

AN ANALYSIS OF THIRD YEAR MEDICAL STUDENTS' KNOWLEDGE AND PERCEIVED SELF-EFFICACY TO COUNSEL AND SCREEN FOR ALCOHOL USE AMONG PREGNANT WOMEN

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ABSTRACT

Background

Fetal Alcohol Spectrum Disorders (FASDs) are one of the leading preventable causes of mental retardation and birth defects in the United States. FASDs are 100% preventable if a mother does not consume alcohol during pregnancy. Research suggests that physician advice is one of the most important factors in determining whether or not a pregnant woman decreases her alcohol intake. However, most physicians receive very little training on counseling and screening pregnant women for alcohol use.

Objective

To assess the knowledge and perceived self-efficacy to counsel and screen for alcohol use among pregnant women in third year medical students at two Midwestern medical schools.

Methods

Third year medical students ($n = 259$) from two Midwestern medical schools were administered a questionnaire via Survey Monkey assessing their knowledge and perceived self-efficacy to counsel for alcohol use among pregnant women as well as their perceived self-efficacy to screen for alcohol use among pregnant women using the T-ACE, CAGE, TWEAK, MAST and AUDIT.

Results

Findings revealed that most participants were knowledgeable about the health risks associated with consuming alcohol while pregnant and the screening tools, but less knowledgeable about the self-help/group support and treatment programs available to patients. In contrast, when asked about their confidence in using the different screening tools, although reporting being knowledgeable, they were most confident in using the CAGE and least confident in using the TACE, TWEAK, MAST and AUDIT respectively.

Conclusions

Recommendations are offered to medical schools for incorporating additional training in screening instruments and self-help/group support and treatment programs available to patients.

Keywords: *Medical students, pregnant women, alcohol screening and counseling, FASD*

As one of the leading preventable causes of mental retardation and birth defects in the United States, Fetal Alcohol Spectrum Disorders are 100% preventable if a mother does not consume alcohol during pregnancy.¹ Numerous federal agencies and national organizations^{1,2,3,4} recommend that pregnant women and women who are planning on

becoming pregnant abstain from alcohol consumption. The U.S. Preventive Services Task Force (USPSTF), "recommends screening and behavioral counseling interventions to reduce alcohol misuse by adults, including pregnant women, in primary care settings", as well as, the need for additional research to determine the effectiveness of counseling and screening for

alcohol misuse among pregnant women in primary care settings.⁵

Consistent with federal government recommendations, the American Medical Association (AMA), and the American College of Obstetrics and Gynecology (ACOG)^{6,7} recommend that physicians screen all women of childbearing age for alcohol use and continue to increase their own knowledge about substance use and abuse. Unfortunately, studies indicate that only about half of all obstetricians, family practitioners and advance practice nurses surveyed counsel or screen all women of childbearing age for alcohol use.^{8,9} Research supports that physician advice is one of the most important factors in determining whether or not a pregnant woman decreases her alcohol intake.^{10,11,12}

According to the National Leadership Conference on Medical Education in Substance Abuse¹³:

“Available data indicate that medical students are receiving training, but how can we know they are ready to use the information they’ve received? How can we tap into the existing structures of medical school and make substance abuse education a central task? The group agreed that this is a propitious time to change the conversation from a general charge that “medical schools are not teaching enough about substance abuse” to more specific issues. For example, a needs assessment might uncover specific problems that could be addressed (e.g., what is the confidence level of medical students in their ability to conduct screening and brief intervention, or to prescribe analgesics for chronic pain?). The data we currently have does not address the *effectiveness* of current education about Substance Use Disorders.”

Currently, Substance Use Disorders (SUD) are defined as “maladaptive patterns of substance use, leading to clinically significant impairment or distress”¹⁴ diagnosed as either “substance abuse” or “substance dependence” in the DSM-IV-TR.

The first draft of the diagnostic criteria of the DSM-5 has now been released. It includes substance-use disorder without delineating abuse or dependence. Each drug, including alcohol, is identified in its own category.¹⁵

The following exploratory study assessed the knowledge and perceived self-efficacy to counsel about health risks and resources for management of alcohol use and alcoholism and perceived self-efficacy to screen for alcohol use in pregnant women using the T-ACE, CAGE, TWEAK, AUDIT and MAST. Subjects were third year medical students, enrolled in a 4-year private M.D. program and a 4-year public D.O. program.

METHODS

Prior to conducting the study, Human Subjects Research approval was sought and granted from each participating institution’s Institutional Review Board. Dillman’s¹⁶ Tailored Design Method was used to collect study data.

Study participants included all third year medical students at two medical colleges in one Midwestern state. All participants previously completed training on alcohol assessment instruments as part of their program coursework. Institution A medical students received training in their first year on the CAGE. Institution B medical students received training between their second and third year of coursework on the CAGE, the AUDIT, and additional “red flags” such as clinical presentation, collateral information, interviewing, criteria for diagnosis, readiness for change, severity of illness, and treatment matching criteria of addiction. Instructors delivered this information through a standard lecture/discussion method.

Completion of the survey was voluntary and no incentives were provided to the participants. The overall response rate for both institutions was 30%. Fifty-six percent of the respondents were female (Table 1), 69.3% identified as White and 54.5% were less than 26 years of age.

TABLE 1 Response Rates & Characteristics of Respondents

	Response Rates								
	<i>Institution A</i>			<i>Institution B</i>			<i>Combined</i>		
	N	n	%	N	n	%	N	n	%
Gender									
Female (%)	73	22	51.2	60	20	33.3	133	42	31.6
Male (%)	73	21	48.8	44	12	27.3	117	35	30
Total	146	43	29.4	104	32	30	250	77	30.8

RESULTS

Instrumentation for the present study was adapted from the Health Promotion /Disease Prevention Inventory.¹⁷ Tresolini & Stritter¹⁸ developed an instrument to assess medical students' self-efficacy in educating patients regarding smoking cessation, nutrition, and exercise. The survey used in the current study adapted Tresolini and Stritter's¹⁸ instrument to evaluate the knowledge and perceived self-efficacy among medical students to screen and counsel for alcohol use among pregnant women.

In the present study participants were asked to rate their knowledge (1= not knowledgeable at all, 2 = somewhat knowledgeable, 3 = knowledgeable, and 4 = extremely knowledgeable) and perceived self-efficacy to counsel about health risks and resources for management of alcohol and alcoholism and perceived self-efficacy to screen for alcohol use among pregnant women using the T-ACE, CAGE, TWEAK, AUDIT and MAST on a four point scale (1= not confident at all, 2 = somewhat confident, 3 = confident, and 4 = extremely confident).

Reliability analyses were conducted on counseling and screening self-efficacy scales for each institution. Cronbach alpha scores for counseling self-efficacy (.799) and screening self-efficacy (.799) were acceptable, using Robinson's¹⁹ criteria of 0.60-0.70 as the lower level of acceptability. Descriptive statistics were used to determine percentages of subjects indicating each answer option. In addition, individual answers to each questionnaire were reviewed. Independent t-tests were conducted to compare both institutions on all knowledge and self-efficacy scores as they related to age, gender and ethnicity.

There were no statistically significant differences between age, race and sex of participants. There was, however, a statistically significant difference between institutions and knowledge of the health risks and resources for management of alcohol use and alcoholism among pregnant women (Table 2). Institution B participants self-reported being more knowledgeable about the health risks related to consuming alcohol while pregnant, self-help materials and group support and treatment programs than Institution A participants. Institution A participants self-reported being more knowledgeable about the screening tools for alcohol use and alcoholism than Institution B participants. There were no statistically significant differences between participant demographics (age, sex, race and institution attended) and perceived self-efficacy to counsel and screen for alcohol use. Overall, findings from this study revealed that mean knowledge scores, counseling self-efficacy scores and screening self-efficacy scores were low for both institutions. Students at both institutions were most knowledgeable on the health risks associated with consuming alcohol while pregnant and screening tools and least knowledgeable about the self-help/group support and treatment programs. Similarly, students at both institutions were most confident in their ability to counsel about the health risks related to consuming alcohol while pregnant and screening tools and least confident in their ability to counsel about self-help/group support and treatment programs available to patients with alcohol problems (Table 3). All participants were least confident in their ability to use the T-ACE, TWEAK MAST and AUDIT and most confident in their ability to use the CAGE (Table 3).

TABLE 2 Independent t-test – Age, Sex, Race, Institution x Knowledge of Health Risks, Screening Tools, Self-Help/Group Support and Treatment Programs

	t-test for Equality of Means			95% Confidence Interval of the Difference			
	F	df	Sig (2 tailed)	Mean Difference	Std Error Difference	Lower	Upper
	Age	6.345	75	.992	-.005	.446	-.932
Sex	1.527	75	0.068	0.843	0.445	-.064	1.750
Race	0.051	75	0.366	0.453	0.498	-.539	1.445
Institution	0.394	77	0.044**	-.949	0.463	-1.872	-.026

p > .05
p > .01

TABLE 3 Mean, Standard Deviation and p value for Knowledge, Counseling and Screening x Institution

	Mean (SD)		<i>p</i>
	Institution A	Institution B	
Knowledge			
Health Risks	2.93 (.654)	3.32 (.638)	.010*
Screening Tools	2.98 (.723)	2.62 (.551)	.014*
Self Help/Group Support	2.04 (.706)	2.44 (.786)	.023*
Treatment Programs	1.98 (.783)	2.50 (.663)	.002**
Counseling			
Health Risks	2.67 (.707)	2.94 (.886)	.143
Screening Tools	2.44 (.785)	2.50 (.615)	.725
Self Help/Group Support	2.13 (.786)	2.29 (.871)	.400
Treatment Programs	1.91 (.793)	2.41 (.892)	.012*
Screening Tools			
T-ACE	1.86 (.990)	2.06 (.919)	.366
CAGE	3.52 (.590)	3.24 (.781)	.079
TWEAK	1.58 (.794)	1.79 (.927)	.310
MAST	1.23 (.684)	1.70 (.884)	.028*
AUDIT	1.23 (.684)	1.65 (.883)	.015*

**p* > .05
***p* > .01

DISCUSSION

Medical school provides an excellent opportunity to train future physicians in the health risks, counseling skills and screening instruments for assessing alcohol use during pregnancy. Research however, on medical education has determined that the topic of substance use disorders has been given a low priority in medical school curricula.²⁰ Additionally, positive attitudes towards patients with substance use disorders appear to decrease over the course of medical school and residency apparently because physicians feel they cannot effectively treat or cure substance use disorders.²¹ Despite the availability of evidence-based screening approaches, practicing physicians often fail to conduct assessments to identify and treat substance abuse problems.²⁰ According to O'Connor and colleagues, prioritizing and fully integrating substance abuse competencies into medical school and residency education is critical to assure that physicians are armed with the tools to provide adequate evidence-based care to their patients.²⁰

Previous research has examined the knowledge, counseling, and screening strategies of practicing physicians,^{8,9,22,23,24,25,26,27,28} but there is a dearth of baseline data on medical students' knowledge and perceived self-efficacy to counsel and screen pregnant women for alcohol use and alcoholism. Based on the findings from this study, very few students were confident in their ability to use the screening tools that are most sensitive and specific for pregnant women. When examining the means, the majority of the respondents were somewhat knowledgeable and somewhat confident in their abilities to counsel and screen for alcohol use among pregnant women. Results suggest that the students are confident using the CAGE to assess for alcohol use, but only somewhat confident using the TWEAK or T-ACE, which are more sensitive and specific in detecting alcohol use among pregnant women.^{29,30,31}

A recent American College of Obstetrics and Gynecology (ACOG) opinion paper highlighted the T-ACE as an effective screening tool. It was noted, that although the CAGE is taught in most medical schools and residency programs, it has

not proved to be sensitive for women and minorities.³¹

Therefore, rather than providing information about the CAGE and alcohol screening in a standard lecture format, integrating this information across the curriculum and giving medical students a chance to practice screening with appropriate tools for women of childbearing age (e.g. the T-ACE), through a simulated patient experience, is advised. In one innovative medical education program, the Western Regional Training Center for Fetal Alcohol Exposure at UCLA collaborated with the Centers for Disease Control and Prevention (CDC) and the National Organization on Fetal Alcohol Syndrome (NOFAS) to develop and integrate FASD materials into first year medical students' curriculum. The Center successfully used FASD as a theme to connect learning basic neurosciences with clinical information and skills.³² Replication of such programs at other medical school campuses would be beneficial.

In addition to medical schools providing training to students in screening tools most sensitive for various populations, it would also be beneficial to incorporate training in self-help/group support and treatment programs and how to locate these programs within a community. For example, most communities have multiple Alcoholics Anonymous (AA) meetings, as well as alcohol and drug counseling programs, and drug and alcohol detoxification and residential treatment facilities. Medical students and residents should learn to serve as resource persons, informing and referring patients in need to these community-based services.

In addition, resources and organizations that address pregnancy and alcohol use, should be presented in medical education programs; the Fetal Alcoholism Family Resource Institute, the National Organization on Fetal Alcohol Syndrome, and the Family Empowerment Network at the University of Wisconsin Medical School. Government resources such as; the SAMHSA Fetal Alcohol Spectrum Disorders Center for Excellence, and the Centers for Disease Control National Center for Birth Defects and Developmental Disabilities should also be introduced.

Limitations

Because this study relied on self-report data it was subject to certain limitations such as honesty of participants' responses to the questionnaire. In addition, the small size of the population limits generalizability to the respondents only, and not to third year medical students at the institutions involved in the study or to medical students in the United States. Participation in this study was voluntary. Volunteers may give different responses than those who are not likely to volunteer. Although studies with physicians have found nonresponse best attributed to mislaid questionnaires and heavy workloads, there is some evidence that respondents to organizational questionnaires are more likely to be conscientious than nonrespondents.³³ This may imply that the nonrespondents in the present study may be less likely or confident to screen patients for alcohol use.

Studies using methodology other than electronic mail surveys may be a more effective method for increasing response rates in future studies of medical students. Research on nonrespondents to internet-based surveys indicates individuals that experience overload are less likely to respond.³⁴ Medical students would certainly be included this category. For this reason, providing paper-and-pencil questionnaires in intact classrooms and/or offering extra credit for questionnaire completion may increase return rates.

Although we found no statistically significant differences between age, race and sex among participants and their self-efficacy to screen for alcohol use, some of this may be attributed to limited statistical power due to the small sample size. We suspect significant differences in knowledge about the health risks related to consuming alcohol while pregnant, self-help materials, group support, treatment programs and screening instruments at the two institutions may be due to differences in how this subject is taught at the respective schools.

Despite the limitations of this study, it begins to explore the confidence level of medical students in their ability to conduct alcohol screening and brief interventions.

Additional studies examining medical students' knowledge, perceived self-efficacy to counsel and perceived self-efficacy to screen for alcohol use using the T-ACE, CAGE, TWEAK, AUDIT, and the MAST are needed. Replicating this study with other health professionals (e.g., nurses, physician assistants, midwives) with modifications, as needed, to measure their perceived knowledge and self-efficacy to counsel and perceived self-efficacy to screen for alcohol use among pregnant women would provide additional comparison data.

In addition, future research on medical students' ability to identify, screen, and refer for alcohol use among simulated patients of various demographics, with particular emphasis on pregnant women, is recommended. Results of such research could be used to improve medical education curricula and simulated patient programs with the ultimate goal of increasing the likelihood that practicing physicians conduct these screenings and referrals.

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