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BRIEF REPORT

Integrating Pharmacotherapy Into SBIRT for Alcohol Use Disorder in Family Medicine

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ABSTRACT

Background and Objectives: Screening, brief intervention, and referral to treatment (SBIRT) for alcohol use disorder (AUD) has been underutilized in primary care. Insufficient physician training on AUD results in low prescribing rates of effective pharmacotherapy. This study evaluated the effectiveness of a three-part interactive seminar on SBIRT and medication management of AUD for family medicine resident physicians.

Methods: All family physician and pharmacy residents affiliated with a family medicine residency program were invited to participate in an AUD workshop (intervention). We administered confidence (five questions) and knowledge (11 questions) surveys before intervention (pre), immediately after intervention (post), and 3 months after intervention (post-post). We performed generalized regression to assess mean changes in confidence and knowledge (% correct) across time.

Results: Thirty-one out of 32 residents participated in the pre-, 29 responded in the post-, and 10 completed the post-postsurvey. Confidence statistically improved from pre- to postsurvey and from pre- to post-postsurvey for all five confidence questions ($P<0.01$). Knowledge statistically improved from pre- to postsurvey in eight out of 11 knowledge questions ($P<0.05$).

Conclusions: This highly interactive curriculum resulted in statistically significant improvements in resident confidence and knowledge of SBIRT and medication management of AUD. Interactive teaching techniques may improve family medicine residents' confidence and knowledge of SBIRT and management of AUD.

BACKGROUND

Heavy alcohol use and alcohol use disorder (AUD) contribute to adverse health outcomes and overall morbidity and mortality.[1-3] While nearly 28 million individuals in the United States met criteria for AUD in the past year, less than one in 10 received pharmacotherapy.[2] Only one in six US adults have reported ever reviewing alcohol use with a health care professional, despite the increasing prevalence of heavy alcohol consumption and AUD.[3-5] Historically, screening and brief interventions for AUD have been underutilized in primary care.[4,6] Primary care physicians also have reported insufficient training on medications for AUD (MAUD) as well as negative attitudes about medication effectiveness.[6-8] These factors highlight the importance of expanded training on screening and medication management of AUD.

Screening, brief intervention, and referral to treatment (SBIRT), a public health preventative framework, reduces alcohol use and health care utilization.[9,10] Education on SBIRT may improve trainee attitudes regarding medication efficacy.[10] However, SBIRT is underperformed due to knowledge deficits in treating substance use disorders, shortages of mentors, and provider stigma.[6,9,11] The updated Accreditation

Council for Graduate Medical Education guidelines now require family medicine residency programs (FMRPs) to implement curricula on the identification and treatment of substance use disorders.[12] However, a 2017 survey conducted with FMRPs revealed that less than half of the surveyed program directors expected their residents to prescribe medications for substance use disorders.[13]

Different teaching modalities have been used in historical SBIRT curricula, such as video/web-based self-directed modules, didactic lectures, small-group sessions, case-based learning, and skills practicums with standardized patients.[14-19] Prior SBIRT curricula have some notable limitations: long training hour requirements, lack of longitudinal knowledge assessments, limited interactive teaching techniques (ITTs), and minimal focus on MAUD.[14-17] We created a concise SBIRT curriculum that emphasizes interactive teaching modalities, incorporates instruction on motivational interviewing (MI), implements a longitudinal knowledge assessment, and distinctively includes training on AUD pharmacotherapy. Our SBIRT curriculum integrates both psychosocial and pharmacotherapy interventions for AUD, which combined may be more effective than psychosocial treatments alone.[20,21] Because advanced behavioral interventions may necessitate technical training or resources not available in primary care settings, combining psychosocial and pharmacological treatment approaches to AUD may offer additional benefits in harm reduction.[20-22]

METHODS

Participants

All residents (family medicine, pharmacy, and family medicine-psychiatry) currently affiliated with three large, academic, urban family medicine programs were invited to participate. Two family medicine programs responded. Both programs offer basic training to family medicine interns on MI techniques and include mandatory participation in medication-assisted treatment (MAT) clinics for alcohol and opioid use disorders. The first family medicine program received the full 2.5 hour SBIRT seminar. To accommodate their site's didactic schedule, the second family medicine program received a truncated 1 hour SBIRT seminar. Due to a low response rate (<30%) and low survey match rate from the second family medicine program, the second site was excluded from statistical analysis. We included pharmacy residents to prepare all providers in SBIRT principles given their direct patient care responsibilities in the ambulatory care program. Additional demographic information for the participating family medicine program is available in Appendix A.

Survey Development

A paper survey (adapted from published papers on SBIRT) was given to all attendees pre- and post-seminar, and electronically 3 months after seminar.[23,24] The survey (Appendix B) had 16 questions on both SBIRT and MAUD: five questions about confidence using a 1–7 Likert scale and 11 questions about knowledge. The principal investigator collected and de-identified the survey data by associating each study participant's email with a unique study participant number. Three months after the intervention, the principal investigator distributed the post-postsurvey via email through Pitt Qualtrics (Qualtrics LLC). The de-identified research data were provided to the statistician for data analysis. This study had institutional review board exempt approval status (Study 24020074).

Curriculum Development

The curriculum was a three-part series: Part I focused on screening (45 minutes); Part II focused on the brief intervention/MI (35 minutes); Part III focused on referral to treatment, including information on local 12-step Alcoholics Anonymous programs, recovery communities/centers, peer support/recovery coaches, and MAUD (55 minutes). The curriculum employed a variety of ITTs to promote active learning, which can improve analytical thinking and learner engagement (Table 1).[25]

Statistical Analysis

We used descriptive statistics to examine responses at each time. We performed general linear mixed models to test adjusted mean changes in confidence scores (Table 2). The knowledge questions (Table 3) were dichotomized as "yes" (correct) or "no" (incorrect), and we used generalized regression for analysis. Each model retained the individual's matched response across time as the unit of measure, and 95% confidence intervals were adjusted for multiple comparisons. Analyses were performed using SAS JMP Pro version 17 (SAS Institute).

RESULTS

Twenty-nine out of 32 participants voluntarily completed matched presurveys and postsurveys (90.62% response rate); 10 matched participants completed post-postsurveys (31.25% response rate). Approximately 85% of participants were family physician residents, 15% of participants were pharmacy residents, and 96% of participants attended the seminar in person. Confidence statistically improved from pre- to postsurvey and from pre- to post-postsurvey for all confidence questions (all $P<0.01$, Table 1). Knowledge statistically improved from pre- to postsurvey in eight out of 11 knowledge questions ($P<0.05$, Table 2) with four questions having large changes in accuracy from pre (>50%). These four knowledge questions focused on recalling key curricular elements and selecting preferred medications in applied clinical scenarios. Although the post-post knowledge results generally improved compared to the pre, the small number of responses (n = 10) for dichotomized (correct/incorrect) data yielded nonsignificant differences and wide confidence intervals, which limited interpretation.

TABLE 1. Description of Curricular Interactive Teaching Techniques (ITTs)

Curriculum: Part I (Screening)			
ITT	Description of ITT	Example of ITT	Purpose of ITT
Turn and Talk	Students sitting in close proximity discussed a series of prompts/ questions.	Turn & Talk Prompts: "What has been your experience with screening and managing AUD?" "What are some challenges to screening and managing AUD?" "What are some successes you have had with screening and managing AUD?"	Activated learners' prior experiences to generate investment in the topic of SBIRT and MAUD. The turn and talk incorporated Knowles' adult learning principle of emphasizing the role of the learners' prior experiences.[28,29]
Storytelling	The presenter described a personal experience (narrative) relevant to the learning topic.	This storytelling technique focused on describing a difficult clinical scenario (or near–miss) related to treating AUD.	Promoted learner reflection and captured the importance of social context, drawing on social theories of learning.[28,29] This storytelling technique humanized the experience of managing substance use disorders, conveyed the importance of screening, and promoted a culture of safety.
Case–based small group learning	In two of 3 different stations with five clinical scenarios each, learners applied two brief screening tools: the Alcohol Use Disorders Identification Test–Consumption (AUDIT – C) and the Single Item Alcohol Screening Questionnaire (SASQ) first individually and then in small groups.[26]	Case–based small group learning prompts: "Determine if the cases in the station correlate to a 'positive' screen for unhealthy alcohol use with the AUDIT-C and SASQ." "You will have 5 minutes to complete the station individually." "After 5 minutes, compare your answers to your group. Then, rotate in numerical order."	Case–based small group learning through rapid–fire practice used social and experiential theories of learning to aid in retention.[25,28,29] Learners compared answers within their small group which enabled collaborative reflection.
Curriculum Part II (Brief Intervention)			
ITT	Description of ITT	Example of ITT	Purpose of ITT
Analysis of Motivational Interviewing Videos	Learners viewed and compared two videos depicting principles of motivational interviewing for AUD using the OARS framework (open–ended questions, affirmations, reflections, summarizing).[27] These videos differed in their communication and motivational interviewing skills. Learners compared the communication techniques in the two videos with a peer.	Motivational Interviewing Video Prompts: "How did these two videos differ in terms of communication skills?" "What communication skills were present in the 2nd video?" "How could the communication in the 1st video be improved?"	Viewing and reflecting on two motivational interviewing videos enabled residents to participate in reflective observation, an essential component of Kolb's framework on experiential learning.[28,29]
Role Play	The 2–person role play included three possible cases so that individuals could practice roles in unique clinical circumstances. One individual served as a patient while the other individual served as the provider. Roles were switched after 7 minutes of practice.	"Case: 55 year old male/female with HTN and prediabetes (a1c 5.8) presenting as a new patient to establish care in your family health center after recently moving across town. You review their home medication list which includes hydrochlorothiazide and metformin. You also reviewed recent laboratory data from their prior PCP 2 months ago which shows a normal CBC, normal BMP, and a hepatic function panel (HFP) showing mild transaminitis ALT 55, AST 80 [...] Task: Screen for unhealthy alcohol use, and if positive, engage in brief behavioral counseling (motivational interviewing)."	Role playing a motivational interview created opportunity for active experimentation using experiential learning principles.[29]

(*Continued*)

TABLE 1. Description of Curricular Interactive Teaching Techniques (ITTs) (Continued)

Curriculum Part III (Referral to Treatment)			
ITT	Description of ITT	Example of ITT	Purpose of ITT
Interactive multiple– choice questions	Learners selected the most appropriate medication option using colorful notecards corresponding to answer choices A – F for a total of five unique clinical cases. After one minute of case review, participants raised the card corresponding to their answer so that a quick visual inspection of responses could be performed. Afterwards, the presenter reviewed each medication in depth including evidence, mechanism of action, dosing regimen, common side effects, and contraindications.	"A 43 yoM patient with severe AUD complicated by decompensated alcohol – induced cirrhosis and recent admission for alcohol – related hepatitis (ALT/AST 150/300), HTN, T2DM, and CKD stage IV presents to discuss a medication to reduce heavy drinking days. The patient is currently drinking. Which option below would be preferred in this scenario?" 1.IM naltrexone 2.Gabapentin 3.Acamprosate 4.Disulfiram 5.Sertraline 6.Topiramate	Interactive multiple–choice questions facilitated active participation and used immediate, real–time feedback to identify misconceptions and reinforce important concepts.
Team–based learning	Teams of 5–6 individuals generated a comprehensive treatment plan and level of care for two different case scenarios based on real clinical vignettes. This was followed by a large group discussion of medical decision making for each case, where teams took turns justifying their clinical decisions.	"Case Scenario #1: 64 yoF with severe AUD, history of complicated alcohol withdrawal, anxiety, HTN, OUD in remission presenting as an outpatient for AUD follow-up. Recent admission for alcohol withdrawal was followed by return to use. Currently the patient is engaged in therapy but has not yet received medication management for AUD. Due to other obligations, the patient cannot do inpatient alcohol detoxification right now."	Team–based learning with clinical vignettes enabled collaborative problem–solving and practical application of the subject matter using social theories of learning.[25,28]

Abbreviations: AUD, alcohol use disorder; HTN, hypertension; OUD, opioid use disorder

DISCUSSION

This interactive SBIRT and MAUD curriculum resulted in statistically significant improvements in confidence and knowledge of SBIRT and MAUD. Self-directed, case-based, and team-based educational activities, based on adult learning theories, successfully promoted confidence and knowledge.[25,28,29] This curriculum has notable strengths by (a) educating family medicine/PharmD trainees in a concise curriculum, (b) implementing entirely active learning through multiple ITTs, (c) incorporating training on MAUD, and

TABLE 2. Mean Confidence Survey Scores for All Five Confidence Questions By Time[a]

Question "How confident are you in . . ."	Presurvey	Postsurvey	Post-postsurvey	95% CI for difference from pre[b]	*P* value for difference from pre[b]
Q1: … **identifying 'unhealthy alcohol use'** in outpatient clinical practice?	4.1	5.4	5.2	(0.9–1.9) (0.3–2.0)	.001 .01
Q2: … **screening for unhealthy alcohol use/alcohol use disorder** using a validated screening tool?	3.7	5.7	5.1	(1.5–2.9) (0.6–2.5)	.001 .001
Q3: … **applying a brief MI intervention** for unhealthy alcohol use/alcohol use disorder?	3.6	5.2	5.0	(0.9–2.3) (0.4–2.4)	.001 .003
Q4: … **providing a referral to treatment** for unhealthy alcohol use/ alcohol use disorder?	3.0	4.8	4.5	(1.1–2.6) (0.4–2.7)	.001 .005
Q5: … **determining appropriate treatments** for unhealthy alcohol use/alcohol use disorder?	3.2	5.1	5.2	(1.3–2.5) (1.2–2.8)	.001 .001

[a]Confidence questions used a 1–7 Likert scale: 1–not at all confident; 2–slightly confident; 3–somewhat confident; 4–neutral; 5–moderately confident; 6–highly confident; 7–completely confident.
[b]95% CI for difference (post minus pre, and post-post minus pre) are adjusted for multiple comparisons and individual subject variability.
Abbreviations: CI, confidence interval; MI, motivational interviewing

TABLE 3. Percentage Correct Responses[a] to Knowledge Survey Questions Shown for Pre-, Post- and Post-Post

Knowledge questions 6–16	Pre	Post	Post-post	95% CI for difference[b]	*P* value[c]
Q6: Define SBIRT.	.09	.93	.70	(.79–.93) (.42–.86)	.001 .01
Q7: List two validated screening tools for unhealthy alcohol use/alcohol use disorder.	.04	.69	.10	(.43–.80) (−.08–.20)	.001 .48
Q8: A 34-year-old male drinks four alcoholic beverages twice a week. is this a positive screen for unhealthy alcohol use?	.71	.54	.60	(−.35–.08) (−.09–.27)	.18 .82
Q9: A 44-year-old female drinks four alcoholic beverages once a week. is this a positive screen for unhealthy alcohol use?	.71	.97	.90	(.10–.48) (−.07–.42)	.003 .15
Q10: Describe the four components of the OARS motivational interviewing framework.	.16	.59	.50	(.23–.59) (.15–.61)	.006 .027
Q11: List one referral to treatment option for unhealthy alcohol use/AUD in the family health centers.	.68	.92	.80	(.02–.43) (−.18–.42)	.04 .42
Q12: A 54-year-old male with HTN, HLD, severe AUD, and OUD on methadone presents to discuss medication management after having recently completed alcohol detoxification.	.36	.90	.70	(.28–.69) (−.04–.53)	.001 .16
Q13: A 32-year-old female with severe AUD and recent admission for acute alcohol-induced hepatitis with repeat AST/ALT 350/120 presents to discuss a medication to reduce heavy drinking days.	.29	.86	.50	(.35–.74) (−.16–.54)	.001 .28
Q14: A 28-year-old female with IDA, GAD, MDD, and mild AUD presents to discuss medication management after having intolerance to vivitrol.	.68	.79	.70	(−.11–.32) (−.28–.25)	.33 .75
Q15: A 35-year-old male with HTN, TUD, and severe AUD with compensated cirrhosis presents to discuss a medication to improve alcohol abstinence.	.43	.69	.80	(.03–.49) (−.06–.64)	.028 .14
Q16: A 30-year-old female with migraines with aura, obesity, and mild AUD presents to discuss a medication to reduce the number of heavy drinking days.	.64	.72	.70	(−.12–.33) (−.19–.35)	.36 .37

[a]Unadjusted percentages shown in the Pre, Post, and Post-post columns.
[b]Difference in percentage correct from Pre and 95% CI for difference shown for Post minus Pre (first row) and Post-post minus Pre (second row).
[c]Generalized regression used to obtain confidence intervals and *P* values adjusted for individual.
Abbreviations: ALT, alanine aminotransferase test; AST, aspartate transferase; AUD, alcohol use disorder; GAD, generalized anxiety disorder; HLD, hyperlipidemia; HTN, hypertension; IDA, iron deficiency anemia; MDD, major depressive disorder; OARS, open-ended questions, affirming, reflective listening, and summarizing; OUD, opioid use disorder; SBIRT, screening, brief intervention, and referral to treatment; TUD, tobacco use disorder

(d) providing longitudinal assessments of confidence and knowledge. Paper surveys and structured seminar time for survey completion led to high completion rates of the pre- and postsurveys. Overall, social and experiential learning theories can be leveraged to encourage adult learner engagement in addiction medicine curriculum.

Limitations

The survey was not piloted, preventing analysis of survey validity or reliability. Objective skill assessment and application of SBIRT to patient encounters were not evaluated, so only self-perceived knowledge and confidence were assessed. Due to the few post-post respondents, the standard errors for the dichotomized knowledge questions were large resulting in wide confidence intervals, limiting interpretation. Additionally, few survey responses were received from Site 2, none of which could be matched, and Site 2 was omitted. Thus, evaluation of data from a single site limited study generalizability.

Future Directions

A practical skill assessment of SBIRT through objective OSCEs could be considered. Future curricular efforts could evaluate family medicine residents applying SBIRT principles in clinical practice. This project could be expanded to other family medicine programs through targeted recruitment efforts. Increasing program participation could enable result comparison across contexts, potentially increasing generalizability.

PRESENTATIONS

This research was presented at the 2025 Society of Teachers of Family Medicine Conference in Salt Lake City, Utah, and at the 2025 Family Medicine Scholarship Day at the University of Pittsburgh Medical Center in Altoona, Pennsylvania.

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