Our results corroborate the **international evidence** that brief, interactive, **online OUD curricula** are **acceptable to learners and yield significant short-term gains that can supplement traditional teaching.** The results of this study **extend** this evidence by demonstrating large MOUD knowledge effects and measurable **improvements in empathy and harm-reduction attitudes** among medical students. It also show that these module are **generalizable globally**.

Interactive Online Training on Opioid Use Disorder for Medical Students: Acceptability, Feasibility, and Effectiveness

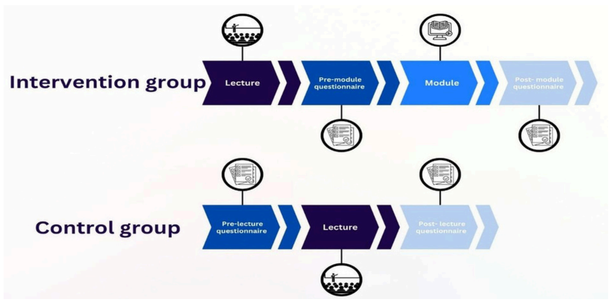
Ferdous A. Ahmed, Mehaf M. Ferak, Ahmed N. Hassan

INTRODUCTION

For future physicians, early competence in recognizing and treating OUD is critical because medications for OUD (MOUD), which are primarily methadone and buprenorphine, substantially reduce all-cause and overdose mortality, and benefits scale with treatment retention. Educational reviews have **highlighted persistent gaps in undergraduate medical education related to addiction**, underscoring the need for structured skills-focused training early in the curriculum. Digital, case-based modules can help close knowledge gaps, yet **few target attitudes, communication skills, or empathy, and most evaluations are U.S.-based—underscoring** the need for context-specific evidence in settings with limited OUD exposure.

Objective:

To evaluate a ~20-minute interactive, animated OUD interview for acceptability, feasibility, and incremental effectiveness beyond lecture among Saudi medical students, focusing on knowledge, approach, and empathy compared with lecture-only instruction.



METHODS

The opioid module: Students completed a self-paced, browser-based interactive e-module. The module was delivered entirely online for individual study. In our implementation, students were asked to complete the module in a single sitting (≈20–25 minutes) before responding to the study surveys. In the module, students viewed an animated clinician–patient vignette modeling a brief empathic substance use conversation.

As descriptive complements to the mixed models, we tabulated group-specific pre and post means and SDs (Table 1) and computed within-subject effect sizes (*Cohen's* d) from paired pre-post tests using the mean change divided by the SD of change scores for the paired subset. These paired results also informed model visualization and interpretation alongside the adjusted margins. Effect sizes were interpreted using Cohen's conventional benchmarks for standardized mean differences (small ≈ 0.20, medium ≈ 0.50, large ≈ 0.80) 29. All tests were two-sided with α = 0.05. The tests were conducted using STATA.

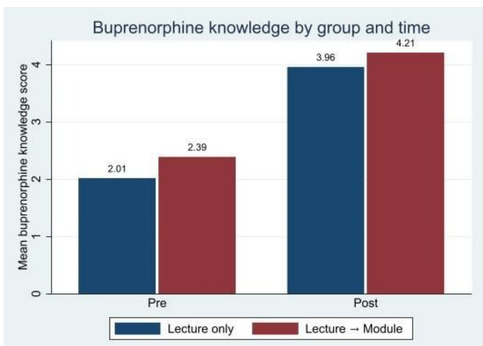
DISCUSSION

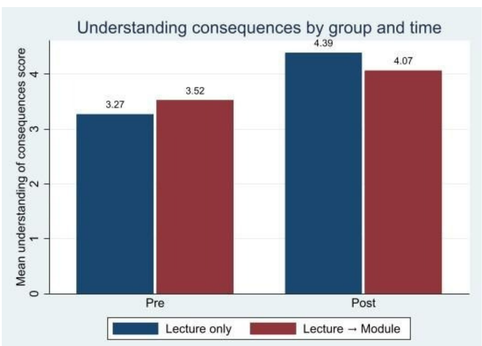
This study assessed the feasibility and acceptability of an interactive self-paced animated module as a supplement to traditional teaching. It also assessed the incremental benefits and effectiveness of this opioid module beyond lectures (traditional teaching). Our findings align with, and in several respects extend, the growing body of literature demonstrating that interactive digital instruction on OUD produces meaningful gains in learners' knowledge and attitudes. Our study contributes by demonstrating concurrent gains in empathy, communication skills, and harm-reduction constructs, together with MOUD knowledge in a short online format. Our implementation in Saudi Arabia adds necessary evidence from a region where the availability of hands-on OUD training opportunities and MOUD programs varies. Thus, the findings could be useful and generalizable to other areas facing similar limited clinical exposure.

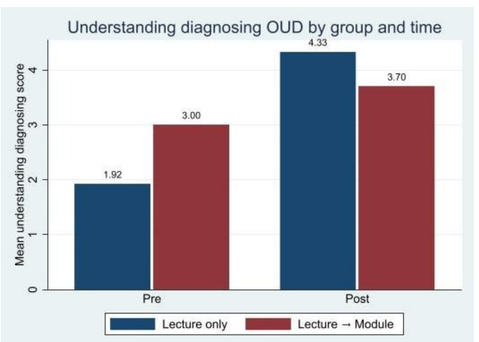
RESULTS

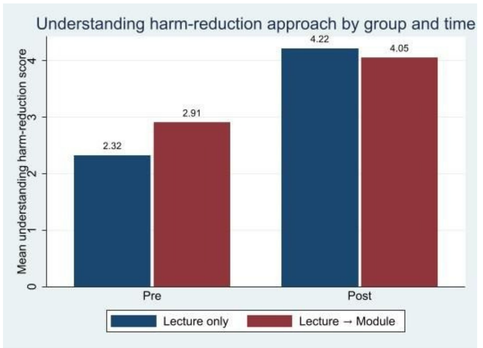
Table 1. Pre- and post-training self-ratings of understanding (1–5 Likert; higher = better) by intervention arm. Values are means (SD) at baseline and post-intervention for the opioid-module and traditional lecture arms. *Cohen's* d is the within-arm standardized change: (post − pre) divided by the SD of individual change scores; positive values indicate improvement and were computed among paired respondents within each arm.

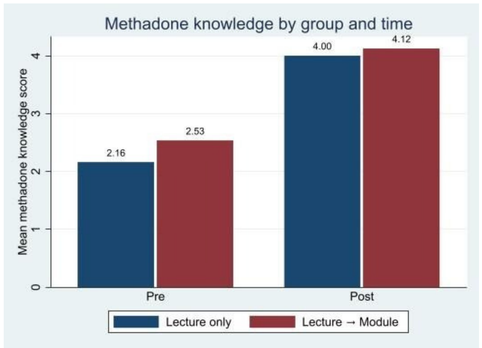
Intervention	Opioid module			Traditional lecture		
Outcome	Pre-Module/baseline Mean (SD)	Post-module Mean (SD)	Cohen's d	Pre-Module/baseline Mean (SD)	Post-module Mean (SD)	Cohen's d
Knowledge						
Consequences/risk of OUD	3.522 (1.077)	4.068 (0.933)	0.30	3.273 (0.968)	4.391 (0.577)	0.93
Approach						
Methadone treatment	2.532 (1.183)	4.123 (0.971)	0.95	2.156 (1.027)	4.000 (0.843)	1.34
Buprenorphine treatment	2.388 (1.161)	4.205 (0.912)	1.22	2.013 (0.980)	3.957 (0.868)	1.40
Non-medical (harm-reduction)	2.905 (1.219)	4.055 (0.984)	0.56	2.325 (1.069)	4.217 (0.758)	1.24
Attitude and empathy						
Attitudinal toward diagnosing OUD	3.000 (1.221)	3.699 (1.050)	0.40	1.922 (0.997)	4.326 (0.598)	1.98
Empathy	3.512 (1.167)	4.329 (0.851)	0.49	3.104 (1.176)	4.065 (0.904)	0.68

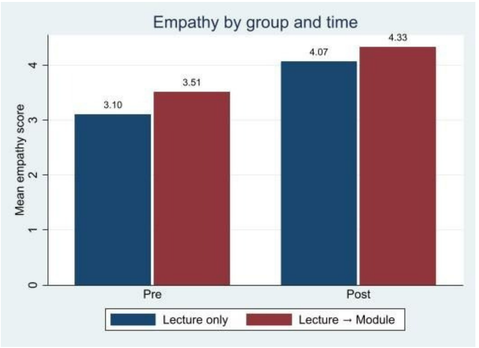












Qualitative Results' Themes

Lack of experience, Personal connections, clinical exposure

Module:

Positive Engagement and Satisfaction, Ease of Use and Practical Application

Lecture only:

Awareness and Recognition, Prepardeness and confidence, Stigma Reduction

Subthemes:

Enhanced Patient Communication, Empathy and Support, Interactive Scenario-Based Learning, Perspective- Taking, Patient-Centered Approach, Recognition of Challenges

References

UNIVERSITY OF TORONTO

cam Centre for Addiction and Menta

كلية الطب Faculty of Medicine