

Review Article

Effectiveness of Prenatal Screening for Substance Use: Critical Consciousness, A Promising Curriculum for Compassionate Screening

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ABSTRACT

Objective: Current literature reports that the screening methods for substance use during pregnancy have lower than expected effectiveness. This analytical review examines the existing evidence for an achievable new direction for medical school curriculum teaching physicians the required skills to conduct a critically conscious, compassionate, and safe prenatal screening for substance use.

Method: A non-systematic literature search of Medline and EMbase was completed for screening methods for substance use during pregnancy as well as medical education and critical consciousness. An analytical approach was utilized in the discussion of the reviewed literature to make a recommendation for the curriculums to focus on training social accountability and critical consciousness.

Results: Current prenatal screening for substance use is not effective despite being widely used. This is primarily due to patients not disclosing their use of the teratogenic substances. Insufficient physician education in substance use is a potential contributing factor for such low disclosure.

Recommendation: Implementation of physician training programs specific to substance use and screening may contribute to a better understanding, awareness, and empathic stance of new physicians. Specific training in critical consciousness may aid in developing physicians' awareness of the diversity of people who use substances and potentially in more effective prenatal substance use screening.

MeSh Headings/Keywords: Substance use; Pregnancy; Screening; Medical education; Critical consciousness; Curriculum

Introduction

Substance use during pregnancy is a substantial public health challenge. In many cultures, approximately one third of people with drug dependence are women of childbearing age [1], and in the USA, five percent of pregnant women reported the use of an illicit drug during pregnancy [2]. In Alberta, the reported prevalence of substance use by pregnant women was 30% for tobacco, 25% for alcohol, and 15% for illicit drugs [3,4]. The Sheway's evaluation in 1998 reported an annual population of 3,000 families with pregnant women and parenting mothers who used substance in the Downtown East Side of Vancouver [5,6,7]. The Universal prenatal screening for substance use (PSSU) has been promoted as a public health solution to reduce obstetric complications, developmental retardations, neonatal abstinence syndrome and increased mortality [4,8-10].

One of the greatest challenges to support Pregnant Women Who Use Substance (PWUS) is early-pregnancy detection of substance use. The successful standard prenatal screening methods require cooperative and attentive and willing care providers. Additionally, PWUS are a diverse group with various barriers to access healthcare, hence frequently missed prenatal screening (42%) [4]. Feelings of guilt, resistance, and fear of authorities result in PWUS avoiding and emotionally disengaging from prenatal care. To deliver direct and effective

care, healthcare providers need to understand the diversity of PWUS [11]. Furthermore, often insufficient healthcare providers' understanding of substance use contributes to their personal biases and attitudes and alienates PWUS and their pregnancy outcomes. Teaching medical students critical consciousness [12], which promotes genuine understanding of others' oppression as well as appreciation for cultural and individual differences, may be an effective strategy for improving effectiveness of prenatal screening for substance use outcomes.

Methodology

We conducted a non-systematic literature search of Medline and Embase for screening methods in substance use during pregnancy as well as medical education and critical consciousness. Combinations of key words related to 'prenatal screening', 'substance use', 'medical training', and 'Critical consciousness' were used. Titles, abstracts, and if necessary the full text of 126 articles (27 from Medline and 99 from Embase) were reviewed by three separate reviewers for relevance to the focus of this review. Critical analysis of 47 relevant articles was conducted by the first author, and reviewed by UBC addiction chair publishing team members who serve this population in different capacities ranging from students & volunteers to addiction experts. The result of such discussion formed the backbone of this recommendation.

Current prenatal screening for substance use

The current best practice guidelines recommend universal prenatal screening for substance use by either a clinician's encounter or by the use of a validated screening tool in prenatal healthcare providers, follow-up assessment if positive, brief interventions for mild to moderate substance-related problems, and referral to specialized treatment for dependency [13-15]. Despite such standard of practice, universal prenatal screening for substance is still not widespread, and it is often used incorrectly [5]. Sensitive screening tools such as the T-ACE (Tolerance, Annoyed, cut down, Eye-opener) or TWEAK (Tolerance, Worried, Eye-openers, Amnesia, Cut-down), are recommended to accurately detect the use of alcohol during pregnancy [3,16]. Although these recommended tests are easy to administer [17,18], physicians have been using alternate tools such as CAGE (consists of the following four questions [19]: Have you ever felt you should Cut down on your drinking?, Have people Annoyed you by criticizing you drinking?, Have you ever felt bad or Guilty about your drinking?, and Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (Eye Opener) ?), Alcohol Use Disorders Identification Test (AUDIT) or Michigan Alcoholism Screening Test (MAST). A cross-sectional online survey conducted between October 2001 and May 2002 across Canada found that 87% of the participating physicians (pediatricians, psychiatrists, obstetricians and gynecologists, family physicians, and midwives) who were member of professional organizations used the CAGE as opposed to 23% the T-ACE as their screening tool [20]. Such tools such as AUDIT, MAST, and CAGE are not recommended for PWUS due to paucity of data in female gender [3,14].

There have been examples of exceptional models of care that include PWUS' determinants of health. PWUS' social determinants of health include poverty, interpersonal violence, psychiatric co-morbidity, polysubstance use, nutritional deficiencies, inadequate access to health care and stressful living conditions [21]. An example is a comprehensive harm-reduction model of perinatal care that does not mandate abstinence. Harm reduction model has shown to improve birth outcomes and can be implemented with limited resources [22]. Furthermore, preventive care through a community based multidisciplinary approach has been successfully used by Operation PAR (Prenatal Awareness and Responsibility) since 1977. It emphasizes trust-building and motivational interviewing as required skills for conduction of PSSU [23]. However, these programs are the exception, and their implementation is not widespread.

Gaps in Prenatal Screening for Substance Use

PSSU effectiveness has been low for a number of reasons. Studies have documented negative attitudes toward PWUS among prenatal healthcare providers [4]. These negative attitudes and feelings of anger toward PWUS may deter women from disclosing their substance use. Personal bias and poor modeling by educators may cause students to question and blame pregnant women who endanger their fetuses by using drugs and alcohol [25-26]. Thus, PWUS may be unwilling to honestly report their substance use because they may be in denial, guilt or shame, fear of being stigmatized and judged, or dread consequences such as child apprehension or legal intervention [3].

Women also did not trust healthcare providers to protect them from these consequences and emotional burden. Instead, they took steps to protect themselves by avoiding prenatal care, attempting to stop using substances that could be detected by urine tests before prenatal care visits, and sharing strategies within social networks for gaining the benefits of prenatal care while avoiding its perceived negative consequences [8]. PWUS may be especially hesitant to volunteer information because of fear of losing custody of their children, being prosecuted, or being socially alienated [27]. A study on PWUS's perspectives on PSSU revealed that most women were averse to having their condition of substance use identified and mistrustful of providers' often untrained efforts to discover it. Women expected psychological, social, and legal consequences from being identified, including feelings of maternal failure, judgment by providers, and being reported to Child Protective Services. While personal questionnaires can correctly identify 65 to 70% of obstetric patients who use alcohol, only approximately 20% of these patients have documentation of alcohol use in their obstetric record [28].

Low substance use identification and its lack of record in medical charts have been demonstrated in past literature. To determine detection of substance use among at-risk pregnant women, Kelly et al. administered a patient health questionnaire to 186 women. Out of these 186 women, 70 (38%) women met screening criteria for psychiatric disorders or substance use. Among the women who screened positive, symptoms were recorded in 43% of the charts, and diagnoses recorded

in 18%; there was treatment in only 23% [4]. Additionally, in 2002, Chasnoff et al. [27] interviewed Medicaid-eligible pregnant women in prenatal clinics in South Carolina State and Washington DC from whom 176 (8.8%) reported current substance use [27].

Other contributing factors that limit the effectiveness of PSSU include lack of patient follow-through as well as insufficient physician education and training [3]. Not only have referrals from healthcare providers amongst PWUS entering treatment stayed consistently low [29], patients may refuse to accept a referral or not keep their appointments. Also, most physicians lack adequate formal undergraduate and graduate training in the management of substance use during pregnancy [25,26,30]. Only 55% and 41% of physicians and pediatricians, respectively, reported feeling prepared to manage PWUS [20]. Few medical schools have adequate required courses in addiction. Studies over three decades have shown that a majority of physicians do not screen for signs of alcohol or drug dependence during routine examinations. Apparently, there is the feeling that such screening efforts are wasted, given that in a 1997 survey, a majority of general practice physicians and nurses indicated that none of the currently available medical or healthcare interventions would be appropriate or effective in treating addiction [31].

Recent guidelines from the National Institute for Health and Clinical Excellence (NICE) (2010) emphasize the need for regular training of antenatal staff in substance use screening and the social and emotional experiences of PWUS [32]. PWUS must be engaged in treatment through empathic and trust-based interaction. Hence, providers need to approach the problem as an advocate for the mother and her child [33]. Integrating dignity and respect into the relationship of healthcare provider and PWUS is requisite. Effective nonjudgmental PSSU can improve maternal and fetal health outcomes [21,34]. Teaching critical consciousness in medical education will help train compassionate physicians to improve the effectiveness of PSSU, and ultimately improve birth outcomes.

Medical education & substance use

Another randomized trial demonstrated that attending specialized clinics and rehab centers for PWUS during clerkship resulted in more empathic history taking from PWUS. Students demonstrated a less judgmental attitude after such training (P-Value<0.001), reported a higher degree of comfort in conducting PSSU (P-Value=0.004), and understood that PWUS would be willing to disclose their substance use if students are trained sufficiently (P-Value<0.001). Students reported that through their trainings they realized how they could overcome their pre-formed biases on PWUS that may not have any basis in experience [35]. Medical education must train physicians in the required skills to address issues of societal relevance and disparities in healthcare. The skills are acquired through a curriculum, transforming the students through critical awareness: a critical consciousness of the self, others, and the world [12].

Critical Consciousness

Current evidence shows the gaps in the system in training physicians to be capable of building trust with PWSU [32,33,35], and be devoid of personal bias through appropriate modeling by professors in medical school [25]. Alberta's 11-year literature review in 2006 revealed 66% of physician' relied on self-reporting of substance use in PSSU; however, only a quarter of PWUS were ready for voluntary disclosure [3].

A promising intervention in this respect can be found in the medical school curriculum and, particularly, in the training of physicians' critical consciousness [12]. Critical consciousness fosters an understanding of social issues in health care by encouraging critical awareness of the self, others, and the world [12]. Critical consciousness emphasizes that physicians must evaluate their own personal assumptions, biases, values and shift their focus to others in the world [12]. As a result, physicians ensure that an individual's human needs are met beyond purely biomedical needs [12]. Although studies have demonstrated that critical consciousness based curriculums can add values in terms of physicians' interaction skills with patients, no study has explored its effects on the conduction of PSSU [12]. However, the argument that such a curriculum can affect PSSU has been supported by randomized trials. Siegel et al. showed that physicians reported increased likelihood of querying patients about substance-use conditions in their practice 6–10 years later, if as medical students, they were given a brief clinical practicum on the subject [36].

The development of critical consciousness involves reflective awareness of the differences in power and privilege and the inequities that are embedded in social relationships—a perspective that Freire calls "reading the world" [37]. It is a reorientation of viewpoint towards a commitment to social justice. The development of this type of consciousness—a process that Freire calls "conscientization", is both cognitive and affective and leads to engaged discourse, collaborative problem-solving, and a "re-humanization" of interpersonal relationships [37]. Through such training, physicians acquire knowledge and awareness to carry out their social roles and responsibilities, and move away from developing dehumanizing stereotypes that negatively impact on the physician-patient relationship. At the very heart of efforts to instill professionalism, humanism, cultural openness and humility in medical students is the notion of equity: to treat all patients as individuals— all the emotional, experiential, and cultural richness and depth that comprise an individual's identity—with fairness and compassion [12,35]. As the "habit of professionalism" develops, so does a critical consciousness of oneself and others in the world, as well as a commitment to alleviate suffering and address disparities through right action. The development of this critical awareness is a central prerequisite for addressing needs of vulnerable populations such as PWUS. The outcome is therefore one of social justice—the open acknowledgment of the dignity and autonomy of, and delivery of high-quality medical care to PWUS regardless of their condition.

The University of Michigan Medical School has implemented a

critical consciousness-based curriculum for medical students since 2003 [38-43]. Such an exercise can be used to gather evidence for the influence of training on how the physicians will properly perform PSSU. This curriculum replaces the traditional "top-down" approach with a bidirectional teaching and learning. Students bring into their small study groups their lived experiences as a resource for collective learning. Small, group-based activities in conjunction with the students' core lecture series foster reflection on the students' own values, perspectives, and biases in a safe setting. This "critical self-reflection," encourages an environment in which there is a shift of one's gaze from self to others and conditions of injustice in the world. A critical element of such a curriculum is dialogue in a small-group setting on health care disparities. Individuals bring themselves—their identities, values, ideas, perspectives, backgrounds, and experiences—into collective (but not necessarily unified) expression to consider the basis of moral action [37,40]. The students personalize the situation to stimulate reflection on the emotional impact of being the target of prejudice that may arise in healthcare settings. This curriculum is based on cognitive disequilibrium where it challenges students' existing schema about PSSU influenced by prejudice. This questioning of personal and societal "Status quo" that gives rise to a worldview that is more complex, inclusive, and moral action oriented [8,30]. Faculty members must go through workshops on active learning and facilitation, providing feedback, and stimulating reflective learning, as well as interactive drama techniques or role plays. It can be evaluated through qualitative methods such as focus groups [44] that explore students' understanding and suggestions regarding this curriculum.

Challenges & Limitations

There has been an increased interest in the treatment needs of PWUS in recent years. While there is literature on prevalence, correlates, and outcomes of perinatal substance use, information on successful PSSU remains sparse. There have been few studies with adequate comparison groups but sample sizes have been small. Few outcome studies have been conducted and success has been usually measured by abstinence rather than harm reduction approaches, such as reduced use or alterations of risk behaviour [28]. Rigorous research on the effect of PSSU on long-term recovery is scarce.

Studies reporting higher hospital costs for infants of PWUS [45] have relied on diagnosis codes from claims, discharge abstracts, or toxicology results to identify PWSU. If hospital personnel were to include drug abuse codes for high-cost cases or performed urine tests only on mothers and infants already identified as problem cases, then cost results may have been overestimated.

While substandard low referral rate [29], and biased attitude of physicians [32,46] are existing evidence for suboptimal conduction of PSSU, there is a paucity of evidence about standard evaluation programs to assess the conduction of PSSU by physicians. However, the indicators are very difficult to define when no training is offered that helps healthcare providers reduce personal bias in their attitude. Also, little evidence exists on nondisclosure as a cause of ineffective PSSU. This could be a result of mistrust of PWUS towards research teams in this healthcare sector [8]. Although governmental policies approve the standard of universal PSSU, they recommend few interventions to encourage its proper conduction.

Scope for action & future direction

Although the existing evidence is not well developed, current studies show that training compassionate physicians can overcome the limitations of existing competency-based curriculums [12]. Knowledge and skills of the physician contribute to the biomedical aspects of medical training and personal biases may influence a physician's care. However, addressing human and societal interests and the needs of vulnerable populations require a multidisciplinary approach, inclusive of the physician-patient relationship. This approach differs from what currently exists in the traditional education system. There is a need for developing a 'critical consciousness' orientation, placing medicine in a social, cultural, and historical context and coupling it with active recognition of societal problems and search for appropriate solutions.

The curriculum with a core of critical consciousness recognizes the key role of compassion and fairness in conducting PSSU. Vulnerable populations such as PWSU require compassionate physicians who create a safe and supportive environment in which their patients may disclose their substance use. Although this is exactly what is required, most medical schools still use the top-down strategy with competency-based curriculums. There is an urgent need to raise awareness and gather evidence on such a deficiency in the training of physicians (Huang & Reid, 2006).

Conclusion

PSSU lack effectiveness primarily due to lack of physician training and education, and patients' fear of social stigma, judgment, and negative consequences associated with revealing their substance use to their physician. Critical consciousness-centered curriculum in medical schools improves non-judgmental, compassionate conduction of PSSU, which leads to improved health outcomes. Such intervention should be implemented into medical training accompanied by effectiveness studies and cost analysis research. Further research is recommended on the availability and efficacy of trainings in the form of post graduate continuous medical education programs and workshops. This can increase the quality of PSSU through a broad spectrum of graduated care providers who are currently in practice.

Contributors and sources

This paper is based on a review of evidence suggesting possible improvement of prenatal screening of substance use by improving medical school curriculum. Current available observational and evaluative evidence and health promotion interventions for PWSU were critically appraised in order to draft and revise the intellectual content of the article.

Competing interests

None declared

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