Trainee Sex Influences Operative Autonomy During Trauma & Orthopaedic Training in Ireland & the UK

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INTRODUCTION:
Operative competency is the fundamental objective of surgical training. In Ireland and the UK, orthopaedic trainees must log a minimum of 1,800 operative procedures over six years, of which 1,260 must be performed as primary operator. Orthopaedic surgery has the lowest number of women across all surgical and non-surgical specialties.
The aim of this study was to explore differences in operative autonomy by trainee sex during orthopaedic training in Ireland and the UK, and to explore differences in operative autonomy by trainee sex with regard to training year, case complexity, index procedures, and specialty area.
METHODS:
This retrospective cohort study examined all operations recorded by all trainees in Ireland and the UK over ten years between July 2012 to July 2022. Specialty training (ST) years 3 - 8 were included. Cases are recorded as assisting, supervised trainer scrubbed, supervised trainer unscrubbed, performed, and training a junior colleague by the trainee. Cases are categorised into four categories of complexity by the Royal College of Surgeons in Ireland. There are 13 index surgical procedures defined by the Joint Committee on Surgical Training that each trainee must be skilled in to allow independent practice. Procedures were also classified by body part by two authors into eight categories; foot & ankle, hand & wrist, hip & femur, knee & lower leg, paediatrics, pelvic & acetabulum (P&A), shoulder & elbow, and spine.
The primary outcome was operative autonomy, which was defined as the trainee performing the case without the supervising trainer scrubbed. Descriptive statistics were used to summarise the data. Chi-squared and proportions test were used to explore differences between autonomy and sex, complexity level and year of training. Unadjusted and adjusted multivariable logistic regression models were used to explore potential associations between trainee sex and operative autonomy.
RESULTS:
3,533,223 operative records were included for analysis. Female trainees recorded a total of 653,935 (18.5%) cases and male trainees recorded a total of 2,879,288 (81.5%) cases. Overall, men performed 5% more operations with autonomy than women (95% CI -5.09 to -4.85). Women assisted for 3% more cases (95% CI 2.91 to 3.17) and performed 2% more cases with a supervising trainer scrubbed (95% CI 1.79 to 2.06).
Men performed more operations with autonomy than women in every year of training, in each category of case complexity, in each orthopaedic specialty area, and in every index procedure except nerve decompression. The greatest difference with regards to year of training was observed in ST5 (6%; 95% CI -6.04 to -5.49) and the least difference was observed in ST8 (3%; 95% CI -3.6 to -2.92). With regards to case complexity, the greatest difference was observed for major operations (6%; -6.3 to -5.96) and the least difference was observed for complex major operations (3%; 95% CI -3.08 to -2.81). The greatest difference with regards to index procedure was observed with hip hemi-arthroplasty (10.59%; 95% CI -11.17 to -9.998). With regards to body part, the greatest difference was observed in knee & lower leg (7%; 95% CI -7.39 to -6.93) and the least difference was observed in P&A (2%; 95% CI -2.67 to -1.55).
Men were more likely to perform cases with autonomy and with a trainer scrubbed than to assist in both the unadjusted (cOR 1.4; 95% CI 1.38 to 1.43; p <0.001 and cOR 1.05; 95% CI 1.03 to 1.06; p <0.001) and adjusted (aOR 2.45; 95% CI 2.18 to 2.76; p<0.001 and aOR 1.35; 95% CI 1.25 to 1.45; p<0.001) analysis.
DISCUSSION AND CONCLUSION:
Women are given less operative autonomy than men during orthopaedic training in Ireland and the UK. Women assist for a greater proportion of cases than their male counterparts. It is likely that the cause of the difference in autonomy between trainees is multifactorial. However, the decision on whether to provide or withhold autonomy is ultimately up to the supervising surgeon and trainers must be cognisant of the difference in training opportunities between trainees by trainee sex. A comprehensive review of T&O training is needed to identify any additional differences in training opportunities, particularly with regards to progression through training, between women and men.