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A Systematic Review of Sexual Health Interventions for Adults: Narrative Evidence

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Abstract

Recent work has explored the intersection between sexual health (as construed by the World Health Organization and others) and public health domains of action in the United States of America. This paper reports the narrative results of a systematic review of sexual health intervention effects on public health-relevant outcomes. To qualify, interventions had to be based on the principles: (1) that sexual health is intrinsic to individuals and their overall health and (2) that relationships reflecting sexual health must be positive for all parties concerned. Outcomes were classed in domains: knowledge, attitudes, communication, healthcare use, sexual behavior and adverse events. We summarized data from 58 studies (English language, adult populations, 1996–2011) by population (adults, parents, sexual minorities, vulnerable populations) across domains. Interventions were predominantly individual and small-group designs that addressed sexual behaviors (72%) and attitudes/norms (55%). They yielded positive effects in that 98% reported a positive finding in at least one domain: 50% also reported null effects. The most consistently positive effects on behaviors and adverse events were found for sexual minorities, vulnerable populations, and parental communication. Whether via direct action or through partnerships, incorporating principles from existing sexual health definitions in public health efforts may help improve sexual health.

The United States of America (US) often does not see an adequate return on resources invested in health care (Schroeder, 2007; Swartzendruber & Zenilman, 2010). Although there have certainly been successes, such as the reduction of gonorrhea rates by >80% since 1990 (CDC, 2014), US rates of sexual violence remain too high, and rates of sexually

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transmitted diseases (STD) and HIV, rates of unintended/teen pregnancy and birth, sex without contraceptive use, and abortion are significantly higher in the US, compared to Canada, Australia and many other western countries (Black et al., 2011; CDC, 2008, 2010c, 2011, 2012, 2013, 2014; Hamilton, Martin, & Ventura, 2012; Maticka-Tyndale, 2001; Mosher & Jones, 2010; Satterwhite et al., 2013; Sullivan et al., 2009). These outcomes are mediated by a mixture of individual behaviors, relationship dynamics (sexual relationships, but also friendships and care relationships), and social factors. Although individual sexual behaviors contribute to pregnancy and disease transmission, broader social and economic factors—including high rates of poverty, income inequality, lower educational attainment, discrimination, religious traditions, and relationships with partners, parents, families, and healthcare providers affect the sexual health of individuals and communities (CDC, 2010a; Dean & Fenton, 2010).

Outcomes pertinent to sexual health are often framed in negative terms: for example, the presence of infection or disease, with sexual behaviors construed in terms of their odds of resulting in infection, etc. Consequently, public health goals and objectives tend to focus on reduction of adverse outcomes, and goals related to health promotion are typically instrumental to reducing adverse outcomes (e.g., increasing chlamydia screening rates). Public health intervention in sexual health tends to be either low-intensity and broadly-focused, or more intensive intervention conducted in the context of adverse events or high risk. Examples include fact sheets for broad public consumption and risk reduction intervention conducted during STD partner notification investigations.

In this paper, we examine the extent to which interventions based on a positively-framed and holistic definition of sexual health (e.g., Douglas & Fenton, 2013; Ivankovic, Fenton, & Douglas, 2013) have effects in domains relevant to sexual health and public health. These domains (Figure 1) were drawn from a 2010 consultation on sexual health and public health at CDC and are: the *intrapersonal* (1) knowledge, (2) attitudes, norms, intentions and self-efficacy; the *interpersonal* (3) negotiation and communication, (4) healthcare use, (5) sexual behavior; and (6) *adverse health outcomes* (e.g., STD, unintended pregnancy). We derived common elements from existing sexual health definitions and used them to select studies for a systematic review of interventions designed around sexual health framed in positive terms. A companion paper (Becasen, Ford, & Hogben, 2014) presents a meta-analysis of effect sizes in a subset of these domains.

Defining Sexual Health

"Sexual health" can be defined in different ways, for example, as a set of minimally-required clinical services, as in the United Kingdom (Department of Health, 2001). We based our construal on three broad approaches converging on an affirmation of sexual health as natural and integral to overall health (Figure 2). The 1994 United Nations (UN) conference on population and development contained a substantial reproductive health component, including statements on access to reproductive and sexual health services (e.g., birth control, adequate clinical STD management, and safer births) (UN, 1994). Sexual health was framed within reproductive health as "the enhancement of life and personal relations," and the framing of rights was gender-neutral and cognizant of "couples and

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individuals" in terms of rights and responsibilities. The Beijing Declaration of 1995 referenced the 1994 conference and broadly affirmed the sexual equality of women as part of the overall equality of women and men (UN, 1995). The World Health Organization (WHO), which had outlined sexual health as early as 1975 (WHO, 1975), defined sexual health (a working definition, not yet ratified) as an integral part of overall health, using much of the same phrasing found in the Cairo and Beijing documents (WHO, 2006). The 2001 US Surgeon-General's *Call to Action* spoke to the need to recognize sexual health as an essential component of individual and community health (U.S. Public Health Service, 2001). As such, it is similar to the WHO's definition of sexual health. Both these definitions define sexual health more broadly than as a facet of reproductive health, although with similar attention to the issue of individual rights incorporated into definition of health. Finally, an advisory committee to the US Centers for Disease Control and Prevention (CDC) used results from a broad consultation to recommend a definition of sexual health that incorporated the view that sexuality is both an intrinsic part of individuals and their overall health and interwoven with social connections (CDC, 2010b; CDC/HRSA Advisory Committee, 2012).

The common elements across the three definitions (Figure 2) are that: (1) sexuality or relationships with a sexual or romantic component have intrinsic value as a part of health and (2) healthy sexual relationships require positive experiences for individuals *and* their partners. These two statements form the basis for selecting studies for review.

Many existing risk reduction studies contain elements that are *compatible* with the definitions of sexual health, but fewer *overtly incorporate* the elements of sexual health in the content of the intervention. We asked: (1) Can a set of sexual health interventions fitting our criteria be extracted from the existing literature? (2) Do these studies show evidence of efficacy in the domains outlined in Figure 1? We assessed the quality of evidence relevant to sexual health through a two-stage retrospective approach: we sought interventions that (a) explicitly tested components of the definition and (b) measured outcomes relevant to public health objectives.

Methods

Three searches were conducted separately in OVID Medline and PsycInfo in late 2011 and early 2012 (Figure 3). The search terms comprised language from the sexual health definitions, and three adverse health outcomes: HIV/AIDS, sexually transmitted disease, and unintended pregnancy. All 9064 unique studies from the three searches were written in English and published between 1996 and 2011. We chose 1996 as a starting point because it is historically close to the emergence of international sexual health efforts (i.e., those following the 1994 Cairo conference) and also close to the initiation of HAART (relevant to interventions addressing HIV).

Inclusion and Exclusion

From 2784 intervention studies identified among the 9064, we retained studies if (a) the abstract linked inputs to outcomes in one of the six domains (Figure 1), (b) the study population were adults drawn from the US or a country with comparable public

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infrastructure (e.g., Canada, Australia, Western European countries, etc.) *and* (c) we could not rule out that the intervention content was congruent with our two sexual health principles. Two raters from a pool of three independently read each of the 162 remaining studies and judged fit to the two sexual health principles derived from sexual health definitions. We asked: (1) *Does the intervention treat sexuality or relationships with a sexual or romantic component as something of intrinsic value?* We answered yes if the intervention content allowed that (a) if sexually active, the possibility of having safe and fulfilling (any of emotionally, socially, mentally, physically, spiritually) sexual experiences, (b) acceptance that sexuality is a natural and healthy part of life and that sexual development is a normal part of maturation toward adulthood, (c) access to medically accurate and developmentally appropriate educational, programmatic, and confidential (as needed) clinical sexual health services for disease prevention and health promotion related to sexuality, or (d) respect for diversity of values and beliefs about sexuality, and structural, environmental, and societal factors that promote sexual health. For the second principle, we asked: *Does the intervention acknowledge that healthy sexual relationships require positive experiences for all parties involved?* We answered yes if the intervention focused on (a) (mutually) respectful relationships with honest communication and trust (and no coercion), (b) taking responsibility for the consequences of one's sexual choices and their impact on oneself, partners, families, and the community, or (c) respect for diversity of values and beliefs about sexuality, and structural, environmental, and societal factors that promote sexual health.

We considered an article aligned with the sexual health principles and therefore a test of those principles if raters independently judged that the intervention content overtly incorporated standards under one or both of the above criteria, but contradicted neither. If both raters agreed, the study was retained or discarded; if the raters disagreed, all raters met to achieve consensus. For example, Robinson et al. (2002) randomized low-income women in urban settings to receive an intervention explicitly acknowledging a "sex-positive approach" to sexual health and predicated on the idea that women who are more sexually comfortable with themselves and others can then reduce risk "in the context of one's sexual behavior and relationships." Because intervention content explicitly acknowledged the intrinsic value in sexuality and also cultivated respect for diverse approaches, we coded the study under 1a and 1d, as well as 2a and 2c. Morin et al. (2008) instituted a 15-session intervention for HIV-infected MSM. The sessions covered safer sex strategies, but were grounded first in overall quality of life, sexual life within overall quality, and "supportive social relationships." Because the context for the content inherently requires acknowledgement of the intrinsic nature of sexuality and sexual relationships (and this among HIV-infected MSM), we coded the study under 1a, 1b and 2a (of the principles identified in the preceding paragraph). Finally, Amirkhanian, Kelly, Kabakchieva, McAuliffe, and Vassileva (2003) designed a risk reduction study through social networks. We would not have construed the preventions messages per se as fitting the sexual health frame, but the means of doing so was to normalize discussions of sex and sexuality in a typically marginalized population of young MSM. Because the communication pertained to positive experiences for all parties and communication (i.e., pertinent to the second principle above) while not contradicting the first principle, we coded the study under 2a. Across all

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studies examined, pairwise agreements were 81.2%; consensus was achieved for the remaining articles in one two-hour session.

Although the sexual health definition is designed to be widely applicable, some of its assumptions are not applicable to the entire population. For example, the presumption of volition may not apply to persons in abusive relationships, which affects the ability to take responsibility for one's choices. For other groups, special factors may alter the nature of the definition. For example, infected persons are at risk to transmit infection and therefore positive experiences for all parties implies added attention to disclosure and transmission risk reduction (e.g., Morin et al., discussed above). Because sexual health remains conceptually attainable for vulnerable populations, we retained interventions with such groups if the intervention otherwise met sexual health criteria even if the intervention focus was attuned to the sample's immediate needs, such as risk reduction.

Quality Rating

We used the Critical Appraisal Skills Program (CASP) templates for judging study quality (Fowkes & Fulton, 1991). CASP applies judgment criteria (e.g., selection and attrition algorithms, quality of analytic strategy, confounders) to a variety of research approaches, including RCTs, cohort studies and qualitative research. Of 70 studies retained on the basis of conceptual relevance, nine (13%) were dropped on the grounds of insufficient study quality: principally high attrition without an intention-to-treat plan or assurance that attrition was unrelated to intervention results. We also examined 20 randomly-selected studies eliminated on conceptual grounds to assess differential attrition by quality: three (15%) would have been dropped on the basis of quality.

Results

Table 1 summarizes studies by population: (1) adults, (2) college students, (3) parents, (4) sexual minorities, and (5) vulnerable populations. We defined studies on vulnerable populations as studies specifically targeting persons facing one or more *experiential* problems (e.g., STD or HIV infection, experience of physical or sexual abuse). We categorized studies first by whether or not their populations qualified as vulnerable, and then by whether or not participants were defined as parents, college students or sexual minorities. The remaining studies fell into the adult category.

Review Meta-data

Of the 58 studies, 37 (64%) were based on experimental methods, principally RCTs with behavioral outcomes. The remaining studies comprised 17 (29%) studies based on pre-post designs and 4 (7%) with matched comparison groups or post-test only designs. Sample sizes varied between 15 (a qualitative study) and 5758: median = 306. Sample sizes were spread across this range; we observed 23 (39.7%) studies with N < 200 and 20 (34.5%) with N > 400. The number of articles sampled per year increased during the study period, ranging from 1 to 10, $r = 0.77$, $p < .001$. Collecting data on knowledge and attitudes was correlated, $r = 0.43$, $p < .01$. Although 18 (31%) studies collected attitudinal and behavioral data, the two domains were inversely correlated, $r = -0.40$, $p < .01$. The majority of the studies (34

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studies, 61%) addressed elements of both major rationales. Of the remainder, 14 (24%) addressed only the intrinsic value of sexuality, while 10 (17%) addressed only positive experiences for all, most often through taking responsibility for consequences.

Fifty-seven studies (98%) reported at least one positive finding, but many (29 studies, 50%) also reported findings of no differences between groups on some outcomes (i.e., null findings). None reported harms, and the likelihood of a study producing any null effect was independent of study year, $r = -0.34$, $p > .10$. The most common intervention across domains and populations was an individual or small-group face-to-face intervention, but there were also examples of other modes of intervention: four video-based presentations (interactive and otherwise), three social marketing interventions and four internet-based approaches. Face to face approaches varied, with individual and group sessions, number of sessions varying from one to 16 (most interventions were one or two sessions), two embedded in college sexuality courses, counseling, seminar and workshop labels, clinical and community-based organization delivery settings, and theoretical bases including motivational interviewing and social cognitive theories.

Evidence Summary by Population

Adults—Of the studies on adults (Table 1), 10 included women-only, and 6 included both genders. Overall trends for this group showed consistent increases in knowledge and pro-sexual health attitudes, although only half the studies measuring behaviors found positive effects. The principal sources of null findings for attitudes were in the realm of self-efficacy, where only four of nine studies measuring self-efficacy reported a positive change. As a group, the 16 interventions with adult populations typically increased positive attitudes about one's own sexuality or sexual health, tolerant attitudes and communication toward others, improved sexual health care-seeking (measured in three studies), but inconsistent behavioral change from the point of view of safer sex (50% of 10 studies measuring these behaviors).

The 15 face-to-face interventions were more likely to report effects on behaviors and health outcomes, while the community and campus level interventions had more effect on attitudes or knowledge than on behaviors. Positive changes in attitudes typically occurred with positive changes in behaviors; in only one case did a study report attitudinal change with no behavioral change (Robinson et al., 2002). There was no clear relationship between the intensity or duration of the intervention sessions and positive findings. Both RCTs measuring adverse outcomes reported success (1 decreased STD incidence, 1 lower pregnancy rate) (Baker et al., 2003; Chung-Park, 2008). One study included investigation of physical abuse experience (no change at post-test), although this measurement was intended only to check for an unintended consequence (increased abuse as a function of safer sex negotiation).

Four of six studies measuring communication outcomes among adults reported positive effects: these included a study reporting the effects of observing programs with plotlines with STD-related content and discussion of sexual histories (versus observing plotlines with STD-related content but no discussion, or no sexual health content) (Moyer-Gusé et al., 2011), and three studies with African American populations, one measuring communication

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with children (Robinson et al., 2002), and a community-level pre-post intervention centered on condom promotion (Lauby et al., 2000). The two studies reporting null effects failed to produce “assertive communication” (Celentano et al., 2001) or any communication among homeless youth (Rew et al., 2007).

College students—College samples included two studies based in classroom experiences (Brigham et al., 2002; Rogers et al., 2009), an unusual setting in that course content serves as the intervention (there is, of course, potential for bias through drop-out attrition). As a group, the interventions were efficacious in whatever outcomes they measured; college studies were also characterized by efforts to produce more mutually honest and respectful relationships; every study met one of the standards for the second principle. In one of these studies, students increased condom use, but also abstinence and monogamy (Brigham et al., 2002).

Parent studies—The distinguishing characteristics of these interventions (4 pre-post designs, 2 RCTs) were that all six studies aimed to facilitate communication skills with children or adolescents and all six had uniformly positive effects: there were no null findings. Five studies were based on small-group sessions for parents, sometimes described as workshops, while one used video and audio methods in CDs mailed to parents. Compared to control group parents or on pre-intervention measures, participants showed increased comfort, confidence or self-efficacy discussing sexual health and were more likely to do so with their children.

Lesbian, Gay, Bisexual, Transgender (LGBT) populations—The participants were most often gay, bisexual or other men who have sex with men (MSM), with one study of transgendered individuals (Bockting et al., 2005). Of the 11 MSM studies, 4 clearly referenced gay men (2 of which identified gay and bisexual); therefore, this section is essentially a review of sexual health studies for MSM. Most studies in this section (8 of 12, 67%) were implemented face to face: the remaining four were a community campaign (Kegeles et al., 1996), two interventions delivered via the internet (Bowen et al., 2008; Rhodes, 2004) (both interactive), and one study with both in-person and interactive video content (Read et al., 2006). Most studies were also conducted in assorted small-group settings (workshops, retreats and seminars) with behavioral content in the intervention (most often unprotected sex). Three included peer outreach or counseling.

Interventions with this population were mostly effective in increasing protective sexual behaviors, although almost half had a mix of null results with positive findings. The most common measures were condom use and unprotected sex – studies did not generally focus on partner reduction. Null results were varied: in one case a 6-month UAI effect attenuated at 12 months (Carballo-Dieguez et al., 2005), in another, the proportion of consistent condom users increased but the mean consistency level did not change significantly (Wilton et al., 2009). The sole study not to report any positive behavioral effects had only 43 participants, and behavior was only a secondary measure (Shepherd et al., 1997). Attitudinal changes were mixed, with only 3 of 6 studies reporting any positive attitude change, typically toward condoms and associated safer sex norms).

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Vulnerable populations—The 18 studies on vulnerable populations in Table 1 comprised 16 RCTs and 2 pre-post designs. A higher proportion (33%) measured adverse outcomes than did studies of other populations. Outcomes varied among STD incidence, experience of violence and depression/grief. All three RCTs measuring STD incidence reported positive findings associated with the sexual health intervention arm, and the one RCT that measured housing stability and employment found positive effects of the intervention on both variables. Effects on depression and grief were more mixed. The most commonly measured outcomes were behavioral, with 94% of studies measuring at least one sexual behavior, and all but one of these 16 studies finding positive effects. Thirteen of 18 studies (72%) explicitly incorporated one or both of the first two standards under the first sexual health principle: the possibility of safe and fulfilling relationships and the acceptance of sexuality as natural and healthy.

Only one study reported null effects: an RCT on highly effective contraceptive use after first trimester abortions that found no effect upon contraceptive use. Several studies provided evidence that a sexual health-focused intervention could affect more than one issue at a time; for example, decreased unprotected sex and drinking or drug use (Velasquez et al., 2009; Wechsberg et al., 2004). Among studies of HIV-infected populations, some interventions were successful in increasing use of partner selection algorithms that reduce transmission risk (e.g., serosorting, avoiding discordant sex), although none of these studies were powered to measure HIV transmission. In contrast, studies on vulnerable populations were less likely than studies of other populations to measure variables from the first three domains. Studies that did measure variables in these domains increased knowledge, but attitude change was inconsistent.

Discussion

The principal question assessed in this review is whether interventions overtly incorporating elements of sexual health had positive effects in any of several domains relevant to public health and individual health (Figure 1). Findings suggest that such interventions are primarily helpful, and that none is antagonistic to participants' well-being. The findings also suggest that such interventions are strongest in select areas defined by population characteristics, domain, and by which behaviors were targeted. After addressing limitations, future directions, and how interventions in this review fit with other prevention activities, we conclude with implications for these findings in the context of public health roles in sexual health interventions.

Populations

Vulnerable populations—The strongest and most consistent effects by population were among those we classed as vulnerable. These studies all used a behavioral or an adverse health outcome or both, and virtually all demonstrated predominantly positive effects in the intervention group with little emphasis on attitude change, compared to other populations. The interventions were more effective in changing sexual behavior in terms of risk per act than in changing the amount of sexual behavior. In particular, interventions were largely successful in increasing contraceptive use, increasing condom use or decreasing the amount

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of unprotected sex, but only sometimes affected numbers of partners. This variable was less frequently studied, and the effects were seen in earlier studies, for example, Project RESPECT (Kamb et al., 1998). Interventions generally did not appear to affect overall frequency of sex, which was also less commonly measured. Such results are consistent with intervention content in which sex and sexuality are considered normal parts of being healthy: sex itself is not discouraged, while healthier outcomes (less infection or unintended pregnancy risk) for all parties involved are encouraged.

Of interest, some sexual health interventions for vulnerable populations also had positive impacts on outcomes such as housing status, employment status and alcohol use, suggesting a mixture of sexual health and impact upon social determinants may be beneficial to participants. The link between variables such as stable housing and less risky lifestyles is well documented in the literature (Fitzpatrick-Lewis et al., 2011; Leaver, Bargh, Dunn, & Hwang, 2007). Although prospective work would need to be added to studies reviewed here, the incorporation of social determinants into sexual health prevention efforts may even be a useful avenue for public health involvement – the public health organizations involved do not have to be explicitly tasked with sexual health or STD prevention.

LGBT Populations—Similar to those we classed as vulnerable, interventions with LGBT populations (almost exclusively gay men or other men who have sex with men: MSM) addressed mainly behavioral outcomes, although a smaller proportion addressed adverse outcomes and a larger proportion measured attitudes. Attitudinal change was mixed, although this may have been partly due to high baseline scores on variables like condom use efficacy. The pattern of behavioral effects for LGBT populations was the same as for vulnerable populations, although LGBT-focused interventions had more results indicating reductions in numbers of partners. More so than for any other population, however, the interventions often devoted effort to countering the effects of stigmatization. This was addressed through techniques such as bolstering sexual self-worth, but also by fostering a sense of community belonging in group settings – group settings and interactive content were common features in these interventions. Thus, a public health role in stigma reduction, including as a predicate to behavioral risk reduction and health care use (this especially is germane to public health efforts), may be managed through health communication or through goal-setting with prevention partnerships. Currently, the role of stigma in HIV prevention is addressed in the National HIV/AIDS Prevention Strategy and in CDC's HIV-directed program funding opportunities (CDC, 2011; White House Office of National AIDS Policy, 2010), as well as in the UK national sexual health strategy (Department of Health, 2001).

Other Adult Populations—With the remaining populations (adult women, studies with men and women, college students, and parents), study emphasis on attitudes and knowledge relative to behavior change was greater. Intervention activity may well have helped solidify knowledge gains relative to didactic instruction. A study in a college population was the only one to measure and increase abstinence, demonstrating that, while exhorting abstinence may not fit the two sexual health principles, abstinence can be an outcome and be affected by intervention (in a student population, at least) (Brigham et al., 2002).

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For adult women and both-gender studies, behavioral results were more mixed than for LGBT and vulnerable populations, although we observed the same pattern of increased condom use and at least as much reduction in numbers of partners. To some extent, these areas of relative intervention strength – behaviors for vulnerable populations and sexual minorities, attitudes and knowledge, especially around reduced prejudice and increased respect, for other adult populations – is a composite strength of the studies in this review. Because the level of adverse outcomes are higher by definition among the vulnerable and empirically among the sexual minorities in this review (at least of STD or HIV infection: almost all were MSM), the correlation between sexual behavior and adverse outcomes should be higher, making the role of behaviors more salient and leaving more room for intervention effects. That noted, both the studies of adult women that did gather adverse outcomes (one STD incidence, one unintended pregnancy) observed reductions compared to control groups. Interestingly, neither study showed behavioral differences.

Finally, the combination of domain and population in which we observed the most consistently positive effects was interventions on improving the ability of parents to understand, communicate with and otherwise manage their children's (primarily adolescents) sexual health. In these studies, we selected interventions (or parts of interventions) targeting parents; the domains always included attitude change and mostly included communications skills. The uniformly positive results that included increased comfort and confidence discussing sexuality and sexual behavior and increased discussions with offspring favor the two principles with respect to taking a rational approach to adolescent sexual health (Santelli & Schalet, 2009; Schalet, 2011). Ecological comparisons across countries suggest that this approach does not affect adolescent sexual frequency one way or the other (Schalet, 2011). With two exceptions (Dilorio et al., 2006; O'Donnell et al., 2010), these interventions took place in workshops with multiple participants. Workshops sometimes build normative influence as well as behavioral skills. Although any norm changes were unmeasured in our analysis, more positive norms around confidence discussing sexual health could be a secondary side effect of these interventions.

Limitations and Future Directions

The foremost limitation is the need to analyze interventions that predate our derivation of principles. Most likely, imprecision in the fit of interventions to principles, whether from actual fit or our ability to discern fit, introduced noise to the extent that it affected results. Nevertheless, prospective interventions designed explicitly around the principles would advance the science.

We found relatively few studies with sexual violence outcomes or health care-seeking/provision. Using HIV, STD and pregnancy as terms may have reduced the odds of retrieving such studies; therefore, a search specific to those areas would expand our understanding. This review also concentrated on adult populations and those living in the United States or countries with similar public health infrastructure. Other areas for potential review include observational data and specialty modes such as media or populations such as disabled persons, separately by physical and cognitive limitations. Our results indicated studies focused heavily on women, if heterosexual (or undefined sexuality) and, among LGBT

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populations, focused heavily on gay men and other men who have sex with men. Therefore, future sexual health research will cover more of the US population if studies include heterosexual men and a more diverse selection from sexual minorities. (Vulnerable populations were considerably more varied.) We did not include sexual rights explicitly in this review because rights were not mentioned in all definitions. Future work could examine whether interventions based on sexual rights improves public health outcomes in our six domains. Finally, a narrative review is most useful for broad conclusions about the utility of sexual health interventions across a variety of approaches and domains. Becasen et al. (2014) use meta-analysis to estimate more precise intervention effects, albeit over a subset of the domains examined in this paper.

Sexual Health and other Prevention Approaches

We drew our review material from a larger universe of prevention interventions. Meta-analyses show interventions in other paradigms produce reductions in risky behavior, increases in condom use and reductions in STD/HIV, both at the general population level (Albarracin et al., 2005; Eaton et al., 2012) and across specific populations (Henny et al., 2012; Scott-Sheldon, Huedo-Medina, Warren, Johnson, & Carey, 2011). Studies in educational settings have identified effective components of school-based interventions, and reviews of comprehensive sex education have shown a protective effect on adolescent risk behavior (Guide to Community Preventive Services, 2011; Kirby, Laris, & Rolleri, 2007). Finally, some community-level comprehensive prevention approaches, whether or not explicitly directed at sexual health, have been associated with reduced STDs (Feinberg, Jones, Greenberg, Osgood, & Bontempo, 2010; Hawkins, Kosterman, Catalano, Hill, & Abbott, 2008). We suggest that combinations of approaches help place sexual health interventions appropriately in the overall context of prevention, health promotion and individual well-being (Ivankovic et al., 2013).

Conclusions

We conclude with thoughts about two more issues pertinent to the public health aspects of sexual health interventions in this review: (1) what are the respective roles of public health and potential public health partners? (2) What is the role of public consensus in any future action? Administering many sexual health interventions in this review, except communication campaigns, is a more obvious clinical or community-based activity than a public health activity. This in turn suggests that public health entities might partner with such entities to provide guidance, to evaluate, or to assure the delivery of efficacious interventions. Public health can also contribute through measuring broad effects via assessment (i.e., surveillance and indicators measurement, Institute of Medicine, 1988). Such partnerships are consistent with emerging priorities in public health and primary care integration (Institute of Medicine, 2012). The second issue is that opinion varies on the *propriety* of various sexual behaviors and beliefs about various people's sexuality. Some variance is attributable to interpreting the science, and some is attributable to ideological beliefs. Policies developed around sexual health may therefore need to balance consensus with efficacy to achieve effectiveness and impact. That, however, is beyond the scope of this review.

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Interventions framed around two principles derived from three comprehensive sexual health definitions have positive individual-level and public health-relevant outcomes (in the domains identified) for the populations studied. Moreover, the extent to which specific outcomes are positive for individuals in different populations generally fit their principal needs and even responsibilities toward others. Whether directly or through public health and primary care partnerships, and with attention to balancing consensus and efficacy to maximize effectiveness, we suggest developing and sustaining sexual health interventions will contribute to the public's health.

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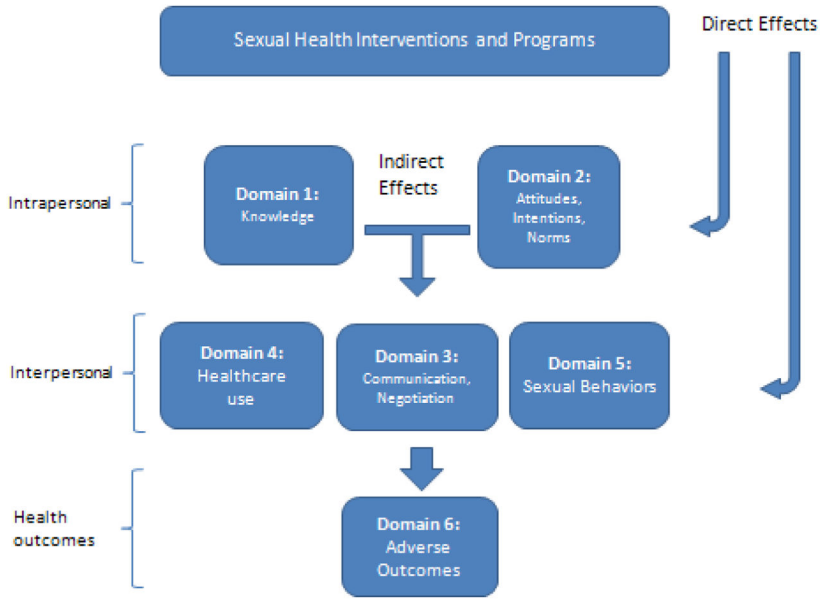

Figure 1.
Six domains of sexual health and their relationships to one another

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US government: The Surgeon General's Call To Action to promote sexual health and responsible sexual behavior, 2001:
Sexual health is inextricably bound to both physical and mental health. Just as physical and mental health problems can contribute to sexual dysfunction and diseases, those dysfunctions and diseases can contribute to physical and mental health problems. Sexual health is not limited to the absence of disease or dysfunction, nor is its importance confined to just the reproductive years. It includes the ability to understand and weigh the risks, responsibilities, outcomes and impacts of sexual actions and to practice abstinence when appropriate. It includes freedom from sexual abuse and discrimination and the ability of individuals to integrate their sexuality into their lives, derive pleasure from it, and to reproduce if they so choose.

World Health Organization: Defining sexual health, report of a technical consultation on sexual health, 2002 (published 2006):
Sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled.

CDC/HRSA Advisory Committee definition of sexual health, 2012:
Sexual health is a state of well-being in relation to sexuality across the lifespan that involves physical, emotional, mental, social, and spiritual dimensions. Sexual health is an intrinsic element of human health and is based on a positive, equitable, and respectful approach to sexuality, relationships, and reproduction, that is free of coercion, fear, discrimination, stigma, shame, and violence. It includes the ability to understand the benefits, risks, and responsibilities of sexual behavior; the prevention and care of disease and other adverse outcomes; and the possibility of fulfilling sexual relationships. Sexual health is impacted by socioeconomic and cultural contexts–including policies, practices, and services–that support healthy outcomes for individuals and their communities.

Figure 2.
Definitions of sexual health used to develop intervention selection criteria

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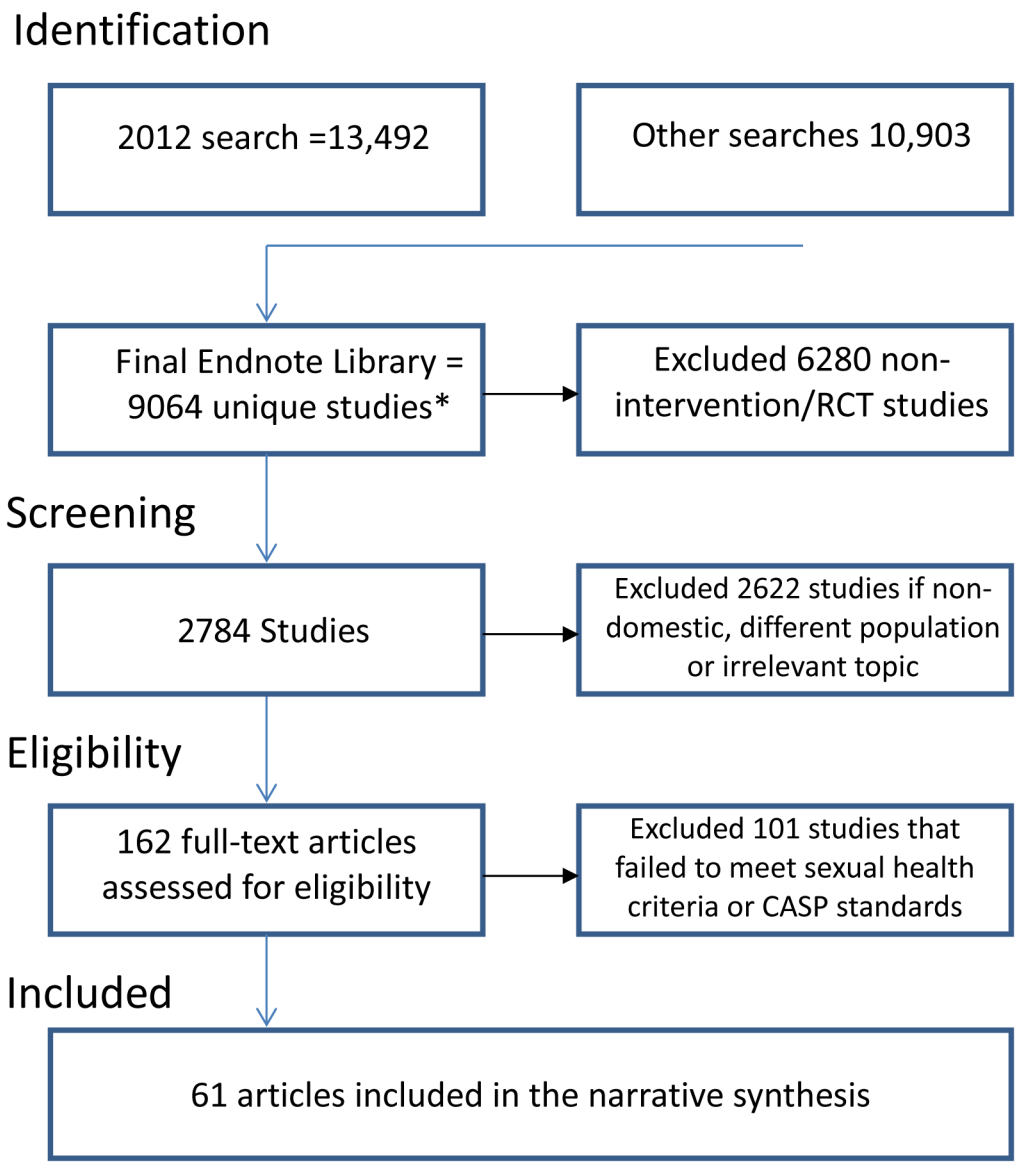

Figure 3. Inclusion flowchart of sexual health intervention studies

*duplicates removed include duplicates between Medline and PsycInfo databases The 61 articles were based on 58 studies.

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Table 1

Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
Adult Women						
1. Baird et al. (2007)	1b 2b	RCT	Population: Females age 15–21 from high schools and local communities (n=100) Setting: Trinidad and Tobago	One 5-hour session Participants were randomized to receive 1) *Be Proud Be Responsible* curriculum, emphasizing responsible sexual behaviors (intervention) or 2) substance abuse messages (control) Post-measurement: unclear (<3 months)	**Domain 2** Attitudes: • Perceived risk • Sexual attitudes • Feelings about self • Self-efficacy • Relationship quality • Sexual behavior	Intervention participants showed improvements in sexual attitudes (F=15.623, p<.001) perceived risk (F=7.48, p=.007). No significant effects on feelings about self (F=5.41, p=.22), self-efficacy (F=0.445, p=.506), attitudes toward sexual behavior (F=3.356, p=.07), or attitudes toward relationships (F=1.504, p=.223)
2. Baker et al. (2003)	1a 2a 2c	RCT	Population: Low income, high risk women (n=229) Setting: Seattle, WA	16 group sessions. Participants randomized to receive skills training or health education Post-measurement: 12 months	**Domain 2** • Risk reduction skills **Domain 5** • Vaginal Episode Equivalent Index (including unprotected sex acts) **Domain 6** • STD acquisition	Skills training intervention participants were 50% less likely to have new STD (χ^2=4.59, p=.05). Both intervention and control groups reduced risky sex (F=0.002, ns), no effect on risk reduction skills (F=0.3, ns).
3. Card et al. (2011)	1a 1b	RCT	Population: African-American women ages 18–29 (n=135) Setting: Atlanta, GA	Participants were randomized to receive 1) two 1-hour computer sessions, followed by a brief 20 minute session with a health educator or 2) a standard health education control condition. Post-measurement: 3 months	**Domain 1** • STI knowledge **Domain 2** • Condom self-efficacy **Domain 5**	Intervention participants were more knowledgeable about STIs, (M=9.45[SD=0.09] p<.001), had higher self-efficacy, (M=30.81 [SD=0.51], p=.

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
					• Consistent condom use • Percentage of protected sex acts	012), and used condoms more consistently, (AOR=5.9, 95% CI=1.09–31.95, p=.039).
4. Chung-Park (2008)	1a 1c 1d	RCT	Population: Females enlisted in U.S. Navy (n=198) Setting: San Diego, CA	Participants were randomized to receive 1) 2 sessions (2 hours and 1 hours) 2 months apart Controls: received nothing Post-measurement: 4 months (from first experimental session)	**Domain 1** • Knowledge **Domain 2** • Mediators (attitude/self-efficacy) **Domain 5** • Sexual activity • Contraceptive use **Domain 6** • Pregnancy rate	Intervention participants showed statistically significant increase in knowledge in intervention group and lower pregnancy rate (M=4.05[SD=1.0], p<.01). No posttest effect on attitudes (M=4.34, [SD=.59], p=.08), self-efficacy (M=2.53, [SD=0.46], p=.91), sexual activity (experimental M=0.77,[SD=0.42]/ control M=0.81, [SD=0.40] p=.732), or contraceptive use (experimental M=0.08, [SD=0.27]/ control M=0.14, [SD=0.38] p=.296).
5. Project FIO (Dworkin et al., Ehrhardt et al., Hoffman et al., Melendez et al., (2002–2007)	1a 1d 2a 2b	RCT	Population: Women in *Project FIO* attending a family planning clinic. (Full trial, n=360, subset of qualitative interviews n=180; subset of abused women n=152) Setting: New York, NY	Participants were randomized to: **1** Eight 2-hour group sessions **2** Four 2-hour group sessions or **3** An assessment only control group Post-measurement: 1, 6, 12 months	**Domain 1** • Sexual health knowledge **Domain 2** • Attitudes towards female condom • perceptions of situation • self esteem **Domain 3** • Negotiation with partner	For the 4 and 8 session groups, attitudes toward the female condom improved (mean scores increased, p<.02), condom negotiation increased (4 session OR=3.56 [1.23, 10.18], (8 session OR=3.67 [1.26, 10.7], odds of first time female condom use were high in the 8 session group OR=9.49 [CI=4.01–22.20]. Women increased their use

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
					about female condom about female condom **Domain 5** • First time female condom use • Repeated female condom use • Total number of sex acts by activity (anal, oral, vaginal) and by partner type (main partner, other partners). • Condom use • Unprotected vaginal and anal sex	of an alternate strategy to avoid unsafe sex in the 4 and 8 session groups (OR=4.61 and 8.76, p<.05), women in the 8 session, but not the 4 session, decreased unprotected sex at 1m (OR= 3.63, 95% CI =1.50–8.80, p<.001) and 1yr (OR = 2.88, 95% CI = 1.17–7.10, p<.05). No effect on substance abuse. Qualitative data showed increased sexual health knowledge, and psycho-social factors supporting sexual health.
6. Jones (2008)	1b 1d	RCT	Population: African-American and Latina urban women (n=76) Setting: New York, NY	Exposure to a 43 minute video: • Intervention group watched a soap opera video promoting HIV sexual risk reduction. • Control watched a video on careers in healthcare and computer technology. Post-measurement: immediate	**Domain 2** • Reduce stereotypical gender expectations to engage in unprotected sex	Intervention participants showed reduction in stereotypical gender views: t(57.77)=3.29, p=.001 (one-tailed).
7. Lauby et al. (2000)	2a	Matched data study (using community data) Pre/post test	Population: Low income, primarily African-American women in 4 communities (n=225–240 in each site) Setting:	This Community level intervention distributed project-produced HIV prevention materials; mobilized networks of community volunteers, organizations and businesses, and delivered prevention	**Domain 3** • Condom negotiation **Domain 5** • Condom consistency	Participants who discussed condoms increased efforts to get main partner to use condoms (M=10.6, CI=4.3–16.9, p=.01). No effects on condom

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
			Pittsburg and Philadelphia, PA; Portland, OR Pittsburg and Philadelphia, PA; Portland, OR Pittsburg and Philadelphia, PA; Portland, OR	m, PA, Portland, OR spec, Portland, OR P, PA, Portland, OR 2 years from start of intervention.	• Condom use at last sex	use at last sex with casual partner (p= .15) or condom consistency (p=.18)
8. Lee & Yen (2007)	1a 1b	RCT	Population: Women who recently gave birth at a medical center (n=166) Setting: Northern Taiwan	Participants were randomized to receive: **1** the intervention: an interactive pamphlet and 10–15 minutes of individual, interactive sexual health education on contraception, postpartum sexual physiology and psychology, or **2** routine postpartum teaching Post-measurement: 8 weeks	**Domain 1** • Knowledge **Domain 2** • Attitudes • Sexual self-efficacy • Contraceptive self-efficacy	Intervention participants increased sexual health knowledge (F=55.6, df=1,443, p<.01), sexual attitudes (F=4.67, df=1,443, p<.05), and sexual self-efficacy (t=2.135, p<.05). No effect on contraceptive self-efficacy (experimental M=25.06, [SD=6.23]/control M=23.42, [SD=5.96], t=1.546, p >0.05.
9. Robinson et al. (2002)	1a 1d 2a 2c	RCT	Population: low income, urban, primarily African-American women (n=152) Setting: Minneapolis-St. Paul, MN	Participants were randomized to receive: 1) a 2-day intensive sexual health intervention, or 2) HIV pamphlets and a certificate for a local beauty school Post-measurement: 3 and 9 months	**Domain 1** • Sexual anatomy knowledge **Domain 2** • Sexual attitudes **Domain 3** • Communication with children **Domain 5** • Sexual risk behaviors	At 3 months, the intervention group showed increases in knowledge (F=15.95, df=1,98, p<.001), positive attitudes toward female condoms (F=6.16, df=1,60, p=.016), and communication with children (F=3.98, DF=1,87, p=.049). No effect on condom attitudes (F=019, df=1,60, p=.890), sexual self-efficacy (F=.259, df=1,59, p=.612) or unprotected sex (F=.339, df=1,101, p=.562).
10. Swartz et al. (2011)	1a 1b	RCT	Population: midlife women ages 40–55 years of age (n=164) Setting: Oregon	Participants were randomized to the internet-based intervention: *Women's Reproductive Health: A Guide to Staying Healthy*, or to the control condition, a	**Domain 1** • Knowledge **Domain 2** • Attitudes	Intervention participants showed improved attitudes and beliefs (F=4.99, df=1, *p*=.027), and intentions (F=6.01,

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
				Web site with reproductive health content. Web site with reproductive health content. Post-measurement: 30 days	• Self-efficacy • Behavioral intentions	df=1, *p*=.015). Marginal effects for self-efficacy (F=3.72, df=1, *p*=.056). No effects on knowledge (F=0.56, df=1, p=.455).
Adults: Both Genders						
11. Armstrong et al. (2010)	1a 1b 2b	Pre and post test	Population: low income African-American and Latino male patients at the Young Men's Clinic (n=157) Setting: New York, NY	The program had 3 components: a) an interactive, 15- to 20-min SRH presentation/discussion; b) 15–20 individual counseling sessions with health educators or social workers and c) a medical exam that integrated sexual health messages. Post-measurement: 3 months	**Domain 1** • Sexual health knowledge **Domain 2** • sexual beliefs, attitudes **Domain 4** • Sexual care **Domain 5** • Sexual health behaviors	Sexual health knowledge increased about STIs (t=9.32, p<.001) and emergency contraception (t=8.57, p<.001). Attitudes increased re lubes increasing pleasure (t=15.17, p<.001) and that healthcare is affordable (t=4.03, p<.001). Increased condom use with casual partner (t=4.16, p<.001) and main partner (t=2.72, p<.05) and decreased no. of partners (t=−3.77, p<.001). Increased self-testicular exam (t=4.8, p<.001). No effect on attitudes towards healthcare utilization (t=1.78, ns) and condoms (t=.08, ns).
12. Bigman et al. (2010)	1b 2a 2c	Survey-based experiment	Population= research panel representative of the U.S. population (n=334) Setting: internet survey	Participants were randomly assigned to read a short passage about the HPV vaccine that framed vaccine effectiveness information in 1 of 5 ways: positively, negatively, a control condition or one of two mixed conditions that included both positive and negative information.	**Domain 2** • Attitudes toward the HPV vaccine	Intervention showed improved HPV vaccine attitudes t(162)=4.18, p<.001, and improved perceived effectiveness t(161)=2.13, p<.05 of HPV vaccine.
13. El-Bassel et al. (2005)	2a 2c	RCT	Population:	6-session intervention 3 arms:	**Domain 5**	Intervention participants

Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
			Heterosexual couples (n=217 couples) Heterosexual couples (n=217 couples) Setting: Bronx, New York	• Intervention provided to couple • Intervention provided to woman alone • Information intervention (control) – women only Post-measurement: immediate	• Number of unprotected sex acts • 100% condom use • Proportion of protected sex acts	decreased unprotected sexual acts (AOR=0.38, p<.01) and increased condom use (AOR=2.41, p<.01 and protected acts (AOR=0.17, p<.01).
14. Hafford-Letchfield et al. (2010)	1a 1b	Post-test, qualitative evaluation	Population: students, older actors, and film makers and audience members (n=unclear +/−15 participants) Setting: England, UK	Participants took part in two one-day workshops to develop and produce materials focused on older adults' intimacy and sexuality. Post-measurement: unclear (<3 months)	**Domain 2** • Attitudes and perceived support **Domain 3** • communication	Qualitative data showed improved relationships and improved understanding of the importance of sexuality in later life stages.
15. NIMH (2001)	1a 1b 1c 2a 2b	RCT	Population: Low income STD clinic patients (n=1,564 men, n=862 women) and health service organization patients (women only, n=1,280) Setting: New York, NY Baltimore, MD; Atlanta, GA; Milwaukee, WI Wisconsin, WI; Los Angeles, CA	Intervention participants received 90-min to 120-min small-group HIV risk reduction sessions, twice weekly over 4 weeks Controls received standard treatment Post-measurement: 3 months	**Domain 2** • Self-efficacy **Domain 3** • Condom negotiation skills **Domain 5** Safer sex as measured by: • consistent 100% condom use or abstinence, reflecting optimal risk reduction; • proportion of intercourse acts during which a condom was used; • number of unprotected intercourse acts	Self-efficacy (M=7.4, SE=.05, p<.001) and self-approval (M=3.4, SE=.03, p<.001) increased among intervention participants. Condom use skills increased (:experimental M=86.0, SE=.004/ control M=74.0, SE=.005, p<.001). At follow up, more intervention participants consistently practiced safe sex (42% versus 27%, p<.001).

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
16. Rew et al. (2007)	1a	Quasi-experimental pre and post test	Population: homeless youth (age 16–23) at an outreach center (n=572) Setting: Central Texas	8, 1-hour sessions Participants either 1) attended the 8 sessions at the center (intervention) 2) attended the center only before the 8-session (controls) or 3)attended both intervention and control parts of the study. Post-measurement: immediate, 6 weeks (behaviors)	**Domain 1** • Knowledge **Domain 2** • Condom self-efficacy and intentions **Domain 3** • Communication **Domain 4** • Sexual Care **Domain 5** • Risk behaviors	Intervention participants reported higher knowledge at follow-up (time 1–3 RR =1.432, CI=0.938–1.925, p<.001). Females exhibited higher condom self-efficacy at posttest (F=4.82, df=2,808.5, p<.008). There were slight changes in sexual self-care (in females only) (F=6.098, df=1,1120.9, p=.014). Overall results showed no changes in self-efficacy and condom intentions (F=.054, ns); communication (F =1.41, ns); sexual risk taking (F=0.368, ns); or safe sex behaviors (F =.264, ns).
College Students						
17. Brigham et al. (2002)	1a 1c 2a	Pre and post test	Population: undergraduate students (n=193) Setting: Washington State University	This college course on sexuality and HIV/STDs met for 15, 50 minute sessions over a semester. Students also attended smaller group sessions led by peer educators. Post-measurement: 15 weeks from start of intervention (semester length)	**Domain 5** • Abstinence • Monogamous partnerships (Condom-use) • Multi-partnered (condom use)	Posttest showed increases in condom use with multiple partners cohort 1: 1(.5%) to 34(18%)/cohort 2: 5(2.5%) to 30(15%); abstinent or in monogamous relationships cohort 1: 4(2.5%) to 32(17%)/cohort 2: 5(2.5%) to 17(8.5%); and increases in abstinence cohort 1: 33(18%) to 81(46%)/cohort 2: 82(41%) to 105(53%). All

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
						significant at the .001 level using a paired significant at the .001 level using a paired significant at the .001 level using a paired significant at the .001 level using a paired significant at the .001 level using a paired
18. Bryan et al. (1996)	1b 2a 2b	RCT	Population: Unmarried female undergraduates (n=198) Setting: Southwestern university	45 minute session: Participants were randomized to receive either a multicomponent safer sex intervention or a control (stress management) session. Post-measurement: 6 months	**Domain 2** • Perceived benefits/ attitudes toward condoms • Self-efficacy • Intentions to use condoms **Domain 5** • Carrying condoms	Intervention participants increased (all p<. 001): perceived benefits of condom use (F=70.49); attitudes toward condom use (F=7.46); perceived acceptance of sexuality (F=25.78); control over the sexual encounter (16.13); perceived self-efficacy for condom use (F=108.99); and intentions to use condoms (F=61.14). More intervention participants carried condoms at 6 weeks M=37/control M=15, d=.517, p<. 001) but not 6 months (d=.229, p>0.05.)
19. Ferrer et al. (2011)	1b 2d	RCT	Population: college students (n=160) Setting: Connecticut	Participants were randomized to receive the social–cognitive– emotional (SCE) intervention, the social–cognitive (SC) intervention, or standard of care. Post-measurement: 3 and 6 months	**Domain 5** • Condom use	At 3 months, intervention and control groups both increased condom use (β=.06, p= .41, d=0.08). At 6 months, intervention participants increased condom use (β=.27, p=.04, d=0.38).
20. Mevsim et al. (2009)	1b 2a	Pre and post-test	Population: Undergraduate students (n=1716, 1st round and 1311, 2nd round)	For one academic year students on campus were exposed to a sexual health intervention including peer education, youth counseling, educational materials, a website and a radio program.	**Domain 1** • Sexual health knowledge **Domain 2**	Posttest showed increases in knowledge about reproductive function (+17.4%, p=.00), STIs (+10.0%, p=.00),

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
			Setting: Dokuz Eylul University, Turkey Setting: Dokuz Eylul University, Turkey	Post-measurement: 9 months from start of intervention (academic year)	• Perceived risk of STIs **Domain 4** • Use of health services • Requests for contraception	and contraception (+11.9%, p=.00). Increased concern about contracting STIs (+18.0%, p=.00); increased seeking treatment for an STI (+19.7%, p=.00) and contraception visits (+37.5%, p=.00). No effect on visiting a health facility or consulting a doctor (+3.5%, p=.44). Non-significant increase in requests for contraceptives among females (+11.2%, p=.08)
21. Moyer-Guse et al. (2011)	1a 2a	RCT	Population: undergraduate students (n=243) Setting: Ohio State University	Participants were randomly assigned to view a program that had (a) STI plotlines where main characters discuss sexual history and STI testing; (b) STI plotlines without these discussions; or (c) a control episode that did not address sexual health in any way. Post-measurement: 2 weeks	**Domain 3** • Sexual discussions	Self-efficacy predicted behavioral intentions (β=.39, *p*<.001). No effect on behavioral intentions (F(2, 218)=.65 (no F provided), *p*=.53). Intervention participants increased sexual discussion behaviors: (F(2,218) =3.72, p=.03, η^2 = .03). Improved sexual risk behaviors (β = . 38, *p*< .001).
22. Rogers et al. (2009)	1d 2a 2c	Matched comparis on group	Population: Undergraduate students (n=128) Setting: Small catholic university in the Pacific Northwest U.S.	One semester course: intervention: students attending a human sexuality class. control group: students enrolled in professional and social science introductory courses. Post-measurement: end of semester (intervention begins at start of semester)	**Domain 1** • Knowledge and understanding of sexuality **Domain 2** • Homophobia	Intervention participants showed greater increases in knowledge (experiment M=+ 13.85, SD=6.08/ control M=+3.35, SD=4.55 p<.01) and lower levels of homophobia (experiment M=40.94,

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
						SD=13.72/control M=57.7[illegible] SD=20.0, p< SD=13.72/control M=57.7[illegible] SD=20.0, p< SD=13.72/control M=57.7[illegible] SD=20.0, p<
Lesbian, Gay, Bisexual, Transgender (LGBT) Populations						
23. Amirkhanian et al. (2003)	2a	Pre and post test	Population: 14 social networks of young MSM (YMSM) (n=72), project trained peer leaders from these networks Setting: St. Petersburg and Sofia, Russia	Five training sessions in peer education lasting 3–4 hours and 1 follow up session. Post-measurement: 4 months	**Domain 2** • Self-efficacy **Domain 3** • HIV prevention communication **Domain 5** • Condom use • Unprotected sex	Posttest showed improved safer sex norms (pretest M=14.7 SD=2.7, post M=15.9, SD=2.5, p=.001) condom and safer sex attitudes (pre M=23.3, SD=3.7; post M=24.5, SD=3.1, p=.001); risk reduction behavioral intentions (pre M=24.4, SD=2.7, post M=25.1, SD=2.3, p=.002) and risk reduction self-efficacy (pre M=27.0, SD=3.0, post M=27.9, SD=2.2, p<.007); conversations about AIDS/safer sex (M=4.0, SD=med=2, post M=6.3, SD=med=5, p=.01); Comfort talking (pre M=86%, post M= 94%, p=.07); 100% condom use with casual male partners (pre M= 69%, post M= 80% p=.04); and percentage of MSM buying condoms and having them available (pre M= 70%, post M= 92%, p=.01). No effect on condom use with casual male partner (pre 69%, post 80%p=N.S.)

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24. Bockting et al. (2005)	1a 1b 2b	Pre and post test	Population: transgender individuals (n=181) Setting: State of Minnesota	Two-day seminar providing a comprehensive sexuality education for transgender populations Post-measurement: immediate, 3 months	**Domain 2** • Attitudes toward condom use • Safer sex self-efficacy **Domain 5** • Sexual risk behavior	Post-test showed increased monogamy (Pretest=42%, post=64%, p=.008). Increased low risk sex (Pre=84%, post=91%, p=.039). Improved attitudes toward condom use: pretest (t=2.62, df=87, p=.010). Safer sex self-efficacy: pre M[SD]= 4.05(0.83); p=.01/post= 4.18 (0.71) but not significant at follow up=4.21 (0.81); p=.179. No effect on consistent condom use (Pre=38%, post=41%, p=.727). No effect on having one partner (pre=71%, post=76%, p=.5).
25. Bowen et al. 2008	1a 1b 2b	Pre and post test	Population: Rural MSM over age 18 (n=294) Setting: internet (men from across the USA)	An internet delivered intervention comprised of three, 20 minute interactive session and printable feedback tailored to participant Post-measurement: 0–9 days	**Domain 1** • HIV knowledge **Domain 2** • Self-efficacy and willingness to engage in risk reduction. **Domain 5** • Unprotected anal sex	Participants improved knowledge (F=122.93, p<.001); self-efficacy (F= 143.88, p<.001); perceived safety (F= 43.03, p<.001); motivation to use condoms (F=18.14, p<.001). Post intervention behavior changes included reduced anal sex and significant increases in condom use both Pre= M[SD]=.44 [.46]; post=.66[.44]; (paired t test= −4.95, p<.001).

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
26. Carballo-Dieguez et al. (2005)	1a 1b 1d 2b	RCT	Population: Latino gay and bisexual men (n=180) Setting: New York, NY	Participants were randomized to the intervention (eight 2-hour sessions) or the wait-list control group. Post-measurement: 2, 6, 12 months	**Domain 5** • Unprotected anal intercourse (UAI)	12m post intervention both groups showed decreased UAI (p=NS between groups: Baseline minus FU1 point estimate=5.22, p=0.23, CI=3.31, 13.75, Baseline minus FU2 pt est=0.46, p=0.89, CI=6.93, 6.01, Baseline minus FU3 PT EST=2.35, P=0.56, CI=10.34, 5.64). At 6 months, intervention participants had less receptive UAI compared to controls (26% vs. 10% control, p=0.045); no SD.
27. Choi et al. (1996)	1a 1b 1d	RCT	Population: Asian and Pacific MSM (n=329) Setting: San Francisco, CA	Participants were randomized to a 3-hour intervention or a wait-list control group. The intervention consisted of four components: (1) development of positive self-identity and social support, (2) safer sex education, (3) eroticizing safer sex, and (4) negotiating safer sex. Post-measurement: 3 months	**Domain 1** • AIDS related knowledge **Domain 2** • Attitudes **Domain 3** • Communication skills **Domain 5** • Number of sexual partners • Unprotected anal intercourse (UAI)	Improved AIDS knowledge (intervention M=7.53 versus control M=7.41, p<.05) and anxiety (intervention M=2.43 versus control M=2.26, p<.05); had fewer sexual partners (At 3m FU-RR=.47 [SD=.28–.77] p=.0004). No effect on perceived risk (Experiment M=2.41 /control M=2.38, p>.05); condom enjoyment ((Experiment M=2.25/ control M=2.21, p>.05); condom negotiation (experiment M=1.89/ control M=1.88, no SD given p>.05); communication (M=2.31, control

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
						M=2.14, no SD given p>.05) or UAI: n/to M=2.14, no SD given p>.05) or UAI: n/to M=2.14, no SD given p>.05) or UAI: n/to M=2.14, no SD given p>.05) or UAI: n/to M=2.14, no SD given p>.05) or UAI: n/to M=2.14, no SD given p>.05) or UAI: n/to M=2.14, no SD given p>.05) or UAI: n/to M=2.14, no SD given p>.05) or UAI: n/to
28. Godin et al. (2008)	2a 2b	Pre and post test	Population: MSM frequenting gay venues (bars, saunas, & sex shops) (n=1,757) Setting: Quebec City, Canada	Intervention consisted of 3 series of prevention workshops (7–10 sessions each) over a 15-month period. Post-measurement: ~3 months	**Domain 2** • Psychosocial variables (intentions, subjective norms, self-efficacy, & anticipated regret) **Domain 5** • Unprotected anal intercourse (UAI)	Posttest showed: 29% reduction in UAI among younger participants (RR=0.71, 95% CI=(0.55–0.92). No effects on intentions, self-efficacy, norms, or anticipated regret (no p values provided).
29. Kegeles et al. (1996)	1a 1b	Pre and post test	Population: Young gay men (n=300) Setting: Eugene, OR and Santa Barbara, CA	Community-level HIV prevention intervention, which included peer outreach, small groups, and publicity campaign. Post-measurement: 1 year	**Domain 5** • Unprotected anal intercourse (UAI)	Proportion of gay men engaging in UAI with non-primary partners decreased (−9.1% change, p<.05) and with boyfriends decreased (−14.2% change, p<.05)
30. Read et al. (2006)	1a 1b 2a 2b	RCT	Population: MSM who received an HIV negative test at an HIV clinic (n=110) Setting: Hollywood, CA	Participants were randomized to receive: an interactive video (IAV) intervention and peer counseling or peer counseling alone. Post-measurement: 3 months	**Domain 5** • Unprotected anal sex	Men who viewed the IAV increased protected anal sex behaviors F(1, 92)=5.53, p=.010 (one tail).
31. Rhodes (2004)	1a 1b 1c	Pre and post test survey.	Population: MSM who visited the chat room (n=619) Setting: chat room based in North Carolina	Using the chat room, an LGBT community educator was available to talk about HIV related issues for 6 hours a day, 5-days a week for 1 month. Post-measurement: varies (outcomes measured while intervention was underway)	**Domain 3** • Discussion of sexual health issues **Domain 5** • healthy behaviors (by using a chat	Qualitative data showed main areas of discussion included: sexual risk reduction strategies; HIV testing issues; non-sexual social support; youth resources; resources for coming out.

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
					room to address sexual health) room to address sexual health)	
32. Shepherd et al. (1997)	1a 1b 2a	Quasi experime nt Pre and post test with matched comparis on group	Population: Gay and bisexual men: • Trained as Peer educators (n=20) • Targeted by peer educators (n=43) Setting: Southhampton, UK	Peer educators were trained one evening a week for 6–8 weeks to promote sexual health among peers. Peer educators then conducted one-on-one sexual health interviews with their peers. Post-measurement: 3–6 months	**Domain 1** • Knowledge **Domain 2** • Attitudes **Domain 5** • Adoption or maintenance of safer sex behaviors	Posttest showed increased STI knowledge (χ^2=17.0, p<.05). No change in attitudes or safer sex behaviors (no p provided).
33. Toro- Alfonso et al. (2002)	1b 1d 2a	Pre and post test	Population: Latino MSM (n=587) Setting: Puerto Rico, USA	Participants engaged in a 3-hour small group meeting and four 3-hour workshops. Post-measurement: 4 weeks from start of intervention (immediately following session 4)	**Domain 5** • Sexual risk behaviors	Posttest analyses showed decreases in overall sexual activities (−.20 m score change, p<. 001); high risk behaviors (−.35 m score change, p<. 001); moderate risk behaviors (−.20 m score change, p<. 001) and increases in low risk behaviors (+.7 m score change, p<. 001)
34. Wilton et al. (2009)	1d 2a 2b	RCT	Population: Black men who are HIV negative or of unknown HIV status (n=388) Setting: New York, NY	Participants were randomized to receive the *Many Men Many Voices* (3MV) intervention of 6 consecutive 2–3 hour sessions on a weekend retreat (n=164) or the wait-list comparison condition (n = 174). Post-measurement: 3, 6 months	**Domain 4** • HIV/STI testing **Domain 5** • Sexual risk behaviors • Protective behaviors	3MV participants reduced unprotected sex with casual partners: (RR=.34, p=.012); had fewer partners (RR=.75, p=.04); consistent condom (OR=1.55, p=.056) and had greater odds of HIV testing (OR=1.33, 95% CI=1.05–1.68, P=0.016). No effects on STI testing (OR=1.16 (0.90, 1.49) p>.05)

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
						and or UAI with main partner (RR=.55/.40 and or UAI with main partner (RR=.55/.40 and or UAI with main partner (RR=.55/.40
Parents						
35. Blakely et al (1996)	1b 1c 2a	Pre and post test	Population: parents identified as having specific needs in relation to their children's sex education (n=341) Setting: Wales, UK	Six, 2-hour sessions with each group of parents. Post-measurement: immediate	**Domain 1** • Self-reported impact on knowledge **Domain 2** • attitudes and ability to fulfill their sex education role as parents	Qualitative data showed parents: Increased knowledge, awareness and understanding of children's needs related to sexual issues; increased confidence dealing with sexual issues and Increases in perceived social support as a result of meeting parents in the group.
36. DiIorio et al. (2006)	2a	RCT	Population: Mother and adolescent daughters (n=582) Setting: Wales, UK	Seven 2-hour sessions over a 14-week period. Participants randomized to receive social-cognitive theory (SCT) or life skills program (LSK). Control received 1-hour of HIV prevention. Post-measurement: 4, 12, 24 months	For mothers and adolescents: **Domain 1** • HIV knowledge **Domain 2** • Comfort talking about sex **Domain 3** For parents: • Discussion of sexuality issues	Mothers in the intervention increased HIV knowledge, p=.028; mothers in all 3 groups showed substantial increases in comfort talking about sex, p<.001, and increased discussion of sex in the past 3 months, p<.01
37. Green et al. (2005)	1a 2a	Pre and post test	Population: parent peer educators (n=35) for community residents (n=721) Setting: Allegheny, PA	2–3 hour workshops run by parent peer educators for 6–12 participants. Post-measurement: immediate, 4 weeks (random subset of 25%)	**Domain 2** • comfort in discussing sexuality; perceived importance of the topic **Domain 3** • discussion behaviors	Post workshop, more parents felt comfortable talking about sexuality-related issues (+21.1% change, p<.05); more parents: talked to their children about sexuality issues (+9.5% change, p<.05) and discussed 2+ issues during last conversation about sexuality

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
						(+17.7% change, p<.05). (+17.7% change, p<.05).
38. Kesterton and Coleman (2010)	1a 1b 2a	Pre and post test	Population: parents around the UK (n=4206); qualitative data based on (n=40) Setting: range of UK communities	Eight 2 hour sessions run by 2 facilitators, for groups of 6–10 parents, using interactive, participatory learning strategies. Post-measurement: immediate	**Domain 1** • Increasing parents' knowledge **Domain 2** • Confidence and positive attitudes toward discussing sexual health	Posttest knowledge increased on: puberty (M increase from 3.04 to 4.46, t(3210)=76.98, p=0.001); STIs (2.67 to 4.35, t(3202)=83.88, p=0.001); contraception (3.36 to 4.58, t(3206)=65.32, p=0.001); staying safe (3.40 to 4.59, t(3062)=63.40, p=0.001). Increased confidence discussing sex and relationships (.01 to 4.43, t(3255)=72.13, p=0.001)
39. Klein et al. (2005)	1b 2a	Pre and post test	Population: Parents or guardians in areas with high teen pregnancy or STD rates (n=174) Setting: Rochester, NY	Intervention consisted of 4-core workshops and 2-optional workshops delivered over a one-month period and run by community residents or volunteers. Post-measurement: 10 weeks	**Domain 2** • comfort with responding to children's questions about sex and sexuality **Domain 3** • parental communication with children • frequency of initiation of conversations	Post workshop, parents showed increased comfort discussing sex (+17% change, p<.001); HIV/STDs (+18% change, p<.001); and sexuality/gender issues (+21% change, p<.001). More parents initiated conversations on sex/intercourse (+6% change, p<.001); HIV/STDs (+8% change, p<.001) and sexuality/gender issues (+15% change, p<.001)
40. O'Donnell et al. (2011)	2a	RCT	Population: Black and Latino families with 6th graders in NY public schools. (n=222 girls and n=233 parents)	Families were randomized to receive (a) the intervention, a four-CD set, *Especially for Daughters*, one audio CD every 6 weeks; (b) an attention-controlled condition covering similar topics and	**Domain 2** For parents: • Self-efficacy to communicate **Domain 3**	Intervention parents had higher self-efficacy to address sexual risks (AOR=6.32, CI=2.12 18.90, p<.01) and alcohol

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
			Setting: New York, NY Setting: New York, NY	mailed at the same intervals as the CDs; or (c) a control condition in which no materials were received. Post-measurement: 3 months	For parents: • Communication about sex and alcohol **Domain 5** Daughters: • Delay sexual intercourse • Alcohol use	with their daughters (AOR=7.45, CI=2.19–25.25, p<.01); were more likely to talk with daughters about sex (AOR=5.69, CI=2.45–13.23, p<.001); Daughters in the intervention reported fewer sexual risks (adjusted odds ratio (AOR=0.39, CI=0.17–0.88, p<.05) and less drinking (AOR=0.38, CI=0.15–0.97, p<.05)
Vulnerable Populations (Infected, physically or sexually abused, drug-using)**						
41. Carey et al. (2010) ** (Infected population)	2a 2b (infected)	RCT with 6 arms	Population: Patients, average age 29.2 years old, from a publicly-funded, walk-in STD clinic (n=1483) Setting: upstate NY	This two-step program combined a brief intervention with an intensive group-based intervention. Participants were randomized to 6 intervention arms; each provided different levels of information, counseling, and behavioral skills training, guided by theory. Post-measurement: 3, 12 months	• Theoretical antecedents including **Domain 1** • STD knowledge; **Domain 2** • intentions; condom attitudes **Domain 5** • Sexual risk behaviors **Domain 6** • STI rates	The intensive information group (IIG) and intensive information/ behavioral skills (IBS) groups showed the highest knowledge (IIG:β=0.05, t=5.03, p<.0001; IBS: β=0.03, t=3.63, p<.001); control (MBL=67%, M =72%)). For all arms, sexual risk antecedents improved (p<.05, no other values given); number of partners (β = −0.09, Z=−4.68, p<.0001), from avg 2.10 @(3m) to 2.07@6m to 1.90@ 12m); unprotected sex (66% of episodes at baseline to 50% @3m (β =−0.16, t=−5.65, p<.001); and STD diagnosis OR=.87 (95% CI . 79— .95), t (1482)

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						=−3.08, p<.001 decreased. 3.08, p<.001 decreased.
42. Chen et al. (2011) ** (Infected population)	1a 1b 2b (infected)	Pre and post test (longitudinal data)	Population: HIV positive youth ages 16–24 (n=142) recruited at HIV adolescent clinics Setting: Baltimore, MD; Detroit, MI; Fort Lauderdale, FL; Los Angeles, CA; and Philadelphia, PA.	Participants were randomized to receive 1) 4 individual counseling sessions based on motivational interviewing or 2) standard care. Post-measurement: 3, 6, 9, 12, 15 months	**Domain 5** • Sexual risk behaviors (including amount and frequency of sex without a condom)	Posttest showed higher chances of being in the low risk group post *Healthy Choices* Intervention (low-risk group likelihood (63% vs. 32%, p<0.01); med risk group likelihood (16% vs. 50%, p < 0.05); High risk youth decreased no-condom sex (β = −0.325, p<0.01) as did high and growing risk youth (β = −0.364, p<0.01).
43. Fisher et al. (2006) ** (Infected population)	1a 1b 2a 2b (infected)	RCT	Population: HIV positive patients at HIV clinics (n=419) Setting: Connecticut, USA	At each clinical visit over 18 months: an Intervention group received a brief clinician-delivered, motivational interviewing informed intervention. Control received standard care. Post-measurement: 4 times over 18 months.	**Domain 5** • Unprotected sexual behavior • Unprotected sex with HIV status unknown partners	Intervention participants reduced unprotected vaginal, anal or oral sex over 18 months (b=20.51, p=.001) and reduced unprotected sex with HIV negative partners (b=20.61, p=.06)
44. Gollub et al. (2010) ** (Substance use)	1b 2a	RCT	Population: women with a history of drug use and risky sexual behavior, majority were African-American (n=189) Setting: Providence, RI New York, NY and Philadelphia, PA	Participants were randomized to receive the intervention: four, 2.5 hour group sessions over 1 month and a reunion session 1 month later, or the control: HIV personalized risk reduction counseling, testing and limited case management delivered by a certified counselor. Post-measurement: 2 months	**Domain 1** • Knowledge **Domain 5** • Condom use of male and female condoms	Intervention participants increased knowledge (13.81 mean % difference, p<.01) and monthly rate of protection use of male and female condoms (1.13, 0.77, both p<.001)
45. Kalichman et al. (2001) ** (Infected population)	1b 2a 2b (infected)	RCT	Population: PLWHA (men=233; women=99) Setting: Atlanta, GA	5 sessions, 2 arms: **1** Intervention: focused on strategies for practicing safer	**Domain 5** • Kept condoms available • Refused unsafe sexual practice	Intervention participants refused unsafe sexual practice (3 & 6m, OR=0.4, 2.0, p≤.05); decreased unprotected vaginal

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				sexual behavior, or sexual behavior, or 2 Control: health-maintenance support group (standard-of-care comparison) Post-measurement: 6 months	• Practiced safer sexual behavior without disclosing HIV status • Number of sex partners • Unprotected vaginal and anal intercourse • Total vaginal and anal intercourse • Percentage condom use for vaginal and anal intercourse • Unprotected oral sex	and anal intercourse (6 month, F=4.9, p<.05); total vaginal and anal intercourse (6m, F=7.7, p<.05); and increased condom use for vaginal and anal intercourse (6m, F=3.8, p≤.05). No effect on keeping condoms nearby (3m, OR=1.3, p=.69); safer sexual behavior without disclosing HIV status (3, 6 months, OR=.7, 1.7, p>.1); unprotected oral sex (3, 6m, F=0.5, 0.2, p<.4); or number of partners (3, 6m, f=0.3,0.3, p>.6)
46. Kalichman et al. (2005) ** (Infected population)	1a 2b (infected)	RCT	Population: HIV positive men and women who reported unprotected anal or vaginal intercourse with HIV negative sex partners in the last 3 months (n=125) Setting: Atlanta, GA	Participants were randomized to receive the healthy relationships intervention or to be in the health maintenance intervention comparison group. Post-measurement: 6 months	**Domain 5** • Sexual risk behavior **Domain 6** • Mental health outcomes (stress, depression etc.)	Intervention participants reduced rates of total sexual intercourse with discordant sex partners F=5.8, p<.01 and lowered HIV-related stress F=11.9, p<.05, which mediated sexual intercourse with discordant partners (β=.16, *t* =2.07, p<.05). No effect on depression, emotional distress, or social support (all p > .05)
47. Kalichman et al. (2011) ** (Infected population)	1a 1c 2b (infected)	RCT	Population: Individuals living with HIV/AIDS (n=436) Setting: Atlanta, GA	45-minute 1-on-1 goal-setting session, five 120-minute group sessions and a 60-minute 1-on-1 counseling session. Participants were randomized to receive the intervention: a risk reduction and adherence intervention or to be in a control HIV support group.	**Domain 4** • ART adherence **Domain 5** • Sexual risk behavior **Domain 6**	Intervention participants showed increased ART adherence χ^2=4.1, p<.05, at 3 and 6 month and inconsistent reductions in unprotected anal

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				Post-measurement: 3, 6 months Post-measurement: 3, 6 months	• STI diagnosis	sex χ^2=2.7, p<.10, vaginal sex χ^2=4.6, p<.01 (ns at 9 m), and fewer STI diagnoses at 9 m follow up (AOR=3.0, P<.05, 95% CI=1.01, 9.04)
48. Kamb et al. (1998) (Infected population)	2b (infected)	RCT	Population: Heterosexual, HIV-negative STD clinic patients (n=5758) Setting: Baltimore, MD Denver, CO Long Beach, CA Newark, NJ San Francisco, CA	One-on-one counseling models— groups received: 4 enhanced counseling; 2 brief counseling, interactive risk-reduction sessions or 2 brief didactic messages typical of current care. Post-measurement: 3, 6 months	**Domain 3** • Communication **Domain 5** • Condom use **Domain 6** • New STD diagnoses (gonorrhea, chlamydia, syphilis, HIV)	Condom use increased in the enhanced counseling arm 83% compared to 79% and 76%, p<.05. Talking to new partners about STD testing increased in the brief intervention group (50% compared to 44% and 41%, p<.05). Number of new partners/casual partners was higher in brief message group (73% compared to 70% and 66%, p<.05). New STD rates were highest in didactic messages arm (RR =0.81 or lower, p<.008)
49. Koblin et al. (2010) ** (Substance use)	1a 2b (women using drugs)	RCT	Population: HIV negative, female who use non-injection drugs (n=311) Setting: New York, NY	Participants were randomized to receive the 1) enhanced risk-reduction and vaccine counseling (2 sessions each) or 2) the standard risk reduction (2 sessions) and vaccine education. Post-measurement: 1 week, 1, 6, 12 months	**Domain 1** • Knowledge **Domain 5** • Sexual risk behaviors • Substance use	Knowledge increased (from 5.4 to 9.2, SD=3.8, p<.0001) and unprotected vaginal sex decreased for both intervention and control groups (specific % not reported, p<.001). No effects on substance use (no p provided)
50. Langston et al. (2010) ** (abortion, miscarriage)	1a 1b	RCT	Population: women seeking a first trimester abortion (n=186)	Participants were randomized to receive the intervention: structured counseling on contraception or standard care.	**Domain 5** • Use of a very effective contraception method	Effects were not significant. Intervention participants were **not** more likely to

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			Setting: New York, NY Setting: New York, NY	Post-measurement: 3 months	• Method initiation at visit	use a very effective method of birth control (OR 0.74, 95% CI 0.44, 1.26, p=.27); to initiate a method (OR 0.65, 95% CI 0.31, 1.34, p=.27); or to continue use of a method (AOR= 1.06, 95% CI 0.53, 2.14, p=.28)
51. Mausbach (2007) ** (Infected population, Substance use)	1a 1b 2b (infected)	RCT	Population: HIV-positive MSM methamphetamine users (n=341) Setting: San Diego, CA	5 weekly individual counseling sessions (90-minutes each) followed by 3 booster sessions. Participants were randomized to 1) a safer sex behavioral intervention or 2) an exercise and diet control group. Post-measurement: 12 months	**Domain 5** • total protected sex • total unprotected sex • percentage of total sex behaviors that were protected	Intervention participants increased protected sex acts at 8m (M=1.17, p=.034) and 12m (M=1.19, p=.007); at 12m a greater percentage of sex acts were protected (25.8% vs. 18.7%, p=.038).
52. Morin et al. (2008) ** (Infected population)	1a 1b 2a (infected)	RCT	Population: HIV positive MSM (n=616) Setting: Los Angeles, Milwaukee, New York and San Francisco, USA	Participants were randomized to receive: 15-sessions, individually delivered cognitive-behavioral intervention or a wait-list control. Post-measurement: 5, 10, 15, 20 months	**Domain 5** • Reduce unprotected transmission risk acts	Intervention participants reduced transmission risk acts (overall χ^2 = 7.5, p≤.02), and had more HIV positive partners suggesting serosorting practices (p≤.01). Risk acts decreased in the control group as well (χ^2=8.86, p≤.001)
53. Rose et al. (2010) ** (Abortion/ miscarriage)	1c 1d	Post test	Population: women who had an abortion at a public abortion clinic (n=510) Setting: New Zealand	The program ran for 10 weeks. Staff counseled patients on contraption without a standard script. During this time: All LARC methods were free; posters and pamphlets about LARC were displayed in the clinic; and information about LARC was provided to clinic staff. Post-measurement: 6 weeks, 6 months	**Domain 5** • Use of long-acting reversible contraception (LARC) • Method Use at 6 weeks and 6 months • Method retention	Use of post-abortion LARC (44% baseline to 61%, p<.001) and LNG-IUS (6% baseline to 36%, p<.05) increased; method retention was 89% at 6 weeks, 86% at 6 m (no p provided)

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54. Rosser et al. (2010) ** (Infected population)	1a 1b 1c 2a 2c	RCT	Population: HIV positive MSM reporting at least one occasion of unprotected anal intercourse in the past year (n=675) Setting: Seattle, WA, Boston, MA, New York, NY, Houston, TX, Los Angeles, CA and Washington, DC.	Participants were randomized to receive 1)The M2M Sexual Health Seminar a 14–16-hour intervention over one weekend; 2) the Positive Sexual Health (PoSH) intervention similar in length to M2M but tailored to HIV positive MSM, or 3) Men Speaking Out, (MSO) a 3-hour group session where participants evaluated six HIV prevention DVDs tailored for MSM. Post-measurement: 6, 12, 18 months	**Domain 2** • sexual comfort • condom self-efficacy • HIV prevention altruism • internalized homo-negativity • safe sex intentions **Domain 5** • unprotected anal intercourse	Safer sex intentions increased for the PoSH to MSO (z=2.24, p=.025) and the M2M to MSO (z=3.65, p=.003) groups. All study arms decreased UAI (by ~23%, p not given); though differences between groups were N.S. over the 18m. No significant effect on safer sex intent, condom self-efficacy, sex comfort, sexual health, homo-negativity, and altruism (no p given).
55. Swanson et al. (1999) ** (Infected population)	1b 2a (infected)	RCT	Population: Young adults with symptomatic genital herpes (n=252) Setting: metropolitan cities on the west coast, USA	Participants were randomized to the group intervention: three 90-minute sessions of a pyscho-education by a nurse or the control group: where participants were offered the group intervention at the end of the study. Post-measurement: 3, 6 months	**Domain 1** • Sexual risk knowledge **Domain 2** • depression • self-efficacy **Domain 5** • condom use • spermicide use	Intervention participants increased knowledge (F=37.45, p=.000); improved condom (F=10.63, p=.002) and spermicide use (F=21.69, p=.000). No effect on self-efficacy (no p given); number of partners (F=2.911, p=.09); or depression (F=.024, p=.87)
56. Swanson et al. (2009) ** (Abortion/ miscarriage)	1a 1b	RCT	Population: couples who had a miscarriage prior to 20 weeks gestation in the past year (n=341) Setting: Puget Sound, WA	All intervention modes had the same sexual health framing. Participants were randomized to: • nurse caring (NC) 3 counseling sessions • self-caring (SC) 3 video and workbook sessions	**Domain 6** • Grief • Depression NB: This study measured outcomes in Bayesian odds (BO), with critical value = 3.2.	All three interventions substantially improved women's resolution of grief [(BO CC v control =3.1, p=0.76, Mdn= −0.2), (BO NC v control=5.5, p=0.85, Mdn=−0.3) and SC (BO SC v control=7.0, p=0.87, Mdn= −0.4)]. The NC arm

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				• Combined caring (CC) 1 counseling session; 3 self-caring sessions. • A no treatment control group. Post-measurement: Up to 13 months		also reduced depression among women (BO = 7.9 p=0.89, Mdn= −0.7), but not men (BO = 1.2, p>0.05). The SC arm had greater impact on grief for women than for men (BO = 7.0, p=.87 for women, 0.97, p=.49 for men). The CC arm had greater effects on grief for men (BO = 22.6, p=.96) than for women (BO = 3.1, p=.76).
57. Velasquez et al. (2009) ** (Infected population)	2a 2b (infected)	RCT	Population: HIV positive MSM with (n = 253) who drank alcohol heavily Setting: Texas, USA	2 arms: • An eight session integrated intervention using individual counseling and peer group support or • A resource referral condition Post-measurement: 3, 6, 9, 12 months	**Domain 5** • Number of days of unprotected sex (mean number of days in which any anal sex occurred and a condom was not used) • prevalence and frequency of alcohol use	Intervention participants showed decreased days of unprotected sex (X^2 =24.64, p = .01) and days drinking (X^2=28.74, p< .003)
58. Wechsberg et al. (2004) ** (Substance use)	1d	RCT	Population: African-American women who used crack and had unprotected sex in the last 90 days (n = 762) Setting: targeted inner-city neighborhoods	Women were randomly assigned to a: **1** 4-session woman-focused intervention (WFI) **2** 4-session standard intervention (SI) based on the National Institute on Drug Abuse's recommendations **3** a delayed-treatment control group	**Domain 5** • high risk behavior (crack use and sexual behaviors) **Domain 6** • employment status • housing status	WFI participants: were less likely to have unprotected sex (M= −36.4%, p<.001) improved employment (M= +50%, p<.001) and housing status (M= +44%, p<.001); SI participants showed largest decrease in crack use (M= −35.7%, p<.001) and all groups decreased crack use and high risk sex at 3&6 months (p<. 001)

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Study	Sexual Health Rationale	Study Design	Population/Setting	Intervention	Outcome Domains & Primary Variables	Results
				Post-measurement: 3, 6 months		

Note. Outcome domains are: (1) knowledge, (2) attitudes, norms, intentions, (3) communication, negotiation, (4) health-seeking behaviors, (5) sexual behaviors, (6) adverse health outcomes.