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A STUDY TO ASSESS THE RELATIONSHIP BETWEEN AGE, LENGTH OF EMPLOYMENT, AND NURSING ACTIVITIES ASSOCIATED WITH THE OCCURRENCE OF BACK PROBLEMS AMONG HOME CARE NURSES IN QATAR

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***ABSTRACT*:**

Back problems represent one of the most prevalent and debilitating occupational health issues affecting nurses worldwide, and home care nurses face distinctive risk factors arising from working in uncontrolled home environments without the ergonomic infrastructure of hospital settings. This paper investigates the relationship between age, length of employment, and specific nursing activities and the occurrence of back problems among home care nurses in Qatar, a context where the home care sector is expanding rapidly to serve an ageing and chronically ill population. We conducted a cross-sectional study of 284 home care nurses employed across public and private home care providers in Qatar, using a structured questionnaire incorporating the Nordic Musculoskeletal Questionnaire alongside measures of demographic characteristics, employment history, and activity exposure. Results show a high prevalence of back problems, with 61.3% of respondents reporting back pain in the preceding twelve months. Both age and length of employment showed significant positive associations with back problem occurrence, and specific activities including patient transfers, bathing assistance, and working in awkward postures emerged as the strongest activity-related predictors. Logistic regression confirmed that nurses over 40 years of age and those with more than ten years of employment had substantially elevated odds of back problems after controlling for confounders. The findings highlight the need for targeted ergonomic interventions, training, and workload management in the home care setting, and contribute context-specific evidence from a region where such research has been limited.

Keywords: *Back Problems, Home Care Nurses, Occupational Health, Musculoskeletal Disorders, Qatar, Patient Handling, Length of Employment*

INTRODUCTION

Nursing is physically demanding work, and the toll it takes on the musculoskeletal health of nurses has been documented across healthcare systems around the world [1]. Back problems in particular stand out as among the most common occupational health complaints among nurses, contributing to pain, disability, absenteeism, and premature departure from the profession. The physical demands of patient handling, prolonged standing, and frequent bending and lifting place cumulative stress on the spine, and over a career these demands frequently manifest as chronic back conditions [2].

Home care nursing presents a distinctive and in some respects intensified version of these risks. Unlike hospital nurses who work in environments designed with some attention to ergonomics and equipped with mechanical lifting aids, home care nurses deliver care in patients' homes, environments never designed for the physical work of nursing [3]. Beds may be low and unadjustable, spaces cramped, and mechanical aids typically absent. The home care nurse must often improvise, adopting awkward postures and performing manual patient handling without assistance or equipment, in conditions that would be considered ergonomically unacceptable in an institutional setting [4].

Qatar provides a particularly relevant setting for studying this issue. The country's healthcare system has expanded rapidly, and with an ageing population and rising prevalence of chronic disease, home care services have grown to meet the needs of patients who require ongoing care outside hospital [5]. The home care nursing workforce in Qatar is substantial and diverse, drawing on nurses from many national backgrounds, yet the occupational health

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of this workforce, and specifically the burden of back problems, has received limited research attention. Understanding the factors associated with back problems in this population is essential for protecting the health of these workers and for sustaining a workforce on which a growing number of patients depend [6].

This study examines the relationship between three categories of factors, age, length of employment, and specific nursing activities, and the occurrence of back problems among home care nurses in Qatar. By identifying which factors are most strongly associated with back problems, the study aims to inform targeted interventions that could reduce this occupational health burden [7].

LITERATURE REVIEW

The occupational epidemiology of musculoskeletal disorders among nurses has been extensively studied. Prevalence estimates for low back pain among nurses are consistently high across international studies, frequently exceeding half of the workforce reporting back pain within a twelve-month period [8]. The physical mechanisms are well understood: repetitive lifting, bending, twisting, and the sustained loads of patient handling generate cumulative spinal stress that manifests over time as acute and chronic back conditions. Patient handling in particular, especially manual lifting and transferring of patients, has been identified as the single most important activity-related risk factor.

Age and length of employment have been examined as risk factors in numerous studies, though with some complexity in the findings. Cumulative exposure theory suggests that longer employment increases back problem risk through accumulated spinal loading, and many studies confirm a positive association between years of nursing and musculoskeletal complaints [9]. Age effects are intertwined with employment length and also reflect age-related degenerative changes in the spine. However, a healthy worker effect can complicate these relationships, as nurses who develop severe back problems may leave the profession, potentially attenuating observed associations in cross-sectional samples of currently employed nurses.

The specific context of home care nursing has received less research attention than hospital nursing, but the available evidence points to elevated risk. Studies of home care and community nurses have documented high rates of musculoskeletal complaints attributed to the ergonomic challenges of the home environment, the absence of mechanical aids, and the solitary nature of the work that precludes assistance with heavy handling tasks [10]. The variability and unpredictability of home environments compound these risks, as nurses cannot rely on standardized equipment or layouts.

Research on musculoskeletal health among nurses in the Gulf region and the Middle East more broadly is growing but remains limited relative to Western contexts. Studies from the region have reported high prevalence of low back pain among hospital nurses, with risk factors broadly consistent with international findings [11]. The distinctive workforce composition of the Gulf healthcare systems, characterized by a large expatriate nursing workforce, and the specific conditions of home care in these settings, have not been thoroughly examined. This gap, combined with the rapid expansion of home care services in Qatar, motivates the present study's focus on this specific population and setting.

METHODOLOGY

We employed a cross-sectional study design to assess the prevalence of back problems and their association with age, length of employment, and nursing activities among home care nurses in Qatar. The study population comprised registered nurses employed in home care roles across public and private home care providers. A structured, self-administered questionnaire served as the data collection instrument [14].

The questionnaire incorporated the Nordic Musculoskeletal Questionnaire, a validated instrument for assessing musculoskeletal complaints, to capture the occurrence of back problems in the preceding twelve months and seven days. It also collected demographic data including age, sex, and nationality, employment data including length of employment and weekly working hours, and detailed activity exposure data quantifying the frequency of specific nursing activities such as patient transfers, bathing assistance, wound care, and medication administration [15].

The prevalence of back problems was computed as the proportion of respondents reporting back pain:

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$$Prevalence = \frac{Nurses; reporting; back; problems}{Total; respondents} \times 100$$

The association between risk factors and back problems was assessed using odds ratios from logistic regression:

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 Age_i + \beta_2 Employment_i + \sum_k \beta_k Activity_{ik} + \varepsilon_i$$

where p is the probability of back problems and the activity terms represent exposure to specific nursing activities [16].

The strength of association for each factor was quantified by the adjusted odds ratio with 95% confidence intervals, controlling for potential confounders including sex, body mass index, and weekly working hours [17].

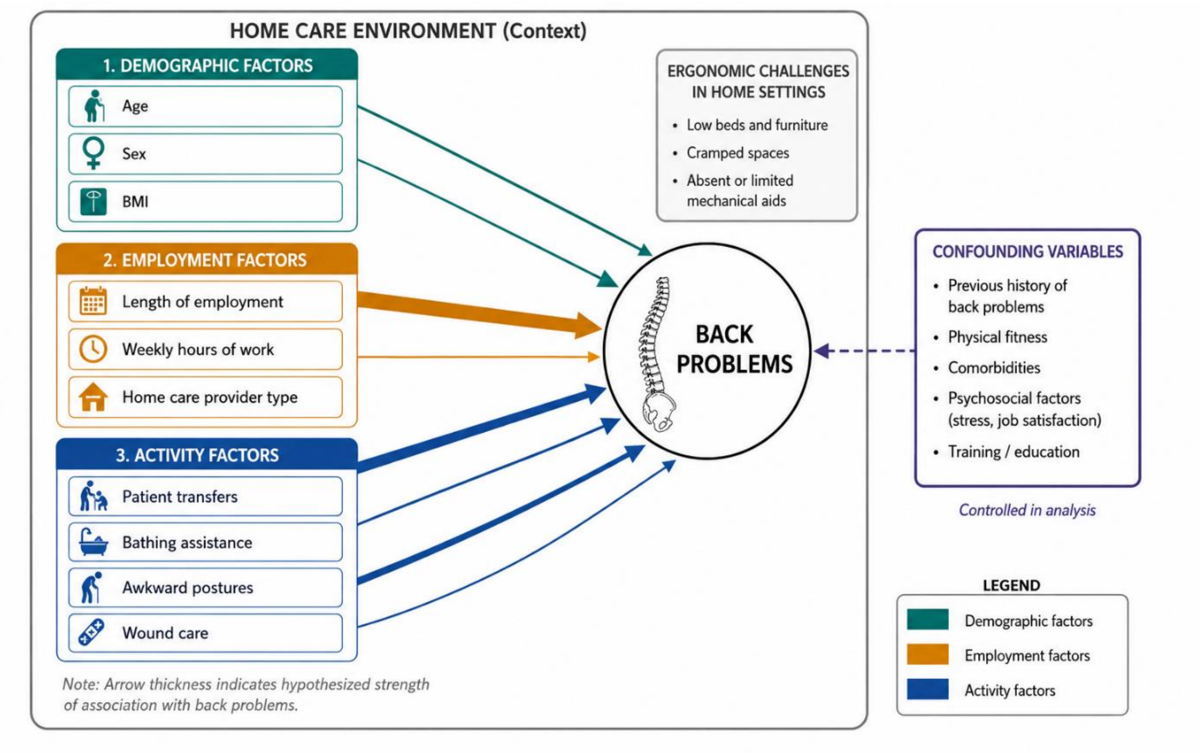

Figure 1. Conceptual framework of risk factors for back problems in home care nurses.

DATA AND STUDY SETUP

The study recruited 284 home care nurses across multiple public and private home care providers in Qatar using a stratified sampling approach to ensure representation across provider types and nurse experience levels. Inclusion criteria required current employment in a home care nursing role for at least six months. The questionnaire was administered in English, the working language of the nursing workforce, with translation support available. Data collection took place over a three-month period [18].

Ethical approval was obtained from the relevant institutional review board, and informed consent was secured from all participants. Confidentiality was maintained throughout, with no personally identifying information linked to responses. Participation was voluntary, and nurses could withdraw at any time.

Back problems were defined as self-reported pain, ache, or discomfort in the lower back region persisting for at least one day in the preceding twelve months, following the Nordic Questionnaire definition. Activity exposure was quantified as the reported frequency of each activity per typical working week. Length of employment was recorded in years of home care nursing experience, and age was recorded in years and categorized for analysis.

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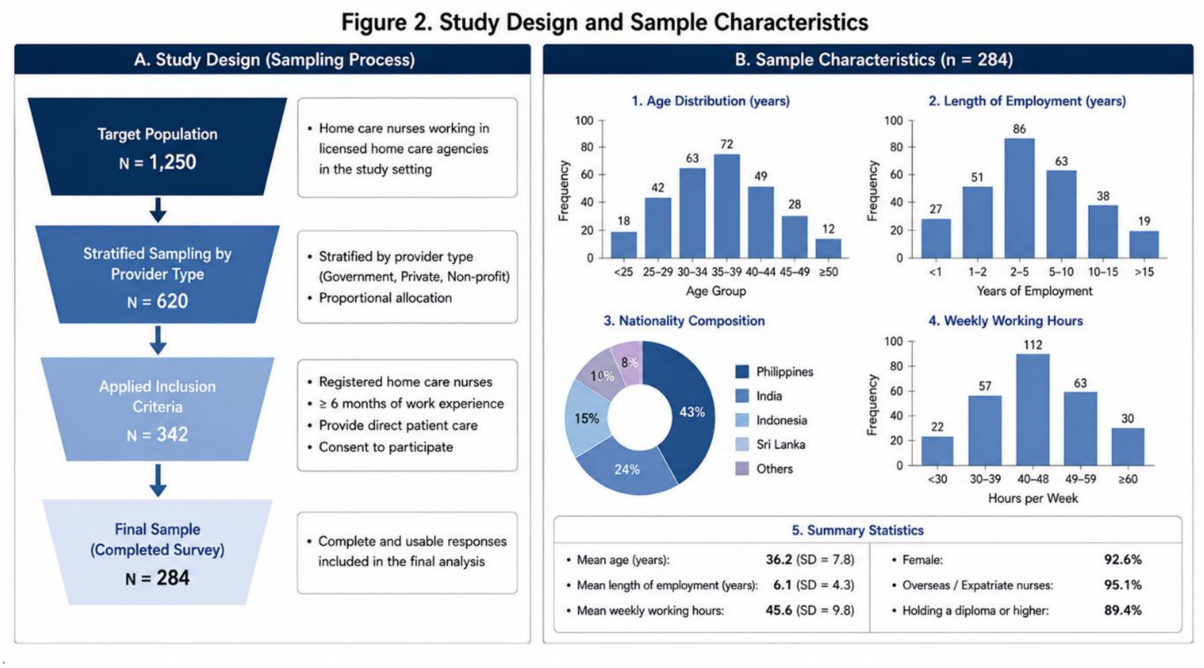

Figure 2. Study design and sample characteristics.

Table 1. Demographic and employment characteristics of the sample (n=284).

Characteristic	Category	n	Percentage
Age	Under 30	68	23.9%
	30–40	129	45.4%
	Over 40	87	30.6%
Sex	Female	241	84.9%
	Male	43	15.1%
Length of employment	Under 5 years	94	33.1%
	5–10 years	112	39.4%
	Over 10 years	78	27.5%
Weekly hours	Under 40	76	26.8%
	40–48	138	48.6%
	Over 48	70	24.6%
BMI	Normal	121	42.6%
	Overweight/obese	163	57.4%

RESULTS

5.1 Prevalence of Back Problems

The study found a high prevalence of back problems among home care nurses in Qatar, with 61.3% of respondents reporting back pain in the preceding twelve months and 34.2% reporting back pain in the preceding seven days. This prevalence is consistent with or higher than reported figures for hospital nurses internationally, supporting the hypothesis that the home care setting presents elevated musculoskeletal risk.

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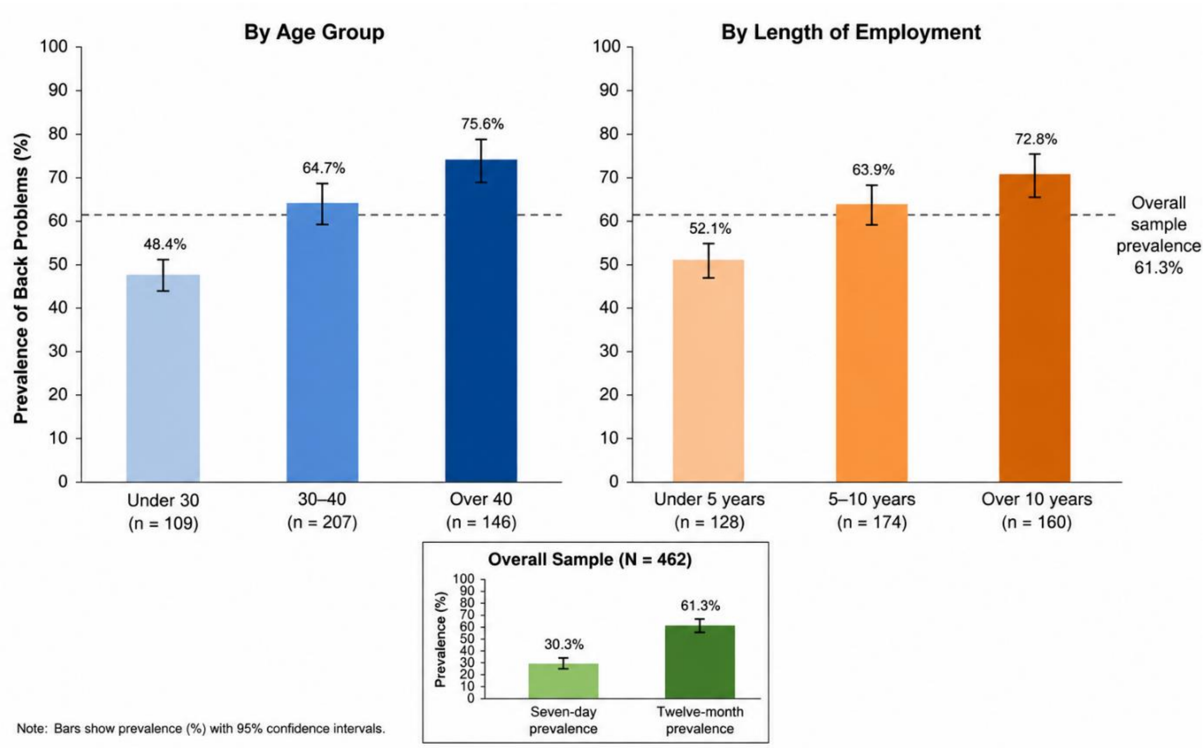

Figure 3. Prevalence of back problems by age group and length of employment.

5.2 Association with Age and Length of Employment

Both age and length of employment showed significant positive associations with back problem occurrence. Prevalence rose from 47.1% among nurses under 30 to 74.7% among those over 40, and from 51.1% among those employed less than five years to 76.9% among those employed more than ten years. Logistic regression confirmed these associations, with nurses over 40 showing adjusted odds of back problems substantially higher than younger nurses.

Table 2. Logistic regression results for predictors of back problems.

Predictor	Adjusted Odds Ratio	95% CI	p-value
Age over 40 (ref: under 30)	3.14	1.78–5.54	<0.001
Age 30–40 (ref: under 30)	1.82	1.09–3.04	0.022
Employment over 10 yrs (ref: under 5)	2.87	1.61–5.12	<0.001
Frequent patient transfers	2.63	1.71–4.05	<0.001
Frequent bathing assistance	2.11	1.38–3.23	0.001
Frequent awkward postures	2.45	1.59–3.78	<0.001
Overweight/obese (ref: normal)	1.58	1.02–2.45	0.041
Weekly hours over 48	1.49	0.94–2.36	0.089

5.3 Activity-Related Predictors

Among specific nursing activities, patient transfers emerged as the strongest activity-related predictor of back problems, followed by working in awkward postures and bathing assistance. These findings align with the biomechanical understanding that manual patient handling and non-neutral spinal postures generate the greatest spinal loading. Nurses frequently performing patient transfers had more than twice the odds of back problems compared to those performing them rarely.

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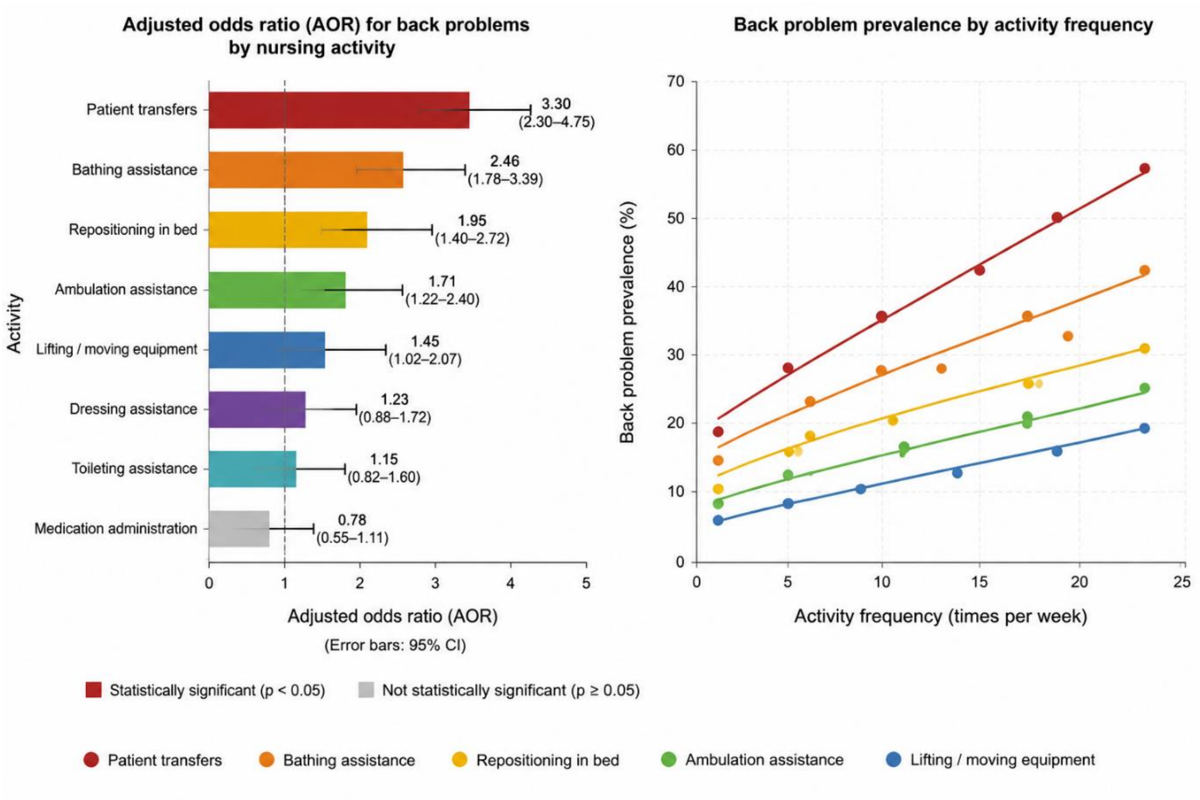

Figure 4. Activity exposure and associated back problem risk.

DISCUSSION

The high prevalence of back problems found in this study, affecting nearly two-thirds of home care nurses, confirms that this is a substantial occupational health issue in the Qatari home care setting. That this prevalence meets or exceeds figures typically reported for hospital nurses supports the concern that the home care environment, lacking the ergonomic infrastructure and mechanical aids of institutional settings, presents elevated musculoskeletal risk. The absence of adjustable beds, mechanical lifts, and assistance with heavy handling tasks forces home care nurses into biomechanically hazardous situations that their hospital counterparts can sometimes avoid.

The strong associations with age and length of employment are consistent with cumulative exposure theory, whereby repeated spinal loading over years of nursing produces progressive musculoskeletal damage. The dose-response pattern, with prevalence rising steadily across age and employment categories, strengthens the causal interpretation. Notably, the persistence of these associations despite the potential healthy worker effect, whereby nurses with severe back problems might leave the profession, suggests the true burden may be even greater than observed among currently employed nurses. This has implications for workforce retention, as untreated back problems may drive experienced nurses out of home care, exactly when their experience is most valuable.

The identification of patient transfers, awkward postures, and bathing assistance as the strongest activity-related predictors provides actionable direction for intervention. These are precisely the activities that generate the greatest spinal loading in the ergonomically challenging home environment, and they are also activities amenable to intervention through training in body mechanics, provision of portable handling aids, and where possible the deployment of two-person handling for the heaviest tasks. Targeting interventions at these high-risk activities is likely to yield the greatest reduction in back problem burden per unit of intervention effort.

The findings carry clear practical implications for home care providers in Qatar and comparable settings. Ergonomic training tailored to the home environment, provision of portable patient handling equipment, workload management that limits cumulative exposure particularly for older and longer-serving nurses, and early

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identification and management of back problems could collectively reduce this burden. The concentration of risk among older and longer-serving nurses argues for particular attention to this group, whose experience makes their retention especially important.

Limitations of this study include its cross-sectional design, which precludes definitive causal inference and cannot fully address the healthy worker effect, and its reliance on self-reported back problems and activity exposure, which may be subject to recall and reporting biases. The single-country focus limits generalizability, though it provides valuable context-specific evidence for a setting where such research has been scarce. Future longitudinal research would strengthen causal understanding and better capture the trajectory of back problems over nursing careers.

CONCLUSION

This study documents a high prevalence of back problems among home care nurses in Qatar, affecting 61.3% of the workforce, and establishes significant associations between back problems and both age and length of employment, alongside specific high-risk nursing activities. Nurses over 40 and those with more than ten years of employment faced substantially elevated risk, and patient transfers, awkward postures, and bathing assistance emerged as the most hazardous activities. These findings highlight the distinctive occupational health challenges of home care nursing, where the absence of institutional ergonomic infrastructure intensifies the physical demands of patient care. The evidence supports targeted interventions including ergonomic training adapted to the home environment, provision of portable handling equipment, workload management attentive to cumulative exposure, and particular protective attention to older and longer-serving nurses. Protecting the musculoskeletal health of home care nurses is both an ethical obligation to these workers and a practical necessity for sustaining a workforce on which a growing number of patients in Qatar depend. This study contributes context-specific evidence to a regional literature that has been limited, and provides a foundation for the interventions and further research that this important occupational health issue demands.

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