



Evaluating Medical Student Pre-Diabetes Knowledge Before and After Implementation of Educational Intervention in the Ambulatory Care Setting

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INTRODUCTION

- The disparity of knowledge between the classroom setting and the ambulatory care setting is of utmost importance as evidence based medicine is critical to providing good care.¹
- Multiple studies have been conducted regarding the implementation of pilot programs in the ambulatory care setting to increase knowledge, including questionnaires, online workshops and standardized patients.^{2,3,4}
- Many simple methods still have not been implemented or studied to assess and improve the knowledge base of medical students.
- This study aims to develop a methodical and effective approach to educating medical students within the ambulatory setting to bridge the gap between didactic and clinical knowledge.

METHODS

- The teaching intervention component on pre-diabetes prevalence, prevention, and management based on current guidelines from National Diabetes Prevention Programs, USPSTF and CDC includes:
 - A screening handout displayed in the outpatient clinic (see Figure II.)
 - A 10- minute PowerPoint presentation during clinical didactics.
- The study incorporates a 14 question, voluntary pre-test and post-test survey given after the teaching intervention (see Figure I.). Survey instrument was piloted with a group of students to assure the questions were predictive.
- This study involved students from three cycles of an internal medicine inpatient rotation.
- Paired-t tests were used for statistical analysis of this data.

Figure I. Pre-Test Sample Questions

Pre-Test: Evaluating Medical Student Knowledge on Pre-Diabetes

Please complete the survey below.
Thank you!

1) You are doing your internal medicine rotation and you want to make sure you impress your attending. You are trying to recollect the 2015 United States Preventive Services Task Force (USPSTF) guidelines for screening for abnormal blood glucose and type 2 DM. Which of the following is a USPSTF grade B recommendation?
* must provide value

5) Ms. Johnson wonders if her disease process will worsen and she is very scared about getting diabetes as she has some family members that have lost their toes to diabetes. If she does not get treatment for her prediabetes, what are her risks of progression to diabetes in the next 5 years?
* must provide value

6) Ms. Johnson now understands that she needs to change her lifestyle so that she can prevent complications and would like to come up with an intervention plan together. According to the National Diabetes Prevention Program (DPP), which of the following treatments has the best outcome on the progression of prediabetes/diabetes?
* must provide value

Figure II. Screening Handout Displayed in Outpatient Clinics
Diagnosis Criteria for Prediabetes and Diabetes

Test	Normal	Impaired Fasting Glucose/ Impaired Glucose Tolerance/ Prediabetes	Type 2 Diabetes Mellitus
Hemoglobin A1c	<5.7%	5.7- 6.4%	≥ 6.5%
Fasting Plasma Glucose Level		100- 125 mg/dL	≥ 126 mg/dL
Oral glucose tolerance test (75g load, 2hr)		140-199 mg/dL	≥ 200 mg/dL
Random plasma glucose			≥ 200 mg/dL

*All positive tests should be confirmed with repeated testing
USPSTF Final Recommendations for Abnormal Blood Glucose/ Type 2 DM Screening 2015
American Diabetes Association: Standards of Medical Care in Diabetes 2016

Table I. Survey Paired T-Test Analysis

	Overall		Attended Lecture	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Sample size (n)	46	43	24	
Mean (μ)	9.09	9.65	9.17	9.42
Standard Deviation (σ)	2.26	2.17	2.16	2.36
p value (p)	0.07		0.29	

RESULTS

- This study evaluated 46 students, of which, 43 completed both components and 24 of those attended lecture.
- The results show that there is improvement from the pre-test to the post-test means, however, it was not statistically significant regardless of whether lecture was attended.
- Although the questions were validated, the students that participated in the study had a higher baseline knowledge than anticipated.
- Confounding variables include ongoing bedside clinical teaching during inpatient rounds and ambulatory classroom curriculum.

CONCLUSION

- In conclusion, a method to educate students in the ambulatory care setting is established and could be used for teaching concepts in order to continually improve quality of care.
- In the future, increasing the power by developing more questions, providing an incentive for students, picking a more advanced topic, and identifying students by year of training may prove to be beneficial in demonstrating further effectiveness of this methodology.

CREDITS/DISCLOSURE/REFERENCES

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