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Integration and Evaluation of Substance Abuse Research Education Training (SARET) Program into a MSW Program

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Abstract

Background—The Substance Abuse Research and Education Training Program is funded by the National Institutes of Drug Abuse in 2006 as a novel approach to spark interest in substance abuse research among medical, dental, nursing, and social work graduate students through a web-based curriculum and research mentorships. This report presents the initial integration of the intervention in a MSW program, the components of the program, and the mixed-methods evaluation of its effect on student's attitudes towards substance abuse research and treatment.

Methods—SARET is comprised of two main components: stipend-supported research mentorships and a web-based module series, consisting of six, interactive, multi-media modules addressing core SA research topics, delivered via course curricula and in the research mentorships. An initial evaluation was designed to assess SARET's acceptability and short-term impact on participants' interest in SA research. The components of our web-based curriculum evaluation include focus group feedback on the relevance of the modules to SW students, number of courses into which the modules were integrated with number of module completions, changes in interest in SUD research associated with module completion.

Results—The full series of web-based modules has been integrated across several courses in the social work curriculum and social work students have become integral participants in the summer

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AUTHOR CONTRIBUTIONS

Dr. Tuchman led the conceptualization of the manuscript, wrote portions of the manuscript, and edited. Drs. Hanley, Naegle, and More wrote portions of the manuscript and edited the final draft. Ms. Bereket led the data collection and conducted the data analysis. Dr. Gourevitch led the study and evaluation design and assisted in editing. All authors contributed to and approved the final manuscript.

mentored research experience. One hundred eighteen students completed at least one module and 42 students completed all six modules. Neurobiology, Screening and Epidemiology were the most widely viewed modules. Students reported positive impact on their vision of SA-related clinical care, more positive attitudes about conducting research, and in some cases, change in career.

Conclusions—The SARET program's modules and summer-mentored research increased clinical and research interest related to substance use disorders, as well as interprofessional attitudes among social work students. Participants have shown some early research success. Longer-term follow up will enable us to continue to assess the effectiveness of the program.

Keywords

Substance abuse; research; education; training; social work

INTRODUCTION

There is a pressing need to increase the number of health professionals, including social workers, conducting substance use disorders (SUD) research,^{1, 2} especially since it has been estimated that a substantial number of substance use researchers will retire in the next decade. A conference was held in May 2006, entitled "Reflections on 40 Years of Research," at which it was estimated that approximately one-third of investigators will retire in the near future, and that this percentage may, in fact, be an underestimate. Thus, it is more critical than ever to recruit more scientists to the area of SUD research and to mentor them effectively.²

The natural history and treatment delivery for SUD are multiply determined, and the observations that spark key research questions as well as the conduct of such research will most effectively address vital clinical issues if they are grounded in the clinical perspectives of diverse health professional disciplines.³⁴ Therefore, multidisciplinary training is more essential than ever for the development of junior investigators. Mentors must be willing to adopt a new mentoring strategy that involves working with those outside of their field and appreciating other scientific cultures. They must also encourage their mentees to adopt a multidisciplinary perspective, when appropriate, and support them in developing a multidisciplinary team of mentors. This is especially important, as increasing numbers of funding opportunities are developed to support interdisciplinary science.²

A small number of MSW programs address the need for SUD education and research. Research that has focused on SUD course requirements in MSW programs identified that few social work (SW) programs required SUD coursework for students. A national study of MSW programs (n = 210) examined the prevalence of SUD courses and specializations. Web-based analyses show that only 14.3% of accredited schools offered specialization and only 4.7% of accredited schools had one or more required courses. Another national study described the type and extent to which SUD courses are offered in the MSW programs (n=58). Results of the 58 programs reviewed indicate that one program required a SUD course, 64% (n = 37), offered an elective course and 34% (n = 20) did not have a designated course focused on SUD.⁶ The researchers conclude that SW education has not met SUD workforce development needs and that there is no evidence this pattern will change.⁵

Programs to train social workers in clinical and translational research (e.g., K12, K30, T32, etc.) have evolved, yet most such programs target later stages of training (typically post-doctoral), once participants have already selected, at least in broad outline, a field of study.¹ Far less attention has been devoted to the less differentiated, “upstream” pool of pre-doctoral students who have not yet defined a specific career focus.

These, and related gaps in other fields, have fueled calls for more attractive SUD career options for investigators across health professions, including medicine, dentistry, nursing, and social work^{7, 8} and suggests the need for supplemental education in topics such as biostatistics and epidemiology, more focused research-oriented mentorships^{9, 10} and attention to interprofessional education.^{11, 12}

The National Institute of Drug Abuse (NIDA) funded the Substance Abuse Research and Education Training (SARET) program in 2007, as a novel approach to spark interest in SA research among graduate medical, dental and nursing students. The SARET program is comprised of two main components: stipend-supported research mentorships and a web-based module series, consisting of six, interactive, multi-media modules addressing core SA research topics, delivered via course curricula and in research mentorships. Our approach to curriculum development is rigorous and scholarly.¹³ The teaching philosophy was based on the strong evidence that adults learn best when they take responsibility for and direct their own learning with guidance and support.^{14,15} The principal investigator from the School of Medicine, co-investigators from the Colleges of Nursing and Dentistry, and the project manager developed and evaluated curricula to be integrated, self-directed, task-centered and relevant.¹⁶

A web-based platform was selected to allow asynchronous learning and facilitate integration across schools. The modules engage students exposing them to new information as well as by providing opportunities to interact with the material and grapple with real-world questions and solutions. The initial project team successfully piloted at least two modules into the curriculum of the schools of medicine, dentistry and nursing. A previous paper describes in more detail the curriculum development and initial evaluation of its impact on dental, medical and nursing students.¹⁷

In 2012, NIDA refunded SARET to expand the interprofessional target audience to include the discipline of SW, fostered through partnership with the School of SW. We sought to stimulate interest and provide SUD research experience to graduate social work students, by combining web-based curricular exposure to core aspects of SUD research with opportunities to conduct mentored research in the field. Here we detail the initial curricular integration process and evaluation to understand program feasibility and acceptability, and to assess short-term impact. The components of our web-based curriculum evaluation include formal feedback on the relevance of the modules to SW faculty and students, number of courses into which the modules were integrated with number of module completions by SW students, changes in interest in SUD research associated with module completion.

Program Description

The curriculum consists of six interactive multimedia web-based modules, each of which integrates exploration of a core topic in the field of SUD with instruction regarding fundamental concepts in research methodology, such as principles of study design, or criteria for evaluating a screening test (Table 1). The initial module Exploring SUD research introduces students to interprofessional aspects of the field through interviews with successful substance abuse researchers from medicine, nursing, dentistry and social work. Subsequent modules address substance use epidemiology, neurobiology, screening, personal impact and treatment modalities. Modules are accessed through an open-sourced, interactive web platform called Compass, (<http://compass.med.nyu.edu/>) and can be completed independently at a time and place convenient to students.

Each module, which takes approximately 40–60 minutes to complete depending on the module, engages the learner with the presentation of a compelling topic (one, for example, addresses the question of whether marijuana is a “gateway drug”), highlights related research by affiliated investigators, and introduces specific research methods that are appropriate to the module topic. The modules provide opportunities to interact with the material and grapple with real-world questions and solutions. Each module has “test your knowledge” questions with immediate feedback thus integrating innovative educational techniques to present the material. The modules serve as a resource for educators, a mechanism to fill content gaps or elaborate upon concepts previously addressed in the graduate curriculum, and a recruitment tool for the second component of SARET, the summer research mentorship program.

The second element of SARET is an intensive 8-week summer stipend-supported research mentorship for 12 students (2–4 per discipline) yearly recruited from the School of Medicine, College of Dentistry, College of Nursing and the School of SW. Students are accepted based on the following criteria: demonstrated interest in the field of SUD and in interprofessional learning, likelihood of completing a research project based on prior experience or research education, and oral and written communication skills. Selected students commit to participating 35 hours per week and are paired with a seasoned SUD researcher who has committed to a minimum of 2 hours/week of dedicated one-on-one mentoring. In order to increase the interprofessional research exposure of students, a concerted effort is made to pair students with a mentor from a discipline other than their own. Research opportunities vary widely from basic science research to anthropological investigations. The mentorship focuses on a research project and promotes support and interaction with other members of the mentor’s team. Students are guided through the process of writing an abstract, developing and presenting formal research posters on their individual research projects.

To complement the mentored research work, the SARET program includes a weekly interprofessional seminar. Common components include presentations on core topics in SUD research by prominent SUD researchers, discussions of the ethical aspects of research, further exploration of topics presented in the modules, field trips (Harm Reduction Center Syringe Exchange Program, Buprenorphine Clinic, AA open meeting, and a SUD Human Subjects Research Lab) and weekly student-led roundtable discussions. The program

culminates with development and presentation of the students' research projects at a poster session attended by mentors and other SA researchers.

METHODS

Web-based Modules

In preparation for SARET integration into SW, the investigator met with the Dean, the Director of the MSW Program and Curricular Chairs, viewed the six interactive multi-media modules, and identified possible curricular points of integration of the SARET modules in the social work curriculum. In year one, modules were piloted in two elective courses: *Clinical Practice with Substance Abusers and their Families and the Co-occurring Disorders Seminar* (Table 1). Faculty integrated the modules as adjunctive assignments in preparation for class discussions and references for their final assignment. The participating faculty decided whether to offer the modules as required or optional in each specific class.

At the end of the first year the project team conducted a focus group from a subset of student volunteers (n = 14) from the participating two courses to assess the "fit" of the web-based curriculum for SW learners. Students were asked about a) their perceptions of the modules' relevance for SW, b) the role of modules in filling curricular gaps, c) modules as adjunctive curricular content in the classroom, d) suggested improvements, and e) the extent to which modules highlight the opportunities for interprofessional collaboration in SUD research and treatment. The group was recorded and transcribed verbatim. The SARET SW investigator, project manager and the curriculum director conducted content analyses of the focus group transcripts independently and together to find the common themes (Table 2). In response to the student focus group data, module content was improved including the addition of a social work SUD researcher to the Exploring SUD research module, and a SW student to demonstrate a patient screening and treatment option discussion in the Treatment Modalities module.

In the second pilot year, the SW investigator met with the SW practice and research faculty to review the SARET modules and discuss potential curricular integration points. Initial faculty feedback indicated that younger faculty conveyed more comfort using the technology in their classrooms and that many professors thought there was not enough space or time to add new content in their courses. Additional meetings and trainings for the integration continued throughout the year for interested faculty led by the SW co-investigator and the previously trained faculty resulting in the integration of SARET modules into four additional courses: Research I, Integrated Behavioral Health, and Practice I and II (Table 1).

Summer Mentored Research

In year one, only one student was recruited for participation in the summer mentorship due to the timing of the SARET grant renewal occurring one month prior to beginning of the summer program. In year two, students were recruited through an electronic flyer to apply to the mentorship following their completion of the first module. Forty-one students expressed interest for three available positions. The SARET SW faculty conducted phone-screenings of all the interested students. Five students submitted applications and were invited to

interview with two SARET faculty members and the project manager. Ultimately, two students were selected for participation. Table 3 presents a sampling of student and mentor project titles.

Web-based Curriculum Evaluation

The NYU web-based curriculum School of Medicine's Institutional Review Board approved all evaluation activities. The web-based curriculum evaluation consisted of two outcome assessments: 1) assessment of the number of module completions and curricular integration points and 2) changes in student's interest in SUD research after participation.

Demographics and module completions were tracked using the SARET online software. The demographic data collected were gender and school affiliation (medicine, dentistry, nursing or social work).

Changes in student interest in SUD research were assessed using module-embedded survey questions with a four-point Likert Scale. The four questions were 1) interest in SAR, 2) interest in conducting research generally, 3) interest in SA treatment, and 4) the importance of SUD to health and health care.

In conducting the analysis, we used the Sign test to account for any changes in students' interest from before to after viewing the module. This test looks to see if the number of students with increases exceeds the number of people with declines (and ignores those who have no change). We conducted the analysis for each of the four interest related questions within each module.

RESULTS

The sample for the module completion data was composed of 160 students enrolled in six first and second year MSW classes. The sample was composed of 87% female, 68.5% Non-Hispanic/Latino and 55.6% White students. The high proportion of female students is representative of our student body and the SW profession.

Curricular Integration Points and Completion Rates

Table 1 reports the curriculum integration points and completion rates for each module. In the first two years, modules were integrated into six distinctive first and second year MSW courses. Of the 160 students, 139 completed at least one module and 42 students completed all six modules. The most widely viewed modules were Screening (118 students/5 classes) and Epidemiology (75 students/3 classes). Completion rates were significantly higher in courses in which modules were required and received credit as part of their grade. *Clinical Practice with Substance Abusers and Their Families*, *Co-occurring Disorders*, *Integrated Behavioral Health Seminars*, and *SW Research I*, had the highest completion rates, from 67% to 100%. Courses that invited students to complete modules but did not offer grade inclusion, *SW Practice I and II*, had extremely low completion rates, from 0.6% to 9.7%.

Module-embedded Surveys

For three of the six modules, there was increased interest in SUD research. Notably, there were differences in the increase in interest across the modules. Rates of the number of students whose interest increased in SUD research, research in general, SUD treatment, and SUD importance for health and healthcare for each module are reported with p values. In particular, Neurobiology, (+30.6%, $p < 0.001$), Exploring SUD research (+27.8%, $p < 0.002$), and Epidemiology (+19.4%, $p < 0.021$) modules had higher rates and statistically significant increases in interest in SUD research. In addition, they demonstrated higher rates and significant interest toward research generally (+36.7%, $p < 0.001$), (+38.9%, $p < 0.001$), and (+38.8%), $p < 0.001$ respectively.

Both the Screening and Neurobiology modules respectively showed significant change in interest about SUD treatment (+15.4%, $p < 0.031$) and (+28.6% $p < 0.001$) and the importance of substance use to health and healthcare (+24.5% $p < 0.001$) and (+12.1%, $p < 0.006$). The least viewed module was the Personal Impact module, which had no effect on student interest in any of the four outcomes.

DISCUSSION

A small number of MSW programs address the need for SA education and research training.^{4, 5} We describe a novel program that blends modular online curricular content with mentored research experiences to stimulate interest in SUD research among SW graduate students. Overall, the engaging, self-directed web-based modules easily lent themselves to our pilot integration in the MSW curriculum. SARET module integration required little preparation and was not reported to be labor intensive for faculty. As modules are independently accessed through an interactive web platform, they served as a great resource for educators to fill SUD research and education content gaps or to elaborate upon concepts in the MSW courses. From the student perspective, the SARET web-based modules and the research mentorship experience enhanced the SW curriculum by educating students about SUD research through the lens of epidemiology, neurobiology, evidence-based treatments, and interprofessional perspectives.

Module content was updated and enhanced in response to feedback from an editorial review panel of professors of dentistry, medicine, nursing and SW from partner institutions following the second year of module integration. To date, the SARET modules are now in active use across New York University schools of medicine, dentistry, nursing and social work, and have been completed by over 4,000 learners.

A challenge in integration is whether adjunct or full-time faculty taught the courses and the mandatory vs. optional module assignment that resulted in very low student participation in specific practice courses. This suggests that strategies need to be developed to further improve the enthusiasm of both full-time and adjunct faculty and to maximize module viewing among the students by either requiring them or providing credit for viewing.

The overarching goal of the SARET program is to stimulate SW participants' enduring engagement in research in the field of SUD. Since 2012, nineteen students (of the 48

available spots for the four disciplines) have participated in the Summer Program, four have continued work on their projects beyond the summer period with their research mentors, three students published two peer-reviewed articles, one received a travel award and three have had presentations at scientific meetings.¹⁸

SARET's interprofessional program was based on providing participants with the elements that predict successful careers in science including inspiration and connection to the field, involvement in science, knowledge and skill development, opportunities for role modeling and mentoring, and a scientific community with peer engagement.⁶ The SARET experience enhanced interdisciplinary awareness. Through early introduction to both students and faculty from other disciplines, students were exposed to new insights into the background and perspectives of future health care- and research-team colleagues. Some students identified this as the best aspect of the summer program, which laid the foundation for future interprofessional relationships in SUD research and treatment.

Greater integration into the curriculum is now taking place at the NYU School of SW through the addition of new faculty teaching courses where modules can be integrated and at our global campuses. We also created a mechanism for the summer mentorship to be offered as a credit bearing research elective or an independent study. We are now working with research faculty to develop an online research elective that incorporates the SARET modules. From an educational perspective, facilitating SW student education and research in SUD through the synergy of web-based interactive modules and research mentorship is a promising method for increasing student research interest, involvement and output.

Following these successes, the SARET team began the dissemination of the curriculum to broaden the impact of this project nationally. We have made the SARET modules exportable to other health professional schools and training programs, while ensuring that the curriculum is simple to update, revise, and adapt for use in diverse settings. We partnered with other national schools of SW to pilot at-a-distance curricular integration of SARET modules. At each 'early partner' school, a 'champion' was identified as the point person for local adoption. We have received very positive feedback from faculty and students at our early partner institutions.

Limitations

First, replication of this program will vary on the basis of the setting. Although the Web-based modules alone may be readily shared with other schools, research experiences require the availability of mentors and administrative support. Although our evaluation suggests an impact on interest in SUD research, this is based upon small survey response rates among students who completed the assigned activities. This limits comparisons and conclusions about potential impact with mandated participation. In addition, data regarding interest in SUD research are based upon self-report rather than on actual career choice. How this will translate into future research involvement will be influenced in part by availability of funding and mentors for SUD research. The program does appear, however, to have 'primed' students who were otherwise minimally interested in SUD research to avow interest in future SUD research opportunities.

Longer-term follow-up surveys will assess SARET's effects on career intentions and early career choices and allow comparison with normative data on comparable graduating students and alumni. The surveys will be sent to all SARET summer mentorship program participants via monkey survey. The purpose of the survey is to get feedback about the SARET program, their current professional activities, and how has SARET informed your approach to your work and the activities of your professional life? This follow-up data is vital to our ongoing efforts to improve the SARET program, to understand its broader impact, and to provide program evaluation data to the funding agency, the National Institute of Drug Abuse. Students will be offered \$100 to complete the survey.

In conclusion, the SARET program appears a promising response to the need for a more extensive SW professional SUD research workforce. Early evaluation suggests that participation stimulates interest among SW students in research and clinical and aspects of SUD. The preliminary assessment of impact presented herein suggests the significant potential of the SARET initiative to stimulate interest in the crucially important yet under-subscribed field of SUD research.

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Table 1**Module Description, Curricular Integration, and Completion Rates**

Module Descriptions	Points of Curricular Integration	Completion Rates
Exploring Substance Abuse Research Features NYU SA researchers discussing how they tackle problems through research and introduces the concept of building a research question. Goal is to activate interest in SARET.	Clinical Practice with Substance Abusers Co-occurring Disorders Seminar	73% (34/43) 75% (9/12)
Epidemiology Focuses on population data, introducing basic epidemiology about SA, cross sectional versus cohort studies, and exploring causality vs. association using the controversy about marijuana as a gateway drug.	Clinical Practice with Substance Abusers Co-occurring Disorders Seminar Social Work Research I	100% (43/43) 100% (12/12) 100% (20/20)
Neurobiology Links the behavior of a cocaine-dependent man with associated neurobiology. Describes the neurobiology of reward, cue development and executive dysfunction. Includes discussion by prominent local researchers about the effect of basic science research on addiction treatment.	Clinical Practice with Substance Abusers Co-occurring Disorders Seminar	100% (43/43) 75% (9/12)
Screening Reviews current standards of screening for substance abuse and leads students to consider whether health systems should routinely screen patients for illicit drugs versus only alcohol or tobacco. Included is in-depth teaching on screening related concepts of sensitivity, specificity and predictive values.	Clinical Practice with Substance Abusers Co-occurring Disorders Seminar Social Work Research I Social Work Practice I Integrated Behavioral Health Seminar	100% (43/43) 75% (9/12) 85% (17/20) 15% (39/402) 91% (10/11)
Personal Impact A man with a family history of alcoholism details his own development of alcohol dependence. Introduces concepts of diagnostic criteria and risk factors for SA and provides learners with an understanding of risk expression including relative and absolute risk	Clinical Practice with Substance Abusers Co-occurring Disorders Seminar	77% (33/43) 67% (8/12)
Treatment Modalities Reviews the categories of treatment for SA problems with a focus on pharmacotherapy. Uses a case example of a patient with prescription opiate dependence to methadone and buprenorphine therapy. Describes how treatments were developed, what they mean for a patient and how randomized controlled and observational trials are used to test and compare treatments.	Clinical Practice with Substance Abusers Co-occurring Disorders Seminar Social Work Practice II	100% (43/43) 100% (17/20) 0.6% (2/310)

Note. Actual class size of the Integrated Behavioral Health (IBH) and Co-Occurring Disorders (COD) Seminars, was 12 students and 20 students, respectively. However, 1 IBH and 8 COD students were previously exposed to the modules in the Clinical Practice Course and thus were removed from the analysis.

Table 2

Focus Group Student Attitudes Regarding the Modules (n=12)

Module Strengths and Challenges	<p>Neurobiology was really effective for me because it helped me to understand what's happening inside the brain when a person is addicted or abusing substance.</p> <p>After I viewed the neurobiology module I could look at the diagram the professor showed and I was surprised that I understood her lecture.</p> <p>The Personal Impact module really contextualized for me the impact of substance abuse and how pervasive it can be on somebody's life.</p> <p>They were straight-forward and easy to follow. The videos helped to illustrate points. I also liked the interactive nature of the graphs/charts used in the modules.</p> <p>Hard to complete in one sitting and retain all the information.</p> <p>Lot of information was new and I had to listen to it a few times.</p>
Modules Filled SW Education and Research Gaps	<p>If students don't have a specific interest in understanding SA, they can dodge it, because it's only covered here on the surface unless you seek it out.</p> <p>If not for this particular class and having viewed the SARET modules, I don't think I would have really gotten it [substance abuse education].</p> <p>The information is so valuable and important; I could see them very easily being a requirement of other courses we have to take.</p>
Interprofessional Collaboration	<p>I wish more oral health and substance abuse was addressed in the modules.</p> <p>I think it would be nice if there were one module specifically dedicated to showing us how interprofessional collaboration occurs or what that looks like in treatment and research.</p> <p>For social workers, not having a medical background, made it seem like everything was new. But it's still helpful to have a different perspective of how to approach SA and how to look at it from another side.</p>
Interest in SAR Post Modules	<p>The integration of research experience with clinical topics and exposure was especially compelling.</p> <p>I realized I should get research experience but had not found anything aligned with their interest until SARET.</p>

Table 3

SARET Social Work Student/Mentor Research Project Titles

Drug and Alcohol Use and Trauma History within HIV+ Older MSM
A Qualitative Study on Neighborhood and Social Network Influences of Drug Use Among YMSM in New York City
Pilot Study: Nicotine Replacement Therapy & Referral to the NYS Quitline in an Opioid Treatment Program
Exploring Gender Differences in Tobacco Cessation Among HIV-Positive Smokers
HIV and Aging-Related Stigmas in Older HIV-positive MSM
Exploring Homelessness and Needle Sharing Behavior Among Women Injection Drug Users
Incidence and Risk Factors of Sexually Transmitted Hepatitis C Virus Among HIV-Positive MSM: A Systematic Review and Meta-Analysis