

Ergonomic Risk in Orthopaedic Surgeries, An Overlooked Entity

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INTRODUCTION:

Ergonomic risks are defined as the aspects of a job or task that impose biomechanical stress on the operator, increasing their risk of developing work-related musculoskeletal disorders (WRMSKD). Orthopaedic surgeons are prone to developing WRMSKD due to the physical nature of orthopaedic surgery. Tan et al in 2020, report the prevalence of WRMSKD is as high as 87.5% among the orthopaedic surgeons. The prevalence of WRMSKD was reported to be higher among arthroplasty and spine surgeons. However, all previous studies utilized subjective self-reporting questionnaires. The objective was to investigate the ergonomic risk of orthopaedic surgery using an objective ergonomic risk assessment tool, rapid upper limb assessment tool (RULA), and its associating factors.

METHODS:

92 orthopaedic surgeries performed by 8 surgeons involving 3 subspecialties: arthroplasty, spine, and hand surgery were assessed using the RULA tool intraoperatively. 4 groups of RULA score: negligible, low, medium and high risk. Associated factor investigated are age and years in service. Body regions contributing to ergonomic risk were identified.

RESULTS:

41.3% are medium risk and 12% are high risk of developing WRMSKD. All the 12% of high risk comes from arthroplasty subspecialty group ($p < 0.05$). Arthroplasty group has the highest score in neck and trunk region compare to other subspecialties. Age and years in service are not associated with high ergonomic risk ($p < 0.05$).

Table 1. RULA score

	Frequency	Percent
NEG (1-2)	1	1.1%
LOW (3-4)	42	45.7%
MED (5-6)	38	41.3%
HIGH (7)	11	12.0%
Total	92	100.0%

Table 2. RULA score according to subspecialty

	NEGLIGIBLE	LOW	MEDIUM	HIGH	
ARTHROPLASTY	0	0	15	11	26
HAND	0	29	1	0	30
SPINE	1	13	22	0	36

DISCUSSIONS:

The limitation of this study is the uneven distribution of the number of surgeons involve for each subspecialty group with all hand surgeries performed by one surgeon only. Demographics of the surgeons were also not evenly distributed among the subspecialty groups.

CONCLUSION:

Orthopaedic surgeons are at a higher risk of developing WRMSKD. Arthroplasty subspecialty being the most at risk of developing WRMSKD with high neck and trunk score suggesting high strain or awkward posture during the procedure. Age of the surgeon and years in service are not associated with increase in ergonomic risks.

REFERENCES:

1. AlQahtani, S. M., Alzahrani, M. M., & Harvey, E. J. (2016). Prevalence of musculoskeletal disorders among orthopedic trauma surgeons: An OTA survey. *Canadian Journal of Surgery*, 59(1), 42–47.
2. Ksk, T., & Ebk, K. (2020). Musculoskeletal occupational injuries in orthopaedic surgeons and residents. *Malaysian Orthopaedic Journal*, 14(1), 24–27. a