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Towards a framework for implementing physician education in substance use disorders



Effective substance use disorder (SUD) treatments have been developed but a persistent gap in implementation of evidence-based therapies exists (Allen et al., 2019; Park and Friedmann, 2014). Moreover, our understanding of how to implement these treatments remains fragmentary (National Center on Addiction and Substance Abuse at Columbia University, 2000, 2012). For instance, the rising rates of opioid overdose and resistance to use of opioid agonist therapies highlight the widespread lack of knowledge about most effective opioid use disorder treatments. While recent research attributed the failure to diagnose and treat opioid use disorders partly to insufficient knowledge (National Center on Addiction and Substance Abuse at Columbia University, 2012), the broader failure to treat SUDs is a more complex matter, and is not neatly attributable to individual physician knowledge or skill. Nevertheless, it is well known that better education can improve accurate diagnosis and appropriate treatment; it may also help reduce the public health epidemics such as the current opioid epidemic (Lembke and Humphreys, 2018; Robertson, 2020).

With educational programs for SUD specialists growing rapidly, the field is changing. Although education is a key part of the solution to the implementation problem, there is a lack of clear evidence that education is the primary driver for treatment gaps. Research demonstrates that treatment gaps are also attributable to such diverse factors as stigma, systems barriers, and social determinants of health (van Boekel et al., 2013; Volkow, 2020). Moreover, training can both hinder knowledge implementation as well as facilitate it, as observed in a recent national survey of treatment staff (N = 514) working in 285 community-based addiction treatment organizations that were funded by the Substance Abuse and Mental Health Services Administration Center for Substance Abuse Treatment (SAMHSA/CSAT) (D'Ippolito et al., 2015). Such ambiguities further highlight the complexity of the problem and a need for a new more effective conceptual framework for knowledge transfer in postgraduate medical training (Haber, 2011).

Recent reviews of literature (Miller et al., 2001; Wilson et al., 2016) on these problems indicate that SUD science is typically situated in the final years of medical school curricula due to misconceptions about how students learn complex problems and that such misconceptions feed the lack of parity and physician advocacy in medical education. Waiting until the final phase of medical education may also interfere with medical trainees' natural development, which requires mastery of certain competencies (i.e., non-judgmental attitude toward the disadvantaged, positive regard) prior to learning about the complexity of SUD.

Attitude change is a well-described phenomenon in medical education (Rezler, 1974; Woloschuk et al., 2004), whereby "idealism is replaced by cynicism as a result of the training process" (Hershey and Stoddard, 2021). However, systematic earlier exposure has not been tried because of a number of structural issues with educational policies and the organization and delivery of medical curricula. By delaying SUD instruction and limiting first exposure to crises and emergency situations, cynicism and other negative attitudes towards complex populations are solidified, and, sometimes even worsened (Avery et al., 2017; Christison and Haviland, 2003; Meltzer et al., 2013). The result is that medical schools may be graduating physicians who have missed an opportunity to develop appropriate skills, compassion and confidence in caring for patients with SUDs.

Access to education is further hindered by the lack of content on SUD in medical curricula (Barth et al., 2017). Few people would argue that the incorporation of content regarding SUDs and related conditions is sufficient in medicine and that it continues to be insufficient in all of the health professional disciplines (Ram and Chisolm, 2016). Students end up lacking knowledge about novel treatments, feeling unprepared to treat SUDs and struggle to develop the skills or interest needed to use such treatments effectively in general practice (Back et al., 2018; Kennedy-Hendricks et al., 2016; Tobin et al., 2018). These shortcomings arise from a lack of understanding of the intricacies of students' developmental cycle and the importance of the attitudinal prerequisites necessary for successful learning (Avery et al., 2017). The evidence overwhelmingly demonstrates that the presence of a supportive learning environment and clear guidance facilitate professional training (Klimas et al., 2017b). These data concord that even junior students are interested in learning about this population in primary care and want to learn more (Klimas et al., 2016); however, they lack opportunities due to limited or delayed access to the population. As shown in two recent studies, even brief SUD training experience can have lasting, positive impact on medical students (Gorfinkel et al., 2019; Klimas et al., 2017a). Therefore, our understanding of the developmental cycle in professional education should incorporate both the learner-specific and system-specific variables.

Finally, current programs overlook one process critical to use of modern effective treatments, i.e., contextual variables that modulate training effectiveness. Bates and Ellaway (2016, p. 807) compare context to dark matter: "the contexts for medical education are largely invisible to those within them, although context can have profound influences on teaching, learning and practice." Understood from this perspective, contextual factors can include anything and everything from socio-demographic characteristics through country or culture to work-

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load of health educators. The way we should be theoretically thinking about contextual factors is through a complex interaction between different patterns in the context. We should not see context as something static, something that can be defined, measured and simplified. Instead, we can see it as a complex network of reactions between the training and the context. Contextual factors are particularly salient in the case of complex health problems (Booth et al., 2019), such as SUD, where the implementation gap persists despite the pervasive global opioid overdose crisis. The abovementioned training initiatives have attempted to close the implementation gap by training health professionals in early recognition and interventions for SUD. Although these initiatives succeeded in increasing the number of health professionals trained in SUD, none achieved significant benefits at the level of patients' health, especially in low-resource settings that have limited access to treatment and higher burden of SUDs (Arya et al., 2019). Moreover, they have not achieved a sustained change in doctors' behaviour. Most of the initiatives overlooked contextual factors that shape the efficacy of treatment approaches emerging from the clinical trials. This is a serious shortcoming, because professional education is an inherently contextual process, which is often overlooked in curricula. Recent research on implementation has revealed that contextual factors are essential tools for translating new drugs, therapies, and treatment approaches from demonstrated efficacy to applied effectiveness (Schliep et al., 2017). Yet, the extent to which current tools used in evidence synthesis and translation and guideline development are suitable in meeting this challenge is limited (Booth et al., 2019). In order to transfer efficacy into effectiveness and widespread usage, we must first understand the process by which the science produced in controlled research settings (efficacy) may vary from the expected effect when applied in 'messy and time-pressured' educational practice (effectiveness) (Kessler and Glasgow, 2011).

The imminent implementation or scaling up of the various training initiatives calls for an urgent examination of their methods from a contextual perspective. We have an unprecedented opportunity for the first time – and in an integrative manner – to leverage these emerging initiatives as explanatory models for diverse educational ecologies. We can and should salute the historically overlooked contextual factors and determine how they shape the actual efficacy of training programs.

Conflict of Interest

No conflict declared

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REFERENCES

- Allen, B., Nolan, M.L., Paone, D., 2019. Underutilization of medications to treat opioid use disorder: What role does stigma play? *Subst Abus* 40, 459–465.
- Arya, S., Delic, M., Ruiz, B.I.I., Klimas, J., Papanti, D., Stepanov, A., Cock, V., Krupchanka, D., 2019. Closing the gap between training needs and training provision in addiction medicine. *BJPsych International* 1–3.
- Avery, J., Han, B.H., Zerbo, E., Wu, G., Mauer, E., Avery, J., Ross, S., Penzner, J.B., 2017. Changes in psychiatry residents' attitudes towards individuals with substance use disorders over the course of residency training. *Am J Addict* 26, 75–79.
- Back, D.K., Tammara, E., Lim, J.K., Wakeman, S.E., 2018. Massachusetts Medical Students Feel Unprepared to Treat Patients with Substance Use Disorder. *J Gen Intern Med* 33, 249–250.
- Barth, K.S., Guille, C., McCauley, J., Brady, K.T., 2017. Targeting practitioners: A review of guidelines, training, and policy in pain management. *Drug and Alcohol Dependence* 173, S22–S30.
- Bates, J., Ellaway, R.H., 2016. Mapping the dark matter of context: a conceptual scoping review. *Medical Education* 50, 807–816.
- Booth, A., Moore, G., Flemming, K., Garside, R., Rollins, N., Tunçalp, Ö., Noyes, J., 2019. Taking account of context in systematic reviews and guidelines considering a complexity perspective. *BMJ Global Health* 4, e000840.
- Christison, G.W., Haviland, M.G., 2003. Requiring a one-week addiction treatment experience in a six-week psychiatry clerkship: Effects on attitudes toward substance-abusing patients. *Teaching and Learning in Medicine* 15, 93–97.
- D'Ippolito, M., Lundgren, L., Amodeo, M., Beltrame, C., Lim, L., Chassler, D., 2015. Addiction treatment staff perceptions of training as a facilitator or barrier to implementing evidence-based practices: a national qualitative research study. *Subst Abus* 36, 42–50.
- Gorfinkel, L., Klimas, J., Reel, B., Dong, H., Ahamad, K., Fairgrieve, C., McLean, M., Mead, A., Nolan, S., Small, W., Cullen, W., Wood, E., Fairbairn, N., 2019. In-hospital training in addiction medicine: A mixed-methods study of health care provider benefits and differences. *Substance Abuse* 40, 207–213.
- Haber, P.S., 2011. International Perspectives in Postgraduate Medical Training in Addiction Medicine. *Subst Abus* 32, 75–76.
- Hershey, M.S., Stoddard, H.A., 2021. A Scoping Review of Research into the Origins of Cynicism Among Medical Trainees. *Med Sci Educ* 31, 1511–1517.
- Kennedy-Hendricks, A., Busch, S.H., McGinty, E.E., Bachhuber, M.A., Niederdeppe, J., Gollust, S.E., Webster, D.W., Fiellin, D.A., Barry, C.L., 2016. Primary care physicians' perspectives on the prescription opioid epidemic. *Drug and Alcohol Dependence* 165, 61–70.
- Kessler, R., Glasgow, R.E., 2011. A Proposal to Speed Translation of Healthcare Research Into Practice: Dramatic Change Is Needed. *American Journal of Preventive Medicine* 40, 637–644.
- Klimas, J., Ahamad, K., Fairgrieve, C., McLean, M., Mead, A., Nolan, S., Wood, E., 2017a. Impact of a brief addiction medicine training experience on knowledge self-assessment among medical learners. *Subst Abus* 38, 141–144.
- Klimas, J., Small, W., Ahamad, K., Cullen, W., Mead, A., Rieb, L., Wood, E., McNeil, R., 2017b. Barriers and facilitators to implementing addiction medicine fellowships: a qualitative study with fellows, medical students, residents and preceptors. *Addict Sci Clin Pract* 12, 21.
- Klimas, J., Tobin, H., Egan, M., Tomas, B., Bury, G., 2016. General practice—A key route for distribution of naloxone in the community. *International Journal of Drug Policy* 38, 1–3.
- Lembke, A., Humphreys, K., 2018. The Opioid Epidemic as a Watershed Moment for Physician Training in Addiction Medicine. *Academic Psychiatry* 42, 269–272.
- Meltzer, E.C., Suppes, A., Burns, S., Shuman, A., Orfanos, A., Sturiano, C.V., Charney, P., Fins, J.J., 2013. Stigmatization of substance use disorders among internal medicine residents. *Subst Abus* 34, 356–362.
- Miller, N.S., Sheppard, L.M., Colenda, C.C., Magen, J., 2001. Why physicians are unprepared to treat patients who have alcohol- and drug-related disorders. *Acad Med* 76, 410–418.
- National Center on Addiction and Substance Abuse at Columbia University, 2000. Missed opportunity: National survey of primary care physicians and patients on substance abuse Available at <http://www.casacolumbia.org/addiction-research/reports/national-survey-primary-care-physicians-patients-substance-abuse>.
- National Center on Addiction and Substance Abuse at Columbia University, 2012. Addiction medicine: closing the gap between science and practice Available at <http://www.casacolumbia.org/addiction-research/reports/addiction-medicine>.
- Park, T.W., Friedmann, P.D., 2014. Medications for addiction treatment: an opportunity for prescribing clinicians to facilitate remission from alcohol and opioid use disorders. *R I Med J* 97, 20–24 (2013).
- Ram, A., Chisolm, M.S., 2016. The Time is Now: Improving Substance Abuse Training in Medical Schools. *Academic Psychiatry* 40, 454–460.
- Rezler, A.G., 1974. Attitude changes during medical school: A review of the literature. *Journal of Medical Education* 49, 1023–1030.
- Robertson, R., 2020. The opioid problem in primary care. *British Journal of General Practice* 70, 52–53.
- Schliep, M.E., Alonzo, C.N., Morris, M.A., 2017. Beyond RCTs: Innovations in research design and methods to advance implementation science. *Evidence-Based Communication Assessment and Intervention* 11, 82–98.

- Tobin, H., Klimas, J., Barry, T., Egan, M., Bury, G., 2018. Opiate use disorders and overdose: Medical students' experiences, satisfaction with learning, and attitudes toward community naloxone provision. *Addictive Behaviors* 86, 61–65.
- van Boekel, L.C., Brouwers, E.P.M., van Weeghel, J., Garretsen, H.F.L., 2013. Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: Systematic review. *Drug and Alcohol Dependence* 131, 23–35.
- Volkow, N.D., 2020. Stigma and the Toll of Addiction. *New England Journal of Medicine* 382, 1289–1290.
- Wilson, M., Cullen, W., Goodair, C., Klimas, J., 2016. Off the record: Substance-related disorders in the undergraduate medical curricula in Ireland. *Journal of Substance Use* 21, 598–600.
- Woloschuk, W., Harasym, P.H., Temple, W., 2004. Attitude change during medical school: a cohort study. *Medical Education* 38, 522–534.

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