

UNDERGRADUATE HUMAN SEXUALITY TEXTBOOKS:
COVERAGE OF STDS

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.....with thanks to my parents, Robert and Esther Sutton, who believed in my abilities and encouraged me to achieve. And special thanks to my husband, Britt, who has stood by me through countless sleepless nights. Your love has been my strength.

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ABSTRACT

Young adults in the United States have higher rates of sexually transmitted diseases (STDs) than young adults in other industrialized nations. This could be a result of inaccurate or insufficient information. This study examined the coverage of STDs in the bestselling undergraduate human sexuality textbooks ($n = 14$). A codebook was developed and concepts about the types, incidence, transmission, symptoms, treatment, health impact and prevention of STDs, as well as the amount and accuracy of that information were coded. In general, textbooks included the most information about prevention and symptoms, and were most accurate in their coverage of HIV, hepatitis B, genital herpes, and pubic lice. In addition, textbooks included more information on HIV, syphilis, and gonorrhea than other STDs. Suggestions to textbook authors and directions for future research are discussed.

CHAPTER ONE

LITERATURE REVIEW

A typical college student spends 7 ½ to 9 hours daily using recreational media including the internet, television, radio, mp3 players, and video games, frequently multi-tasking across media (e.g., playing the radio while surfing the internet; Greenberg, Eastin, Skalski, Cooper Levy, & Lachlan, 2005). Sexual references inundate the media that adolescents and young adults are consuming (Brown, 2002). On television, approximately 70% of programs include talk about sex, although fewer (3%) show some type of physical sexual behavior (Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005). Television programs targeting young people contain more sexual scenes per hour than all other programming (Kunkel et al., 2005). For example, 83% of the episodes of the top 20 television shows watched by teens contained sexual dialogue (e.g., comments about sexual actions or interest “He’s hot” or “I’d like to do her,” and 20% of the episodes showed sexual intercourse (Kunkel, Cope-Farrar, Eyal, Maynard-Farinola, & Donnerstein, 2001).

In other media, about 25% of radio segments (including talk radio, advertisements, and music) contain either implied or direct sexual references (Gentile, 1999) and 20-50% of music videos portray sexuality or eroticism, depending on the music genre (e.g., country, rock, rap; DuRant et al., 1997). In addition, although there are currently fewer R-rated, and more PG-13 rated movies being produced (Nash Information Services, 2008), research shows that there has been significant increases in violence, sexual innuendo and profanity in PG and PG-13 movies (Thompson & Yokota, 2004).

Sexual content is more prevalent in music lyrics, however, than any other medium (Pardun, L'Engle, & Brown, 2005). Of the 10 top-selling CDs in 1999, all contained at least one song with sexual content and almost half of the songs on these CDs contained some sexual content. Moreover, almost 20% of the songs with sexual content had lyrics describing sexual intercourse (e.g., "The one you let hit it and never called you again," Lauryn Hill; "Let him do his thing," Foxy Brown) and 8% of all songs included sexual sound effects (Gentile, 1999).

Even those who are not consumers of electronic media cannot escape the sexual imagery that pervades American culture. Billboard advertisements, magazines, and other print media often contain advertisements with sexual references and scantily clad women, and partially naked couples are regularly portrayed to sell products such as shoes (e.g., Candies™), beer (e.g., Budweiser™), perfume (e.g., Jovan™), and clothing (e.g., Abercrombie and Fitch™). Insinuations of sexual behavior, partially clad individuals, and suggested nudity are in almost 50% of magazine advertisements, and ads that target young adults are more than twice as likely to contain provocatively dressed models and 128% more likely to contain sexual behavior than ads targeted at older audiences (Reichert, 2003).

These sexual messages communicate little about the risks associated with unprotected sex or the importance of using protection during sex. Of the 14,000 sexual messages that adolescents and young adults are exposed to each year, only about 1% of them deal with birth control, self-control, abstinence, or the risk of pregnancy or STDs (Committee on Public Education, 2001). Although 45% of the television programs most watched by youth contained a depiction of some type of sexual activity, including

passionate kissing or intimate touching, only 5% mentioned contraception or protection from STDs (Kunkel et al., 2005). In addition, unintended pregnancies are rarely shown as the outcome of unprotected sex (Kunkel et al., 2001). Among song lyrics, only 14% of the songs that contained sexually explicit lyrics included any message about responsibilities or risks (e.g., "...It was so dumb / should'a used a condom..." Foxy Brown; Gentile, 1999).

The unrealistic depictions of sexuality in the media may contribute to the current high rates of STDs in the United States. Young adults in the United States have higher rates of HIV, syphilis, gonorrhea, and chlamydia than young adults in other industrialized nations (Feijoo, 2001). Half of all new HIV infections in the United States occur in people 25 years of age or younger, and one in four sexually active youth will contract an STD by age 25 (Hoff, Greene, & Davis, 2003). In addition, 40% of girls aged 15-19 who have had sex have experienced at least one STD (Stepp & Shaver, 2008). The high risk of contracting an STD is in part because young adults are more likely to have multiple sex partners, engage in unprotected sex, and select higher-risk partners (Division of STD Prevention, 2000). Numerous studies have found that multiple partners and non-condom use is prevalent among college students.

In one study about 30% of college students indicated that they had had six or more sexual partners (CDC, 1995). And in a national sample of college students, only 43% reported consistent use of condoms during heterosexual intercourse, and 24% said they never used condoms (Eisenberg, 2001). However, another study found that one-third of sexually active college students reported having more than one partner in a 3-month period, and 75% of those with multiple partners either did not use a condom or used a

condom infrequently (Desiderato & Crawford, 1995). Unfortunately, only 50% of young adults (age 18 - 24) get tested for STDs because most do not think they are at risk (Hoff et al., 2003).

Another contributing factor in the spread of STDs is that young adults do not disclose previous or concurrent sexual partners (Desiderato & Crawford, 1995). For example, in one clinic, 74% of young adults whose partners had another sexual partner during their relationships were not aware of that fact (Drumright, Gorbach, & Holmes, 2004). One serious consequence of multiple partners is that students with multiple partners were more likely to test positive for human immunodeficiency virus (HIV) or other sexually transmitted diseases than were other students (Abbey, Saenz, & Buck, 2005).

Risky sexual behaviors that lead to STDs may begin with poor information; surveys of youth indicate that they have inadequate knowledge of basic safe sex practices. For instance, there is a great deal of confusion about the risk of oral sex and the proper protection. Twenty (Hoff et al., 2003) to sixty percent (Johnston-Polacek, Hicks, & Oswalt, 2007) of adolescents think that engaging in oral sex instead of vaginal intercourse protects them against contracting chlamydia or HIV, and over 50% of college students are not aware that someone can get STDs from intimate body contact that does not involve sexual intercourse (Jones & Haynes, 2006). In another study of college students, 37% described oral sex as an abstinent behavior (Remez, 2000). This inadequate knowledge may be why 80% of college students indicate that they do not use protection during oral sex (Chambers, 2007). In the same study, few students seemed to

be aware that dental dams (30%) or Saran Wrap™ (22%) could protect them from STDs during oral sex.

Young adults also seem confused about their ability to discern if someone has an STD. In one study, about 60% of young adults indicated that they can tell if someone has an STD (“Smarter Sex,” 2002). As a result, young adults do not use condoms if they think their new partner does not have an STD, and in one study most of these young people had contracted an STD (Hoffman & Cohen, 1999).

A paradox of 21st Century American society is that children, adolescents, and young adults are exposed to more sexual themes and imagery growing up than ever before in U.S. history, and yet young people seem to know little about the basics of human sexuality. In addition to media that fail to include accurate information about sexuality, the United States has been characterized by a cultural orientation to sex education that results in incomplete or inadequate instruction (Hoff, Greene, McIntosh, Rawlings, & D’Amico, 2000). Since 1981, when the Adolescent Family Life Act (AFLA) was signed into law, the federal government has continued to fund abstinence based sexuality education. In 2008, the United States government allocated \$176 million for abstinence-only-until-marriage programs, and it has proposed increasing this funding level to \$204 million in 2009 (SIECUS, 2008). As a result, sexuality education is increasingly focused on abstinence. From 1988 – 1999, teachers became more likely to teach abstinence as the only way of preventing STDs (increased from 2% in 1988 to 23% in 1999) and were more likely to indicate that abstinence was the most important message for their students (25% in 1988 vs. 41% in 1999; Darroch, Landry, & Singh, 2000). In spite of no evidence that abstinence programs work, a 2008 report of the sexuality

education in the United States showed that in 32 of the 50 states, abstinence is stressed as the best protection for STDs/HIV (SIECUS).

It is no surprise, then, that in this void of authoritative information about sexual issues, college students often seek advice from friends, who may or may not have accurate information. Between 60% and 80% of college students considered friends to be their most important source of sex-related information, followed by the media (i.e., TV, movies, magazines, or the internet), and then their sexual partners (Feigenbaum & Weinstein, 1995; Hoff et al., 2003; “Smarter Sex,” 2002). College students, however, are likely to have authoritative information available to them at the student health center or in a human sexuality class.

Although in any given course an instructor may choose to explore some topics in depth, while giving less time to other topics (Goettsh, 1987), textbooks provide an idea of what is taught. Textbooks also contain material that students can access on their own, even if the instructor does not cover the material in class. In fact, in a conversation with a Human Sexuality professor, he mentioned that he does not cover the STD chapter in class, although his syllabus recommends that students read this chapter (Joseph LoPiccolo, personal communication, December 5, 2008). Therefore, a textbook may be one of a student’s best sources of information concerning sexuality and healthy sexual behaviors (Feigenbaum & Weinstein, 1995; Rind, 1995).

One way to assess the amount and quality of information available to young people in college would be to examine the coverage of topics related to STDs in post-secondary textbooks for human sexuality courses. Human sexuality courses are offered at about half of the colleges and universities around the United States (Rodriguez, Young,

Renfro, Asencio, & Haffner, 1996), and about 250,000 college students take a human sexuality course every year (Moglia, 1994). However, almost half of the students who have taken a sex education course indicate they want more information about STDs/ HIV and prevention of these diseases (Hoff et al., 2000). Although one cannot rule out the impact of teacher instruction, it could be that students are not getting sufficient or accurate information in textbooks.

Research Purpose and Research Questions

Therefore, the purpose of this study was to examine undergraduate human sexuality textbooks to assess the content presented about STDs and to evaluate the accuracy of that content. In addition, the information about the types, incidence, transmission, symptoms, treatment, health impacts, and prevention of STDs and HIV was examined. The following questions about STDs and HIV were raised:

Research Question 1: How much material is included in sexuality textbooks about STDs and HIV?

Research Question 2: Is the content in undergraduate human sexuality textbooks accurate about STDs and HIV?

Research Question 3: What information is presented in undergraduate human sexuality textbooks about the types, incidence, transmission, symptoms, treatment, health impacts, and prevention of STDs?

CHAPTER TWO

METHODS

Selection of Texts

I contacted two university professors who teach courses on human sexuality and neither of them knew of either accessible lists of best-selling human sexuality textbooks or listserves for instructors of sexuality courses (Jason Hans, personal communication, July 11, 2007; Joseph LoPiccolo, personal communication, August 28, 2007). I then contacted Marilyn Myerson, first author of a review of “all but one of the best-selling [human sexuality] textbooks on the market” (Myerson, Crawley, Anstey, Kessler, & Okopny, 2007, p.97), who told me that they obtained their list of 12 best-selling textbooks from the publishers (see Appendix A).

I went to several textbook-selling web sites - Amazon.com, Bookbyte.com, Barnesandnoble.com, Half.ebay.com, and Ecampus.com – and at each site I searched for books using the keywords, “human sexuality textbooks.” This resulted in 244 titles from Amazon.com, 82 from Bookbyte.com, 928 from Barnesandnoble.com, 22,573 from Half.ebay.com, and 542 from Ecampus.com. I sorted the titles by “Bestselling.” Noticing that many of them were books on the history of sexuality or gender, I rejected any titles that suggested that the text was historical, gender specific, race specific, or collected readings. Since half.ebay.com returned such a large list, I reviewed the list until all of the textbooks had been listed multiple times and no new ones were added. I reached this saturation point after 16 pages of 20 textbooks per page, but I continued to search through

the first 50 pages of titles to insure that I did not miss any new titles. I did not find any new textbooks.

These search procedures resulted in 10 textbooks from Amazon.com, 11 from Bookbyte.com, 16 from Barnes and Noble's site, 16 from Half.ebay.com, and 15 from Ecampus.com (see Appendix A). There was a great deal of repetition among these five web sites, so I decided to examine textbooks that appeared on at least 5 of the 6 lists – the five web sites plus Meyerson et al.'s 2007 review of bestselling textbooks. This criterion left 14 textbooks (see Appendix B). I contacted each textbook publisher and asked for a review copy.

Coding

The first step in analyzing the content of the textbooks was to locate the topics of interest in the index and table of contents. I used search methods that college students would likely use to find a topic. I examined the table of contents and index for the keywords *sexually transmitted diseases* and *human immunodeficiency virus*. I also searched for specific STDs (e.g., *gonorrhea*, *chlamydia*), starting with a list of 11 STDs from The Centers for Disease Control (CDC) web site (Center for Disease Control, 2008). As I read the textbooks I inductively added STDs that were in the texts but not on the CDC web site. I tried to identify every STD in the texts.

The CDC presents information on the incidence, transmission, symptoms, treatment, health impact and prevention of the most common diseases that are primarily sexually transmitted: chlamydia, genital herpes, gonorrhea, viral hepatitis, HIV, Human papillomavirus (HPV), pubic lice, syphilis, and trichomoniasis. In addition, the CDC includes information on bacterial vaginosis (BV) because it is the most common vaginal

infection in women of childbearing age (CDC, 2008). The STDs included on the CDC website are those that have the most significant impacts on the health and the economy of the United States. It seemed reasonable to expect that information about these STDs should be in human sexuality textbooks. Therefore, I developed a codebook template based on the information from the CDC web site for each STD on the web site. I also inductively coded concepts about STDs that were in the textbooks, but not on the CDC website. These concepts were added to the codebook. Each unique concept was coded separately. For example, “the symptoms (of gonorrhea) in women include a painful or burning sensation when urinating, increased vaginal discharge, or vaginal bleeding between periods,” was coded as: (1) painful/burning sensation when urinating; (2) increased vaginal discharge; and (3) bleeding between periods.

The CDC lists three main methods for preventing STDs: Abstinence, a monogamous relationship with an uninfected partner, and wearing latex condoms for each incidence of sexual contact (CDC, 2008). Content on the three main prevention strategies, prevention strategies for specific STDs, and all information on the care and use of condoms was coded.

Research question 1. The recording unit for the amount of material presented on STDs and HIV was the number of separate concepts about each of the STDs (Krippendorff, 2004). The total number of coded concepts for each STD was counted. These totals included both deductively and inductively coded concepts. Deductively coded concepts were derived from the CDC website; they were coded whenever they were identified in the textbooks. Inductively coded concepts were concepts found in the textbooks that were not on the CDC website. Concepts that were deductively coded were

always coded as CDC based, and concepts that were inductively coded were always coded as textbook-based.

Research question 2. The accuracy of the content in the textbooks about each STD was assessed by computing the number of concepts in each textbook that agreed with the information provided by the CDC. For instance, a symptom of genital herpes is “painful, shallow sores and blisters on the genitals” (CDC, 2008). Every time a textbook contained this information, the book was coded as accurate for that item. The wording in the text did not have to match CDC wording, but the meaning had to be similar. When I was not sure if the meanings between textbooks and the CDC were comparable, a second coder was consulted and, after discussion, coding was based on our consensus. From this, a percentage of agreement with CDC was calculated for each STD and for each textbook. Percentage of agreement with CDC was calculated for: Types, incidence, transmission, symptoms, treatment, health impact, and prevention of each STD. Generally, coded concepts were seen as either agreeing or disagreeing with CDC. However, the incidence of STDs was coded as 100% for complete agreement with CDC statistics, within 50% of CDC statistics, or as greater than a 50% discrepancy with CDC.

Research question 3. The focus of the review was limited to the 11 STDs identified by the CDC web site. Although 24 STDs were identified in the textbooks (see Table 1), coding and analyses was limited to the most common STDs in the United States, and to those that were primarily transmitted via sexual relations. Therefore, although textbooks included amebiasis, candidiasis, chancroid, cystitis, cytomeglovirus, Granuloma Inguiale, Lymphogranuloma Venereum (LGV), Molluscum Contagiosum, Nongonococcal Urethritis (NGU), pinworms, scabies, and shigellosis, these STDs did not

meet the twin criteria of being common in the United States and primarily sexually transmitted. Although pelvic inflammatory disease (PID) is not an STD, this disease was included in the review since it is a common complication of STDs prevalent among college-aged individuals (e.g., chlamydia; CDC, 2008).

Table 1 here

Information regarding transmission of STDs was sometimes included in the section with an STD and sometimes at the beginning of the chapter. Modes of transmission mentioned in the beginning of the chapter were coded as a mode of transmission for each STD in the chapter. For example, if a textbook mentioned that STDs are transmitted through vaginal sex, then each STD would be coded as agreeing that it could be transmitted through vaginal sex.

Reliability of Coding

I coded all of the textbooks, and a randomly selected 15% were coded by a second reader. Agreement among coders was 90%. Codes were discussed and some were revised. Given the high level of agreement, no additional checks for reliability of coding were made, but the two coders held frequent meetings to discuss codes and to maintain the rigor of the coding process.

CHAPTER 3

RESULTS

Research Question 1: How much material is included in textbooks about STDs and HIV?

and Research Question 2: Is the content in textbooks accurate about STDs and HIV?

All of the textbooks devoted at least one entire chapter to the discussion of STDs, and all of them included several STDs ($M = 17$). A few textbooks even presented additional material about STDs in other chapters, and four had separate chapters devoted to HIV. Nearly all ($n = 11$) of the major STDs, defined as the ones included on the CDC web site on STDs, were discussed in every textbook. STDs are clearly not ignored by authors of human sexuality textbooks, and from a general perspective, coverage of this material is more than adequate.

Textbooks contained more concepts about syphilis ($n = 107$), than HIV ($n = 99$) or gonorrhea ($n = 88$), but there were more concepts on average about HIV ($M = 54$) than syphilis ($M = 41$) or gonorrhea ($M = 41$; see Table 2). Although texts included fewer concepts about genital herpes ($n = 77$), they contained almost as many concepts on average ($M=38$) as syphilis and gonorrhea. Rathus and colleagues (2008) included the most information about all STDs. Greenberg and colleagues (2007) had the least amount of information.

Strong, DeVault, Sayad, and Yarber (2008) had the most accurate information for STDs overall with more than 50% agreement with CDC for all 11 coded STDs. Allgeier and Allgeier (2000) had the least accurate textbook, with 50% agreement for only two STDs.

Bacterial Vaginosis

Amount of coverage. There were a total of 37 coded concepts for BV, 33 from the CDC web site and 4 that were inductively coded from the textbooks (see Table 2).

Although most ($n = 12$) textbooks included BV, the amount of information covered ranged widely. For instance, Strong and colleagues (2008) included 22 separate concepts about BV, by far the most of any of the textbooks. In contrast, several textbooks included little beyond the description that BV is characterized by discharge with a fish-like odor, which was in all textbooks that mentioned BV.

Table 2 here

Accuracy. The textbooks were generally accurate about the prevention of BV (see Table 3 for accuracy rates for all STDs). They were far less accurate about transmission and treatments, and content about symptoms and health effects were quite mixed across the textbooks. The most accurate textbook was by Strong and colleagues (2008), who had more than 60% of the CDC-based concepts for transmission, symptoms, treatment, and health impacts.

Table 3 here

Chlamydia

Amount of coverage. There were 85 coded concepts about chlamydia, 71 drawn from CDC and 14 inductively coded from the textbooks. Although all textbooks included

chlamydia, Strong and colleagues (2008) were more thorough in their coverage of symptoms, health impact, and site of infection than the other textbooks. At the other extreme, King (2005) left out critical information about who is at risk of acquiring chlamydia, modes of transmission, several symptoms, possible sites of infection, and possible complications of chlamydia.

Accuracy. The textbooks were generally more accurate about the transmission, symptoms, and treatment of chlamydia than they were about the incidence, health impacts, and prevention. In fact, only four had accurate incidence statistics. Strong et al. (2008) and Greenberg et al. (2007) had the most accurate coverage of the 71 CDC-based concepts about chlamydia.

Genital Herpes

Amount of coverage. There were 77 coded concepts for genital herpes, 45 from CDC and 32 from the textbooks. Coded concepts added from the textbooks included information on possible ways to shorten the duration or lessen the severity of outbreaks, possible outcomes of pregnancy (e.g., stillbirth), symptoms, and several ways of transmission not mentioned by CDC. All but two textbooks contained more than half of the coded concepts about genital herpes. Those two texts (Greenberg, Bruess, & Conklin, 2007; McCammon & Knox, 2007) contained fewer concepts about the progression of genital herpes than other textbooks. In addition, McCammon and Knox omitted content about complications, treatments, diagnosis, prevention, and how to lessen the severity of outbreaks.

Accuracy. The textbooks were generally accurate about genital herpes, with many matching nearly all of the CDC-based concepts. They were highly accurate about

incidence statistics and transmission, and fairly accurate on health impacts and treatment of genital herpes. Half of the textbooks ignored specific prevention methods for genital herpes, however, and the accuracy of the coverage of symptoms was relatively low. The most accurate books about genital herpes were by Rathus et al (2008), Hock (2007), McAnulty and Burnette (2004), and Crooks and Bauer (2005).

Gonorrhea

Amount of coverage. There were a total of 88 concepts for gonorrhea, 66 from CDC and 22 from the textbooks. Concepts inductively coded included the chance of contracting gonorrhea from one exposure, symptoms, and ways that gonorrhea can be contracted besides sexual contact. The textbooks with the most coded concepts for gonorrhea were Hyde and DeLamater, (2006), Kelly (2008), (Rathus et al., 2008), and Strong et al. (2008). The textbook with the fewest concepts regarding gonorrhea omitted information about diagnosis, effects on babies born to infected mothers, and rectal infections (McCammon & Knox, 2007).

Accuracy. Textbooks had much about gonorrhea, but their accuracy, as compared to the concepts derived from the CDC web site, was relatively low. Information about transmission was highly accurate for all but one textbook, but accurate descriptions of health impacts were few. Kelly (2008), Strong et al. (2008) and Hyde and DeLamater (2006) were the most accurate.

Hepatitis

Amount of coverage. There were 31 coded concepts for hepatitis, 18 from CDC and 13 from the textbooks. Coded concepts from textbooks included modes of transmission, treatment, and complications. For the most part, the textbooks with fewer

coded concepts (see Table 2) contained less information on modes of transmission and were not as thorough as other texts in the coverage of health and pregnancy complications. In addition, these texts (with the exception of Hyde & DeLamater, 2006) did not mention antiviral treatments for hepatitis.

Accuracy. Overall, the textbooks contained accurate content about viral hepatitis, with Rathus and colleagues (2008), Hock (2007), and Crooks and Bauer (2005) including more than 90% of the CDC-based concepts. Four other textbooks had accuracy rates above 80%. The only area in which they fell short was in incidence statistics – none matched CDC estimates.

Human Immunodeficiency Virus (HIV)

Amount of coverage. Of the 99 coded concepts for HIV, 36 were from CDC and 63 were from the textbooks. Coded concepts from the textbooks included information about how HIV is *not* transmitted, populations in which HIV is increasing most rapidly (e.g., among women), early warning signs of HIV, and progression of the disease (i.e., from mild flu-like symptoms to symptomatic state “wasting syndrome”). HIV was one of the most thoroughly covered STDs. The texts that contained the fewest coded concepts tended to omit how HIV is not transmitted in daily activities (e.g., hugging, one a door knob).

Accuracy. The textbooks generally were accurate in their reporting of information about HIV, although only six had accurate estimates of the incidence of HIV. Otherwise, most ($n = 8$) of the textbooks included greater than 50% of the 36 CDC-related concepts. McCammon and Knox (2007) and Rathus et al. (2008) were the most accurate texts.

Human Papillomavirus (HPV)

Amount of coverage. There were 87 coded concepts for HPV, 66 from CDC and 21 from the textbooks. Coded concepts from textbooks included information on how HPV is diagnosed, who is most susceptible (e.g., women with multiple partners), and the physical appearance of genital warts. None of the textbooks included as many as half of the coded concepts, and three had less than 25% of them. Strong and colleagues (2008) contained the most concepts ($n = 38$), but they failed to mention who is at risk, modes of transmission, and other types of cancer besides cervical cancer. Several textbooks omitted transmission, who is at risk for acquiring HPV (Allgeier & Allgeier, 2000; Crooks & Bauer, 2005; Greenberg et al.; Hyde & DeLamater, 2006; LeVay & Valente; McAnulty & Burnette, 2004; McCammon & Knox; Strong et al.), and the progression of the disease (Allgeier & Allgeier; Hyde & DeLamater; LeVay & Valente; McCammon & Knox).

Accuracy. In contrast to HIV, textbooks generally included only about one-third of the CDC-based concepts for HPV. Texts tended to be more accurate about the treatment, transmission, and symptoms of HPV, but were less accurate about the health impacts and not very accurate about the incidence. Strong et al. (2008) was the only textbook that included more than half of the CDC concepts.

Pelvic Inflammatory Disease

Amount of coverage. There was a great deal of variety in the amount of coverage of PID. There were 59 coded concepts, 50 from CDC and 7 from the textbooks. Only one textbook included more than 50% of the coded concepts ($n = 31$) (Strong et al., 2008).

Other textbooks had as few as 5 concepts. Although all textbooks covered the health effects of PID (infertility, ectopic pregnancy, chronic pain), several excluded symptoms (Kelly, 2008; McCammon & Knox, 2007), causes of PID and who is at risk (Allgeier & Allgeier, 2000; Byer et al., 2002; Greenberg et al., 2007; Hyde & DeLamater, 2006; Rathus et al., 2008), and treatment (Greenberg et al.; Hyde & DeLamater; Kelly; King, 2005; LeVay & Valente, 2006; McAnulty & Burnette, 2004; McCammon & Knox). Strong and colleagues were the only ones to mention how PID is diagnosed.

Accuracy. Material about PID was characterized by relatively low accuracy. In fact, estimates of the prevalence was the sole area in which there was substantive agreement with CDC, with seven of the textbooks being accurate. Once again, Strong et al. (2008) was the sole text with more than 50% of the 50 CDC-based concepts, and that text was barely above 50%.

Pubic Lice

Amount of coverage. There were 24 coded concepts about pubic lice, 17 from CDC and 7 from the textbooks, mostly about sites of infection. Only five textbooks contained fewer than 50% of the coded concepts about pubic lice (Allgeier & Allgeier, 2000; Byer et al., 2002; Greenberg et al., 2007; King, 2005; McCammon & Knox, 2007). The most often omitted information was about transmission and treatment.

Accuracy. Textbooks included information about the transmission, symptoms, and treatment of public lice. Inclusion of the 17 CDC-based concepts tended to be fairly high, with Rathus et al. (2008) and Kelly (2008) having the most accurate content.

Syphilis

Amount of coverage. Syphilis had the most coded concepts of all STDs ($n =$

107), 82 from CDC and 25 from the textbooks. Concepts from the textbooks included possible sites for syphilis sores (e.g., nipples), and potential outcomes for babies born to infected mothers (e.g., deformed bones). No text included as many as 50% of the coded concepts, but Rathus and colleagues (2008) came close ($n = 53$). McCammon and Knox (2007) had the fewest concepts ($n = 29$), excluding information on transmission, the possible impacts of syphilis on a child born to an infected mother, how syphilis is diagnosed, and the connection between syphilis and HIV.

Accuracy. Strong et al. (2008) was by far the most accurate, and was, in fact, the only textbook whose accuracy rating (61%) was above 50% and the only one with accurate estimates of the incidence. The textbooks generally were accurate about transmission, and little else.

Trichomoniasis

Amount of coverage. Out of the 30 coded concepts about trichomoniasis, 28 were from CDC and only 2 were added from the textbooks - information that many people are asymptomatic and that symptoms often appear or worsen during or just after a woman's period. Although trichomoniasis is one of the most prevalent STDs among college students (Weinstock, Berman & Cates, 2004), only three textbooks included more than 50% of the coded concepts. Strong and colleagues (2008) contained the most concepts ($n = 24$). Several textbooks omitted information regarding transmission (Allgeier & Allgeier, 2000; Byer et al., 2002; Greenberg et al., 2007; Kelly, 2008; McCammon & Knox; Rathus et al., 2008) and complications associated with trichomoniasis (Allgeier & Allgeier; Carroll, 2007; Greenberg et al.; Hock, 2007; McAnulty & Burnette, 2004; McCammon & Knox; LeVay & Valente, 2006).

Accuracy. Textbooks contained accurate information about treatment, symptoms, and transmission of trichomoniasis, although 5 textbooks omitted mention of transmission. Seven omitted the health impacts of trichomoniasis entirely and most of the textbooks did not have accurate statistics about the prevalence of this STD. Strong et al. (2008) was one of only two textbooks with more than 50% of the CDC-based concepts, and at 86%, was much more accurate than McNulty and Burnette (2004) at 50%.

Prevention

Amount of coverage. The coverage of prevention is presented separately because many textbooks had separate sections on the prevention of STDs in general. The CDC only mentions three types of prevention: abstinence, monogamy with an uninfected partner, and using latex condoms (CDC, 2008), but there was a total of 50 prevention strategies in the textbooks. These ranged from vaccines for hepatitis and HPV to avoiding the use of another individual's personal items such as disposable razors. Rathus and colleagues (2008) contained the most prevention strategies ($n = 39$). Other textbooks included as few as 10 prevention strategies (Allgeier & Allgeier, 2000; LeVay & Valente, 2006).

Accuracy. All textbooks were accurate in including the three main types of prevention, but were less accurate in discussing specific preventions for each STD. For example, although five texts mentioned that one way to prevent serious complication of chlamydia was to get an annual screening (Carroll, 2007; Greenberg et al., 2007; Hyde & DeLamater, 2006; Rathus et al., 2008; Strong et al., 2008), just two texts mentioned that douching increases the risk of acquiring BV (Byer et al., 2002; Kelly, 2008). And, even though all textbooks discussed the hepatitis vaccine, less than half discussed getting an

HPV vaccine (Crooks & Bauer, 2005; Hock, 2007; Hyde & DeLamater; Kelly; Rathus et al.; Strong et al) or abstaining from sex when genital herpes lesions are present (Byer et al.; Crooks & Bauer; Greenberg et al.; Kelly; King, 2005; Rathus et al.). Textbooks were least accurate in describing prevention strategies of PID including getting tested and treated for STDs that cause PID (Byer et al.; Rathus et al.) and not douching (Kelly; King; Strong et al.).

Research Question 3: What information is presented in undergraduate human sexuality textbooks about the types, incidence, transmission, symptoms, treatment, health impacts, and prevention of STDs?

Types of STDs

The textbooks included a total of 24 STDs (for a summary of STDs in the textbooks see Table 1). King (2005), with 23, and Strong and colleagues (2008), with 22, had the most. The fewest number of STDs in a textbook was 13 (Greenberg et al., 2007). The mean number per text was 17. Candidiasis, chlamydia, genital herpes, gonorrhea, hepatitis, HIV, HPV, pubic lice, PID, syphilis, and trichomoniasis were in all of the textbooks. Scabies and NGU were in all but one (Hyde & DeLamater, 2006).

The CDC web site contains 11 STDs: BV, chlamydia, herpes, gonorrhea, hepatitis, HIV, HPV, pubic lice, PID, syphilis, and trichomoniasis. With the exceptions of BV and PID, all of these STDs were in all of the textbooks. BV was excluded from two textbooks (Greenberg et al., 2007; Hock, 2007), and only five textbooks classified PID as a unique STD (one considered PID to be a type of chlamydia; Crooks & Bauer, 2005). The others mentioned PID only as a complication of gonorrhea and chlamydia, not as a separate disease.

For the most part, STDs were in chapters devoted solely to material about STDs. An exception was the textbook by McAnulty and Burnette (2004), in which BV, candidiasis, and trichomoniasis were in a chapter about female sexual anatomy. LeVay and Valente (2006) also placed candidiasis in a chapter on female sexual anatomy.

STDs vs. STIs vs. Sexually Related Diseases. There was no consensus on what to label these sexually transmitted health concerns. Half of the textbooks used the term sexually transmitted *diseases* (STDs) and half used the term sexually transmitted *infections* (STIs; for textbooks that used STIs see Table 1). Authors that used the term STI claimed this is a more accurate term because these infections: (a) may not show symptoms (Byer, et al., 2002; Strong et al., 2008), (b) are acquired when harmful agents invade the body (McAnulty & Burnette, 2004), and (c) are transmittable, in contrast to a disease such as diabetes, which is not transmittable (Hock, 2007). In addition, one set of authors preferred STI because they considered it to be a less judgmental term than STD (Strong et al.).

A few authors defended their use of the term STD. Crooks and Bauer (2005) reasoned that although STI is the preferred international term, STD is preferred in the United States. McCammon and Knox (2007) asserted that they employed the term STD because it is the one used by the Sexuality Information and Education Council of the United States (SIECUS) and the CDC.

Three textbooks differentiated between STDs and *sexually related diseases* that may occur in either sexually active or sexually abstinent individuals (Greenberg et al., 2007; Hyde & DeLamater, 2006; King, 2005). Use of this term was not consistent across textbooks. Hyde and DeLamater and King applied this label to cystitis, BV, candidiasis,

and prostatitis, whereas Greenberg et al. referred to breast cancer, cervical cancer, and toxic shock syndrome as sexually related diseases as well.

Incidence

For the most part, statistics on the total incidence of STDs were not in the textbooks. Only three textbooks pointed out that the United States has the highest rate of STDs in the industrialized world (LeVay & Valente, 2006; Rathus, Nevid & Fichner-Rathus, 2008; Strong et al., 2008), and five reported that over 65 million Americans have incurable STDs (Byer, et al., 2002; Carroll, 2007; Hock, 2007; Hyde & DeLamater, 2006; LeVay & Valente; McAnulty & Burnette, 2004). Although most authors made the point that many new cases of STDs are diagnosed each year, they did not agree on the number of new cases. Estimates of new cases reported annually ranged from 10-15 million (8 textbooks) to 19 million (5 textbooks).

Although individuals aged 15-24 make up 25% of the sexually active population, they account for half of the new STD cases each year (Weinstock et al., 2004). This was reported by only two textbook authors (Hyde & DeLamater, 2006; Strong et al., 2008). Others inflated these statistics, stating that 67% of new cases of STDs occurred in people younger than age 25 (Allgeier & Allgeier, 2000; Carroll, 2007; Crooks & Bauer, 2005; Rathus et al., 2008), and some deflated the estimate to 25% (Hock, 2007; King, 2005, McCammon & Knox, 2007).

The incidence of specific STDs, however, was frequently communicated; estimates of the “major” STDs (i.e., chlamydia, genital herpes, gonorrhea, HIV, HPV, syphilis, trichomoniasis) were in most textbooks. The rates of some STDs such as pubic lice, PID and BV were frequently ignored (see Table 3). Textbooks often disagreed about

the rates of specific STDs. For instance, the rate of syphilis was reported in some textbooks as 7,000 cases new per year (e.g., McCammon & Knox, 2007, citing statistics from 2001), but other estimates were as much as 101,000 annually (Allgeier & Allgeier, 2000, citing statistics from the 1990s).

Chlamydia, HPV, and trichomoniasis are the most prevalent STDs among those aged 15-24, accounting for 88% of the 9.1 million new cases of STDs in this age group (Weinstock et al., 2004). Few textbook authors, however, identified these diseases as the most likely to be experienced by young adults. Exceptions included Strong et al. (2008), who stated that in 2004, 38% of the new cases of chlamydia were among 15-19 year old females and 37% of new cases were among 20-24 year old women, and Crooks and Bauer (2005), who highlighted the incidence of chlamydia among 15-24 year olds, stating that 75% of reported cases of chlamydia are from this age group.

Clinics and private care physicians are mandated to report the incidence of several STDs including chlamydia, gonorrhea and syphilis. However, it is not mandated that public or private clinics report the incidence of pubic lice. Therefore, it is not a surprise that the occurrence of pubic lice was in one textbook only; Hock (2007) estimated from over-the-counter treatments sold annually that there were more than 3 million new cases of pubic lice per year in the United States.

Transmission

For the most part, all of the textbooks described how STDs were transmitted (see Table 3). In addition, all but two (Greenberg et al., 2007; Hyde & DeLamater, 2006) reported that male-to-female transmission was more likely than female-to-male transmission. Male-to-female transmission is more likely because women are biologically

more susceptible when exposed to an STD. Women are more likely to retain the organism in their bodies, there are greater amounts of infectious organisms in semen than in vaginal secretions, and because of the shortness and location of the urethra. As a result of the vulnerability of women's internal sex organs, they often have fewer symptoms and more serious health complications than do men (Crooks & Bauer, 2005).

Not all of the textbooks specified how specific STDs were transmitted - some simply stated that STDs were transmitted "sexually." All mentioned that STDs could be transmitted via vaginal-penile sexual behavior, however, and most of them discussed the transmission of STDs via oral-genital sexual behavior. STDs also can be transmitted via oral-anal sexual activity, but with the exception of hepatitis, discussed in 10 textbooks, oral-anal transmission of STDs was rarely discussed. Pubic lice was the only STD the CDC (2008) identified that can be transmitted by fingers from the pubic region to other hairy regions intra-individually or interpersonally, a fact included in only two textbooks (Crooks & Bauer, 2005; Rathus et al., 2008).

The CDC (2008) does not indicate that any STDs can be contracted from a toilet seat, but some authors claimed it was possible to contract STDs in this manner (Byer et al., 2002; Carroll, 2007; Hyde & DeLamater, 2006; McAnulty & Burnette; 2004; Rathus et al., 2008). The only mention of toilet seat transmission by CDC is that pubic lice *cannot* be contracted from a toilet seat. Although one author included this information (McCammon & Knox, 2007), five textbooks stated inaccurately that it *is* possible to contract pubic lice from a toilet seat (Byer et al.; Carroll; Hyde & DeLamater; McAnulty & Burnette; Rathus et al.). Other textbooks mentioned that trichomoniasis can be contracted from a toilet seat (Byer et al.; Rathus et al.,) although one author cautioned

that the penis or vagina would have to come into direct contact with the trichomoniasis protozoan in order for transmission to occur (Rathus et al.). Another author, however, claimed that trichomoniasis can survive 45 minutes on a toilet seat (Byer et al.).

Pubic lice can be transmitted on fabrics (e.g., towels, bedding and clothing), according to the CDC. All of the textbooks, with one exception (Greenberg et al., 2007), mentioned this, but some authors also claimed that other STDs could also be transmitted on fabrics. For instance, some mentioned that trichomoniasis could be contracted from using a wet towel immediately after an infected person (Allgeier & Allgeier, 2000; Greenberg et al.; Rathus et al., 2008), and one textbook claimed that HPV could be transmitted by touching infected towels or clothing (Rathus et al.). Considering that college students seem to be misguided about the transmission of STDs, it is unfortunate that textbooks also provided incorrect information.

All textbooks discussed the spread of STDs in the context of heterosexual relationships and several also included information about STD transmission in women who have sex with women (WSW) and men who have sex with men (MSM), although the coverage of this in every textbook was sparse. Trichomoniasis and BV are the two STDs that can be transmitted via vulva-to-vulva sex, according to CDC (2008), but few textbooks mentioned trichomoniasis (Carroll, 2007; Rathus et al., 2008; Strong et al., 2008) or BV (Byer et al., 2002; Carroll; Kelly, 2008; LeVay & Valente, 2006; Strong et al.) being transmitted between WSW. Textbooks, however, claimed that eight other STDs could be transmitted in vulva-to-vulva sex (excluding pubic lice and PID). Carroll included the most discussion of transmission of STDs among WSW.

Some authors discussed the likelihood of contracting STDs through a range of sexual behaviors (e.g., mutual masturbation, protected oral sex; Carroll, 2007; Hock, 2007; Kelly, 2008; McCammon & Knox, 2007; Strong et al., 2008). Whereas some textbooks separated sexual behaviors into four categories of risk (extremely high, moderate, low, and no risk; McCammon & Knox), others focused on high-risk sexual behaviors only (Carroll). For the most part, authors agreed with each other on which behaviors were riskier than others. For example, unprotected vaginal intercourse was consistently labeled a high risk sexual behavior, while solo masturbation was always portrayed as safe. One author differentiated between high and low risk for the same sexual behavior (Hock). For example, kissing is considered very low risk of contracting herpes when no sores are present but high when sores are present or recently healed.

Symptoms

Refer to Table 3 for STD symptoms. For the most part, all of the textbooks included symptoms for the most common STDs (exceptions were omissions of BV and PID from two textbooks). Some textbooks did not cover symptoms in both men and women equally. For instance, some omitted symptoms of HPV (Hock, 2007) and trichomoniasis (Greenberg et al., 2007; Kelly, 2008; McCammon & Knox, 2007; Rathus et al., 2008) in men, and one did not include symptoms of chlamydia for women (Hyde & DeLamater, 2006).

Many STDs can be asymptomatic, a point made in most of the textbooks. Because they are common among the age group of traditional college students and they may be asymptomatic, chlamydia, trichomoniasis, and HPV are of particular relevance. In fact, 75% of infected women and 50% of men with chlamydia do not have symptoms.

Although most textbooks pointed out the absence of symptoms for chlamydia several omitted this important fact for women (Crooks & Bauer, 2005; King, 2005) and for men (Allgeier & Allgeier, 2000; Greenberg et al., 2007; Kelly, 2008; King; Rathus et al., 2008). Some authors failed to state that HPV can be asymptomatic in men or women (Allgeier & Allgeier; Kelly; McAnulty & Burnette, 2004; McCammon & Knox, 2007; Rathus et al), and three omitted the asymptomatic nature of trichomoniasis in women (Greenberg et al.; Rathus et al.; Strong et al., 2008). Only four textbooks included information about the asymptomatic nature of trichomoniasis in men (Greenberg et al.; Hyde & DeLamater, 2006; Rathus et al.; Strong et al.).

Although STDs usually infect genitals, other parts of the body also may be infected, including the rectum, throat, and eyes, fewer textbooks mentioned that chlamydia can also infect the rectum (Hock, 2007; LeVay & Valente, 2006; McAnulty & Burnette, 2004; McCammon & Knox, 2007; Strong et al., 2008). Textbooks only described symptoms of rectal infections of chlamydia (Hock; LeVay & Valente) and gonorrhea (Allgeier & Allgeier, 2000; King, 2005; Rathus et al., 2008). STDs can infect a person's throat if there is oral contact with infected genitals or rectum. The symptoms of throat infection of chlamydia was also covered poorly infection (Carroll, 2007; Hock; LeVay & Valente; Rathus et al., 2008; Strong et al.), whereas most textbooks included the throat as a site of infection for gonorrhea and syphilis. However, all of the textbooks that discussed throat infection of chlamydia mentioned the symptoms of throat infection, while only three textbooks discussed the symptoms of gonococcal throats infection (Carroll; King; McCammon & Knox), but no textbook discussion the symptoms of a throat infection of syphilis. Six textbooks revealed that chlamydia could be transmitted

from the genitals to the eyes if infected discharge remained on the fingers (Allgeier & Allgeier, 2000; Crooks & Bauer, 2005; Hock; McAnulty & Burnette; McCammon & Knox; Rathus et al.), but only five texts mentioned the same information about gonorrhea (Byer et al., 2002; Crooks & Bauer; Hyde & DeLamater; King; Rathus et al.).

To illustrate symptoms, all textbooks included pictures of STD lesions, although not all types of STDs were shown, nor were pictures of both male and female genitalia regularly included (see Table 4). For instance, Hock (2007) was the only textbook with pictures of chlamydia infections in women and men and only five textbooks included photos of genital warts on both a penis and vagina (Carroll, 2007; Greenberg et al., 2007; Hock; Hyde & DeLamater, 2006; Strong et al., 2008). Most textbooks depicted disease (e.g., lesions or discharge) on White genitalia (see Table 4). In fact, 63% of the 101 pictures depicted were of White individuals, 15% were African American, and in 22% of the photographs, I was unable to discern the race of the individual. Strong and colleagues (2008) and Greenberg and colleagues (2007) have the most racial diversity in their photographs, whereas McCammon and Knox (2007) only included photographs or diagrams that showed White individuals or couples.

Treatment

All of the textbooks included information on the treatment of STDs (see Table 3). All authors pointed out that bacterial STDs are curable (i.e., BV, chlamydia, gonorrhea, syphilis, trichomoniasis), while viral STDs can be treated to relieve symptoms, but cannot be cured (i.e., genital herpes, hepatitis, HIV, HPV). Most, but not all, authors asserted that it is important to treat partners of a person diagnosed with a bacterial STD. For example, Hyde and DeLamater (2006) did not mention that partners should be treated

for any bacterial STDs, and other textbooks omitted treating partners of individuals with chlamydia (Allgeier & Allgeier, 2000; McCammon & Knox, 2007), gonorrhea (Greenberg et al., 2007; McAnulty & Burnette, 2004; McCammon & Knox), pubic lice (Allgeier & Allgeier; Crooks & Bauer, 2005; Greenberg et al.; Hock, 2007), syphilis (Allgeier & Allgeier; Carroll, 2007; Greenberg et al.; Kelly, 2008; McCammon & Knox), or trichomoniasis (McAnulty & Burnette).

Although bacterial STDs can be cured, it is important for partners to abstain from sex until both partners are clear of infection. Otherwise, the STD can be passed back and forth between the partners. For the most part, textbooks did not state that partners should abstain from sex during treatment for bacterial STDs and pubic lice. Few textbooks pointed out that individuals should abstain from sex if diagnosed with chlamydia (Greenberg, et al., 2007; King, 2005; LeVay & Valente, 2006; McAnulty & Burnette, 2004), gonorrhea (Carroll, 2007; Crooks & Bauer, 2005; Greenberg et al.; Hock, 2007; King; McAnulty & Burnette; Rathus et al., 2008; Strong et al., 2008), pubic lice (Kelly, 2008; King; McCammon & Knox, 2007; Rathus et al.), syphilis (Greenberg et al.; King), or trichomoniasis (Carroll; King).

Although most texts mentioned that it is important to get regular medical checkups to ensure being STD free, several textbooks did not include much information on where to go for testing or treatment. Generally, textbook authors identified at least one place where students could get tested or treated for STDs, with the exception of three textbooks that simply declared that students should get tested and seek treatment if they think they had been exposed (Carroll, 2007; Hock, 2007; Hyde & DeLamater, 2006). Most texts mentioned young adults could go to public health clinics ($n = 11$), but fewer

books mentioned STD clinics ($n = 3$), family planning centers ($n = 5$), or students health centers ($n = 5$). Textbook authors pointed out that counties often have public health clinics where testing and treatment are available at low or no cost (Allgeier & Allgeier, 2000, Byer et al., 2002; Crooks & Bauer, 2005; King, 2005; McAnulty & Burnette, 2004; Rathus et al., 2008; Strong et al., 2008). Authors also informed students they could get tested or treated at STD clinics, family planning centers, private doctors, hospitals, and student health centers. Few textbooks, however, included the number for the national STD hotline where individuals can get information about symptoms and referrals to local STI clinics that provide confidential treatment at little to no cost (exceptions were Crooks & Bauer; Hock; Kelly, 2008; King; Rathus et al.).

Health impacts of STDs

Textbooks varied greatly in their coverage of the health impacts of STDs. For instance, although most textbooks mentioned that having an STD increased the risk of contracting HIV, fewer pointed out that having both an STD and HIV made it more likely that a person could transmit HIV to his or her partner. In particular, four textbooks neglected to state the connection between HIV contraction and both chlamydia and trichomoniasis (Allgeier & Allgeier, 2000; Carroll, 2007; McAnulty & Burnette, 2004; McCammon & Knox, 2007). In addition, no textbooks reported that individuals with HIV are at increased risk of acquiring HPV.

Untreated bacterial STDs can often cause infertility in both men and women. All textbooks identified that chlamydia could result in infertility for women but sterility in men was not covered as thoroughly (e.g., not in Carroll, 2007; Crooks & Bauer, 2005; Hyde & DeLamater, 2006; McAnulty & Burnette, 2004). In addition, several textbooks

failed to discuss infertility as a potential outcome of untreated bacterial vaginosis (Allgeier & Allgeier, 2000; Greenberg et al., 2007; Hock, 2007; Hyde & DeLamater; Kelly, 2008; McCammon & Knox, 2007) or gonorrhea (Carroll; Hock; King, 2005). And just three textbooks stated that trichomoniasis could cause infertility (Hyde & DeLamater; King; Strong et al., 2008).

According to Rathus and colleagues (2008), STDs account for 15-30% of cases of infertility among women. Of concern to college women is that PID, which frequently causes infertility and ectopic pregnancy, is more likely to develop in women under the age of 25 (CDC, 2008). However, this fact was included in just three textbooks (Crooks & Bauer, 2005; Hock, 2007; Strong et al., 2008), and only Strong and colleagues pointed out that the cervix of teenagers and young women is more susceptible to the STDs that are linked to PID than are older women (CDC). According to Byer et al. (2002), more than 20,000 young U.S. women become sterilized by chlamydia each year. Although BV can also cause PID, chlamydia and gonorrhea are responsible for the majority of the 1 million cases of PID each year, and about 10% of those women become infertile (Byer et al.). In addition, most of the 80,000 ectopic pregnancies each year are caused by chlamydia (Byer et al.).

Some textbooks discussed cancer as a possible health impact of STDs. Genital herpes has been implicated in causing cervical cancer (LeVay & Valente, 2006; Rathus, et al., 2008), and HPV can cause multiple cancers including, cancers of the cervix, vulva/vagina, penis, anus, and mouth. Although all textbooks include that some types of HPV can cause cervical cancer and several textbooks also mentioned that HPV can cause cancers of the anus and penis (Allgeier & Allgeier, 2000; Byer et al., 2002; Crooks &

Bauer, 2005; Hock, 2007; Hyde & DeLamater, 2006; Kelly, 2008; LeVay & Valente; McAnulty & Burnette, 2004; Rathus, et al.), fewer textbooks mentioned the possibility of cancer of the vulva/vagina (Allgeier & Allgeier; Crooks & Bauer; Kelly; King, 2005; LeVay & Valente; McAnulty & Burnette; Rathus et al.) or oral cancer (Hock; Hyde & DeLamater). One textbook also suggested that trichomoniasis increases a woman's susceptibility to cervical cancer (Crooks & Bauer).

STDs, including HIV, can be fatal. Although all textbooks cited that HIV can result in death and most pointed out that without treatment, syphilis can be fatal (not mentioned by Allgeier & Allgeier, 2000; Kelly, 2008), fewer textbooks cited death as a possible consequence of gonorrhea or hepatitis. Gonorrhea can spread to the blood or joints, which can be a life-threatening condition (CDC, 2008), but just five textbooks reported this outcome (Byer et al., 2002; Carroll, 2007; Crooks & Bauer, 2005; Hock, 2007; LeVay & Valente, 2006). Hepatitis can cause chronic liver disease resulting in death (CDC), and although over half of the textbooks mentioned chronic liver disease (Carroll; Crooks & Bauer; Hock; Hyde & DeLamater, 2006; Kelly; King, 2005; LeVay & Valente; Rathus et al., 2008), only two textbooks cited death as a possible outcome (Crooks & Bauer; Greenberg et al., 2007). Chronic liver infection occurs in about 90% of infants who are infected at birth (CDC), but fewer than half of the textbooks mentioned that hepatitis can be transmitted from mother to child (Crooks & Bauer; Greenberg et al.; Hock; King; McCammon & Knox, 2007; Strong et al., 2008). PID can be fatal, which was reported in only two textbooks (McAnulty & Burnette, 2004; Strong et al.).

A woman can transmit the STD to her fetus or to her baby during vaginal birth, or in utero (e.g., HIV, hepatitis, and syphilis; CDC, 2008). For the most part, textbooks

stated that STDs could be transmitted from mother to child, with only a few neglecting to discuss transmission of chlamydia (Hyde & DeLamater, 2006), syphilis (Hock, 2007), genital herpes (Hock; King, 2005; Strong et al., 2008), HIV (Byer et al., 2002; Hock) or HPV (Allgeier & Allgeier, 2000; Carroll, 2007; Crooks & Bauer, 2005; Greenberg et al., 2007; King; McAnulty & Burnette, 2004; McCammon & Knox, 2007; Strong et al.). Babies that contract STDs from their mothers can suffer severe health consequences, including pneumonia or respiratory infection (chlamydia), eye infection, blindness or pink eye (chlamydia, gonorrhea, syphilis), ear infection (chlamydia), brain damage (genital herpes), life threatening blood infection (gonorrhea), warts in throat or on voice box (HPV), or deformed bones and teeth (syphilis). Although most textbooks pointed out that STDs can have serious implications for babies, only a few mentioned the serious implications of HPV (Carroll; Crooks & Bauer; Greenberg et al.).

STDs can also affect pregnancy, sometimes causing preterm delivery or a low-birth-weight baby. Bacterial vaginosis, chlamydia, gonorrhea, herpes, and trichomoniasis can cause a baby to be born preterm or low birth weight (LBW; CDC 2008). Although about half of the textbooks discussed chlamydia (Allgeier & Allgeier, 2000; Byer et al., 2002; Carroll, 2007; Crooks & Bauer, 2005; Hyde & DeLamater, 2006; King, 2005; McCammon & Knox, 2007) and bacterial vaginosis as causing preterm delivery (Byer et al.; Crooks & Bauer; Hock, 2007; McAnulty & Burnette, 2004; Strong et al., 2008), fewer mentioned gonorrhea (Hock; King; McAnulty & Burnette), genital herpes (Allgeier & Allgeier; Carroll; King; McCammon & Knox) or trichomoniasis (Byer et al; Crooks & Bauer; Hyde & DeLamater King; Strong et al.) in connection to LBW or preterm babies.

Prevention

All textbooks identified abstinence, monogamy with an uninfected partner, and using latex condoms as the three main ways to prevent STDs. Textbooks included a variety of information about the care and use of condoms. Although they are the best protection against STDs, condoms are not 100% reliable because they sometimes break or are mishandled by the users. In addition, condoms provide no protection against STDs if it does not cover lesions or warts associated with STDs (U.S. Food and Drug Administration, 2003). However, six textbooks omitted this important information (Allgeier & Allgeier, 2000; Byer et al., 2002; Hock, 2007; Kelly, 2008; King, 2005; LeVay & Valente, 2006). Some textbooks also neglected to mention wearing a condom during fellatio (Allgeier & Allgeier; Hock; Hyde & DeLamater, 2006; King), or using a dental dam for cunnilingus oral-anal sex (Allgeier & Allgeier; Crooks & Bauer, 2005; Hock; Hyde & DeLamater; King; LeVay & Valente) since oral-genital and oral-anal transmission of infection is possible.

In order to provide the best protection against STDs, condoms must be placed on the penis before insertion and the penis must be removed immediately after ejaculation. All textbooks included at least some instructions regarding when and how to put on and remove the condom. This is important because college students make numerous errors in using condoms. For example, one study found that 75% of men did not inspect the condom for damage, 61% failed to check the expiration date on the wrapper, 40% did not leave space at the end of the condom, 30% put the condom on the wrong side up, and 20% used the condom without lubricant (e.g., Crosby, Sanders, Yarber, Graham & Dodge, 2002). These errors contributed to the condom breaking or slipping during sex. A

subsequent study found that breakage/slippage of condoms was related in part to never receiving instructions on correct condom use (Yarber, Graham, Sanders, & Crosby, 2004), and another study found that when students had recent sex education, there was an 80% decrease in risk of breakage (Lindenberg, Sonenstein, Ku & Levine, 1997).

Although instruction in a textbook may not be as effective as an instructor-led discussion, written directions might provide students with reliable information on increasing a condom's effectiveness. Considering the importance of the condom in reducing the risk of STDs, it would seem reasonable that textbook authors would want to include information on how to correct the common mistakes that college students make.

Nearly every textbook mentioned that condoms should not be used after its expiration date and all textbooks mentioned that users should put the condom on immediately before intercourse and should leave space at the tip for ejaculate. However, fewer than half of the textbooks mentioned that condoms should be inspected for tears or cracks (Byer et al., 2002; Hock, 2007; LeVay & Valente, 2006; Rathus et al., 2008; Strong et al., 2008) and half mentioned that individuals should ensure there is adequate vaginal lubrication, using a lubricant if necessary (Byer et al.; Carroll, 2007; Crooks & Bauer, 2005; Hock; King, 2005; LeVay & Valente; Rathus et al.). Although no textbooks defined what "adequate vaginal lubrication" is, Crooks and Bauer mentioned that if a condom is nonlubricated, some vaginal secretion, saliva or water-based lubricant needs to be put on the vulva and on the outside of the condom before the penis is inserted into the vagina. Only Strong et al. pointed out that if a condom is put on the wrong side up it should be discarded, although they did not explain which side of the condom is wrong

side up. One text mentioned that a new condom brand, eZon, can be unrolled in either direction (McAnulty & Burnette, 2004).

Most college students do not discuss condom use prior to sexual intercourse (Crosby et al., 2002), even when they want to use a condom (Artz et al., 2005; Smith, 2003). Moreover, 30% of male and 41% of female college students reported that a partner had attempted to discourage them from using a condom on at least one occasion (Oncale & King, 2001). In light of these findings, it would seem reasonable that textbooks would include information about talking to a partner about condom use. However, only six textbooks included information on how to deal with a partner who did not want to wear a condom. Several of them gave sample statements that a partner might make and sample responses to those statements (e.g., “I can’t feel anything.”/”No condom, no sex;” Byer et al., 2002; Crooks & Bauer, 2005; Greenberg et al., 2007; King, 2005; McAnulty & Burnette, 2004). Hock (2007) included strategies students have used to influence a partner to use a condom. Other textbooks encouraged students to talk to their partner and gave such suggestions as picking a time that is free of distraction and couching the discussion in terms of feelings about partner (Rathus et al., 2008), or reading about and choosing contraceptive methods as a couple (Crooks & Bauer).

All textbooks mentioned that condoms should be kept in a cool place away from heat (e.g., in a jacket pocket rather than a pants pocket). However, other precautions also were mentioned, such as not to buy condoms from a machine exposed to direct heat or sunlight since this could decompose the condom (McCammon & Knox, 2007; Rathus et al., 2008), and not to test a condom by inflating or stretching it (Hock, 2007; LeVay & Valente, 2006; Rathus et al.). Only McCammon and Knox mentioned that a person

should only buy condoms made in the United States or Japan because condoms made in other countries are not tested for effectiveness.

Other preventive measures included in the textbooks were inspecting self and partner for signs of STDs (Allgeier & Allgeier, 2000; Carroll, 2007; Crooks & Bauer, 2005; Greenberg et al., 2007; Hyde & DeLamater, 2006; Kelly, 2008; LeVay & Valente, 2006; McCammon & Knox, 2007; Rathus et al., 2008), “milking” the penis to check for discharge (Crooks & Bauer; Greenberg et al.; Rathus et al.), and using fingers to detect any sign of vaginal discharge (Greenberg et al.; Rathus et al.). Although the information to inspect partner for STD is useful, it disregards the fact that many STDs are asymptomatic. In addition, books did not discuss how to distinguish between a “discharge” that could be symptomatic of an STD (which should be foul-smelling) and a woman or man’s natural lubrication prior to sex. Unfortunately, this type of information may also encourage students to engage in the myth that they can tell if someone has an STD. Other prevention strategies mentioned in textbooks included circumcision, because circumcised men have less risk of transmitting or acquiring STDs (Carroll, 2007; Crooks & Bauer, 2005; Rathus et al., 2008; Strong et al., 2008), and avoiding douching since douching increases the risk of contracting an STD (Byer et al., 2002; Carroll; Kelly, 2008; King, 2005; Strong et al.).

Some prevention strategies can begin prior to commencing sexual relationships. For instance, the HPV vaccine can be administered to girls as young as 12 (CDC, 2008). However, only six cited the availability of a vaccine for HPV (Crooks & Bauer, 2005; Hock, 2007; Hyde & DeLamater, 2006; Kelly, 2008; Rathus et al., 2008; Strong et al., 2008); the others were published before the HPV vaccine was approved (one of these

stated there was *no* vaccine for HPV ;Byer et al., 2002). Vaccines are available also for hepatitis, and all textbooks mentioned the hepatitis vaccine.

Some textbooks stated that a person should urinate (Byer et al., 2002; Hyde & DeLamater, 2006) or wash (Byer et al.; Crooks & Bauer, 2005; Greenberg et al., 2007; Hyde & DeLamater; Kelly, 2008; McCammon & Knox, 2007; Rathus et al., 2008) the genitals prior to and just after sex because it might help keep the harmful bacteria out of the urethra. On the same note, although three textbooks mentioned using sex toys such as dildos or vibrators as an alternative to penetrative sex (McAnulty & Burnette, 2004; Rathus et al.; Strong et al., 2008), only two discussed the importance of washing the sex toys thoroughly with soap and water before and between use (Rathus et al.; Strong et al.).

Textbooks also mentioned avoiding bodily fluids (e.g., semen, blood vaginal secretion, or feces), because these fluids could be carrying infectious agents (Allgeier & Allgeier, 2000; Byer et al., 2002; Crooks & Bauer, 2005; Kelly, 2008; Rathus et al., 2008; Strong et al., 2008). Textbooks were sometimes more specific in discussing prevention strategies such as not letting semen or vaginal secretions get near mucous membranes (McCammon & Knox, 2007; Rathus et al.; Strong et al.) or not using someone else's cuticle scissors or razor or anything that might have an infected person's blood (Allgeier & Allgeier; Crooks & Bauer; Greenberg et al., 2007; Rathus et al.). In contrast, over half of the texts mentioned remaining sober as a prevention strategy (Carroll, 2007; Greenberg et al.; Hock, 2007; Kelly; King, 2005; McAnulty & Burnette, 2004; Rathus et al.; Strong et al.).

CHAPTER 4

DISCUSSION

Amount and Accuracy of Material on STDs Included in Textbooks

Undergraduate human sexuality textbooks were examined to evaluate the amount and accuracy of information presented about STDs. On average, textbooks included more information about HIV, syphilis, gonorrhea, and genital herpes than the other STDs and based on the CDC standard, were more accurate about HIV, genital herpes, hepatitis, and pubic lice than other STDs. There are probably several reasons why these diseases received relatively more attention.

Accuracy Coding. The accuracy of textbooks was calculated as agreement with CDC based on various fact sheets about STDs obtained from the CDC website in early 2008. It could be that additional material presented in textbooks that was not coded as “accurate” by CDC standards could have been completely correct had I used other standards of accuracy such as medical texts or research-based evidence from journals. In addition, it is important to note that lack of agreement with CDC is frequently a reflection of omission of material contained on the CDC website, rather than inaccurate information being presented.

Syphilis and Gonorrhea

Amount of coverage. Prior to the introduction of antibiotics, syphilis and gonorrhea were significant health threats. Historically, people have suffered greatly from the effects of gonococcal infections and syphilis. Both of these diseases were a major health threat for much of the Twentieth Century, and although these two STDs currently

have low rates of incidence, they still threaten the lives of thousands of Americans and are dangerous to health. In 2006, most new cases of gonorrhea occurred in people between the ages of 20-24, and the incidence of syphilis was highest among women aged 20-24 (CDC, 2008). Syphilis and gonorrhea have few visible symptoms and new antibiotic-resistant strains of these diseases are becoming more prevalent. In addition, the initial symptoms (if present) disappear without treatment, and the bacteria move to other organs causing more serious damage. It could be that textbooks include more information on these diseases because of their long history, their potential effects on young adults, and the serious health threats they remain in spite of their diminished prevalence.

Accuracy. Few textbooks covered syphilis accurately, but gonorrhea was accurately covered more often. One possible reason that syphilis was not as accurately covered as gonorrhea is that there were more concepts to be coded for syphilis.

HIV and Genital Herpes

Amount of coverage. In general, textbooks either had an entire chapter on HIV/AIDS, or dedicated a larger portion of text to HIV/AIDS than to any other STD. Textbooks may contain so much information about HIV because of its prevalence, lethality, and the number of young adults that are being affected by this disease. Before the world-wide epidemic of HIV/AIDS, few young men, women, and babies died from STDs (McAnulty & Burnette, 2004). In the approximately 30 years since HIV was first identified, world-wide prevalence has increased dramatically from a few million in the early 1980s to over 40 million individuals who are currently living with HIV (UNAIDS, 2006). In the United States, over 1 million Americans are currently living with HIV,

about 500,000 people have died from AIDS (CDC, 2008) and half of all new HIV infections occur in people 25 years of age or younger (Hoff et al., 2003).

Although HIV/AIDS deserves attention, the relatively greater emphasis placed on it may indirectly downplay the impact of the other STDs. In one study of adolescents aged 12 to 21, although almost every respondent reported having been educated about STDs (97%), only 2% correctly could name all eight major STDs (i.e., chlamydia, genital herpes, gonorrhea, hepatitis B, HIV, HPV, syphilis, trichomoniasis). Although 91% could name HIV as an STD (and about half thought it was the most common STD), only about one-fifth identified Trichomoniasis, HPV, or hepatitis B as STDs. In addition, few could distinguish between diseases that were curable (9%) and those that were incurable (3%; Clark, Jackson, & Allen-Taylor, 2002).

Other studies of young adults have found that they underestimate the seriousness of the health threat and their own level of risk or vulnerability to the health threat of STDs (Mattson, 2002; Ratliff-Crain, Donald, & Dalton, 1999). Young adults seem to worry more about getting pregnant than getting an STD because, “most of the time you can take something for [an STD] and get over it, a child is something for the rest of your life” (p.560, de Visser, 2005). In addition, these young adults dismissed the threat of HIV.

Prior to the advent and rapid spread of HIV/AIDS, the prevalence of genital herpes in the 1970s and 1980s was cause for much concern in the United States (Rathus et al., 2008). It is estimated that 45 million Americans(i.e., 20%) are living with this incurable disease and that most of them are not aware that they are infected (CDC, 2008). Although there are increasingly fewer new cases of genital herpes each year than other

STDs, it is the most prevalent STD in the United States as far as numbers of people chronically living with the disease. Textbooks may have included more information on genital herpes than STDs with higher annual incidence because of its prevalence.

Accuracy. Based on the CDC standard, HIV and genital herpes were generally covered accurately by textbooks. The tremendous health impact of HIV and genital herpes, along with their life-altering status, may be why textbooks contained more information regarding these two STDs. In addition, it is estimated approximately 30% of persons with herpes, and 25% of persons with HIV do not know they are infected. It could be that more research has been produced on these serious diseases and therefore no matter where what source textbooks writers use for their pull their information from, there will be high rates of agreement between sources.

Hepatitis and Pubic Lice

Amount of coverage. On average, textbook authors included fewer concepts about hepatitis and pubic lice, A paradox is that even though textbooks contain fewer concepts about these STDs, they have a higher percentage of inclusion of the total concepts than all other STDs except HIV. In general, textbooks included over half of the possible concepts for both STDs.

Accuracy. For the most part, textbooks correctly represented Hepatitis B and pubic lice. One possible reason that these two diseases had such high accuracy scores is because there were so few concepts to code for pubic lice or Hepatitis B. For example, pubic lice is a fairly straight-forward disease with few symptoms (i.e., itching and visual identification of the louse since it can be seen with the naked eye). The texts that did not meet accuracy requirements of 50% agreement with CDC failed to mention detailed

information about treatment (Allgeier & Allgeier, 2000; Byer et al., 2002) and transmission (Greenberg et al., 2007).

Chlamydia, HPV and Trichomoniasis

Amount of coverage. Chlamydia, HPV, and trichomoniasis are the three most prevalent STDs among young adults (and in the population). On average, textbooks included about 30% of the total coded concepts for these STDs. Based on the number of total coded concepts, texts contained more information HPV and chlamydia and less information about trichomoniasis. It makes sense that college textbooks would include a significant amount of information about chlamydia and HPV, since they are prevalent among young adults. However, it is not understood why trichomoniasis would have less coverage. One possible reason for this is that trichomoniasis was generally covered in either the chapter with female anatomy or in the section with vaginal infections. This disease, however, affects men as well as women, and merits more thorough coverage by textbooks.

Accuracy. The lack of accuracy about HPV and trichomoniasis may be a reflection of the rapid increase of these diseases in the last few years. According to Allgeier and Allgeier (2000), annual estimated incidence of HPV was 500,000 to 1 million and annual incidence of trichomoniasis was 3 million. This means that the annual estimated incidence of trichomoniasis has more than doubled and HPV has sextupled in the last 10 years. The rate of chlamydia however has remained fairly stable. So, it remains a mystery why it is not given more accurate coverage. Textbook authors need to include more accurate information about chlamydia, trichomoniasis, and HPV.

Pelvic Inflammatory Disease

Amount of coverage. Considering the prevalence of acute cases of PID, and the prevalence of PID among women under age 25 it seems as if textbooks should do a more thorough job of incorporating material on PID. It is estimated that each year approximately 1 million women suffer from acute cases of PID, 100,000 women become infertile, and about 150 women die each year from complications of this disease (CDC, 2008). Although not a sexually transmitted disease, the serious impact of this disease needs to be discussed.

Accuracy. It is not obvious why textbooks are less accurate in their description of PID when it is so common and has such devastating consequences. One possible explanation is that textbooks authors do not consider it merely a complication of STDs rather than a disease worthy of more explanation. Several textbooks, in fact, did not include a separate section for PID. This is especially prevalent in the case of PID. Several textbooks only devoted a few sentences to describing the diseases.

Bacterial Vaginosis

Amount of coverage. On average, textbooks contained the least information about BV. It could be that some authors may consider BV as more of a female disease, which could be why BV was included in the female anatomy section of some textbooks, and in the section labeled “vaginal infections” in other textbooks. Only half of the textbooks contained concepts about transmission of BV, which accounted for 11 of the 37 total concepts, and few textbooks discussed symptoms of BV in men. Another possibility is that authors do not consider BV to be much of a threat since it is easily treated with antibiotics; however, it is the most common vaginal infection in women of childbearing

age (CDC, 2008). In addition, men need to be treated since they can carry the infection and continue to re-infect their partner. Although BV may not carry a death sentence, it nevertheless can have serious health consequences, and textbooks authors should include more information on this disease.

Accuracy. Texts were relatively inaccurate in their discussion of BV. One reason that texts had low accuracy scores is that some texts only had one or two sentences about BV in a section about vaginal infections. Considering there were 33 possible concepts to code from the CDC web site, a couple of sentences did not begin to adequately cover the material.

Information Presented in Undergraduate Human Sexuality Textbooks

Types of STDs included

Textbooks included a number of STDs that were not included in this review for in-depth analysis. For instance, candidiasis was mentioned in all 14 textbooks. This fungus, however, is typically a result of overgrowth of yeast that is naturally in the vagina rather than primarily sexually transmitted. In addition, scabies was included in 13 textbooks. As with candidiasis, scabies can be transmitted sexually, but it is not the primary mode of transmission. Few textbooks included Amebiasis and pinworms as STDs, although it is possible to contract these diseases through oral-anal sexual activity. It is more typical, however, to contract these diseases through undercooked food or unclean hands that have touched fecal matter. Cystitis, sometimes called, honeymoon cystitis, was also included in some textbooks because it is a sexually related disease that is brought on by frequent or vigorous sex.

For STDs reviewed in this study, textbooks generally included the most information about prevention, symptoms, and methods of transmission. The least information was about the health impacts of STDs.

Incidence

In general, although most textbooks discussed the incidence of STDs, they were frequently inaccurate. This, however, is in part because incidence numbers change frequently. For instance, syphilis rates in the United States have been cyclical, with increases and decreases, until the 1990s when syphilis incidence reached a 40-year high, and then began a decline for the next ten years, reaching an all-time low in 2000. However, since 200, syphilis rates have been increasing, and in 2006, there were approximately 36,000 new cases reported (CDC, 2008). As a result of this rise and fall in incidence rates, textbooks can quickly become inaccurate.

Transmission

Some textbooks listed modes of transmission in each STD section, whereas other textbooks just mentioned modes of transmission once at the beginning of the chapter. When transmission was mentioned in the beginning of the chapter, but not for each separate STD, each STD was coded as including that mode of transmission. When textbooks mentioned that STDs were transmitted “sexually,” transmission by “vaginal sex” was coded for each STD. This is because it is impossible to determine what the author means by “sexually.” In addition, if the textbooks mentioned vaginal, oral or anal transmission at the beginning of the chapter, then each STD was coded as including vaginal, oral and anal transmission. This system of coding contributed to the high rates of inclusion of transmission in texts. I found it much more informative when texts included

modes of transmission for each STD so there was no confusion on how each STD was transmitted.

There was ambiguity in the language that some texts used when discussing modes of transmission. For instance, two textbooks mentioned transmission through sexual contact but did not specify what type of sexual contact (Allgeir & Allgeier, 2000; McCammon & Knox, 2007), and another text mentioned that transmission occurs during kissing or intimate body contact (Byer et al, 2002). In another section of one of these books the authors mentioned that syphilis is transmitted through “genital contact” (McCammon & Knox). Another author mentioned that chlamydia is spread when the infected membranes of one person come into contact with the membranes of another person but does not go into further detail (King, 2005). This type of language is unclear and confusing. In contrast, other textbooks used language that is more specific. For instance, McAnulty and Brunette (2004) mentioned that the genital herpes infection occurs “when the virus passes through breaks in the skin or membranes of the mouth, vagina, penis, urethra, or anus, and can be transmitted through any combination of oral, vaginal, and anal contact.” (p. 436) Authors should use precise language and give concrete examples so that they can be understood by sexually uninformed and inexperienced students.

Although the congruence about risk of STD transmission was generally high across textbooks, sometimes misstatements were made. McCammon and Knox (2007) identified masturbation (alone or with partner) as a no-risk behavior. Although solo masturbation is a no-risk behavior for contracting STDs, mutual masturbation could be risky because it is possible to transmit an STD from one partner to another through

infected discharge (Allgeier & Allgeier, 2000). Authors need to caution their readers that “no-risk” mutual masturbation means that a person cannot touch the other partner’s genitals.

Symptoms

Textbooks typically included symptoms that were common to both women and men (e.g., fever, fatigue) and symptoms that were particular to men (e.g., burning during urination) or to women (e.g., irregular menstrual bleeding). In addition, texts also mentioned the lack of symptoms for several STDs. This lack contributes to curable diseases causing serious health damage to individuals that do not know they are infected, and thus do not seek treatment. The inclusion of content regarding the lack of symptoms for numerous STDs is important because prior studies have found that a substantial proportion of young people did not believe that STD transmission could occur if there were no obvious symptoms (Hoff et al., 2003). Textbook authors responsibly stressed the importance of getting tested because students cannot rely on the obvious presence of symptoms to know if they have an STD.

Treatment

Most textbooks mentioned whether STDs could be treated or not. Some texts even separated STDs into sections for those which are curable (bacterial and parasitic STDs) and those that are incurable (viral STDs). Most texts also mentioned that current and past partners should be treated to prevent reoccurrence. Few textbooks, however, discussed the importance of abstaining from sex during treatment so that infection does not continue to be passed between partners. Whereas most texts mentioned that some STDs could be treated with antibiotics, Greenberg et al. (2007) went into more detail about

treatment (e.g., treatment consists of a intramuscular injection of 500 mg of ciprofloxacin). This particular text might be more useful to medical students rather than the typical undergraduate student.

Considering that about many sexually active adolescents and emerging adults may have limited financial resources to seek testing and treatment for STDS, and considering that over half of the new STDs each year occur to individuals in these age groups, it would be useful if textbook authors included information about testing and treatment, and would identify resources such as websites and telephone numbers. However, few textbooks included the national STD hotline number where people can get STD information and references about where to go for testing. Textbooks should include more information for students on the availability of these services and stress the importance of getting tested not just for HIV, but for all STDs. Prior research indicates that young adults typically visit health care providers more for pregnancy tests, pap smears and pelvic exams than for STD testing or treatment (Mosher, Martinez, Chandra, Abma, & Willson, 2004).

Health impacts

Most texts mentioned infertility as a possible health impact of STDs, but other health impacts such as cancer and death were infrequently revealed. In addition, although most texts mentioned that it was possible for a mother to transmit an STD to her child in utero or during the birth process, fewer texts pointed out that some diseases cause preterm delivery or a LBW baby. Although the disease may not be transmitted to the child in some instances, preterm delivery often means that the lungs and the liver of the child are not developed enough to work on their own, which can result in jaundice or

breathing difficulties. In addition, LBW babies may require intensive care after they are born. It is not clear why textbooks included less information about the health impacts of STDs, since numerous STDs affect reproductive health, as well as cause individuals to be more susceptible to other STDs. In addition, young adults are more susceptible to some of the diseases that cause the most serious health damage (e.g., chlamydia). Previous studies have shown that young adults lack knowledge of the health consequences of being infected with an STD including their association with infertility (Jones & Haynes, 2006). Considering the apparent lack of knowledge among young adults, authors should include more information on the serious health impacts of STDs.

Prevention

Overall prevention strategies of STDs (i.e., abstinence, monogamy with an uninfected partner, and use of latex condoms) were typically discussed in a separate section of each chapter. Prevention strategies for each STD were usually included in the section with that particular STD. For instance, one prevention strategy for HPV is vaccination. Most textbooks listed this in the section that discussed HPV. This separation of prevention strategies caused some confusion for me when I first began coding the textbooks. When I finished coding an STD and prevention strategies were not included, I would mark “no” on my code sheet (for not included in the text). However, I would sometimes find this information later in the chapter. Although I learned that prevention strategies were included in both the prevention section and the individual STD sections, this might also cause some confusion among students who are simply trying to find information on how to prevent a particular STD.

Other prevention strategies included in texts sometimes seemed unclear. For example, one text included the prevention strategy of showering or bathing with your partner, but did not discuss how this was a prevention strategy (Allgeier & Allgeier, 2000). Some other texts mentioned that a person should use their fingers to detect any sign of vaginal discharge and to “milk” the penis to check for discharge at the penile opening (Greenberg et al., 2007; Rathus et al., 2008). However, because these books did not discuss how to distinguish between a “discharge” that could be symptomatic of an STD (which should be foul-smelling for women or greenish-yellow for men) and a woman or man’s natural lubrication prior to sex, this information may not be helpful to students who may be inexperienced or uneducated.

It was also disturbing that most authors mentioned that one of the disadvantages of condoms is that they make sex less spontaneous (only omitted by Kelly, 2008 and Strong et al., 2008). Mentioning that putting on a condom is “interrupting spontaneity” conveys two things: (1) that authorities agree that putting a condom on interrupts sex rather than suggesting how to make it more of a part of intimacy, and (2) that sex should be spontaneous. The mention of a condom interrupting spontaneity may be inadvertently contributing to the spread of STDs among college students because the “authorities” are condoning the romantic beliefs that sex is magical and spontaneous, rather than part of a relationship to be discussed and planned. It was commendable that some textbooks suggested that if partners included putting the condom on a part of sexual interaction, then it could be an enjoyable ritual (Crooks & Bauer, 2005; Hyde & DeLamater, 2006; McAnulty & Burnette, 2004). It seemed like a mixed message, however, when some of the same textbooks that said condoms interrupted spontaneity also mentioned that

couples should share responsibility for contraception (e.g., Crooks & Bauer, 2005; McCammon & Knox, 2007; Rathus et al., 2008). Authors should not perpetuate the romantic beliefs of young adults that condoms interrupt the spontaneity of sex, but rather provide them with concrete ways to discuss condom use with their partner.

Diversity

Although not included in the original research questions, it became apparent when reviewing texts that there was a wide variety of information concerning ethnic and sexual diversity in the STD chapters.

Ethnic Diversity. Most textbooks discussed the racial discrepancy of higher incidence of STDs among minorities, but some textbooks couched this discussion in the context of less access to health care and the increased likelihood of African Americans to go to a public clinic (which is more likely to report diseases) than to a private doctor. Ethnic diversity, however, was not as apparent in the photographs and illustrations in the STD chapters.

In general textbooks included pictures of diseased genitals, couples interacting, individuals or couples talking to a health care provider or young people in a group (e.g., partying). Most texts contained some apparent racial diversity in photographs. Regardless, the majority of pictures in textbooks were of White individuals, whether the picture portrayed health or disease. In the five photographs that depicted a medical person (e.g., doctor or clinician) interacting with a client, four of the “doctors” were White and one was Asian, whereas three of the “clients” were White, one was African American and one was Hispanic.

There was an even greater disparity in racial diversity when looking at photographs depicting prevention of STDs. For the most part, pictures shown in the prevention section of the STD chapter were of White male/female couples, with only two textbooks including a photo of a young African American male/female couple. Additionally, in textbooks depiction of condom usage, only one photograph in 27 depicted an African American. Whereas the pictures of White individuals depicted putting a condom on or a couple in bed reaching for a condom, the depiction of an African American was simply two hands holding a condom, with no connection to another person or place.

Although it is unclear why textbooks included little racial diversity in photographs, it seems as if this could be provoking some unintended messages about STDs and prevention. Whereas about 40% of the diseased pictures were of African American genitals only 8% showed African Americans engaging in prevention behaviors. This type of depiction, along with the discussion of the high rates of STDs among racial minorities, could lead to the unintended conclusion that although African Americans have high rates of STDs, they do not take preventive measures. Textbook authors need to be more aware of this discrepancy, and be more sensitive about racial depictions of health, disease and prevention.

Sexual Diversity. In general, there was little discussion in the textbooks regarding sexual diversity. Although all textbooks mentioned the transmission of HIV among men who have sex with men (MSM), fewer textbooks discussed other STDs among MSM ($n = 3$). Discussing STDs among WSW was more common, with seven textbooks mentioning transmission of STDs among WSW. Most textbooks included their

discussion of same-sex transmission of STDs in the section with the particular STD (e.g., BV), whereas other authors discussed this separately. Although several texts discussed the prevalence of STDs among WSW and MSM, only one text discussed the lack of preventive measures women take with female partners (e.g., do not wash hands, use rubber gloves, or clean sex toys) which increased the chances of transmitting STDs between partners (McCammon & Knox, 2007).

This lack of sexual diversity was apparent in the photographs in the STD chapters. Few textbooks included illustrations or photographs suggesting a same-sex relationship between men ($n = 3$) or women ($n = 1$). Two textbooks that included a picture of a male couple had the picture in the HIV section, perhaps unintentionally underlining the idea that HIV is a gay male disease. In fact, only one textbook included a picture of a male/female couple in the HIV section (McAnulty & Burnette, 2004). Two textbooks included discussion of STDs among MSM, WSW, and bisexual individuals (Carroll, 2007; Strong et al, 2008). For the most part, however, pictures were of male/female couples. These findings underscore the study by Myerson et al, (2007) who concluded that undergraduate Human Sexuality textbooks are heteronormative (Myerson et al., 2007).

The portrayal of sexual diversity, along with the discussion of the incidence and transmission of STDs between MSM, WSW, and bisexual individuals could lead readers to conclude that HIV remains a gay male disease, while the other STDs are more of a problem for heterosexual couples. Textbook authors need to be inclusive in their discussion of STDs in same-sex and bisexual couples. It is possible that all STDs can be transmitted between all types of couples, but textbooks do not do a good job of discussing

this. In addition to being more inclusive of sexual diversity, authors need to be explicit in their discussion of the prevalence and transmission of STDs.

Problems with Textbooks

One of the most notable problems with one textbook, Strong and colleagues (2008), was that page numbers in the index were incorrect. After numerous searches, the information was finally discovered a few pages off from what the index indicated. Not only does this need to be corrected, but educators should be made aware of the problem so they can alert their students until a corrected copy becomes available.

Some textbooks contained disagreement between the tables and text. For example, Kelly (2008) mentions that there are about 3 million new cases of trichomoniasis in the text, but in the table that discusses annual incidence, symptoms, and treatment of common STDs, they mention that there are about 5 million new cases annually. Although neither of these figures is accurate, this type of disagreement in the same text could easily be confusing to students.

Another problem was that some textbooks referred to previous chapters for additional information, but I could not find the information. For instance, Hock (2007) mentioned that candidiasis is discussed more thoroughly in Chapter 2, but I could not find it in Chapter 2. In addition, I could not find a reference in the index for candidiasis except the one in the chapter for STDs.

Summary of the Best Textbooks

Based on accuracy, inclusion of material in texts, and diversity, the best five textbooks are Crooks and Bauer (2005), Hock (2007), McAnulty and Burnette (2004), Rathus et al. (2008), and Strong et al. (2008). Rathus and colleagues included the most

total coded concepts about STDs, and Strong and colleagues were the most accurate. Although not listed in the top five textbooks, Carroll (2007) included the most discussion of ethnic, sexual and racial diversity.

One probable reason that Strong et al. (2008) contained such high accuracy scores is because they frequently cited CDC as their reference. However, other textbooks cited CDC as their source, but did not rank as high as Strong et al., typically because of their year of publication. Some of the bestselling textbooks that contained the least accurate information in comparison to CDC were textbooks published in the early 2000s (e.g., Allgeier & Allgeier, 2000; Byer et al., 2002). Consequently, their citations were frequently from the mid- to late-1990s. Although some information does not change much over time, the information regarding incidence of STDs mentioned in these texts was often out of date, even though CDC was used as the source (e.g., McAnulty & Burnette, 2004).

Limitations

There are several limitations of this study. One limitation was that only STDs from the bestselling textbooks were reviewed. Although this gives me a snapshot of the information available, it is not the complete picture of what is being taught in classrooms. Another limitation is that only specific information about STDs were coded- their incidence, modes of transmission (and what increases the risk of transmission), symptoms, treatments, health impacts, and ways to prevent STDs. As a result, the amount of information that was coded for textbooks is not complete. For instance, several textbooks discussed the history of HIV or measure to alleviate the symptoms of genital herpes, but this information was not coded. Another limitation is that since only pages

mentioned in the index and table of contents were examined, not every possible page that might have included information about a particular STD was coded.. It could be that at another section in the book authors discussed a point that was not coded.

Directions for Future Research

Previous studies have examined the overlap of references between sexuality textbooks (Hogben, Hartlaub, & Wisely, 1999), preference of textbooks for using photographs versus illustrations to depict explicit material (e.g., nudity; Hartlaub & Dreznick, 2001), the preference of textbooks to be heteronormative (Myerson et al., 2007), and specific content areas including the sexual response cycle and extramarital sex (Goettsch, 1987). No studies prior to this, have sought to quantitatively assess the information provided by sexuality textbooks, although there have been several essay reviews of human sexuality textbooks (e.g., Ephross, 1986; Goettsch) Future research should focus on a more thorough review of the entire textbook rather than specific content areas by quantitatively coding the type of information included in texts.

Another direction for future research would be to survey university professors who teach human sexuality courses. Surveys should include what topics they teach in their classrooms, what topics they avoid, what type of supplemental information they provide students, and ideas about what they think should be included in textbooks. This would help guide textbook authors' decisions of what to include in their texts (i.e., include more information about topics that professors do not cover).

From past research we know that not only do young adults in the United States have higher rates of STDs than other industrialized nations, they also have higher rates of

unintended pregnancy (Feijoo, 2001). Future studies should also review human sexuality textbooks to determine the amount and accuracy of coverage of BCMs.

This study sheds light on what is included in human sexuality textbooks about STDs. According to previous studies, almost 86% of school districts have a policy that promotes abstinence (Landry, Kaeser, & Richards, 1999), which is in part a reflection of the federal funding for abstinence-only-until-marriage education. This may mean that many students are coming to college with unrealistic ideas about safer sex, their perceived vulnerability to STDs, and prevention strategies for keeping themselves protected against STDs. However, findings from this study show that although college students may be getting a lot of accurate information about HIV from textbooks, they may not be getting good information about HPV, chlamydia and trichomoniasis, which are the STDs most prevalent in their age range.

These findings indicate that authors may need to rethink the accuracy and information presented in textbooks, not only about STDs, but also about prevention and the portrayal of racial and sexual diversity. For instance, prior studies have indicated that adolescents tend to view oral sex as “safe” sex because it prevents pregnancy; several do not know that oral sex can transmit STDs (e.g., Hoff et al., 2003). This unawareness may be why recent studies show that there has been an increase in the rates of throat cancer caused by HPV for those under age 40, and most prevalent among those who practice oral sex (e.g., Herrero et al., 2003). No textbooks, however, discussed the throat as a possible site of infection for HPV. Authors may need to focus more on health consequences in order to inform young adults of the serious impact of STDs on their current and future health. Although this study provides information on what information

textbooks cover, this is not a complete picture of what is taught in the human sexuality college classroom. Future studies should survey university professors to determine what they teach in undergraduate human sexuality classrooms.

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Appendix A

List of bestselling textbooks from websites and Myerson et al., 2007

Amazon.com	bookbyte.com	barnesandnoble.com
	Allgeier and Allgeier, Sexual Interactions	Allgeier and Allgeier - Sexual Interactions
Byer, et al, Dimensions of Human Sexuality	Byer et al., Dimensions of Human Sexuality	Byer, et al, Dimensions of Human Sexuality
	Carroll - Sexuality Now	Carroll - Sexuality Now
	Crooks and Bauer - Our Sexuality	Crooks and Bauer - Our Sexuality
Greenburg - Exploring Dimensions of Human Sexuality		Greenburg - Exploring Dimensions of Human Sexuality
Hock, Human Sexuality	Hock, Human Sexuality	Hock, Human Sexuality
		Hyde - Understanding Human Sexuality
Kelley, Exploring Human Sexuality		Kelley - Sexuality Today
King, Human Sexuality	King, Human Sexuality Today	King, Human Sexuality Today
LeVay and Valente, Human Sexuality		LeVay and Valente, Human Sexuality
McAnulty, Exploring Human Sexuality	McAnulty, Exploring Human Sexuality	
McAnulty, Fundamentals of Human Sexuality	McAnulty, Fundamentals of Human Sexuality	McAnulty, Fundamentals of Human Sexuality
	McCammon - Choices in Sexuality	McCammon - Choices in Sexuality
		Nye - Sexuality
Rathus et al., Human Sexuality in a World of Diversity	Rathus et al., Human Sexuality in a world of diversity	Rathus et al., Human Sexuality in a World of Diversity
Strong et al., Human Sexuality Diversity	Strong et al., Human Sexuality Diversity	Strong et al., Human Sexuality Diversity
		Weistheimer - Human Sexuality

half.ebay.com	Myerson et al., 2007	Ecampus.com
Allgeier and Allgeier – Sexual Interactions	Allgeier and Allgeier – Sexual Interactions	Allgeier and Allgeier - Sexual Interactions
Baumister - Human Sexuality		
Byer et al., Dimensions of Human Sexuality		Byer, et al, Dimensions of Human Sexuality
Carroll - Sexuality Now	Carroll - Sexuality Now	Carroll - Sexuality Now
Crooks and Bauer - Our Sexuality	Crooks and Bauer - Our Sexuality	Crooks and Bauer - Our Sexuality
Greenburg - Exploring Dimensions of Human Sexuality	Greenburg - Exploring Dimensions of Human Sexuality	Greenburg - Exploring Dimensions of Human Sexuality
Hock, Human Sexuality		Hock, Human Sexuality
Hyde - Understanding Human Sexuality	Hyde - Understanding Human Sexuality	Hyde - Understanding Human Sexuality
Kelley - Sexuality Today	Kelley - Sexuality Today	Kelley - Sexuality Today
King, Human Sexuality Today	King, Human Sexuality Today	King, Human Sexuality Today
LeVay and Valente, Human Sexuality	LeVay and Valente, Human Sexuality	LeVay and Valente, Human Sexuality
McAnulty, Exploring Human Sexuality	McAnulty, Exploring Human Sexuality	McAnulty, Exploring Human Sexuality
		McAnulty, Fundamentals of Human Sexuality
McCammon - Choices in Sexuality	McCammon - Choices in Sexuality	McCammon - Choices in Sexuality
Rathus et al., Human Sexuality in a World of Diversity	Rathus et al., Human Sexuality in a World of Diversity	Rathus et al., Human Sexuality in a World of Diversity
Strong et al., Human Sexuality Diversity	Strong et al., Human Sexuality Diversity	Strong et al., Human Sexuality Diversity
Weistheimer - Human Sexuality		

Appendix B

College Human Sexuality Textbooks Reviewed

- Allgeier, E. R., & Allgeier, A.R. (2000). *Sexual interactions*. (5th ed.). Boston: Houghton Mifflin.
- Byer, C.O., Shainberg, L.W., Galliano, G., & Shriver, S.P. (2002). *Dimensions in human sexuality*. (6th ed.). Boston: McGraw Hill.
- Carroll, J. L. (2007). *Sexuality now*. (2nd ed.). Belmont, Calif.: Thompson Wadsworth.
- Crooks, R., & Bauer, K. (2005). *Our sexuality*. (9th ed.). Pacific Grove, CA: Wadsworth.
- Greenberg, J.S., Bruess, C.E., & Conklin, D.W. (2007). *Exploring the dimensions of human sexuality*. (3rd ed.). Sudbury, MA: Jones and Bartlett.
- Hock, R. (2007). *Human sexuality*. Upper Saddle River, NJ: Pearson.
- Hyde, J. S., & DeLamater, J.D. (2006). *Understanding human sexuality*. (9th ed.). New York: McGraw-Hill.
- Kelly, G. F. (2008). *Sexuality today*. (9th ed.). New York: McGraw-Hill.
- King, B.M. (2005). *Human sexuality today*. (5th ed.). Upper Saddle River, N.J.: Pearson.
- LeVay, S., & Valente, S.M. (2006). *Human sexuality*. (2nd ed.). Sunderland, MA: Sinauer.
- McAnulty, R.D., & Burnette, M.M. (2004). *Exploring human sexuality*. (2nd ed.). Boston: Pearson/Allyn and Bacon.
- McCammon, S.L., & Knox, D. (2007). *Choices in sexuality*. (3rd ed.). Cincinnati: Atomic Dog.
- Rathus, S. A., Nevid, J.S., & Fichner-Rathus, L. (2008). *Human sexuality in a diverse world*. (7th ed.). Boston: Pearson/Allyn and Bacon.
- Strong, B., DeVault, C. Sayad, B., & Yarber, W. (2008). *Human sexuality*. (6th ed.). New York: McGraw-Hill.

Table 1. Sexually transmitted diseases included in each textbook.

STD	Rathus, Nevid, & Fincher-Rathus	Allgeier & Allgeier	Strong, Yarber, Sayad & DeVault	Byer, Shainberg, Galliano & Shriver	Hock	Kelly	King	McCammon & Knox	Greenberg, Bruess & Conklin	Hyde & DeLamater	LeVay & Valente	McAnulty & Burnette	Carroll	Crooks & Bauer
Amebiasis		X	X				X							
Bacterial Vaginosis*	X	X	X	X		X	X	X		X	X	X ²	X	X
Candidiasis	X	X	X	X	X	X	X	X	X	X	X ²	X ²	X	X
Chancroid	X	X	X		X	X	X	X			X		X	X
Chlamydia*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cystitis		X	X				X			X				
Cytomeglovirus			X								X			
Genital Herpes*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gonorrhea*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Granuloma Inguiale	X		X			X	X							
Hepatitis* #	X ^{ACI}	X	X ^{AC}	X ^{AC}	X	X ^{AC}	X ^{AC}	X	X	X	X ^A	X ^{AD}	X ^{AC}	X ^{AC}
HIV*	X	X	X ³	X ³	X	X	X	X ³	X ³	X	X	X	X	X
HPV *	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lymphogranuloma Venereum	X		X			X	X				X			
Molluscum Contagiosum	X		X			X	X	X			X			
NGU	X	X	X	X	X	X	X	X	X		X	X	X	X
Pinworms							X							
Prostatitis		X					X			X				
Pubic Lice*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PID*	X	X ¹	X ¹	X ¹	X	X	X ¹	X	X	X	X	X	X ¹	X ¹
Scabies	X	X	X	X	X	X	X	X	X		X	X	X	X
Shigellosis	X	X	X				X							
Syphilis*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trichomoniasis *	X	X	X	X	X	X	X	X	X	X	X	X ²	X	X

Textbooks in **BOLD** use Sexually Transmitted Infections (STIs), others use Sexually Transmitted Diseases (STDs).

1. Chapter includes a separate section for PID

2. Was not included in STD chapter, but was included in textbook

3. HIV/AIDS has a separate chapter (not included in STD chapter)

* Sexually Transmitted Diseases listed on the CDC website

All textbooks include Hepatitis B. However, some textbooks also included Hepatitis A, C, or D. The letters in superscript indicate which types of hepatitis the textbook include in addition to Hepatitis B.

Table 2. Amount of information in textbooks about STDs and HIV.

	Total Concepts (N)	Rathus	Allgeier	Strong	Byer	Hock	Kelly	King	McCammon	Greenberg	Hyde	LeVay	McAnulty	Carroll	Crooks	Mean # of Concepts (M)	Range (r)
Bacterial Vaginosis	37	7	5	22	10	0	12	4	4	0	1	17	14	10	15	9	0-22
Chlamydia	85	32	29	48	28	35	32	20	31	23	23	34	29	33	35	30	20-48
Genital Herpes	77	47	35	32	42	43	33	42	26	24	36	34	47	39	51	38	24-51
Gonorrhea	88	50	36	44	43	41	44	41	33	43	47	36	35	36	43	41	33-50
Hepatitis	31	26	13	20	15	24	20	17	15	16	14	13	23	15	24	18	13-26
HIV	99	79	50	65	48	64	53	57	54	44	43	49	48	39	65	54	39-79
HPV	87	36	20	38	18	27	29	27	20	19	24	26	28	35	35	27	18-38
Pubic Lice	24	19	7	13	10	15	16	11	11	9	12	14	13	14	13	13	7-19
PID	59	22	16	31	10	24	7	16	5	7	6	10	8	12	15	14	6-31
Syphilis	107	53	44	47	38	40	40	45	29	33	40	40	43	33	45	41	29-53
Trichomoniasis	30	11	8	24	8	14	9	15	6	7	8	15	13	14	14	12	6-24
Prevention*	50	39	10	24	20	11	19	12	16	21	18	10	18	20	28	19	10-39
Total Concepts	774	421	273	408	290	338	314	307	250	246	272	298	319	300	383		

* Since prevention was often a separate section from the other STDs it is calculated separately.

Table 3: Accuracy of STD coverage in textbooks compared to CDC, expressed as a percentage.

	CDC Concepts (N)	Rathus	Allgeier	Strong	Byer	Hook	Kelly	King	McCammon	Greenburg	Hyde	LeVay	McAnulty	Carroll	Crooks
Bacterial Vaginosis															
<i>Incidence</i>			X ^A	X ^A									X ^A	X ^A	
<i>Transmission¹</i>	11	9	9	67	27		27		9			27	27	36	27
<i>Symptoms</i>	5	80	40	60	40		60	40	20		20	60	60	40	60
<i>Treatment</i>	5	20	20	60	20		20	20	20			40	20	20	40
<i>Health Impact</i>	8	13		75	38		25	13				75	63	13	50
<i>Prevention</i>	4	75	75	75	100	75	100	75	75	75	75	75	75	75	75
Total Agreement ^{2,3}	33	24	15	64	30		36	12	12		3	45	45	30	39
Chlamydia															
<i>Incidence</i>		X ^B	X ^C	X ^A	X ^B	X ^B	X ^B	X ^C	X ^A	X ^C	X ^C	X ^A	X ^B	X ^A	X ^B
<i>Transmission</i>	3	100	33	100	67	100	100	33	33	33		100	100	100	100
<i>Symptoms</i>	18	44	33	94	50	61	56	33	50	39	33	39	39	50	56
<i>Treatment</i>	4	25	25	25	50	50	50	25	25	75	25	75	75	50	25
<i>Health Impact</i>	20	55	45	60	40	35	35	35	40	30	45	35	30	25	50
<i>Prevention</i>	6	50	50	67	50	50	50	50	50	87	50	50	50	87	50
Total Agreement	71	44	28	63	35	45	38	24	38	30	28	44	34	42	45
Genital Herpes															
<i>Incidence</i>		X ^B	X ^B		X ^A		X ^A	X ^A	X ^A			X ^A	X ^A	X ^A	X ^A
<i>Transmission</i>	7	100	71	100	86	100	86	100	86	57	86	100	100	100	100
<i>Symptoms</i>	8	63	38	38	63	75	50	25	25	38	50	50	50	25	63
<i>Treatment</i>	4	75	75	75	75	75	75	75		75	100	100	75	100	100
<i>Health Impact</i>	8	63	38		50	13	50	50	25	38	63	38	63	25	63
<i>Prevention</i>	4	100	75	75	100	75	100	100	75	100	75	75	75	75	100
Total Agreement	45	64	51	62	69	67	51	60	38	42	60	62	71	62	67
Gonorrhea															
<i>Incidence</i>		X ^B	X ^B	X ^A	X ^B	X ^B	X ^B	X ^B	X ^B		X ^B	X ^B	X ^B	X ^B	X ^B
<i>Transmission</i>	3	100	100	100	100	100	100	100	33	100	100	100	100	100	100
<i>Symptoms</i>	21	38	48	62	52	48	62	33	38	48	57	43	48	53	53
<i>Treatment</i>	14	43	36	50	43	50	64	43	43	36	36	71	14	36	64
<i>Health Impact</i>	5	40	40	40	20	60	40	40	20	40	40	40	20	20	40
<i>Prevention</i>	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Agreement	66	50	36	56	50	53	58	50	35	50	55	48	38	45	52
Hepatitis (Viral)															
<i>Incidence</i>		X ^B	X ^C	X ^B		X ^B	X ^C	X ^C	X ^C		X ^C	X ^B	X ^C	X ^B	
<i>Transmission</i>	8	100	13	63	75	75	63	75	63	38	75	75	100	25	88
<i>Symptoms</i>	6	83	67	83	67	83	83	67	67	50	33	50	83	83	67
<i>Treatment</i>	2	100	50	50	50	100	100	50		50	50	50	50	50	100
<i>Health Impact</i>	2	50	50	100	50	100	50	100	100	50	50	50		50	100
<i>Prevention</i>	4	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Agreement	18	94	50	83	72	94	83	83	72	56	67	72	89	61	94
HIV															
<i>Incidence</i>		X ^A	X ^C	X ^A	X ^A	X ^B	X ^A	X ^A	X ^B	X ^B		X ^B	X ^C	X ^B	X ^A
<i>Transmission</i>	18	83	44	44	39	67	61	44	94	28	33	39	50	22	44
<i>Symptoms</i>	4	100	50	75	25	50		50	25	25	50		25	25	100
<i>Treatment</i>	1	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<i>Health Impact</i>	4	100	100	75	75	25	75	100	100	75	75	100	100	100	100
<i>Prevention</i>	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Agreement	36	83	58	64	47	67	64	61	86	44	47	50	56	47	64
HPV															
<i>Incidence</i>			X ^C	X ^A	X ^B	X ^B	X ^B	X ^B	X ^B		X ^B	X ^B	X ^B	X ^C	X ^B
<i>Transmission</i>	4	75	75	25	25	75	75		50				75	75	75
<i>Symptoms</i>	16	50	38	81	25	66	25	38	50	31	63	56	31	50	38
<i>Treatment</i>	4	25	25	50	25	50	50	75	50	50	25	50	50	75	75
<i>Health Impact</i>	10	60	60	30	30	40	60	50	30	40	40	40	60	20	80
<i>Prevention</i>	6	83	50	83	67	67	67	67	50	50	100	67	50	67	83
Total Agreement	66	36	24	53	15	33	32	33	24	23	29	33	35	44	42

	CDC Concepts (N)	Rathus	Allgeier	Strong	Byer	Hock	Kelly	King	McCammon	Greenburg	Hyde	LeVay	McAnulty	Carroll	Crooks
PID															
<i>Incidence</i>			X ^A	X ^A	X ^A	X ^A		X ^A						X ^A	X ^A
<i>Transmission¹</i>	13	23	15	85	15	31	31	62	15	8	8	15	8	23	38
<i>Symptoms</i>	7	57	29	71	29	57		14		43	14	29	29	29	29
<i>Treatment</i>	4	50	25	25	25	50								50	50
<i>Health Impact</i>	15	40	33	20	13	60	13	20	20	13	20	27	13	20	20
<i>Prevention</i>	6	67	67	67	67	50	67	83	50	50	50	50	50	50	50
Total Agreement	50	32	24	54	14	42	14	26	10	12	10	16	8	22	24
Pubic Lice															
<i>Incidence</i>						X ^D									
<i>Transmission</i>	5	60	80	80	80	80	80	80	100	20	80	80	60	80	60
<i>Symptoms</i>	2	100		100	50	100	100	100	100	100	50	100	50	100	100
<i>Treatment</i>	8	100	13	50	25	50	75	25	25	38	50	50	63	50	38
<i>Prevention</i>	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Agreement	17	88	35	65	47	76	82	59	59	47	65	71	65	71	59
Syphilis															
<i>Incidence</i>		X ^C	X ^C	X ^A	X ^C	X ^C	X ^C	X ^C	X ^C	X ^C	X ^C	X ^C	X ^C	X ^C	X ^C
<i>Transmission</i>	4	100		100	25	75	75	25	25	100	100	50	100	25	100
<i>Symptoms</i>	45	60	44	80	49	60	64	53	44	36	44	55	53	40	49
<i>Treatment</i>	7	29	43	29	29	14	14	43	43	14	57	14	14	29	43
<i>Health Impact</i>	9	22	33	78	33		33	56	11	33	33	44	22	22	44
<i>Prevention</i>	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Agreement	82	46	35	61	38	42	46	46	33	33	40	43	41	33	40
Trichomoniasis															
<i>Incidence</i>		X ^B	X ^C	X ^A		X ^B	X ^C	X ^B	X ^B	X ^C		X ^B	X ^B	X ^A	X ^B
<i>Transmission</i>	3			100	33	67		33			67	67	67	100	67
<i>Symptoms</i>	10	50	40	100	50	60	40	50	30	30	30	60	60	60	40
<i>Treatment</i>	4	50	50	50	25	50	50	100	50	50	25	75	25	75	50
<i>Health Impact</i>	4	50		75	25		25	25			50				75
<i>Prevention</i>	3	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Agreement	28	36	25	86	29	46	32	46	21	25	29	39	50	43	39

1. Includes activities that increase risk.
2. Total number may not equal concepts for individual categories. This is because not all concepts fit into these 5 categories and prevention is not included in the total agreement score.
3. Numbers in rows after the first column are percentages.
 - A. 100% agreement with CDC.
 - B. Within 50% agreement \pm of CDC.
 - C. Outside the 50% \pm agreement with CDC.
 - D. CDC does not record Incidence but Hock (2007) estimates 3 million.

Table 4. Pictures of lesions or discharge and the apparent ethnicity of the individual pictured

	Rathus	Allgeier	Strong	Byer	Hock	Kelly	King*	McCammon	Greenberg	Hyde	LeVay	McAnulty	Carroll	Crooks
Candidiasis women	W								W					
Chancroid women					A									
Chancroid men					A		R							
Chlamydia women					R									
Chlamydia men					W									
Genital herpes women			W		W	W			R	W	W	W	W	W
Genital herpes men	W	W	R	W	W	R	R	A	R	W	W	W	W	W
Genital herpes cold sore									W				W	
Gonorrhea women														
Gonorrhea men	W	W	W	W	R	W	R	W	W	W	R	W	W	W
Gonorrhea Tongue									A					
HPV women	A	W	W		W			R	W	W		W	W	
HPV men			A	W	W	W	A		W	W	R		W	W
Pubic Lice (on person)						W								
Scabies rash					W				W		W			
Syphilis women		R	A	A	A	R	R	R	A	A		A	W	R
Syphilis men			W		W	W	R	W	A	R	W	W	A	R
Secondary syphilis rash				W	R	W	R		W		W		W	W

*Contained only Black and White photographs which made ethnicity difficult to discern.

W – White

A – African American

R – Race indiscernible

VITA

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