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Unwanted pregnancy and sexually transmitted infections (STIs) remain epidemic among American youth, demonstrating a failure to implement effective policies and practices to prevent these poor health outcomes. Teens are at risk during their school-age years. Some young people (10%) are initiating sex as young as sixth grade, and two-thirds are sexually active before they leave high school.[1] Research has demonstrated the effectiveness of school-based sex education on reducing risky sexual behavior that results in unwanted pregnancies and sexually transmitted infections (STIs),[2] yet most sex education policies in the United States fail to support these programs.[3] Texas youth are greatly in need of effective sex education. It is estimated that more than 800,000 teens in Texas are sexually experienced. In Texas, the failure to address adolescent sexual health results in more than 50,000 teen births each year, of which 22% are repeat births.[4] Texas teen births account for 12% of all US births—a concern for the entire nation. The cost of teen births to Texas taxpayers exceeds $162 million annually in direct medical costs and over $1 billion annually in all costs.[5] In addition, STIs among youth cost the US over $6 billion annually.[6]

Hispanic, African-American, and low-income teens are at greater risk for early sexual behavior, teen pregnancy and STIs than white, Asian, and high-income teens.[7,8] In Texas, the birth rate among Latina teens is 97 per 1000, compared to 65 per 1000 among African Americans, 33 per 1000 among whites, and 14 per 1000 among Asians.[9] Over two thirds of teen births in Texas occur among Latina teens,[10] translating into 10% of Latina teens giving birth—more than 30,000 births each year. This rate corresponds to data suggesting that Texas Latino students are two times less likely than white students in Texas to receive the most basic sexual health information on HIV and AIDS.[1,10] One-fourth of Latino high school students living in Texas reported never learning about HIV in school compared to 11% of white students and 11% of black students.[10]

The debate over sex education policy has centered on the type of message that sex education delivers to students: promotion of abstinence until marriage with no information on contraceptives (abstinence-only) or abstinence as the safest choice with information on contraceptive use (abstinence-plus).[11] Carefully designed abstinence-plus curricula have been shown to impact risky sexual behavior and to delay the initiation of sexual activity, while only a few abstinence-only curricula have demonstrated behavioral impacts.[12]

Texas has taken more federal abstinence-only funding than any other state, which has resulted in the vast majority (96%) of Texas school districts implementing abstinence-only sex education with no evidence of

effectiveness, and 41% of school districts in Texas using sexual health education materials that contain factual errors about condoms and STIs.[13] Moreover, Texas recently decided not to apply for a federal teen pregnancy prevention grant worth $4.4 million,[14] instead applying for $5.4 million in abstinence-only money.[15,16]

Previous peer-reviewed published national and statewide surveys of parents and the general public[17-22] demonstrate widespread support for abstinence-plus sex education. However, little research has been published on parental attitudes in Texas. It is particularly important to assess parental opinions of sex education among Latino and African-American parents whose children are at the highest risk of teen pregnancy. The University of Texas Prevention Research Center (UTPRC) has been developing tools to overcome perceived barriers in implementing effective sex education programming in schools in Harris County, Texas. Harris County is the third most populous county in the United States and home to Houston, the fourth largest city in the US. As part of our efforts to understand the state of sex education in Harris County, we conducted a survey of 1,201 parents of school-aged children to assess their views on sex education programming in schools. The purpose of this study is to examine whether parents are in favor of teaching sex education in schools, in what grades parents think sex education should be taught, the content (abstinence plus contraception or abstinence-only) parents want taught in schools, and who should be making decisions regarding teaching sex education. We further examine whether the opinions of parents differ by sociodemographic factors and if parents whose children are at highest risk (Hispanic, African American, and low income) are less likely to support sex education than parents whose children are at less risk.

METHODS

SAMPLING DESIGN

The UTPRC commissioned Zogby International to conduct a telephone survey of parents of children 18 years of age and under in Harris County, Texas. The target sample was 1,200 interviews. Samples were randomly drawn from purchased lists of parents in Harris County, Texas. Zogby employed a sampling strategy in which selection probabilities are proportional to population size within area codes and exchanges. As many as six calls were made to reach a sampled phone number. Cooperation rates were calculated using a methodology approved by the American Association for Public Opinion Research[23(p46, COOP4)] and are comparable

to other professional public-opinion surveys conducted using similar sampling strategies.[24] Weighting by education and gender was used to adjust for non-response. The margin of error is +/- 2.8 percentage points.

TARGET POPULATION

Harris County, the target population for this study, is the most populous county in Texas and the third most populous in the US, with an estimated 4.1 million residents covering 1,729 square miles.[25,26] Harris County represents one of the most diverse and disadvantaged counties in the nation: 38% of residents are Hispanic, 20% are African-American, one-third of adults speak a language other than English, and over 23% of Harris County children live in poverty. Texas has the highest percentage (25%) of uninsured residents in the United States, and Harris County has even higher proportions than Texas with more than one million of the county's population (30%) uninsured. According to demographers, the make-up of Harris County is representative of what the nation will look like in 2040 (Stephen L. Klineberg, PhD, written communication, May, 2010),and therefore makes an excellent target population for studying the attitudes of parents towards adolescent sexual health and teen pregnancy.

There are 22 public school districts in Harris County with one of them the 7th largest school district in the nation. Within these districts, there are 187 middle schools and 110 high schools with approximately 178,000 and 208,000 students, respectively.

MEASURES

Study investigators developed the telephone survey after a systematic review of previous national and state surveys of parents[17-22] and with input from parents through a parent advisory group. The survey consisted of 26 questions, 16 assessing demographic characteristics and 10 asking opinions on sexual health education. For the purposes of the current study, the analyses will focus on five of the 10 sex education questions.

Demographic characteristics assessed included age, race/ethnicity, gender, marital status, religious affiliation, political affiliation, and income. Race/ethnicity was categorized as white, black, Hispanic, Asian, and other. Age was categorized as 18 to 29, 30 to 39, 40 to 49, or 50 plus. Marital status was categorized as married or civil union; single, never married; divorced, widowed, or separated; or other. Education was dichotomized as no college degree or college degree. Religion was categorized as Protestant, Catholic, or other. Attendance of religious services was categorized as more than once a week, about once a week, once or twice a month, only on religious holidays, rarely, or never.

Participants were asked if they were registered to vote and if they were likely to vote. Voter registration was dichotomized as registered to vote and all others. Likelihood of voting was categorized as very likely to vote, somewhat likely to vote, and all others. Political affiliation was coded as Democrat, Republican, Independent, other, or not sure. Household income in the previous year was categorized as less than $25,000, $25,000-$49,999, $50,000-$74,999, $75,000-$99,999, and $100,000 or more.

Table 1 presents five items asking for parents' opinions about sex education. To examine when sex education should begin, Question 1 asked at what grade level age-appropriate sexual health education should begin in schools. Responses were coded for analysis as (1) high school (response C), (2) elementary or middle school (responses A and B), or (3) none (responses D). For all questions regarding sex education, responses of "not sure" (response E) were dropped from the analyses.[1]

To examine the type of sex education that parents think should be offered, Question 2 asked parents about their views on teaching sexual health education in schools. This question was coded for analysis as (1) abstinence-only (response A); (2) abstinence-plus, which emphasizes abstinence but includes information about condoms and contraceptives (response B); or (3) not taught at all (response C).

To assess if parents thought information on contraception and condoms should be taught, Question 3 asked at what grade level sexual health education should provide students with medically accurate information on condoms and contraception. Responses for analysis were coded as high school (response C), middle school or earlier (responses A, B, and D), or none (response E).

Question 4 asked parents to choose the top three groups that should decide how sexual health education is taught in public schools. Response options included politicians, religious leaders, school administrators, teachers, students, parents, and public health professionals.

Question 5 asked parents their opinion about whether schools should be doing more to help prevent teen pregnancy and sexually transmitted infections among students with responses on a 5-point Likert scale from strongly agree to strongly disagree. For analysis, responses were categorized as agreement (i.e., strongly agree and agree) compared with all other responses.

[1] "Not sure" comprised less than 1% of the responses for each sex education question.

Table 1.
Parent Poll Questions on Sexual Health Education

Question	Responses
1. At what grade level should age-appropriate sexual health education begin in schools?	A. Elementary school (ages 6–10) B. Middle school (ages 11–13) C. High school (ages 14–17) D. None of the above E. Not sure
2. Which of the following most closely matches your view on sexual health education in public schools?	A. It should only teach young people to wait to have sex until marriage B. It should teach young people to wait to have sex but also provide them with medically accurate information on condoms and contraception C. It should not be taught in schools at all D. Not sure
3. In addition to teaching students to abstain from sex, at grade level should sexual health education provide students with medically accurate information on condoms and contraception? (Choose all that apply.)	A. Elementary school (ages 6–10) B. Middle school (ages 11–13) C. High school (ages 14–17) D. All E. None of the above F. Not sure
4. Out of the following groups, choose the top 3 that should decide how sexual health education is taught in public schools.	A. Politicians B. Religious leaders C. School administrators D. Teachers E. Students F. Parents G. Public health professionals
5. How much do you agree or disagree with the following statements about sex education in public schools: Schools should be doing more to help	A. Strongly agree B. Agree C. Disagree D. Strongly disagree

prevent teen pregnancy and sexually transmitted infections among students.	E. Not sure F. Declined to answer

DATA COLLECTION

Interviews were conducted at Zogby International by professional interviewers trained on a computer-assisted telephone interviewing (CATI) system. Data were collected from July to August, 2010. Verbal consent to participate was obtained prior to the interview. The Institutional Review Board at the University of Texas Health Science Center at Houston approved the study protocol. The average length of time to complete the survey was 9 minutes.

Of calls dialed, 1,615 resulted in contacts with an eligible household. Households were considered eligible if they had at least one child under the age of 18 years and if a parent was able to complete the survey in English or Spanish. Of the 1,615 eligible contacts, 236 (15%) declined to participate and 178 (11%) agreed to participate but terminated the survey. The resulting participation rate was 74% resulting in the 1,201 parents surveyed.

DATA ANALYSIS

We used bivariate and multinomial logistic regressions to examine differences in opinions regarding sex education across demographic and personal characteristics. Analysis was conducted using STATA SE version 11.1. Reported frequencies and crosstabs are weighted using the appropriate demographic profile to provide a sample that best represents the targeted population from which the sample is drawn.

RESULTS

CHARACTERISTICS OF THE SAMPLE

Table 2 presents demographic information for the parents who completed the survey. The sample consisted of 41% white, 33% Hispanic, 18% African-American, and 8% Asian and other ethnicities. Eight percent of the parents answered the survey in Spanish. Almost half (48%) of the sample was male, and the majority (83%) were married. The majority of the sample was between 30 and 49 years old. Two-thirds of parents had less than a college degree. Most (81%) parents were registered to vote, and two-thirds said they were very likely to vote. Parents were almost evenly divided in political affiliation: 27% Democrat, 30% Republican, and 27%

Independent or another party. Over one-third (33%) were Catholic, 55% were Protestant, and 11% were another or no affiliation. The majority of parents reported attending religious services more than once a week (21%) or about once a week (33%). One third of participants reported a household income below $50,000 per year and almost one-third reported a household income as being $100,000 or more.

Table 2.
Demographics of Parent Sample Answering the Survey

	Unweighted		Weighted[a]	
Characteristic	Frequency	%[b]	Estimated frequency	%[b]
Total	1201	100	1201	100
Race/Ethnicity				
White	607	56	485	41
Hispanic	309	26	391	33
African American	102	9	213	18
Asian/Pacific/Other/Mixed	105	9	94	8
Gender				
Male	294	25	578	48
Female	904	76	620	52
Age				
18-29	84	7	120	10
30-39	378	32	328	27
40-49	481	40	473	39
50+	249	21	280	23
Education				
No college degree	457	38	719	60
College degree+	742	62	480	40
Marital Status				
Married/Civil union			1009	84
Single, never married	58	5	77	6
Divorced/Widowed/ Separated	83	7	112	9
Voter Registration				
Registered to vote	181	15	977	81
Not registered to vote/Not sure			224	19
Likelihood of Voting				
Very likely to vote	865	72	795	66
Somewhat likely to vote	163	14	182	15

Not likely to vote/Not sure			223	19
Political Party Affiliation				
Democrat	269	22	321	27
Republican	458	38	365	30
Independent/Minor party	304	25	320	27
Not sure	170	14	195	16
Religious Affiliation				
Catholic	373	31	398	33
Protestant	672	56	659	55
Other	145	12	134	11
Attends religious services				
More than once a week	237	20	252	21
About once a week	432	36	399	33
Once or twice a month	264	22	300	25
Only on religious holidays	91	8	77	6
Rarely/Never	168	14	166	14
Income				
Less than $25,000	85	8	114	10
$25,000-$49,999			268	22
$50,000-$74,999	146	14	153	13
$75,000-$99,999	173	17	186	16
$100,000 or more	430	42	334	28
Language of interview				
English	1095	92	1064	89
Spanish	100	8	137	11

[a] Frequencies weighted by proportion of the population.
[b] May not add up to 100% because of rounding or missing data.

SUPPORT FOR SEX EDUCATION

When asked when sex education should begin, the overwhelming majority (80%) of parents responded that sex education should begin in middle school or earlier, and another 13% believed sex education should begin in high school, resulting in 93% of parents in support of school-based sex education (Table 3). Only 7% indicated that sex education should not be taught in school. Differences in opinions about when sex education should begin were observed by gender, race/ethnicity, and political party. No significant differences were observed by age, marital status, religious affiliation, religious service attendance, income, and whether they were a registered voter. Hispanic parents demonstrated the highest support of teaching sex education in middle school, followed by white, African-American, and Asian parents. While not statistically significant, parents

reporting the lowest income level and parents reporting the highest income level were more likely to support sex education than other income groups. Significant differences in support of sex education were found between parents who took the survey in English compared to those who took the survey in Spanish: 78% of those taking the survey in English said they support sex education beginning at middle school or earlier compared to 93% of those taking the survey in Spanish.

Table 3.
Percentage of Parents Responding to When They Think Sex Education Should Begin (N = 1,201)

Sample characteristic	Starting middle school or earlier (%)	Starting high school (%)	None (%)
Total	78	13	7
Race/Ethnicity**			
White	79	14	7
Hispanic	86	9	4
African American	76	11	13
Asian/Pacific/Other/Mixed	61	28	11
Gender			
Male****	72	18	10
Female	87	8	5
Age			
18-29	90	7	4
30-39	83	10	7
40-49	74	17	9
50+	80	13	7
Education			
No college degree	80	13	7
College degree+	79	13	8
Marital Status			
Married/Civil union	79	14	7
Single, never married	90	6	4
Divorced/Widowed/Separated	75	12	13
Voter Registration			
Registered to vote	79	13	8
Not registered to vote/Not sure	83	13	3
Likelihood of Voting			

Very likely to vote	77	15	9
Somewhat likely to vote	87	10	3
Not likely to vote/Not sure	84	10	6
Political Party Affiliation*			
Democrat	88	10	2
Republican	76	15	9
Independent/Minor party	76	13	11
Not sure	77	15	8
Religious Affiliation			
Catholic	81	14	6
Protestant	80	12	8
Other	77	14	9
Attends religious services			
More than once a week	77	13	10
About once a week	78	15	7
Once or twice a month	79	12	8
Only on religious holidays	82	13	4
Rarely or never	87	8	4
Income			
Less than $25,000	90	8	2
$25,000-$49,999	83	11	6
$50,000-$74,999	78	13	9
$75,000-$99,999	73	21	6
$100,000 or more	81	12	7
Language*			
English	78	14	8
Spanish	93	5	2

* $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$

Table 4 shows the type of sex education that parents thought should be offered. Two-thirds of parents responded that sex education should include information about both abstinence and condoms and contraception. Almost one-third (27%) responded that sex education should include information on abstinence-only, and 8% of parents responded that sex education should not be taught at all. While the majority of all parents thought that contraception and condoms should be included as part of sex education, parents who were male, African-American, Asian, or other ethnicities; married; attended church more than once a week; and Protestant were slightly less likely to support a curriculum that taught condoms and contraception than other groups. Parents reporting the lowest income and parents reporting the highest

income had higher support for an abstinence-plus contraception message than parents from other income groups. Parents who took the survey in Spanish were also more likely to support teaching an abstinence-plus contraception message than those who took the survey in English.

Table 4.
Percentage of Parents Responding to the Type of Sex Education They Want Taught in Schools (N = 1,201)

Sample characteristic	Abstinence plus teaching condoms/ contraception (%)	Abstinence -only (%)	None (%)
Total	66	27	8
Race/Ethnicity**			
White	70	22	8
Hispanic	68	26	6
African American	60	34	6
Asian/Pacific/ Other/Mixed	47	36	17
Gender*			
Male	61	31	9
Female	71	23	7
Age			
18-29	72	23	5
30-39	68	24	8
40-49	62	31	8
50+	70	22	8
Education			
No college degree	66	28	6
College degree+	66	23	10
Marital Status***			
Married/Civil union	62	30	8
Single, never married	87	6	7
Divorced/Widowed/Separated	84	14	2
Voter Registration			
Registered to vote	66	26	8
Not registered to vote/Not sure	66	27	6
Likelihood of Voting			
Very likely to vote	65	26	9
Somewhat likely to vote	71	24	5

Not likely to vote/Not sure	67	30	4
Political Party Affiliation*			
Democrat	70	26	4
Republican	65	25	10
Independent/Minor party	61	30	9
Not sure	69	24	6
Religious Affiliation*			
Catholic	74	18	8
Protestant	62	31	7
Other	63	26	10
Attends religious services****			
More than once a week	42	48	10
About once a week	67	26	8
Once or twice a month	70	22	8
Only on religious holidays	79	18	4
Rarely or never	86	10	4
Income**			
Less than $25,000	78	20	2
$25,000-$49,999	62	33	5
$50,000-$74,999	55	33	12
$75,000-$99,999	66	29	5
$100,000 or more	72	18	10
Language*			
English	65	27	8
Spanish	78	20	3

* $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$

Table 5 presents the proportion of parents indicating the grade level at which sexual health education should provide students with medically accurate information on condoms and contraception. Two-thirds of parents indicated that in addition to abstinence, medically accurate information regarding condoms and contraception should be presented at the middle school level or earlier. A small percentage (8%) of parents thought this information should not be taught at all. Hispanic and African American parents were more likely than white or Asian parents to indicate that medically accurate information on condoms and contraception should begin at the middle school level. A higher proportion (84%) of parents from low income groups thought that information on condoms and contraception should be taught in middle school or earlier. Across all demographic groups, few parents reported that teens should receive no information on condoms and contraception. Significantly more parents

who took the survey in Spanish thought that information on contraception and condoms should be provided at middle school or earlier than parents who took the survey in English. Significant differences were also observed by age, education, marital status, and party affiliation.

Table 5.
Percentage of Parents Responding to What Grade Level They Think Students Should Be Taught Medically Accurate Information on Condoms and Contraception (N = 1,201)

Sample characteristic	Starting middle school or earlier (%)	Starting high school (%)	None (%)
Total	64	28	8
Race/Ethnicity**			
White	56	34	10
Hispanic	74	23	4
African American	72	21	7
Asian/Pacific/Other/Mixed	44	38	17
Gender*			
Male	59	33	8
Female	69	24	8
Age			
18-29	79	20	1
30-39	68	22	10
40-49	59	32	9
50+	61	31	8
Education			
No college degree	68	26	6
College degree+	58	32	10
Marital Status***			
Married/Civil union	62	29	9
Single, never married	87	9	4
Divorced/Widowed/Separated	67	31	2
Voter Registration			
Registered to vote	62	30	8
Not registered to vote/Not sure	72	23	6
Likelihood of Voting			
Very likely to vote	60	31	9
Somewhat likely to vote	72	24	4
Not likely to vote/Not sure	72	22	6

Political Party Affiliation*			
Democrat	74	23	3
Republican	54	34	13
Independent/Minor party	61	31	8
Not sure	70	22	8
Religious Affiliation*			
Catholic	65	28	7
Protestant	63	28	9
Other	64	29	7
Attends religious services****			
More than once a week	61	27	11
About once a week	58	32	10
Once or twice a month	65	30	6
Only on religious holidays	75	22	3
Rarely or never	74	21	5
Income**			
Less than $25,000	84	1	15
$25,000-$49,999	72	3	25
$50,000-$74,999	59	11	30
$75,000-$99,999	53	8	39
$100,000 or more	62	9	29
Language*			
English	61	30	9
Spanish	84	15	1

* $p < .05$; ** $p < .01$; *** $p < .001$; **** $p < .0001$

Most (75%) parents thought that schools should be doing more to help prevent teen pregnancy and STIs. While the majority of parents, regardless of their demographic characteristics, said that schools should be doing more, parents were slightly less likely to endorse this idea if they were Republican, a registered voter, married, and had a high income.

When parents were asked to pick the top three groups that should decide how sexual health education is taught in public schools, 3% of participants said politicians, 10% said students, 22% said religious leaders, 28% said school administrators, 52% said teachers, 63% said health professionals, and 84% said parents.

DISCUSSION

Parents of children in Harris County, Texas overwhelmingly support sexual health education in schools, and most feel it should start by middle

school. The majority of parents support an abstinence message that includes medically accurate instruction on condoms and contraception. Few parents indicated that sex education should not be taught in schools. Hispanic parents, low-income parents, and parents who took the survey in Spanish had the greatest support for teaching sexual health education in school, beginning in middle school or earlier, and indicated the curriculum should include medically accurate information on condoms and contraception. We observed small differences in the magnitude of support among parents of different genders, race/ethnicities, and political parties. No significant differences were observed by age, marital status, religious affiliation, frequency of religious service attendance, income, and whether they were a registered voter. Interestingly, parents of high risk students, Hispanic, low income parents, and parents who took the survey in Spanish voiced strong support for teaching sex education beginning in middle school and for curricula to cover medically accurate information on condoms and contraception. These parents may be more aware of the risks and realities facing teens than parents with higher income levels or from racial/ethnic groups that are not as impacted by teen pregnancy or STIs. It is also possible that parents from higher income groups feel more prepared or have more resources to address sex education at home.

Our results are consistent with other polls conducted in North Carolina, Minnesota, and a national poll conducted by Kaiser Family Foundation,[17,20-22] all of which demonstrated overwhelming support for teaching sexual health education in schools, with the majority of parents supporting a comprehensive approach. Interestingly, results from a recent statewide poll of Texas voters reported that 80% of voters were in favor of teaching about contraception such as condoms and other birth control along with abstinence in high school sex education classes.[27] Our survey brought attention to sex education in middle school and found that 69% of parents are in support of teaching students about contraception and condoms in middle school or earlier.

Both the American Academy of Pediatrics and the Society of Adolescent Medicine have indicated their support of comprehensive sex education programs.[28,29] However, these professional opinions and the opinions of parents are in direct contrast to what is happening in the State of Texas, where state leaders are turning away funding that supports effective sex education programs in our schools.

States vary widely in their sex education policies; however, California has the same demographic profile as Texas and has a teen birth rate much lower than Texas: 39 per 1000 teen births in California

compared to 63 per 1000 teen births in Texas.[30] California has a sex education policy that requires curricula to be medically accurate and to cover contraception and condoms whereas Texas requires neither.[3]

Certain limitations must be taken into consideration when interpreting these results. This study is a telephone survey limited to Spanish- and English-speaking parents with a phone in Harris County, which may present some selection bias. Harris County may not generalize to all of Texas or the rest of the US. However, views expressed by our participants are consistent with the recent statewide poll of Texas voters and also with surveys conducted in other states.

Given that students are becoming sexually active at early ages and that Texas has one of the highest teen birth rates in the nation, Texas sex education policies should change to reflect parental attitudes and good public health practice. Medically accurate, evidence-based sex education should start in middle school and continue throughout high school. It should include information about condoms and contraception.

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