Assessment of the use of a patient simulation on pharmacy student HIV treatment knowledge
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BACKGROUND
- As of 2015, there were approximately 1.1 million people in the United States living with HIV
- HIV causes approximately 15,000 deaths per year
- Current guidelines recommend using a multidisciplinary team of providers, nurses, social workers, pharmacists, and medication managers
- Pharmacists play a crucial role in HIV treatment and antiretroviral therapy (ART) monitoring, counseling, and adherence checks
- Pharmacists do not feel comfortable with their knowledge of HIV/AIDS, with 33% of those pharmacists regularly providing care to HIV patients
- Patient simulations have been shown to positively impact student knowledge
  - More likely to retain knowledge with a combination of didactic learning and a patient simulation
  - Increase in HIV knowledge for third-year medical students after patient simulation workshops
- The application of knowledge through hands-on learning to unique situations like patient simulations are useful supplementations to didactic learning and aid in knowledge retention

OBJECTIVE
To assess if a patient simulation increased pharmacy student knowledge of HIV therapy.

METHODS

Sample
- Second-year pharmacy students enrolled in the Cedarville University School of Pharmacy (CUSOP) PHAR 6263 Infectious Diseases & Immunology Module II

Study design
- Pre-test/post-test study design
- 2/1/18 HIV Treatment Knowledge Scale (post-class)
- 2/7/18 HIV Treatment Knowledge Scale (simulation)
- 2/15/18 HIV Treatment Knowledge Scale (post-simulation)

Team-Based Learning (TBL) Session
- The TBL session was over a period of 4 hours
- Pre-readings were completed before the start of the session
- Individual readiness assessment tests (iRATs) & team readiness assessment tests (tRATs) covering pre-class material were administered at the start of the session
- A mini-lecture was then presented to cover concepts for reinforcement
- Online application exercise was used to apply concepts and learning in a team setting

HIV Patient Counseling Simulation
- HIV patient case provided to students 3 days before the simulation
- HIV patient treatment worksheet was turned in prior to the simulation
- No notes or use of electronic devices were allowed during the simulation
- 15 minutes to counsel the patient on the following:
  - Propose an appropriate antiretroviral regimen for this patient (drug, dosage, schedule and duration of therapy, major side effects) and counsel them appropriately
  - Explain any monitoring (clinical & laboratory) that the patient will need to have completed
  - Explain the surrogate markers and their use in monitoring HIV disease to the patient
  - Propose an appropriate treatment regimen for this patient’s opportunistic infection (drug, dosage, schedule and duration of therapy) and counsel them appropriately
  - When counseling the patient, identify any potential barriers to medication adherence and discuss potential strategies with the patient to overcome these barriers and maximize treatment adherence
  - Simulation was evaluated with 4-point Likert scale rubric based on five objectives of simulation plus patient interaction skills

HIV Treatment Knowledge Scale
- Consisted of 21 HIV treatment questions
- Contained options of “true,” “false,” or “I don’t know”
- Higher total scores indicate greater HIV treatment knowledge
- Total scale scores were summed

REFERENCES

RESULTS

1. Once the HIV viral load results are "undetectable," HIV medications should be stopped
2. If HIV medications are not taken at the right time of day, HIV drug resistance can occur
3. HIV is cured when the HIV viral load blood test result is "undetectable"
4. Condoms are not needed when the HIV viral load blood test results are at "undetectable" levels
5. It is better to take a half dose of the HIV medications than stopping the HIV combination medications completely
6. One can get infected with a drug-resistant type of HIV
7. HIV medications can cause unpleasant side effects (e.g., nausea, diarrhea, vomiting)
8. If sexual partners are both HIV-negative condoms are no longer needed
9. Treatments are available to reduce HIV medication side effects
10. Recreational drugs (e.g., ecstasy) can affect the effectiveness of HIV medications
11. Providing HIV medications to a pregnant woman reduces the baby’s risk of being infected with HIV
12. There currently exists an HIV vaccine that prevents HIV infection
13. HIV medications can be taken at a different time of day on weekends or holidays
14. Over-the-counter herbal pills (e.g., St. John’s Wort) could make HIV medications less effective
15. It is best to stop HIV medications as soon as you feel better
16. Mixing a few doses of HIV pills can increase the amount of HIV virus in the body
17. After a few months, it becomes less important to take HIV medications at the right time of day
18. HIV medications help the body’s immune system get stronger (CD4 increase)
19. When HIV medications work well, the HIV viral load increases
20. Taking antibiotic medications protects a person from getting infected with HIV
21. Physical exercise (e.g., yoga, tai chi) can help reduce stress levels in HIV patients

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DISCUSSION AND CONCLUSIONS
Discussion
- HIV knowledge increased significantly post-TBL (p = 0.001) and increased post-simulation, but not significantly (p = 0.291)
- Knowledge on 15 of the 21 items on the HIV Treatment Knowledge Scale significantly improved from pre-TBL to post-simulation (p ≤ 0.025), although the significant differences occurred from pre-TBL to post-TBL
- Responses were not significantly different between post-TBL and post-simulation
- Item numbers 5 and 13 had a significant increase in knowledge only from pre-TBL to post-simulation
- Correct responses on 13 of the 21 items on the HIV Treatment Knowledge Scale increased from post-TBL to post-simulation, although not significantly

Conclusions
- TBL sessions significantly increase student knowledge of HIV treatment
- Knowledge is sustained after patient simulations however the long-term retention of topics should be further explored

Future Directions
- Examine the impact on skills and abilities in counseling patients on HIV treatment regimens
- Assess student confidence in HIV treatment knowledge and counseling
- Assess student empathy in the treatment of patients living with HIV