



Connecting the Dots: Bridging the Gap Between Basic Sciences and Clinical Skills using Illness Scripts

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INTRODUCTION

- Problem-Based-Learning (PBL) is a self-directed learning strategy conducted in small groups in the Human Body Foundations courses of the M1 pre-clerkship curriculum that challenges students to explore basic science topics and apply them to a clinical case scenario.
- Adjoining basic science education, sessions of the Clinical Skills Course (CSC) 1 simulate the clinical environment with standardized patients to develop competency in foundational clinical skills.
- While both PBL and CSC foster professional development of the physician-in-training, opportunities exist to apply skills learned in CSC to the PBL experience.
- One such bridge is the application of Illness Scripts introduced in CSC to strengthen each student's investigation and presentation of a clinical case in PBL. Illness Scripts are a tool to organize medical knowledge to help clarify clinical reasoning.¹ Table 1 shows the framework of an illness script.
- In particular, illness scripts have the benefit of allowing pre-clinical students to practice their self-directed clinical reasoning skills prior to entering the clerkship segment.¹
- We aim to integrate illness scripts within PBLs to create a stronger connection with clinical skills.

Table 1: Illness Script Format

Component of Illness Script	Framed as a Question
Epidemiology	Who gets this disease?
Time Course	How does the illness develop?
Signs/Symptoms	How does the illness present?
Pathophysiology	What is happening to cause the illness?
Diagnostic Lab Tests	What additional information would inform your diagnosis?
Imaging	What additional information would inform your diagnosis?
Treatment	What interventions can be described?

METHODS

- Clinical skills faculty and student leaders created content to introduce illness scripts and PBLs to students, which was subsequently reinforced in CSC.
- 5 PBL cases are presented in the Human Body Foundations courses of the M1 pre-clerkship curriculum. For each case, medical students (~300) were divided into groups of 10 students with one facilitator.
- Students were provided a case file including presenting symptoms and more specific lab findings. Students were only allowed to progress to the next page after discussing and organizing their learning gaps under each component of the Illness Script template.
- After organizing learning objectives on the first day of the PBL, students performed independent research on the objectives, and the team came back two days later and presented their findings using the structure of the Illness Script in a second session.
- To measure the success of this intervention, M1s were surveyed before the 1st PBL session to gauge their baseline understanding of Illness Scripts and again after each PBL case.
- Data from 2 of the 5 PBL cases have been collected at this time.

Illness scripts provide an opportunity to bridge the gap between basic sciences education and clinical skills

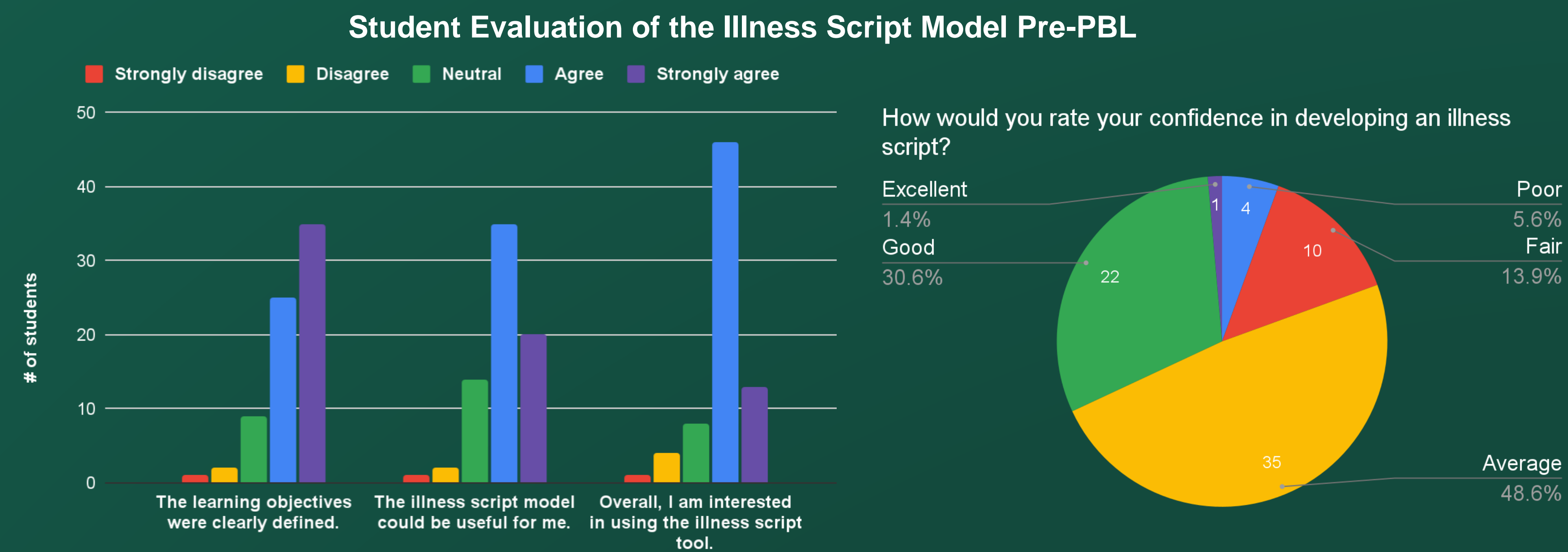


Fig 1. First-year medical students were surveyed prior to their first PBL session on their level of agreement with the statements: "The learning objectives were clearly defined", "The illness scripts model could be useful for me", and "Overall, I am interested in using the illness script tool". Student confidence level in developing an illness script was also collected.

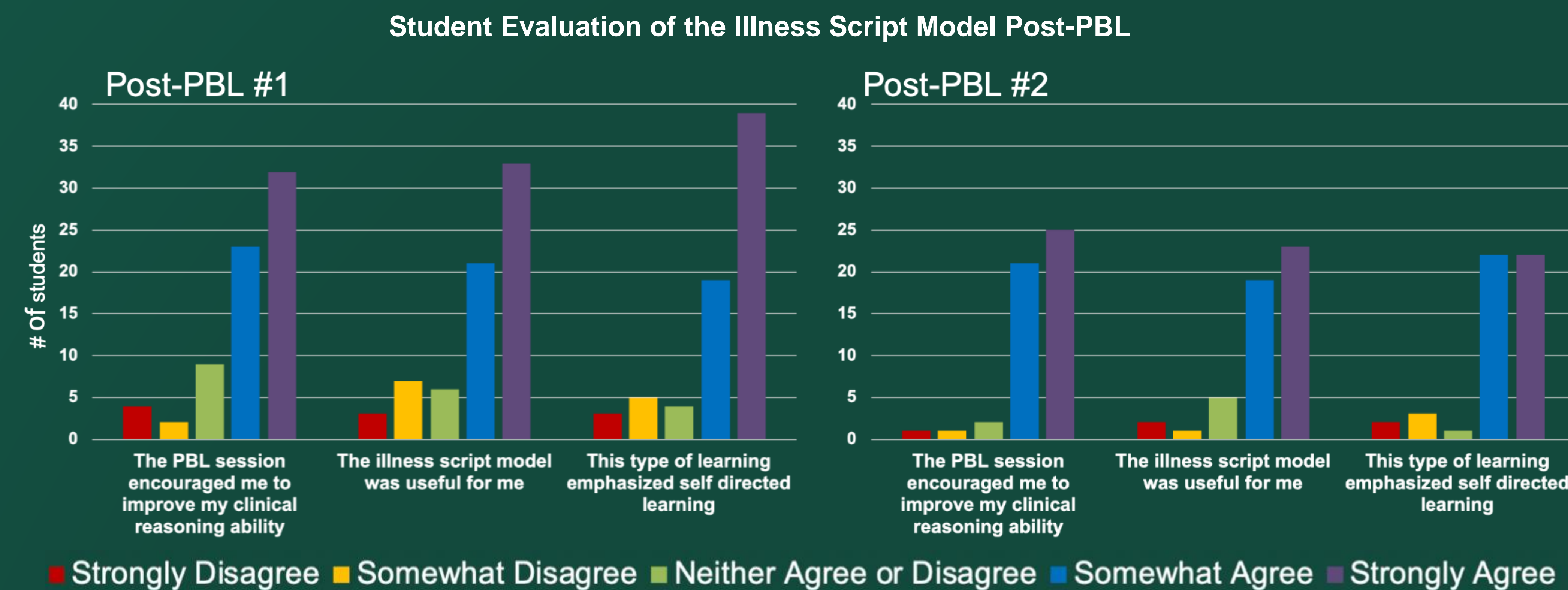


Fig 2. First-year medical students were surveyed following their inaugural experience utilizing the illness script model after their first PBL session on their level of agreement with the statements: "The PBL session encouraged me to improve my clinical reasoning ability", "The illness script model was useful for me", and "This type of learning emphasized self-directed learning". Response rates declined from 25% after PBL #1 to 15% after PBL #2.

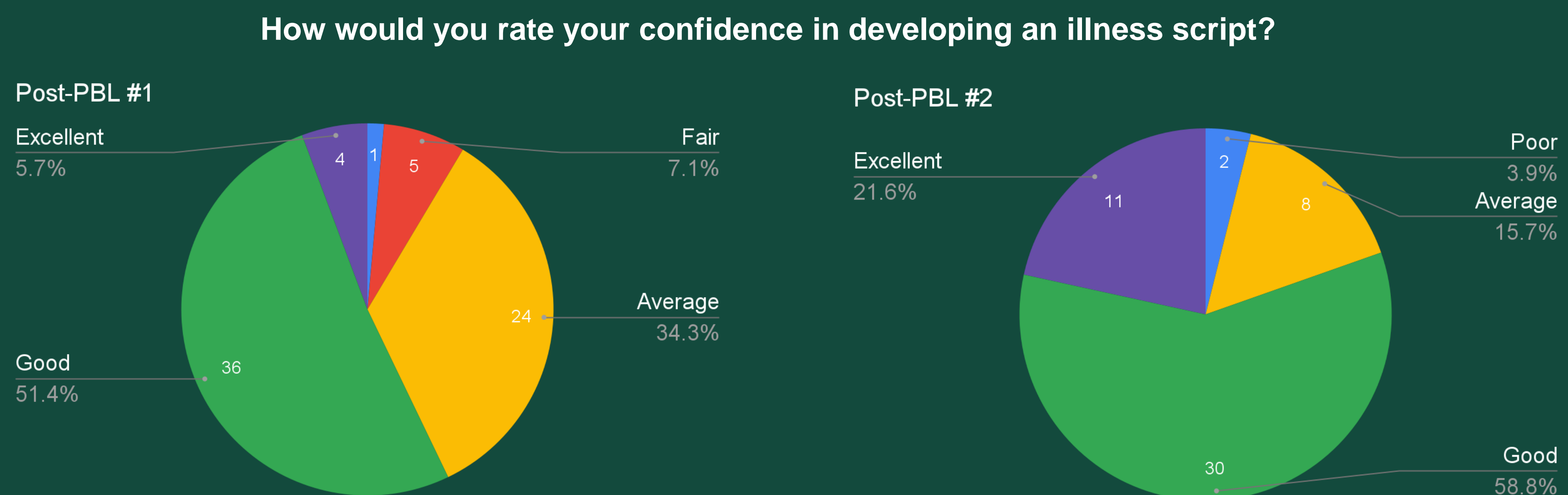


Fig 3. First-year medical students were surveyed following the completion of PBL #1 and PBL #2 on their level of confidence in developing an illness script. No students responded "Fair" in the Post-PBL #2 survey.

RESULTS

- Incoming students report average/good confidence in their skills of developing an illness script (Figure 1, right panel).
- Furthermore, students mostly agree or strongly agree that objectives were clearly defined and are interested in using the illness script tool in the future (Figure 1, left panel).
- The majority of student respondents somewhat or strongly agreed that the illness script model in PBL was useful to them and fostered their clinical reasoning ability while receiving minimal input from facilitators (Figure 2).
- Students responded similarly after each PBL session - most students either somewhat or strongly agreed that the illness script model was useful to them and helped improve their clinical reasoning ability (Figure 2).
- After the first PBL session, most students reported their confidence in the average/good categories, and after the second session, most students reported their confidence as "good" (Figure 3).

DISCUSSION & CONCLUSIONS

- Extending the illness script model to PBL sessions was perceived as a useful addition by students and improved their confidence in developing an illness script.
- Our response rates ranging from 15 to 25% are good, but not excellent. This is one explanation for why the "strongly agree" category dropped off in the Post-PBL #2 survey. Effort in the future will be placed towards improving this. One method will be to respond to student opinions on how to improve the course in order to maintain student engagement.
- There are 3 more PBL cases in which data from the application of Illness Scripts can be collected and analyzed for each M1 class and as data arrives we will be better able to measure the innovation's efficacy. Additionally, further data will be collected to directly ask students whether this intervention is effectively bridging the gap between basic sciences and clinical skills.
- We hope this will be beneficial to medical students, as it serves to familiarize them with a nationally recognized clinical reasoning tool.
- This tool may improve the learning experience of each student and deepen their appreciation of how the foundational sciences can be applied to the understanding of disease processes in the clinical setting.

REFERENCES

1. Moghadami M, Amini M, Moghadami M, Dalal B, Charlin B. Teaching clinical reasoning to undergraduate medical students by illness script method: a randomized controlled trial. BMC Med Educ. 2021 Feb 2;21(1):87. doi: 10.1186/s12909-021-02522-0. PMID: 33531017; PMCID: PMC7856771.