

## An exploratory study of selected sexual knowledge and attitudes of Indiana adults

By: Christina A. Clark, Kathleen L. Baldwin, and [Amanda E. Tanner](#)

Christina A. Clark, Kathleen L. Baldwin & Amanda E. Tanner (2007) An Exploratory Study of Selected Sexual Knowledge and Attitudes of Indiana Adults, *American Journal of Sexuality Education*, 2 (3), 39-58, DOI: 10.1300/J455v02n03\_04

Made available courtesy of Taylor & Francis: [https://doi.org/10.1300/J455v02n03\\_04](https://doi.org/10.1300/J455v02n03_04)

This is an Accepted Manuscript of an article published by Taylor & Francis in *American Journal of Sexuality Education* on 11 October 2007, available online:  
[http://www.tandfonline.com/10.1300/J455v02n03\\_04](http://www.tandfonline.com/10.1300/J455v02n03_04)

\*\*\*© The Haworth Press. Reprinted with permission. No further reproduction is authorized without written permission from Taylor & Francis. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document. \*\*\*

### **Abstract:**

Although there are numerous ways to obtain accurate information about sexuality, research suggests that many American adults do not have accurate sexuality and sexual health knowledge. This research investigated selected sexual knowledge and attitudes of adults in Indiana. A representative sample of men (n = 158) and women (n = 340) aged 18 to 89 was surveyed via telephone interviews regarding sexuality-related topics. The level of sexual knowledge was determined from 14 content based questions, for example questions about sexually transmitted infections, gender, sexual orientation, and other reproductive health topics. Additionally, Indiana adults were surveyed about their beliefs regarding certain sources of influence over young peoples' sexual values. Key findings of the research indicate that adults in Indiana do not have accurate information about sexuality and seem to have wide-spread sexuality-related misperceptions and misinformation. This lack of sexual knowledge or misinformation may negatively impact the sexual health of Indiana adults and, by extension, their children. Additional findings and implications for educators, health professionals, and policymakers are discussed.

**Keywords:** attitudes | Family communication | Indiana | school based sexuality education | sex | sexuality sex education

### **Article:**

## **INTRODUCTION**

There are thousands of sexuality-related media messages available via magazines, books, newspapers, network television, cable/satellite television, and, of course, the Internet (Kunkel, Biely, Cope-Farrar, Fandrich, Eyal, & Donnerstein, 2003; American Academy of Pediatrics, 2001). However, mere exposure to sexuality-related information does not necessarily translate

into accurate sexual knowledge and healthy sexual attitudes. This point was underscored by a study conducted by The Kinsey Institute for Research in Sex, Gender, and Reproduction in conjunction with The Roper Organization nearly 15 years ago that assessed Americans' "sexual literacy" (Reinisch & Beasley, 1990). This study asked a statistically representative sample of Americans ( $n = 1,974$ ) a series of eighteen questions designed to assess "basic sexual knowledge." Questions seemed to pertain to three general topic areas grouped together and named by the current authors: estimating sexual behavior norms, sexual and reproductive health, and beliefs about commonly held social perceptions about sexuality. The items were as follows:

(1) Estimating sexual behavior norms

- average age of first intercourse,
- percentage of extramarital affairs by men,
- percentage of women who engage in anal intercourse,
- percentage of men who have had a sexual experience with another man,
- percentage of women who engage in masturbation,

(2) Sexual and reproductive health

- transmissibility of HIV to uninfected partners,
- ability of spermicide to kill HIV,
- possibility of becoming pregnant using the withdrawal method,
- appropriateness of gynecological and breast /testicular exams,
- the etiology and treatment of erection problems,
- whether or not menopause causes diminished sex drive,
- appropriateness of using lotions as condom lubricants,

(3) Social perceptions of sexuality

- average length of an erect penis,
- women's perceived preference for partners with longer penises, and
- the ability to determine sexual orientation based on appearance.

Based on responses received on the 18-item survey, it was determined that the majority of Americans "failed the basic sexual knowledge test" by answering nine or more items incorrectly:

- 55% got "F's,"
- 27% got "D's,"
- 14% got "C's,"
- 4% got "B's," and less than
- 1% got "A's" (Reinisch & Beasley, 1990).

Although the aforementioned study was clearly a valuable addition to the research on the level and quality of adults' sexuality-related knowledge in the United States, the ability to understand Americans' actual sexual health knowledge is somewhat limited due to the emphasis on peoples' perceptions of general sexual behaviors and basic facts rather than awareness of functional knowledge about sexuality and sexual health issues. More recent surveys have looked at specific

components of sexual health knowledge, and possible implications for individuals' sexual health and well-being, albeit in a somewhat limited manner.

For example, in a 1996 nationwide survey of adults aged 18 to 64, approximately one in five respondents believed that "all sexually transmitted infections are curable" (Henry J. Kaiser Family Foundation & Harvard School of Public Health, 1996). A nationwide 1997 survey concerning reproductive health issues found that many women ages 18 to 44 were not clear about the relationship between female reproduction and certain factors that might or might not impact a woman's ability to become pregnant, such as having had an abortion previously, history of having a sexually transmitted infection, and being of advanced maternal age (Henry J. Kaiser Family Foundation & Harvard School of Public Health, 1997).

In that study, 66% of women believed that long-term use of birth control pills negatively impacted a woman's ability to get pregnant, 51% believed that having had an abortion (type and timing of abortion unspecified) negatively impacted a woman's ability to get pregnant, and 71% of the same women believed that having had a sexually transmitted infection in the past negatively affected a woman's ability to get pregnant. More recently, a 2002 nationwide survey of adults about HIV/AIDS transmission found that roughly 40% of respondents believed that the majority of HIV/AIDS cases worldwide are contracted by women and young people via heterosexual contact. Within the same study, an equal proportion believed that the majority of HIV/AIDS cases worldwide are attributable to gay men and intravenous drug users (Henry J. Kaiser Family Foundation & Harvard School of Public Health, 2002).

These more recent surveys seem to confirm what Reinisch and Beasley (1990) noted 15 years ago: Most American adults do not seem to have comprehensive knowledge about sexuality and sexual health issues. Despite the former Surgeon General, Dr. Satcher's, (2001) call to action to promote sexual health and responsible sexual behavior via education and communication about human sexuality in the home, schools, and religious, health care, and community based settings, it is not known whether or not this call to action has actually translated into increased levels of accurate sexual health knowledge among adults. The current research sought to investigate the issue of the level of sexuality and sexual health knowledge among American adults, specifically Indiana residents.

The purpose of this study was to assess individuals' level of knowledge about sexual health issues and other basic concepts that relate to sexuality more broadly. Research focuses specifically on sexual knowledge among adults has not previously been conducted in Indiana. A survey instrument was created to assess individuals' knowledge and attitudes about a variety of topics such as disease transmissibility, reproduction and viability of sex cells, sex hormones and their action in the body, sexually transmitted infections and possible consequences of an infection, gender roles, and sexual orientation, in attempt to gather as much information about a broader range of sexuality-related knowledge.

## **METHOD**

### ***Participants***

Participants were 518 Indiana residents ages 18 to 89. There were 340 female and 158 male ( $n = 498$ ) respondents. An additional 20 respondents' gender could not be clearly identified by voice. The sample was ethnically representative of the state of Indiana with the majority (83%) of respondents identifying as Caucasian (see Table 1). The sample was also geographically representative of Indiana. Twenty-one percent identified as living in a large city/metropolitan area, 30% identified as being from a medium-sized city, 31% identified as being from a small town, and 18% identified as being from a rural area.

**Table 1. Highest Level of Education Completed**

Level of Educational Attainment	Percentage
Professional/Graduate degree	8
4-year college graduate	19
Associates/Technical degree	5
Some college	22
High school diploma/GED	35
Did not complete high school	11
Total percentage that had at least a high school diploma/GED	89
Total percentage that had at least some college experience	54
Total percentage that had at least a 4-year degree	27

More than half (54%) of all respondents had some vocational/technical college or 4-year university experience (see Table 2). The household income of respondents was normally distributed. The median income fell between \$40,000 and \$50,000 per year. Twenty-five percent of respondents had an annual household income above \$60,000 per year. Two percent reported an annual household income below \$10,000 per year.

**Table 2. PPIN\* Survey Data Comparison with U.S. Census Bureau Data for Indiana**

	PPIN Survey (%)	2000 Census (%)
Ethnicity		
African-American/Black	9.0	8.4
American Indian/Alaskan Native	1.0	0.3
Asian/Pacific Islander	1.0	1.0
Biracial	2.0	1.2
Caucasian/White	83.0	87.5
Hispanic/Latino	1.0	3.5
Level of Education		
Less than a High School Diploma	11.2**	
Diploma or Higher	88.7**	82.1***
B.A. Degree or Higher	26.7**	19.4***
Higher Income****		
Median Income	\$40,000-\$50,000	\$41,467

\*PPIN–Planned Parenthood of Indiana.

\*\*18+ years old.

\*\*\*25+ years old.

\*\*\*\*\$0-\$10,000.

The sample was representative of the state of Indiana politically. Twenty-nine percent of respondents identified as “Republican,” 24% identified as “Democrat,” and 9% identified as “Independent.” (See Table 3 for additional demographic data and 2000 U.S. Census data which provide a comparison for the representativeness of the current sample.) The remainder either identified with a non-majority party or declined to provide an answer. In addition, eighty-five

percent of respondents indicated that they were “Very” or “Somewhat” religious and 64% percent indicated that they “Always” or “Frequently” use their religious beliefs to help them make decisions in their lives.

**Table 3. PPIN Survey Data–PPIN Respondents Only**

<b>Age</b>	<b>Range</b>	<b>Average</b>		
Total Sample	18-89	45.79		
Men	18-85	42.66		
Women	18-89	46.99		
<b>Political Affiliation*</b>	<b>Total (%)</b>	<b>Men (%)</b>	<b>Women (%)</b>	
Democrat	24	25	29	
Republican	29	34	32	
Independent	9	13	10	
No Party Affiliation	20	23	22	
Other	1	3	2	
No Response	17			

\*Percentages have been rounded to nearest whole number.

The majority (82%) reported being parents and said that their children were in the following grades: (1) 17% currently in kindergarten or younger, (2) 13% in elementary school grades, (3) 11% in middle school grades, (4) 11% in high school grades, and (5) 7% in college. Forty-one percent of the parents had adult children (22+ years old). The majority of parents (65%) reported that their children attend(ed) public schools.

### ***Procedure***

Planned Parenthood of Indiana initially contacted the Social Science Research Center (SSRC) at Ball State University in February 2003 to solicit their assistance in conducting a statewide telephone survey of Indiana residents. Interviewers were hired and trained by the Social Science Research Center, and a survey instrument was developed by a Planned Parenthood staff member in conjunction with research staff at the Social Science Research Center. The Institutional Review Board (IRB) at Ball State University approved the survey instrument and research protocol.

In March 2003, the Social Science Research Center purchased 3,506 randomly generated telephone numbers from Marketing Systems Group (Genesys Sampling Systems from Fort Washington, Pennsylvania). Using the 3,506 phone numbers, a total of 5,751 telephone calls were made including call-backs to busy numbers, answering machines, and respondent instructions to try again later. There were a total of 547 unusable numbers (i.e., disconnected service, business/government numbers, computer tones) bringing the total of available numbers to 2,959. Using the dispositions of “Initial Refusal” and “Blocked Call,” a total of 830 potential participants were unwilling to participate. This translates to a refusal rate of 28.1%.

Beginning in mid-April 2003, respondents were contacted via random-digit telephone number dialing by one of 15 interviewers (13 females and 2 males, between the ages of 18 and 30). Staff from the Social Science Research Center supervised the interviewers to ensure compliance with the protocol and to maintain quality control. None of the interviewers were terminated due to

inability to follow protocol and none removed themselves due to discomfort with the subject material.

All data were directly managed using Win Query's Computer-Aided Telephone Interviewing software that allowed for the automation and recording of all responses. Data were then transferred into SPSS for Windows format for statistical analyses.

### ***Materials***

Respondents were asked a series of demographic questions to assess age, ethnicity, size of home city, household income, highest level of education completed, grade level of any children the respondent may have, choice of school enrollment for any children the respondent may have had, and political party affiliation. Most questions were multiple-choice format. Respondents could offer alternative answers if the multiple-choice options did not capture their preferred response. Respondents were also asked about the influence of religion in their lives. The first question asked respondents to indicate how religious of a person they were. Respondents answered on a Likert-type scale with 1 = "Very religious" and 4 = "Not at all religious." A second question asked the respondent to indicate how frequently they rely on their religious or spiritual beliefs to help make life decisions. Respondents answered on Likert-type scale with 1 = "Always" to 4 = "Never." Per SSRC protocol, respondents' gender was determined by the interviewer based on voice-analysis and recorded as male or female. Collecting demographic information was considered essential as it was expected that these factors would be related to parents' attitudes and behaviors about sexuality communication.

Following the demographics, respondents were asked 14 questions that assessed their knowledge and attitudes about sexuality and sexual health such as sexual orientation, sexually transmitted infections, HIV/AIDS, birth control, emergency contraception, basic reproductive physiology, gender issues, and other sexual health topics (see Table 4 for a list of items). Answer choices were presented on a 4-point Likert-type scale with 1 = "Strongly agree with this statement" to 4 = "Strongly disagree with this statement." There was also a response category for "Don't know." These questions were created by first developing a list of topics using the Sexuality Information and Education Council of the United States' (SIECUS) guidelines for Comprehensive sexuality education (National Guidelines Task Force, 2004). The SIECUS guidelines highlights 6 main concept areas in sexuality education: human development, relationships, personal skills, sexual behavior, sexual health and society and culture. After reviewing the concept areas, we generated items that were written to tap into a component of factual knowledge that would be related to that topic. We chose to include questions on a broader range of topics than those perhaps typically included in "sexual health" surveys in an attempt to get a better understanding of individuals' level of sexuality-related knowledge in a larger sense. Our goal was to create questions that could have a correct, medically-accurate answer that could be confirmed by reviewing the current scientific literature rather than create questions that might be geared more toward public opinions about sexuality and sexual behavior.

To conclude the interview, respondents were asked, "To what extent do you think images of sexuality on TV and in magazines influence the way young people view sex and sexuality?" and "To what extent do you believe parents influence a child's attitude toward sex?" Both items had

4-item Likert-type response choices from 1 = “The most influential factor” to 4 = “Not at all influential.” All other answers were recorded as “Don’t know/no response.” (See Table 4 for a list of questions.)

**Table 4.** Questions on Sexual Knowledge and About Sources of Influence on Sexual Attitudes of Young People Items

Item 1:	Kids can pick up their parents’ values about sex even if no one ever mentions it. (True)
Item 2:	Someone who engages in sexual intercourse with a person of the same sex is definitely gay or lesbian. (False)
Item 3:	Sexually transmitted diseases always have symptoms or signs that can be noticed. (False)
Item 4:	HIV can be spread through having unprotected oral sex with an infected partner. (True)
Item 5:	Worldwide, HIV is spread most commonly by sexual intercourse between two men. (False)
Item 6:	Women take oral contraceptives (“the pill”) in order to prevent pregnancy. (True)
Item 7:	The most common cause of cervical cancer in women is an HPV infection, the virus that can also cause genital warts. (True)
Item 8:	Worldwide the most common way HIV is spread is from sexual intercourse between a man and a woman. (True)
Item 9:	Emergency contraception (or EC) can most effectively prevent pregnancy if taken within 3 days (72 hours) of contact. (True)
Item 10:	Sperm cells can live in the female reproductive tract for only minutes. (False)
Item 11:	Gender identity means that men are expected to act masculine and women are expected to act feminine. (False)
Item 12:	The most important hormone linked to female sexual desire is testosterone. (True)
Item 13:	Sperm cells can live in the female reproductive tract for as much as 5 days. (True)
Item 14:	Untreated syphilis infections can cause serious health problems such as insanity and death. (True)
Item 15:	To what extent do you think that images of sexuality on TV and in magazines influence the way young people view sex?
Item 16:	To what extent do you think parents influence a child’s attitude toward sex?

**Table 5.** Responses to Sexual Knowledge Questions

Item	Correct (%)	Incorrect (%)	“Don’t know” (%)
1. Values transmission	80	17	1
2. Gay/Lesbian	36	57	4
3. STI symptoms	80	14	3
4. HIV/oral sex	80	9	9
5. HIV/male-male	57	28	12
6. Pill and pregnancy	65	23	9
7. HPV and cancer	36	15	45
8. HIV/male-female	52	31	14
9. Emergency Contraception	37	21	27
10. Sperm-minutes	57	24	15
11. Gender identity	36	55	5
12. Testosterone and desire	33	41	21
13. Sperm-5 days	36	35	25
14. Syphilis	80	8	9

## RESULTS

Results from the current study indicate that Indiana adults had mixed performance on the sexuality-related knowledge questions (see Table 5). Indiana adults demonstrated moderate proficiency in the content areas of values transmission and sexually transmitted infection knowledge, where:

- 80% correctly noted that children pick up on their parents' values about sexuality,
- 80% knew that sexually transmitted diseases do not always have noticeable signs or symptoms,
- 80% knew that a person could contract HIV via unprotected oral sex, and
- 80% knew that an untreated syphilis infection can lead to death.

While Indiana residents demonstrated some degree of accurate knowledge in the area of sexually transmitted infections, Indiana adults did not do as well on the remaining 9 items including items that examined non-disease related sexuality knowledge, thus:

- 65% of respondents correctly knew that women take oral contraceptives in order to prevent pregnancy,
- 57% correctly rejected the notion that worldwide HIV is spread most commonly between two men,
- 45% did not know that HIV is most commonly spread via male-female sexual intercourse worldwide,
- 57% knew that sperm cells are able to live in the female reproductive tract for longer than a few minutes,
- 37% knew that emergency contraception (EC) could prevent pregnancy most effectively if taken within 72 hours of intercourse,
- 36% knew that an individual who has sexual intercourse with a person of the same gender is not "definitely gay or lesbian,"
- 36% knew that sperm cells can live as long as five days in the female reproductive tract,
- 36% knew that the phrase "gender identity" does not refer to the expectation that men act masculine and women act feminine,
- 36% knew that the human papillomavirus (HPV) is related to cervical cancer in women, and lastly,
- 33% of respondents knew that testosterone is an important element of female sexual desire.

Given respondents' generally poor performance on the content items, it was important to examine whether or not certain demographic variables were useful in understanding the response patterns generated on the questions. Correlation coefficients between content items and demographic variables are listed in Table 6, and that between sexual knowledge items and demographic variables are listed in Table 7. We hypothesized that respondents who were parents would perform better on the sexual knowledge test given that it would be beneficial to be sexually knowledgeable so as to be able to share accurate knowledge with their children. To examine this issue, we conducted a series of hierarchical binary logistic regressions for each item. At step one, we entered demographic variables (i.e., ethnicity, age, gender, size of home town, and level of education). At step two, we entered attitudinal variables (i.e., level of



religiosity, frequency of usage of religious beliefs in decision-making and political affiliation) and at step three, we entered respondents' parental status.

**Table 6.** Correlations Between Content Items and Demographic Variables

Variables	Values	Gay	STI	HIV/Oral	HIV/men	Pill	HPV	HIV
Residence	-.01	-.06	-.05	.03	-.10	.07	.05	-.05
Ethnicity	-.09	.10*	.05	.07	.00	.02	.02	-.06
Age	-.14*	.04	-.27*	.07	-.09	-.07	.04	.02
Education	-.01	.06	.29**	.02	.20**	.03	-.02	.03
Income	-.06	.07	.15**	.08	.12*	.03	.05	.05
Religiosity	.01	.09	-.01	.03	.01	.03	.00	-.12*
Use Religion	.05	.09	.03	.05	.11*	.02	.02	-.10
Parent	.06	-.02	.16**	-.05	.06	-.01	-.04	-.10*

\*statistically significant at  $p < .05$

\*\*statistically significant at  $p < .01$

**Table 7.** Correlations Between Sexual Knowledge Items and Demographic Variables

Variables	EC	Sperm/Minutes	Gender	Desire	Sperm/Days	Syphilis
Residence	.14*	-.03	-.11*	-.04	.07	-.08
Ethnicity	.00	-.12*	-.10*	.02	.14**	-.07
Age	.06	-.13**	-.06	-.17**	.25**	-.13**
Education	.05	.21**	.15**	-.02	-.01	-.06
Income	.07	.08	.17*	.05	-.01	.01
Religiosity	.02	.03	.03	.04	-.15*	-.05
Use Religion	-.06	.04	.06	.03	-.16**	-.03
Parent	-.07	.07	-.02	.13*	-.11*	.04

\*statistically significant at  $p < .05$

\*\*statistically significant at  $p < .01$

### ***Hierarchical Binary Logistic Regressions***

Statistically significant results from the hierarchical binary logistic regression indicated that certain demographic variables were indeed useful in understanding Indiana residents' responses to the content items (see Table 8).

Values transmission:

- Older respondents were less likely to believe that children do pick up their parents' values about sex even if the values are not mentioned explicitly, such as being "definitely gay or lesbian"
- Men were more likely to answer incorrectly suggesting that they are more likely to believe that a person is "definitely gay/lesbian" based only on their sexual behavior,
- African-Americans individuals were nearly 3 times more likely than Caucasians to believe that a person is "definitely gay or lesbian" based only on their sexual behavior,

Sexually transmitted diseases:

- Women were more likely than men to correctly know that sexually transmitted diseases do not always have signs or symptoms,

- Respondents with less education were more likely to incorrectly believe that sexually transmitted diseases do always have signs or symptoms,
- Parents were more likely than non-parents to know that sexually transmitted diseases do not always have signs or symptoms,

HIV transmissibility via oral sex:

- Those with lower incomes were less likely to know that HIV can, in fact, be transmitted via unprotected oral sex,

HIV being most commonly spread via male-male sexual contact:

- Respondents with less education were less likely to answer correctly, indicating that they believed HIV is spread most commonly worldwide via male-male sexual contact,
- Respondents who indicated that they frequently relied on their religious beliefs to help them make decisions were less likely to answer correctly, indicating that they believed HIV is spread most commonly worldwide via male-male sexual contact,

Use of oral contraceptives (“the pill”) to prevent pregnancy:

- Respondents who identified as being Republicans were more likely to answer incorrectly,

HPV infection and cervical cancer:

- Women were more likely than men to correctly know that HPV is related to cervical cancer,
- Individuals without children were almost 3 times more likely than parents to know that HPV is related to cervical cancer,

Male-female HIV transmission worldwide:

- In contrast to the item on male-male HIV transmission, no variable contributed any statistically significant information on response patterns for this item.

Emergency Contraception:

- Younger respondents were less likely to know that emergency contraception is most effective if used within 72 hours,
- Respondents with lower levels of education were less likely to know that emergency contraception is most effective if used within 72 hours,

Sperm cells could only live a few minutes:

- Younger respondents were less likely to answer correctly indicating they believed that sperm cells could only live a few minutes,

Gender identity definition:

- Men were less likely than women to answer this item correctly demonstrating a lack of knowledge regarding the definition of gender identity,

Female sexual desire and testosterone:

- None of the measured demographic variables provided any statistically significant information about response patterns,

Sperm in the female reproductive tract:

- Younger respondents were less likely to know that sperm can live as long as five days,
- Respondents with lower levels of education were less likely to know that sperm can live as long as five days,

Syphilis infection and death:

- Younger respondents were less likely to know that death is a possible outcome of an untreated syphilis infection.

Overall, results of the hierarchical analyses indicated that parental status was not a statistically significant factor in understanding the response patterns on all of these knowledge items. It seems that perhaps other factors such as age, income, level of education, and gender are more salient factors.

### ***Attitudes About Influences over Young People's Knowledge and Beliefs About Sexuality***

The majority of all respondents (73%) believed that parents were either the “Most influential” or “A strong influence.” However, 86% of participants believed that the media had the same level (Most/Strong) of influence over young people's level of knowledge and beliefs about sexuality (see Table 9).

Hierarchical regression analyses were also performed to examine the impact of certain demographic variables on variance in respondents' perceptions about the amount of influence they feel parents and the media have over young people's understanding of sexuality. Results indicated that none of the demographic variables were significant predictors of respondents' beliefs about parents' level of influence. One's status as a parent versus non-parent approached significance as an individual contributor ( $b = -.167, p < .06$ ; final model:  $F(17, 361) = -1.43, p < .12$ ). Results indicated that usage of religion in decision-making (“Frequently”  $b = .309, p < .025$  and “Sometimes”  $b = .259, p < .045$ ) was a statistically significant predictor of attitudes about the media's ability to be influential in young people's understanding of sexuality  $F(17, 363) = 1.55, p < .07$ ].

**Table 8.** Hierarchical Binary Logistic Regression for Content Items at Step Three

Item/Variable	$R^2$	Change $R^2$	Beta	$p <$	Exp(B)	Final Model Chi-Square	$P <$
Values Transmission	.05	.02				20.40	.319
Age			-.021	.050	.979		
Gay/Lesbian	.08	.02				29.51	.040
Gender			-.792	.005	.482		
Ethnicity			1.200	.028	3.300		
STI symptoms	.13	.02				53.27	.001
Gender			-.902	.010	.406		
Education			-.597	.001	.550		
Parent status			1.160	.050	3.170		
HIV/Oral sex	.04	.01				20.16	.341
Income level			.243	.020	1.260		
HIV/male-male	.04	.00				25.75	.106
Education			-.168	.047	.845		
Usage of religion			.369	.045	.691		
Pill to prevent pregnancy	.06	.04				32.64	.037
Party is republican			1.320	.005	3.790		
HPV/cervical cancer	.10	.04				21.76	.059
Gender			-1.880	.017	.390		
Parent status			1.010	.049	2.760		
HIV/male-female (none)	.03	.02				9.51	.734
Emergency contraception	.11	.00				35.94	.001
Age			.030	.001	1.030		
Education level			-.188	.034	.829		
Sperm-minutes	.10	.01				37.73	.001
Age			.020	.034	1.020		
Education level			-.414	.001	.661		
Gender Identity	.06	.02				25.37	.020
Gender			-.524	.028	.581		
Testosterone/desire (none)	.02	.00				6.03	.945
Sperm-days	.11	.00				35.94	.001
Age			.030	.000	1.030		
Education level			-.188	.030	.829		
Syphilis	.06	.02				21.16	.070
Age			-.043	.005	.958		

**Table 9.** Perceptions Regarding Level of Influence over Youth's Sexual Attitudes and Knowledge

Source	Level of Influence (%)			
	Most	Strong	Slight	None
Media	14	72	9	1
Parents	15	58	20	2

## DISCUSSION

Results of this study indicate that many adult residents of Indiana lack accurate knowledge on a variety of sexuality-related topics and may have some misperceptions that affect sexuality-related attitudes. Indiana adults performed moderately well on most disease-related items. There was also an interesting difference in response patterns on HIV transmission worldwide.

Responses on these two items, in conjunction with the item about sexual behavior and its relationship to sexual orientation, suggest a level of misunderstanding about gay/lesbian/bisexual and HIV transmission issues, particularly among men and African-Americans.

Given that the human papilloma virus (HPV) is a critical public health issue and there are several sub-types of the infection that can cause serious problems in women, and considering the relatively high rates of correct answers to disease-related questions, it was disconcerting that many respondents did not have a clear understanding about the connection between cervical cancer and HPV. Clearly, this is a serious public health issue that needs to be addressed in Indiana.

It is interesting that many respondents were misinformed about reproductive issues and physiology. For example, many respondents were not sure how long sperm remained viable in the female reproductive tract. Some estimated that it was not for more than a few minutes and others were not sure if sperm could live up to five days. This should raise concerns for sexuality educators and health professionals who provide reproductive health care to women, especially adolescents. Men and women who do not have a clear understanding about the female reproductive cycle may be more likely to have unprotected sex at times when they believe that they are “safe” and they may not take appropriate postcoital measures if they suspect a contraceptive failure (i.e., condom breakage). This particular issue is compounded by the fact that the majority of respondents also did not know that emergency contraception could help prevent a pregnancy most effectively if taken within 72 hours of intercourse. Critical misunderstandings about these issues may have serious implications for women’s reproductive health. Possession of accurate information about female reproductive physiology and emergency contraception could serve to lower the rate of unintended pregnancy and abortion in the United States.

It is also noteworthy that many respondents did not perform well on the items that were non-disease, non-health oriented. Many respondents incorrectly answered items that focused on gender issues, gay/lesbian sexuality issues and health concerns, and sexual desire. While these are complex issues, lack of awareness could impact women, men, and their partners.

Additional findings from the regression analyses indicated that several of the measured demographic variables factored into our understanding of response patterns. For instance, one’s political affiliation as a Republican, one’s status as a male, lower level of income, and younger age were related to incorrect responses on multiple items. It is important to note that lower levels of education were also related to incorrect responses on several items. This is very important, given that out of all the variables, the issue of education is an area that can most readily be improved upon or changed.

The results of this study indicate that many Indiana adults, including parents, do not have accurate information about sexuality-related issues and may have misperceptions about the issues. While respondents did moderately well on some disease-related and medically-oriented items, they did not do as well on items that required knowledge of sociocultural issues related to sexuality. Based on these findings, it is appropriate and essential to reconsider the timing, content, and methods used to convey correct information about sexuality to young people and

adults. In order to fulfill the Surgeon General's Call to Action (2001), we need to ensure that adults in multiple settings possess accurate knowledge. One place to start might be to ensure that educational efforts focus on the 6 content areas addressed by comprehensive sexuality education as outlined by SIECUS. (National Guidelines Task Force, 2004). These are as follows:

- Human Development,
- Relationships,
- Personal Skills,
- Sexual Behavior,
- Sexual Health and
- Society and Culture

Educators and other health professionals need to increase their awareness of these issues and work to address the sexuality education needs of adults and young people in Indiana to stave off negative individual outcomes and related negative social effects while supporting a positive healthy sexual development. Currently, Indiana ranks 49th overall in the nation with regard to access to reproductive health care services, sexuality-related laws and policies, and public funding for sexuality-related health care services and education (Guttmacher Institute, 2006). Without improvements in these areas, Indiana adults may continue to be ignorant of important sexuality and sexual health knowledge. Policymakers need to become aware of this information and realize that their current constituencies and future constituents may not be adequately prepared to lead sexually healthy lives, which may result in financial and social repercussions falling on Indiana residents.

Several options that could impact this issue and create change on multiple levels should be considered. Adults, especially those who work with young people, should be supported in attending educational seminars about sexuality-related topics. Adults who are also parents should be encouraged to participate in parent-teacher associations, lobby their local school boards, and express their desire for and acceptance of medically accurate comprehensive sexuality education provided by credentialed specialists. Concerned citizens should also organize to promote the provision of accurate sexuality information in faith-based, community-based, and clinical settings.

While the current study provides interesting information about the level and quality of sexuality-related knowledge among Indiana adults, the study is not without limitations. Although this study used a representative sampling of Indiana residents, it is possible that residents from other states or geographic locations may have responded differently to the items presented in the research. Due to the fact that the majority of the respondents were Caucasian and female, it is possible that the results of the survey would have been different if more non-Caucasian and male respondents participated. It is also important to note that the methodology only included residential phone numbers. This is noteworthy as there is an increasing reliance on the use of cellular phones, and it is possible that different results may have been obtained if such numbers could have been included. Lastly, it is possible that the gender of some respondents was misattributed by the interviewer creating a discrepancy in the accuracy of the gender count.

While the study has limitations, it provides further evidence that serious changes are needed to in regards to the quality and comprehensiveness of the sexuality information provided in Indiana. We need a new vision of our sexual health and of the sexual health of our children. As was noted in the *Call to Action*, the Institute of Medicine's report (2000) stated:

. . . Society's reluctance to openly confront issues regarding sexuality results in a number of untoward effects. This social inhibition impedes the development and implementation of effective sexual health and HIV/STD education programs, and it stands in the way of communication between parents and children and between sex partners. It perpetuates misconceptions about individual risk and ignorance about the consequences of sexual activities and may encourage high-risk sexual practices. It also impacts the level of counseling training given to health care providers to assess sexual histories, as well as providers' comfort levels in conducting risk-behavior discussions with clients. In addition, the code of silence has resulted in missed opportunities to use the mass media (e.g., television, radio, printed media, and the Internet) to encourage healthy sexual behaviors. (p. 17)

If we are to move forward on issues related to sexual health, we must conclude that comprehensive, medically accurate sexuality information from a variety of sources, including schools and the media, is the foundation for promoting sexually healthy life. It is suggested that we have more to risk by continuing to ignore the problems, rather than by facing the challenges directly. The authors hope that this study and its findings will help stimulate some much-needed discussion about the quality and provision of sexuality information, promote continued research in this area, and help move us toward a more encompassing and honest discussion about sexuality in Indiana, as well as nationally.

## REFERENCES

American Academy of Pediatrics. (2001). Sexuality, contraception, and the media. *Pediatrics*, 107(1), 191-194.

Clark, C.A., Baldwin, K.L., & Tanner, A.E. (2006). A statewide survey of the nature and scope of sexuality communication in Indiana. *American Journal of Sexuality Education*, in press.

Guttmacher Institute. (2006). Contraception Counts: Indiana. Retrieved July 14, 2006, [http://www.guttmacher.org/pubs/state\\_data/states/indiana.pdf](http://www.guttmacher.org/pubs/state_data/states/indiana.pdf).

Henry J. Kaiser Family Foundation & Harvard School of Public Health. (1996). Knowledge and attitudes about STDs other than AIDS survey. Retrieved July 14, 2006, <http://www.kff.org/youthhivstds/1206-stdtop.cfm>.

Henry J. Kaiser Family Foundation & Harvard School of Public Health. (1997). Women's knowledge, attitudes and practice concerning reproductive health survey. Retrieved July 14, 2006, <http://www.kff.org/womenshealth/1205-glams.cfm>.

Henry J. Kaiser Family Foundation & Harvard School of Public Health. (2002). Health News Index Poll. Retrieved May 17, 2005,  
[http://www.ropercenter.uconn.edu/cgi-bin/hsrun.exe/Roperweb/HPOLL/StateId/Cc92TItNGv0AEieWcCFi6yb2ZNIL\\_3f6m/HAHTpage/SetWhereClause](http://www.ropercenter.uconn.edu/cgi-bin/hsrun.exe/Roperweb/HPOLL/StateId/Cc92TItNGv0AEieWcCFi6yb2ZNIL_3f6m/HAHTpage/SetWhereClause).

Institute of Medicine. (2000). *No time to lose: Getting more from HIV prevention*. Ruiz, M.S., Gable, A.R., Kaplan, E.H., Soto, M.A., Fineberg, H.V., & Trussell, J. (Eds.) Washington, DC: National Academy Press.

Kunkel, D., Biely, E., Cope-Farrar, K., Fandrich, R., Eyal, K., & Donnerstein, E. (2003). *Sex on TV3: A biennial report of the Kaiser Family Foundation*. Kaiser Family Foundation.

National Guidelines Task Force. (2004). *Guidelines for comprehensive sexuality education: Kindergarten through 12th grade*, (3rd Edition). New York: Sexuality Information and Education Council of the United States.

Office of the Surgeon General. (2001). *The Surgeon General's call to action to promote sexual health and responsible sexual behavior*. Rockville, MD: Office of the Surgeon General.

Reinisch, J.M.& Beasley, R. (1990). *The Kinsey Institute new report on sex: What you must know to be sexually literate*. New York: St. Martin's Press.