



REVIEW

Framing and understanding the whole aspect of oral sex from social and health perspective: a narrative review [version 1; peer review: 1 approved with reservations]

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Abstract

Since thousands of years ago, oral sex has become part of sexual behavior among humans. Oral sex is considered taboo. Its taboo does not lie in the behavior, but its expression is deemed inappropriate. As technology becomes more sophisticated, human rights also stand out, leading to the disclosure of the practice in the 21st century. The oral sex that is discussed on a large scale in media encourages people to express it as feedback whether within right or not. It all depends on the value of each people. We found that this sexual behavior is found everywhere regardless of religion, culture, and race.

Pop culture influences this behavior so much, it can be seen from music, movies, and television programs that provoke oral sex. Many motivations underlying this behavior include getting sexual pleasure for the sake of living well-being. But it is undeniable that this behavior is still controversial. It could be at risk of causing disease and, on the other hand, is reported to provide many benefits.

According to our theory, oral sex is not a new behavior crossing boundaries. It is just an old behavior that surfaces because of the factors that support it. This behavior, which is still considered taboo, has its disadvantages such as sexually transmitted disease but has also benefits such as preventing preeclampsia.

Keywords

oral sex, sexual behaviour, well-being, pop culture, sexually transmitted disease, preeclampsia

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Introduction

Defining oral sex and pop culture

Oral sex is sexual activity with genital stimulation using the mouth, tongue, teeth, or throat. Currently, oral sex is frequent in both heterosexual and homosexual couples. Oral sex involves oral-vaginal contact (cunnilingus), oral-penile contact (fellatio), oral-anal contact (anilingus).¹ Besides that, Keating also stated that breast biting or licking was included in oral sex behavior. Oral sex has become a part of sexual behavior in society regardless of age.²

Two types of oral sex widely accepted in society are “going down” activities, cunnilingus, and fellatio. The aim of the cunnilingus is stimulation of the clitoris. The cunnilingus can start with a kiss to the lower part of the stomach’s partner and then the thigh’s side to the clitoris.³ Meanwhile, fellatio or sucking (blow job) is an activity the penis will be stimulated by licking by his partner. His partner will lick the shaft of the penis, even the testicles. In fellatio, men can ejaculate, ejaculation can be done outside, or sometimes the partner will swallow ejaculate. This action sometimes causes discomfort and not necessarily for everyone but tasting this ejaculate becomes advanced satisfaction for the “sucker” or “kisser”. Fellatio and cunnilingus can be done simultaneously, known as the “69” position.^{3,4} Moreover, it must be understood that ejaculate fluid still risks transmitting diseases. This should be considered and communicated to the partner when deciding this.

Oral sex can be considered an ancient activity from past manuscripts. As can be seen from the Hebrew, the Greeks to the Kamasutra manuals and the reliefs of several historical buildings depict this activity. Several moral, religious, medical, legal, and cultural factors influence the practice. Several cultures and religions give perception that oral sex is weird and unusual sexual behavior.⁴ But currently, the trend of oral sex has increased prominently. The development of technology and media also supports this.

Oral sex in this era is introduced in films and music videos, song lyrics, and literature. Several movies and music videos are not reluctantly labeled as hard-core and X-rated. Some scenes in the movie shown in public cinema presented men and women actively and even unstimulated in sexual positions, including oral sex.⁵ The Brown Bunny’s Vincent Gallo, 9 Songs’s Michael Winterboom, Nymphomaniac vol 1 & 2’s Lars von Trier, Love’s Gaspar Noe and many more movies are movies that promote explicitly oral sex in a graphic scene in the history of cinema.⁶ Other than that in music, “Summer of 69” of Bryan Adams to the most recent Ariana Grande’s song “34 + 35” are song which describes how oral sex activities are carried out by both men and women simultaneously with position 69.^{7,8}

These television programs and films also play a role in encouraging premarital sex behavior and uncommitted.⁹ This trend is known as “hooking up”, this term refers to sex in an uncommitted and casual context. Oral sex is part of this “hooking up” trend.^{10,11} Hooking up is depicted through films such as “No strings attached”, “Friends with benefits”, etc., or cable television program such as “MTV’s Jersey Shore”.¹²

Despite sexual expression between partners, oral sex can also be defined as a form of sexual harassment and violence.² Oral sex as a form of sexual violence can occur in heterosexuals and homosexuals. The rate of oral sex as an act of harassment varies widely. This suggests that investigations for sexual harassment do not have to focus on vaginal or anal genitals. However, tracing the oral organs is also necessary to confirm allegations of sexual misconduct. Evidence, for example, can be done by detecting sperm or seminal plasma in the victim’s mouth in cases of fellatio or by performing penis swabs in cases of cunnilingus.¹³

Prevalence of oral sex

Wylie conducted an extensive survey on 26,032 participants aged > 16 years in 26 countries from the Americas, Europe, Asia, and Australia. As many as 38% of the participants engaged in oral sex as a sexual activity. Oral sex has a very high prevalence among all sex orientation groups.¹⁴ Meanwhile, data by Richters *et al.* reported 19,307 Australians aged 16 to 59 found 32% of the respondents had oral sex from their last sexual history.¹⁵ According to D’souza *et al.*, there are differences in oral sex behavior compared to gender, age, and race. Oral sex behavior exists in married couples or adults and adolescents, and young adults.¹⁶ In a report from the Child Trends Data Bank in 2015, adolescents aged 15-19 years, both boys and girls, reported having oral sex as much as 39% and 38%. Women said giving more oral sex than men.¹⁷

In developing countries in Africa, such as Nigeria, it is reported that the influence of the media and the Internet affects a person’s sexual attitudes and behavior. Out of 400 respondents, 352 people had oral sex. Some of them learned this behavior from the internet.¹⁸ In Addis Ababa, Ethiopia, a study reported oral sex among high school adolescents in 3840. Adolescents who had practiced oral sex is 5.4% (190) person. Oral sex is closely related to the concept of best friends (AOR = 5.7; 95% CI 3.6-11.2) and having illiterate mothers (AOR = 11.5; 95% CI 6.4-18.5).¹⁹ Besides that, oral sex

behavior is one of the activities carried out and offered by sex workers. In some countries in Asia, the percentage of women who engage in oral sex varies 5% in Indonesia,²⁰ 16% in Thailand,²¹ and 18% in India.²²

Perspectives and motives in oral sex

In adolescents and young adults, NBC (2005) reports that 40-47% of young people who do oral sex do not need to worry about pregnancy, meet the right person, and feel the sense for the first time. Other reasons, many couples in serious relationships want to experience sexual pleasure but are not pregnant,²³ experience sex without using a condom,²³⁻²⁶ maintain virginity,^{24,26} answer curiosity about sexual activities,²⁴ then believed that oral sex has a low risk of STD transmission.²³⁻²⁶

In teenagers, having oral sex is related to increased popularity,²⁷ improvement of relationships between teenagers,^{24,25} engaging in sexual activity without commitment,²³ assumption that oral sex is not sex,²³ and also sex with someone is a generous behavior.²⁷ The same perspectives and motivations were also found in married couples. Holway and Tillman reported on the timing of oral sex in marriage among young adult couples. Their report stated that women who were late or never performed oral sex reported being more satisfied with their relationships with their partners. The fundamental reason is they do not feel forced when having sexual intercourse and do not need to worry about the transmission of disease due to sexual relations.²⁸

Meanwhile, oral sex is behavior that risks transmitting various diseases. Teens and young adults even claim oral sex is less risky and more acceptable than vaginal sex. Sometimes they perform oral sex because they do not want contraception and protection while having sex.²⁹ This fact shows the need for health workers and counsellors who provide the correct perspective in education or sex counselling.^{28,29}

Penhollow *et al.* also conducted a study on 408 students. They asked students' involvement in religious activities, frequency of worship attendance, their feelings about religion, their perception of God in sex and then looked at their participation in several sexual activities such as oral sex.³⁰ Results indicated that religiosity variables, mainly frequency of religious attendance and religious feelings, were significant predictors of sexual behavior such as oral sex.¹⁸ The religious factor was reported as one of the reasons a person does not engage in oral.¹⁶ Apart from that, another influencing factor in higher education.²⁸

Attitudes in oral sex

Attitudes towards oral sex tend to vary in population. The study surveyed 8600 people aged 16-64 years regarding their sexual activity. The analysis results stated that oral sex is one of the mandatory activities in sex activities besides kissing, cuddling, and vaginal intercourse. About 74% of their respondents reported that women want stimulation over their genitals orally, and 70% stimulate their partners' genitals orally.³¹ This proves that genital mouth stimulation is widespread in married couples.³²

Another study on young couples reported that every young couple had at least one oral sex session a year.²⁸ If oral sex is practiced mainly by women, even sometimes ingesting ejaculate to prevent pregnancy.^{28,33} men are reported to prefer oral sex and partners who engage in oral sex.³⁴ However, there is no gender difference in oral sex.³⁵ For several couples, oral sex is an indicator of the satisfaction of sexual life.³⁶

One study reported 368 women in the 45-59 years age group (19.5%), 60-74 years (2.2%) and 75 (over 0.8%) had at least one oral sex in a week.³⁷ Whereas in 341 men surveyed, the age group 45-59 years (20.1%), 60-74 years (6.5%), and 75 years (8.8%) perform oral sex at least once a week.³⁷

Men at risk for adultery are more likely to engage in oral sex.³⁸ Oral sex can be used to detect infidelity, material retention behavior, and orgasm with sperm retention. Oral sex, which is used as a detector for adultery, is indicated, for example, in cunnilingus activity; one study states that men are still likely to feel and smell their rival's semen around the vagina related to their previous sexual activity.³⁹

Many studies have reported that couples during oral sex mostly do not use condoms. However, Auslender *et al.* reported different results. The results were all in young adults when oral sex took protective measures to reduce the process of transmitting diseases such as *Herpes simplex* such as microbicide surrogate products.⁴⁰

In 2015, a study enrolled 346 men and women regarding their expressions and attitudes towards oral sex, either receiving or doing for the first time. They address various expressions: happy, fearful, indifferent, strange, disgusted, surprised, relieved, proud, and sad. The most common expression for oral sex recipients was feeling happy (38.7%).

Interestingly, 10.8% thought this behavior was disgusting, and 8.2% thought this was strange. In another case who did oral sex, dominant among them felt fearful as much as 17.1%, 15.8% felt indifferent, 2.8% felt disgusted, and only 12% felt happy doing it.⁴¹ Others reported on a focus group discussion study involving women with experiences of fellatio and cunnilingus. They stated a feeling of good emotional vulnerability when engaging in oral sex on their partners.⁴²

During oral sex, the aim is to orgasm for the partner. Richerts *et al.* (2006) conducted a study on a large population. 50% of women experience orgasm during vaginal intercourse, but when intercourse is added with cunnilingus activity, 73% will experience orgasm. Oral sex strengthens the increased incidence of orgasm in partners, especially in women.¹⁵

Oral sex risk

Many reports have stated that oral sex can be local infections, rather a cunnilingus, fellatio, or anilingus. Pathogens that are often transmitted through oral sex are viruses (*Herpes simplex viruses*, *Hepatitis virus*, *Human papillomaviruses*, and less frequently HIV) and bacteria (mainly *syphilis*, *gonorrhea*, group B *Streptococcus*).^{43,44} In addition, infections such as *Molluscum contagiosum*, *Candidiasis*, *Epstein Barr virus*, and *Aspergillosis* can also be spread through the process of oral sex.⁴⁵

Gonorrhea infection is possible in oral sex. Sex workers with inconsistent condom use for oral sex were reported 17.1 times more likely infected (95% CI: 8.0 ± 36.5) than consistent condom users to develop pharyngeal gonorrhea.⁴⁶ HSV-1 is transmitted through genital and oral contact. This lesion is one of the most prevalent lesions among women, even young.^{47,48} HSV-1 is more likely to spread to the female genital organs than male genital organs.⁴⁹ For young people, acquiring a lifelong recurrent infection such as genital herpes is not only an unfortunate surprise diagnosis, it can also invoke anxiety, guilt, and social-sexual isolation.^{50,51}

Unusual infections have also been reported after oral sex. The incidence of pharyngitis with *Trichomoniasis vaginalis* was reported in men who routinely had oral sex with their partner who had vaginal *Trichomoniasis*.⁵² So far, it is infrequent for *Trichomoniasis* to spread by mouth and cause a local infection. In addition, parasites such as *Toxoplasma gondii* is found in ejaculate fluid, possibly spread through oral sex.^{53,54} There may be a positive association or association between *Toxoplasma* transmission and oral sex behavior, especially fellatio. However, this condition depends on the activity of fellatio, whether it will be sperm swallowed or not.

A severe infection has been reported by Froissart *et al.* They reported two cases of severe infection that occurred through oral sex activity. The first case complained of fever, pubic erythema, penile edema, and cellulitis and the second case complained of genital bubo, foreskin edema, fever, glans erosion, and cellulitis. Both of these cases occurred after performing fellatio activities with their sex partners. In this case, the suspicion of the transmission process was an abrasion of the penis during traumatic oral sex. Cellulitis of the pubis is an infrequent case. The trauma of the genital organs due to the bite of the partner is presumed as a port de entry.⁴³

Severe soft tissue infections such as Fournier's gangrene were also reported by Lutz and Gerber (2020) through oral sex with commercial sex workers. This male patient experienced swelling and sloughing of the skin of his penis after reportedly engaging in oral sex. During intercourse, his partner nicked the shaft of the penis using her teeth.⁵⁵ Takenouchi *et al.* also reported a rare infection, Lemierre syndrome, in a 58-year-old man after oral sex with a sexual partner two days previously.⁵⁶ Lemierre syndrome is characterized by thrombophlebitis of the internal jugular veins and bacteremia caused by anaerobic organisms following a recent oropharyngeal infection.⁵⁷

Cunnilingus should be avoided in pregnant women. Hosseini and Hunt reported a case of *Streptococcus mitis* Chorioamnionitis in a 43-year-old pregnant woman who had oral sex with his partner. This infection occurred ten days before contractions after dental scaling and oral sex.⁵⁸ The same case was also reported by Gherman *et al.* in Australia that infected by *Streptococcus viridans* after cunnilingus.⁵⁹ Both *Streptococcus mitis* and *Streptococcus viridans* are normal flora in the oral cavity.

WHO's guidelines for adolescent sexual and reproductive health and rights in 2018 recommends giving antibiotic prophylaxis to children who experience sexual abuse with the suspicion of one of which is oral sex, WHO considers that oral sex by unknown offender has a significant risk of sexual transmitted disease.⁶⁰ According to Barbara *et al.*, oral sex was the riskiest behavior than vaginal and anal sex. Cunnilingus has an OR of 2.199 and fellatio of an OR of 2.756 to have infected. This study reported that people who performed oral activities have higher risks associated with STD/HIV transmission than those not.⁶¹

Other serious risks that arise due to oral sex behavior include human papillomavirus infection, which causes oral squamous papilloma, oral verruca vulgaris, condyloma acuminata, focal epithelial hyperplasia, epidermoid carcinoma, and oropharyngeal squamous cell carcinoma.⁶²⁻⁶⁴ One study from Indonesia proves a strong correlation between the activity of oral and anal among homosexuals and HPV infection (OR 6.854).⁶⁵ According to Brown *et al.*, women who had more than three times oral sex with their partners in the previous month had a higher risk of developing oral HPV than those who had less.⁶⁶

Benefits obtained due to oral sex

Meuleman *et al.* reported that oral sex might be a protective factor in recurrent miscarriage cases. This study was conducted on 97 women who experienced unexplained consecutive miscarriages. Recurrent miscarriage cases occur due to an imbalance of immunity in the embryo's implantation into the endometrium.⁶⁷ Koelman *et al.* stated that exposure to oral sex could reduce the incidence of preeclampsia.³³

Pittrof *et al.* performed a study on 619 women engaged in oral sex. They have a lower risk of developing endometriosis and pelvic inflammatory disease than their counterparts. The assumption that oral sex can be a protective factor is that endometriosis and PID require adaptive immunity in the lymphoid system.⁶⁸ Meanwhile, the oropharynx is a channel that is rich in lymph channels, thereby facilitating the stimulation of adaptive immunity. Primed lymphocytes in the nasopharyngeal tract will be found later in the endocervix.⁶⁹ In addition, it is possible to induce genital T-cells and B-cells through sub-lingual immunization.⁷⁰

Testosterone also affects the libido of women. Testosterone in semen can logically affect the libido of the sexual partner. Women who did not use condoms at the time of intercourse had more sexual intercourse than women who did.⁷¹ But there are no specific reports in the case of women who swallowed semen. Semen also had an antidepressant effect, such as serotonin. It has been reported that women whose partners used a condom during intercourse were more likely to be depressed than those who did not use it.⁷¹

Some interesting substances are opioids such as endorphin, enkephalin, and other cytokines also present in semen. These substances affect sperm motility, such as endorphins and calcitonin.⁷² Endorphin and enkephalines function to reduce anxiety and induce analgesia and drowsiness.⁷³ Likewise, with oxytocin, oxytocin is a hormone that plays a role in increasing bonding and intimacy in partners. This hormone impacts penile erection and female orgasm.⁷⁴ However, in the case of semen ingestion, the activity levels of these substances will be significantly reduced in the blood due to the absorption, distribution, and metabolism processes.

Besides that, several benefits are felt during oral sex, such as satisfaction in intercourse and emotional or pleasure in intercourse. A study on 410 women who had oral sex showed that their male partners delay orgasm so that the intercourse time is longer.⁷⁵ Oral sex is a positive activity that provides sexual satisfaction and relationships.^{76,77}

Another benefit of oral sex is sperm retention by male partners.⁷⁸ Cunnilingus is considered one of the activities that help women experience orgasm.¹⁵ Reports show that oral sex helps sexual activity last longer than usual.⁷⁹ Another study reported that 233 men who had oral sex with their partners would spend more time having sex with them, doing more copulatory behavior that replaced semen, and reported greater sexual arousal.³⁸ Men engaging in oral sex with their partners as part of strategy provide a more comprehensive range of benefits. Men who are higher in consideration are more likely to benefit their partner.⁷⁹

Conclusion

Oral sex is currently independent of age and gender. In adolescents and young adults, the reason for having oral sex is wanting to feel sexual pleasure but not getting pregnant or losing your virginity, doing intercourse without contraception, and having minimal risk of STD. In addition, there is also a reason for "friends with benefits" and popularity among peers. In late adulthood, oral sex is reported to be one of the mandatory activities besides kissing, cuddling, and vaginal intercourse. Oral sex is also one activity that supports orgasm in a married couple. The expressions felt by those who had oral sex varied from feeling happy, afraid, and feeling strange. Oral sex is also reported to be one way to detect cheating in a relationship. One of the risks posed by oral sex is infection. Some have said the benefits of oral sex include increased immunity and a reduced risk of recurrent bleeding and preeclampsia.

Data availability

No data are associated with this article.

References

1. Saini R, Saini S, Sharma S: **Oral sex, oral health and orogenital infections.** *J Glob Infect Dis.* 2010; **2**(1): 57–62.
[PubMed Abstract](#) | [Publisher Full Text](#)
2. Keating SM: **Oral sex—a review of its prevalence and proof.** *J Forensic Sci Soc.* 1988; **28**(5–6): 341–355.
[PubMed Abstract](#) | [Publisher Full Text](#)
3. Hyde JS, Delamater JD: *Understanding Human Sexuality.* 13th ed. Odoardi E, editor. New York: 2017; 214–215 p.
4. Fry MJ, Cochran JJ, Ohlmann JW, Anderson DR: **2019 Cengage Learning. WCN 02-200-203.** 2019; 249–251 p.
5. Filmsite: **Sex in Cinema: Pre-1920s Greatest and Most Influential Erotic/Sexual Films and Scenes.** 2020.
[Reference Source](#)
6. Ranker: **15 Movies Where the Actors Really Had Sex.** 2021.
[Reference Source](#)
7. Timeout: **Out T. Top 25 oral sex songs.** 2014.
[Reference Source](#)
8. Burgos J: **Ariana Grande'34+35' Lyrics Meaning: Doja Cat, Megan Thee Stallion|StyleCaster.**
[Reference Source](#)
9. Kunkel D, Eyal K, Finnerty K, et al.: **Sex on TV 4: A Kaiser Family Foundation Report. Sex TV 4 A Bienn Rep to Kaiser Fam Found.** 2005; 81.
[Reference Source](#)
10. Garcia JR, Reiber C, Merriwether AM: **Sexual Hookup Culture: A Review.** *Rev. Gen. Psychol.* 2013; **16**(2): 161–176.
11. Kuperberg A, Padgett JE: **Dating and hooking up in college: Meeting contexts, sex, and variation by gender, partner's gender, and class standing.** *J Sex Res.* 2015; **52**(5): 517–531.
[PubMed Abstract](#) | [Publisher Full Text](#)
12. Aubrey JS, Smith SE: **The Impact of Exposure to Sexually Oriented Media on the Endorsement of Hookup Culture: A Panel Study of First-Year College Students.** *Mass Commun. Soc.* 2016; **19**(1): 74–101.
[Publisher Full Text](#)
13. Keating SM, Higgs DF: **Oral sex—further information from sexual assault cases.** *J Forensic Sci Soc.* 1992; **32**(4): 327–331.
[PubMed Abstract](#) | [Publisher Full Text](#)
14. Wylie K: **A Global Survey of Sexual Behaviours.** *J Fam Reprod Heal.* 2009; **3**(2): 39–49.
15. Richters J, De Visser R, Rissel C, et al.: **Sexual practices at last heterosexual encounter and occurrence of orgasm in a national survey.** *J Sex Res.* 2006; **43**(3): 217–226.
[Publisher Full Text](#)
16. D'Souza G, Cullen K, Bowie J, et al.: **Differences in oral sexual behaviors by gender, age, and race explain observed differences in prevalence of oral human papillomavirus infection.** *PLoS One.* 2014; **9**(1): 19–21.
[Publisher Full Text](#)
17. Child Trends: **Oral Sex Behaviors among Teens.** 2013; (December).
[Reference Source](#)
18. Asekun-Olarinmoye E, Asekun-Olarinmoye OS, Adebimpe W, et al.: **Effect of mass media and Internet on sexual behavior of undergraduates in Osogbo metropolis, Southwestern Nigeria.** *Adolesc Health Med Ther.* 2014; **15**.
[Publisher Full Text](#)
19. Cherie A, Berhane Y: **Oral and anal sex practices among high school youth in Addis Ababa, Ethiopia.** *BMC Public Health.* 2012; **12**(1): 5.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Reference Source](#)
20. Fajans P, Ford K, Wirawan DN: **STD knowledge and behaviours among clients of female sex workers in Bali, Indonesia.** *AIDS Care.* 1994; **6**(4): 459–475.
[PubMed Abstract](#) | [Publisher Full Text](#)
21. Swaddiwudhipong W, Nguntra P, Chaovakiratipong C, et al.: **Effect of health education and condom promotion on behavioral change among low socioeconomic prostitutes in Mae Sot, Tak, Thailand.** *Southeast Asian J Trop Med Public Health.* 1990 Sep; **21**(3): 453–457.
[PubMed Abstract](#)
22. Bhave G, Lindan CP, Hudes ES, et al.: **Impact of an intervention on HIV, sexually transmitted diseases, and condom use among sex workers in Bombay, India.** *AIDS.* 1995 Jul; **9**(Suppl 1): S21–S30.
23. Dotson-Blake KP, Knox D, Zusman ME: **Exploring Social Sexual Scripts Related to Oral Sex: A Profile of College Student Perceptions.** *Prof Couns.* 2012; **2**(1): 1–11.
[Publisher Full Text](#)
24. Cornell JL, Halpern-Felsher BL: **Adolescents tell us why teens have oral sex.** *J Adolesc Health.* 2006; **38**(3): 299–301.
[PubMed Abstract](#) | [Publisher Full Text](#)
25. Goldstein R, Halpern-Felsher B: **Adolescent Oral Sex and Condom Use: How Much Should We Worry and What Can We Do?.** *J Adolesc Health.* 2018; **62**(4): 363–364.
[PubMed Abstract](#) | [Publisher Full Text](#)
26. Brewster KL, Tillman KH: **Who's Doing It? Patterns and Predictors of Youths' Oral Sexual Experiences.** *J Adolesc Health.* 2008; **42**(1): 73–80.
[PubMed Abstract](#) | [Publisher Full Text](#)
27. Prinstein MJ, Meade CS, Cohen GL: **Adolescent oral sex, peer popularity, and perceptions of best friends' sexual behavior.** *J Pediatr Psychol.* 2003; **28**(4): 243–249.
[PubMed Abstract](#) | [Publisher Full Text](#)
28. Holway GV, Tillman KH: **Timing of Sexual Initiation and Relationship Satisfaction in Young Adult Marital and Cohabiting Unions.** *J Fam Issues.* 2017; **38**(12): 1675–1700.
[PubMed Abstract](#) | [Publisher Full Text](#)
29. Halpern-Felsher BL, Cornell JL, Kropp RY, et al.: **Oral versus vaginal sex among adolescents: Perceptions, attitudes, and behavior.** *Pediatrics.* 2005; **115**(4): 845–851.
[PubMed Abstract](#) | [Publisher Full Text](#)
30. Penhollow T, Young M, Denny G: **The impact of religiosity on the sexual behaviors of college students.** *Am J Heal Educ.* 2005; **36**(2): 75–85.
[Publisher Full Text](#)
31. Smith AMA, Patrick K, Heywood W, et al.: **Sexual practices and the duration of last heterosexual encounter: Findings from the Australian longitudinal study of health and relationships.** *J Sex Res.* 2012; **49**(5): 487–494.
[PubMed Abstract](#) | [Publisher Full Text](#)
32. Cherlin AJ, Laumann EO, Gagnon JH, et al.: **Social Organization and Sexual ChoicesThe Social Organization of Sexuality: Sexual Practices in the United States.** *Contemp. Sociol.* 1995; **24**: 293.
[Publisher Full Text](#)
33. Koelman CA, Coumans ABC, Nijman HW, et al.: **Correlation between oral sex and a low incidence of preclampsia: A role for soluble HLA in seminal fluid?.** *J Reprod Immunol.* 2000; **46**(2): 155–166.
[PubMed Abstract](#) | [Publisher Full Text](#)
34. Vannier SA, Byers ES: **A qualitative study of university students' perceptions of oral sex, intercourse, and intimacy.** *Arch Sex Behav.* 2013; **42**(8): 1573–1581.
[PubMed Abstract](#) | [Publisher Full Text](#)
35. Tolman DL, McClelland SI: **Normative sexuality development in adolescence: A decade in review, 2000-2009.** *J Res Adolesc.* 2011; **21**(1): 242–255.
[Publisher Full Text](#)
36. Santtila P, Wager I, Witting K, et al.: **Discrepancies between sexual desire and sexual activity: Gender differences and associations with relationship satisfaction.** *J Sex Marital Ther.* 2008; **34**(1): 31–44.
[PubMed Abstract](#) | [Publisher Full Text](#)
37. Office AM: **AARP/Modern Maturity Sexuality Study.** 1999.
38. Pham MN, Shackelford TK, Sela Y: **Women's oral sex behaviors and risk of partner infidelity.** *Pers Individ Dif.* 2013; **55**(4): 446–449.
[Publisher Full Text](#)
39. Shackelford TK, Pound N: **Sperm competition in humans: Classic and contemporary readings.** *Sperm Competition in Humans: Classic and Contemporary Readings.* 2006: 1–283.
[Publisher Full Text](#)
40. Auslander BA, Catalozzi M, Davis G, et al.: **Adolescents' and young women's use of a microbicide surrogate product when receiving oral sex.** *J Pediatr Adolesc Gynecol.* 2014; **27**(1): 37–40.
[PubMed Abstract](#) | [Publisher Full Text](#)
41. Vasilenko SA, Maas MK, Lefkowitz ES: **"It Felt Good but Weird at the Same Time": Emerging Adults' First Experiences of Six Different Sexual Behaviors.** *J Adolesc Res.* 2015; **30**(5): 586–606.
[PubMed Abstract](#) | [Publisher Full Text](#)
42. Sovetkina E, Weiss M, Verplanken B: **Perception of vulnerability in young females' experiences of oral sex: Findings from the focus group discussions.** *Cogent Psychol.* 2017; **4**(1): 1–18.
[Publisher Full Text](#)
43. Froissart A, Martinez V, Jaureguiberry S, et al.: **Local infections after oral sex.** *Med Mal Infect.* 2011; **41**(3): 152–153.
[Publisher Full Text](#)
44. Cherpes TL, Melan MA, Kant JA, et al.: **Genital tract shedding of herpes simplex virus type 2 in women: Effects of hormonal contraception, bacterial vaginosis, and vaginal group B Streptococcus colonization.** *Clin Infect Dis.* 2005; **40**(10): 1422–1428.
[PubMed Abstract](#) | [Publisher Full Text](#)

45. Ran Y, Lu Y, Cao L, *et al.*: **Primary laryngeal aspergillosis related to oral sex? A case report and review of the literature.** *Med Mycol Case Rep.* 2013; **2**(1): 1–3.
[PubMed Abstract](#) | [Publisher Full Text](#)
46. Wong ML, Chan RKW: **A prospective study of pharyngeal gonorrhoea and inconsistent condom use for oral sex among female brothel-based sex workers in Singapore.** *Int J STD AIDS.* 1999; **10**(9): 595–599.
[PubMed Abstract](#) | [Publisher Full Text](#)
47. Horowitz R, Aierstuck S, Williams EA, *et al.*: **Herpes simplex virus infection in a university health population: Clinical manifestations, epidemiology, and implications.** *J Am Coll Heal.* 2010; **59**(2): 69–74.
[PubMed Abstract](#) | [Publisher Full Text](#)
48. Peña KC, Adelson ME, Mordechai E, *et al.*: **Genital herpes simplex virus type 1 in women: Detection in cervicovaginal specimens from gynecological practices in the United States.** *J Clin Microbiol.* 2010; **48**(1): 150–153.
[PubMed Abstract](#) | [Publisher Full Text](#)
49. Gray E, Morgan J, Lindeman J. **Herpes simplex type 1 versus Herpes simplex type 2 in anogenital herpes; a 10 year study from the Waikato region of New Zealand.** *Erana.* 2008; **121**(1271): 43–50.
[Reference Source](#)
50. Azwa A, Barton SE: **Aspects of herpes simplex virus: A clinical review.** *J Fam Plan Reprod Heal Care.* 2009; **35**(4): 237–242.
[Publisher Full Text](#)
51. Hendry K: **Oral Sex and HSV-1 Knowledge Among College Freshmen Females.** 2017.
52. Carter-Wicker K, Utuama O, Omole F: **Can trichomoniasis cause pharyngitis? A case report.** *SAGE Open Med Case Reports.* 2016; **4**: 2050313X1668213.
[PubMed Abstract](#) | [Publisher Full Text](#)
53. Dass SAH, Vasudevan A, Dutta D, *et al.*: **Protozoan parasite *Toxoplasma gondii* manipulates mate choice in rats by enhancing attractiveness of males.** *PLoS One.* 2011; **6**(11): 1–6.
[Publisher Full Text](#)
54. Kačková, Hlaváčková J, Flegr J: **Oral sex: A new, and possibly the most dangerous, route of toxoplasmosis transmission.** *Med. Hypotheses.* 2020; **141**(March): 109725.
[PubMed Abstract](#) | [Publisher Full Text](#)
55. Lutz S, Gerber D: **Oral-Sex-Associated Fournier'S Gangrene Following Contact With Commercial Sex Worker.** *Chest.* 2020; **158**(4): A868.
[Publisher Full Text](#)
56. Takenouchi S, Kunieda T, Yamada R, *et al.*: **Lemierre syndrome caused by oral sex.** *J Formos Med Assoc.* 2014; **113**(10): 762–763.
[PubMed Abstract](#) | [Publisher Full Text](#)
57. Eilbert W, Singla N: **Lemierre's syndrome.** *Int J Emerg Med.* 2013; **6**(1): 1.
58. Hosseini BS, Hunt J: **Streptococcus mitis Chorioamnionitis after Dental Scaling and Oral Sex.** *Case Rep Obstet Gynecol.* 2020; **2020**: 1–3.
[PubMed Abstract](#) | [Publisher Full Text](#)
59. Gherman RB, Browning J, Tramont J, *et al.*: **Streptococcus viridans intra-amniotic infection associated with antecedent cunnilingus.** *Aust New Zeal J Obstet Gynaecol.* 1999; **39**(2): 257–260.
[PubMed Abstract](#) | [Publisher Full Text](#)
60. OMS: **WHO recommendations on adolescent sexual and reproductive health and rights.** 2018; 1–88 p.
[Reference Source](#)
61. Santa-Bárbara RC, Hueso-Montoro C, Martín-Salvador A, *et al.*: **Association between sexual habits and sexually transmitted infections at a specialised centre in granada (Spain).** *Int J Environ Res Public Health.* 2020; **17**(18): 1–9.
62. Rosenquist SE: **Is Oral Sex Really a Dangerous Carcinogen? Let's Take a Closer Look.** *J. Sex. Med.* 2012; **9**(9): 2224–2232.
[PubMed Abstract](#) | [Publisher Full Text](#)
63. Fernández-López C, Morales-Angulo C: **Otorhinolaryngology Manifestations Secondary to Oral Sex.** *Acta Otorrinolaringol (English Ed.).* 2017; **68**(3): 169–180.
[PubMed Abstract](#) | [Publisher Full Text](#)
64. Shah A, Malik A, Garg A, *et al.*: **Oral sex and human papilloma virus-related head and neck squamous cell cancer: A review of the literature.** *Postgrad Med J.* 2017; **93**(1105): 704–709.
[PubMed Abstract](#) | [Publisher Full Text](#)
65. Gofur ARP, Bramantoro T, Palupi R: **Identification of sexual behavior in community at risk of oral human papillomavirus infection.** *Syst Rev Pharm.* 2020; **11**(6): 543–549.
66. Brown B, Blas MM, Cabral A, *et al.*: **Oral sex practices, oral human papillomavirus and correlations between oral and cervical human papillomavirus prevalence among female sex workers in Lima, Peru.** *Int J STD AIDS.* 2011; **22**(11): 655–658.
[PubMed Abstract](#) | [Publisher Full Text](#)
67. Meuleman T, Baden N, Haasnoot GW, *et al.*: **Oral sex is associated with reduced incidence of recurrent miscarriage.** *J Reprod Immunol.* 2019; **133**(July 2018): 1–6.
[PubMed Abstract](#) | [Publisher Full Text](#)
68. Pittrof R, Sully E, Bass DC, *et al.*: **Stimulating an immune response? Oral sex is associated with less endometriosis.** *Int J STD AIDS.* 2012; **23**(11): 775–780.
[PubMed Abstract](#) | [Publisher Full Text](#)
69. Johansen FE, Baekkevold ES, Carlsen HS, *et al.*: **Regional induction of adhesion molecules and chemokine receptors explains disparate homing of human B cells to systemic and mucosal effector sites: Dispersion from tonsils.** *Blood.* 2005; **106**(2): 593–600.
[PubMed Abstract](#) | [Publisher Full Text](#)
70. Çuburu N, Kweon M-N, Hervouet C, *et al.*: **Sublingual Immunization with Nonreplicating Antigens Induces Antibody-Forming Cells and Cytotoxic T Cells in the Female Genital Tract Mucosa and Protects against Genital Papillomavirus Infection.** *J Immunol.* 2009; **183**(12): 7851–7859.
[PubMed Abstract](#) | [Publisher Full Text](#)
71. Gallup GG, Burch RL, Platak SM: **Does semen have antidepressant properties?.** *Arch Sex Behav.* 2002; **31**(3): 289–293.
[Publisher Full Text](#)
72. Mungan NA, Mungan G, Basar MM, *et al.*: **Effect of seminal plasma calcitonin levels on sperm motility.** *Arch Androl.* 2001; **47**(2): 113–117.
[PubMed Abstract](#) | [Publisher Full Text](#)
73. Grossman A, Clement-Jones V: **3 Opiate receptors: Enkephalins and endorphins.** *Clin Endocrinol Metab.* 1983; **12**(1): 31–56.
[Publisher Full Text](#)
74. Turner RA, Altemus M, Enos T, *et al.*: **Preliminary Research on Plasma Oxytocin in Normal Cycling Women: Investigating Emotion and Interpersonal Distress.** *Psychiatry.* 1999; **62**(2): 97–113.
[PubMed Abstract](#) | [Publisher Full Text](#)
75. Sela Y, Shackelford TK, Pham MN, *et al.*: **Do women perform fellatio as a mate retention behavior?.** *Pers Individ Dif.* 2014; **73**: 61–66.
[Publisher Full Text](#)
76. Brody S, Costa RM: **Satisfaction (sexual, life, relationship, and mental health) Is associated directly with penile-vaginal intercourse, but inversely with other sexual behavior frequencies.** *J Sex Med.* 2009; **6**(7): 1947–1954.
[PubMed Abstract](#) | [Publisher Full Text](#)
77. Brody S: **The relative health benefits of different sexual activities.** *J Sex Med.* 2010; **7**(4 PART 1): 1336–1361.
[Publisher Full Text](#)
78. Pham MN, Shackelford TK, Sela Y, *et al.*: **Is cunnilingus-assisted orgasm a male sperm-retention strategy?.** *Evol Psychol.* 2013; **11**(2): 405–414.
[PubMed Abstract](#)
79. Pham MN, Shackelford TK, Holden CJ, *et al.*: **Men's Benefit-Provisioning Mate Retention Behavior Mediates the Relationship Between Their Agreeableness and Their Oral Sex Behaviors.** *Arch Sex Behav.* 2015; **44**(6): 1723–1728.
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Thi Tu An Nguyen

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First, I would like to take this opportunity to say thank you for giving me this chance to review this interesting topic.

In my opinion, I would like to say thank you to the authors who spent time writing this article. However, this is not a review paper, because:

- There is no rationale for this paper. Why did you do this review? What contexts are you looking for? Are you looking for this in a certain country or globally?
- Method: what databases did you search for these papers? Time frame? Countries? Etc?
- The topic of the review is not discussed comprehensively in the context. To me, this paper is very descriptive. It needs more critical thinking.
- The conclusion is so simple. The authors should restate their aims/objectives and future directions or implications (if needed).

I think this paper should be revised a lot before it can be published. My recommendations are below:

Introduction:

The authors need to clarify: Why are you doing this review? What are your aims/objectives?

Defining oral sex and pop culture

Paragraph No3 (from the top) - page 3/9: The last sentence needs references.

Paragraph No4 (from the top) - page 3/9: The first sentence needs references.

Prevalence of oral sex

I suggest this headline should be ***The prevalence of oral sex of some countries around the world.*** This section is so descriptive. You should say some things such as what is your thinking of these oral sex rates?

Perspectives and motives in oral sex

You should add on the countries where these studies were conducted. Again, what do you think about these studies influencing your aims?

Attitudes in oral sex

Again, which nationalities of these participants in these studies?

Paragraphs No 2&3 should be deleted because they are irrelevant to this section.

Oral sex risk

This section is good.

Benefits obtained due to oral sex

I suggest this headline should be "oral sex benefits".

Again, which nationalities of these participants in these studies?

Is the topic of the review discussed comprehensively in the context of the current literature?

Partly

Are all factual statements correct and adequately supported by citations?

Partly

Is the review written in accessible language?

Yes

Are the conclusions drawn appropriate in the context of the current research literature?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: sexual and reproductive health, disability, applied health, sociology, anthropology, family and gender.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 26 Feb 2022

Cennikon Pakpahan, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

We are very grateful for the excellent feedback from reviewers. We have considered it and revised it according to your suggestions in our latest version. We are waiting for a good response from you.

Competing Interests: No competing interests

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