At Risk: Single Young Women Having Nonmarital Sex

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Abstract

The purpose of this paper is to provide a rationale for restoring the primary public-health principle of risk avoidance versus risk reduction when advocating for the reproductive health of young women. Many sexually active youth hold mistaken beliefs about the potential benefits of nonmarital sex; misconceptions are identified and explained. Due to the incomplete development of the adolescent brain, youth also have cognitive limitations that make many of them poor sexual decision makers, a phenomenon that is also explained. Finally, the physical, psychological, relational, social, and potential spiritual risks that young women disproportionately face when they have nonmarital sex are described. We conclude that these risks cannot adequately be addressed by a continued primary reliance on the secondary public health principle of risk reduction (such as the promotion of condoms and contraception); rather, risk avoidance needs to be emphasized.

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Sexual activity is defined as bodily contact meant to give or derive sexual gratification; a chief form of sexual activity, of course, is sexual intercourse. Oral sex, anal sex, and vaginal sex are all forms of sexual intercourse that can spread many sexually transmitted infections (STIs). But intercourse isn't the only sexual activity that puts its participants at risk: Mutual masturbation also carries risk of transmitting some STIs.

The risks inherent in such activity are affecting those at progressively younger ages. In the United States, 20% of American youth initiate some form of sexual activity prior to 14 years of age (Sexual Health Statistics, 2006; U.S. Teenager, 2010), and 75% of graduating high school seniors have had vaginal sexual intercourse (Fast Facts, 2010).

There is significant medical and social science data to suggest that, in addition to the risk of unwed pregnancy, early onset of sexual activity disproportionately places young women at risk for STIs, mental illness, and dating violence (Grossman, 2007; Steenhuysen, 2008).To be sure, young men may also suffer negative consequences relative to unwed pregnancy, STIs, mental illness, and dating violence, but the heaviest burden resulting from these is borne by young women (Zavodny, 2001). Thus it is imperative that young people, especially young women, fully understand these risks before making decisions about nonmarital sex.

Sexual abstinence is the act of refraining from intentional sexual gratification, whether through fantasy, self or mutual masturbation, oral or anal orgasm, and vaginal intercourse. Sexual abstinence—also known as *risk avoidance*—is the only absolutely certain way to avoid the risks of unwed pregnancy, STIs, and the emotional, social, and relational harm associated with nonmarital sex. A survey of American parents and adolescents released in August 2010 by the Department of Health and Human Services revealed that a majority of Americans consider premarital sex unacceptable. This study, entitled the "National Survey of Adolescents and Their Parents: Attitudes and Opinions about Sex and Abstinence," found that approximately 70% of parents and just more than 60% of

adolescents believe that sex should occur only between those who are married (Olsho et al., 2009).

The surprising pervasiveness of this conservative cultural norm should encourage health-care providers and educators to find ways to effectively promote the primary public health principle of risk avoidance in the area of sexual risk-taking. Risk avoidance—in contrast to the secondary public health principle of risk reduction—guarantees every individual's right to optimal health. Consequently, promotion of risk avoidance in the area of sexual health should be vigorously pursued by all individuals regardless of personal worldview.

Seventeen published studies demonstrate a positive impact from school-based abstinence programs (Abstinence Works, 2010; c.f., Ericksen, Weed, Birch, White, & Evans, 2009; Jemmott, Jemmott, & Fong, 2010; Tortolero et al., 2010). The majority of these programs successfully delay onset of sexual debut by two years, and some have also been associated with decreased rates of teen pregnancy (Cabezon et al., 2005; Denny, Young, & Spear, 1999; Weed, Ericksen, Lewis, Grant, & Wibberly, 2008; Sather & Zinn, 2002). Clearly, delay of sexual debut among adolescents is possible and is beneficial not only to adolescents but to society at large (Manlove et al., 2002). It is our hope that this paper will aid parents and professionals alike in promoting optimal sexual health while eliciting a greater respect for women.

Why Do Youth Have Nonmarital Sex?

One way to approach youth about the risk of premarital sex is to discuss what they believe are the benefits of sex before marriage (Abbott & Dalla, 2008). Recognizing these beliefs is not an endorsement of them, *but rather a prerequisite to effectively expose their limitations and liabilities*. The following findings come from two studies (Abbott & Dalla, 2008; Abbott & Stortvedt, 2012). Quantitative and qualitative data was collected from a group of 68 sexually active teens, and 60 sexually abstinent adolescents and 42 abstinent young adults (ages 17–26).

Benefits of Sexual Activity as Perceived by Sexually Active Teens and Young Adults

The sexually active teens surveyed by Abbott and Dalla (2008) reported five perceived rewards of engaging in nonmarital sex: (1) physical pleasure from foreplay and orgasm, (2) increased bonding and closeness to partner, (3) the ability to test sexual compatibility, (4) a demonstration of love as a natural part of a growing relationship, and (5) a way to avoid being teased or humiliated for being a virgin. Those dedicated to influencing the sexual behavior of youth cannot dismiss these perceived rewards, especially since there are significant limitations to each of them. In explaining this, the word *outcome* will be used instead of the word *reward*—while a reward also implies something desirable, an outcome may be positive or negative, healthy or unhealthy.

Perceived Outcome #1 is that premarital sex provides physical pleasure (Kunz, 2011; Steinberg, 2005). Sexually active teens made statements such as "It's fun," "Sex gives pleasure to both of us," and "It feels good, especially when you're hopped up on hormones." It's difficult to dispute claims of "pleasure," but physical gratification in a young, uncommitted relationship is fleeting. Juvenile sex has not been shown to enhance growth for self or partner, because at its heart, nonmarital sex is selfish. It is the momentary use of another's body to "relieve the pressure and anxiety built up by abstinence," as one teen admitted (Bryner, 2011).

Perceived Outcome #2 is the belief that sharing physical intimacy brings increased closeness and bonding with the partner (Gross, 2009; Steinberg, 2005). Teens commented that "It will bring you and your partner closer" or "It deepens the relationship." Increased closeness is more possible for young women than young men, who can more easily have sex without emotional attachment or deep caring for the well-being of the partner (Sprecher, 1988). The cognitive and biochemical basis for this gender difference will be explained in a later section of this paper. Even if sex is perceived as a positive bonding experience by both partners, however, statistics show that the rela-

tionship is unlikely to last past high school—so deep, physical intimacy is wasted on a temporary affair and temporary feelings (McIlhaney & Bush, 2008; Lavoie, Robitaille, & Herbert, 2000).

Perceived Outcome #3 is the common belief that premarital sex is a way to test sexual compatibility. Sexually active teens reported, "It sounds bad, but who buys a car without test-driving it?" Another argument is that "You won't be shocked, surprised or disappointed when you marry." It is a common belief among youth that one must try out a sexual relationship prior to marriage in order to guarantee sexual compatibility within marriage. Intuitively, this seems reasonable. People explore, research, and try out many things—from potential purchases to colleges and even careers—before committing to a final or long-term decision. Experience generally broadens a person's perspective, increases knowledge, and improves judgment.

There are, however, some exceptions to this general rule. One example is taking illegal drugs. Trying out methamphetamine will not improve one's judgment or enhance one's decision-making capacity with regard to drug use. The same is true for premarital sex. Research has demonstrated that premarital sexual experience is not predictive of later marital sexual satisfaction (Day, 2010). In fact, having many—or, in fact, any—sexual partners before marriage, including one's future spouse, may be harmful to achieving marital sexual satisfaction. Nonvirgins who eventually marry or cohabit do not report higher levels of sexual satisfaction than do virgins who marry (Crooks & Baur, 2011). And persons who have had sex before marriage not only are more likely to be unfaithful and or divorce (Hsiu-Chen, Lorenz, Wickrama, Conger, & Elder, 2006), but also are more likely to have difficulty adjusting to marriage and are less likely to experience marital happiness, satisfaction, and love (Finger et al., 2004). Some of this difficulty appears to result from one spouse comparing the other with past sexual partners.

Research shows that those who have had sex before marriage are less likely to experience marital happiness, satisfaction, and love (Finger et al., 2004). And, on aver-

age, marriages preceded by cohabitation are 46% more likely to end in divorce (DeMaris & Rao, 1992; cited in Popenoe and Whitehead, 2002).

Achieving good sex in marriage is not dependent on prior love-making experience but on the love-making qualities possessed by both partners. These include kindness, unselfishness, humor, playfulness, and the ability to openly communicate needs and desires. Sexual satisfaction in marriage is one of those rare situations where prior experience is not needed (Abbott, 2011; Byers, 2005; Haavio-Mannila & Kontula, 1997; Litzinger & Gordon, 2005; Young, Luguis, Denny, & Young, 1998).

Perceived Outcome #4 is the belief that premarital sex is a way to show love in a growing relationship and that it is a natural progression of serious dating that may lead to a more stable marriage. Sexually active teens commented that "Sex is a sign of love." "It is a natural part of the relationship." "Sex is OK if a person is in a steady, loving relationship" (Abbott, 2011, p. 18). Some sexually active teens seem to believe that marital happiness is primarily related to sexual satisfaction. Sharing sexual intimacy certainly taps into one aspect of love, but it is not in and of itself a guarantee of marital success or satisfaction.

Perceived Outcome #5 is the belief that one will avoid being teased or embarrassed for being a virgin—a benefit of being sexually active that does not have lasting value. All teens face teasing—if not for one thing, then for another. It's just part of growing up. In many circumstances, abstinent youth are in the minority among peers and friends and are occasionally teased or ostracized by peers (Abbott & Dalla, 2008). However, Abbott and Dalla (2008) could find no empirical evidence to support the notion that being sexually active made one more popular and/or well regarded by friends or peers. There is certainly the possibility that a young woman who won't have sex will be rejected by some young males, but this does not seem to be a common occurrence among those who report being abstinent (Abbott & Dalla, 2008).

Benefits of Abstinence as Seen by Abstinent Youth

It is interesting to compare the perceived benefits reported by sexually active youth with those reported by the sexually abstinent. Nearly 80% of the abstinent teens reported that the main benefit of abstinence was *no worry about pregnancy or STIs*.

Second in importance, stated by almost half the youth, was that *abstinence until marriage would strengthen and preserve their future marriages*. One teen said, "My future husband will know that I love him because I waited for him." Another said, "Choosing abstinence before marriage makes one's relationship with one's wife or husband more special than if one had already had sex with earlier partners." Another said that sex was "a special gift to the future spouse" and would make sex in marriage more enjoyable (Abbott, 2011, p. 21).

Third, nearly half the youth reported that *abstinence makes them feel emotionally healthy*. Abstinent youth reported feeling good about themselves and positive about the future (Abbott, 2011).

The fourth important benefit reported by 25% of the youth was *more self-respect and self-esteem*. As one respondent said, "Self-esteem increases from resisting temptation." Another believed that "many people respect those who are abstinent and some wish they could be that way too" (Abbott, 2011, p. 22). Nearly one in five youth believed that having sex before marriage would bring shame and guilt over disappointing parents, friends, or God.

Finally, another fifth of the sample stated that a benefit of abstinence was the *avoidance of emotional pain if and when the relationships failed*, as most do in adolescence and early adulthood. The ache and hurt of having shared such intimacy and then having the relationship end can be devastating for some youth and can lead to depression and even thoughts of suicide (Teen Suicide Statistics, 2012; Portner, 2001; Teen Suicide Statistics, 2012).

Empirical data suggests that each of these perceptions about the benefits of sexual abstinence is correct, as will become evident in the second half of this paper.

The Adolescent Brain: A Work in Progress

In addition to the previously discussed misperceptions about nonmarital sex, youth who engage in sex before marriage often make poor decisions due to their stage of brain development. The prefrontal cortex of the brain—the master center for executive functioning, judgment and restraint—does not fully mature until the mid-twenties. For this reason, the authors have defined both teens and young adults under age 26 as *youth*. As a result of this physiological reality, many young adults are still in the adolescent phase of brain development (Giedd, Blumenthal, Jeffries et al., 1999; McIlhaney & Bush, 2008).

Barbara Strauch, a medical science editor for *The New York Times*, spent nearly a year interviewing the top researchers in the field of adolescent brain development—including Jay Giedd, Chuck Nelson, Marian Diamond, Francine Benes, and Larry Steinberg—and concluded, "The teenage brain may be briefly insane. ..... The teenage brain is in flux, maddening and muddled" (Strauch, 2003, p. 8).

The MRI (Structural and Functional Magnetic Resonance Imaging) has improved the ability of neuroscientists to view brain development *in vivo* and to follow changes over time. It has also allowed experts in the field to see that adolescent brains are not yet structurally mature—a reason why youth do not possess the same capacity as adults for consistent intellectual judgment and mature impulse control (Nelson et al., 2002; Silveri et al., 2006; Yurgelun-Todd, 2007).

Major structural growth of the preadolescent brain begins three to four years before puberty with an overproduction of gray matter, consisting of neurons, dendrites (treelike branches from each neuron), and synapses (junctions across which impulses pass via neurotransmitters from one neuron to another). This increase in gray matter expands the potential to think and learn in novel and creative ways. However, during mid and late adolescence, dramatic *neural pruning* occurs. Unused or infrequently used neurons and their connections atrophy, while the remaining neural pathways are strengthened. This

process can be likened to pruning fruit trees of unwanted growth so that the remaining branches will grow and produce more fruit (Giedd et al., 1999; Steinberg, 2005).

In addition to pruning, *nerve myelination* occurs. Myelin is a fatty substance that coats and insulates nerves, increasing the speed and efficiency of electrochemical transmissions in the brain. This process is similar to the way that insulating electrical wires improves their conductivity. Pruning and myelination cause "the brain [to become] leaner and more efficient" and adolescent reasoning capacity to increase (Weinberger, Elvevag & Giedd, 2005, p. 1).

Those processes don't change the fact that the structure of the brain responsible for reasoning and critical thinking is not fully mature before the midtwenties. The prefrontal cortex of the brain, located behind the forehead, enables a person to (a) manage impulses, (b) regulate emotions, (c) forgo immediate pleasure for long-term gains, (d) reason hypothetically, (e) weigh positive and negative consequences, and (f) plan for the future (Casey, Galvan & Hare, 2005; Fuster, 2002; Giedd, 2004). The immaturity of this portion of the brain explains much of the inability of adolescents to properly interpret experience and to make healthful decisions.

Psychiatrist and neuroscientist Jay Giedd summarized the significance of this fact, stating, "Adolescents have the passion but no brakes [in the midst of emotionally charged situations] until they are *twenty-five*" (Strauch, 2003, p. 33 author's emphasis). Thus, many adolescents and young adults lack the full adult capacity to reason, judge, and control emotional responses (Yurgelun-Todd, 2007). Dr. Miriam Grossman postulates that this is one reason why adolescents fail to use condoms and contraception correctly and consistently despite repeated instruction and demonstration of use. When students in comprehensive sex education classes are taught and allowed to practice putting condoms on bananas or dildos, for example, they are in an emotionally neutral setting. The ability to correctly and consistently "use condoms" in this classroom setting is no guarantee that the same correct and consistent use will occur in the throes of passion (Grossman, 2009).

Common Cognitive Limitations during Adolescence

The fact that the adolescent brain is in a dramatic state of structural flux accounts for at least 11 common cognitive limitations that render adolescents and young adults poor candidates for engaging in nonmarital sexual activity (Berk, 2007; Feldman, 2008; Santrock, 2008; Steinberg, 2005; Walsh, 2005). These limitations vary from one person to another, are more likely to occur in younger teens than in older young adults, and may not all occur simultaneously.

1. *Long-term consequences of behavior are often unanticipated or ignored*. Youth tend to focus on the here and now. They rarely look ahead and think to themselves, "If I do this now, it could lead to that in the future. Maybe I should reconsider my actions in light of my long-term goals."

2. *Youth have limited impulse control*. As a result, passion and pleasure can drive behavior—resulting in irrational and illogical choices. They may not want to participate in a particular activity, but the emotion of the moment may propel them into reckless behavior. For many teens, getting pleasure now is better than enjoying satisfaction later—even if later satisfaction would bring greater rewards. In other words, they may not be capable of conducting an unbiased cost/benefit analysis regarding potential behaviors and outcomes.

3. *The adverse consequences of risky behaviors are frequently underestimated.* Youth believe they are impervious to the negative costs and penalties of dangerous behavior that others may suffer. This adolescent perception of invulnerability creates in them a belief that they can get away with heavy drinking, fast driving, or unprotected sex without suffering any of the associated consequences. They simply believe the negative outcomes will not happen to them.

4. *Personal values that are not fully formed can be overwhelmed by peer pressure, media propaganda, and situational factors*. Because adolescents may be susceptible to influences that push them away from their values and goals, a youth may cave in to the whims and wishes of others.

5. *Youth egocentrism limits a teen's ability to empathize with peers and family members,* though they can show great enthusiasm and sympathy for just causes (such as the homeless or mistreated animals). Their egocentrism may "blind" them from perceiving the potential harm their actions may have on others. In this state of self-absorption, they may fail to ask, "How will my behavior affect this person for good or ill? Who else could be adversely affected by my actions?"

6. *Strong emotions can overwhelm rational thinking*. Teens tend to do things based on gut feelings or expectations of the peer group instead of on well-reasoned thought. They may also act contrary to what they know they should do.

7. *Moral reasoning is precarious*. Issues or actions that had previously been clearly black or white now become gray. Teens are skeptical of parental, societal, cultural, or religious values that proscribe behavior, even if they intellectually believe the prohibitions make sense. As they see faults and hypocrisy in parents and other adults, they may begin to question almost everything. They may also justify breaking rules because others are doing it—and may lie, cheat, or steal with ease if a good excuse is handy.

8. *Youth are often overly self-conscious*. They imagine that their appearance and/or behavior are the constant focus of peers and adults. This imaginary audience makes them more vulnerable to self-criticism and subject to the opinions of the

peer group. They may be more worried about how they look to peers than about doing what they know is right.

9. *Convergent thinking dominates youth problem-solving.* Youth rely on their unique experience and current knowledge to solve present problems. A single-solution answer is the usual outcome. Divergent thinking—the capacity to derive novel, multiple solutions to various predicaments—is an emerging skill for adolescents.

10. *Youth may misinterpret other people's emotional reactions*. They often misread the verbal or behavioral cues in interpersonal communications, and as a result are often easily hurt and offended. For example, a teen who is explaining a bad day at school sees a parent frown and look away. The teen quickly becomes angry because she misinterprets the parent's scowl as disapproval or criticism when, in fact, the parent wasn't thinking about the teen's story at all.

11. *Alcohol and other drugs affect the teen brain more dramatically than the adult brain*. The young brain is more sensitive to any type of chemical imbalance. Even small amounts of alcohol or marijuana, for example, can significantly impair the adolescent's ability to reason and make prudent choices (Brown, Tappert, Granholm, & Delis, 2000).

Taken as a group, these deficiencies present difficulties in adolescent and young adult thought and behavior—hormones are flowing, but the restraining power of the brain has yet to fully engage and put the brakes on foolish or risky behavior (Giedd, 2004). Thus, youth lack strong emotional control, often fail to reason logically, rarely plan ahead or envision adverse consequences, tend to make impulsive choices, and often overreact emotionally to real or imagined counsel or correction. Youth lack the capacity to foresee the

possible ramifications that sex can have not only upon them, but also upon their partners (Abbott, White, & Felix, 2010; Carr, 2007). Daniel Weinberger and colleagues (2005) summarize the cognitive limitations of the adolescent brain this way:

> Teens are not the same as adults in a variety of key areas such as the ability to make sound judgments when confronted by complex situations, the capacity to control impulses, and the ability to plan effectively. Such limitations reflect, in part, the fact the key areas of the adolescent brain, especially the prefrontal cortex that controls many higher order skills, are not fully mature until the third decade of life. . . are full of promise . . . but neurologically they are not adults. (p. 3)

Consequently, youth require parents, mentors, and others in authority to function as a surrogate prefrontal cortex for them (McIlhaney & Bush, 2008).

Risks to Young Women from Nonmarital Sex

Thus far we have reviewed common misperceptions about premarital sex among youth and the inherent cognitive limitations of adolescents. We now turn attention to describing the biological reasons why young women are at a proportionately greater risk for experiencing more challenging or harmful physical, psychological, and relational consequences from premarital sex than the young men with whom they have sex (McIlhaney & Bush, 2008; Waller, Hallfors, Halpern, Iritani, Ford, & Guo, 2006).

Physical Consequences for Women

Unwed Pregnancy

The prevailing approach to preventing unwed pregnancy—particularly among teens—is to promote the use of condoms and hormonal contraceptives. This "pregnancy

as a disease" model, however, fails on three counts. First, teens do not appear to have the cognitive ability to use artificial contraception as efficiently as do adult women. Second, the chemicals and hormones in contraceptives can have adverse side effects for some women, resulting in nausea, weight gain, blood clots, increased blood pressure, increased risk of gallbladder disease, and increased risk of liver tumors (CDC, 2010c). And third, many unwed pregnancies occur beyond the teen years because more women are actively choosing to have children without marriage (Sheffield, 2011).

In 2010, nearly 1.5 million children were born outside of marriage. The majority of these infants (825,000) were born to women between the ages of 20 and 29; another 15% were born to mothers between the ages of 30 and 39; and 400,000 were born to teenagers aged 15 to 19 (CDC, 2010b). Clearly, fertility is not a disease—but the adverse medical, social, emotional, educational, and vocational consequences of unwed pregnancy in general, and of teen pregnancy in particular, are significant (Kearney, 2009; Terry-Humen, Manlove, & Moore, 2001). The medical, psychological, and financial support for these women, and for their often fatherless children, costs the United States government more than $11 billion a year (Sheffield, 2011).

The most recent statistics from the Guttmacher Institute indicate that in 2008, an estimated 750,000 teen girls became pregnant (Kost & Henshaw, 2012). Adolescent pregnancy results in decreased educational and vocational opportunities for the mothers, an increased likelihood of the family living in poverty, and significant risk for negative long-term outcomes for the children. For example, children of adolescent mothers are more likely to be born prematurely and at a low birth weight; suffer from poor health; perform poorly in school; run away from home; be abused or neglected; and grow up without a father (Guttmacher, 2006; quoted in The Institute for Research and Evaluation, 2007).

Regarding the use of contraceptives by teens, roughly 60% of sexually active American teens report using a condom or birth control pills, but few do so correctly and consistently (Guttmacher, 2010a). It has been reported that 20% of teen women between the ages of 12

and 18 will become pregnant within the first six months of being on a birth control pill (Dinerman, Wilson, & Duggan, 1995). Moreover, nearly 50% of cohabiting teens become pregnant within a year of starting oral contraceptives as compared to only 8% of married females over age 30 (Fu, Darroch, Haas, & Ranjit, 1999). The disparity in these rates between women under age 30 and those over age 30 has remained largely unchanged over the last decade (Kost, Singh, Vaughan, Trussell, & Bankole, 2008). Clearly, reliance on the "pregnancy as disease / risk reduction" model for preventing unwed pregnancy is insufficient.

Sexually Transmitted Infections (STIs)

Young women are significantly more likely to contract an STI than are young men. For example, if an adolescent female has chlamydia and engages in a single act of intercourse with a male who is *not* infected, his risk of acquiring the infection is 30%. However, if a young man has chlamydia and engages in one act of intercourse with a female who is *not* infected, her risk of acquiring infection is 90% (Sultan, 2004). Similarly, nearly 75% of HPV infections occur in females between the ages of 15 and 25 (Indman, 2010).

There are physiological reasons for the difference: The vagina, cervix, and uterus are warm, moist, dark environments conducive to the growth of bacteria and viruses. Natural cleaning occurs only during menstruation, about once a month. In addition, women under the age of 21 produce thinner cervical mucus and have a more physiologically immature cervix. The cervix is composed of two different cell types: rectangular columnar cells and flat squamous cells. Columnar cells are less resistant to infection than are squamous cells. Women in their early twenties and younger have columnar cells that are continually transforming into squamous cells. The area of the cervix where this occurs is called *the transformation zone*. Due to the high cellular turnover, this area is susceptible to both infection and carcinogenic transformation. In addition, hormonal contraception enlarges the transformation zone in young women, placing them at even greater risk.

The penis, in contrast, is external, readily cleaned, and dry, and the male urethra is regularly flushed out, making men less prone to acquiring STIs. Additionally, while the majority of STIs are asymptomatic for both genders, when symptoms are present it is easier for men to notice those symptoms—such as genital lesions, ulcers, sores, warts, or a purulent penile discharge—that would alert them to seek treatment *(*CDC, 2010b).

Pelvic Inflammatory Disease (PID)

If a woman becomes infected with either chlamydia or gonorrhea, she has a one in five chance of developing pelvic inflammatory disease (PID) (Guttmacher, 2010b). PID is most commonly a complication of chlamydia or gonorrhea that involves the uterus, fallopian tubes, and ovaries. Symptoms may include pain in the abdomen, pain during intercourse and/or urination, vaginal discharge, and/or irregular menstrual bleeding. PID can lead to chronic pelvic pain as well as the scarring of the fallopian tubes, which places women at risk for both ectopic pregnancy and infertility. Although PID is curable with antibiotics, scarring significant enough to cause infertility may have already occurred by the time the disease is diagnosed and treated. Consequently, women who develop PID have a one in five chance of becoming infertile—in other words, an estimated 150,000 to 200,000 American women lose their ability to have children each year because of this complication (Guttmacher, 2010b).

Even if chlamydia is successfully treated before scar tissue forms, women may still be at an elevated risk for infertility. When the chlamydia bacterium dies, it releases a protein called hsp, similar to a protein produced by early human embryos. A woman's immune system may produce antibodies to the hsp protein, and a pregnant woman's immune system may not distinguish between the two similar proteins. This causes an autoimmune reaction that results in recurrent miscarriages for some women. (Grossman, 2007).

Emotional Risks to Women

Surveys of college students have shown that 25 to 30% of women who have casual sex suffer some psychological and emotional consequences ranging from mild guilt to worry about negative consequences (STIs and pregnancy) and even acute anxiety and depression (Grossman, 2007). Moreover, McIlhaney and Bush (2008) reported that after controlling for confounding factors, sexually active young women were three times more likely to experience depression and three times more likely to have attempted suicide as compared to their sexually abstinent peers. In addition, young unmarried women who become pregnant and choose abortion may also suffer emotional distress over the abortion for many years (Grossman, 2007). During the last decade, emerging research suggests that innate gender differences may underlie these negative emotional risks.

The first brain-imaging study comparing brain areas activated in women and men during sexual arousal was published in 2002 (Sax, 2005). Men had significant activity in the base of the brain, especially the hypothalamus. Women, on the other hand, showed proportionately greater activity in the cerebral cortex. A 2004 study at Emory University replicated these results (Sax, 2005). This finding partly explains what many, including UCLA psychologist Anne Peplau, have observed: "[W]omen's sexuality tends to be strongly linked to a close relationship. For women, an important goal of sex is intimacy; the best context for pleasurable sex is a committed relationship. This is less true for men" (Sax, 2005).

If a young woman decides to have nonmarital sex, she is probably hoping for three things: (1) emotional closeness, (2) increased commitment, and (3) physical pleasure. However, when a young man has premarital sex, his reasons are similar but in a different order: (1) physical pleasure, (2) emotional closeness, and (3) increased commitment—something that's not absolutely required. In other words, women have sex primarily for relationship reasons while young men are primarily seeking physical pleasure without commitment (Sax, 2005).

However, structural arousal of the brain is not the only thing that differs between the genders. There's also a difference in hormonal responses to sexual arousal that affects the degree and significance of emotional bonding during physical touch. During intimate touching, the hormone oxytocin is released in women and vasopressin is released in men. These hormones are the biochemical basis for the emotional bond that forms between the couple even in the context of a single sexual encounter (Sax, 2005; McIlhaney & Bush, 2008).

Oxytocin—colloquially known as "the bonding hormone"—is released not only during labor and breast feeding to promote bonding between mother and child but is also released during sexual intercourse. It can even be released in women with a lesser degree of physical touch, such as a hug. McIlhaney and Bush (2008) described the bonding effect of oxytocin to be "almost like the adhesive effect of glue—a powerful connection that cannot be undone without great emotional pain" (pp. 36, 37).

When men and women become physically intimate with each other, oxytocin exerts still another effect on women: it impairs judgment, making it more difficult for women to assess the character of their partners. In Dr. Miriam Grossman's words, this is why hooking up "turns attachment 'on' and critical thinking 'off'" (Grossman, 2009, p.48).

Although some oxytocin is released in men, there are far more extensive oxytocin circuits in the brains of women, and the bonding effect of oxytocin is generally stronger for women than the effect of vasopressin for men. Consequently, women seem to suffer more emotional heartache when the relationship fails than do young men (Regan, 2008). This does not mean that men never suffer emotional consequences from the breakup of sexual relationships (Lydon, Menzies-Toman, Burton, & Bell, 2008). For example, McIlhaney and Bush (2008) report that Rector, Johnson, and Noyes (2003) found that, after controlling for confounding factors, sexually active adolescent girls were three times as likely to report being depressed and to have attempted suicide than girls who are not sexually active. Similarly, sexually active teen boys are more than twice as likely to report being depressed and seven times more likely to have attempted suicide compared

with their sexually abstinent male peers (McIlhaney & Bush, 2008, p. 20, 78). Overall, however, young women are more likely to be depressed and hurt by the frequent dissolution of temporary sexual relationships than are their male partners (Sax, 2005).

Relational Harm

Another growing concern is the correlation between dating violence and sexual activity among youth (Banyard & Cross, 2008; Lavoie, Robitaille, & Herbert, 2000). *Dating violence* is defined as a pattern of abusive behaviors used to exert power and control over a dating partner. Physical, emotional, verbal, and sexual abuse, as well as stalking (which includes digital harassment), are all forms of dating violence. Females aged 16 to 24 are more vulnerable to intimate partner violence than any other age group—at a rate almost triple the national average (U.S. Department of Justice, 2001). A woman's risk of experiencing dating violence seems to increase as the woman's age of sexual debut decreases. An online survey conducted by Dr. Elizabeth Miller and colleagues (2007) of the University of California-Davis, for example, found that among youths who reported sex by age 14, 33% had been hit, choked, or punched, and 58% had been verbally abused.

Young women who engage in nonmarital sex risk more than dating violence, depression, and suicidal ideation. Repeatedly disrupting the emotional bonds forged by oxytocin reduces the ability to attach to subsequent sexual partners (Brizendine, 2006; Fisher, 2004). In other words, casual sex damages a woman's ability to ultimately bond in a long-term, committed relationship like marriage (McIlhaney & Bush, 2008, p. 43; Heaton, 2002; Kahn & London, 1991). When sexual contact creates a bond that is then broken and replaced by another sexual relationship, and that cycle repeats itself over time, the brain's natural bonding mechanisms are damaged (McIlhaney & Bush, 2008, p. 103). For women with multiple sexual partners, oxytocin gradually loses much of its bonding effect, "almost like tape that loses its stickiness after being applied and removed multiple times" (McIlhaney & Bush, 2008, p. 43).

Social Risks to Women

If a woman has sex with multiple partners over many years, she is disadvantaged in the marriage market for three reasons. First, the double standard of sexual behavior exists in almost all modern cultures; a sexually experienced woman can be seen as a slut, a whore, or a "loose woman." A promiscuous male, on the other hand, is seen as virile, sexy, and "a stud." Most men looking for a mate want a woman with little prior sexual experience (Austin, 2011; Lyons, Giordano, Manning, & Longmore, 2011).

If a woman spends many years cohabitating with one or more males and the relationship ends, she is at a disadvantage for a second reason: She will find fewer available men to date who are her own age, and she must consider older men. On the other hand, a man who sleeps around and/or cohabits for several years retains a greater field of eligible women because it is socially acceptable for him to date much younger women, women his own age, and older women (Burleson, Trevathan, & Todd, 2007; Veevers, 2003).

A third disadvantage women with multiple sex partners face in the marriage market is that age affects fertility more for women than men**.** A woman's ability to ovulate and carry a fetus drops significantly after age 35. If she waits until her mid to late thirties or early forties to marry, she may have difficulty conceiving a child. In addition, the chances of having a special-needs child increase significantly with age (Dunson, Colombo, & Baird, 2002; Pawlik-Kienlen, 2009; van Noord-Zaadstra et al., 1991).

According to the American Society of Reproductive Medicine, 7% of women between the ages of 20 and 24 are infertile. Between the ages of 25 and 29, that number increases to 9%; between ages 30 and 34, infertility among married women increases to 15%; and between the ages of 35 and 39, female infertility rates rise to about 22% (American Society of Reproductive Medicine, 2010; Morris, 2010).

Even though fertility among men is less affected by age than among women, a man's ability to impregnate a female also decreases over time, especially after age 50. In other words, a middle-aged man is more likely to be able to sire a child than a middle-

aged woman is likely to be able to become pregnant (Girsh et al., 2008; Kidd, Eskenazi, & Wyrobek, 2001).

Psychological Risks to Women Who Violate Their Religious or Spiritual Beliefs

Across all cultures, a majority of people view human beings not as mere animals but as spiritual beings created by God or some other higher power (Denys, 2004; Overman, 2009). This is true for Christians, Muslims, and Jews. Consequently, these religions state unequivocally that nonmarital sex is "sinful"—in other words, contrary to the fact that God created men and women to give and receive love as sexually complementary beings. These faiths view nonmarital sex as a behavior that is inherently harmful for the individual spiritually and also teach that this can lead to many problems for children born outside of a healthy and stable marriage (Amato, 2005; Booth, Scott, & King, 2010).

Some women believe that those who engage in premarital sex violate God's will. The Hebrew Bible declares that "he who commits adultery has no sense; he who does it destroys himself" (Proverbs 6:32). Muhammad, the prophet of Islam, declared that sex outside of marriage is a great sin, and Allah (God) has forbidden *zina*, which means adultery and fornication (The Noble Qur'an Sura 4, aya 16 and 23). Christ, the Christian messiah, said that adultery and fornication are serious offenses against God (Matthew 15:19, 19:9; Mark 7: 21). Paul, the disciple of Christ, declared:

> Shun fornication! Every sin that a person commits is outside the body; but the fornicator sins against the body itself. .....Do you not know that wrongdoers will not inherit the kingdom of God? Do not be deceived! Fornicators, . . . adulterers . . . none of these will inherit the kingdom of God.And this is what some of you used to be. (1 Corinthians 6:18, 9a, 10b–11a)

It is clear from the Hebrew, Muslim, and Christian scriptures that sex outside of marriage is a violation of religious standards. If a woman adheres to this belief deep in her heart and mind, she may suffer psychological and/or spiritual consequences if she engages in premarital sex (Harris, 2006). Following is a list of possible concerns for women of faith who have sex outside of marriage (Abbott, 2011; Grossman, 2007; Nicholi, 2003; Overman 2009; Polkinghorne, 2003):

1. Reduction or loss of the presence of God's Spirit or grace, which guides and comforts
2. Emotional desensitization, resulting in greater likelihood of condoning or overlooking other immoral behaviors
3. Less concern for others, more self-centeredness, and less sensitivity to the suffering of others
4. Decrease in self-esteem and self-worth and possible corrosive guilt and regret
5. Depression and despair
6. Less confidence, hope, and optimism in the future

Even women who have either partly or wholly rejected the religion of their youth may feel pangs of guilt if they have sex outside of marriage. Core principles, ideals, and values that are instilled in youth but later violated in adulthood can result in depression, anxiety, worry, and shame (Bogart, Collins, Ellickson, & Klein, 2007; Rector, Johnson, & Noyes, 2003; Waller et al., 2006).

Yet another situation occurs in women who perceive sexual self-control as being right or good, independent of religion or faith; this view of sexual self-control may lead to a psychological, even spiritual, path of self-fulfillment. As a result, such women may abstain from or cease nonmarital sexual activity—and may suffer significant distress if they engage in such behavior.

Spiritual consequences may occur to a greater or lesser degree, depending on the religious belief of the woman. Such outcomes may also result as a natural consequence of violating God's will independent of anyone's belief or disbelief in God's existence (Buckely, 2004). Other women, however, reject the notion of spiritual consequences for engaging in nonmarital sex and believe that any psychological consequences arise merely from a morally repressive view of sexuality. In their view, the only concerns related to sexual intercourse are the prevention of unwanted pregnancy and the risk of STIs (Steinberg, 2005; c.f., Dawkins, 2008; Dennett, 2007; Hitchens, 2009).

Conclusion

The purpose of this paper is to advocate for restoring the primary public-health principle of risk avoidance to its proper place in achieving improved reproductive health for young women. Approximately half of American teens and three-fourths of young adults are or have been sexually active. Three in ten will become pregnant and one in four will acquire one or more STIs (CDC, 2012). Most of this sexual activity, both vaginal and oral, is done without much thought or effort to reduce the risk of pregnancy and STIs (Holcombe, Carrier, Manlove, & Ryan, 2008).

Science does not indicate that there is no role for the secondary public-health principle of risk reduction. However, even if a significant portion of youth are able to improve their use of condoms and contraception, nonmarital sex carries with it significant psychological, relational, and social risks—as well as potential spiritual risks—that cannot be mitigated by condoms and contraception. Those risks include, among others, depression, suicidal ideation, and dating violence.

Many youth subscribe to false beliefs about perceived benefits of premarital sex. Part of the problem arises from brain development: Youth have several cognitive and affective limitations stemming from the fact that the prefrontal cortex is not fully developed until the mid to late twenties. As a result, youth lack the adult capacity for intellectual

judgment and are at high risk for making unhealthy decisions, particularly in emotionally charged situations.

Several other factors that contribute to negative outcomes in sexually active youth, especially young women, have been presented. For biological reasons, young women are especially vulnerable to the negative effects of nonmarital sex in temporary relationships. Women suffer greater physical, psychological, social, and relational harm than do the young men with whom they have sex. Unfortunately, many young women are unaware of their increased risk for these adverse outcomes. Consequently, many young women adhere to the popular culture's male model of promiscuity without giving thought to their higher propensity for experiencing harm—something that profoundly impacts their future welfare (Grossman, 2009; Kern, 2008; McIlhaney & Bush, 2008; Stepp, 2007).

Adolescent sex may not be injurious for all youth, but it certainly carries grave risks for those involved. Youth who are sexually abstinent avoid these risks with 100% certainty and can devote more time and energy to academics, extracurricular activities, friendships that are not focused on sexual activity, and pursuit of their dreams (Carnegie Council on Adolescent Development, 1995). Considering the risks as opposed to potential benefits of nonmarital sex among youth, we conclude that abstinence is the best course of action for most adolescents.

It is our hope that this paper will help parents and professionals provide age-appropriate sexuality and relationship education that promotes the knowledge and skills necessary to delay sexual involvement, with the aim of preparing for sex exclusively within the context of marriage. This is not an impractical or unattainable goal (Weed, Ericksen, Lewis, Grant, Wibberly, 2008). Both parents and professionals must raise the primary public-health principle of risk avoidance to its proper place in the promotion of optimal sexual health (Oman, Vesely, Kegler, & McLeroy, 2003).

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