

# Youths' Knowledge and Perceptions of Health Risks Associated With Unprotected Oral Sex

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## ABSTRACT

**PURPOSE** Although rates of sexually transmitted infections (STIs) and human papillomavirus (HPV)-related head and neck cancers associated with oral sex are increasing, less than 10% of youths report using protection. This study aims to assess youths' knowledge and perceptions of oral sex risk and barriers to protection use.

**METHODS** Our study uses MyVoice, a national text message poll of youths aged 14-24 years. Four open-ended probes were fielded to 1,215 youths in March 2019. Qualitative data were analyzed using thematic analysis and quantitative data were summarized with descriptive statistics.

**RESULTS** Nine hundred and nine youths responded to the survey (relative risk [RR] = 74.8%). Youths' responses regarding why protection is frequently not used centered around: lack of education (22.4%), no perceived STI risk (19.8%), decreased pleasure (19.3%), and no pregnancy risk (15.7%). Youths believed that comprehensive education (53.7%), normalization in popular culture and media (19.1%), increased access to protection (15%), and improved protection options (10.5%) would increase protection use during oral sex.

**CONCLUSION** Youths demonstrated limited knowledge of the risks of oral sex, dissatisfaction with current protection options, and a need for normalization in popular culture. Programs developed with youths in mind may be able to successfully increase protection use and decrease rates of STI transmission and oral sex-related HPV head and neck cancer.

## VISUAL ABSTRACT

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## INTRODUCTION

Rates of sexually transmitted infections (STIs) in the United States have increased for 5 consecutive years.<sup>1</sup> Transmission rates of *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and syphilis are at their highest recorded, with 2.5 million cases diagnosed annually.<sup>1,2</sup> Youths (aged 15-24 years) are disproportionately affected by STIs, accounting for approximately one-half of STI incidence, with an estimated 1 in 4 sexually active adolescent females currently having an STI.

Adolescents are a uniquely vulnerable population for STI risk. Many factors that increase youths' risk of STI transmission have been previously described, including initiation of sex at a younger age, multiple sex partners, failure to use barrier protection, cervical ectopy, mental health issues, substance abuse, and limited access to health care.<sup>3,4</sup> Cognitively, youths have increased activation of the reward-sensitivity regions of their brains, and are more likely to engage in sensation-seeking behaviors and risk taking.<sup>5</sup> Additionally, it has been shown that many health care clinicians fail to assess adolescents' risky sexual behaviors and sexually transmitted disease (STD) risk,<sup>6</sup> and youths are less likely to seek health care, resulting in lower rates of diagnosis and treatment.<sup>6,7</sup>

Research on adolescent sexual behavior and STIs has predominantly focused on prevention and interventions for reduced transmission via vaginal intercourse, rather than other forms of sexual activities, such as oral sex.<sup>8,9</sup> Although the risk of STI transmission is lower for oral sex than vaginal sex, many STIs are transmitted orally, including herpes, gonorrhea, chlamydia, syphilis, and HIV, as well as other respiratory pathogens.<sup>9-11</sup> Additionally, due to the general perception that oral sex is less risky, there is potential for increased STI transmission via oral sex resulting from this belief and subsequent lack of the use of protection.<sup>9</sup> According to the Centers for

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Disease Control and Prevention (CDC), 85% of sexually active adults (aged 18-44 years) and 33% of adolescents (aged 15-17 years) have engaged in oral sex at least 1 time.<sup>10,12</sup> Between 14% and 50% of youths also have oral sex before any other experiences with sexual intercourse.<sup>9</sup> Yet studies show only 7% to 10% of youths report using protection during oral sex.<sup>10,12,13</sup>

A further concern of unprotected oral sex is the risk of oral human papillomavirus (HPV) infection, which can lead to oropharyngeal squamous cell carcinoma (OPSCC).<sup>14</sup> In the past 20 years, the rate of HPV positive OPSCC went from 20% to 70% in the United States.<sup>15,16</sup> Additionally, in recent surveillance data, HPV-related head and neck cancers have surpassed HPV-related cervical cancers.<sup>17</sup> Various behaviors have been shown to increase risk of HPV-infection including engaging in oral sex, a greater number of oral sex partners, and having a female partner with a history of cervical cancer.<sup>18-20</sup> The HPV vaccine is effective against vaccine-type strains but there is a low vaccination rate, particularly among men, so the effect of the vaccine on the population as a whole may be low.<sup>21</sup> Additionally, there are limited studies evaluating HPV vaccine effectiveness against oral HPV infection.<sup>22</sup> Due to this rapid increase of HPV-related OPSCC and limited vaccination uptake, it is necessary to better understand youths' behavior in order to prevent infection.<sup>14</sup>

There is no recent data about youths' knowledge and behaviors regarding oral sex or perceptions of protection usage, as previous studies were published over a decade ago.<sup>9,23</sup> There is a critical need to understand what a contemporary sample of youths knows about oral sex and its associated risks, as well as what the barriers are to using protection. This study aims to answer these important questions. Understanding of these behaviors can be used to inform effective, youth-centered interventions to decrease transmission of STIs through oral sex and decrease rates of HPV head and neck cancer.

## METHODS

Our study uses MyVoice ([www.hearmyvoicenow.org](http://www.hearmyvoicenow.org)), a national open-ended text message poll of youths aged 14-24 years. Enrolled participants must have access to a cellular device with text-messaging capabilities and are sent weekly questions via text message. Participants are recruited through Instagram, Facebook, and in-person community events to meet national benchmarks based on the American Community Survey. The study was approved by the University of Michigan Institutional Review Board (HUM00119982). To ensure equitable enrollment and because the study was deemed of minimal risk, parental consent is waived for minors.

Questions were iteratively developed with a team of researchers, physicians, and youths, and 4 open-ended probes were sent to participants:

(1) A recent study showed that very few youths use protection (condoms/dental dams) during oral sex. Why do you think this is? (2) On a scale of 1 to 5, how risky do you think it is to have oral sex

without protection? (1-Not risky at all, 5-Very risky), (3) What do you think are the risks (if any) to not using protection during oral sex? and (4) What might help more people use protection during oral sex?

Two investigators reviewed responses to identify thematic codes and create a codebook based on themes that emerged. Each response was coded by 2 independent investigators and discussed until consensus was reached. Responses unrelated to the question were excluded from coding. Demographic information was collected at study enrollment and summarized using descriptive statistics. Response data was stratified by gender (female, male, and "other" gender) and differences were assessed with  $\chi^2$  tests.

## RESULTS

Of the 1,215 MyVoice participants, 909 responded to the survey (74.8%). Respondents had a mean age of 18.9 years (SD 2.9). Most respondents identified as female (58.7%) and non-Hispanic White (58.1%). Nearly one-half of the respondents were from the Midwest (44.7%) and one-third received high school free or reduced lunch (33.7%). Additional demographic characteristics of respondents are summarized in Table 1.

In the first question, respondents most commonly attributed the lack of protection use during oral sex to minimal or an absence of education about the subject (200/893; 22.4%). Particularly, they noted a lack of education on the risks of unprotected oral sex, as well as limited information about oral sex protection methods; stating protection usage during oral sex "is not something I have been taught about." Many youths (177/893; 19.8%) also noted that they "don't think many kids know that you can get STIs from oral." Youths also mentioned lack of pleasure as a reason for not using protection stating they are uncomfortable, don't feel good, and don't taste good; "it's more pleasurable without the condom" (172/893; 19.3%). Some respondents expressed a lesser concern for STIs compared with pregnancy as the reason for not using protection during oral sex, "I think that youths are more concerned about getting pregnant than contracting an STD, so they aren't as careful about using protection for oral sex" (140/893; 15.7%). Some respondents additionally mentioned trouble with accessing protection due to embarrassment when purchasing, inadequate funds, and not "know[ing] where to get them" (104, 11.6%). When stratifying the data by gender identity, females more commonly attributed lack of protection usage to educational deficiencies than male respondents (26.7% vs 14.2%;  $P = 0.0001$ ). Table 2 presents the most frequently identified thematic codes with representative quotes.

On a scale from 1 (not risky at all) to 5 (very risky), nearly one-third of youth respondents ranked the risk of unprotected oral sex as a 3 (269/883; 30.5%). Fewer respondents (72/883; 8.2%) rated unprotected oral sex as a 1, not at all risky, compared with a 5, very risky (178/883; 20.2%). Female respondents were more likely to rank the risk of oral sex as 4-5 compared with male respondents (females 42.8% vs males

21.7%), while male respondents were more likely to rank risk as 1-2 compared with female respondents (males 46.3% vs females 23.4%). When asked about the main risks of not using protection during oral sex, the vast majority of respondents noted the greatest risk to be acquisition of STIs (760/864; 88.0%). STD risk was the most common perceived risk across all gender groups (females 89% vs males 85.4% vs other 95.2%). Notably, a small percentage of youths stated that the main risk is pregnancy, "unwanted pregnancies" (36/864; 4.2%). Of the youths that believed unprotected oral sex is not risky, their rationale included an inability to get pregnant, a reduced risk of transmission when you know your partner, and an increased difficulty in transmission of STIs through oral sex.

**Table 1. Demographic Characteristics of Poll Respondents**

	n (%), n = 909 <sup>a</sup>
Age, y, mean (SD)	18.9 (2.9)
14-17, n (%)	380 (41.8)
18-24	529 (58.2)
Gender, n (%)	
Male	307 (33.8)
Female	533 (58.7)
Other	68 (7.5)
Race/Ethnicity, n (%)	
Non-Hispanic White	528 (58.1)
Non-Hispanic Black	82 (9.0)
Hispanic	111 (12.2)
Non-Hispanic Other	187 (20.6)
Education, n (%)	
<High school	463 (51)
High school graduate	79 (8.7)
Some college or tech school	235 (25.9)
Associate's or tech graduate	32 (3.5)
≥Bachelor's degree	99 (10.9)
Parent education, n (%)	
≤High school	127 (14.0)
Some college or tech school	102 (11.2)
Associate's or tech graduate	76 (8.4)
Bachelor's degree	253 (27.9)
Master's degree	241 (26.5)
Doctoral degree	109 (12.0)
HS free lunch (n = 901), n (%)	
Yes	304 (33.7)
No	597 (66.3)
Region (n = 901), n (%)	
West	162 (18.0)
Midwest	403 (44.7)
South	215 (23.9)
Northeast	121 (13.4)

HS = high school; tech = technical.

<sup>a</sup>1 participant was missing all demographic information except age.

When prompted about what youths thought may help people use protection more during oral sex, over one-half (459/855; 53.7%) reported that better education could improve the use of protection during oral sex. These responses suggested a need for "more actual sex education," modification of education methods by "talking about safe sex vs saying don't have sex," and improved "awareness." Youths also mentioned normalization of talking about oral sex as a method for improving protection usage (163/855; 19.1%). Respondents suggested, "less of a taboo around talking about sex," "spreading the word," and "the stigma behind it would have to be broken before anything can help" as examples of how normalization may occur. Some respondents also mentioned that reducing barriers through "cheaper and easier access," free access to protection in clinics and schools, and minimizing interaction required to access protection to lessen embarrassment could improve access and use (128/855; 15.0%). Youths additionally suggested having increased and improved options for protection like more natural feeling "thinner condoms," and improved taste (90/855; 10.5%).

## DISCUSSION

Many findings from our study are aligned with studies of youths from over a decade ago which found that teens have oral sex for physical pleasure and a reduced risk when compared with vaginal sex.<sup>23</sup> Our study adds to this literature, however, by describing reasons reported by a large contemporary sample of youths on the barriers to engaging in oral sex with protection, including a lack of knowledge of the risks, limited access to and dissatisfaction with protection methods, and cultural norms. Many respondents knew that some STIs can be transmitted through unprotected oral sex, but many youths also underestimated the severity of risk associated with the act, "You can't really get anything super harmful from it." A lack of inclusive, comprehensive sexual education, as well as the lack of safe sexual practices depicted in popular culture and media were salient themes that respondents associated with low levels of protection use, "I think it's a combination of poor sex education and the taboo around sex."

Overall, youths were underinformed about the extent of risk associated with unprotected oral sex. While most youths acknowledged that STIs are a risk associated with oral sex (88.1%), many respondents (60.1%) reported a low-to-moderate risk (risk score of 1-3) associated with unprotected oral sex. While the evidence may at first seem contradictory, these results suggest that youths may believe STIs are transmissible through oral sex, but the severity and transmissibility of those STIs are not as high as through vaginal sex, thus making the act "less risky." Youths explained that they also perceived oral sex as less risky because, unlike vaginal sex, it does not result in pregnancy. Although pregnancy may be the primary concern of many youths, education on the risks associated with various sexual acts should stress the importance of using protection in all behaviors to reduce the risk of STIs.

**Table 2. Questions, Themes, and Example Participant Quotes**

Question, Theme <sup>a</sup>	All n (%)	Female n (%)	Male n (%)	Example Participant Quote
<b>Q1: A recent study showed that very few youth use protection (condoms/dental dams) during oral sex. Why do you think this is? (n = 893)</b>				
Lack of education <sup>b</sup>	200 (22.4)	139 (26.7)	43 (14.2)	"People aren't well informed on safe sex due to the state of American sex education"
No perceived STI risk	177 (19.8)	109 (20.9)	52 (17.2)	"Because they don't think they can get stds from oral"
Sensation/pleasure	172 (19.3)	95 (18.2)	66 (21.8)	"I think they think that condoms will result in a loss of pleasure"
No pregnancy risk	140 (15.7)	76 (14.6)	54 (17.8)	"I think that's because there's no risk for pregnancy so they don't think they need to use protection"
Access/cost	104 (11.6)	58 (11.1)	32 (10.6)	"They probably don't because it's either too expensive or they feel weird buying these items"
<b>Q2: On a scale of 1 to 5, how risky do you think it is to have oral sex without protection? (n = 883)</b>				
1 (Not risky at all) <sup>b</sup>	72 (8.2)	26 (5.0)	42 (14.3)	"1 because fertilization is never actually achieved, it is just for pleasure"
2 <sup>b</sup>	205 (23.2)	96 (18.4)	94 (32.0)	"2 You can't really get anything super harmful from it. And it's unlikely to get anything harmful at all. As long as you get tested and treated if any symptoms show up you should be ok."
3	269 (30.5)	163 (31.0)	88 (29.9)	"3 There's a chance for sexual disease transmission but lower than with vaginal sex and no worry of pregnancy"
4 <sup>b</sup>	136 (15.4)	100 (19.1)	28 (9.5)	"4 You don't know what disease someone could have"
5 (Very risky) <sup>b</sup>	178 (20.2)	124 (23.7)	36 (12.2)	"5 STIs can be extremely serious and easily transferred"
<b>Q3: What do you think are the risks (if any) to not using protection during oral sex? (n = 864)</b>				
STIs/diseases	760 (88.0)	455 (89.0)	245 (85.4)	"You could get a disease/infection like with any other type of sex."
Seems not risky <sup>b</sup>	49 (5.7)	16 (3.1)	31 (10.8)	"...there aren't as many risks by not using protection because it doesn't involve the danger of getting someone pregnant"
<b>Q4: What might help more people use protection during oral sex? (n = 855)</b>				
Better education <sup>b</sup>	459 (53.7)	293 (58.3)	129 (45.4)	"It may help to have some more education about the consequences of oral sex without protection."
Normalization	163 (19.1)	103 (20.5)	45 (15.9)	"Make it normalized in media (television, porn, etc.) and make condoms and other forms of protection taste and feel better"
Access/cost	128 (15.0)	75 (14.9)	37 (13.0)	"Lowering the price of condoms"
More options	90 (10.5)	48 (9.5)	34 (12.0)	"Making it more available"

<sup>a</sup> Totals may not add to 100% as codes are not mutually exclusive.

<sup>b</sup> Chi-square *P* value <0.01 for comparison across genders; genders designated as "other" not included in table due to small numbers (n = 18).

Youths in our study also stated that additional sexual education could bring awareness to the need for oral sex protection. Previous evaluations of comprehensive sexual education programs (compared with abstinence-only education) show that condom and contraceptive use can increase nearly 50% for those that participate.<sup>24</sup> Including more explanation of the risks associated with oral sex, such as STIs and HPV-related cancers, may result in a similar increase in protection use during oral sex. Also, educators may need to focus on correcting misinformation; a small group of our study youths believe they can get pregnant from oral sex. Educators should also ensure that material is inclusive of all sexualities; respondents in our survey explained that female-centered options, such as dental dams, were not taught in their sexual education programs.

Long-term efforts to increase STI protection use during oral sex will need to focus on changing cultural norms and widening the types of contraception that are available. Youths in our survey frequently mentioned the lack of

protection use in film, television, online, and wider popular culture. This lack of responsible representation of sexual acts has an impact on youths' behaviors, as sexual norms for many teens are shaped through exposure to media more than by their parents or traditional education.<sup>25</sup> In fact, one-half of teens do not feel comfortable talking to their parents about sex, which gives insight into why youths feel the need to seek sexual information from other sources.<sup>26</sup> Respondents also stated that the types of protection available for oral sex—namely, condoms and dental dams—are not desirable due to their reduction of pleasure for the user or associated tastes. Future research should explore whether protection options can improve the user experience without sacrificing efficacy.

Our study is not without limitations. A text message-based platform allows us to reach more youths across the country and retrieve more rapid responses on salient issues, but other research methods, such as focus groups and

in-person interviews, may be able to provide deeper exploration of the themes identified. Although our study focuses on youths, parents and educators also play an invaluable role in the formation of youths' sexual norms. Further research should explore the barriers that may exist among these 2 groups in discussing protection during oral sex.

## CONCLUSION

Youths in our survey demonstrated limited knowledge surrounding risks of oral sex without protection, dissatisfaction with current protection options, and a need for normalization in popular culture. These results suggest a continued need for more comprehensive and inclusive sex education that clearly explains the risks of unprotected oral sex, methods of protection, as well as increased depictions of safe sexual practices in popular media, and normalization of discussions on the topic. Programs and policies developed with the experiences and preferences of youths in mind may be more successful in increasing protection use and subsequently decreasing rates of STI transmission and HPV-related head and neck cancer.

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**Key words:** oral sex; adolescents; sexually transmitted infections; text message survey; sex

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**Author contributions:** M.W. and T.C. were involved in the design and conducting of the survey. N.M-P. and A.S. were involved in the coding of the data. M.W. performed the statistical analyses. N.M-P., A.S., M.W., and T.C. contributed to writing and revising the manuscript before submission.

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