



Functional consequences of work-related spinal musculoskeletal symptoms in a cohort of Australian midwives

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ABSTRACT

Background: Early evidence suggests spinal musculoskeletal symptoms are as prevalent in Australian midwives as in samples of nurses. Functional consequences of these symptoms include sick leave and functional incapacity, which are costly at both individual and workplace levels. To date there have been no studies of these consequences in midwives.

Question: What risk factors are associated with sick leave and functional incapacity among midwives with spinal musculoskeletal symptoms?

Methods: We undertook a cross-sectional study of qualified Australian midwives who completed the baseline survey of the Nurses and Midwives e-Cohort Study. A comprehensive set of independent variables were examined for bivariate associations with the main outcomes of sick leave and functional incapacity due to work-related musculoskeletal symptoms in the neck, upper or lower back. Associations that achieved a p value $< .1$ were entered into multiple logistic regression models.

Findings: 729 midwives with a mean age of 46 years were eligible for inclusion. Functional incapacity was more than twice as common as sick leave. Severity of worst pain was the explanatory variable most strongly associated with each main outcome and the only one significant for both. Psychological job demands showed a significant association with sick leave, while several individual factors were associated with both outcomes. Only the association of poorer general health with functional incapacity remained significant in all three spinal regions.

Conclusion: Our sample reported considerable work-related musculoskeletal pain and functional incapacity. Factors associated with sick leave and functional incapacity in midwives should be confirmed by longitudinal studies with the aim of developing tertiary prevention strategies.

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1. Introduction

Evidence suggests neck and upper back musculoskeletal symptoms (MSS) are as prevalent in Australian midwives¹ as in nurses, who have demonstrated prevalence rates between 20 and 60% in these spinal regions (Long, Bogossian, and Johnston, unpublished data). To present a more concrete picture of the scope of the problem, some researchers have moved beyond symptoms to investigate functional consequences of those symptoms. Among nurses, functional consequences of MSS in both individual and workplace domains have been reported. Some examples of individual consequences include diminished ability to undertake normal activities outside of work, disturbed sleep, and

need for analgesia,² as well as visits to health care professionals, which can be costly in lost income, time, treatment, and rehabilitation. Sick leave from work is another consequence of MSS^{2,3} that may have repercussions for colleagues and employers as well as for the individual. Colleagues may need to bear additional responsibilities while the affected individual recovers, and employers may be faced with additional costs and disruption of services if a temporary replacement must be recruited and oriented. Musculoskeletal disorders cost the Australian health care system an estimated \$4 billion overall in 2004–5.⁴

In studies of nurses and other health care workers, the proportions that have taken sick leave due to musculoskeletal disorders are often reported, but risk factors associated with sick leave have not received comparable research attention. One study of sick leave rates among workers in a range of health care occupations revealed significant direct associations with female gender, increasing age, and work in long-term care, while part-time work was inversely related to sick leave rates.⁵

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Given similar MSS prevalence rates, midwives may demonstrate similar functional consequences. As midwives are the ideal providers of maternity care for healthy women and there is a shortage of these professionals in Australia,⁶ it is timely to explore these consequences in midwives as a distinct occupational group. The aim of the present study was to investigate two functional consequences, namely sick leave and functional incapacity attributed to work-related spinal MSS, and the factors associated with each, in a cohort of practising Australian midwives.

2. Methods

2.1. Study design, setting and participants

This cross-sectional study, guided by the STROBE criteria,⁷ is a subset analysis of data from participants in the Nurses and Midwives e-Cohort Study (NMeS), a longitudinal electronic survey aimed at ascertaining health and workforce outcomes experienced by nurses and midwives in Australia, New Zealand and the United Kingdom (<http://www.e-cohort.net>). Details of the NMeS have been reported elsewhere.^{8,9} The NMeS received ethical clearance from the Behavioural and Social Sciences Ethical Review Committee of The University of Queensland, and all participants gave informed consent. NMeS data collection occurred online in three waves and contained several widely used, reliable and validated

instruments. The reader is referred to the [supplementary material](#) containing complete reference information for all instruments by which data for this study, taken from the baseline survey (2006–8), were obtained (see [Table 1](#)).

The present study was conceived as a follow-up to the initial analysis of Australian NMeS participant midwives' neck and upper back MSS by the same research team.¹ In that prior study, we estimated the prevalence of neck and upper back symptoms in the sample and examined associations between candidate risk factors and the symptoms of interest. Background reading for a systematic review of MSS risk factors and functional consequences in nurses and medical practitioners stimulated interest in pursuing an enquiry into these consequences in midwives. Data from the baseline NMeS survey supported analysis of only two functional consequences, namely sick leave and functional incapacity, which are defined in the Study variables section of this report. We restricted the analysis to qualified Australian midwives who reported working in midwifery at baseline as we wished to explore possible determinants of sick leave and functional incapacity inherent in midwifery as opposed to nursing roles.

2.2. Study variables

Outcome variables were self-reported sick leave and functional incapacity attributed to work-related musculoskeletal symptoms

Table 1
Risk factors measured in the study.

Risk factor domains and sub-categories	Description of variables	Instruments/scales reference numbers ^a	Range of possible scores if applicable
Individual – foundational			
Age	Continuous	16	
Gender	Female/male	16	
Children ≤3 years of age in the home	No/yes	31	
Carer responsibility for adult dependent	No/yes; residence with respondent not required	31	
Individual – developmental			
<i>Health behaviours</i>			
Smoking status	Never or former smoker/Current smoker	27	
Total physical activity	Low/Moderate or high	International Physical Activity Questionnaire Long Form (2, 3, 19)	
Sleep hours in 24-h period	Fewer than 8/8 or more	32	
Sleep difficulty	Rarely/Sometimes or most of the time	25	
<i>Occupation</i>			
Current shift work	No/yes	28–30	
Permanent night shift work	No/yes	28–30	
Years of rotating shift work	<15/≥15	28–30	
<i>General health/prior pain/co-morbidities</i>			
Body mass index	Continuous; calculated as wt (kg)/ht (m ²)	20	
General (physical) health	Continuous	Short Form–36 version 2 Physical Component Score (4, 34)	2–76
Number of diagnosed conditions	Continuous; sum of “yes” responses to 32 possible medical diagnoses	24	0–32
Co-morbid spinal musculoskeletal symptoms	No/yes	17	
Severity of worst pain	Continuous	5,18, 23	1–10
<i>Individual psychological factors</i>			
Depression	Continuous (10 items)	Center for Epidemiologic Studies – Depression 10 Scale (6, 26)	0–30
Pain catastrophising	Continuous (13 items)	Pain Catastrophising Scale (7, 33)	0–52
Fear of movement	Continuous (11 items)	Tampa Scale for Kinesiophobia (35, 8, 18)	11–44
Passive pain coping	Continuous (6 items)	Pain Management Inventory (9, 13, 18)	6–30
Overcommitment	Continuous (6 items)	Effort-Reward Imbalance Scale (15, 21, 22)	6–24
Workplace – psychosocial			
Job control	Continuous (9 items)	Job Content Questionnaire (JCQ) (10–12, 16)	24–96
Psychological job demands	Continuous (3 items)	JCQ	3–12
Overall support	Continuous (4 items)	JCQ	4–16
Workplace – physical			
Physical job demands	Continuous (2 items)	JCQ	2–8
Lifting, pushing, pulling heavy objects or people	0/1+ times per shift	14	
Awkward postures (bent or twisted at waist)	0/1+ times per shift for >5 min	14	
Static postures	0/1+ times per shift for >30 min	14	

^a Please see the [supplementary reference list](#) for all references. Numbers in italics are references that support inclusion of variables.

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