

Validation of Subscales from the Peer Physical Examination Questionnaire and the Examining Fellow Students Questionnaire: Evidence of Scalability and Convergent Validity

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Abstract

Background: Peer physical examination (PPE) is a cost-effective preclinical method for learning physical examination skills, but its implementation requires careful evaluation of students' acceptability.

Methods: We analyzed the responses of 2,085 undergraduate students of medicine and of BS programs in different health professions (mostly nursing students) to two questionnaires widely used to assess PPE acceptability: the Peer Physical Examination Questionnaire (PPEQ) and the Examining Fellow Students (EFS) questionnaire. Subscales were derived using Mokken scale analysis and Principal Component Analysis, and concurrent validity was examined.

Results: The PPEQ yielded three subscales -

Emotional (PPEQ-E, H = 0.50), *Attitudinal* (PPEQ-A, H = 0.68), and *Concerns about Sexual Connotation* (PPEQ-SC, H = 0.52). The EFS could be partitioned into Sensitive Areas (EFS-SA, H = 0.68) and *Less Sensitive Areas* (EFS-LSA, H = 0.59). All subscales showed good scalability and internal consistency, and were strongly intercorrelated. Each PPEQ subscale was independently associated with the EFS score after adjustment for sex and course type ($p < 0.001$). The subscales were able to detect differences in response patterns across sex and course type: female students reported lower emotional and attitudinal scores and higher sexual concerns on the PPEQ, and lower willingness to be examined in sensitive areas on

the EFS ($p < 0.001$). Students of BS programs showed lower PPEQ scores than medical students, but also greater reluctance toward sensitive areas, while medical students reported fewer sexual concerns.

Conclusions: The PPEQ and EFS subscales provide complementary perspectives on students' attitudes toward PPE. Their combined use enables a nuanced assessment of acceptability and its determinants across different student populations. These tools may support monitoring of trends over time and contribute to the design of educational activities that maximize learning benefits while minimizing discomfort.

Keywords: Peer Physical Examination; Medical Education, undergraduate; Nursing education, undergraduate; Questionnaires; Acceptability