



HHS Public Access

Author manuscript

Am J Med Qual. Author manuscript; available in PMC 2023 October 13.

Published in final edited form as:

Am J Med Qual. 2021 ; 36(6): 429–440. doi:10.1097/01.JMQ.0000735508.08292.73.

Relationship between Working Conditions, Worker Outcomes, and Patient Care: A Theoretical Model for Frontline Health Care Workers

Aleksandra Zarska, BS¹, Ariel C. Avgar, PhD¹, Madeline R. Sterling, MD, MPH, MS²

¹Cornell University, Ithaca, NY.

²Division of General Internal Medicine, Department of Medicine, Weill Cornell Medicine, New York, NY.

Abstract

Despite the integral role that frontline health care workers play in providing care to older adults and those with chronic conditions and disabilities, few studies have examined the relationships between the working conditions endured by this workforce, the quality of the care they deliver, and the outcomes of patients for whom they care. Thus, the authors: (1) developed a novel conceptual framework that highlights these relationships, and (2) performed a comprehensive search and analysis of the literature (PubMed, AgeLine, CINAHL, JSTOR, Scopus, Web of Science) to assess the relationships proposed in the framework. A total of 31 studies were included. The results suggest that working conditions affect workers themselves, the care they deliver, and their patients' outcomes. Additional studies, as well as policy solutions, are needed to address the issues faced by this workforce in order to improve health care delivery.

Keywords

frontline workers; health care; home care worker; literature review; occupational health

Frontline health care workers, which include licensed practical and vocational nurses, nursing aides, personal care aides/attendants, and home health aides, are a vital yet frequently overlooked group of health care providers within the health care workforce.¹ Driven in part by the rapidly aging population, and in part by the shift of care from hospitals to home and long-term care facilities, the overall growth rate for this workforce is projected to surpass that of any other occupation in 38 states from 2018 to 2028.² Indeed, some

Corresponding Author: Madeline R. Sterling, MD, MPH, MS, Assistant Professor of Medicine, Division of General Internal Medicine, Department of Medicine, Weill Cornell Medicine, 420 East 70th Street, LH-357, New York, NY 10021, Phone: 646-962-5029 | Fax: 646-962-4610, mrs9012@med.cornell.edu | Twitter: @mad_sters.

Author Contributions

Ms. Zarska, Dr. Avgar, and Dr. Sterling had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Concept and design: Zarska, Avgar, Sterling. Acquisition, analysis, or interpretation of data: Zarska, Sterling. Drafting of the manuscript: Zarska, Sterling. Critical revision of the manuscript for important intellectual content: Zarska, Avgar, Sterling. Statistical analysis: N/A. Obtained funding: Avgar, Sterling. Administrative, technical, or material support: Avgar, Sterling. Supervision: Avgar, Sterling

Declaration of Conflicting Interests

The authors declare that there are no conflicts of interest.

workers, such as home health aides and personal care aides, are expected to experience growth rates as high as 36% over the next decade.² Given this, there is an urgent need to distinguish this mostly low-wage, broad, but varied workforce from other health care workers such as physicians and registered nurses, and to better characterize their role in health care delivery and, ultimately, their influence on the quality of patient care and patients' health outcomes.

As the “eyes and ears” of the health care system,³ frontline health care workers, alongside family caregivers, often serve as the minute-to-minute observers of patients' emotional well-being and physical health in health care facilities and in the home.⁴ Studies have shown that in addition to providing personal care, many provide health-related assistance to older adults and those with chronic conditions and disabilities on a daily or near-daily basis.³ However, existing data demonstrate that this workforce, composed mainly of women and minorities, is often invisible to the medical system and society at large.^{1, 5} Furthermore, frontline health care workers often experience poor working conditions (including low wages, lack of benefits, and insufficient staffing) and turnover rates as high as 200%.⁶ Yet, in contrast to ample research focused on physicians and registered nurses, few studies have attempted to examine the relationships between working conditions endured by this mostly low-wage frontline workforce, the quality of care they deliver, and the outcomes of patients for whom they care. Although there is a great deal of empirical evidence to support the relationship between working conditions and workers' attitudes and outcomes (eg, working conditions affect workers' burnout, turnover intentions, discretion, job satisfaction), few studies examine how these factors, in turn, affect patients' quality of care when frontline health care workers are involved.^{7–10}

To address these gaps, the research team: (1) proposed a novel conceptual framework that depicts the relationship between working conditions experienced by the aforementioned group of mostly low-wage frontline workers, worker outcomes, and patient care; (2) performed a comprehensive literature review in order to examine the evidence underlying the associations outlined in the framework; (3) highlighted areas where additional empirical evidence is warranted; and (4) identified policy implications stemming from the proposed framework.

Conceptual Framework

Informed by the existing literature, the research team proposed a novel conceptual framework that depicted the complex relationship between frontline working conditions, worker outcomes, characteristics of care delivered by workers, and patient outcomes (Figure 1). This framework captured empirical evidence related to each of these central dimensions. As shown in Figure 1, solid 1-way arrows link unidirectional relationships between dimensions that have been empirically tested in the peer-reviewed literature. Bidirectional arrows signify reciprocal relationships between these main domains. Novel to this framework is the clear distinction across these dimensions allowing the team to propose and support linkages that often go unacknowledged in the literature.

Within the framework, working conditions represented the general work environment, employment terms and conditions, as well as organizational arrangements (culture, climate, wages, and benefits), and work practices (teamwork, leadership, staffing). Worker outcomes included physical and mental health, job satisfaction, discretion, autonomy, empowerment, skill and knowledge, turnover, intention to leave and commitment, employee tenure, and employee engagement. The research team defined characteristics of care as patient safety and quality of care and patient outcomes by mortality, morbidity, quality of life, self-reported patient satisfaction, and other measurable adverse patient outcomes such as incidence of pressure ulcers and urinary tract infections. The framework also acknowledged the inherent influence of policy on each of the aforementioned central domains.

Methods

Search Strategy

A comprehensive search was conducted (with the assistance of medical and employment relations librarians) to identify relevant articles. The following databases were searched: AgeLine, CINAHL, JSTOR, PubMed, Scopus, and Web of Science. The search was initially conducted in PubMed and subsequently translated to the other databases. Additional studies were identified through cited reference searching. The search included combinations of the following keywords and terms: *working environment, working condition(s), work practice(s), work condition(s), organizational practice(s), organizational environment(s), worker outcome(s), job satisfaction, autonomy, empowerment, turnover, intention to leave, intent to leave, patient safety, quality of care, health care quality, patient outcomes, mortality, mortality rate(s), readmission(s), quality of life, patient satisfaction* (supplementary Table S1, available with the article online).

Inclusion Criteria

The research team used a broad interpretation of frontline health care workers, which included licensed practical nurses (LPNs), nursing assistants, home health aides/home care workers, personal care aides, home care therapists, and resident assistants working in assisted living facilities, and excluded physicians, nurse practitioners, and most registered nurses. Three studies of registered nurses were included given that the workers studied were employed in home health agencies and nursing homes – 2 primary settings on which the review focused. Studies were included if they investigated 1 or more of the linkages depicted in the aforementioned conceptual framework (Figure 1). Experimental, quantitative and qualitative studies were included, but systematic, scoping, or narrative reviews were excluded. Only studies written in English were considered.

Data Extraction

The following data elements were abstracted from each study that met the inclusion criteria: study author, publication year, population, design, objective, main finding(s), and country. Studies were grouped based on relevant variables from the proposed conceptual framework.

Results

Relationship between Working Conditions and Worker Outcomes

Of the 31 studies that met the inclusion criteria, 16 focused on the association between working conditions of frontline health care workers and their own outcomes (Table 1).^{11–26} Of these, 6 examined the specific relationship between working conditions and turnover intention (as a worker outcome).^{12–16, 25} Three of these studies found that workplace safety indicators, such as safety hazards and incidence of on-the-job physical injury, were associated with higher turnover intent of home health aides and practical nurses.^{13–15} Further, one of these studies found that the degree of supportive supervision over certified nursing assistants (CNAs) in a number of nursing homes was negatively associated with CNA intent to leave the job.²⁵

Studies of frontline workers also have examined the relationship between work environment and worker outcomes such as job satisfaction.^{15, 18–20, 25} For example, a study of 644 direct care workers (nurse assistants in nursing homes, resident assistants in assisted living facilities, and home care aides in home health agencies) found that formal training programs and the worker's starting wage were both independently and positively associated with higher job satisfaction.¹⁹ The association between wages and job satisfaction, however, was not seen in a cross-sectional survey of direct care workers in assisted living facilities.²⁰

In addition to satisfaction, several studies investigated the association between working conditions and mental health of frontline health care workers, including burnout and stress.^{21–23} In a study of 674 home care workers including home care therapists, nurses, and support workers, Denton et al found that workload, workplace harassment, safety hazards, repetitious work, and work-related injuries were each independently associated with poor mental health of home care workers.²³ In contrast, pay, benefits, and organizational and peer support were each associated with better mental health of home care workers.²³

Two studies also examined the relationship between the work conditions and physical health of frontline health care workers.²⁴ In a study of 3377 home health aides, McCaughey et al found that poor worker perceptions of training practices, as well as poor worker perceptions of social support on the job, were associated with higher risk for workplace injuries.²⁴ Additionally, in a study of female nurses and nursing aides, Thompson et al found that working a more compressed schedule (measured as three 12-hour shifts in a period of 4 days) was associated with decreases in isometric strength-based performance abilities.²⁶ Taken together, existing research provides substantial evidence for the link between working conditions and a range of worker outcomes – a central linkage in the proposed framework.

Relationship between Working Conditions and Care Delivered to Patients

Three studies examined supported the link between working conditions and the characteristics and quality of care delivered to patients by frontline health care workers, as highlighted in Table 2.^{27–29} In one large cross-sectional study of 4311 CNAs, LPNs, and nurse aides, Zúñiga et al found that teamwork and organizational safety climate – features of the work environment – were both independently associated with higher worker-perceived quality of care.²⁷ Another study examined the relationship between CNA and LPN

staffing ratios (average number of nurse staffing hours per resident a day) and quality of care deficiencies (calculated using the Centers for Medicare & Medicaid Services' (CMS) Nursing Home Compare Five-Star Quality Rating System).²⁸ The authors found that higher CNA staffing levels predicted lower total deficiency scores, as well as lower quality of care deficiency scores.²⁸ Taken together, these studies demonstrate how working conditions can either bolster or hinder the delivery of high-quality patient care.

Relationship between Working Conditions and Patient Outcomes

Overall, 5 of the 31 studies examined the association between working conditions of frontline health care workers and patient outcomes such as patient satisfaction, adverse drug events, and incidence of health care infections, as described in Table 3.^{30–34} Of these, 4 studies investigated the association between working conditions and health outcomes among residents in nursing homes and other long-term care facilities.^{30–32} Of these, one large study of 15,508 nursing homes highlighted the relationship between CNA training hours and adverse outcomes, finding that nursing homes in states that required clinical training hours above the federal minimum experienced lower odds of adverse outcomes such as resident falls with injury and depression.³⁰ Another study of nurses and nursing assistants found that greater workload (as measured by number of residents per nurse/nursing assistant) was positively associated with incidence of adverse drug events in nursing homes.³⁴ Existing studies also have examined the relationship between working conditions and patient satisfaction as a patient outcome. One study of residents in a large long-term care facility found that a work environment that emphasized a culture of “companionate love” – characterized by workers feeling compassion, affection, and caring for others – was associated with increased patient satisfaction and mood, as well as better quality of life and fewer emergency room visits.³¹

The relationship between working conditions of frontline workers and patients' health outcomes also has been investigated in home health agencies. A cross-sectional study of 1436 registered nurses working for a total of 118 Medicare and Medicaid-certified home health agencies found that better work environments (as measured by a composite score derived from the University of Pennsylvania Multistate Survey of Nursing Care and Patient Safety) were associated with reduced hospitalizations among home care patients, as compared to agencies with poor work environments.³³ Taken together, existing empirical evidence supports the relationship between working conditions and patient outcomes.

Relationship between Worker Outcomes and Patient Outcomes

In total, 7 studies, highlighted in supplementary Tables S2 and S3, explored the relationship between worker and patient outcomes, which often was a bidirectional relationship.^{16, 32, 35–39} Five of these investigated the influence of worker outcomes (eg, worker satisfaction, turnover, job commitment, emotional and mental well-being) on patient outcomes in a variety of settings.^{16, 32, 35–37} In one study of 255 CNAs and 105 residents in 15 nursing homes, greater CNA commitment to the job was associated with better quality of life for nursing home residents.¹⁶ Another large study of 1174 nursing homes found that nursing homes with higher CNA turnover rates were associated with higher resident odds of pressure ulcers, pain, and urinary tract infections,³⁶ highlighting the critical role that

retention and recruitment of frontline workers plays in supporting patient outcomes within a sector notorious for exceptionally high turnover rates.^{36, 40} Providing additional evidence for the influence of worker outcomes and attitudes on outcomes of patient care, Van De Weerd and Baratta found that positive emotions felt at work by nurses, nursing aides, coordinating nurses, and secretaries working at a home health care service were positively associated with the regression of a patient's disease as well as success of technical procedures, thereby leading to less pain for the patient.³⁷ Furthermore, one qualitative study of home health aides by Tsui et al found that patient death was negatively associated with workers' emotional well-being,³⁸ demonstrating that patient outcomes also can affect those of workers.

Relationship between Worker Outcomes and Characteristics and Quality of Care

As already described, working conditions affect the quality of care provided to patients and residents. In addition to this relationship, the research team proposes that worker outcomes also are likely to influence the characteristics and quality of care rendered to patients.

As outlined in supplemental Tables S4 and S5, 6 studies in total examined the reciprocal relationship between worker outcomes and characteristics and quality of care.^{35, 37, 39, 41–43} Of these, 3 studies explored the influence of worker outcomes (such as turnover and turnover intention and emotional and physical well-being at work) on the characteristics and quality of care delivered.^{35, 37, 41} For example, one qualitative study of nurses, nursing aides, and coordinating nurses working at a home care agency in France found that workers' negative emotions at work were associated with poor care performance conditions, weak relationships with patients, and the presence of time-related pressures.³⁷ Additionally, another study of 1151 nursing homes found that high LPN and CNA turnover rates were associated with poor quality measures, as measured by the total number of nursing home survey deficiencies reported by the Online Survey, Certification and Reporting database.⁴¹

Further, 3 studies examined the ways in which the characteristics and quality of care delivered by frontline workers affect their own worker outcomes.^{39, 42, 43} One study of CNAs, LPNs, and registered nurses working in 203 skilled nursing facilities found a positive association between a facility's performance on CMS survey quality ratings and frontline workers' retention, satisfaction, and engagement.³⁹ Another study of 354 LPNs, CNAs, and registered nurses found that decreases in care quality in the nursing homes studied (defined as a combination of quality indicators, including physical restraint use, pressure ulcers, certification survey deficiencies, and others) were associated with increases in worker turnover rates.⁴³

Discussion

Although highly prevalent in the health care system and integral to patient care,³ frontline health care workers have generally been overlooked in medical and public health research. Moreover, research that formally examines how the working conditions in which they provide care affect their own outcomes, and those of the patients for whom they care, has been lacking. In particular, there has been an absence of conceptual frameworks providing clarity as to how working conditions affect outcomes for patients and workers. To address this gap, the research team proposed a comprehensive framework highlighting

these relationships and evaluated the existing 31 studies that pertain to these relationships. Overall, the team found that working conditions such as worker-perceived staffing adequacy, workload (based on the number of shifts and days worked), training, and perceived workplace discrimination were strongly associated with workers' satisfaction levels, turnover intentions, and mental health and well-being.^{15, 19, 22, 23} Additionally, outcomes among workers (eg, job satisfaction, turnover) were associated with the quality of care delivered by these workers, as well as patient outcomes such as incidence of pressure ulcers, falls, and various quality of life measures of residents in nursing homes.^{32, 35, 36} Although evidence was found for many of these individual associations, the relationship between working conditions endured by frontline health care workers and patient outcomes was less established, indicating a need for additional longitudinal research to test these relationships.

To the research team knowledge, this is the first study to propose a conceptual framework that synthesizes the relationships between various frontline working conditions, worker outcomes, and patient outcomes across a broad range of health care. Although other literature reviews also have sought to examine some of these relationships, most have focused on a narrow subset of workers – particularly nurses in a hospital setting. For example, Stalpers et al found that characteristics of nurse work environments such as staffing, collaboration, and communication were associated with adverse patient outcomes such as patient falls and incidence of pressure ulcers.⁴⁴

In addition to including an array of workers and care settings, the present review extends the existing body of research that ties working conditions, worker outcomes, and patient care outcomes together. For example, a recent conceptual framework by Feldman et al explored the relationships between policy, home health aide working conditions, satisfaction, retention, and client outcomes.¹¹ Similar to the present study, this framework highlights the influence of working conditions (eg, compensation, relationships at work, training) and worker outcomes (eg, satisfaction, retention) on the outcomes of home care clients. Notably, though, the majority of existing frameworks almost exclusively focus on 1 or 2 sole worker attitudes in relation to patient outcomes. For example, a framework by Franzosa et al emphasized the dynamic relationship between policy, home health aide satisfaction, high-quality care, and client outcomes.⁴⁵ Contrary to the wide range of worker outcomes included in the present conceptual model, the main worker outcomes examined in this framework included physical, emotional, and economic worker satisfaction. This review broadens the range of worker outcomes studied to include other critical factors such as turnover intent, satisfaction, empowerment, and physical and mental health and well-being, which are central to the provision of safe, high-quality patient care. Most notably, however, this framework is the first to comprehensively consolidate evidence regarding the relationships between working conditions, worker outcomes, quality of patient care, and patient outcomes, and to present these associations in unison.

Strengths and Limitations

The strengths of this study include a rigorous literature review, the development of a novel and comprehensive framework, and the inclusion of a diverse group of frontline health care workers such as CNAs, LPNs, nurse aides, and home care workers. A few limitations should

be noted. Although this review is unique in its use of such a broad spectrum of health care workers, the research team is limited in the ability to comment on training, pay, and work environment of distinct worker groups. Second, the study includes data conducted only in industrialized countries such as the United States and Canada.

Policy Implications

The proposed conceptual framework highlights the overarching influence of policy on both patients and workers. As indicated by the framework, working conditions (which are commonly regulated by state and federal policy) directly influence worker outcomes, characteristics and quality of patient care, and patient outcomes, thereby indicating that policy influences each of these domains as well. Thus, policy makers ought to consider the effects of poor compensation, inadequate staffing levels, dissatisfaction and burnout, and soaring turnover rates on the quality of care rendered by frontline workers, as well as on patient outcomes. Further, in order to attract frontline workers given the growing demand in this industry, and to simultaneously ensure that high-quality care is being provided to patients, policy makers should acknowledge the value of investing in frontline workers in terms of training, compensation, and improved work environments that emphasize clear communication and worker autonomy and empowerment.

As health care systems continue to reorganize and reform the care delivery process, and payment models shift from traditional fee-for-service structures to innovative payment approaches, further research is warranted on the role of worker-related factors in patient outcomes.⁷ Additionally, a growing emphasis on cutting costs and improving quality in the current health care landscape has shifted financial accountability for poor quality measure ratings onto organizations and agencies that currently employ frontline health care workers.⁴⁵ It is well documented in the literature that cost-cutting strategies in the form of lower wages, reduced benefits, and fewer resources can have a negative effect on frontline health care worker outcomes (eg, turnover, autonomy), and deteriorate the quality of care rendered by this workforce.⁴⁶ However, data are lacking on the effects of cost savings as a result of investing in the frontline workforce, although research indicates that doing so actually may reduce the hidden costs associated with worker burnout, turnover, and staffing.⁵ For example, lost work hours because of vacancies, recruiting costs, and training costs combined can be as high as \$4000 per frontline health care position.⁵ Further, training incumbent CNAs also can reduce long-term care agency costs by leading to significant savings in turnover costs.⁵ Indeed, the direct and indirect costs of turnover are substantial: one study of 902 nursing homes in California found that the marginal cost savings associated with a 10% reduction in turnover could lead to savings of 3% of total annual costs.⁴⁷ Nevertheless, existing data on the relationship between cost savings, quality of care, and working conditions in nursing homes and other frontline health care work environments are mixed,⁴⁸ indicating a need for future research to examine the relationships between cost savings and the outcomes proposed by this framework.

The all-encompassing position of policy in the conceptual framework and its influence on the quality of care delivered by frontline workers is meant to reflect these phenomena. However, evidence suggests that recent changes to policy and funding actually may be

harming some frontline workers' working conditions instead of improving them, given that frontline workers' voices are often excluded from policy discussions and decisions.⁴⁹ This framework thus may serve as a guide for policy makers seeking to address 2 pressing demands in today's health care landscape: investing in the frontline health care workforce and improving the quality of care delivered to patients.

Conclusion

In this study, the research team developed a novel conceptual framework that details how the environment in which frontline health care workers work affects not only workers themselves, but also the people for whom they care. In doing so, the team synthesized evidence from 31 existing studies that pertain to these factors. This framework is the first to comprehensively consolidate evidence regarding the relationships between working conditions, worker outcomes, characteristics and quality of care, and patient outcomes, and to demonstrate these associations in unison. Study results suggest that working conditions affect frontline workers' outcomes, the care they deliver, and their patients' outcomes. Future research can utilize this framework as a guide to empirically test these relationships. Furthermore, from a policy standpoint, this framework highlights the benefits of prioritizing pertinent working conditions such as staffing ratios, workload, training, and supervision, and support in policy reforms aimed at improving the long-term care and home health care sectors, as well as other environments in which frontline health care workers work. Although the studies included in this review were conducted prior to the COVID 19 crisis, the insights synthesized in this framework are more relevant today than ever. The COVID-19 pandemic has highlighted the consequences associated with a lack of attention to frontline working conditions.⁵⁰ Our framework provides a road map for policy makers, health care systems, and practitioners seeking to revisit their approach to frontline working conditions as a way to advance outcomes for patients and workers. Additional studies, as well as policy solutions, are needed to address the issues faced by this workforce in order to improve health care delivery.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements

We would like to thank Sara Scinto-Madonich, Cornell University systematic review librarian, for her assistance with the comprehensive search of the existing literature.

Funding

This research was supported, in part, by a generous gift from Douglas H. Wigdor, Esq, and the Cornell Center for Health Equity. Dr. Sterling is supported by the National Heart, Lung, and Blood Institute (K23HL150160). The views expressed here do not reflect those of the National Heart, Lung, and Blood Institute.

References

1. Hudson RB. The need for and the needs of the direct care workforce. *Public Policy & Aging Report*. 2017;27(3):81–83.

2. Bureau of Labor Statistics, U.S. Department of Labor. Occupational Outlook Handbook; Home Health Aides and Personal Care Aides. <https://www.bls.gov/ooh/healthcare/home-health-aides-and-personal-care-aides.htm>. Accessed July 13, 2020.
3. Stone R The direct care worker: a key dimension of home care policy. *Home Health Care Management & Practice*. 2004;16:339–349.
4. Patel K, Nadel J, West M. Redesigning the Care Team: The Critical Role of Frontline Workers and Models for Success. Washington, DC: Engelberg Center for Health Care Reform at Brookings; 2014.
5. Wilson R, Kelly A. CareerSTAT Guide to Investing in Frontline Health Care Workers. National Fund for Workforce Solutions. <https://nationalfund.org/learning-evaluation/publications/guide-to-investing-in-frontline-health-care-workers/>. Accessed July 20, 2020.
6. Gleason H, Shellito N, Gurgone L, Coyle C. Setting the agenda: Data driven advocacy to address home care aide policy. <https://phinational.org/resource/setting-the-agenda-data-driven-advocacy-to-address-home-care-aide-policy/>. Accessed July 20, 2020.
7. Avgar AC, Eaton AE, Givan RK, Litwin AS. Editorial essay: Introduction to a special issue on work and employment relations in health care. *ILR Review*. 2016;69:787–802.
8. Lehning AJ, Austin MJ. Long-term care in the United States: policy themes and promising practices. *J Gerontol Soc Work*. 2010;53(1):43–63. [PubMed: 20029701]
9. Stone R Research on frontline workers in long-term care. *Generations*. 2001;25(1):49–57.
10. Boamah SA, Spence Laschinger HK, Wong C, Clarke S. Effect of transformational leadership on job satisfaction and patient safety outcomes. *Nurs Outlook*. 2018;66:180–189. [PubMed: 29174629]
11. Feldman PH, Ryvicker M, Evans LM, Barron Y. The homecare aide workforce initiative: implementation and outcomes. *J Appl Gerontol*. 2019;38:253–276. [PubMed: 28452242]
12. Gaudenz C, De Geest S, Schwendimann R, Zúñiga F. Factors associated with care workers' intention to leave employment in nursing homes: a secondary data analysis of the Swiss nursing homes human resources project. *J Appl Gerontol*. 2019;38:1537–1563. [PubMed: 28715925]
13. Stone R, Wilhelm J, Bishop CE, Bryant NS, Hermer L, Squillace MR. Predictors of intent to leave the job among home health workers: analysis of the national home health aide survey. *Gerontologist*. 2017;57:890–899. [PubMed: 27106825]
14. Palumbo MV, McLaughlin V, McIntosh B, Rambur B. Practical nurses' health and safety in nursing homes. *J Health Hum Saerv Admin*. 2011;34:271–301.
15. Jang Y, Lee AA, Zadrozny M, Bae SH, Kim MT, Marti NC. Determinants of job satisfaction and turnover intent in home health workers: the role of job demands and resources. *J Appl Gerontol*. 2017;36:56–70. [PubMed: 25956445]
16. Bishop CE, Weinberg DB, Leutz W, Dossa A, Pfefferle SG, Zincavage RM. Nursing assistants' job commitment: effect of nursing home organizational factors and impact on resident well-being. *Gerontologist*. 2008;48 Spec No 1:36–45. [PubMed: 18694985]
17. Butler SS, Brennan-Ing M, Wardamasky S, Ashley A. Determinants of longer job tenure among home care aides: what makes some stay on the job while others leave? *J Appl Gerontol*. 2014;33:164–88. [PubMed: 24652953]
18. Delp L, Wallace SP, Geiger-Brown J, Muntaner C. Job stress and job satisfaction: home care workers in a consumer-directed model of care. *Health Serv Res*. 2010;45:922–940. [PubMed: 20403063]
19. Ejaz FK, Noelker LS, Menne HL, Bagaka's JG. The impact of stress and support on direct care workers' job satisfaction. *Gerontologist*. 2008;48 Spec No 1:60–70. [PubMed: 18694987]
20. Chou RJ-A, Robert SA. Workplace support, role overload, and job satisfaction of direct care workers in assisted living. *J Health Soc Behv*. 2008;49:208–222.
21. Vogel B, De Geest S, Fierz K, Beckmann S, Zúñiga F. Dementia care worker stress associations with unit type, resident, and work environment characteristics: a cross-sectional secondary data analysis of the Swiss nursing homes human resources project (SHURP). *Int Psychogeriatr*. 2017;29:441–454. [PubMed: 27903306]
22. Geiger-Brown J, Muntaner C, Lipscomb J, Trinkoff A. Demanding work schedules and mental health in nursing assistants working in nursing homes. *Work & Stress*. 2004;18:292–304.

23. Denton MA, Zeytino lu IU, Davies S. Working in clients' homes: the impact on the mental health and well-being of visiting home care workers. *Home Health Care Serv Q.* 2002;21(1):1–27.
24. McCaughey D, McGhan G, Kim J, Brannon D, Leroy H, Jablonski R. Workforce implications of injury among home health workers: evidence from the national home health aide survey. *Gerontologist.* 2012;52:493–505. [PubMed: 22217463]
25. Choi J, Johantgen M. The importance of supervision in retention of CNAs. *Res Nurs Health.* 2012;35:187–99. [PubMed: 22262015]
26. Thompson BJ, Stock MS, Banuelas VK. Effects of accumulating work shifts on performance-based fatigue using multiple strength measurements in day and night shift nurses and aides. *Hum Factors.* 2016;59:346–356. [PubMed: 27941163]
27. Zúñiga F, Ausserhofer D, Hamers JP, Engberg S, Simon M, Schwendimann R. Are staffing, work environment, work stressors, and rationing of care related to care workers' perception of quality of care? A cross-sectional study. *J Am Med Dir Assoc.* 2015;16:860–866. [PubMed: 26027721]
28. Hyer K, Thomas KS, Branch LG, Harman JS, Johnson CE, Weech-Maldonado R. The influence of nurse staffing levels on quality of care in nursing homes. *Gerontologist.* 2011;51:610–616. [PubMed: 21602292]
29. Redfern S, Hannan S, Norman I, Martin F. Work satisfaction, stress, quality of care and morale of older people in a nursing home. *Health Soc Care Community.* 2002;10:512–517. [PubMed: 12485139]
30. Trinkoff AM, Storr CL, Lerner NB, Yang BK, Han K. CNA training requirements and resident care outcomes in nursing homes. *Gerontologist.* 2016;57:501–508.
31. Barsade SG, O'Neill OA. What's love got to do with it? A longitudinal study of the culture of companionate love and employee and client outcomes in a long-term care setting. *Administrative Science Quarterly.* 2014;59:551–598.
32. Shin JH, Park T, Huh I-S. Nursing staffing and quality of life in western New York nursing homes. *West J Nurs Res.* 2013;36:788–805. [PubMed: 24258404]
33. Jarrin O, Flynn L, Lake ET, Aiken LH. Home health agency work environments and hospitalizations. *Med Care.* 2014;52:877–83. [PubMed: 25215647]
34. Al-Jumaili AA, Doucette WR. A systems approach to identify factors influencing adverse drug events in nursing homes. *J Am Geriatr Soc.* 2018;66:1420–1427. [PubMed: 29691843]
35. Plaku-Alakbarova B, Punnett L, Gore RJ. Nursing home employee and resident satisfaction and resident care outcomes. *Saf Health Work.* 2018;9:408–415. [PubMed: 30559988]
36. Trinkoff AM, Han K, Storr CL, Lerner N, Johantgen M, Gartrell K. Turnover, staffing, skill mix, and resident outcomes in a national sample of US nursing homes. *J Nurs Adm.* 2013;43:630–636. [PubMed: 24232236]
37. Van De Weerd C, Baratta R. New working conditions and consequences on activity of home healthcare workers. *Work.* 2012;41 suppl 1:1–4.
38. Tsui EK, Franzosa E, Cribbs KA, Baron S. Home care workers' experiences of client death and disenfranchised grief. *Qual Health Res.* 2019;29:382–392. [PubMed: 30264669]
39. Boakye-Dankwa E, Teeple E, Gore R, Punnett L. Associations among health care workplace safety, resident satisfaction, and quality of care in long-term care facilities. *J Occup Environ Med.* 2017;59:1127–1134. [PubMed: 28945639]
40. Berridge C, Tyler DA, Miller SC. Staff empowerment practices and CNA retention: findings from a nationally representative nursing home culture change survey. *J Appl Gerontol.* 2018;37:419–434. [PubMed: 27566304]
41. Lerner NB, Johantgen M, Trinkoff AM, Storr CL, Han K. Are nursing home survey deficiencies higher in facilities with greater staff turnover. *J Am Med Dir Assoc.* 2014;15:102–107. [PubMed: 24139163]
42. Rathert C, May DR. Health care work environments, employee satisfaction, and patient safety: care provider perspectives. *Health Care Manage Rev.* 2007;32(1):2–11. [PubMed: 17245197]
43. Castle NG, Engberg J. Staff turnover and quality of care in nursing homes. *Med Care.* 2005;43:616–626. [PubMed: 15908857]

44. Stalpers D, de Brouwer BJ, Kaljouw MJ, Schuurmans MJ. Associations between characteristics of the nurse work environment and five nurse-sensitive patient outcomes in hospitals: a systematic review of literature. *Int J Nurs Stud*. 2015;52:817–835. [PubMed: 25655351]
45. Franzosa E, Tsui EK, Baron S. Home health aides' perceptions of quality care: goals, challenges, and implications for a rapidly changing industry. *New Solut*. 2018;27:629–647. [PubMed: 29139336]
46. Burns DJ, Hyde PJ, Killett AM. How financial cutbacks affect the quality of jobs and care for the elderly. *ILR Review*. 2016;69:991–1016.
47. Mukamel DB, Spector WD, Limcangco R, Wang Y, Feng Z, Mor V. The costs of turnover in nursing homes. *Med Care*. 2009;47:1039–1045. [PubMed: 19648834]
48. Rantz MJ, Hicks L, Grando V, et al. Nursing home quality, cost, staffing, and staff mix. *Gerontologist*. 2004;44:24–38. [PubMed: 14978318]
49. Franzosa E, Tsui EK, Baron S. “Who’s caring for us?”: understanding and addressing the effects of emotional labor on home health aides’ well-being. *Gerontologist*. 2019;59:1055–1064. [PubMed: 30124808]
50. Sterling MR, Tseng E, Poon A, et al. Experiences of home health care workers in New York City during the coronavirus disease 2019 pandemic: a qualitative analysis. *JAMA Intern Med*. 2020;180(11):1453–1459. [PubMed: 32749450]

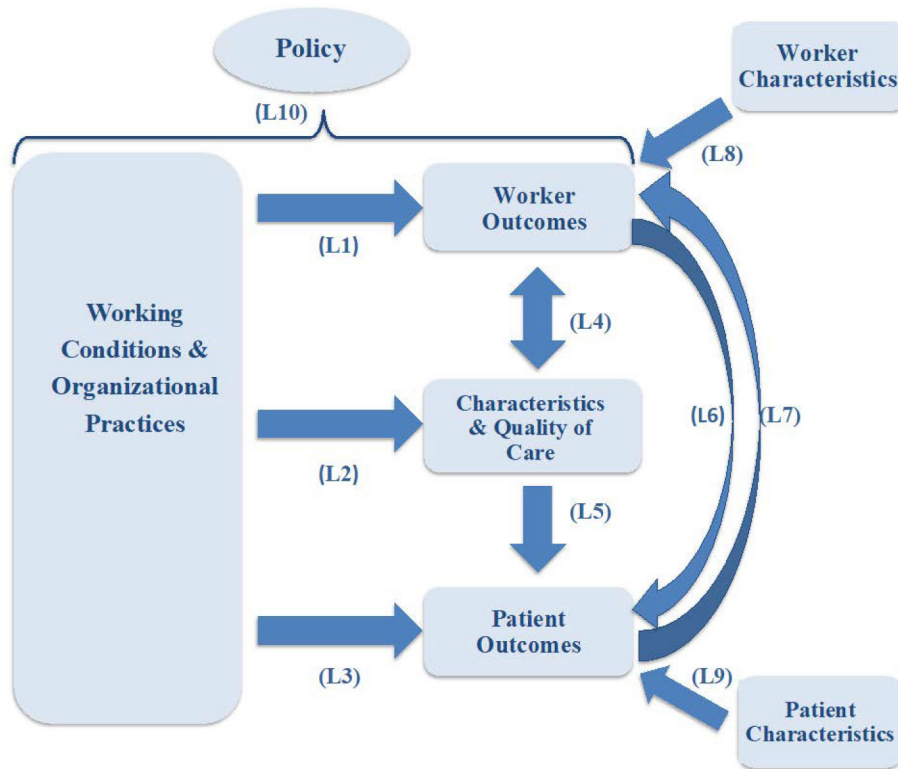


Figure 1.
Proposed conceptual framework.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1. Relationship between Working Conditions of Frontline Workers and Worker Outcomes.

Working Condition(s) ¹	Worker Outcome(s) ²	Relationship	Design	Population Context	Country	Studies
Training and peer mentoring	Retention	A training and peer mentoring program established under the Homecare Aide Workforce Initiative was associated with greater 3-, 6-, and 12-month retention of home care aides.	Mixed methods evaluation using qualitative interviews, and observational data and quantitative analyses of survey data.	N=228 home care aides from 3 agencies	US	Feldman et al 2019 ¹¹
Manager and supervisor leadership ratings	Intention to leave	Positive worker-reported leadership ratings of managers and supervisors were associated with lower worker intention to leave.	Secondary data analysis of data from Switzerland's multicenter cross-sectional Swiss Nursing Homes Human Resources Project study.	N=3984 nursing home care workers	Switzerland	Gaudenz et al 2017 ¹²
Insufficient work hours On-the-job injuries	Turnover intent	Insufficient work hours assigned and on-the-job injuries were associated with greater intent to leave the job.	Linked data set of 2 national surveys (National Home and Hospice Care Survey and National Home Health Aide Survey).	N = 160,720 home health workers	US	Stone et al 2017 ¹³
Workplace safety practices	Intention to leave	Better worker-evaluated workplace safety practices were associated with lower turnover intent.	Cross-sectional survey.	N=813 practical nurses working in various settings including, but not limited to: nursing homes, hospitals, and ambulatory centers.	US	Palumbo et al 2011 ¹⁴
Perceived workplace discrimination Recognition by supervisor and organization On-the-job physical injury	Job Satisfaction	Higher incidence of on-the-job physical injury and workplace discrimination were each independently found to be negatively associated with job satisfaction of home health workers. Recognition by a supervisor and by the organization were found to be positively associated with job satisfaction.	Secondary analysis of the 2007 National Home Health Aide Survey supplemented by qualitative data obtained from phone interviews.	N=3354 home health workers	US	Jang et al 2017 ¹⁵
Perceived workplace discrimination Recognition by supervisor and organization On-the-job physical injury	Turnover Intent	Higher incidence of on-the-job physical injury and workplace discrimination were each independently found to be associated with higher turnover intent. Recognition by a supervisor and the organization were found to be associated with lower turnover intent.	Secondary analysis of the 2007 National Home Health Aide Survey supplemented by qualitative data obtained from phone interviews.	N=3354 home health workers	US	Jang et al 2017 ¹⁵
Employee supervision	Turnover intent	Good basic supervision was associated with increased intent to stay on the job.	Quality-of-life questionnaire administered to CNAs; general linear model estimated the effects of job commitment on quality of life.	N=255 CNAs and N=105 residents in 15 nursing homes	US	Bishop et al 2008 ¹⁶

Working Condition(s) ¹	Worker Outcome(s) ²	Relationship	Design	Population Context	Country	Studies
Wages	Employee tenure	Higher hourly wages were associated with longer job tenure.	Mixed-methods study.	N=261 home care aides working in 11 home care agencies and companies	US	Butler et al 2014 ¹⁷
Abuse from consumers Unpaid overtime hours Caring for more than 1 consumer Work-health demands Social support and control (job security and union involvement)	Worker satisfaction	Abuse from consumers, unpaid overtime hours, caring for more than 1 consumer, and work-health demands predict less satisfaction. Social support and control (indicated by job security and union involvement) has a positive effect on satisfaction.	Mixed methods investigation using computer-assisted telephone interviews.	N = 1614 home care workers	US	Delp et al 2010 ¹⁸
Training Pay and Benefits	Job Satisfaction	Better worker-perceived training practices were associated with higher job satisfaction. Fair worker-perceived compensation and the presence of a retirement/pension plan and paid health insurance were associated with higher job satisfaction.	Survey data using a multiple regression analysis and hierarchical linear modeling.	N=644 Direct care workers from 49 long-term care organizations (nurse assistants in nursing homes, resident assistants in assisted living facilities, and HCAs in HHAs)	US	Ejaz et al 2008 ¹⁹
Supervisor, coworker, institutional support Pay	Job satisfaction	Greater supervisor, coworker, and institutional support were each independently associated with higher job satisfaction of direct care workers. Pay was not associated with job satisfaction.	Cross-sectional survey.	N=984 direct care workers working in 108 assisted living facilities	US	Chou & Robert 2008 ²⁰
Staffing & resources adequacy Workplace aggression	Worker stress levels	Poor worker-perceived staffing and resources adequacy was associated with increased worker stress levels. The presence of verbal or physical aggression in the workplace was associated with increased worker stress levels.	Cross-sectional secondary data analysis of the Swiss Nursing Homes Human Resources Project.	N= 3922 care workers working in 156 nursing homes	Switzerland	Vogel & Züniga 2017 ²¹
Workload	Risk for mental health indicators	Higher workload, defined as working 2 double shifts per month, was associated with increased risk for mental health indicators, including depression, anxiety, and somatization. Higher workload, defined as working 6–7 days per week was associated with increased risk for mental health indicators, including depression and somatization.	Cross-sectional survey.	N=473 female nursing assistants working in nursing homes	US	Geiger-brown et al 2004 ²²
Workload Harassment Safety hazards Repetitious work Work-related injuries Pay	Mental health and well-being	Workload, harassment, safety hazards, repetitious work, and work-related injuries were each independently associated with poorer mental health of home care workers. Pay, benefits, organizational support, and peer	Mixed-methods, cross-sectional study using the focus group method in addition to data obtained by a questionnaire.	N=674 home care workers including home care therapists, nurses, and support workers	Canada	Denton, Zeytino lu, and Davies 2002 ²³

Working Condition(s) ¹	Worker Outcome(s) ²	Relationship	Design	Population Context	Country	Studies
Benefits Organizational support Peer support		support were each independently associated with better mental health of home care workers.				
Perceptions of training Perceptions of social support	Risk of workplace injury	Poor worker perceptions of training were associated with increased risk for workplace injuries. Poor worker perceptions of social support were associated with higher risk for workplace injuries.	Secondary analysis of data from the 2007 National Home Health Aide Survey.	N=3377 home health aides	US	McCaughey et al 2012 ²⁴
Supportive supervision	Job satisfaction Intent to leave	The degree of supportive supervision was positively associated with CNA job satisfaction and negatively associated with intent to leave.	Multilevel logistic regression analysis of linked data from the 2004 National Nursing Home Survey and the 2004 National Nursing Assistant Survey.	N= 3017 CNAs	US	Choi & Johantgen 2012 ²⁵
Work compression	Isometric strength-based performance testing of 3 muscle groups (knee extensors, knee flexors, and wrist flexors)	A more compressed nursing work schedule (three 12-hour work shifts in a 4-day period) resulted in decreases in strength-based performance abilities.	Participants performed isometric strength-based performance testing of 3 muscle groups (knee extensors, knee flexors, and wrist flexors) and countermovement jumps, at baseline and after three 12-hour work shifts in a 4-day period.	N= 37 female health care workers including registered nurses, nurses' aides, and licensed vocational nurses	US	Thompson et al. 2016 ²⁶

¹Independent variable.

²Dependent variable.

Abbreviations: CNA, certified nursing assistant; HCA, health care aide; HHA, home health agency.

Table 2.

Relationship between Working Conditions of Frontline Workers and Characteristics and Quality of Care Delivered.

Working Condition ¹	Characteristics and Quality ² of Care	Relationship	Design	Population Context	Country	Studies
Teamwork Safety climate Leadership Staffing levels	Worker-perceived quality of care	Greater teamwork was associated with better worker-perceived quality of care. Higher safety climate was associated with better worker-perceived quality of care. Leadership was not significantly associated with quality of care. Staffing was not significantly associated with quality of care.	Cross-sectional survey	N=4311 CNAs, LPNs, and nurse aides	Switzerland	Zúñiga et al 2015 ²⁷
Staffing ratio (average number of nurse staffing hours per resident a day)	Total CMS survey deficiency scores Quality of care survey deficiency scores	Higher CNA staffing levels were predictors of lower total deficiency scores and lower quality of care deficiency scores.	Data from Florida staffing reports and the Online Survey Certification and Reporting database for 663 Florida nursing homes between 2002 and 2005.	N=663 nursing homes Survey population: CNAs and LPNs	US	Hyer et al 2011 ²⁸
Job Satisfaction	Quality of care perceived by staff	Satisfaction was positively related to quality of care perceived by staff	Staff questionnaire; interviews with residents	N=34 residents and 31 care staff in one 46-bed nursing home	UK	Redfern et al 2002 ²⁹

¹Independent variable.

²Dependent variable.

Abbreviations: CMS, Centers for Medicare & Medicaid Services; CNA, certified nursing assistant; LPN, licensed practical nurse.

Table 3.

Relationship between Working Conditions of Frontline Workers and Patient Outcomes.

Working Condition ¹	Patient Outcome ²	Relationship	Design	Population Context	Country	Studies
Training hours	Patient odds of adverse outcomes (pain falls with injury, depression)	A greater ratio of clinical to didactic hours for CNAs was related to better resident outcomes: Nursing homes in states that required clinical training hours above the federal minimum had lower odds of adverse outcomes such as pain falls with injury and depression.	Compiled data on 2010 state regulatory requirements for CNA training (clinical, total initial training, in-service, ratio of clinical to didactic hours) linked to 2010 resident outcomes data.	N=15,508 nursing homes Worker population: CNAs	US	Trinkoff et al 2016 ³⁰
Culture of companionate love in the workplace	Patient mood Patient quality of life Patient satisfaction Number of trips to the emergency room	A work culture of companionate love (indicated by feelings of compassion, tenderness, affection, and caring for others) was associated with better patient mood, quality of life, patient satisfaction, and fewer trips to the emergency room	Longitudinal study.	N=185 employees and N=108 patients ("residents") in a large nonprofit long-term health care facility	US	Barsade & O'Neill 2014 ³¹
Staffing (hours per resident day)	Self-reported quality of life measures (comfort, functional competency, privacy, meaningful activity, autonomy, food enjoyment, spiritual well-being, security, individuality, dignity, relationships)	CNA staffing hours had a positive impact on the spiritual well-being domain. LPN staffing hours were negatively associated with the food enjoyment domain.	Cross-sectional, correlational study.	N=142 residents from 8 nursing homes Worker population: CNAs, LPNs, and RNs	US	Shin et al 2013 ³²
General work environment	Acute hospitalizations Patient discharges	Better work environments (as rated by the University of Pennsylvania Multistate Survey of Nursing Care and Patient Safety) were associated with lower rates of acute hospitalizations. Better work environments were associated with more patient discharges.	Cross-sectional analysis of linked Center for Medicare & Medicaid Services Home Health Compare data and nurse survey data.	N=1436 RNs working in 118 home health agencies	US	Jarrín et al 2014 ³³
Workload (number of residents per nurse/nursing assistant)	Adverse drug events	Facilities with higher workload were more likely to have adverse drug event incidents.	Observational quantitative study using retrospective resident chart extraction and survey data	N=11 nursing homes	US	Al-Jumalal & Doucette 2018 ³⁴

¹Independent variable.²Dependent variable.

Abbreviations: CMS, Centers for Medicare & Medicaid Services; CNA, certified nursing assistant; LPN, licensed practical nurse; RN, registered nurse.