational outcomes, as well as better nursing work environments, than non-Magnet hospitals. That said, there is still a lot of work to do. More research is needed in order to clarify certain associations and explore causality. Nevertheless, this review can provide nursing managers and administrators with timely evidence that will support them in decision-making about investing in the pursuit of Magnet status. ▼

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