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"Alcohol During Pregnancy? Nobody Does That Anymore": State Legislators' Use of Evidence in Making Policy on Alcohol Use in Pregnancy

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ABSTRACT. Objective: In recent years, U.S. states have passed many laws addressing alcohol use in pregnancy, despite limited evidence on the impact of such policies. This study explores how state legislators use evidence when making policy on alcohol use in pregnancy. **Method:** Study data are drawn from semistructured interviews with 29 state lawmakers and their aides in Maryland, North Carolina, and Virginia, conducted in March through July 2017. Interview transcripts were coded and analyzed by inductive and deductive methods. **Results:** Despite evidence on the harms of alcohol use in pregnancy, most lawmakers did not express concern about this topic. Instead, they expressed concern about opioid use in pregnancy. Personal experiences, anecdotes, and known contacts influenced legislators' views on substance use in pregnancy, whereas evidence, for the most part, did not. The intermediaries who typically bring evidence about problems and solutions to legislators did not appear to be raising the issue of alcohol use in pregnancy on legislators' agenda. **Conclusions:** Basic evidence on the prevalence and harms of alcohol use in pregnancy did not appear to influence state lawmakers' policy priorities. Concern over opioid use in general may provide a window of opportunity to educate legislators on the relative scope and harms of alcohol and opioid use in pregnancy. It remains unclear why states are passing alcohol-in-pregnancy policies. More research is needed to explore how state lawmakers form their understanding of substance use in pregnancy and related policies. (*J. Stud. Alcohol Drugs, 80,* 380–388, 2019)

ALCOHOL USE DURING PREGNANCY is a continuing issue of significant public health concern. A recent meta-analysis of studies on alcohol consumption in the United States shows an estimated 15% of women report alcohol use in pregnancy, with about 21% of those (3% of all women) reporting binge drinking (four or more standard drinks per episode; Lange et al., 2017). Although no conclusive evidence shows that low levels of prenatal alcohol exposure cause fetal harm (Abel, 2006; Henderson et al., 2007; O'Leary & Bower, 2012), periodic binge drinking or regular heavy drinking (drinking that averages 70 g alcohol/week; O'Leary et al., 2010) during pregnancy can lead to serious adverse outcomes (Flak et al., 2014; Jacobson & Jacobson, 1999; Sayal et al., 2009), including low birthweight and preterm birth (Patra et al., 2011), and a range of permanent physical birth defects and neurodevelopmental disorders known collectively as fetal alcohol spectrum disorders (FASD; O'Leary et al., 2010; Williams et al., 2015). As many as 2%–5% of school children in the United States may be affected by some form of FASD (May et al., 2009, 2018).

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In recent years, U.S. states have passed many policies addressing alcohol use in pregnancy (Drabble et al., 2014). Researchers have categorized these policies into two types: *supportive,* providing information, treatment, and services to pregnant women; or *punitive,* seeking to directly control pregnant women's behavior (Thomas et al., 2006). Supportive laws include measures giving pregnant women priority access to alcohol treatment, or mandating point-of-sale signage warning of the risks of drinking during pregnancy. Punitive laws include measures requiring mandatory reporting of patients who abuse alcohol during pregnancy to Child Protective Services, or allowing civil commitment of alcohol-abusing pregnant women to involuntary treatment or protective custody of the state. Policy environments around alcohol and pregnancy are becoming increasingly punitive (Roberts et al., 2017).

There is limited evidence on the impact of these policies. Reducing the waiting time for entry into substance abuse treatment has been associated with higher completion rates for the treatment program (Albrecht et al., 2011), suggesting that laws giving pregnant women priority entry into treatment might help improve outcomes. One study examining mandatory warning signs policies from 1989 to 2006 found that laws mandating point-of-sale warning signs have been associated with decreases in very low birthweight and very preterm birth (Cil, 2017). However, the most comprehensive study, which examined eight different alcohol-in-pregnancy policies and outcomes for more than 148 million births over 40 years, found that most alcohol-in-pregnancy policies were associated with increased adverse birth outcomes, including low birthweight and preterm birth (Subbaraman et al., 2018).

Moreover, some alcohol-in-pregnancy policies also appear to lead to decreased prenatal care utilization. Qualitative studies with women who used drugs found that mandatory reporting policies for drug use during pregnancy deterred women from seeking prenatal care (Roberts & Pies, 2011; Schempf & Strobino, 2009), suggesting the same may be true for mandatory reporting of alcohol use in pregnancy. Laws requiring point-of-sale warnings about harms of alcohol use during pregnancy, as well as those defining alcohol consumption as child abuse/child neglect, also have been associated with less prenatal care utilization (Subbaraman et al., 2018).

Despite the findings that policies targeting alcohol use in pregnancy have not been shown to reduce harms, states continue to implement such laws (Roberts et al., 2017). Medical experts and practitioners have called for policies on alcohol use in pregnancy to be guided by the best available scientific evidence (Chasnoff & Gardner, 2015; Krans & Patrick, 2016; Terplan, 2017). However, the extent to which evidence influences policy decision making on alcohol use in pregnancy is not known. The goal of this study was to assess how state legislators use research evidence when making policy decisions on alcohol use in pregnancy, via a qualitative study of state lawmakers in three neighboring U.S. states with varying alcohol-in-pregnancy policy environments.

Method

Ethics

The protocol for this research was reviewed and approved by the Committee for the Protection of Human Subjects at the University of California, Berkeley.

Setting

We interviewed state legislators to explore their use of evidence[1] in making policy on alcohol use in pregnancy in the states of Maryland, North Carolina, and Virginia. These states were chosen because they share some sociocultural similarities, being in the same region; however, they have different policies on alcohol and other substance use in pregnancy (Table 1).

We began this study intending to focus only on policies related to alcohol use in pregnancy. However, many policies considered in these states in 2017 covered both alcohol and drugs in a single bill. (For example, Maryland's SB27 [Chair, Judicial Proceedings Committee, Maryland Senate, 2017], rejected by the Senate Judicial Proceedings committee, would have required health care professionals to report to child welfare agencies any newborns displaying "the effects of controlled drug use or symptoms of withdrawal resulting from prenatal controlled drug exposure as determined by medical personnel; or the effects of a fetal alcohol spectrum disorder" [p. 2], with no exceptions for circumstances involving prescribed drugs.) As a result, we amended our interview guide to include exploration of a broader range of policies regarding alcohol and drug use in pregnancy.

Outreach and recruitment

We recruited legislators from the primary health-related committees of the General Assembly in all three states, as well as sponsors and cosponsors of 2017 bills on alcohol and/or drug use in pregnancy and members of committees that voted on such bills. We conducted outreach via email to 132 legislators. The outreach email described our research as a study of state legislators' decision making around maternal and reproductive health policies, and requested their participation in a 30-minute interview with the legislator or one of their staffers. We followed up via phone and in person. We made additional outreach attempts with Republican legislators when it became apparent that more Democrats than Republicans were agreeing to be interviewed.

Data collection and analysis

We conducted open-ended interviews with 29 legislators and aides in March through July 2017. Twenty-six interviews were with elected officials (split evenly between State Senators and members of the House of Delegates) and three were with legislative aides. Twenty-three were conducted in person (in a location of the participant's choosing, usually their office); six were conducted over the phone. Interviews ranged from 12 to 53 minutes, with a mean of 34 minutes.

Our interview guide was scalable to allow for the participant's legislative experience and time constraints. Thus, we could cover one specific piece of legislation or a broader set of policy questions. In general, we asked participants to describe their decision making on a recent bill related to substance use in pregnancy. Follow-up questions probed for factors that were particularly influential in their decision-making process (studies/research evidence, stories, testimony, personal experiences, etc.). We also explored how participants assessed credibility of evidence and how they balanced evidence with other factors. If time allowed, we explored their perceptions and concerns around the relative scope of alcohol and opioid use in their state. Our interviews also covered other reproductive health subjects; those data are analyzed elsewhere (Woodruff, 2018).

Interviews were audio recorded, transcribed, and uploaded to Dedoose (2017) qualitative data analysis software for coding and analysis. We used a two-stage process of thematic analysis (Braun & Clarke, 2012; Smith & Osborn, 2008):

[1]For purposes of this study, we use the definition of "evidence" established by the National Research Council's Committee on the Use of Social Science Knowledge in Public Policy: "knowledge based in science . . . broadly taken to mean data, information, concepts, research findings, and theories that are generally accepted by the relevant scientific discipline" (Prewitt et al., 2012, pg. 8).

TABLE 1. State policies on alcohol and/or substance use in pregnancy, as of 2017 legislative session[a]

State	Policies regarding alcohol and/or substance use in pregnancy in place before 2017	Policies regarding alcohol and/or substance use in pregnancy considered in 2017 (with legislative outcome)
Maryland	• Mandatory reporting of substance-exposed newborns (those "showing effects of substance abuse, or withdrawal resulting from prenatal exposure to a controlled substance, or effects of a FASD") to child welfare agencies, with exemption for substances prescribed by a physician	• Mandatory reporting of substance-exposed newborns to child welfare agencies—whether or not the substance was prescribed by a physician (rejected)
North Carolina	• Mandatory point-of-sale warning signs for alcohol sales (off-premises consumption only)	• Mandatory point-of-sale warning signs for on- and off-premises sales of alcohol (passed) • Mandatory reporting of substance-exposed newborns to child welfare agencies (rejected)
Virginia	• Mandatory reporting of substance-exposed/FASD-affected newborns to child welfare • Prenatal alcohol exposure may be used as evidence in child welfare proceedings regarding child abuse/neglect • Medical test/screening results may be used as evidence in criminal prosecution of women who may have caused harm to a fetus	• Funded study to explore barriers to treatment for substance-exposed infants (passed) • Required local social services to investigate whether the mother of an infant exposed in utero to a controlled substance sought substance abuse counseling or treatment during pregnancy—whether or not the substance was prescribed by a physician (passed) • Board of Health to adopt neonatal abstinence syndrome as a reportable disease (passed) • Designated the first week of July as Substance-Exposed Infant Awareness Week (passed)

Notes: FASD = fetal alcohol spectrum disorder. [a]Data from the National Institute on Alcohol Abuse and Alcoholism's Alcohol Policy Information System and General Assembly websites of Maryland, North Carolina, and Virginia.

preliminary coding to identify concepts arising from the transcripts, and second-cycle coding to consolidate the range of concepts into broader themes. This multistage process yields fewer and more meaningful units of analysis than a single-stage coding process (Saldaña, 2015). Quotations that illustrated key themes were extracted. The first author conducted all interviews and analysis; the authors consulted together to resolve areas of uncertainty, such as themes that seemed compelling yet were rare, to ensure dependability of results (Ulin et al., 2004).

Results

Participants came from Maryland (n = 10), North Carolina (n = 8), and Virginia (n = 11). Approximately 40% of respondents were female and 60% male. Democrats outnumbered Republicans by roughly two to one.[2]

In analysis, several themes emerged. In general, alcohol use in pregnancy was not seen as salient unless respondents had personal direct experience with the issue. Rather, respondents reported that opioid use, including use during pregnancy, was of greater concern to them than alcohol use in pregnancy. On opioids, anecdotes and known personal contacts were more important in shaping their views than evidence. Finally, many noted that the professional intermediaries they relied on to bring health policy issues to their attention were not raising the issue of substance use in pregnancy with them. We explore each theme below.

Alcohol use in pregnancy is not salient

For most participants, alcohol use in pregnancy was not salient. Most expressed that they did not believe drinking during pregnancy to be a major public health problem. This is largely because of the perception, expressed by many, that prominent government efforts to educate the public about the risks have been effective.

"I don't see a big problem with [drinking in pregnancy] . . . I think that the public-service announcements and the whole campaign to make sure that people know that it's a bad thing to do has been helpful." — Democrat

"I really do think we've done such a good job on educating the public [on] don't drink when you're pregnant." — Republican

"Alcohol during pregnancy? Do I think that's a problem? You know, everybody I know, that's how you know they're pregnant, when they're not drinking. So yeah, nobody does that anymore." — Democrat

Personal experience sets the agenda on alcohol use during pregnancy

The only participants who expressed concern about alcohol use in pregnancy were those who disclosed a direct personal familial connection to the issue. In one case, a

[2]For context, the percentage of female lawmakers in these state legislatures in 2017 ranged from 19% in Virginia to 31% in Maryland. The percentage of Republicans was 34% in Maryland and 64% in North Carolina and Virginia. Source: National Conference of State Legislators, http://www.ncsl.org/legislators-staff/legislators/womens-legislative-network/women-in-state-legislatures-for-2017.aspx and http://www.ncsl.org/research/about-tate-ltgislatures/partisan-composition.aspx#2017

participant believed that he and his siblings had themselves been harmed by in-utero alcohol exposure:

"My mom and dad were heavy drinkers . . . And I am sure that we kids are in some manner affected by fetal alcohol, all of us . . . I don't think you can avoid it, when you're drinking at that level . . . So I am ultrasensitive to the issue because of my personal background." — Republican

Others had experience from the parental side; three participants shared that they were foster or adoptive parents of children who had been born exposed to alcohol or drugs. As one Democrat said, "My oldest child is adopted, and she was put into foster care because of chronic substance abuse in her biological family. So, I have kind of that personal connection to it."

Many female legislators who were parents reported that they had eliminated their own drinking during pregnancy and, therefore, assumed that others would do so as well. Some reported that they had noticed norms changing toward greater acceptability of drinking during pregnancy but still believed that virtually everyone felt pressure to minimize their drinking when pregnant and would do so.

"This one girl the other day had a glass of champagne and then she proceeded to tell me she was pregnant. She said, you know I've done a lot of research and, she said, one little glass of champagne is not going to hurt me . . . So, she felt pretty confident with that. But I wouldn't. When I got pregnant, it was just, you can't drink coffee, you can't drink alcohol, you can't smoke . . . And if I were pregnant now I wouldn't drink anything." — Democrat

Opioid use during pregnancy is higher priority than alcohol

Many participants expressed that opioids are a higher priority than alcohol, even specifically during pregnancy. This appeared to be because of two misperceptions: (a) belief that opioid use is more prevalent overall than (heavy) alcohol consumption;[3] and (b) belief that, used during pregnancy, opioids pose more threat of harm to the fetus than alcohol.

"I think opiate use [during pregnancy] has probably got a bigger impact [than alcohol use], to be honest with you. I mean, opioid use is pretty rampant, way more than alcohol." — Democrat

One participant summed up a common perception: that opioids are much more powerful and hazardous than alcohol, specifically in terms of potential harm to the fetus.

"Alcohol vs. drugs . . . It's comparing apples and oranges, to see the effects on the child when it's born. Whether it be what they call crack babies, meth babies, opioid-addicted babies—I don't think that the effect of alcohol on that child when it's born is as great as it is whenever it's one of those drugs. I mean, an opioid—that's just such a powerful drug." — Republican

Even many of those who did understand that alcohol poses a serious risk of harm during pregnancy, and believed it to be a concern, still placed a higher priority on opioids.

"Alcohol use in pregnancy? I'm sure it's there. I'm sure that it's just as—it would be just as relevant to study as opioids, because you know it's happening . . . I mean, that's just as bad on the child, just as bad on development, things of that nature. So, something we need to address. But it's not the focus of what we're doing now." — Democrat

In Maryland and North Carolina, many legislators were aware of proposed 2017 bills in their state to require mandatory reporting of substance-exposed newborns to child welfare agencies, but assumed that the relevant substances were opioids and other drugs. They were not aware that the bills' definition of "substance-exposed newborn" included infants displaying effects of FASD. This included some legislators who had personally voted on these measures.

On opioids, anecdotes drive sense of urgency more than evidence

Regarding opioids, anecdotes appeared more influential than evidence in prioritizing the issue on legislators' policy agenda. Several participants reported being affected by stories of friends or colleagues who had used prescription painkillers and had conveyed the addictive potential of these drugs. One participant who had briefly used opioids after surgery said:

"While I was still in the hospital, I had a friend come in telling me, you've got to get off of this stuff fast. Because he'd been in a motorcycle accident and he was taking pills, and a year later he woke up and realized he was addicted. And you don't want to be that guy. So I tried to get off those things as quick as I could. And my family has a problem with addictions. So, I had some real interest in trying to get off of it." — Republican

Several respondents noted that there seemed to be a convergence of opinion in the General Assembly about the need to address opioids, driven largely by stories and anecdotes circulating among their colleagues.

"It really is remarkable the number of personal stories [about opioid addiction] that legislators have that they'll share privately and say, well, my brother, my friend, my kids . . . And so it didn't take a lot to convince people that it's time to do something about this. The governor put together a taskforce for a year, and while that was happening, all of these stories were coming out of the woodwork and everyone just knows, okay, it's time, we've got to do this." — Republican

[3]In 2011, 1 in 8 adult U.S. women overall, and 1 in 5 among women age 18–34, reported binge drinking three or more times in the previous month (CDC, 2013), whereas in 2012–2013, 1 in 25 adult U.S. women (3.9%) reported nonmedical opioid use in the prior 12 months (Kerridge et al., 2015).

It is worth noting that respondents shared these anecdotes and observations about the urgency of opioid addiction in response to questions about substance use in pregnancy, even though their anecdotes did not relate to use in pregnancy.

Known contacts more trusted than evidence

In shaping policy approaches to substance use (in pregnancy and in general), people known to the legislators appeared to be more trusted and influential than evidence. One Republican described how he came to reject punitive approaches to opioid use in pregnancy:

"I went to the same two doctors that help me on all my pro-life stuff . . . I asked them [about civil commitment or mandatory reporting] and they said, totally misguided. They said the only way to get the kids born healthy, and the mother to come out of it, is to treat it purely medical. And so that's what we do. I kept the people at bay that wanted to lock them up or report them and I just—I explained to them. It was not any original research on my part, or any data. It was where I was trusting the people that were in the field doing it." — Republican

Others noted that they were attuned to issues related to opioid use because affected constituents were asking them for help or they had seen the impact in their district first hand.

"I think the legislators who know about this issue are the ones who have a personal connection through their district, the ones who are seeing and hearing about this problem on a regular basis. I happen to have a personal connection 'cause I [come from] a post-industrial town [with a high incidence of opioid use]. That's where I got like 90 percent of my knowledge on this problem. Otherwise, I don't think I'd know squat." — Democrat

Intermediaries are not raising this issue with lawmakers

Although constituents had raised concerns related to opioids with many respondents, we found that the issue of substance use in pregnancy was not "professionalized"; that is, with few exceptions, respondents reported that no one in the bureaucracy or lobbyist community had brought the issue to them.

"I'm not saying the data is not influential, but it's just not present. I haven't had anybody come and talk to me about the opioid epidemic ever. Ever. I'm sure there are lots of groups working on it—couldn't name one. This is the only conversation I've ever had about it in this office." — Democrat

"I certainly would support anything that would help us, you know, limit or restrict or stop completely a mother's use of alcohol during her pregnancy. But again, I don't hear calls of, you know, it's a crisis or that we need to address it immediately or anything like that. So, again I'm sure it's a problem but you know, just nothing's—nothing specific has come across my desk." — Democrat

Discussion

In this study of state legislators' use of evidence related to alcohol-in-pregnancy policies, we found that most lawmakers were not concerned about alcohol use in pregnancy. They believed that past efforts to educate the public about harms of drinking during pregnancy had worked, and that, effectively, "nobody does that anymore." This relative lack of concern is surprising, given high-profile efforts by the Centers for Disease Control and Prevention (CDC) to highlight the dangers of drinking in pregnancy and the persistence of the problem. In 2016, the CDC released a report and educational campaign to recommend that (hetero)sexually active women who were not using birth control should abstain from drinking alcohol, to prevent harms from alcohol use before pregnancy recognition (CDC, 2016). This campaign generated significant news coverage and controversy (Victor, 2016a; Szabo, 2016), as many observers criticized what they saw as the "condescending" tone of the recommendations (Petri, 2016; Victor, 2016b). It is possible that state policymakers were not aware of the CDC's education effort or the resulting media coverage. Alternatively, if legislators were aware of the campaign, they may have taken it as more proof that the public had been adequately educated about the risks of alcohol in pregnancy. Prior critiques of public education campaigns on alcohol consumption have pointed out that such campaigns may do more harm than good, in that the campaign's visibility can make policymakers believe that the issue is being addressed and may, therefore, reduce political will for other interventions or policies that may be more effective (DeJong & Wallack, 1992; DeJong et al., 1992). Other research has suggested that the alcohol industry itself may actively promote the view that pregnant women are aware of the harms of drinking in pregnancy and that therefore preventive regulation is unnecessary (Avery et al., 2016). We cannot answer the question of how state legislators in the current study came to believe that alcohol in pregnancy is no longer a pressing public health issue; more research is needed to explore this.

Another surprising finding is that legislators prioritized opioid use over alcohol use in pregnancy. Most believed that opioid use was more prevalent and posed a far greater threat to fetal development than alcohol use in pregnancy. Opioid use in pregnancy has been on the rise; the prevalence of opioid use disorder at delivery increased from 1.5 per 1,000 hospital births in 1999 to 6.5 per 1,000 in 2014 (Haight et al., 2018). Yet even this increased rate of 0.65% of U.S. women with opioid use disorder at delivery is much less than the 3% of U.S. women who binge drink during pregnancy (Lange et al., 2017).

State legislators' prioritization of opioids over alcohol in pregnancy does not reflect current evidence of the relative impacts of these substances on a fetus. The number of newborns with Neonatal Abstinence Syndrome (NAS), a set of clinical symptoms associated with postnatal drug withdrawal among some infants exposed to opioids in utero, rose almost five-fold from 2000 to 2012 (Ko et al., 2016). However, NAS is usually treatable with existing practices, and evidence to date has not documented major lasting effects (Grossman et al., 2017; Jansson & Patrick, 2019; McQueen & Murphy-Oikonen, 2016). On the other hand, the link between alcohol use in pregnancy and permanent physical and neurodevelopmental damages has been solidly established (O'Leary et al., 2010; Williams et al., 2015). By the most recent estimates, the number of U.S. children affected by FASD is about 10 times the number of infants with NAS (Ko et al., 2016; May et al., 2018).

Our respondents' relative focus on opioids over alcohol in pregnancy, and their confusion over whether the mandatory reporting bills proposed in their states included alcohol-exposed pregnancies, could reflect the influence of recent changes in federal child welfare laws. Since 2003, the federal Child Abuse Prevention and Treatment Act (CAPTA) has required states to make and implement a "Plan of Safe Care" for each substance-exposed newborn (HHS Administration for Children and Families, 2003). In 2010, the CAPTA Reauthorization Act clarified the definition of "substance-exposed newborn" to explicitly include those showing effects of an FASD, as well as those affected by illegal substance use and withdrawal symptoms (HHS Administration for Children and Families, 2010). In 2016, the Comprehensive Addiction and Recovery Act, passed in response to the increase in prescription opioid misuse, removed the word "illegal" from the definition of substance-exposed infants and thus included prescription opioids within CAPTA's purview for the first time (HHS Administration for Children and Families, 2016). Thus, some state policies on substance use in pregnancy that include alcohol may have been passed in response to changes in federal child welfare laws, rather than from a sense of urgency about harms of alcohol use.

Our analysis suggests that personal experience and anecdotes from trusted sources set the filter through which legislators understand substance use in pregnancy, and may have more influence than scientific evidence. This reflects the fact that that most U.S. states, including those in which we conducted our research, have part-time legislatures, comprising lawmakers from a variety of professions who come together for a brief and busy legislative session. (For example, the General Assembly of Maryland decided on more than 2,800 bills in the 90-day 2017 legislative session.[4]) The legislators we spoke with typically had only one legislative aide, who assisted with everything from scheduling and constituent relations to limited policy analysis. In this context, legislators rely on trusted intermediaries such as lobbyists, public health practitioners, and professional organizations to assess quality of evidence and present policy solutions to them (Feldman et al., 2001). This finding concurs with a seminal political science study that explains legislative oversight as functioning more like fire alarms than police patrols (McCubbins & Schwartz, 1984).That is, legislators do not go out proactively looking for problems to solve; rather, they respond to the "alarms" raised by interest groups who bring concerns to them. In the absence of intermediaries sounding the alarm about alcohol use in pregnancy, the issue is not seen as urgent.

This study echoes prior political science research describing the relatively low impact of evidence on policymaking, compared to factors such as personal values, political considerations, media coverage, "gut instincts," and stereotypes (Brownson et al., 2006; Cairney, 2016; Dodson et al., 2013; Kelly et al., 2017; Redman et al., 2015; Waddell et al., 2005). Past studies of health policy decision making have generally found very little direct use of evidence to guide policy formulation and other decisions (Amara et al., 2004; Brownson et al., 2009; Chagnon et al., 2010; Fitzgerald et al., 2017; Ritter, 2009). In the context of this literature, the current study's findings regarding use of evidence are unsurprising, but our respondents' minimal awareness of FASD and low priority assigned to its prevention are nonetheless noteworthy.

Some limitations may constrain our findings. First, the pool of legislators who agreed to be interviewed is not representative of the overall sampling frame. Despite our attempts to oversample Republicans, our sample is more Democratic and more female than the overall representation in the General Assemblies.[2] Second, because we worked within participants' time constraints, we were not able to ask exactly the same questions of each participant. This limits our ability to draw conclusions across our sample and to transfer conclusions from this study to other contexts (Miles & Huberman, 1994). Third, the states in which we conducted interviews have high levels of opioid use and overdose and are adjacent to states with the highest levels of NAS (Ko et al., 2016). This may mean that legislators' perceptions about the urgency of opioid use in pregnancy may not generalize to other states in which opioid use and NAS rates are lower.

This study also has several strengths. As the first study to explore how state lawmakers understand substance use in pregnancy and use evidence in making decisions, it sheds light on motivations behind an active policy trend in U.S. states that has implications for millions, as well as adding to the critical discussion over how evidence is (or is not) used in making public health policy. Our open-ended, in-person interview process allowed us to uncover unexpected findings; indeed, it was crucial to our getting access to legislators at

[4]http://msa.maryland.gov/msa/mdmanual/07leg/html/sessions/2017.html

all, as several expressed that they do not respond to requests for participation in research via surveys or questionnaires but are "always glad to have a conversation." Although legislators may dominate public discourse in settings such as news media, their perspectives are rarely represented in social science. As such, this study contributes an important understanding of the views of individuals whose decision making has broad public impact (Nader, 1972).

This research has important implications. Basic evidence on the prevalence and harms of alcohol use in pregnancy does not appear to influence state lawmakers' policy priorities. Although alcohol use in pregnancy was not a concern for state lawmakers, opioids were, and this may provide a window of opportunity to educate lawmakers on the relative scope and harms of both alcohol and opioid use in pregnancy. The fact that legislators' trusted sources of information were not currently raising this issue with them suggests that researchers concerned about substance use in pregnancy may be able to work with existing intermediaries to translate research on these issues for policymakers. However, our findings also suggest that scientific evidence has limited influence on policymaking on this issue and may not outweigh anecdotes and personal stories in legislative decision making. More research is needed to explore how state lawmakers form their understanding of substance use in pregnancy and what policies they think will make a difference.

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