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【論文摘要】 A Network Analysis of Clinical Reasoning after Femoral Transverse Fracture Surgery: A Comparison by Years of Experience

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摘要

Background and Purpose: Clinical reasoning requires organizing extensive patient information. However, the structure of clinical reasoning is not well-developed, leading to less-experienced physical therapists struggling with information organization. Therefore, we examined how years of experience affect clinical reasoning. **Methods:** Two groups (n = 10 per group)-a less-experienced group (1-2 years) and a more-experienced group (6-13 years)- were presented with simulated patient data after femoral transverse fracture surgery and asked to select the necessary tests, possible problems, and body parts. Their reasoning structure was visualized using NetworkX, a Python library. A directed graph of "patient -> problem -> body part -> tests" paths was created, and the mean numbers of nodes (N) and edges (E), as well as the mean degree (k), were calculated. Nodes indicate the participant's problems, body parts, and tests, and edges indicate connections among them. We investigated the lack-free paths from the problem nodes to the test nodes. Normality of k was assessed using the Shapiro-Wilk test. Since a more-experienced group was non normal, inter-group comparison was performed using the Mann-Whitney U test. **Results:** Mean ± SD values were as follows: a less-experienced group, N = 25.8 ± 17.5, E = 106.4 ± 115.2, k = 6.03 ± 3.91; a more-experienced group, N = 34.2 ± 20.8, E = 145.5 ± 174.4, k = 6.28 ± 4.87. The Mann-Whitney U test showed no significant difference in k between groups (U = 48.0, p = 0.910, r = 0.03). A less-experienced group focused on the three combinations of "muscle function -> hip muscles -> MMT." In contrast, a more-experienced group also considered pain-related pathways such as "pain sensation -> hip muscles -> NRS/tenderness." **Conclusion:** There was no difference in the k, and the effect size was minimal, suggesting that the density of connections does not depend on years of experience. Nonetheless, a more-experienced group addressed a broader range of problems-including pain-whereas a less-experienced group concentrated on muscle-function problem tests. **Clinical Significance:** Network visualization of clinical reasoning structure is effective for supporting clinical reasoning education because it highlights reasoning biases and the recognized relevance of problem-to-test combinations.

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