
**TECHNOLOGIES FOR DEVELOPING COGNITIVE THINKING OF STUDENTS
IN MEDICAL EDUCATION BASED ON THE SNAPPS MODEL (IN THE
EXAMPLE OF TEACHING INTERNAL MEDICINE)**

Supichakov Khondamir Khamidovich

*Assistant of the department of hospital therapy and endocrinology
Andijan State Medical Institute*

Abstract: The current thesis was created to pilot an approach to clinical experiential learning for Physician Assistant (PA) students by teaching students the six-step clinical teaching model: (1) Summarize the case, (2) Narrow the differential diagnosis, (3) Analyze the differential diagnosis (what key patient findings support or lack support for each), (4) Probe the preceptor (ask for clarification of topics about which the learner feels unsure), (5) Plan management (with preceptor input) and (6) Select a care-related issue for self-directed learning, abbreviated to SNAPPS.

Keywords: Clinical rotations, clinical teaching strategies, physician assistant education, SNAPPS.

INTRODUCTION

Physician Assistants (PAs) are licensed clinicians who fulfill a role in healthcare by expanding access to care through patient-centered, team-based care and are able to practice in every specialty and setting within the United States (American Academy of Physician Assistants [AAPA], 2022). However, faced with clinical site and preceptor shortages in the United States (Erikson et al., n.d.; Kohlhepp, 2017), Physician Assistant (PA) students may be placed with clinical preceptors who lack competence in effective teaching strategies. Research about clinical teaching strategies has focused on training both the preceptor and the student to achieve evidence of effectiveness (Fagundes, et al., 2020; Jain, et al., 2019).

MATERIALS AND METHODS

However, one teaching model is documented to be learner-led and places the responsibility of the teaching encounter onto the learner (Pascoe et al., 2015). This shift may support adult learners' needs for autonomy and self-directedness (Bastable et al., 2020). Burgess et al. (2020, p. 2) noted strategies that increase learner engagement could create students who identify as proactive learners who "seek feedback and reflect on their own performance".

RESULTS AND DISCUSSION

The PA Clinical Rotation Evaluation (PACRE) instrument (Meverden et al., 2018) was developed based on the Stanford Faculty Development Program (SFDP) for Clinical Teaching categories, which include (1) learning climate, (2) control of session, (3) communication of goals, (4) promotion of understanding and retention, (5) evaluation, (6) feedback and (7) promotion of self-directed learning (Meverden, et al., 2018). The items are responded to on a five-point Likert scale of (1) strongly disagree to (5) strongly agree and included items such as The preceptor created an environment that was conducive to learning (learning climate), I received feedback on my performance (feedback), and I was evaluated on what I learned (evaluation). Each of the categories included two items that were evaluated on the survey by clinical learners. Additional demographics were collected with the survey, including age, gender and rotation specialty. After iterative revisions, the draft survey was pilot-tested with PA students and colleagues before being used on a larger scale (Meverden, et al., 2018). Meverden, et al. (2018) showed the instrument to have excellent internal consistency (Cronbach alpha = 0.95). Meverden et al. reported PACRE scores to be associated with

gender and rotation specialty, as well as the perception of preparedness and value of the rotation.

The PACRE instrument was developed and validated with clinical PA students, which aligns with the population of interest and the research question for the proposed study. There are no anticipated changes to the instrument besides adding some demographic questions. Permission to use the instrument was obtained from the developer of the PACRE.

The case-based education group (with pretest condition) had statistically significantly higher ratings in the domains of control of session, communication and evaluation than the SNAPPS intervention groups. Control of session score was based on ratings of participants on statements regarding balancing time between patient care and teaching and using time effectively. Communication scores were based on agreement with statements regarding how clear the rotation goals were and if the goals were appropriate for educational needs. The evaluation scores were based on rating statements about performance evaluation by the preceptor (Meverden et al., 2018). The SNAPPS model is known for giving the student a greater role in leading the educational process and creating more engagement in the learning activity by the student (Fagundes et al., 2020; Jain et al., 2019). The SNAPPS group participants may have ranked their preceptors lower in these specific domains of control of session, communication of goals and evaluation, and in general across all the domains because they had more insights into how to be engaged in the learning experience. Burgess et al. (2020) noted that the self-directed learner would seek feedback and reflect more on their performance. Potentially the SNAPPS participants were more self-directed and engaged in more reflection, and were more critical in their reflection on the clinical learning experience. It is interesting to note that one case-based group gave a rating of strong agreement (score of 5) across all the domains, which brings into question how sincerely these participants were reflecting on the learning experience.

CONCLUSION

Limitations of this study were the small sample size, lack of generalizability, and not controlling for factors such as rotation setting or perceptions of preparedness for the rotation. The small sample was taken from a program in an HBCU with a student profile that may vary dramatically from other PA programs, which limits the generalizability of the findings and may raise questions about the influence of student and preceptor race on perceptions of learning in the clinical setting that was beyond the scope of this study. Meverden et al. (2018), in their validation of the PACRE instrument, noted correlations between rotation settings, with general practice rotations having the highest scores and surgical rotations having the lowest. A significant relationship between PACRE scores and participant responses to two questions about preparation for the rotation and preparation for being a PA was also noted in the analysis of the PACRE instrument (Meverden, et al., 2018). Data analysis that includes factoring in data about rotational settings and perception of students' preparation for the rotation may provide clearer insights into the effects of the SNAPPS model while controlling for other external factors that can impact the PACRE score.

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