

# State Policy on School-based Sex Education: A Content Analysis Focused on Sexual Behaviors, Relationships, and Identities

William J. Hall, PhD, MSW  
Benjamin L. H. Jones, BS  
Kristen D. Witkemper, BS  
Tora L. Collins, BS  
Grayson K. Rodgers, BS

**Objectives:** Adolescents in the United States face crucial sexual health behavior issues, including consequences of sexually transmitted infections and diseases, pregnancy, and sexual violence. Lesbian, gay, bisexual, and transgender youth are disproportionately affected by these issues. State policies about sex education in K-12 schools shape what is taught to students about sexual health. In this study, we analyzed the content of school-based sex education policies of all 50 states and focuses on sexual behaviors, relationships, and identities. **Methods:** Policies analyzed include state statutes, state board of education policies, and state department of education or public instruction curriculum standards. Data were analyzed using content analysis. **Results:** Most state policies emphasized abstinence from sexual behavior and did not require education about contraceptive and barrier methods. Few policies required detailed information about contraceptive and barrier methods to prevent pregnancy and sexually transmitted infections. Around half of states addressed relationship issues (ie, healthy relationships, sexual decision-making, and sexual violence); however, few states required content on communication about sexual consent. Eight state policies explicitly stigmatized homosexuality. Conversely, 12 states were inclusive of diverse sexual orientations and 7 states were inclusive of diverse gender identities. **Conclusion:** Sex education policies should be evidence-based and inclusive of sexual diversity.

**Key words:** sex education; sexual health; sexual behavior; sexual orientation; sexually transmitted infections; sexually transmitted diseases; school; policy; adolescent; youth

*Am J Health Behav.*™ 2019;43(3):506-519

DOI: <https://doi.org/10.5993/AJHB.43.3.6>

Sexual behavior takes a prominent position in the lives of youth and has significant implications for health. Rates of sexual activity increase significantly during adolescence. National data from the United States (US) show that 20% of 9<sup>th</sup> grade students had sexual intercourse, whereas 57% of 12<sup>th</sup> grade students had sexual intercourse.<sup>1</sup> Nearly 90% of young people have had sex by age

24.<sup>2</sup> Sexual behavior is intimately related to many health issues, including unplanned pregnancy, sexually transmitted infections or diseases (STIs/STDs), and sexual violence and trauma. Given the significance of these health issues, schools have sought to educate youth about sexual health, and state policy is a primary determinant of school-based sex education. However, relatively little pol-

*William J. Hall, Assistant Professor, School of Social Work and Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC. Benjamin L. H. Jones, Research Assistant, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC. Kristen D. Witkemper, Research Assistant, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC. Tora L. Collins, Research Assistant, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC. Grayson K. Rodgers, Research Assistant, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC.*  
Correspondence Dr Hall; [wjhall@email.unc.edu](mailto:wjhall@email.unc.edu)

icity research has been conducted in this area. This study reports findings from a content analysis of school-based sex education policies from all 50 states in the US focusing on sexual behaviors, relationships, and identities.

### **Sexual Health Behavior Issues among Youth**

Sexual behavior during adolescence can have significant and even lifelong implications. The unintended pregnancy rate is higher among adolescents than any other age group.<sup>3</sup> About 5% of women become pregnant before they reach age 20.<sup>4</sup> Teen-age pregnancy can be problematic because adolescent parents are often unprepared for parenthood. Adolescent pregnancy and childbirth are associated with poor health and social outcomes, including inadequate prenatal care, low birth weight, single parenthood, poverty, welfare receipt, and child maltreatment.<sup>5,6</sup> Adolescents are also disproportionately affected by STIs/STDs. Experts have estimated that there are about 20 million new STI/STD cases each year in the US, and about half of them are among youth ages 15 to 24.<sup>7</sup>

### **Problems in Sexual Relationships among Youth**

An additional sexual health problem that arises during youth is sexual violence. Among survivors of sexual assault and intimate partner violence, the most common ages of first victimization were 11 to 24, with 67% of female survivors and 45% of male survivors being first victimized between 11 and 24 years old.<sup>8</sup> Results from the most recent Youth Risk Behavior Survey showed that 8% of high school students reported experiencing physical dating violence (ie, being hit, slammed into something, or injured with a weapon or object) by someone they had dated and 7% experienced sexual dating violence (ie, being forced to do sexual acts they did not want to do) by someone they had dated.<sup>9</sup> These traumatic sexual experiences can have adverse long-term effects including psychiatric problems (eg, post-traumatic stress disorder, depression, anxiety disorders, sleep disorders, and suicide attempts),<sup>10,11</sup> interpersonal difficulties (eg, infrequent contact with friends and family, and limited emotional support from others),<sup>12</sup> and health risk behaviors (eg, unhealthy weight control, cigarette smoking, binge drinking, drinking and driving, and illicit drug use).<sup>13-16</sup>

### **Sexual Identity Disparities in Sexual Health Outcomes**

There are also disparities in sexual health outcomes by sexual identity. Studies show that adolescent girls who identify as lesbian, gay, or bisexual (LGB) or reported same-sex contact had higher pregnancy rates compared to those who were exclusively heterosexual.<sup>17-21</sup> In addition, bisexual adolescent boys were more likely to be involved in a pregnancy than their heterosexual counterparts.<sup>19,20,22</sup> There are additional sexual orientation disparities in terms of STIs/STDs. Young bisexual and heterosexual women who had sex with women, as well as young gay and bisexual men were more likely to have had a STI/STD.<sup>23</sup> These disparities may be explained by sexual minority youth more frequently engaging in risky behaviors, including early age of sexual debut, multiple sexual partners, substance use before sex, and lack of condom or contraceptive use.<sup>24,25</sup> Finally, compared to their heterosexual peers, LGB high school students are about 3 times more likely to experience physical dating violence (6% vs 17%) and sexual dating violence (6% vs 16%).<sup>25</sup>

Research on sexual health outcomes among transgender youth is scarce; however, the existing studies in this area indicate sexual health disparities. A study of transgender youth at a health center in Boston, MA showed high rates of STIs/STDs (eg, HIV, chlamydia, and gonorrhea), particularly among transgender women.<sup>26</sup> These findings align with results from meta-analytic and systematic reviews of STI/STD rates among transgender adults across the US.<sup>27,28</sup> In terms of sexual violence, 2 studies showed that transgender youth were nearly 3 times more likely to experience dating violence and intimate partner violence compared to their cisgender peers.<sup>29,30</sup> Sexual harassment at school is also prevalent among sexual minority and transgender students, with national data showing that 59% of lesbian, gay, bisexual, and transgender (LGBT) students reporting sexual harassment in the past year.<sup>31</sup> Collectively, this evidence demonstrates disparities in sexual health outcomes for LGBT youth.

### **Sexual Health Education and School Policy**

Given the sexual health risks facing adolescents, education that advances students' knowledge, skills, and attitudes about sexual health is impera-

tive to prevent STIs/STDs, unplanned pregnancy, and sexual violence as well as to promote individual well-being and healthy relationships. Schools play a major role in educating adolescents about sexual behavior and the content of the curriculum is typically guided by policy. According to the socio-ecological perspective on health promotion, public policies can have significant effects on the health of populations.<sup>32</sup> A *policy* is a system of principles created by governing bodies or public officials to achieve specific outcomes by guiding action. Education policy can include statutes passed by state legislatures, policies passed by boards of education, and regulations and standards set by departments of education or public instruction. Sex education policies can regulate what is taught to students about sexual behavior with a presumed aim of promoting health. Therefore, examining the content of these policies is important because they guide what is taught to students and may influence sexual health outcomes.

Currently, regulatory power over US K-12 school curriculum content involves federal, state, and local actors; however, policymaking power lies primarily at the state level. The federal government does not play a direct role in curriculum content because the Constitution demarcates education as a state and local responsibility. Nonetheless, federal agencies can still influence sex education through the allocation of funds, for example, distributing millions in federal funding to schools for abstinence-only sex education. On the other hand, state-level policy actors (ie, state legislatures, governors, state boards of education, and state departments of education or public instruction) can determine curriculum content taught in public schools by way of mandates or guidelines about topics to be covered, a specific curriculum sequence, or specific textbooks to be used. At the local level, decisions and actions by school boards, administrators, and teachers must comply with state regulations.

Given the primacy of state policy over school-based sex education, this study focused on policy at the state level. The purpose of this study was to examine the content of all 50 states' policies about sex education in schools in the United States. Policy content analyzed focused on sexual behaviors, sexual relationships, and sexual identities because of the health implications associated with sexual

behaviors and relationships, as well as the sexual health disparities facing LGBT youth.

## METHODS

### Data Sources

The Sexuality Information and Education Council of the United States (SIECUS) is a national, nonprofit organization that provides education and information about sexuality and sexual and reproductive health. SIECUS hosts a website that provides an overview of the sex education policies of every state, which fall under several names (eg, HIV education, sex education, and health education) and types (ie, statutes, board of education policies, and department of education or public instruction curriculum standards).<sup>33</sup> The state-by-state overview consists of a summary of each state's extant policies and the titles of the policy sources (eg, Alabama State Code § 16-40A-2, and New Hampshire Health Education Curriculum Guidelines). To compile the profiles of state policies each year, a team of SIECUS staff examined state statutes enacted, state board of education policies passed, and curriculum standards posted on state department of education or public instruction websites. The policy profiles used for this study were based on those assessed by SIECUS between October 2014 and September 2015. However, policy updates were posted on the website in March 2016 based on new developments in the prior 6 months. We accessed the policy profiles website in June 2016. To locate the source documents for all of the state sex education policies, the first author performed searches in June 2016 based on the policy titles noted for each state by SIECUS (eg, Alabama State Code § 16-40A-2). All of the source documents for the policies were found, typically on state legislature websites or state department of education or public instruction websites. The text of the state policies was then compiled into 50 documents to facilitate a state-level analysis.

### Data Analysis

Policy document data were analyzed using qualitative content analysis with an inductive approach, which allows themes to emerge from the data and aims at description.<sup>34</sup> The authors approached the data using a social-behavioral science perspective and focused on content related to sexual behaviors,

relationships, and identities. Using a social-behavioral science perspective in the analysis stemmed from the authors' disciplinary backgrounds in psychology, social work, education, and public health. Using this perspective allowed the authors to focus on individual human behavior, behavioral interactions between individuals, interpersonal communication, interpersonal relationships, personal and social identities (eg, LGBT), and social issues related to discrimination and health equity within the policy data content.

The data analysis involved several steps. First, the authors independently read, wrote memos for, and open-coded a pilot sample of 5 policy documents. Second, the group met and compared notes, discussed codes, and derived a coding scheme that consisted of 22 codes falling under 3 overarching categories and 2 subcategories. Third, each state's policy document was independently read and coded by 2 coders using the established coding scheme. The initial coding results for each pair of coders were compared by the first author to assess inter-coder reliability, and coding pair agreement was found 85% of the time. Cohen's kappa statistics were calculated with SPSS (version 24), which showed substantial agreement: kappa = 0.69,  $p < .001$ . Next, to resolve disagreements, the coding pairs met together to examine the source documents, resulting in 100% inter-coder agreement.

Several strategies for rigor were used to help ensure that the findings were valid and trustworthy: triangulation, peer debriefing and support, and use of an audit trail.<sup>35</sup> First, we used investigator triangulation because all 5 authors coded and analyzed the data, which provides cross-checking of data by multiple investigators. Second, we used interdisciplinary triangulation because the investigators represented the disciplines of psychology, social work, education, and public health, broadening the understanding and interpretation of policy content. Third, we used peer debriefing and support where members of the research team met to discuss challenges related to the data and coding, provide feedback, and offer new ideas or alternative perspectives. Finally, we created an audit trail that included the raw data, memos from the open-coding process, notes from discussions about codes and categories, the final coding scheme and instructions, and notes from discussions about coding issues and questions.

## RESULTS

Thematic results involved 3 overarching categories (ie, sexual behavior, sexual relationships, and approach to sexual identity diversity), 2 subcategories for the sexual behavior category (ie, abstinence and contraceptive or barrier methods), and 22 codes falling within these categories. Table 1 shows the categories and codes that emerged from the data, as well as illustrative examples of policy statements for each code. Table 2 shows which states included or excluded the sexual education policy content themes.

### Sexual Behavior

Results show that 74% of states recommended that abstinence or abstinence-until-marriage be stressed to students. Over half of states (54%) did not require that contraceptive and barrier methods be taught. Of the 23 state policies that did include content on contraceptive and barrier methods, almost all ( $N = 19$ ) included multiple strategies to prevent pregnancy and STIs/STDs. However, less than one-fourth of states required students to learn about the effectiveness of preventive methods, their pros and cons, and how to use contraceptive and barrier methods.

### Sexual Relationships

Less than half of states (42%) included policy content related to healthy sexual or romantic relationships. Just over half (54%) of state policies required content related to sexual violence, and about one-third (36%) of states required content related specifically to sexual consent.

### Approach to Sexual Identity Diversity

Eight states had policies that explicitly stigmatized homosexuality by describing it as a lifestyle choice, socially or morally unacceptable, unhealthy, and/or criminal. In addition, 5 states indicated that sex education should be conducted separately for boys and girls, based on sex or gender. Conversely, 12 states had policy statements that sex education should be inclusive of diverse sexual orientations and 7 state policies were inclusive of gender identities and expressions. Two state policies were inclusive of diverse sexual activities (ie, penile-vaginal, penile-anal, and oral sex).

**Table 1**  
**Sex Education Policy Codes, Illustrative Examples, and State Percentages**

Category or Code	Illustrative Example	Percent of States
<i>I. Sexual Behavior</i>		
<b>A. Abstinence</b>		
<b>1. Stresses abstinence</b>	“The program of AIDS prevention education shall stress the life-threatening dangers of contracting AIDS and shall stress that abstinence from sexual activity is the only certain means for the prevention of the spread or contraction of the AIDS virus through sexual contact.” (Revised Code of Washington § 28A.230.070)	30%
<b>2. Stresses abstinence until marriage</b>	“Abstinence from sexual intercourse outside of lawful marriage is the expected social standard for unmarried school-age persons” (Alabama State Code § 16-40A-2)	44%
<b>3. Covers abstinence</b>	“Sexuality health education programs funded by the State shall provide medically accurate and factual information that is age appropriate and includes education on abstinence” (Hawaii Revised Statute § 321-11.1)	14%
<b>4. Abstinence not mentioned</b>	“...” (Idaho Statute § 33-1608)	12%
<b>B. Contraceptive or Barrier Methods to Prevent Pregnancy and STIs/STDs</b>		
<b>1. Contraceptive or barrier methods included</b>	“Abstinence may not be taught to the exclusion of other materials and instruction on contraceptives and disease prevention.” (Revised Code of Washington § 28A.300.475)	46%
<b>2. Using multiple methods</b>	“All comprehensive human sexuality education must stress the importance of the correct and consistent use of sexual abstinence, birth control, and condoms to prevent pregnancy and sexually transmitted infections” (Colorado Statute § 22-1-128)	38%
<b>3. Effectiveness of methods</b>	“Methods of contraception are analyzed in terms of their effectiveness in preventing pregnancy and the spread of disease.” (Virginia Department of Education . Family Life Education: Board of Education Guidelines and Standards of Learning for Virginia Public Schools. Richmond, VA: Virginia Department of Education; 2014)	24%
<b>4. Pros and cons of methods</b>	“Students shall be provided with statistics based on the latest medical information regarding both the health benefits and the possible side effects of all forms of contraceptives, including the success and failure rates for prevention of pregnancy.” (Oregon Revised Statute § 336.455)	12%
<b>5. How to use methods</b>	“The abstinence-based education program shall . . . provide youth with information on and skill development in the use of protective devices and methods for the purpose of preventing sexually transmitted diseases and pregnancy.” (Hawaii Revised Statute § 321-11.1)	8%
<i>II. Sexual Relationships</i>		
<b>1. Healthy sexual relationships</b>	“‘Comprehensive health education’ . . . includes the study of . . . how to recognize and prevent sexual abuse and sexual violence, including developmentally appropriate instruction about promoting healthy and respectful relationships” (Vermont Statute Annotated, Title 16 § 131)	42%
<b>2. Empowered sexual decision-making</b>	“Sexual behavior. Student work must be personalized and show progression through a decision-making process: identify the decision to be made, consider options and consequences, take action or make decision, and evaluate or reflect on the decision” (New Hampshire State Department of Education . New Hampshire Health Education Curriculum Guidelines. Concord, NH: New Hampshire State Department of Education; 2003)	52%

**Table 1 (continued)**  
**Sex Education Policy Codes, Illustrative Examples, and State Percentages**

Category or Code	Illustrative Example	Percent of States
<b>3. Communicating sexual consent or refusal</b>	“Student will demonstrate the ability to use communication skills for dealing with sexual pressure from peers and from one’s girlfriend/boyfriend (pressure to date and/or be sexually active; saying no and communicating limits, etc.)” (Rhode Island Department of Education. Rhode Island Department of Education Comprehensive Health Instructional Outcomes. Providence, RI: Rhode Island Department of Education; 2015)	34%
<b>4. Seeking sexual consent</b>	“Teach students that no form of sexual expression is acceptable when the expression physically or emotionally harms oneself or others and teach students not to make unwanted physical and verbal sexual advances” (Oregon Revised Statute § 336.455) “...consent is an essential component of healthy sexual behavior.” (Oregon Administrative Rule § 581-022-1440)	20%
<b>5. Sexual violence addressed</b>	“The instruction and materials shall: (1) Focus on healthy relationships. (2) Teach students what constitutes sexual assault and sexual abuse, the causes of those behaviors, and risk reduction. (3) Inform students about resources and reporting procedures if they experience sexual assault or sexual abuse. (4) Examine common misconceptions and stereotypes about sexual assault and sexual abuse.” (North Carolina General Statute § 115C-81)	54%
<b>III. Approach to Sexual Identity Diversity</b>		
<b>1. Homosexuality as a lifestyle or preference</b>	“No district shall include in its course of study instruction which: (1) Promotes a homosexual life-style. (2) Portrays homosexuality as a positive alternative life-style.” (Arizona Revised Statute § 15-716)	6%
<b>2. Homosexuality is socially or morally unacceptable</b>	“Course materials and instruction relating to sexual education or sexually transmitted diseases should include ... that homosexuality is not a lifestyle acceptable to the general public” (Texas Health and Safety Code § 163.002)	12%
<b>3. Homosexuality is unhealthy</b>	“AIDS prevention education shall specifically teach students that engaging in homosexual activity, promiscuous sexual activity, and intravenous drug use or contact with contaminated blood products is now known to be primarily responsible for contact with the AIDS virus” (Oklahoma Statute § 70-11-103.3)	10%
<b>4. Homosexuality as criminal</b>	“Course materials and instruction that relate to sexual education or sexually transmitted diseases should include ... that homosexual conduct is a criminal offense under the laws of the state” (Alabama State Code § 16-40A-2)	4%
<b>5. Different forms of sexual intercourse</b>	“‘Sexual intercourse’ means a type of sexual contact or activity involving one of the following: (A) Vaginal sex; (B) Oral sex; or (C) Anal sex.” (Oregon Administrative Rule § 581-022-1440)	4%
<b>6. Inclusive of diverse sexual orientations</b>	“Instruction and materials shall affirmatively recognize that people have different sexual orientations and, when discussing or providing examples of relationships and couples, shall be inclusive of same-sex relationships.” (California Education Code § 51933)	24%
<b>7. Inclusive of diverse gender identities or expressions</b>	“The comprehensive plan of instruction shall include information that ... uses inclusive materials, language, and strategies that recognizes different sexual orientations, gender identities and gender expression.” (Oregon Administrative Rule § 581-022-1440)	14%
<b>8. Separate instruction based on sex or gender</b>	“Instruction in pregnancy prevention education must be presented separately to male and female students.” (South Carolina Code Annotated § 59-32-30)	10%

**Table 2**  
**Sex Education Policy Content Across the 50 States**

	AL	AK	AZ	AR	CA	CO	CT	DE	FL	GA	HI	ID	IL	IN	IA	KS	KY	LA	MA	MD	ME	MI	MN	MS	MO	
Stresses abstinence			✓		✓			✓			✓				✓		✓				✓					
Stresses abstinence until marriage	✓			✓					✓				✓					✓				✓				✓
Covers abstinence						✓													✓							
Abstinence not mentioned		✓					✓					✓														
Includes contraceptive and barrier methods	✓			✓		✓					✓								✓			✓				✓
Multiple methods	✓					✓					✓								✓							✓
Effectiveness of methods	✓																		✓							✓
Pros and cons of methods																			✓							✓
Using methods						✓					✓															
Healthy relationships		✓		✓		✓			✓						✓											
Empowered decision-making		✓				✓					✓				✓				✓							✓
Communicating consent or refusal			✓			✓													✓							✓
Seeking consent			✓			✓													✓							✓
Sexual violence	✓			✓		✓							✓						✓							✓
Homosexuality as a lifestyle	✓																									
Homosexuality as unacceptable	✓		✓																						✓	
Homosexuality as unhealthy			✓																						✓	
Homosexuality as criminal	u																								✓	
Diversity in sexual intercourse						✓																				
Inclusive of diverse sexual orientations						✓									✓											
Inclusive of diverse gender identities						✓									✓											
Separate instruction for boys and girls			✓																							✓

(continued on next page)

Table 2 (continued)

	MT	NE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VT	VA	WA	WV	WI	WY
Stresses abstinence				✓	✓	✓					✓		✓	✓								✓			
Stresses abstinence until marriage		✓					✓	✓	✓	✓					✓		✓	✓	✓					✓	
Covers abstinence	✓											✓								✓			✓		
Abstinence not mentioned			✓													✓									✓
Includes contraceptive and barrier methods	✓			✓	✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		
Multiple methods	✓			✓	✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		
Effectiveness of methods				✓	✓		✓	✓				✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		
Pros and cons of methods												✓	✓	✓	✓										
Using methods												✓	✓	✓	✓										
Healthy relationships					✓	✓		✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓
Empowered decision-making	✓	✓		✓	✓	✓		✓				✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓
Communicating consent or refusal		✓		✓	✓	✓						✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓
Seeking consent				✓	✓							✓	✓	✓	✓										
Sexual violence				✓	✓			✓		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓
Homosexuality as a lifestyle																									
Homosexuality as unacceptable																									
Homosexuality as unhealthy																									
Homosexuality as criminal																									
Diversity in sexual intercourse												✓													
Inclusive of diverse sexual orientations				✓	✓							✓	✓	✓	✓					✓	✓	✓	✓		✓
Inclusive of diverse gender identities				✓	✓							✓	✓	✓	✓										✓
Separate instruction for boys and girls																		✓							u

## DISCUSSION

Almost all US adolescents (97%) receive formal sex education before they reach 18 years of age; however, there is variability in the content of instruction.<sup>36</sup> This variability is due, in part, to differences in sex education policy content across states. This study examined policy content in all 50 states focusing on sexual behaviors, relationships, and identities. The results and their implications will be discussed according to these 3 thematic categories.

### Sexual Behavior

Our results show that about three-fourths of states recommended that abstinence or abstinence-until-marriage be emphasized in the classroom. Most states did not require that contraceptive and barrier methods be taught. This is problematic because a strong body of evidence demonstrates that abstinence-only sex education is ineffective at preventing unwanted pregnancy and the spread of STIs/STDs.<sup>37-42</sup> In addition, policies that emphasize abstinence until marriage are unrealistic because there is a 10-year difference between the median age at first sexual intercourse (17) and median age at first marriage (27).<sup>1,43</sup> Conversely, research on comprehensive sex education programs that cover abstinence as well as contraceptive and barrier methods shows a 31% reduction in STIs/STDs and an 11% decrease in pregnancy rates.<sup>37</sup>

Comprehensive, accurate, and specific information about strategies to prevent pregnancy and STIs/STDs are needed. Among sexually active high school students, at their last sexual intercourse, 43% did not use a condom and 73% did not use birth control pills, an intrauterine device (IUD) or implant, or other hormonal methods (ie, shot, patch, or vaginal ring).<sup>9</sup> Around 60% of adolescents used the withdrawal method to prevent pregnancy at last sexual intercourse and 15% used fertility-awareness,<sup>44</sup> which are among the least effective methods to prevent pregnancy.<sup>45</sup> Another issue is condom use errors and failures, which occur too frequently among youth.<sup>46,47</sup> Condom use errors and problems were significantly higher among youth who had not received instruction on correct condom use.<sup>48</sup> Providing youth with information and skills related to the array of options to prevent pregnancy and STIs/STDs will empower them to make informed decisions if and when they choose

to become sexually active.

The tendency in policy to place a greater emphasis on abstinence than a comprehensive approach to prevent pregnancy and STIs/STDs leaves youth poorly equipped to manage and protect their health. Policies that fail to include information about contraceptive and barrier methods bring into question whether rights to accurate and complete health information are being violated within public schools.<sup>49</sup> This is especially concerning given the serious sexual health issues that are disproportionately affecting adolescents. There are also broad economic costs of adolescent pregnancy and STIs/STDs. In 2010, teen pregnancy and childbirth accounted for at least \$9.4 billion in costs to US taxpayers.<sup>50</sup> The direct medical costs of STIs/STDs in the US in 2008 was even greater at about \$16 billion.<sup>51</sup>

Based on this evidence, we recommend that state policymakers revise current policies to require that comprehensive information related to sexual health behavior be taught to students. Postponing or refraining from sexual activity is an important strategy to prevent adolescent pregnancy and STIs/STDs; however, it should not be the principal focus of school-based sex education. The National Sexuality Education Standards is a comprehensive framework for K-12 sex education curriculum content, which addresses these issues.<sup>52</sup> This framework outlines basic core content for K-12 sexuality education and was developed through a consortium of health education organizations (eg, the American Association for Health Education, American School Health Association, National Education Association Health Information Network, and Society of State Leaders of Health and Physical Education) based on research and professional expertise from 40 sexual health researchers and practitioners from multiple disciplines.

### Sexual Relationships

Most states did not include policy content related to healthy sexual or romantic relationships. Information about healthy relationships is especially important for youth because adolescence is when most people begin to enter romantic and sexual relationships, which have health implications.<sup>53</sup> Nearly three-fourths (73%) of 18-year-olds reported a romantic relationship in the past 18 months.<sup>54</sup>

Important relationship topics identified for youth in the National Sexuality Education Standards include the similarities and differences in friendships and romantic relationships, different ways of expressing affection, effective communication skills about personal boundaries, respecting the boundaries of others, characteristics of healthy and unhealthy relationships, and the potential influence of power differentials in relationships.<sup>52</sup> Research shows that youth want more sexual health education about relationship issues, such as beginning a relationship (28%), developing mature relationships (70%), and dealing with breakups (46%).<sup>55</sup>

Weissbourd et al<sup>55</sup> argue that sex education is too focused on “disaster prevention” regarding adolescent pregnancy and STIs/STDs, and has neglected healthy relationships. They also argue that schools represent the appropriate context to provide this information because many parents struggle with teaching their children about romantic and sexual relationships, and many adolescents might feel uncomfortable and resist talking with parents about these issues. Young people are increasingly learning about sexual and romantic relationships from peers, the Internet, and the media, which may contain incorrect or harmful information.<sup>55</sup>

Unfortunately, sexual violence often occurs in the context of relationships. Youth and adolescence is also a time when dating violence and intimate partner violence arise; however, only about half of state policies required content related to sexual violence, and few states required content related specifically to sexual consent. This is problematic because some adolescents do not understand the numerous actions that constitute sexual violence. Research shows that certain instances of sexual assault can be construed by youth as normal sexual activities, like seduction,<sup>56</sup> and some young men indicated coercing someone to intercourse by holding them down but did not acknowledge such behavior as rape.<sup>57,58</sup> It is likely that many youth lack an understanding of consent and how to talk with partners about sexual consent or refusal. The National Sexuality Education Standards curriculum framework includes healthy relationships and personal safety as 2 of the 7 topic areas.<sup>52</sup> Teaching individuals how to clearly communicate their boundaries and to respect the boundaries of others are important topics that should be included in school-based sex education.

### Approach to Sexual Identity Diversity

Though in the minority, a concerning number of states had policies that explicitly stigmatized homosexuality. Moreover, 5 states indicated that sex education should be separate based on sex or gender, which reinforces a strict gender binary and stigmatizes transgender students. These policies are part of a history of legalized discrimination against LGBT people in the US. For example, at points in US history, 27 states had sodomy laws targeting sexual activity between same-sex couples,<sup>59</sup> and 45 states had statutory or constitutional bans on same-sex marriage.<sup>60</sup> Ultimately, the US Supreme Court struck down sodomy laws in 2003 via *Lawrence v Texas* and bans on same-sex unions in 2015 via *Obergefell v Hodges*. Nonetheless, many states have not repealed or revised their sodomy laws since the *Lawrence v Texas* decision.<sup>59</sup> Recently, state legislation was introduced and enacted to require transgender students to use the bathroom that corresponds to the sex on their birth certificate.<sup>61</sup>

There also may be negative spillover effects of sex education policies that stigmatize LGBT people. For example, a teacher in Arizona may witness students bullying another student for having same-sex parents or perhaps for being perceived to be LGB. The teacher may not intervene because stopping anti-LGB bullying could be interpreted as promoting homosexuality as an acceptable alternative lifestyle, which is prohibited by Arizona law.<sup>62</sup> There is considerable evidence that many LGBT students face hostile school climates, including verbal harassment (85%) and physical assault (16%).<sup>31</sup> Despite high rates of verbal harassment, 42% of LGBT students reported that school personnel did not intervene when anti-LGBT comments were made in their presence. Anti-LGBT sex education policies are one of several elements that contribute to a hostile school climate for LGBT students. Hostility at school can negatively impact psychological and educational outcomes for LGBT adolescents. For example, LGBT students who reported experiencing discriminatory policies or practices in school had lower levels of self-esteem and higher levels of depression than students who did not report experiencing this discrimination.<sup>31</sup> In addition, among LGBT students who indicated that they did not plan to finish high school, the leading reason for not finishing was a hostile or unsupportive school

environment.<sup>31</sup> In conjunction with negative health effects, it has been estimated that each high school student who drops out costs the US economy approximately \$250,000 over the person's lifetime due to lower tax contributions and higher rates of Medicaid and Medicare use, criminality, and reliance on social welfare programs.<sup>63,64</sup>

In contrast to policies that stigmatize LGBT people, a distinct minority of states included statements that sex education should be inclusive of diverse sexual orientations and gender identities/expressions. Only 2 states were inclusive of diverse sexual activities (ie, penile-vaginal, penile-anal, and oral sex). Inclusive policies address concerns that LGBT issues are excluded from and silenced in the sex education curriculum, which relies on a heterocentric or heteronormative perspective.<sup>65-67</sup> When LGBT people and issues are not mentioned at all in the classroom, LGBT youth reported feeling like "freaks" or "aliens,"<sup>67</sup> and in this study, LGBT youth also reported that outside of penile-vaginal intercourse, no other forms of sexual activity were discussed. When asked about themselves and the curriculum, LGBT youth stated: "I didn't feel that a lot of it had to do with me" and "This doesn't apply to us."<sup>67</sup> Requiring content that acknowledges diversity in sexual orientation and gender identity not only may be beneficial for LGBT students who face sexual health disparities and need specific sex education related to the issues they face, but also may benefit heterosexual youth because exposure to information about sexual and gender diversity could counter historical narratives of LGBT people as "undesirable others" and promote a sense of understanding and respect for people despite differences.

The National Sexuality Education Standards curriculum framework is inclusive of sexual diversity because it includes topics such as differentiating between biological sex, gender identity, gender expression, gender roles, and sexual orientation; communicating respectfully with all people, regardless of sexual orientation or gender identity; and accessing accurate information about sexual orientation and gender.<sup>52</sup> These topics can be addressed in developmentally appropriate ways across the K-12 curriculum.

### Limitations

This study has several limitations. First, the study

was descriptive and examined policy content as opposed to the relationship between policy and what students actually learn in school-based sex education. It was beyond the purview of this study to examine what content is actually taught to students in the classroom. Although policymakers are typically considered to be elected and appointed officials, educators also can be considered policymakers because they are responsible for putting policies into practice on a regular basis on the ground level, relatively autonomous from high-level bureaucrats. Another limitation is that this study did not consider federal policy regarding sex education, which has focused on funding abstinence until marriage programs. State policy is undoubtedly influenced by federal policy and funding priorities. A final limitation relates to the ongoing and changing nature of policy; this study presents policy content captured at one point in time.

### Future Research

Researchers should collect data from sexual health educators and students to ascertain what is being taught and learned in classrooms across the country, which can be considered within the context of the sex education policy landscape. Future policy content analyses also are needed given the changing nature of policy over time. Additional topics should also be incorporated into future content analyses, such as investigating whether content about the disadvantages of risky sexual behavior (eg, starting to have sex at an early age, having unprotected sex, not using contraceptive or barrier methods, having multiple sexual partners, changing sexual partners frequently, and using alcohol or drugs before sex) is required to be taught, as well as state policy regarding how students and/or their parents can opt in or out of different sex education programs (eg, abstinence only vs comprehensive sex education). Researchers also might examine if policy content is related to adolescent sexual health behaviors and outcomes. For example, whether students in states with policies that require instruction on how to use contraceptive and barrier methods are more likely to use condoms correctly, and thereby, have lower rates of STIs/STDs and teenage pregnancy. In addition, research also might map the evolution of sex education policy over time and compare patterns of stability and change with adolescent sexual

health outcomes.

Beyond sexual risk prevention, research needs to focus on sexual and romantic relationships, as well as LGBT diversity. Although researchers have examined the effectiveness of sex education on the outcomes of pregnancy and STIs/STDs, little research has examined if sex education that includes information about healthy relationships might lead to more supportive and stable relationships among young couples, as well as lower rates of dating violence and intimate partner violence. Researchers also should investigate potential benefits for LGBT youth of having sex education that is inclusive of sexual orientation and gender diversity. Such education may reduce sexual health disparities and foster a more inclusive school climate.

State policies should be revised to include developmentally appropriate and evidence-based information about the broad set of topics related to sexuality. Adolescent pregnancy and STIs/STDs place undue burdens on young people and entail high financial, social, and health costs. Sex education policy that relies on social, political, and religious ideology in the face of scientific evidence or ideology that stigmatizes certain population groups (eg, LGBT people) is problematic and threatens the health of youth. All youth deserve inclusive and complete information in school-based sex education to promote their health.

### Human Subjects Approval Statement

This study did not require institutional review board approval because we analyzed publicly available policy document data.

### Conflict of Interest Disclosure Statement

All authors of this article declare they have not conflict of interest.

### Acknowledgements

The first author was supported by the National Research Service Award Postdoctoral Traineeship from the National Institute of Mental Health sponsored by Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, and the Department of Psychiatry and Behavioral Sciences, Duke University School of Medicine, Grant Number: T32 MH019117.

### References

1. Kann L, McManus T, Harris WA, et al. Youth Risk Behavior Surveillance – United States, 2017. *MMWR Surveill Summ*. 2018;67:1-114.
2. Copen CE, Chandra A, Febo-Vazquez I. Sexual behavior, sexual attraction, and sexual orientation among adults aged 18-44 in the United States: data from the 2011-2013 National Survey of Family Growth. *Natl Health Stat Report*. 2016;88:1-14.
3. Mosher WD, Jones J, Abma JC. Intended and unintended births in the United States: 1982-2010. *Natl Health Stat Report*. 2012;55:1-28.
4. Kost K, Maddow-Zimet I, Arpaia A. *Pregnancies, Births and Abortions Among Adolescents and Young Women in the United States, 2013: National and State Trends by Age, Race and Ethnicity*. New York, NY: Guttmacher Institute; 2017.
5. Hoffman SD, Maynard RA. Kids Having Kids: *Economic Costs and Social Consequences of Teen Pregnancy*. 2<sup>nd</sup> ed. Washington, DC: Urban Institute Press; 2008.
6. Martin JA, Hamilton BE, Sutton PD, et al. Births: Final data for 2008. *Natl Vital Stat Rep*. 2010;59:1-72.
7. US Centers for Disease Control and Prevention (CDC). *Sexually Transmitted Disease Surveillance 2015*. Atlanta, GA: CDC; 2016.
8. Smith SG, Zhang X, Basile KC, et al. *The National Intimate Partner and Sexual Violence Survey: 2015 Data Brief – Updated Release*. Atlanta, GA: National Center for Injury Prevention and Control, US Centers for Disease Control and Prevention; 2018.
9. Kann L, McManus T, Harris WA, et al. Youth Risk Behavior Surveillance – United States, 2017. *MMWR Surveill Summ*. 2018;67:1-114.
10. Chen LP, Murad MH, Paras ML, et al. Sexual abuse and lifetime diagnosis of psychiatric disorders: systematic review and meta-analysis. *Mayo Clin Proc*. 2010;85:618-629.
11. Tomasula JL, Anderson LM, Littleton HL, Riley-Tillman TC. The association between sexual assault and suicidal activity in a national sample. *Sch Psychol Q*. 2012;27:109-119.
12. Golding JM, Wilsnack SC, Cooper ML. Sexual assault history and social support: six general population studies. *J Trauma Stress*. 2002;15:187-97.
13. Basile KC, Black MC, Simon TR, et al. The association between self-reported lifetime history of forced sexual intercourse and recent health-risk behaviors: findings from the 2003 National Youth Risk Behavior Survey. *J Adolesc Health*. 2006;39(5):752.e1-752.e7.
14. Brener ND, McMahon PM, Warren CW, Douglas KA. Forced sexual intercourse and associated health-risk behaviors among female college students in the United States. *J Consult Clin Psychol*. 1999;67:252-259.
15. Champion HL, Foley KL, Durant RH, et al. Adolescent sexual victimization, use of alcohol and other substances, and other health risk behaviors. *J Adolesc Health*. 2004;35:321-328.
16. Silverman JG, Raj A, Mucci LA, Hathaway JE. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *JAMA*. 2001;286:572-579.

17. Charlton BM, Corliss HL, Missmer SA, et al. Sexual orientation differences in teen pregnancy and hormonal contraceptive use: an examination across 2 generations. *Am J Obstet Gynecol*. 2013;209(3):204.e1-e8.
18. Saewyc EM, Bearinger LH, Blum RW, Resnick MD. Sexual intercourse, abuse and pregnancy among adolescent women: does sexual orientation make a difference? *Fam Plann Perspect*. 1999;31:127-131.
19. Saewyc E, Pettingell S, Skay C. Teen pregnancy among sexual minority youth during the 1990s: countertrends in a population at risk. *J Adolesc Health*. 2004;34:125-126.
20. Saewyc EM, Poon CS, Homma Y, Skay CL. Stigma management? The links between enacted stigma and teen pregnancy trends among gay, lesbian, and bisexual students in British Columbia. *Can J Hum Sex*. 2008;17:123-139.
21. Tornello SL, Riskind RG, Patterson CJ. Sexual orientation and sexual and reproductive health among adolescent young women in the United States. *J Adolesc Health*. 2014;54:160-168.
22. Parkes A, Strange V, Wight D, et al. Comparison of teenagers' early same-sex and heterosexual behavior: UK data from the SHARE and RIPPLE studies. *J Adolesc Health*. 2011;48:27-35.
23. Everett BG. Sexual orientation disparities in sexually transmitted infections: examining the intersection between sexual identity and sexual behavior. *Arch Sex Behav*. 2013;42:225-236.
24. Everett BG, Schnarrs PW, Rosario M, et al. Sexual orientation disparities in sexually transmitted infection risk behaviors and risk determinants among sexually active adolescent males: results from a school-based sample. *Am J Public Health*. 2014;104:1107-1112.
25. Kann L, Olsen EO, McManus T, et al. Sexual identity, sex of sexual contacts, and health-related behaviors among students in grades 9-12 – United States and selected sites, 2015. *MMWR Surveill Summ*. 2016;65(Suppl 9):S1-S202.
26. Reisner SL, Vettes R, White JM, et al. Laboratory-confirmed HIV and sexually transmitted infection seropositivity and risk behavior among sexually active transgender patients at an adolescent and young adult urban community health center. *AIDS Care*. 2015;27:1031-1036.
27. Baral SD, Poteat T, Strömdahl S, et al. Worldwide burden of HIV in transgender women: a systematic review and meta-analysis. *Lancet Infect Dis*. 2013;13:214-222.
28. Herbst JH, Jacobs ED, Finlayson TJ, et al. Estimating HIV prevalence and risk behaviors of transgender persons in the United States: a systematic review. *AIDS Behav*. 2008;12:1-7.
29. Dank M, Lachman P, Zweig JM, Yahner J. Dating violence experiences of lesbian, gay, bisexual, and transgender youth. *J Youth Adolesc*. 2014;43:846-857.
30. Whitton SW, Newcomb ME, Messinger AM, et al. A longitudinal study of IPV victimization among sexual minority youth. *J Interpers Violence*. 2016 May 3. pii: 0886260516646093. [Epub ahead of print]
31. Kosciw JG, Greytak EA, Palmer NA, Boesen MJ. *The 2013 National School Climate Survey: The Experiences of Lesbian, Gay, Bisexual and Transgender Youth in Our Nation's Schools*. New York, NY: GLSEN; 2014.
32. McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Educ Behav*. 1988;15:351-377.
33. Sexuality Information and Education Council of the United States. The SIECUS state profiles: a portrait of sexuality education and abstinence-only-until-marriage programs in the states. Available at: <http://www.siecus.org/>. Accessed June 5, 2016.
34. Schreier M. Qualitative content analysis. In Flick U, ed. *The SAGE Handbook of Qualitative Data Analysis*. London, UK: SAGE Publications; 2014:170-183.
35. Padgett, DK. *Qualitative and Mixed Methods in Public Health*. Thousand Oaks, CA: SAGE; 2012.
36. Martinez G, Abma J, Copen C. *Educating Teenagers About Sex in the United States*. Hyattsville, MD: National Center for Health Statistics; 2010.
37. Chin HB, Sipe TA, Elder R, et al. The effectiveness of group-based comprehensive risk-reduction and abstinence education interventions to prevent or reduce the risk of adolescent pregnancy, human immunodeficiency virus, and sexually transmitted infections: two systematic reviews for the Guide to Community Preventive Services. *Am J Prev Med*. 2012;42:272-294.
38. Kirby DB. The impact of abstinence and comprehensive sex and STD/HIV education programs on adolescent sexual behavior. *Sex Res Social Policy*. 2008;5:18-27.
39. Kohler PK, Manhart LE, Lafferty WE. Abstinence-only and comprehensive sex education and the initiation of sexual activity and teen pregnancy. *J Adolesc Health*. 2008;42:344-351.
40. Ott MA, Santelli JS. Abstinence and abstinence-only education. *Curr Opin Obstet Gynecol*. 2007;19:446-452.
41. Petrova D, Garcia-Retamero R. Effective evidence-based programs for preventing sexually-transmitted infections: a meta-analysis. *Curr HIV Res*. 2015;13:432-438.
42. Underhill K, Operario D, Montgomery P. Abstinence-only programs for HIV infection prevention in high-income countries. *Cochrane Database of Syst Rev*. 2007;4:1-143.
43. US Census Bureau . Median age at first marriage: 1890 to present. Available at: <https://www.census.gov/hhes/families/files/graphics/MS-2sm.jpg>. Accessed June 5, 2016.
44. Martinez GM, Abma JC. *Sexual Activity, Contraceptive Use, and Childbearing of Teenagers Aged 15–19 in the United States*. Hyattsville, MD: National Center for Health Statistics; 2015.
45. Trussell J. Contraceptive failure in the United States. *Contraception*. 2011;83(5):397-404.
46. Graham CA, Crosby RA, Sanders SA, Yarber WL. Assessment of condom use in men and women. *Annu Rev Sex Res*. 2005;16:20-52.
47. Sanders SA, Yarber WL, Kaufman EL, et al. Condom use errors and problems: a global view. *Sex Health*. 2012;9:81-95.
48. Yarber WL, Graham CA, Sanders SA, Crosby RA. Correlates of condom breakage and slippage among university undergraduates. *Int J STD AIDS*. 2004;15:467-472.
49. Santelli J, Ott MA, Lyon M, et al. Abstinence-only education policies and programs: a position paper of the Society for Adolescent Medicine. *J Adolesc Health*. 2006;38:83-87.
50. National Campaign to Prevent Teen and Unplanned Pregnancy. *Counting It Up: The Public Costs of Teen Childbearing*. Washington, DC: National Campaign to Prevent

- Teen and Unplanned Pregnancy; 2013.
51. Owusu-Edusei K, Chesson HW, Gift TL, et al. The estimated direct medical cost of selected sexually transmitted infections in the United States, 2008. *Sex Transm Dis.* 2013;40:197-201.
  52. Future of Sex Education Initiative. *National Sexual Education Standards: Core Content and Skills, K-12.* Washington, DC: Future of Sex Education Initiative; 2012.
  53. Hall WJ, Rounds KA. Adolescent health. In Keefe RH, Jurkowski ET, eds. *Handbook for Public Health Social Work.* New York, NY: Springer; 2013:59-80.
  54. Carver K, Joyner K, Udry JR. National estimates of adolescent romantic relationships. In: Florsheim P, ed. *Adolescent Romantic Relations and Sexual Behavior: Theory, Research, and Practical Implications.* Mahwah, NJ: Lawrence Erlbaum Associates Publishers; 2008:23-56.
  55. Weissbourd R, Peterson A, Weinstein E. Preparing students for romantic relationships: schools could and should do much more to prepare students for romantic love and sex. *Phi Delta Kappan.* 2013;95:54-58.
  56. Littleton HL, Axsom D. Rape and seduction scripts of university students: implications for rape attributions and unacknowledged rape. *Sex Roles.* 2003;49:465-475.
  57. Edwards SR, Bradshaw KA, Hinsz VB. Denying rape but endorsing forceful intercourse: exploring differences among responders. *Violence Gend.* 2014;1:188-193.
  58. Koss MP. Hidden rape: sexual aggression and victimization in a national sample in higher education. In Burgess AM, ed. *Rape and Sexual Assault.* Vol 2. New York, NY: Garland Press; 1998:3-25.
  59. Painter G. The sensibilities of our forefathers: the history of sodomy laws in the United States. Available at: <http://www.glapn.org/sodomylaws/sensibilities/introduction.htm>. Accessed June 5, 2016.
  60. Pew Research Center. Same-sex marriage, state by state. Available at: <http://www.pewforum.org/2015/06/26/same-sex-marriage-state-by-state/>. Accessed June 5, 2016.
  61. Kralik J. "Bathroom bill" legislative tracking. Available at: <http://www.ncsl.org/research/education/-bathroom-bill-legislative-tracking635951130.aspx>. Accessed March 6, 2017.
  62. Rodriguez M. See no evil, hear no evil, speak no evil: stemming the tide of no promo homo laws in American schools. *The Modern American.* 2012;8:29-47.
  63. Levin HM, Belfield CR. Educational interventions to raise high school graduation rates. In Belfield CR, Levin, HM, eds. *The Price We Pay: Economic and Social Consequences of Inadequate Education.* Washington, DC: Brookings Institution Press; 2007:177-199.
  64. Stark P, Noel AM. *Trends in High School Dropout and Completion Rates in the United States: 1972-2012* (NCES 2015-015). Washington, DC: National Center for Education Statistics; 2015.
  65. Elia JP, Eliason M. Discourses of exclusion: sexuality education's silencing of sexual others. *J LGBT Youth.* 2010;7:29-48.
  66. Elia JP, Tokunaga J. Sexuality education: implications for health, equity, and social justice in the United States. *Health Educ.* 2015;115:105-120.
  67. Gowen LK, Wings-Yanez N. Lesbian, gay, bisexual, transgender, queer, and questioning youths' perspectives of inclusive school-based sexuality education. *J Sex Res.* 2014;51:788-800.

Copyright of American Journal of Health Behavior is the property of PNG Publications and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.