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FINDINGS FROM THE NATIONAL SURVEY OF SEXUAL HEALTH AND BEHAVIOR (NSSHB)
CENTER FOR SEXUAL HEALTH PROMOTION
INDIANA UNIVERSITY

BASIC SCIENCE & CLINICAL RESEARCH IN MALE & FEMALE SEXUAL FUNCTION & DYSFUNCTION

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Findings from the National Survey of Sexual Health and Behavior (NSSHB)
Center for Sexual Health Promotion
Indiana University

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ORIGINAL RESEARCH

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GUEST EDITORIAL

Background and Considerations on the National Survey of Sexual Health and Behavior (NSSHB) from the Investigators

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Background

As we enter the second decade of the 21st century, the United States continues to face significant challenges in terms of the sexual and reproductive health of its population. With the Human Immunodeficiency Virus (HIV) continuing to have considerable and disproportionate impacts on diverse communities, high rates of other sexually transmissible infections and high numbers of unintended pregnancies each year, those on the front lines of public health and medicine are challenged to implement appropriate and effective strategies in response. While sexual health problems such as these have driven much of the nation's social and health priorities and research agendas in the past, it remains the case that sexual behaviors, and the associated behaviors that occur within the context of a sexual event (e.g., condom use), continue to garner significant interest among both scientific and lay communities. However, the delivery of sexual health services and the conduct of sexual health research remain challenging and, at times, controversial.

Just over 60 years ago, Dr. Alfred Kinsey and his research team made available, to both scientists and the general public, the first large-scale systematic studies of human sexual behavior [1–2]. For decades, much of what was known about human sexual behaviors was based upon the thousands of interviews conducted by Kinsey and his team, most of which were collected during the 1930s and 1940s. Later on, in the 1980s, the realities of the epidemics of HIV and Acquired Immune Deficiency Syndrome (AIDS) made clear how little was known about contemporary human sexual interactions, how they had changed over time, and the manner in which individuals and couples make decisions to protect themselves from infection and pregnancy. In 1994, a team of researchers had a profound impact on our understanding of these issues with the results from the first nationally representative probability study of sex and sexuality-related behavior in the U.S. (the National Health and Social Life Survey-NHSLS), which they had conducted two years earlier [3–4]. Since that time, there have been thousands of studies focusing on specific sexuality and health-related topics among a diverse range of communities that have continued to advance scientific understanding of sexuality-related behaviors, condom and contraceptive use, and that have driven the development of increasingly effective public health interventions. There have been only a few nationally representative probability samples of sexual behavior among specific age groups (e.g., Youth Risk Behavior Survey; National Social Life, Health, and Aging Project) or of sexual concerns or distress. Studies specific to condom use have been more frequent, with a great deal of effort being expended to document trends in cond om use both across the general population and within specific communities disproportionately impacted by sexual health problems for which the latex condom is an accessible and efficacious solution.

Studies such as these have clear relevance for the development and delivery of social service and health programs that address issues related to sexuality and sexual health. They are also central to those individuals whose scientific interests are grounded within areas related to human sexuality, and over the past two decades, such scientists have discussed and debated the need for, and the possible mechanisms for conducting, a contemporary

study of sexual behaviors in the U.S. In addition to the merits of such data for these scientific purposes, as the research teams at The Institute for Sex Research at Indiana University (in the 1940s and 1950s) and at the University of Chicago (in the 1990s) recognized, men and women in the general public are interested, for reasons of curiosity and personal comparison, in knowing who does what sexually and how often. Humans appear to be innately curious about how often other people who are like them (e.g., single, partnered, or married)—or who are around the same age—have sex or the types of sexual activities in which others engage. This includes an interest in sexual expression over the lifespan, from the sexual activities of adolescents to the nature of sexual expression in later stages of life, including how behaviors might vary with changes in partnership and health status.

Much has changed in American society since the first nationally representative study of sexual behavior in the U.S. was conducted in 1992, with likely impacts on the manner in which individuals construct their sexual lives. The emergence of new medications in response to both sexuality-related disease and dysfunction, shifts in policies that shaped the types of sexuality education available to youth who are entering adulthood, changes in social attitudes regarding issues of sexual orientation, and the introduction of the Internet and the rapid evolution of technology-based tools for human interactions, among others, beg for data that expands our contemporary understanding of the sexual health and behaviors of the U.S. population. Such data are essential to support ongoing advancements to the development and implementation of programs and policies that aim to improve the sexual health of the nation.

The NSSHB

In response, with this supplemental issue of *The Journal of Sexual Medicine*, we present a series of nine papers from the National Survey of Sexual Health and Behavior (NSSHB), a nationally representative study of the sexual and sexual health-related behaviors of 5,865 adolescents and adults in the U.S. Our team, based at the Center for Sexual Health Promotion at Indiana University, and representing the disciplines of public health, psychology, medicine, and gender studies, sought to conduct a study that would provide a contemporary snapshot of sexual behaviors, condom and contraceptive use, and sexual health of the U.S. population. We sought to do so in a way that would build upon the traditions of sexology pioneered by Kinsey and that have been advanced by generations of sexual and public health researchers over the past 60 years. Our aim was to be considerate of a developmental and age cohort perspective on human sexual behavior and, as a result, we collected data from individuals across ages that span 80 years (14 to 94 years). We also sought to merge the methodological and measurement advances made by sexual and public health with those now available given the utility of the Internet as a research tool for overcoming the challenges posed by traditional forms of probability-based sampling.

Papers in this Supplement

We were strategic in our selection of the nine papers to be initially released from the NSSHB data and strived to assemble a collection of papers that would be of interest and value to both scientific and lay communities. With the two leading papers, we sought to provide baseline rates of sexual behaviors and condom use among individuals aged 14–94 years, as such rates not only serve as a valuable foundation for health and social policies and programs and for sexuality researchers; they also provide for a source of common knowledge when made available to the general population. We present separate papers that document the reported sexual behaviors of adult men and women by decade in order to provide contemporary information about sexuality across the life course. We chose to present individual papers focused on sexual behaviors and condom use within three specific subpopulations (adolescents, aging adults, and black and Hispanic Americans) given the efforts by those in public health and education who continue to work toward the development of policies and programs that are appropriately responsive to developmental and cultural aspects of one's behaviors. We present an event-level analysis of condom use during the most recent sexual event reported by adults during which penile-vaginal intercourse occurred given the importance of understanding condom use within the context of a particular sexual event so that the situational, relational, and experiential nature of that sexual event could be examined in relation to condom use or non-use. To provide additional insight into the nature of a sexual event, we built on previous research that has assessed the varying combinations of behaviors that comprise a sexual event and, in a separate paper, present our findings among adults ages 18 to 60.

Methodological Considerations

To conduct the NSSHB, our team partnered with Knowledge Networks (Menlo Park, CA, USA) given their ability to combine the use of statistically valid sampling methods with the advantages of the Internet as a research tool. Sampling included a dual-frame approach based upon both random digit dial and address-based sampling, a combination that provides statistically valid representation of the United States population in a way that attends to the challenges presented by cell phone-only households and that ensures representation of communities that are often difficult to reach in sexuality-related research. We provide an in-depth overview of the methods within each of the papers contained in this supplement.

While we believe that the NSSHB provides a valuable snapshot of sexual health and sexual behaviors for an expansive range of the United States population, studies of this nature inherently have limitations, and when considering this study within the context of others to which it may be compared, some of these limitations should be discussed in addition to the specific limitations discussed within each paper. Although the NSSHB did include the collection of some qualitative data, it was highly quantitative in nature. As a result, it cannot offer much of the rich contextual insights that were available in other studies that used in-depth interview methods, particularly those conducted by Kinsey and those used in the NHSLS. While the NSSHB contains data that allows for comparisons across the lifespan, one such strength of the other studies that employed interview methods is that they allowed for the collection and consideration of data *within* the context of one's place within their lifespan and their lived experiences to date. Also inherent in data from both this and the other national studies of sexual behavior is that, while they offer a representative assessment of the United States population on the whole, none have oversampled those who identify as homosexual or bisexual. Although papers in this supplement do provide data related to same-gender sexual interactions (among individuals of all reported sexual orientations), future analyses and publications will provide additional data on both behaviors by sexual orientation and same-gender behaviors overall. However, there remains the need for research of this nature to include mechanisms that more fully attend to the complexities of establishing representative samples of individuals of varying sexual orientations.

Funding for the NSSHB

Funding for the NSSHB was provided by Church & Dwight Co., Inc. In 2007, our team entered into a strategic scientific partnership with Church & Dwight Co., Inc., known to sexual and public health professionals for their Trojan brand condoms. This partnership has the goal of addressing critical knowledge gaps related to the manner in which individuals make health-related decisions once they decide to become sexually active and to better bridge public health research with the sexual health promotion activities and products to which American consumers are exposed daily. To facilitate this partnership, our mutual teams work to demonstrate a model for collaboration between academic and corporate partners that is grounded by principles of participatory research and the highest levels of scientific integrity. Our team is grateful for the support provided by Church & Dwight Co., Inc., and to their commitment to advancing a scientific understanding of sexual health in the United States, which resulted in a study of this nature for which funding from any other entity has not been made available for close to two decades.

Acknowledgments

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COMMENTARIES

Looking at Sexual Behavior 60 Years after Kinsey

Irwin Goldstein, MD, Editor-in-Chief

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More than 60 years ago Alfred C. Kinsey, then a Professor of Zoology, and his colleagues at Indiana University, Wardell B. Pomeroy and Clyde E. Martin shook the academic scientific world with one of the first-ever, large-scale evidence-based reports in human sexuality entitled "Sexual Behavior in the Human Male".

As Dr. Kinsey explained, the study was undertaken because students were asking him questions on matters of sex. They hoped that he would provide them with factual information in working out their patterns of sexual behavior. These same students found it difficult to obtain factual information free of moral, philosophic, or social interpretations.

The monumental Kinsey undertaking involved recording testimonials and interviews from 12,000 individuals, young and old, from various socioeconomic backgrounds and different races. A total of 5,300 males participated in the 1948 study. But the success of the Kinsey study was based on more than the size of the population studied. Kinsey's group not only investigated one of the least studied of all human biologic functions, but they performed this difficult research without discrimination, with an intense thoroughness, and with a high level of objectivity. The data presented were noteworthy in that they were free of the social, cultural, and political taboos that almost always accompany human sexual behavior.

Alan Gregg of the Rockefeller Foundation, the agency that funded this research, wrote the following: "*Certainly no aspect of human biology in our current civilization stands in more need of scientific knowledge and courageous humility than that of sex. . . As long as sex is dealt with in the current confusion of ignorance and sophistication, denial and indulgence, suppression and stimulation, punishment and exploitation, secrecy and display, it will be associated with a duplicity and indecency that lead neither to intellectual honesty nor human dignity.*"

In the history of sexual medicine, Kinsey and Indiana University will always be regarded as the place that opened the door, long closed to thorough and careful scientific research in the field. In essence, current sexual medicine journals, such as *The Journal of Sexual Medicine* (JSM) would not exist without the groundbreaking work of Kinsey and his colleagues. Later researchers such as Masters and Johnson and Helen Singer Kaplan, kept the research door open. It was, however, Kinsey's home, Indiana University, that became one of the true centers of the universe when it came to human sex research. And it has been maintained as a home for such innovative research.

In 1953, seven years after their first publication, Kinsey, Pomeroy, Martin and Paul H. Gebhard of the Institute for Sex Research at Indiana University published the first-ever, large-scale, population-based and evidence-based scientific work in women's sexual behavior entitled "Sexual Behavior in the Human Female." Nearly 8,000 women contributed data. In this book, Robert M. Yerkes and George W. Corner as members of the National Research Council wrote: "*The current report makes a notable contribution of fact in replacement of ignorance and of inadequately verified surmise. We look forward to the possibility that the Institute for Sex Research may long serve to inform, enlighten and guide us in an area where knowledge and understanding may affect the very existence of the genus Homo. We, as scientists, have large faith in the values of knowledge, little faith in ignorance.*"

There are havens for all kinds of research in the United States. Sex research and sexual medicine research continues at The Kinsey Institute at Indiana University. And just next door, figuratively, is the Center for Sexual Health Promotion. The Center is a collaboration of experts from both within Indiana University and the broader sexual health and sexual medicine community. At a time when we can have nudity on HBO but cannot use

the names of our genitals on the evening news, there remains a need to continue research on sexual health.

More than half a century after Kinsey, The Center for Sexual Health Promotion brings us all new knowledge in this wonderful and exciting yet understudied, and underfunded field of human sex research. This supplement exists as a result of extensive research performed at the Center for Sexual Health Promotion, bringing information relevant to those of us working in the field of sexual medicine. These also bring information relevant to the general public–just like Kinsey's work. And just like then, these papers contain material that is avant garde and often considered off limits because of the social, cultural, and political taboos that are inevitably linked to human sexual behavior.

The Journal of Sexual Medicine is proud to have been chosen to publish this outstanding body of work, comprised of a series of manuscripts that underwent the same extensive and detailed peer review process as all manuscripts in the *JSM*. Hopefully this supplement will inspire others to learn more about human sexual function and dysfunction. We now live in an era where we can discuss human sexual behavior openly. Thank you, Dr. Kinsey. Thank you, Indiana University. Thank you, Center for Sexual Health Promotion. Thank you, *JSM*.

Sex for Health and Pleasure throughout a Lifetime

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Sex is for more than procreation once or twice in life; sex is also for a lifetime of pleasure. While this is not news to anyone, it is not part of our national conversation. We have finally included masturbation in our national conversation and as a result stopped checking our hands for growing hair. Now it is time to include sex and sexuality as pleasurable and natural in open frank conversation about the human condition. Knowledge and open discussion are the paths to societal change that lead us away from viewing sexuality primarily in negative terms and towards viewing sexuality as a part of life that is wholesome and pleasurable.

We have a sexually dysfunctional society because of our limited views of sexuality and our lack of knowledge and understanding concerning the complexities and joys of humanity. We must revolutionize our conversation from sex only as prevention of pregnancy and disease to a discussion of pleasure. Talk concerning procreation is not enough, because it neither addresses accurately the varied sexuality of Americans nor the broad range of sexual practice.

It is difficult to have ubiquitous conversations about sexuality and sex for pleasure in the absence of accurate data about the actual sexual experiences that are common.

Researchers from Indiana University's Center for Sexual Health Promotion, School of Medicine and Kinsey Institute for Research in Sex, Gender, and Reproduction have used Internet-based Knowledge Networks to conduct a comprehensive assessment of sexual behaviors, condom use, and other sexual health indicators in Americans aged 14–94. The results of these nationally representative studies on sexual behavior in the United States across the lifespan are presented in this special issue.

These data are important for keeping the nation moving forward in the area of sexual health and well being. In the absence of scientific data available to construct an accurate and up-to-date view, opinions in the field of sexual science can vary widely from person to person. Without current data, it is impossible to make sound recommendations concerning sexual behavior to medical personnel, educators, and others who need to make decisions in this area. These papers offer tools we need to improve the health and decrease the dysfunction we have in the area of sexual behavior.

Studies in the area of sexuality, sexual health, and responsible sexual behaviors are critical to our understanding of what must be done to revolutionize sexual health in America. Accurate and assessable knowledge are keys to powerful and positive change. Such data is essential for numerous reasons.

- Thirty percent of our healthcare cost is related to sexuality.
- Some of our millennium goals are related to sexuality. Therefore, understanding the societal changes taking place in sexuality and sexual behaviors is essential.
- In order for physicians, nurses, pharmacists, and other healthcare professionals to provide sexual health information to their patients, they must first have the understanding of what the sexual behaviors are in the community and how they are manifested. They must understand that humans are sexual beings from birth to death.
- People are living longer and spending a greater portion of their lives as sexually active individuals.

Sexual health and responsible sexual behaviors remain a serious public health challenge in the United States and in societies around the world. The Surgeon General's Call to Action to Promote Sexual Health and Responsible Sexual Behavior was issued in 2001. It addressed the significant public health challenges regarding the sexual health of America and proposed three strategies for initiating a mature national dialogue on issues

of sexuality, sexual health, and responsible sexual behaviors [1]. The strategies covered three fundamental areas: 1) increasing public awareness of issues relating to sexual health and responsible sexual behaviors; 2) providing the health and social interventions necessary to promote and enhance sexual health and responsible sexual behavior; and 3) investing in research related to sexual health and disseminating findings widely.

Every parent, teacher, clergy member, and adult in our society must step up to the task of raising our children in a sexually healthy manner. Hiding from sexuality is not realistic when we know that humans are inherently sexual beings. We must all step up to change our sexually dysfunctional society into a wholesome attitude about our human sexuality.

Our valued children and adolescents are dependent upon adults to help them across the often-challenging developmental bridge to adulthood. We want them to be healthy, happy persons who will develop into adults who are wholesome, educated, and well rounded.

In order to attain this goal, we must have strategies to create sexually healthier communities through effective public policy. The best contraceptive in the world is a good education. A population that is well-educated and informed about sex, sexuality, and sexual health concerns, through age-appropriate, scientifically-based universal sexual education across the lifespan, is necessary. We must have age-appropriate, science-based comprehensive health education in schools from kindergarten to 12th grades, parent education and teach partner-shared sexual responsibility. Before patients reach puberty, health care providers should give counseling concerning changes the youth can anticipate. They should encourage abstinence while providing age-appropriate counseling to reduce risky sexual behaviors. Healthcare providers must develop policies for all office procedures to ensure privacy and confidentiality of adolescents [2].

We have both a moral and ethical responsibility to protect all children and adolescents in our community. We cannot withhold information from children, adolescents, or adults, live in silence about this taboo subject and expect everything to turn out all right. We have tried ignorance and it does not work.

A national conversation about the nature of sexuality could bring about a more wholesome understanding that will endure through many lifetimes as parents teach their children. A sexually healthy society must be our new goal for the 21st century.

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Time for Change: Rethinking and Reframing Sexual Health in the United States

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The data are both compelling and concerning. Each year more than 19 million sexually transmitted infections (STIs) are estimated to occur in the United States, with almost half of these infections occurring among young persons aged 15 to 24 years [1]. One in four women aged 14–19 years is infected with at least one STI [2], and there are an estimated 1.1 million Americans living with HIV, with over 55,000 new infections per year [3]. The annual direct and indirect costs associated with managing STIs, including HIV, are estimated at $15.9 billion per year [4,5]. One-half of all pregnancies in the United States are unintended [6], and rates of teenage pregnancies are again on the rise after a decade of relative stabilization [7]. There is growing concentration of adverse sexual and reproductive health outcomes among the economically disadvantaged or socially marginalized [8–9], challenging our work to achieve sustained improvements in health for all persons in the United States. Today, men who have sex with men (MSM) of all races, young people, African Americans, and Hispanic/Latinos bear a severe, pervasive, and disproportionate burden of many of these and other adverse health outcomes [10]. The enormity of the challenges appears daunting—it's time for change.

It is time for us to question whether this status quo is either acceptable or just. While individual-level sexual risk behaviors are among the strongest predictors of STI acquisition, there is now a greater appreciation of the role of interpersonal, network, community, and societal level influences on the sexual health of individuals and communities [11]. As our understanding of the complex and dynamic interactions between these multi-layered determinants evolve, they challenge communities, practitioners, and policymakers to question long-held beliefs regarding the role and responsibilities of individuals, clinical, and public health services. Similarly, generational changes resulting from major demographic shifts in sexual attitudes and behaviors, combined with the global expansion of the internet; mobile technology; social networking; novel patterns of sexual mixing; globalization of sex work; and technological advances in preventive, diagnostic, and clinical services, suggest that simultaneous evolutions in our practice are required to remain relevant and effective in today's society [12].

Nowhere is this challenge to the status quo in the United States more clearly articulated than in the recently released National HIV/AIDS Strategy (NHAS) [13]. The strategy establishes a clear vision for change, promotes improved interagency cooperation to achieve concrete goals focused on reducing incidence of HIV and health disparities, and improving access to quality care. The NHAS calls for the use of evidence-based strategies to intensify interventions with individuals and communities in greatest need, while scaling these efforts for maximum impact.

It is within these contexts that the studies on sexual health and behavior presented in this supplemental issue take on new and exciting relevance. The papers present long overdue data from the United States that provide an excellent opportunity to assess critically the impact of our efforts to improve sexual and reproductive health over the past two decades. They also provide a strong foundation on which our future health protection activities can be based. Public health can only assert its role in this evolving domain with a strong commitment to the systematic measurement and tracking of the nation's sexual attitudes and behaviors; a more critical approach to selecting, implementing, and bringing to scale the most

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effective evidence-based interventions; and fostering a sustained commitment to maintaining supportive policy environments for success.

Robust data provide the cornerstone for an effective public health response. Population-based surveys of sexual health and behavior are critical to informing effective health policy; identifying gaps and opportunties for service provision; determining community health needs; developing culturally competent interventions; and providing evidence to characterize normative, diverse, and evolving sexual attitudes and behaviors. Although methodologically complex, expensive, and infrequently undertaken, these national probability sample surveys also enable cross-national comparative analyses, with the ability to examine heterogeneity within and between population subgroups of interest [14]. The insights obtained on the patterns and distribution of sexual behavior, use, and uptake of sexual health services and interventions, and the prevalence of relevant sexual attitudes and social norms should help guide the development and provision of sexual and reproductive services, professional training, and resource allocation, especially in the new era of health reform in the U.S.

The study findings confirm the results of previous sex surveys regarding the heterogeneity between and within demographic groups with age, gender, sexual orientation, marital status, geographic area of residence, and socio-economic status being major determinants of sexual attitudes, behaviors, and health outcomes. Especially important, the studies provide updated population-based estimates on infrequently examined subgroups, for example those aged over 65 years, or infrequently reported sexual practices. By highlighting the evolution of sexual practices, health needs and the role of sexual relationships over the lifespan, we obtain new insights on how sexual health is understood, achieved and maintained by individuals, and their partners, over time. These insights allow us to re-conceptualize and design approaches and policies to improve sexual health based upon contemporary realities and contexts, rather than received beliefs or ideology. Ultimately, these data challenge us to reconsider the nature of the "prevention toolkit" and urge a critical rethinking of its content. This requires the development of a broader range of evidence-based and culturally competent interventions that cover the lifespan and that can be adapted and tailored as needed.

By characterizing behavioral and attitudinal norms within the society, the findings in this issue confirm that not everyone is at equal risk of adverse sexual and reproductive health outcomes; that some potentially risky behaviors are quite prevalent; and highlight encouraging signs of individual and community resilience and commitment to maintaining sexual health. Understanding where risk behaviors are most prevalent; where infections are occurring; and where, when, and how best to intensify efforts to mitigate adverse health outcomes are important elements of enhancing our prevention and control efforts. The latter may involve using novel approaches, scaling-up existing interventions, or employing combinations of either of these for maximal impact. Strategic trade-offs between intervention efficiency, effectiveness, and coverage may need to be taken occasionally [15]. In this respect, the data from these studies will be especially useful in helping policy makers and program planners provide the required leadership to acknowledge and incorporate the rapidly changing external environments; adopt more comprehensive and holistic efforts, shifting away from the usual disease-specific focus; and address the devastating impact of stigma and other social determinants of health.

As we think about the challenges and opportunities ahead, realigning our public health efforts to incorporate a more holistic frame of improving sexual health would be a major step in a bold new direction, and the data presented in this supplement provide a compelling case for change. As we prepare to implement the National HIV/AIDS Strategy, and reconsider roles and opportunities within a transformed health system, the stage is set for a long overdue reframing of our efforts to accelerate health impact. We must seize this moment.

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Commentary on the National Survey of Sexual Health and Behavior (NSSHB)

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It was with great interest and anticipation that I read the reports from the team at the Center for Sexual Health Promotion at Indiana University. A comprehensive study of sexual and sexual health-related behaviors in the United States hasn't been conducted in almost two decades—far too long. The data and insights from this new research will guide future thoughts, plans, research, and ultimately, education and advocacy efforts in the field of sexual health.

Certainly, the study will help inform our work at the American Social Health Association (ASHA). Since 1914 ASHA has advocated on behalf of patients to help improve public health outcomes, with an emphasis on sexually transmitted infections (STIs). We have always felt that knowledge was key, and this research into sexual behavior across the life course is critically important if we are going to stem the tide of rising rates of unintended pregnancy and STIs. In our efforts to address this, ASHA has made a shift in recent years from an emphasis on disease and prevention to a more positive model focused on sexual health. This shift is predicated on the assumption that this new positive, health-centered approach will allow us to reach people in new ways we've not accomplished before. But understanding where people are in their thoughts and behavior is key to making this change have real meaning, and this new study will provide us valuable insights as we move forward.

Of particular value is the scope and breadth of this work. The study affords us a view of sexual behaviors and attitudes of men and women across the lifespan, from adolescents to midlife and older adults, as well as highlights issues relevant to specific populations, including black and Hispanic men and women. It fills in gaps in our knowledge and is critical to our understanding of areas of opportunity for organizations such as ASHA to communicate more effectively and make an impact on issues related to sexuality and sexual health. The data on condoms is an excellent example. Beyond abstinence, condoms are the most effective way to prevent both STIs and unintended pregnancy, and thus insights from this study help increase our understanding of who is using condoms, and when. While the data suggests that adolescents do indeed have the capacity to be sexually responsible if given the educational and other tools needed, it also indicates an education and communication gap—and a corresponding opportunity to fill that gap.

At ASHA, we know from our own work communicating with the public that there is not clarity on how to use a condom *effectively*. Condoms are, of course, most effective when used both consistently and correctly, and evidence suggests this is an area where adolescents may fall short. In one telling study from the *Archives of Pediatrics and Adolescent Medicine* [1], researchers noted that "The most prevalent condom error reported by adolescents in our study was starting sex without a condom, reported by more than 40% of condom users . . . other studies have reported prevalence of this error from 8% to 38% among university students." So research suggest that teens are using condoms, and seem to understand the value of condoms for contraception, but may not be using condoms as effectively as they could be. This knowledge allows us to target our education and communication efforts to this population, focusing not on simply encouraging use, but emphasizing *effective* use.

Of course these messages are important for people of all age groups, yet again we look to the data to guide our understanding and the development of appropriate communication. The study shows condom use declines as people age, with an initial decline in the 20s continuing into midlife and beyond, with only 20% of men and 25% of women 50 and older reporting condom use. This isn't due to a lack of sexual activity; with the

widespread use of drugs to treat erectile dysfunction, older adults are sexually active, but freed from concerns about contraception by virtue of age, they remain unclear or unaware about the need to continue protecting themselves and their partners from STIs. While messages geared toward adolescents and older adults would necessarily take a different approach in style, we can see the need for clear differences in substance as well.

The data and analysis presented here are both exciting and important for the field, but there is still so much more we need to know. Even limited to the subject of condoms, there are many more questions to explore. We need more research on same gender sexual interaction, on the role partner communication plays in condom negotiation and the tools needed, and on effective methods for instructing condom users in order to reduce user errors. Beyond condoms, there is much in this research, from health disparities among black and Hispanic populations to same sex sexual behaviors, that calls for additional study. Yet this effort by the Indiana University team, and leadership and foresight from Church & Dwight, is a significant step forward, and I can only hope continued research in this area will advance the national dialogue on sexual health and health promotion.

In 2000, then Surgeon General David Satcher issued a national "Call to Action" on sexual health. Since that time, very little has been done. I hope that this new research will reinvigorate the public health and medical communities and compel all of us—professionals, parents, clergy, teachers—to heed Dr. Satcher's call to "begin a mature and thoughtful discussion about sexuality." As he so clearly states, "Doing nothing is unacceptable."

We applaud this effort and look forward to future findings from this and other research projects.

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ORIGINAL RESEARCH

Sexual Behavior in the United States: Results from a National Probability Sample of Men and Women Ages 14–94

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ABSTRACT

Introduction. Despite a demonstrated relationship between sexual behaviors and health, including clinical risks, little is known about contemporary sexual behavior.

Aims. To assess the rates of sexual behavior among adolescents and adults in the United States.

Methods. We report the recent (past month, past year) and lifetime prevalence of sexual behaviors in a nationally representative probability sample of 5,865 men and women ages 14 to 94 in the United States (2,936 men, 2,929 women).

Main Outcome Measures. Behaviors assessed included solo masturbation, partnered masturbation, giving and receiving oral sex, vaginal intercourse, and anal intercourse.

Results. Masturbation was common throughout the lifespan and more common than partnered sexual activities during adolescence and older age (70+). Although uncommon among 14- to 15-year olds, in the past year 18.3% of 16- to 17-year-old males and 22.4% of 16- to 17-year-old females performed oral sex with an other-sex partner. Also in the past year, more than half of women and men ages 18 to 49 engaged in oral sex. The proportion of adults who reported vaginal sex in the past year was highest among men ages 25–39 and for women ages 20–29, then progressively declined among older age groups. More than 20% of men ages 25–49 and women ages 20–39 reported anal sex in the past year. Same-sex sexual behaviors occurring in the past year were uncommonly reported.

Conclusions. Men and women engage in a diverse range of solo and partnered sexual behaviors throughout the life course. The rates of contemporary sexual behavior provided in this report will be valuable to those who develop, implement, and evaluate programs that seek to improve societal knowledge related to the prevalence of sexual behaviors and to sexual health clinicians whose work to improve sexual health among the population often requires such rates of behavior. **Herbenick D, Reece M, Schick V, Sanders SA, Dodge B, and Fortenberry JD. Sexual behavior in the United States: Results from a national probability sample of men and women ages 14–94. J Sex Med 2010;7(suppl 5):255–265.**

Key Words. Sexual Behavior; Adolescents; Adults; Probability Sample; United States

Introduction

Sexual health emerged during the past decade as a key unifying concept addressing clinical and public health issues as diverse as unintended pregnancy among adolescents, sexually transmitted infections (STI) among young adults, and sexual dysfunctions among older adults [1–3]. In 2002, the World Health Organization (WHO) described sexual health as ". . . a state of physical, emotional, mental and social well-being related 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 responses, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence." [4]

Nationally representative up-to-date data about human sexual behavior are required to fully translate the WHO definition into public health policy and practice and to provide physicians with a suitable basis for understanding sexuality through the life course. Relatively recent national surveys (e.g., the National Survey of Family Growth [NSFG], the Youth Risk Behavior Survey, and the National Social Life, Health, and Aging Project [NSHAP]) had limited age ranges and explored a narrow range of sexual behaviors [5–7]. The most recent nationally representative survey of adult sexual behavior in the United States, conducted in 1992, was limited to adults aged 18 to 60 [8].

Much has changed since 1992 that may have influenced sexual behavior in the United States. Previously less common sexual behaviors such as oral and anal sex appear to have become more widely practiced [9–11]. Changes in oral–genital behaviors may be linked to increased rates of genital infections by Type 1 herpes simplex viruses and to increased rates of oropharyngeal cancer linked to human papilloma virus infections [12,13]. The Internet has influenced sexual knowledge, norms, and behaviors [14,15]. A vaccine for prevention of cancers associated with sexually transmitted human papilloma virus infections has been marketed amid concern about its influence on sexual behaviors [16]. Since 1997, over $1.5 billion of federal funding for abstinence-only sexuality education has been in place although with equivocal evidence of efficacy [17,18]. Since 1998, oral medications to treat erectile dysfunction have been available; more than 6 million outpatient prescriptions were written for sildenafil in the 6 months following approval by the United States Food and Drug Administration [19]. Attitudes toward same-sex relationships have changed, with same-sex marriage and civil unions now legally recognized in several U.S. states [20]. As such, there is a need for nationally representative data that adequately captures contemporary American sexual behavior given these many social and historical changes.

Aims

The purpose of this study, the National Survey of Sexual Health and Behavior (NSSHB), was to assess solo and partnered sexual behaviors in a national probability sample of men and women ages 14–94 years and to thus provide a comprehensive snapshot of American sexual behavior over a wide range of the sexual life course.

Methods

Data Collection

During March–May 2009, NSSHB data were collected using a population-based cross-sectional survey of adolescents and adults in the United States via research panels of Knowledge Networks (Menlo Park, CA, USA). Research panels accessed through Knowledge Networks are based on a national probability sample established using both random digit dialing (RDD) and an address-based sampling (ABS) frame. ABS involves the probability sampling of a frame of residential addresses in the United States derived from the U.S. Postal Service's Delivery Sequence File, a system that contains detailed information on every mail deliverable address in the United States. Collectively, the sampling frame from which participants are recruited covers approximately 98% of all U.S. households. Randomly selected addresses are recruited to the research panel through a series of mailings and subsequently by telephone follow-ups to nonresponders when possible. To further correct sources of sampling and nonsampling error, study samples are corrected with a post-stratification adjustment using demographic distributions from the most recent data available from the Current Population Survey (CPS), the monthly population survey conducted by the U.S. Bureau of the Census considered to be the standard for measuring demographic and other trends in the United States. These adjustments result in a panel base weight that was employed in a probability proportional to size (PPS) selection method for establishing the samples for this study. Population specific distributions for this study were based upon the December 2008 CPS [21].

Once the sample frame was established, all individuals within that frame received a recruitment message from Knowledge Networks that provided a brief description of the NSSHB and invited them to participate. Adolescent recruitment included obtaining consent from a parent (or legal guardian) and, if provided, subsequently from the adolescent. A total of 2,172 parents (or legal guardians) reviewed a study description, including the survey, and 62% (N = 1,347) consented for

their child to be invited to participate. Of 1,347 adolescents contacted electronically, 831 responded, with 99.0% (N = 820) consenting to participate. An electronic recruitment message was sent to 9,600 potential adult participants, of whom 6,182 (64%) responded, with 82% (N = 5,045) consenting to participate. All study protocols were approved by the Institutional Review Board of the primary authors' academic institution.

All data were collected by Knowledge Networks via the Internet; participants in a given Knowledge Networks panel were provided with access to the Internet and hardware if needed. Multiple researchers have used Knowledge Networks for multiple health-related studies, substantiating the validity of such methods for obtaining data from nationally representative samples of the U.S. population [22–28].

Main Outcome Measures

Some participant characteristics were previously collected by Knowledge Networks for purposes of sample stratification and for sample adjustments using post-stratification data weights. These measures included gender, age, race (black, Hispanic, white, other), U.S. geographic region (Midwest, North, South, West), and sexual orientation (heterosexual/straight, homosexual/gay/lesbian, bisexual, asexual, other). Household income included an adult's reported household income; for adolescents household income was reported by their parent or guardian. Additionally, level of educational attainment and marital status were collected from adult participants.

Participants were asked to report whether or not they had engaged in certain solo and partnered sexual behaviors and, if so, how recently each behavior had occurred (never, within the past month, within the past year, more than 1 year ago), consistent with other nationally representative studies of sexual behaviors [27,28].

Measures of oral sex were specific to the participant's role and partner's sex (receiving from male, receiving from female, giving to female, giving to male). Also assessed were receptive (men and women) and insertive (men only) anal intercourse.

Analyses

The proportions of participants reporting histories of participating in each sexual behavior are reported based upon whether that behavior occurred within the past month, past year, or at some other point during one's lifetime. For each percentage of individuals reporting a history of participating in a behavior during the specified periods of time, corresponding 95% confidence intervals using the Adjusted Wald method [29,30], were calculated and are presented by age group. During analyses, post-stratification data weights were applied to reduce variance and minimize bias caused by nonsampling error. Distributions for age, race, gender, Hispanic ethnicity, education, and U.S. census region were used in post-stratification adjustments. These distributions were based upon the December 2008 CPS [21].

Results

A total of 5,865 individuals (2,936 men, 2,929 women) ages 14 to 94 years participated. The weighted demographic characteristics of the sample are presented in Table 1.

Men's Sexual Behaviors

Men's sexual behaviors are presented in Table 2.

Masturbation

Solo masturbation was reported with the most consistency, as 27.9% to 68.6% of men in each age group reported masturbation during the past month. The majority of men in all age groups reported masturbation during the past year with the exception of the 14- to 15-year-old and 70+ age groups. Solo masturbation (past month and past year) was more commonly reported than most partnered sexual behaviors for ages 14 through 24 years and among those aged 50 years or older.

Vaginal Intercourse

Although most men in the 18- to 19-year-old age group had experienced vaginal intercourse, it was not a fixed aspect of every man's experience. For example, although about 85% of men in their 20s and 30s reported engaging in vaginal intercourse in the previous year, this proportion decreased to 73.6% among men in their 40s and to 57.9% among men in their 50s. For men ages 25 to 49 years, vaginal intercourse was more common than other sexual behaviors.

Partnered Noncoital Behaviors

Partnered noncoital behaviors were reported by at least some men in all age groups. Although a minority of those ages 14–15 years had ever engaged in partnered masturbation (5.7%) or received oral sex from a female (13.0%), among the 16- to 17-year-old cohort, approximately one-fifth reported having engaged in partnered mas-

Table 1 Weighted participant characteristics (N = 5,865)

	Adolescents (N = 820)				Adults (N = 5,045)			
	Males N = 414 (50.5%)		Females N = 406 (49.5%)		Males N = 2,522 (49.9%)		Females N = 2,523 (50.1%)	
Characteristics	N	%	N	%	N	%	N	%
Gender								
Males	414	100.0	—	—	2,522	100.0	—	—
Females	—	—	406	100.0	—	—	2,523	100.0
Age								
14–15	193	46.7	190	46.8	—	—	—	—
16–17	221	53.3	216	53.2	—	—	—	—
18–19	—	—	—	—	73	2.9	50	2.0
20–24	—	—	—	—	203	8.1	145	5.8
25–29	—	—	—	—	341	13.5	394	15.6
30–39	—	—	—	—	410	16.2	430	17
40–49	—	—	—	—	522	20.7	502	19.9
50–59	—	—	—	—	466	18.5	452	17.9
60–69	—	—	—	—	322	12.8	342	13.6
≥70	—	—	—	—	184	7.3	207	8.2
Race or ethnic group	(N = 413)		(N = 405)					
White	253	61.3	241	59.6	1,735	68.8	1,737	68.8
Hispanic	77	18.6	74	18.2	376	14.9	317	12.6
Black	55	13.4	59	14.6	250	9.9	303	12.0
Other	28	6.7	31	7.6	161	6.4	166	6.6
Sexual orientation					(N = 2,521)		(N = 2,521)	
Heterosexual	398	96.1	367	90.5	2,325	92.2	2,348	93.1
Gay or Lesbian	7	1.8	1	0.2	105	4.2	23	0.9
Bisexual	6	1.5	34	8.4	66	2.6	92	3.6
Other	2	0.1	3	0.9	25	1	58	2.3
Geographic region			(N = 405)					
South	145	35.0	143	35.4	922	36.5	1,065	36.4
West	96	23.2	96	23.7	591	23.4	668	22.8
Midwest	95	23.0	92	22.7	552	21.9	622	21.1
Northeast	78	18.7	74	18.2	458	18.1	573	19.7
Education completed†								
Less than high school	—	—	—	—	342	13.6	290	11.5
High school	—	—	—	—	757	30.0	760	30.1
Some college	—	—	—	—	685	27.2	750	29.7
College degree or higher	—	—	—	—	737	29.2	723	28.7
Marital status†								
Married	—	—	—	—	1,206	47.8	1,118	44.3
Never married	—	—	—	—	709	28.1	601	23.8
Divorced	—	—	—	—	278	11.0	334	13.2
Living with partner	—	—	—	—	227	9.0	222	8.8
Widowed	—	—	—	—	53	2.1	185	7.3
Separated	—	—	—	—	50	2.0	63	2.5
Annual income ($)‡								
<25,000	52	12.6	52	12.8	506	20.1	605	24.0
25,000–49,999	86	20.8	92	22.6	745	29.6	773	30.7
50,000–74,999	86	20.8	85	21.0	522	20.7	548	21.7
≥75,000	190	45.8	177	43.6	749	29.7	597	23.7

†Education and marital status data presented only for adult participants.
‡Income levels for adolescents based on parental income level reported by parent or guardian.

turbation and one-third having received oral sex from a female partner. The highest proportions who reported having engaged in recent (past month) partnered masturbation and who reported oral sex with a woman (giving and receiving) were between 25 and 49 years.

Anal Intercourse

Insertive anal intercourse was less common than other partnered behaviors but was not rare, being reported in the past year by more than 5% of 16- to 19-year olds, 10.8% of those ages 20–24 years, greater than 20% of those 25–49 years and 11.3% of men in their fifties. More than 40% of men ages 25–59 years reported ever having engaged in insertive anal intercourse during their lifetime.

Same-Sex Sexual Behavior

Sexual activity between men was relatively uncommon. Among men ages 18 to 59, 4.8% to 8.4% reported having received oral sex from another man in the previous year. However, 13.8% of men

ages 40–49 years and 14.9% ages 50–59 years reported such lifetime behavior. A total of 4.3% to 8.0% of men aged 18–59 years reported having performed oral sex on another man in the previous year; however, more than 10% of men in the 18–19, 40–49, and 50–59 age groups reported having ever engaged in this behavior. Receptive penile-anal intercourse was the least common behavior reported (less than 6% of men in any age group in the past year). Lifetime receptive anal intercourse was most prevalent among 20- to 24-year olds (10.8%) and those aged 40–49 and 50–59 years (8.5% and 9.5%, respectively).

Women's Sexual Behaviors

Women's sexual behaviors are presented in Table 3.

Masturbation

Solo masturbation was reported by more than 20% of women in all age groups during the past month and by more than 40% of all women within the past year, with the exception of those over 70 years. A greater proportion of those ages 14 to 17 reported lifetime solo masturbation compared with any other sexual behavior.

Vaginal Intercourse

Beginning with women ages 18–19 years (26.0% of women reported solo masturbation and 43.1% reported vaginal intercourse during the previous month), vaginal intercourse was the sexual behavior that more women in all age groups reported as having occurred during the past month compared with all other sexual behaviors assessed. Beginning in the cohort in their thirties, increasing proportions of women reported having had no vaginal intercourse during the previous year; this was the case for approximately one-fourth of women ages 30–39, nearly 1/3 of women 40–49, one-half of women ages 50–59, and ultimately nearly four-fifths of women ages 70 years and older.

Partnered Noncoital Behaviors

Masturbation with a partner during the previous month and year was most commonly reported by women ages 16 through 49 and most women between the ages of 25–49 reported this behavior in their lifetime. Approximately 10% of 14- to 15-year-old women and 23.5% of 16- to 17-year-old women reported receiving oral sex from a male partner in the previous year. More than half of women in the age groups between 18 and 49 had received oral sex from a male partner in the previous year as had 34.2% of females ages 50–59 and 24.8% of females ages 60–69 years.

A total of 11.8% of 14- to 15-year-old women and 22.4% of 16- to 17-year-old women reported having given oral sex to a male partner in the past year. Also, most women in the age groups between 18 and 49 years reported having given oral sex to a man in the past year. Oral–genital sex given to male partners during the previous month was rarely reported by women in the 70+ age group in the past year (6.8%) though 42.7% had done so in their lifetime.

Anal Intercourse

A total of 4% or less of 14- to 17-year-old women and those aged 50 or older reported anal intercourse in the previous year. However, 18.0% of 18- to 19-year-old females and more than 20% of those between the ages of 20 and 39 reported anal sex in the past year. Lifetime anal sex was reported by 40% or more of women ages 20–49 years, and by about 30% or more of women ages 50–69 years.

Same-Sex Sexual Behavior

Sexual activity between women was relatively uncommon. Fewer than 5% of women in most age groups reported having received oral sex in the past year from a female partner, with the exception of the 8.5% of women ages 20–24 who reported having performed oral sex on a woman in the past year. A total of 2.0% to 9.2% of those ages 16 to 49 years reported having given oral sex to another woman in the past year.

Discussion

These findings provide a detailed picture of solo and partnered sexual behavior through a lifespan, showing that one's sexual repertoire varies across different age cohorts, with masturbation relatively more common in young and older individuals and vaginal intercourse being more common than other sexual behaviors from early to late adulthood. Partnered noncoital sexual behaviors (oral and anal sex) also appear to be well established aspects of a contemporary sexual repertoire in the United States. The baseline rates of behavior established by the analyses provided in this report will be helpful to sexuality educators who develop, implement, and evaluate programs that seek to improve societal knowledge related to the prevalence of sexual behaviors and to sexual health clinicians whose work to improve sexual health among the population often requires such rates of behavior.

Although the largest proportion of adults reported vaginal intercourse during the past month throughout most of the reproductive year

Table 2 Men's sexual behaviors past month, past year, and lifetime (N = 2,857)

	Adolescents (N = 410)		Adults		
	14–15	16–17	18–19	20–24	25–29
	191	219	72	196	334
	Percent (95% confidence interval)				
Masturbated alone					
Past month	42.9% (36.1%–50.0%)	58.0% (51.4%–64.3%)	61.1% (49.5%–71.5%)	62.8% (55.8%–69.3%)	68.6% (63.4%–73.3%)
Past year	62.1% (55.0%–68.7%)	74.8% (68.6%–80.1%)	80.6% (69.9%–88.2%)	82.7% (76.8%–87.4%)	83.6% (79.2%–87.2%)
Lifetime	67.5% (60.6%–73.7%)	78.9% (73.0%–83.8%)	86.1% (76.1%–92.5%)	91.8% (87.0%–95.0%)	94.3% (91.2%–96.4%)
Masturbated with partner					
Past month	3.6% (1.6%–7.4%)	7.1% (4.3%–11.4%)	14.5% (8.0%–24.6%)	15.0% (10.6%–20.7%)	20.5% (16.5%–25.2%)
Past year	5.2% (2.7%–9.4%)	16.0% (11.7%–21.5%)	42.0% (31.3%–53.5%)	43.5% (36.7%–50.5%)	49.3% (44.0%–54.6%)
Lifetime	5.7% (3.1%–10.1%)	20.3% (15.5%–26.1%)	49.3% (38.1%–60.6%)	54.5% (47.5%–61.3%)	69.0% (63.8%–73.7%)
Received oral from female					
Past month	7.8% (4.7%–12.6%)	17.5% (13.0%–23.1%)	22.9% (14.6%–33.9%)	34.7% (28.4%–41.6%)	45.5% (40.2%–50.9%)
Past year	11.9% (8.0%–17.3%)	30.9% (25.1%–37.3%)	53.6% (42.2%–64.6%)	62.8% (55.8%–69.3%)	77.2% (72.4%–81.4%)
Lifetime	13.0% (8.9%–18.6%)	34.4% (28.4%–40.9%)	59.4% (47.9%–70.0%)	73.5% (66.9%–79.2%)	91.0% (87.4%–93.7%)
Received oral from male					
Past month	0.5% –(0.2%–3.2%)	1.4% (0.3%–4.2%)	1.5% –(0.4%–8.3%)	5.2% (2.8%–9.4%)	1.2% (0.4%–3.2%)
Past year	0.5% –(0.2%–3.2%)	2.8% (1.2%–6.1%)	5.9% (2.0%–14.3%)	6.2% (3.5%–10.6%)	4.8% (2.9%–7.7%)
Lifetime	1.6% (0.3%–4.8%)	3.2% (1.4%–6.6%)	8.8% (3.9%–17.9%)	9.3% (5.9%–14.3%)	7.6% (5.2%–11.0%)
Gave oral to female					
Past month	2.6% (0.9%–6.1%)	13.8% (9.8%–19.0%)	20.3% (12.5%–31.1%)	28.1% (22.3%–34.8%)	40.4% (35.3%–45.7%)
Past year	7.8% (4.7%–12.6%)	18.3% (13.7%–24.0%)	50.7% (39.4%–61.9%)	54.9% (47.9%–61.7%)	73.5% (68.5%–78.0%)
Lifetime	8.3% (5.1%–13.2%)	20.2% (15.4%–26.0%)	60.9% (49.3%–71.4%)	70.9% (64.2%–76.8%)	85.6% (81.4%–89.0%)
Gave oral to male					
Past month	1.0% (0.0%–3.9%)	0.9% (0.0%–3.5%)	1.4% –(0.5%–8.2%)	5.2% (2.8%–9.4%)	2.7% (1.4%–5.1%)
Past year	1.0% (0.0%–3.9%)	2.3% (0.8%–5.4%)	4.3% (1.0%–12.2%)	6.7% (3.9%–11.2%)	4.8% (2.9%–7.7%)
Lifetime	1.6% (0.3%–4.8%)	2.8% (1.2%–6.1%)	10.1% (4.8%–19.5%)	9.3% (5.9%–14.3%)	6.3% (4.1%–9.5%)
Vaginal intercourse					
Past month	7.9% (4.8%–12.7%)	16.1% (11.8%–21.6%)	31.0% (21.5%–42.5%)	52.0% (45.0%–58.9%)	74.4% (69.5%–78.8%)
Past year	8.9% (5.6%–13.9%)	30.3% (24.6%–36.7%)	52.8% (41.4%–63.9%)	63.3% (56.4%–69.7%)	85.7% (81.5%–89.1%)
Lifetime	9.9% (6.4%–15.0%)	30.3% (24.6%–36.7%)	62.5% (50.9%–72.8%)	70.3% (63.6%–76.3%)	89.3% (85.5%–92.2%)
Inserted penis into anus					
Past month	0.5% –(0.2%–3.2%)	1.4% (0.3%–4.2%)	0% –(1.0%–6.1%)	6.2% (3.5%–10.6%)	10.3% (7.4%–14.1%)
Past year	3.1% (1.3%–6.8%)	5.5% (3.1%–9.4%)	5.6% (1.8%–13.9%)	10.8% (7.1%–16.0%)	26.6% (22.1%–31.6%)
Lifetime	3.7% (1.7%–7.6%)	6.0% (3.5%–10.1%)	9.7% (4.5%–19.0%)	23.7% (18.3%–30.1%)	45.2% (39.9%–50.6%)
Received penis in anus					
Past month	1.0% (0.0%–3.9%)	0.9% (0.0%–3.5%)	1.4% –(0.5%–8.2%)	2.1% (0.6%–5.4%)	0.9% (0.2%–2.7%)
Past year	1.0% (0.0%–3.9%)	0.9% (0.0%–3.5%)	4.2% (1.0%–12.1%)	5.2% (2.8%–9.4%)	4.0% (2.3%–6.7%)
Lifetime	1.0% (0.0%–3.9%)	0.9% (0.0%–3.5%)	4.3% (1.0%–12.2%)	10.8% (7.1%–16.0%)	5.2% (3.2%–8.2%)

age cohorts, the reproductive years are not marked exclusively by potentially procreative sex. Sizable proportions of individuals ages 18 and 49 years reported solo masturbation, partnered masturbation, oral sex, and anal sex during the previous year, a common time frame between wellness visits, particularly for women.

Data about sexual activity in the previous year inform clinicians about the proportions of patients who are likely to have engaged in various sexual behaviors since their last clinical exam and who may benefit from annual, detailed sexual history taking. Also, the lack of sexual behavior experienced by some groups has clinical relevance. For example, the decreasing proportion of men in their forties engaging in vaginal intercourse may reflect, at least in part, a growing incidence of erectile dysfunction that may be related to cardiovascular disease or diabetes [31,32]. Similarly, the decreasing proportion of sexual activity among women as they age may, for some, reflect pain with vaginal intercourse (caused by vaginal dryness), lower libido, or other sexual health concerns [33,34].

Also related to important clinical concerns, the rates of behavior established in this report may be helpful to those dedicated to reducing rates of human immunodeficiency virus, STIs, and unintended pregnancy. The rates of these sexual health challenges do provide a rationale for continued surveillance of sexual behaviors among both adults and adolescents in order to inform health-related policy and practice. However, given the purpose of this particular report, the analyses presented do not consider the situational or partner-related variables that influence the extent to which a sexual behavior poses the potential for negative impacts to sexual health, and those using these data to substantiate public health programs should consider the lack of context that underlies the rates presented here. The NSSHB did collect such variables, and additional in-depth analyses from the NSSHB are presented in multiple other reports

Adults (N = 2,447)				
30–39 396	40–49 499	50–59 454	60–69 317	70+ 179
Percent (95% confidence interval)				
66.4% (61.6%–70.9%)	60.1% (55.7%–64.3%)	55.7% (51.1%–60.2%)	42.3% (37.0%–47.8%)	27.9% (21.8%–34.9%)
80.1% (75.9%–83.7%)	76.0% (72.1%–79.5%)	72.1% (67.8%–76.0%)	61.2% (55.7%–66.4%)	46.4% (39.2%–53.7%)
93.4% (90.5%–95.5%)	92.0% (89.3%–94.1%)	89.2% (86.0%–91.8%)	90.2% (86.4%–93.0%)	80.4% (73.9%–85.6%)
22.9% (19.0%–27.3%)	19.2% (16.0%–22.9%)	14.4% (11.5%–17.9%)	10.3% (7.4%–14.2%)	4.1% (1.9%–8.2%)
44.7% (39.9%–49.6%)	38.1% (33.9%–42.4%)	27.9% (24.0%–32.2%)	17.0% (13.2%–21.5%)	12.9% (8.7%–18.7%)
68.3% (63.6%–72.7%)	61.5% (57.2%–65.7%)	51.9% (47.3%–56.5%)	37.0% (31.9%–42.4%)	31.6% (25.2%–38.7%)
49.4% (44.5%–54.3%)	37.7% (33.6%–42.0%)	24.4% (20.7%–28.6%)	18.6% (14.7%–23.3%)	12.4% (8.3%–18.1%)
77.6% (73.2%–81.4%)	62.1% (57.8%–66.2%)	48.5% (43.9%–53.1%)	37.5% (32.3%–43.0%)	19.2% (14.1%–25.6%)
89.7% (86.3%–92.3%)	86.2% (82.9%–89.0%)	82.6% (78.8%–85.8%)	75.3% (70.3%–79.7%)	57.6% (50.3%–64.6%)
2.0% (0.9%–4.0%)	4.6% (3.1%–6.8%)	4.7% (3.1%–7.1%)	1.0% (0.2%–3.0%)	0% –(0.4%–2.5%)
5.5% (3.6%–8.2%)	5.8% (4.0%–8.2%)	8.4% (6.2%–11.3%)	2.6% (1.3%–5.1%)	2.4% (0.8%–6.0%)
9.0% (6.5%–12.3%)	13.8% (11.0%–17.1%)	14.9% (11.9%–18.5%)	8.7% (6.0%–12.4%)	7.7% (4.5%–12.7%)
38.1% (33.5%–43.0%)	32.6% (28.6%–36.8%)	20.8% (17.3%–24.8%)	14.3% (10.8%–18.6%)	12.4% (8.3%–18.1%)
68.7% (64.0%–73.1%)	57.4% (53.0%–61.7%)	44.1% (39.6%–48.7%)	34.3% (29.3%–39.7%)	24.3% (18.6%–31.1%)
88.2% (84.6%–91.0%)	84.4% (80.9%–87.3%)	77.3% (73.2%–80.9%)	72.5% (67.3%–77.1%)	61.6% (54.3%–68.4%)
2.8% (1.5%–5.0%)	4.7% (3.1%–7.0%)	6.4% (4.5%–9.1%)	1.3% (0.4%–3.4%)	0% –(0.4%–2.5%)
5.0% (3.2%–7.7%)	6.7% (4.8%–9.3%)	8.0% (5.8%–10.9%)	2.6% (1.3%–5.1%)	3.0% (1.2%–6.8%)
7.3% (5.1%–10.3%)	13.2% (10.5%–16.5%)	13.1% (10.3%–16.5%)	5.6% (3.5%–8.8%)	5.3% (2.7%–9.7%)
71.3% (66.7%–75.5%)	61.0% (56.7%–65.2%)	44.1% (39.6%–48.7%)	38.9% (33.7%–44.4%)	28.2% (22.1%–35.2%)
85.3% (81.5%–88.5%)	73.6% (69.6%–77.3%)	57.9% (53.3%–62.4%)	53.5% (48.0%–58.9%)	42.9% (35.9%–50.2%)
92.6% (89.6%–94.8%)	89.3% (86.3%–91.7%)	85.8% (82.3%–88.7%)	86.9% (82.7%–90.2%)	88.1% (82.5%–92.1%)
7.1% (4.9%–10.1%)	7.2% (5.2%–9.8%)	3.3% (2.0%–5.4%)	4.2% (2.4%–7.1%)	0% –(0.4%–2.5%)
23.9% (20.0%–28.3%)	21.2% (17.8%–25.0%)	11.3% (8.7%–14.6%)	5.8% (3.7%–9.0%)	1.7% (0.4%–5.1%)
44.5% (39.7%–49.4%)	43.1% (38.8%–47.5%)	40.4% (36.0%–45.0%)	26.7% (22.1%–31.8%)	13.8% (9.4%–19.7%)
1.3% (0.5%–3.1%)	2.0% (1.0%–3.7%)	2.9% (1.7%–4.9%)	0% –(0.2%–1.4%)	0% –(0.4%–2.5%)
3.3% (1.9%–5.6%)	4.4% (2.9%–6.6%)	4.6% (3.0%–7.0%)	6% (0.0%–2.4%)	1.7% (0.4%–5.1%)
6.3% (4.3%–9.2%)	8.5% (6.3%–11.3%)	9.5% (7.1%–12.6%)	3.8% (2.1%–6.6%)	4.7% (2.3%–9.0%)

that provide rates of condom use for both adolescents and adults [35], and those that consider the situational characteristics and potential health consequences of recent sexual events among both adolescents [36] and adults [37], including reports focused specifically on the aging population [38] and ethnic minorities [39].

Although not longitudinal, a strength of this study, compared with other studies that have focused on more narrow age ranges, is that a developmental trajectory of sexual expression is apparent. A minority of 14- to 17-year-old adolescents report engaging in partnered sexual activity with sharply raised proportions of partnered sexual behavior reported among 18- to 24-year olds. Although partnered sexual activity remains common throughout the 20s, 30s, and 40s, there is a clear decline in partnered activity for both genders in their 50s and 60s and a sharper decline as individuals reach age 70. The latter echoes findings from the recent NSHAP, which found substantial declines in sexual activity among individuals aged 74 or older in association with partner loss and health problems [7]. Of course, differences in sexual behavior between various age groups are likely to be influenced not only by development throughout the life course but also by cohort effects that reflect socialization related to sexuality.

Compared with the 1992 National Health and Social Life Survey (NHSLS), in this present study more men and women have engaged in oral sex and a significantly greater proportion have engaged in anal sex. The larger proportions of those who had engaged in anal sex were not limited to the youngest cohorts. Most participants in all adult (18+) age groups had engaged in oral sex with the exception of females in the 70+ age group, of whom slightly less than half had done so. Anal sex was reported by sizable proportions of adults ages 20 to 49 and twice the proportion of 18- to 19-year-old females reported lifetime receptive anal sex (20.0%) as the proportion of 18- to

Table 3 Women's sexual behaviors past month, year, and lifetime (N = 2,813)

	Adolescents (N = 400)		Adults		
	14–15	16–17	18–19	20–24	25–29
	188	212	50	142	383
N	Percent (95% confidence interval)				
Masturbated alone					
Past month	24.1% (18.5%–30.7%)	25.5% (20.1%–31.8%)	26.0% (15.8%–39.7%)	43.7% (35.8%–51.9%)	51.7% (46.7%–56.7%)
Past year	40.4% (33.6%–47.5%)	44.8% (38.3%–51.5%)	60.0% (46.2%–72.4%)	64.3% (56.1%–71.7%)	71.5% (66.8%–75.8%)
Lifetime	43.3% (36.4%–50.4%)	52.4% (45.7%–59.0%)	66.0% (52.1%–77.6%)	76.8% (69.2%–83.0%)	84.6% (80.6%–87.9%)
Masturbated with partner					
Past month	4.3% (2.1%–8.4%)	11.2% (7.6%–16.2%)	18.4% (9.8%–31.5%)	16.1% (10.9%–23.1%)	24.1% (20.1%–28.6%)
Past year	7.5% (4.4%–12.3%)	18.9% (14.2%–24.7%)	36.0% (24.1%–49.9%)	35.9% (28.5%–44.1%)	48.2% (43.2%–53.2%)
Lifetime	9.0% (5.6%–14.0%)	19.7% (14.9%–25.6%)	38.8% (26.5%–52.7%)	46.9% (38.9%–55.1%)	64.0% (59.1%–68.6%)
Received oral from female					
Past month	0% –(0.4%–2.4%)	2.3% (0.8%–5.5%)	0% –(1.4%–8.5%)	1.4% (0.1%–5.3%)	5% (0.0%–2.0%)
Past year	1.1% (0.1%–4.1%)	4.7% (2.5%–8.5%)	3.9% (0.3%–14.1%)	8.5% (4.8%–14.4%)	2.6% (1.4%–4.8%)
Lifetime	3.8% (1.7%–7.7%)	6.6% (3.9%–10.9%)	8.0% (2.6%–19.4%)	16.8% (11.5%–23.9%)	10.8% (8.0%–14.3%)
Received oral from male					
Past month	3.7% (1.7%–7.6%)	16.4% (12.0%–22.0%)	32.0% (20.7%–45.9%)	38.0% (30.4%–46.2%)	36.1% (31.4%–41.0%)
Past year	10.0% (6.4%–15.2%)	23.5% (18.3%–29.7%)	58.0% (44.2%–70.6%)	70.4% (62.4%–77.3%)	71.8% (67.1%–76.1%)
Lifetime	10.1% (6.5%–15.3%)	25.8% (20.4%–32.1%)	62.0% (48.1%–74.2%)	79.7% (72.3%–85.5%)	88.1% (84.5%–91.0%)
Gave oral to female					
Past month	0.5% –(0.2%–3.2%)	4.2% (2.1%–7.9%)	2% –(1.3%–8.8%)	1.4% (0.1%–5.3%)	1.1% (0.3%–2.8%)
Past year	1.6% (0.3%–4.8%)	7.1% (4.3%–11.5%)	2.0% –(0.6%–11.5%)	9.2% (5.3%–15.2%)	2.6% (1.4%–4.8%)
Lifetime	5.4% (2.9%–9.7%)	9.0% (5.8%–13.7%)	8.2% (2.8%–19.6%)	14.0% (9.2%–20.7%)	9.5% (6.9%–12.9%)
Gave oral to male					
Past month	8.0% (4.8%–12.9%)	14.6% (10.4%–20.0%)	34.7% (23.0%–48.6%)	47.2% (39.2%–55.4%)	49.9% (44.9%–54.9%)
Past year	11.8% (7.9%–17.3%)	22.4% (17.3%–28.5%)	58.5% (44.7%–71.1%)	74.3% (66.5%–80.8%)	75.9% (71.4%–79.9%)
Lifetime	12.8% (8.7%–18.4%)	29.1% (23.4%–35.6%)	61.2% (47.3%–73.5%)	77.6% (70.0%–83.7%)	89.0% (85.4%–91.8%)
Vaginal intercourse					
Past month	5.9% (3.2%–10.3%)	20.8% (15.9%–26.8%)	43.1% (30.3%–56.8%)	61.9% (53.7%–69.5%)	74.3% (69.7%–78.4%)
Past year	10.7% (7.0%–16.0%)	29.7% (23.9%–36.2%)	62.0% (48.1%–74.2%)	79.9% (72.5%–85.7%)	86.5% (82.7%–89.6%)
Lifetime	12.4% (8.4%–17.9%)	31.6% (25.7%–38.1%)	64.0% (50.1%–75.9%)	85.6% (78.8%–90.5%)	90.7% (87.3%–93.2%)
Received penis in anus					
Past month	3.2% (1.3%–7.0%)	0.5% –(0.2%–2.9%)	8.0% (2.6%–19.4%)	7.3% (3.9%–12.9%)	5.3% (3.4%–8.1%)
Past year	3.7% (1.7%–7.6%)	4.7% (2.5%–8.5%)	18.0% (9.5%–31.0%)	23.4% (17.2%–31.0%)	21.1% (17.3%–25.5%)
Lifetime	4.3% (2.1%–8.4%)	6.6% (3.9%–10.9%)	20.0% (11.1%–33.2%)	39.9% (32.2%–48.1%)	45.6% (40.7%–50.6%)

19-year-old males who reported lifetime insertive anal sex (9.7%). These proportions were twice as large for each gender in the 20- to 24-year-old cohort.

Neither the NHSLS nor the NSHAP included questions about mutual masturbation or the gender of respondents' oral sex partners [7,8]. As such, it is not known to what extent mutual masturbation, or same-sex vs. other-sex oral sex behaviors, may have changed over time. Little is known about same-sex behaviors from nationally representative studies, as none—including ours—have oversampled those who identify as homosexual or bisexual, leaving the numbers too few for adequate statistical analysis. However, findings reflect those from the NHSLS and from the Kinsey interview data in that a greater number of males and females have engaged in same-sex sexual behaviors than identify as homosexual or bisexual [8,40,41].

The current study is only the second nationally representative study of sexual behavior of adults living in the United States and the first to include such an expansive range of ages. Although Alfred Kinsey and his team reported data from adults about their sexual lives from childhood through older age, sampling was not nationally representative, people married at younger ages, the life expectancy was lower when data were collected (late 1930s to early 1950s) and older age was experienced in clinically different ways that likely impacted sexuality [40,41]. The social changes occurring since both of the large-scale studies of sexual behavior have been significant and up-to-date data about human sexual behavior among different age groups is important.

Depending on the country and time period in which sexual behavior has been studied, previous studies of sexual behavior in the United States and in other countries have recruited participants and collected data via in-person interviews, computer-assisted interviews, questionnaires, RDD phone interviews, computer-assisted telephone interviewing, intercept methods, or door-to-door sampling [42–49]. In our study, by recruiting participants and collecting data over the Internet, respondents may have felt more comfortable reporting taboo sexual behaviors compared with the NHSLS data, which were collected via in-person interviews.

Adults (N = 2,413)				
30–39 412	40–49 468	50–59 435	60–69 331	70+ 192
Percent (95% confidence interval)				
38.6% (34.0%–43.4%)	38.5% (34.2%–43.0%)	28.3% (24.3%–32.7%)	21.5% (17.4%–26.3%)	11.5% (7.7%–16.8%)
62.9% (58.1%–67.4%)	64.9% (60.5%–69.1%)	54.1% (49.4%–58.7%)	46.5% (41.2%–51.9%)	32.8% (26.5%–39.7%)
80.3% (76.2%–83.9%)	78.0% (74.0%–81.5%)	77.2% (73.0%–80.9%)	72.0% (66.9%–76.6%)	58.3% (51.2%–65.0%)
19.3% (15.8%–23.4%)	12.7% (10.0%–16.0%)	6.7% (4.7%–9.5%)	5.9% (3.8%–9.0%)	2.1% (0.6%–5.4%)
43.3% (38.6%–48.1%)	34.8% (30.6%–39.2%)	17.7% (14.4%–21.6%)	13.1% (9.9%–17.2%)	5.3% (2.8%–9.5%)
63.1% (58.3%–67.6%)	56.1% (51.6%–60.5%)	46.9% (42.3%–51.6%)	36.4% (31.4%–41.7%)	17.5% (12.7%–23.5%)
1.2% (0.4%–2.9%)	8% (0.2%–2.2%)	0.7% (0.1%–2.1%)	0.3% –(0.1%–1.9%)	1.0% (0.0%–3.9%)
4.9% (3.2%–7.5%)	2.3% (1.2%–4.1%)	0.9% (0.3%–2.4%)	0.6% (0.0%–2.3%)	1.5% (0.3%–4.6%)
16.5% (13.2%–20.4%)	10.1% (7.7%–13.2%)	8.2% (5.9%–11.2%)	4.4% (2.6%–7.2%)	2.1% (0.6%–5.4%)
36.2% (31.7%–41.0%)	24.1% (20.4%–28.2%)	16.9% (13.7%–20.7%)	11.7% (8.6%–15.6%)	2.6% (0.9%–6.1%)
58.7% (53.9%–63.4%)	52.3% (47.8%–56.8%)	34.2% (29.9%–38.8%)	24.8% (20.4%–29.7%)	7.8% (4.7%–12.6%)
82.0% (78.0%–85.4%)	86.3% (82.9%–89.1%)	83.4% (79.6%–86.6%)	79.0% (74.3%–83.1%)	47.4% (40.5%–54.4%)
1% –(0.2%–1.3%)	1.1% (0.4%–2.6%)	0% –(0.2%–1.1%)	0.6% (0.0%–2.3%)	1.0% (0.0%–3.9%)
4.0% (2.4%–6.4%)	2.5% (1.4%–4.4%)	0.9% (0.3%–2.4%)	0.9% (0.2%–2.7%)	1.5% (0.3%–4.6%)
14.2% (11.1%–17.9%)	11.6% (9.0%–14.8%)	7.3% (5.2%–10.2%)	3.4% (1.9%–6.0%)	2.1% (0.6%–5.4%)
43.9% (39.2%–48.7%)	26.8% (23.0%–31.0%)	18.5% (15.1%–22.4%)	13.1% (9.9%–17.2%)	3.6% (1.6%–7.4%)
59.2% (54.4%–63.8%)	52.7% (48.2%–57.2%)	36.2% (31.8%–40.8%)	23.4% (19.1%–28.3%)	6.8% (3.9%–11.4%)
80.1% (76.0%–83.7%)	83.1% (79.4%–86.2%)	80.0% (76.0%–83.5%)	73.1% (68.1%–77.6%)	42.7% (35.9%–49.8%)
63.5% (58.7%–68.0%)	55.8% (51.3%–60.2%)	39.9% (35.4%–44.6%)	28.9% (24.3%–34.0%)	11.9% (8.0%–17.3%)
73.5% (69.0%–77.5%)	70.3% (66.0%–74.3%)	51.4% (46.7%–56.1%)	42.2% (37.0%–47.6%)	21.6% (16.3%–28.0%)
88.7% (85.3%–91.4%)	94.5% (92.0%–96.3%)	94.0% (91.3%–95.9%)	92.4% (89.0%–94.8%)	89.2% (84.0%–92.9%)
6.4% (4.4%–9.2%)	3.6% (2.2%–5.7%)	1.6% (0.7%–3.3%)	2.2% (1.0%–4.5%)	0% –(0.4%–2.4%)
21.6% (17.9%–25.8%)	11.7% (9.1%–14.9%)	5.6% (3.8%–8.2%)	4.0% (2.3%–6.8%)	1.0% (0.0%–3.9%)
40.4% (35.8%–45.2%)	40.6% (36.2%–45.1%)	34.6% (30.3%–39.2%)	29.8% (25.1%–34.9%)	21.2% (16.0%–27.5%)

In addition, while some studies have focused on only men [45–48], only women [43], or a more narrow age range [2,3,6,7,48] we sampled both women and men from adolescence through old age, resulting in a sample of individuals that spanned eight decades of age. However, a limitation of the present study is that, like the NHSLS and NSHAP, the sample was likely only accessible to those who were living in the community and so is not representative of all adults, particularly older adults, who are more likely to be hospitalized or living in long term care facilities.

A limitation of the study is that nationally representative survey data often obscures data points of minority groups, such as those who identify as gay, lesbian or bisexual. Certainly a proportion of those individuals who did not engage in sexual behaviors between women and men (such as vaginal intercourse) were likely to be gay or lesbian. The present data cannot therefore be generalized to gay, lesbian, or bisexual individuals and more detailed analyses are needed to illuminate the sexual behaviors of these individuals. Like other studies of sexual behavior, this study may have been subject to self-selection. Although the sampling procedures ensured a lack of differences on key sociodemographic characteristics between those who chose to participate and those who refused, sexual behavior data are not available on nonresponders, and it is therefore not possible to assess the extent to which participants were different from those who either did not respond to the recruitment messages or those who responded and chose not to participate. However, the proportion of those who responded and chose to participate was slightly higher than the participation rate of the eligible, contacted individuals in the NHSLS who were recruited through in-person recruitment efforts at their homes [8].

Although statistical differences between men's and women's reports of sexual behaviors were not assessed for this particular paper, the data demonstrate that, for all age cohorts, recent (past month and past year) masturbation was strikingly more prevalent among men than women. Similarly, with the exception of the 25- to 29-year-old age cohort, more men reported vaginal intercourse in the past month and more men reported vaginal intercourse

in the past year in advanced age, likely caused by the greater number of available female partners. Compared with men's reports of insertive anal intercourse, more women in the 18- to 19-year-old age cohort reported receptive anal intercourse, which may be an artifact of having the small number of individuals in this age group or the result of younger women partnering with older men. More detailed data related to the sexual behavior of women and men in this sample can be found in other reports that have examined gender-specific behaviors and that collectively offer in-depth analyses that provide for comparisons across genders [50,51].

Conclusions

In summary, findings provide medical and public health professionals with up-to-date information about solo and partnered sexual behaviors throughout the life course. Such information should assist both educators and clinicians in their efforts to increase knowledge about contemporary sexual behaviors and provide a valuable context that can be useful particularly to health professionals during sexual history taking and during discussion with patients about sexual problems and dysfunctions.

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Condom Use Rates in a National Probability Sample of Males and Females Ages 14 to 94 in the United States

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ABSTRACT

Introduction. Given the efficacy of latex condoms for preventing pregnancy, HIV, and most STI, their promotion remains central to global sexual health efforts. To inform the development of accurate and appropriately-targeted interventions, there is a need for contemporary condom use rates among specific populations.

Aims. The purpose of this study was to establish rates of condom use among sexually active individuals in the U.S. population.

Methods. Data were collected via a national probability sample of 5,865 U.S. adolescents and adults aged 14 to 94 years.

Main Outcome Measures. Condom use was assessed during the most recent partnered vaginal or anal sexual event and over the past 10 vaginal and anal intercourse events.

Results. Condom use by men during past 10 vaginal intercourse events was slightly higher (21.5%) than that reported by women (18.4%), and consistent with rates of condom use reported during most recent vaginal intercourse by men (24.7%) and women (21.8%). Adolescent men reported condom use during 79.1% of the past 10 vaginal intercourse events, adolescent women reported use during 58.1% of the same. Condom use during past 10 anal intercourse events was higher among men (25.8%) than women (13.2%); the same was observed for most recent anal intercourse event (26.5% for insertive men, 44.1% for receptive men, and 10.8% for receptive women). Generally, condom use was highest among unmarried adults, higher among adolescents than adults, and higher among black and Hispanic individuals when compared with other racial groups.

Conclusion. These data indicate clear trends in condom use across age, gender, relationship status, and race/ethnicity. These contemporary rates of condom use will be helpful to those who lead efforts to increase condom use among individuals who may be at risk for sexually transmitted infections or who desire to prevent pregnancy. **Reece M, Herbenick D, Schick V, Sanders SA, Dodge B, and Fortenberry JD. Condom use rates in a national probability sample of males and females ages 14 to 94 in the United States. J Sex Med 2010;7(suppl 5):266–276.**

Key Words. Condoms; Sexual Health; Probability Sample; Sexual Behavior

Introduction

The male condom is one of the oldest methods of contraception and offers significant advantages because it is not made with hormones, is available without a prescription, can be used directly by men, is widely available in the United States and in many parts of the world, and its use can be visibly validated by both sex partners. The condom is the only current contraceptive method (other than abstinence) that protects against most sexually transmissible infections (STI), and its efficacy for the prevention of human immunodeficiency virus (HIV) transmission, unintended pregnancy, and the reduction of risk for most STI has been well documented [1,2].

Sexual health practitioners have long promoted condom use for prevention of STI and unintended

pregnancy [3,4]. However, it was the recognition of the serious threat posed by the HIV epidemic that propelled extensive research agendas related to condom use and condom education, promotion, and distribution programs. As correct and consistent condom use remains one of the most cost-effective STI/HIV and contraceptive methods, their promotion continues to be a major component of STI/HIV interventions worldwide [5–7].

Prior studies have indicated increasing rates of condom use for HIV/STI and pregnancy prevention purposes among both adolescents [8–13] and adults [14–19] in the general population of the United States. Unfortunately, surveillance of condom use across expansive segments of the U.S. population is less routine as the collection of such data is methodologically complex, time-consuming, and costly [20,21].

Most national studies providing rates of condom use among adolescents and adults in the general U.S. population were conducted and published in the mid- to late-1990s to early 2000s [5–11,14,15,22–24], with the most recent data focused on sexual health among aging adults, collected in 2005–2006 [25]. However, given constant shifts in social attitudes and policies about condoms, changes in sexual relationship structures and behaviors, and changes in the epidemiology of STI and HIV, there is a need for the ongoing surveillance of condom use behaviors across the general U.S. population. The availability of contemporary condom use data will help to inform and guide accurate and appropriately targeted sexual health interventions

Aims

The purpose of this study was to establish contemporary condom use rates in a probability sample of the U.S. population aged 14 to 94 years.

Methods

Data Collection

Data presented are from the National Survey of Sexual Health and Behavior (NSSHB), conducted during early 2009. NSSHB data were collected using a population-based cross-sectional survey of adolescents and adults in the United States via research panels of Knowledge Networks (Menlo Park, CA, USA). Research panels accessed through Knowledge Networks are based on a national probability sample established using both random digit dialing (RDD) and an address-based sampling (ABS) frame. ABS involves the probability sampling of a frame of residential addresses in the United States derived from the U.S. Postal Service's Delivery Sequence File, which contains detailed information on every mail deliverable address in the United States. Collectively, the sampling frame from which participants are recruited covers approximately 98% of all U.S. households. Randomly selected households are recruited to panels through a series of mailings and subsequently by telephone follow-ups to nonresponders when possible. Once an individual agrees to be in a panel of Knowledge Networks, they are provided with access to the Internet and computer hardware if needed, and data collection by Knowledge Networks occurs via the Internet. Multiple health-related studies have substantiated the validity of such methods for obtaining data from nationally representative samples of the U.S. population [26–31].

To further correct sources of sampling and non-sampling error, study samples were corrected with post-stratification adjustments using demographic distributions from the most recent data available (at the time of the study) from the Current Population Survey (CPS), the monthly population survey conducted by the U.S. Bureau of the Census considered to be the standard for measuring demographic and other trends in the United States. These adjustments result in a panel base weight that was employed in a probability-proportional-to-size selection method for establishing the samples for this study. Population specific distributions for this study were based upon data from the December 2008 CPS [32].

Once the sample frame for this study was established, all adult individuals within that frame received a recruitment message from Knowledge Networks that provided a brief description of the NSSHB and invited them to participate. Of 6,182 adults (≥18 years), 5,045 (82%) consented to and participated in the study. Adolescent (14–17 years) recruitment included obtaining consent from a parent (or guardian) and subsequently from the adolescent. A total of 2,172 parents reviewed the study description and 62% (N = 1,347) consented for their child to be recruited. Of 1,347 adolescents who were contacted, 831 responded, with 98.7% (N = 820) consenting to and completing the study.

All study protocols were approved by the Institutional Review Board of the primary authors' academic institution.