

An Examination of Washington State Workers' Compensation Claims for Home-Based Health Care Workers, 2006 to 2016: Part 2. Injury Rates and Trends

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Abstract

Research of home-based health care (HBHC) has shown that care providers suffer from a high rate of injuries. Analysis of workers' compensation records, a reliable source for injury and illness data, enables the identification of trends within a specific working population. HBHC workers' compensation compensable claims in Washington State from 2006 to 2016 were compared to clinical health care (CHC) claims. Injury event and source attributed to HBHC claims were also analyzed, with a focus on work-related musculoskeletal disorders (WMSDs). Though CHC had 5 times the number of full-time employees during the study period, HBHC grew by 61.1%, compared to 28.7% in CHC. Claim rates for all compensable claims and WMSD claims consistently decreased year-over-year for both HBHC and CHC. WMSD claims experienced a year-over-year decline of 5.3%; for all compensable claims the decline was 4.5%. Analysis of HBHC claim rates by injury event found WMSD had the highest rates, followed by falls from the same level. However, the largest annual change was for the injury event overexertion (−10.1%, 95%CI: −13.4, −6.8). HBHC injuries attributable to the health care patient were the most common. Claims with this injury source declined annually by 6.0%. Claim rates for injuries to the back region, and specifically back WMSDs, were consistently higher year-over-year compared to other body regions and WMSD types. Claims for injuries to the back declined by an annual rate of 6.6% (95% CI: −7.9, −5.3), while back WMSD claims decreased by 6.4% (94% CI: −7.8, −4.9).

Keywords

home-based health care, workers' compensation, work-related musculoskeletal disorders, occupational injuries, costs, home health care

Introduction

Home-based health care (HBHC) is one of the fastest growing health care sectors in the United States. This growth is reflected in the increased number of available Medicare-certified home health agencies per 100,000 adult population between 2002 and 2015, increasing from 14.7 to 21.8.¹ Between 2019 and 2029, the projected job growth for U.S. home health and personal care aides is an estimated 34%.² In comparison, the demand for nurses is expected to grow by 7% during this same period.² The need for home-based health care arises from several factors, including an aging U.S. population and improved health and cost outcomes when care is given in the home.^{2,3}

Home-based health care involves a wide range of caregiving tasks, from assisting in activities of daily living to more complex care such as dialysis, chemotherapy, diabetes management and home infusion therapies. This variety of caregiving tasks results in differing work settings, autonomy

levels, and responsibilities. A scoping review to evaluate the breadth and depth of home-based health care aide literature found these workers experienced low job stability, lower wages, fewer working hours, and a lack of benefits compared to those working in hospitals and nursing homes. Because HBHC aides perform a wide range of tasks, their role can be unclear.⁴

The provision of care that allows individuals to remain in their home is often a physical job, involving awkward lifting,

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pushing and pulling.^{5,6} HBHC providers have been shown to suffer from a high rate of on-the-job injury compared to other occupations. The 2019 national injury rate for home health aides and personal care aides of 94.5 injuries/illness per 10,000 full-time workers is comparable to the rates for machinists and painters.⁷ Wipfli et al⁸ found that home health aides suffered work-related injuries at a rate 3 times higher than the national average for all occupations. PHI (The Paraprofessional Health Institute) identified factors for injuries to home-based health care workers: improper and/or repetitive lifting and repositioning activities, inadequate staffing, and incompatible assignments between caregiver and care recipient.⁹ Additionally, the underreporting of injuries prevent useful data from reaching decision-makers within the industry.⁹ Underreporting was identified as a problem within the home-based care industry. HBHC workers have described managing chronic injuries through the use of pain medication, acupuncture, herbal remedies, and adjusting how they perform their tasks. It is only when injuries become unmanageable and workers can no longer perform their job that the injury is reported.¹⁰ Injuries to these workers are most often attributable to patient handling.^{8,11,12} In Washington State, an examination of workers' compensation claims between 1998 and 2007 found musculoskeletal disorders the most prevalent injury type among home-based health care workers.¹³ Despite the high rate of injury among home-based health care providers, injuries are often not reported.¹⁴ Additionally, those who were injured are more likely to have the intention to leave their job.¹⁵ In 2017, average caregiver turnover was 66%; the estimated cost of replacing a single home-based caregiver was \$2600.

The effectiveness of interventions and safe patient handling programs in reducing care provider injuries in clinical care facilities, such as hospitals and nursing homes, is well studied.^{16,17} However, the efficacy of these same preventative measures in the home health care setting is not well understood.¹⁸ Research has found differences between HBHC providers and those in clinical care facilities with regard to the types of injuries suffered, injury rates, demographics and chronic health conditions.¹⁹⁻²¹ Comparing these 2 working populations highlights the distinctiveness of home health care from clinical health care. This provides a better understanding of how prevention efforts developed for health care facilities may or may not guide the development of preventative measures in home health.

Workers' compensation is considered an elucidative source for injury and illness data, enabling the identification of trends and patterns within specific working populations. Though previous studies have utilized workers' compensation data to identify injuries and illnesses within home-based health care,^{13,22,23} there is a paucity of industry-level surveillance data. This research continues an examination of home-based health care workers' compensation claim data between 2006 and 2016 in Washington State. Earlier analyses of these data²⁴ found the majority of injured HBHC providers were

between the ages of 40 and 59, with a median age of 45.7, younger than the national median age for registered nurses of 52 years.²⁵ Work-related musculoskeletal disorders (WMSDs) accounted for close to half of the compensable claims for HBHC. Injuries from falls from the same level have also proven frequent.²⁴

The aim of this research is to describe recent trends and patterns of injury incidence among home-based health care workers in Washington State. Through the identification and tracking of injuries, prioritization of intervention efforts can be determined. Some comparisons were made between home-based health care and clinical health care in order to identify similarities and differences in trends and patterns. In this research, Washington State workers' compensation claim data were examined to identify the events and causes of injuries over an 11-year period, 2006 to 2016. A focus on work-related musculoskeletal disorders (WMSDs) is provided, given that this injury type is, historically, the most prevalent in the Washington State's workers' compensation insurance.

Methods

Washington Workers' Compensation Claims

In Washington State, employees are either covered by the State's industrial insurance fund, commonly referred to as the State Fund, which covers approximately 3-quarters of the mandated covered workforce, or by large employers who self-insure. Both accepted state fund and self-insured compensable claim data were analyzed. Compensable claims involve wage replacement or disability benefits and is, therefore, considered more serious than claims that only involve medical treatment. In Washington State, eligibility for wage replacement begins after a 3-day waiting period, in which workers are medically determined to be unable to work. The State Fund workers' compensation database includes data necessary to adjudicate claims, including codes characterizing the injury or illness, medical treatments and procedures, and associated costs. Self-insured claim data are not as complete as State Fund claim data in that medical billing, costs, and days of missed work are only available for closed claims.

A detailed description of data extraction methods is provided in a companion study using these same data.²⁴ Washington State workers' compensation claim data between 2006 and 2016 was extracted for analysis. Data were extracted in February 2019 for claims accepted between January 1, 2006 and December 31, 2016. A minimum claim maturation period of 18 months was required. Data from open and closed HBHC and CHC compensable claims and work-related musculoskeletal disorders (WMSD) claims, a subset of compensable claims, were extracted. Extracted data included claim status (medical only or compensable), body region, injury event and source, associated costs and lost workdays due to injury. Body regions included the trunk, upper extremities,

Table 1. Washington State Risk Classification System and NAICS^a Codes Used to Identify Patient Care Jobs in Home-Based (HBHC) and Clinical Health Care (CHC).

Health care type	NAICS ^a Code	WA Risk Classification Codes
Home-Based Health Care	6216: Home Health Care Services 6241: Individual and Family Services	6110: Home Services, Nursing Care Not Otherwise Classified 6511: Chore Services/Home Care Assistants 6512: Home Care Services/Home Care Referral Registry
Clinical Health Care	621: Ambulatory Health Care Services 622: Hospitals 623: Nursing and Residential Care Facilities	N/A

^aNorth American Industrial Classification System.

lower extremities and multiple body parts (claim included more than one of the preceding regions). Occupational Injury and Illness Classification System (OIICS) codes, assigned at the beginning of the claim process and representing the initial injury description, were used to characterize body region, injury event and injury source. Costs were expressed in 2015 U.S. dollars using the Consumer Price Urban Workers Index. Closed claim costs reflected the actual dollars paid out during the analysis period (2006-2016). Open claim costs reflected the actual dollars paid out in addition to the case reserve estimates for future costs.

At the beginning of the claim process, claims are categorized as either non-traumatic or traumatic onset to differentiate cumulative exposures from acute exposures, such as falls. This distinction was used to help identify WMSDs. A WMSD case involved a combination of body region, nature of injury and non-traumatic event type. Cases of WMSDs were identified using combinations of OIICS codes (v1.01) for body region, nature, primary and secondary source and exposure consistent with WMSD. Injury nature involved dislocations; sprains, strains and tears; back pain, non-specified soreness, pain, hurt excluding the back, carpal tunnel syndrome and other disorders of the peripheral nervous system; diseases of the circulatory system; disorders and diseases of the musculoskeletal system. WMSDs were identified as either (1) a specific body region code and a general WMSDs diagnosis, (2) a generalized body part code with a diagnosis that clearly indicated the specific body part, or (3) an injury code that alone clearly indicated a WMSD. WMSD exposures included contact stress, and bodily reaction and exertion. A listing of the OIICS codes utilized to identify WMSDs has been described elsewhere.²⁴ Previous studies have used this case definition of WMSDs.²⁶⁻²⁸ Claim rates for all compensable claims and WMSD claims were expressed as claims per 10,000 full time equivalents (FTEs), which is based on 2000 working hours per year, as reported by employers. Analyses of claim rates were done by event type, injury source, injured body region (back, hand/wrist, leg, neck, and shoulder) and WMSD type (back, shoulder, hand/wrist, knee, elbow and neck). Injury events and sources were defined by the Occupational Injury and Illness Classification System (OIICS) codes (v1.01).

Definition of Occupational Groups, Home-Based Health Care (HBHC) Services, and Clinical Health Care (CHC) Services

Cases were identified from patient care jobs involved in home-based health care (HBHC) and clinical health care (CHC). HBHC jobs were identified using a combination of codes from the North American Industrial Classification System (NAICS) and the Washington State workers' compensation insurance risk classification codes. The Washington State workers' compensation risk classification system is unique to this state, grouping occupations into categories based the type of work performed and the risk of insurance loss. The use of this classification system allowed for a more precise identification of claims within home-based health care. The risk classifications and NAICS codes used are listed in Table 1. A total of 5558 claims were extracted for HBHC. To identify claims in clinical health care, NAICS codes associated with clinical care (Table 1) were used to extract claim data initially, which yielded over 82,000 claims. A review of risk classes associated with these claims was then conducted and claims with risk classes not involving CHC services were removed from the dataset (117 risk classes). With the elimination of medical-only claims, 43,513 claims formed the final dataset. An earlier analyses of these data²⁴ found a greater proportion of HBHC providers were female than CHC providers (all compensable claims 90.1% vs 79.5%; WMSD claims 91.6% vs 81.7%). The mean age of HBHC claimants with WMSDs was 45.3 years, significantly older than CHC claimants with WMSD (42.9 years). HBHC claimants for all compensable claims were also significantly older than their CHC counterparts (45.7 vs 43.8 years). HBHC providers also had significantly greater body mass indexes (30.4 for all compensable claims, 30.0 for WMSD claims).

Data Analysis

Trends of all compensable and WMSD claims were analyzed by negative binomial regression modeling using GENMOD procedure in SAS[®]. For those variables with no over-dispersion, Poisson regression was utilized. Estimated changes in claim rates year-over-year during the analysis period

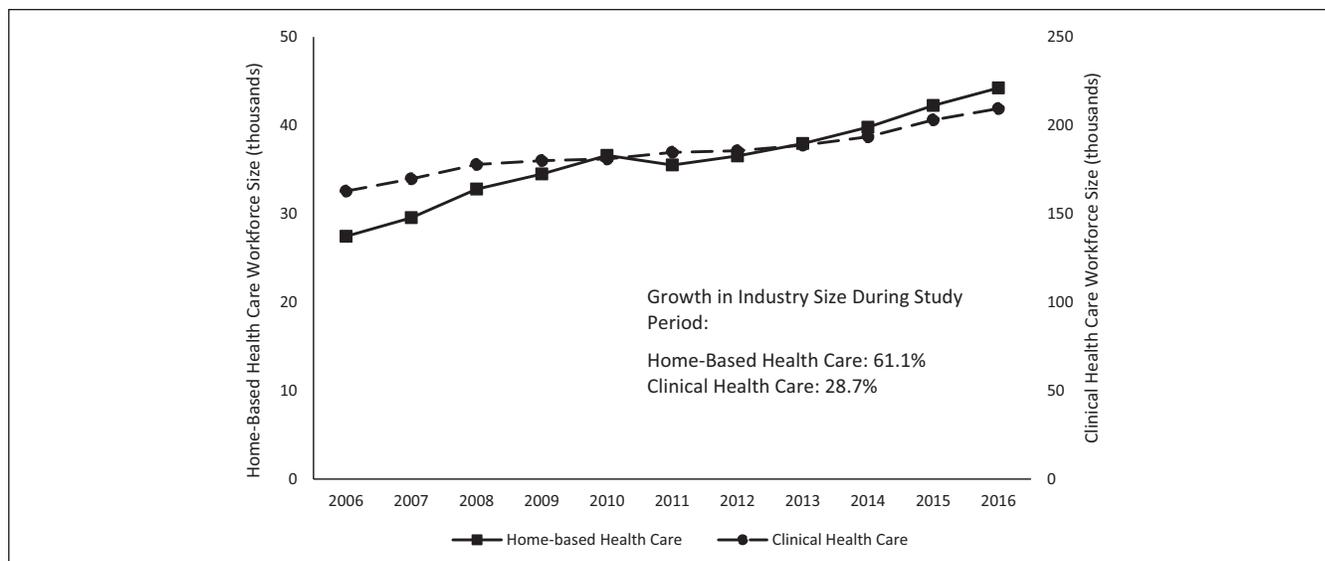


Figure 1. Number of full-time employees in home-based health care and clinical health care: Washington State, 2006 to 2016.

^aBased on full-time employment, 2000 hours worked/year.

(2006-2016) are reported, using reported working hours as the exposure variable. Statistical significance level was set at 0.05.

Results

Description of Home-Based Health Care Industry

The size of clinical health care in Washington State is much larger than that of home-based health care, with respect to full-time workers. Figure 1 shows the growth within these 2 industry sectors across the 11 year study period, based on hours reported by employers to the Department of Labor and Industries. Although the size of CHC was 5 times greater than HBHC, HBHC grew by 61.1% across the study period, compared to 28.7% in CHC (Figure 1).

Workers' Compensation Claims Trends

In a comparison of claim rates between all compensable claims and WMSD claims, CHC rates were consistently higher than HBHC rates for both types of claims (Figure 2). Rates declined during the study period for both types of claims. The HBHC rates for all claims and WMSDs had greater year-over-year declines than CHC, though the differences in rates of decline were not significantly different. The year-over-year decline in WMSD claim rate for HBHC (5.3%) was greater than the year-over-year decline in claim rate for all HBHC claims (4.5%).

WMSD was the most prevalent injury event between 2006 and 2016, though overall, the claim rates for all injury types decreased during this period, with the exception of violence (Figure 3). Falls from the same level was the next most

common event type. Year-over-year, the claim rates for falls to a lower level, struck by/against, violence and vehicle accidents were inconsistent. Overexertion experienced the greatest decline in claim rate, declining an estimated 10.1% year-over-year, followed by Struck By injuries and WMSDs (6.4% and 5.3% year-over-year decline, respectively). Though not statistically significant, the annual claim rate for violence increased by 1.6%.

The annual rate of claims with health care patient as the source of injury was consistently the highest throughout the study period, with an estimated annual year-over-year decline in rates of 6.0% (Figure 4). This rate decline was similar to that observed for the injury source of tools/equipment. The health care patient was followed by structures/surfaces, bodily motion/conditions of the injured worker, and vehicles as the injury sources with the highest claim rates. Claim rates for vehicles as the injury source remained stable throughout the study period, with a year-over-year annual rate decline of only 0.2%, though this decline was not significant (95% CI: -3.9, 3.6). Bodily Fluids was the only injury source to experience a year-over-year increase in claim rate (12.9% year-over-year increase, 95% CI: 3.5, 23.2).

The back was the body region with the highest claim rates across the study period, followed by the leg (Figure 5). The back region experienced the largest year-over-year decline in rate, with a statistically significant decline of 6.6% (95% CI: -7.9, -5.3). The hand/wrist region saw a decline of 5.3% (95% CI: -8.3, -2.2). The neck region experienced the least decline (0.5%), though this was not statistically significant. The annual rate decline of the shoulder also proved to be insignificant (-1.8%, 95%CI: -5.8, 2.4).

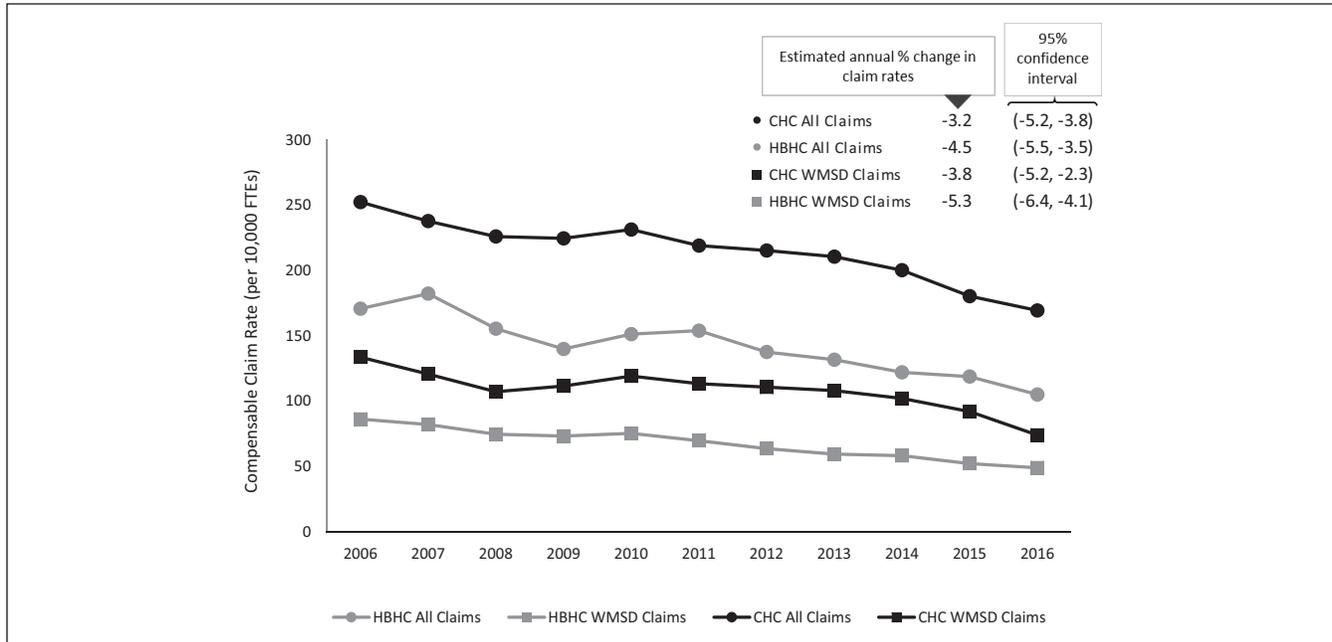


Figure 2. Washington State Workers' Compensation Compensable Claim Rates for Home-Based and Clinical Health Care, 2006 to 2016.

HBHC=home-based health care; CHC=clinical health care; WMSD=work-related musculoskeletal disorder; FTE=full-time equivalent (2000 hours worked/year).

^aState fund compensable claims only, where the injured/ill worker medically certified as unable to perform normal work duties beyond 3 calendar days, not including the date of injury.

HBHC compensable claim rates for WMSDs by body region were analyzed—back, shoulder hand/wrist, and knee (Figure 6). Claim rates for all body regions experienced year-over-year declines. Back WMSDs had the highest claim rates across the entire study period. Annual claim rates for the back ranged between 31.9 and 73.8 claims per 10,000 FTEs. Across the study years, claim rates for the shoulder, hand/wrist, knee and neck stayed below 20 claims per 10,000 FTEs. Back WMSDs experienced a decline of 6.4% (95%CI: -7.8, -4.9). Shoulder WMSDs saw the least decline, 4.0%, though this result was not statistically significant.

Discussion

This research found that workers' compensation compensable claims for injuries and WMSDs among home-based health care declined between 2006 and 2016. The decline in rates for all claims and for WMSDs has been observed in previous examinations of Washington State workers' compensation claims.^{26,28} A similar decline in national occupational rates has also been observed.^{29,30} Several factors may be contributing to this observed decline, including underreporting. In an analysis of a survey of non-management salaried employees, less than 20% of employees with at least 1 day of work absence caused by a WMSD filed a workers' compensation claim.³¹ A study of underreporting by injured

workers' in the health care industry found that it was the employees' perception of which incidents were eligible, and not the lack of awareness about their rights after an injury, that posed an obstacle in reporting.³² Workers may believe that the injury was not serious enough to report. The benefits and costs of reporting may also be a determinant of underreporting. Galizzi et al³² found that workers perceived no benefit with reporting; either no corrective action to reduce the job-related risk was taken or the corrective burden was put on the worker to work more carefully. However, research has found that the lack of knowledge about workers' compensation eligibility by independent care providers, where the traditional employment infrastructure to help educate workers is absent, poses a barrier to reporting.¹⁰ The workers' compensation system can be an intimidating process, especially for those not familiar with workplace safety practices of the United States. Several facets of the process have been identified to undermine the health of workers, and encourage underreporting including stigmatization of injured workers and the power imbalance between claimants.³³ Though the reasons described are valid explanations to support the position of underreporting of injuries to workers' compensation, their contributions may not be sufficient enough to account for the observed decline in claim rates. In order to truly understand the reasons for underreporting, interviews with workers who do not report their injuries are

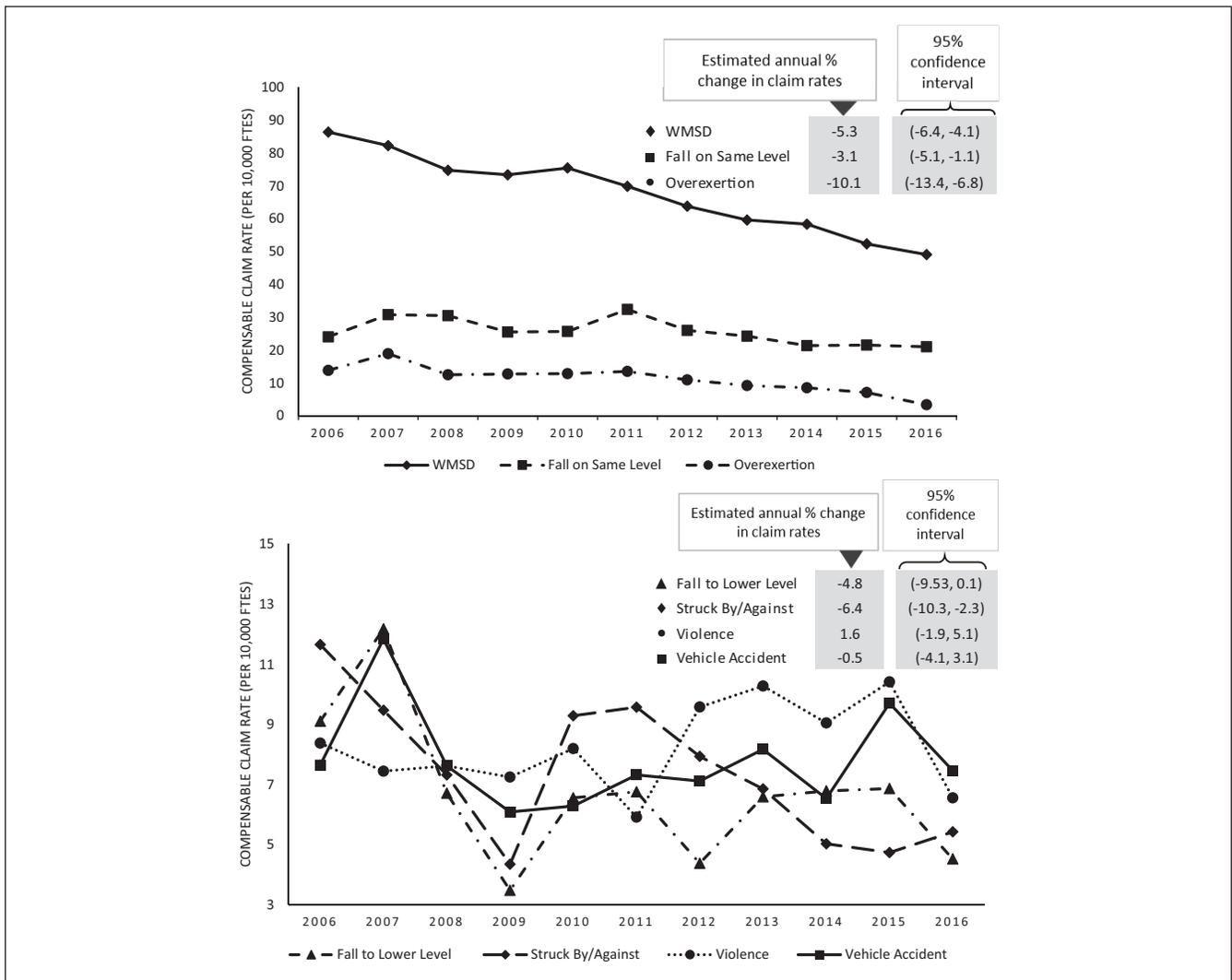


Figure 3. Washington State Workers' Compensation Compensable Claim Rate by Event Type for Home-Based Health Care, 2006 to 2016.

Note. WMSD = work-related musculoskeletal disorders; FTE = full-time equivalent (2000 hours worked/year).

^aState fund compensable claims only, where the injured/ill worker medically certified as unable to perform normal work duties beyond 3 calendar days, not including the date of injury.

needed; however, identifying and locating such workers is difficult and was beyond the scope of this study.

A contributing factor to the observed decline in claim rates that is gaining attention is the shift of occupational injuries from state workers' compensation systems into other programs. Evidence has shown that costs for occupational injuries have shifted from state workers' compensation systems to federal programs and private insurers, including Medicare, Medicaid, and Social Security disability.³⁴⁻³⁶ As more workers are covered by Affordable Care Act programs, they may be receiving care through this avenue. There is also evidence that the changing labor market and the growth of less secure work arrangements is having an adverse effect on workers' compensation utilization.³⁷ Workers' compensation benefits are based on the traditional employer/employee

relationship. The traditional workplace of a fixed-site manufacturing plant with union representation is being replaced by work that includes workers with multiple jobs, or working from home.³⁸ The self-employed or independent contractors are not entitled to workers' compensation benefits and are, thusly, overlooked in examinations of these databases.³⁹ And despite a slight increase in unionized workers between 2019 and 2020, since the early 1980's the number of unionized workers has been declining.⁴⁰ Unionization has, historically, been an essential advocate for worker protection programs. All these factors may limit access to or knowledge of industrial insurance eligibility.

Within HBHC, underreporting of workplace injuries may be attributable to the following factors: care providers' personal commitment to their patients and not wanting to stop

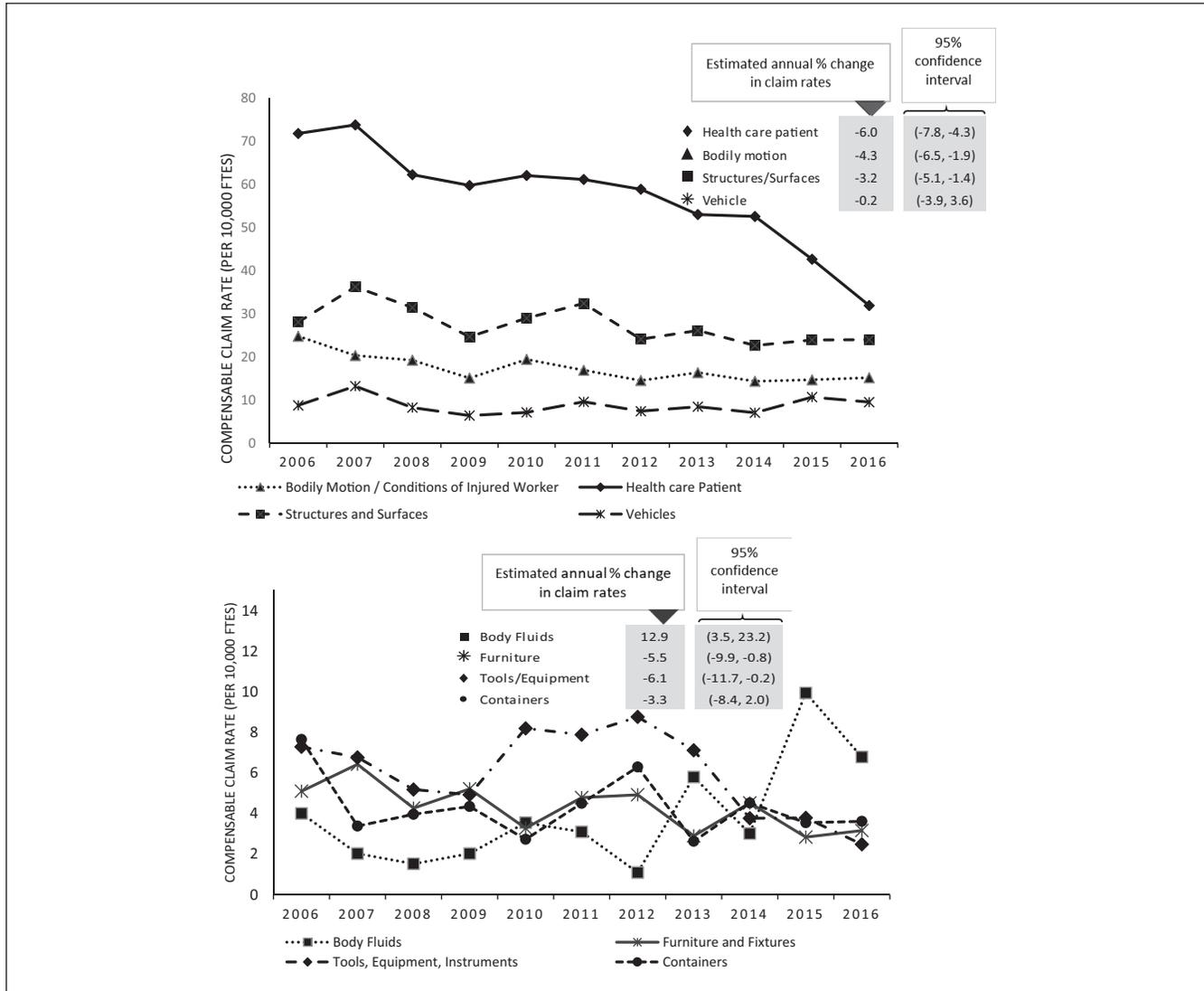


Figure 4. Washington Workers' Compensation Compensable Claim Rate by Injury Source for Home-Based Health Care, 2006 to 2016.

FTE = full-time equivalent (2000 hours worked/year).

*State fund compensable claims only, where the injured/ill worker was medically certified as unable to perform normal work duties beyond 3 calendar days, not including the date of injury.

caring for them, worrying over losing hours and wages, fear of losing of their good reputation and the inconvenience of the reporting process.^{10,41} Precariousness of income has been identified as a contributor to underreporting, as well. Home care workers have reported avoiding taking care of themselves because it would require taking time off to visit a medical provider, resulting in loss of income.⁴² An examination of home care workers in Alameda County, California, found the majority of home care workers were primary breadwinners of the their family.⁴³

The year-over-year injury rates were found to be higher for CHC than HBHC, both for all compensable claims and WMSD claims. In a separate analysis of these workers'

compensation claim data, the overall claim rate across all study years was also found to be higher for CHC.²⁴ However, HBHC claims were more expensive, and involved more lost work days.²⁴ These are important factors to consider when prioritizing resources for injury prevention.

Though the claim rates declined across the study period, the health care patient was the most prevalent injury source in the workers' compensation compensable claims data. However, these data did not describe the type of interaction with the patient that resulted in the injury. These data includes injuries incurred both while handling a patient (transferring, lifting, repositioning) and from violent acts. An examination of the injury narratives of the claims may describe

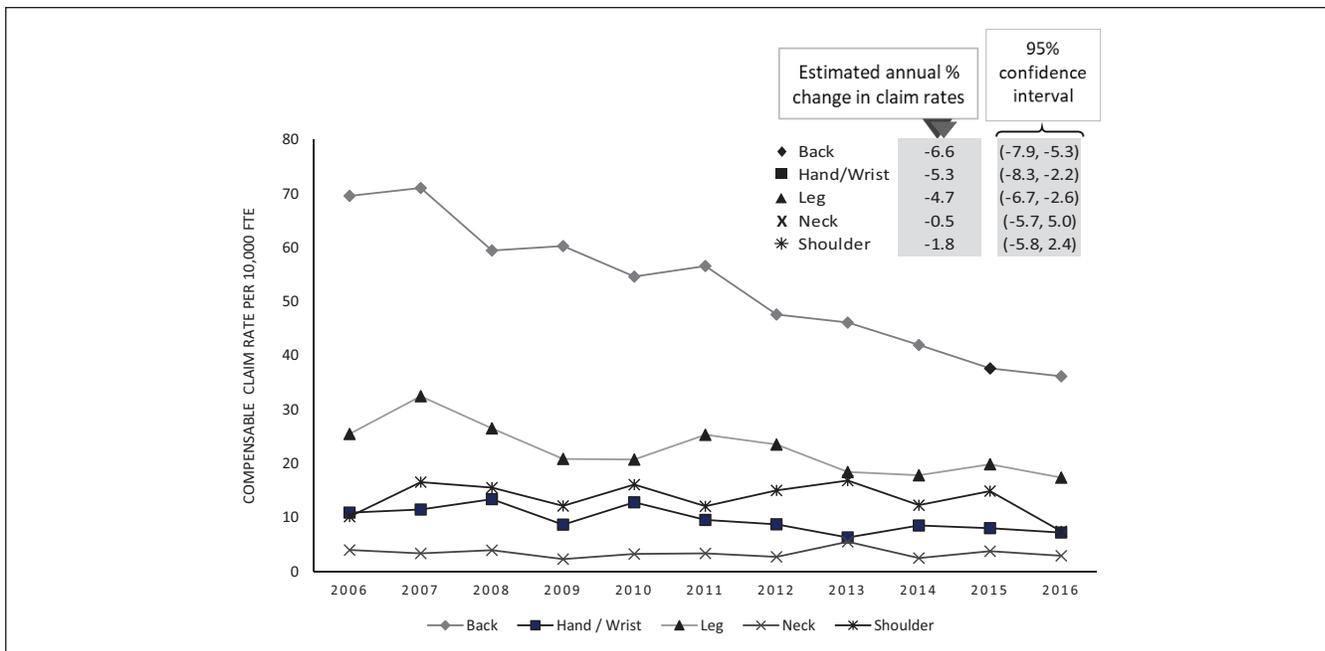


Figure 5. Washington State Workers' Compensation Compensable Claim Rates by Body Region for Home-Based Health Care, 2006 to 2016.

FTE = full-time equivalent (2000 hours worked/year).

^aState fund compensable claims only, where the injured/ill worker was medically certified as unable to perform normal work duties beyond 3 calendar days, not including the date of injury.

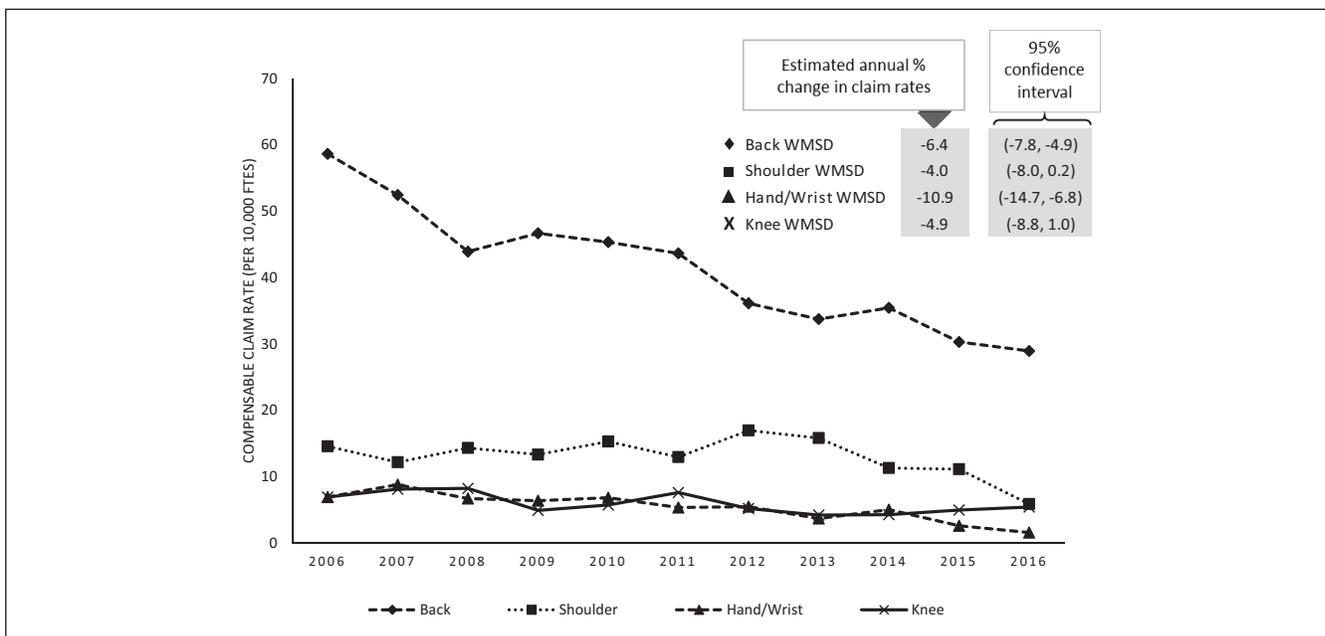


Figure 6. Washington State Workers' Compensation Compensable Claim Rates by WMSD Type for Home-Based Health Care, 2006 to 2016.

WMSD = work-related musculoskeletal disorder; FTE = full-time equivalent (2000 hours worked per year).

^aState fund compensable claims only, where the injured/ill worker was medically certified as unable to perform normal work duties beyond 3 calendar days, not including the date of injury.

such interactions. In the home setting, common patient handling devices include gait belts, shower chairs and grab

bars—devices intended to assist the care providers in handling patients. However, the continuing high claim rates of

back WMSDs suggest that these devices are not enough to prevent this type of injury or provide differential protection to different body regions. Patient lifts, which are considered the most efficacious method of eliminating the risks presented from handling patients, are not without their difficulties. The acquisition and payment for equipment is the responsibility of the patient and not the care provider. Given the cost of lift equipment, this may explain why patient lifts are not commonly found in the home environment. Additionally, lift equipment has been designed and manufactured for the clinical environment, which has very specific design requirements—homes do not. A consequence of this is that lift equipment may not fit through the doors of the home or into rooms such as bathrooms. Manufacturers of patient handling equipment should work with the home-based health care industry to address these design issues.

Anderson et al⁴⁴ found a positive dose response between back injury and the number of transfers performed per day. Lifting and transferring unassisted clients has been identified as a task causing the most pain or concern for injury among HBHC providers.⁸ Structures and surfaces was the second most common injury source from this examination of the Washington State WC data. This classification includes floors, walkways and the ground surface. The high prevalence of this injury source is concordant with the high prevalence of the event type falls on the same level (Figure 1). Bodily motion was also found to have a high prevalence among injury types. Injuries from bodily motion involve the movement without impact, or awkward and sustained positions. Risks associated with awkward working posture have been identified.⁴⁵

In the workers' compensation compensable claims data, the back was the body region most frequently injured. Back symptoms and injuries among HBHC providers has been frequently documented.^{20,22,46-48} Among nursing home employees, pain severity level and higher physical demands at work increased the likelihood of filing a low-back workers' compensation claim, while higher job strain and social support at work decreased the likelihood.⁴⁹ The leg region also experienced a high claim rate. This finding is not surprising, given that falls on the same level was the second most frequent cause of injury among the workers' compensation claim data. In a study of another workers' compensation claims database, while back injuries were the most common, leg injuries ranked seventh after the back, neck, shoulder, finger, knee, and arm.²² However, only a quarter of leg claims involved indemnified lost work time, compared to almost 3 quarters of the back claims.

Although WMSD claim rates were shown to decline among all body regions, the high share of WMSDs among health care providers is well documented. Kim et al⁵⁰ found that 76% of WC claims among health care workers in a large health system were identified as musculoskeletal disorders. WMSDs of the back were the most prevalent. Previous studies have also found back WMSDs to be the most prevalent type.⁴⁶ Almost one-third of the working age population has

been permanently removed from the workforce over the past 30 years due to disabilities related to WMSDs, with back and neck WMSDs associated with the longest period of time living with disability.⁵¹ Unlike health care provided in facilities such as hospitals and nursing homes, home-based health care providers more commonly work alone, with minimal interaction with their peers. Work organizational factors of home care associated with permanent disability includes few opportunities to work with co-workers.⁵²

The rates of decline varied between the WMSD types. WMSDs of the hand/wrist had the greatest annual claim rate decline while the shoulder WMSDs had the lowest rate of decline. The differing rates of claims suggests that the risk of injury is different for the body regions. Within the home health care work setting, patient handling equipment intended to reduce the physical load on care providers, is often absent, leaving care providers to manually assist patients. However, manual assist techniques intended to reduce low back risk may negatively impact shoulder demands or provide differential benefit.^{53,54}

Limitations

As discussed above, underreporting within the workers' compensation system is commonly recognized.²⁸ Other occupational health surveillance systems, such as the Bureau of Labor and Statistics' annual occupational injuries and illness survey, bear the same burden.⁵⁵ This research examined injuries and WMSDs within the home-based health care sector. WMSDs develop from cumulative exposures over a period of time that may result in the illness not being apparent at the time of reporting or failures of the health care provider in recognizing a WMSD or the work-relatedness. This may also lead to misclassification in the WC filing. The use of self-insured WC data in this research also introduced potential underestimation and inaccuracies. Self-insured data is incomplete compared to State-Funded WC data, with limited access to diagnostic information and costs. Since these data are provided by the employer and not by an industrial insurance administrator, these data may contain inaccurate information.

Conclusion

While workers' compensation data is a rich source of information for identifying trends in injuries and illnesses over time, the deficiencies of this data source described in this paper suggest that additional sources of injuries and illness data should be sought to help inform prevention efforts. The Behavioral Risk Factor Surveillance System (BRFSS), an annual national survey of health related risk behaviors, can provide further knowledge of injuries and illnesses. The National Home Health Aide Survey (NHHAS) is currently the only national probability survey for home-based Health Care, which was administered in 2007. This survey has provided a rich body of research, however, an updated survey would be informative.

This examination of WC claims and the identified injury sources suggests that the home care environment presents numerous risk factors of injuries. Up to this point, research into risk factors in HBHC services has primarily focused on the physical environment and the tasks performed. However, providing care in the home environment involves a complex system of environments, as described by Beer et al,⁵⁶ each which may present risk factors individually or in combination with others. As such, prevention will need to involve a systems approach. Less attention has been paid to the health policy, social, equipment and technology, care provider and patient environments of home-based health care. Further research of these environments and the interactions among all of them will help better understand the etiology of injuries within this working population.

Declaration of Conflicting Interests

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