What work characteristics are associated with musculoskeletal complaints in student nurses?

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SPRING Starting Strong in Nursing

BACKGROUND

Musculoskeletal complaints (MSCs) arise during nursing education. They affect the work ability of (student) nurses and may contribute to leaving the profession. Addressing this problem early and ongoing, preferably starting during nursing education, may contribute to the long-term retention of nurses.

AIM

This study aims to explore possible cross-sectional associations between sociodemographic and workplace characteristics, and self-reported MSCs.

METHODS

We examined cross-sectional associations between self-reported MSCs and both sociodemographic and workplace characteristics in different clinical placement settings. We included two observations among three cohorts of third-year Dutch nursing students (total N=711) of the undergraduate nursing program of Rotterdam University of Applied Sciences. Questionnaire data on sociodemographic, physical and psychosocial work characteristics, and MSCs were used. Generalized estimating equation analysis for repeated measurements with backward elimination was used to examine associations with MSCs.

RESULTS

In total, 79% of students experienced MSCs. a ale sex (OR 0.37, 95% CI 0.22 - 0.62), lifting and bending (OR 1.01, 95% CI 1.00-1.03), physical job demands (OR 2.33, 95% CI 1.68 - 3.22) and need for recovery (OR 1.02, 95% CI 1.01-1.03), were statistically significantly associated with overall MSCs. Models for regional complaints are also available.

Demographic, physical and psychosocial work and health characteristics (N=711)

	N (%) unless specified otherwise
Sample size, N	711
Sociodemographic characteristics	
Sex (% female)	641 (90.2%)
Age (years), mean ± SD	23.50 ± 5.46
(range)	(19 to 55)
Median; IQR	22; 4
Height (cm), mean ± SD	170.37 ± 8.26
(range)	(146 to 200)
Median; IQR	170; 10
BMI (kg/m2), mean ± SD	23.71 ± 4.18
(range)	(15.6 to 67.6)
Median; IQR	23.03; 4.45
Need for recovery, mean ± SD	63.37 ± 27.07
(range)	(0 to 100)
Median; IQR	72.73; 36.36
Physical job demands, mean ± SD	2.65 ± 0.60
(range)	(1 to 4)
Median; IQR	2.75; 0.75
Lifting and bending, mean ± SD	26.48 ± 18.72
(range)	(0 to 100)
Median; IQR	22.1; 25.0
Study route	
• fulltime programme	439 (61.7%)
• work-study programme	212 (29.8%)
• part-time study programme	60 (8.4%)
Distress (% moderate to high distress)	324 (45.6%)
Decision latitude, mean ± SD	2.95 ± 0.41
(range)	(1 to 3.92)
Median; IQR	2.92; 0.50
Prior education	
• Senior general secondary education	393 (55.3%)
• Pre-university education & academic higher education	106 (14.9%)
• secondary vocational nursing education and training & in-service training & other	212 (29.8%)
Psychological job demands, mean ± SD	2.85 ± 0.50
(range)	(1-4)
Median; IQR	2.83; 0.75
Clinical placement setting	
• hospital	338 (47.5%)
• nursing homes and elderly care	81 (11.4%)
• home care	189 (26.6%)
• mental healthcare	55 (7.7%)
• other	48 (6.8%)
Ethnicity (% Dutch or western migration background)	498 (70%)
Daily number of patients cared for, mean ± SD	7.65 ± 5.43
(range)	(1 to 80)
Median; IQR	6.0; 6
Dutch as first language (% Dutch)	614 (86.4%)
Musculoskeletal complaints during current clinical placement	
• Overall MSC at any body part (% regular /long-lasting)	558 (78.5%)
• Complaints of the upper extremities area (% regular /long-lasting)	405 (57.0%)
• Complaints of the lower back area (% regular /long-lasting)	399 (56.1%)
• Complaints of lower extremities (% regular /long-lasting)	293 (41.2%)

Determinants associated with MSCs in nursing students (1067 observations) [a]

	Model 1		Model 2		Model 3		Model 4	
	Overall MSC		Upper extremities		Low back		Lower extremities	
Determinants	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Sex (reference: female)	0.37 ***	0.22 - 0.62	0.55*	0.33 - 0.91	0.57*	0.35 - 0.93	0.28***	0.16-0.51
Need for recovery (0-100)	1.02***	1.01 - 1.03	1.01***	1.01-1.02	1.02***	1.01 - 1.02	1.01***	1.01-1.02
Physical job demands (1-4)	2.33***	1.68 - 3.22	2.49 ***	1.89 - 3.28	2.03***	1.56 - 2.64	1.69***	1.31 - 2.19
Lifting and bending (0-100)	1.01**	1.00 - 1.03			1.01*	1.00 - 1.02	1.01*	1.00-1.02
Study route: part-time (reference: full-time)			1.80*	0.95 - 3.41			0.53*	0.32 - 0.88
BMI (15-68)							1.06**	1.02-1.09
Distress (reference: no distress)			1.60***	1.21-2.11				
Decision latitude (1-4)			0.67*	0.47 - 0.95				
Prior education: secondary vocational nursing education (reference: senior general secondary education)			1.43*	1.01-2.03				
Psychological job demands (1-4)			0.71*	0.52 - 0.96				
Clinical placement setting: nursing homes and elderly care (reference: hospital)			0.60*	0.39 - 0.91				
Ethnicity (reference: non-Western background)					0.62**	0.46 - 0.84		
Daily number of patients cared for (1-80)							0.96**	0.94-0.99
First language (reference: Dutch)							2.03***	1.34 - 3.08

OR = odds ratio; CI = confidence interval

* p ≤ 0.05, ** p ≤ 0.01, *** p ≤ 0.001

[a] For categorical factors, the odds ratios are computed with respect to the specified reference category; for continuous factors, the odds ratios are computed per unit increase. Cells are left empty if that factor was not included in the final model.

DISCUSSION

Exposure to physical work conditions, such as lifting and bending activities and other physical job demands, were associated with higher proportions of MSCs. This is in line with existing evidence from studies among (registered) nurses. An association between the need for recovery and MSCs was also found in other studies. It remains unclear whether insufficient recovery time leads to MSCs, or whether having MSCs increases the need for recovery.

CONCLUSION & RECOMMENDATIONS

The prevalence of MSCs is high among nursing students. This study provided insights in workplace characteristics that are associated with MSCs among nursing students. Nursing school and clinical placement staff should consider these factors when dealing with nursing students with MSCs. Nursing school and clinical placement staff should make an effort to lower physical job demands and invest in proper training and aids that contribute to the prevention and decrease of MSCs in nursing students. The interplay between job stressors, need for recovery and MSCs in nursing students is complex. To understand this fully, further research is needed.

REFERENCES

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FURTHER INFORMATION

Website: rotterdamuas.com/spring

applied **research**

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