Women's Health Issues 21-3S (2011) S37–S41

WOMEN'S HEALTH ISSUES
www.whijournal.com

Invited paper

Sex-Selective Abortion in Nepal: A Qualitative Study of Health Workers' Perspectives

Prabhat Lamichhane, MScPH [a], Tabetha Harken, MD [b], Mahesh Puri, PhD [a], Philip D. Darney, MD [c], Maya Blum, MPH [c], Cynthia C. Harper, PhD [c], Jillian T. Henderson, PhD [c,*]

[a] Center for Research on Environment Health and Population Activities (CREHPA), Kusunti, Lalitpur, Nepal
[b] Department of Obstetrics and Gynecology, University of California, Irvine
[c] Department of Obstetrics, Gynecology, & Reproductive Sciences, Bixby Center for Global Reproductive Health, University of California, San Francisco

Article history: Received 25 October 2010; Received in revised form 7 January 2011; Accepted 2 February 2011

A B S T R A C T

Background: Sex-selective abortion is expressly prohibited in Nepal, but limited evidence suggests that it occurs nevertheless. Providers' perspectives on sex-selective abortion were examined as part of a larger study on legal abortion in the public sector in Nepal.
Methods: In-depth interviews were conducted with health care providers and administrators providing abortion services at four major hospitals ($n = 35$), two in the Kathmandu Valley and two in outlying rural areas. A grounded theory approach was used to code interview transcripts and to identify themes in the data.
Results: Most providers were aware of the ban on sex-selective abortion and, despite overall positive views of abortion legalization, saw sex selection as an increasing problem. Greater availability of abortion and ultrasonography, along with the high value placed on sons, were seen as contributing factors. Providers wanted to perform abortions for legal indications, but described challenges identifying sex-selection cases. Providers also believed that illegal sex-selective procedures contribute to serious abortion complications.
Conclusion: Sex-selective abortion complicates the provision of legal abortion services. In addition to the difficulty of determining which patients are seeking abortion for sex selection, health workers are aware of the pressures women face to bear sons and know they may seek unsafe services elsewhere when unable to obtain abortions in public hospitals. Legislative, advocacy, and social efforts aimed at promoting gender equality and women's human rights are needed to reduce the cultural and economic pressures for sex-selective abortion, because providers alone cannot prevent the practice.

Background

Female sex-selective abortion has been documented in South and East Asia (Ganatra, 2008; Miller, 2001; Visari, 2007). Sex selection distorts natural sex ratios, varying in degree by country, state, culture, and religion (Miller, 2001; Visari 2007). Researchers have argued that an imbalanced sex ratio perpetuates gender discrimination against women, contributes to poor health in women, and disrupts social and familial networks (Hesketh & Wei Xing, 2006; Miller, 2001).

A 2007 report found that social pressures for bearing male children in Nepal was similar to those in India and China, but that the sex ratio in 2006 was 104 (male/female), which is close to the biologically natural ratio of 105 (Center for Research on Environment Health and Population Activities [CREHPA], 2007). Some ethnic groups and regions of the country, however, had skewed sex ratios favoring boys. A hospital-based review of records conducted in Patan, an urban area adjacent to Kathmandu, also found the sex ratio at birth to be skewed toward males (114 boys to 100 girls) during the 5-year study period, 2003 to 2007 (Adhikari, Ghimire, & Ansari, 2008).

The cultural context, dominant Hindu religion, and patrilineal structure of Nepali society confer high value and status to sons because they perform funeral rites, continue the family name, and

The authors acknowledge funding from an anonymous donor that made this study possible.

* Correspondence to: Jillian T. Henderson, PhD, Department of Obstetrics, Gynecology, & Reproductive Sciences, Bixby Center for Global Reproductive Health, University of California, San Francisco, 3333 California Street, Suite 335, San Francisco, CA 94118.
E-mail address: hendersonj@obgyn.ucsf.edu (J.T. Henderson).

1049-3867/$ - see front matter Copyright © 2011 by the Jacobs Institute of Women's Health. Published by Elsevier Inc.
doi:10.1016/j.whi.2011.02.001

bring resources into the family (a wife and dowry) that help to support parents in old age (Abrejo, Shaikh, & Rizvi, 2009; Unnithan-Kumar, 2010). The availability of ultrasonography in Nepal makes sex determination possible. Other sex-determination techniques, such as sperm sorting, chorionic villus sampling, and amniocentesis, are also available to Nepali women who are able to travel to India (CREHPA, 2007). The availability of these technologies, coupled with patriarchal social structures and sociocultural values that contribute to son preference, increase the likelihood of sex selection. Determination of fetal sex and sex-selective abortion are, however, illegal in both India and Nepal.

The 2002 law that legalized abortion in Nepal expressly prohibits sex determination and sex-selective abortion (Dahal, 2004). A woman can legally obtain an abortion up to 12 weeks' gestation, up to 18 weeks in the case of rape or incest, and at anytime during pregnancy if her life is at risk or the fetus has congenital anomalies. More than 700 providers have been trained, 245 sites (116 government, 129 nongovernment) have been certified as safe, and more than 300,000 women have received abortions since legalization in 2004.

Female sex-selective abortion is recognized as a form of gender discrimination that arises from strong son preference in societies that associate male gender with greater social and material security and control. The practice, framed as discrimination against women, has been outlawed on moral grounds and for its social consequences (Rogers, Ballantyne, & Draper, 2007). Others, however, have argued that outlawing the practice does not address the extreme social and economic pressures on women to bear male children and that it can have unintended negative consequences for women (Zilberberg, 2007). For example, efforts to enforce sex-selection bans can result in reduced access to second-trimester abortion for legal indications and in higher rates of unsafe abortion as women seek services through underground channels (Ganatra, 2008). Sex selection poses ethical dilemmas for providers, individuals, and society with regard to the best policy for ensuring women's safety and well-being.

As the first point of contact for safe abortion care, providers have a role in enacting laws banning sex selection while also protecting patient health. This paper examines health care workers' views toward and experiences with sex-selective abortion and the potential challenges it presents in the new context of legalized abortion in Nepal.

Methods

Data for this study come from ongoing research documenting the effects of abortion legalization at four major hospitals in Nepal: Two located inside Kathmandu (a teaching hospital and a government hospital) and two outside of Kathmandu (government hospitals) that serve rural populations. This paper is based on the 35 in-depth interviews conducted with health care workers at these sites from 2007 to 2009.

Participants included physicians, nurses, abortion counselors, and hospital administrators and were selected to obtain diverse perspectives and experiences with abortion care. Purposive sampling was used to select participants from lists (prepared in consultation with senior hospital staff) of health workers involved in providing abortion and abortion-related administration.

The interview guide was developed in English, translated into Nepali, and pretested. Topics included views on abortion legalization and sex-selective abortion, record-keeping practices, and patient care. Follow-up probes were used to gather more nuanced information on sex-selection awareness and practices, perceptions of patient sex-determination methods, and views on the consequences of sex-selective abortion. Background information on participants, including their education level and responsibilities within the hospital, was also collected. Two authors (Harken and Lamichhane) conducted all interviews in English and Nepali. When conducted in English, a translator was present. Interviews lasted 1 hour on average. All individuals invited to participate in the study agreed. Participants were fully informed of their option to decline the interview or any question, and one interviewee refused to be tape recorded. Verbal consent was obtained from all participants. Ethical approval was obtained from the Committee on Human Research at the University of California, San Francisco, the Nepal Health Research Council, and study hospitals.

A thematic approach was used for data analysis. Interviews were tape recorded, transcribed, and translated into English (those conducted in Nepali). A codebook was developed based on the interview questions and from an initial reading of interview transcripts. Transcripts were then repeatedly read and coded for content. Content codes were then grouped into thematic categories. Key quotes that exemplified major themes and concepts are presented in the results. The computer software ATLASti (version Win4.1) was used for organizing the text and attaching codes.

Results

Characteristics of Participants

Most of the participants were health care providers (14 gynecologists/physicians, 13 staff nurses, and 1 health assistant); there were also six administrators and 1 counselor. The length of participants' experience varied widely, ranging from 9 months to 37 years. The health care professionals provided abortion and had administrative and training responsibilities (Table 1).

Table 1
Characteristics of Participants

Professional Category	Roles and Responsibilities	Number	Experience
Obstetrician/gynecologist, general physician	Clinical and managerial; teaching; training	14	3–24 years
Nurse	Clinical and administrative duties; emergency management of patients; history taking; counseling	13	9 months to 37 years
Health assistant	Look after gynecological outpatient department cases, assist physicians in handling gynecological cases	1	24 years
Counselor	Postabortion care counseling, training and coordination	1	17 years
Health care administrator	Training and personnel administration; general administration; record keeping	6	5–25 years
Total		35	

We present health care workers' views on sex selection in Nepal as they relate to the change in the legal status of abortion, summarized according to the following themes: Knowledge and beliefs about the legal status of sex selection, effects of abortion legalization on sex selection, perceptions of patients seeking sex selection, health and social problems related to sex selection, and clinical challenges in the context of sex selection.

Knowledge and Beliefs About the Legal Status of Sex-Selective Abortion

Almost all participants were aware of the ban on sex-selective abortion, although a few nonclinician health workers were not.

> They can do [abort] in case of unwanted pregnancy, rape case, or if there is some sex problem. . . . Sex problem mean, if they wish for a son and have a daughter or if they wish for a daughter and have a son.
>
> —*Nurse, Teaching Hospital*

Participants had generally positive views of abortion legalization, but were concerned about sex selection. A charge nurse summarized the view:

> If it [abortion] is utilized in right way it is good thing. I don't consider abortion for sex selection as good thing. . . . They don't use those [contraceptives] but abort wishing for a son, which I don't like else it is good to be legalized.
>
> —*Nurse, Central Government Hospital*

Effects of Abortion Legalization on Sex Selection

Many health workers believed sex-selective abortion was common before abortion was legalized and that legalization has had no effect on its prevalence. Some providers (13 out of 35), however, thought the availability of modern sex-determination methods and services might lead to an increase.

> I don't see any role between legalization and sex-selective abortion. Sex-selective abortion has been strictly prohibited by law so how can there be any effect of abortion legalization. . . . The practice must have been there earlier as well.
>
> —*Obstetrician/gynecologist, Government Zonal Hospital*

> I don't think there is any relation between abortion legalization and sex-selective abortion. But I feel the number of women who tend to do [it] is higher because of the availability of techniques for sex determination in Nepal.
>
> —*Nurse, Government District Hospital*

Providers described women who sought abortion after sex determination at their hospitals (certified legal sites of care). Providers generally reported the gestational stage of women seeking sex-selective abortion as beyond 12 weeks, given that sex determination by ultrasonography is not reliable earlier.

> We don't know about the private sector, but there are women who come here for sex selection, but we simply reject it after knowing the history. I think sex selection exists because some cases do come to the hospital.
>
> —*Obstetrician/gynecologist, Government Zonal Hospital*

> Such practice is rampant in this area. Especially after I received second-trimester abortion training my opinion has got stronger. Earlier, women used to have ultrasound after 12 weeks and then go to private clinic for abortion service as the second-trimester abortion was unavailable here [hospital]. They used to come to my clinic and also in other places. I thought there were plenty who did sex-selective abortion. After receiving second-trimester abortion training, what I feel is almost 80% of the abortion cases are of sex selection.
>
> —*Obstetrician/gynecologist, Government District Hospital*

Study participants mentioned government hospitals and private clinics, as well as institutions in India, as places where women obtain abortion after sex determination. Many indicated that women denied abortion in the government hospitals visit private clinics. Very few providers stated that they would advise woman to go to a private clinic.

> They do come to hospital for sex-selective abortion as it is cheap. But, when we ask them two to four questions, they say that they will keep the child. However, they will go to some clinic for abortion.
>
> —*Nurse, Government Zonal Hospital*

It was also suggested that more women remain in Nepal for sex-selective procedures rather than traveling to India since abortion was legalized. An obstetrician/gynecologist stated that women return to Nepal from India after sex determination because of the wider availability and affordability of abortion.

> Practice of sex selection was there before legalization as well. Now, they have become more reluctant and say, "Why should we go elsewhere [India]? We can do ultrasound and then decide on what should be done as abortion service is available here as well."
>
> —*Obstetrician/gynecologist, Government District Hospital*

> Women go to *Gorakhpur* for sex determination, and only some of them do abortion there as it is expensive. So women come back here [*Nepal*] for abortion.
>
> —*Obstetrician/gynecologist, Government District Hospital*

Some providers reported that all types of health care workers offer sex-selective abortion in private clinics. Gynecologists, physicians, staff nurses, and health assistants (paramedics) reportedly provide sex-selective procedures; however, not all providers are trained or skilled.

> Some are trained and some are untrained. Doctors, gynecologists are trained whereas many nurses, paramedics are untrained.
>
> —*Nurse, Government Zonal Hospital*

Perceptions of Patients Seeking Sex-Selective Abortion

Most providers indicated that women in all communities and castes practiced sex selection. Difficult socioeconomic circumstances, lack of education, and the dowry system were viewed as contributing factors.

> If one has daughter then there can be stigma for being son-less. From the economic perspective, dowry system is prevalent in the Terai belt. Having daughter means that you will be compelled to give dowry otherwise she will not get married. Hence, having daughter itself is problem for the future.
>
> —*Obstetrician/gynecologist, Government Zonal Hospital*

A few providers voiced a different perspective, suggesting that the practice was more common among educated and urban people, because they were more aware of the technology and services.

Educated people come. Poor, illiterate people are generally ignorant about all this. Obviously, educated people are the ones who know that through video x-ray sex of the fetus can be differentiated. They are the people who come for such service. People from urban area are more conscious about it. . . . Rural women are unaware of all this, maybe there are rare cases but majority of them are from educated family.

—*Obstetrician/gynecologist, Government Zonal Hospital*

Health and Social Problems Related to Sex-Selective Abortion

Providers were apprehensive that women might obtain unsafe abortions when denied them at hospitals and would be at increased risk of such complications as uterine perforation and septicemia.

We have not been able to restrict sex-selective abortion and so it is still in practice, which ultimately has impact on unsafe abortion cases. In listed [government certified] sites we do not do sex selection as it is against the law. Hence, women will automatically go to unsafe places for abortion as she will face pressure from her husband, mother-in-law, family, and society to have male child. So, in my personal opinion it is one of the major reasons for nondecline of unsafe abortion cases.

—*Obstetrician/gynecologist, Government Zonal Hospital*

Providers were concerned that women are under considerable pressure to terminate female fetuses. Providers mentioned concerns about women's feeling of inferiority, depression, and psychological pressure. Some of the providers were afraid that the practice of sex-selective abortion would create an imbalance in the sex ratio and disrupt society.

Sex selection creates a negative impact in our society. This is because it destroys the ratio between male and female. . . . I mean if you look at last year's record (of the hospital) 2700 males were born when 2400 females were born. This means that it is not naturally selected. There's something unnatural here. Now if you look at the long-term effects for these 300 extra males, where will they get their bride from? This will surely bring clash in the society because sex selection will destroy symbiosis in the society.

—*Obstetrician/gynecologist, Government District Hospital*

Clinical Challenges in the Context of Sex-Selective Abortion

Many health workers described the dilemma they faced in serving women seeking abortion for legal indications beyond 12 weeks when some of them might be trying to select for sex. Some providers described how women tried to convince them to perform abortions by giving reasons that are not legally indicated but might garner their sympathy, such as contraceptive failures, unwanted pregnancy, and misperceptions about fertility. Providers also expressed empathy for patients and their pressure to bear male children, but were conflicted in their desire to help and to conform to the law.

Earlier I used to feel that I should help them on humanitarian ground. . . . But it encouraged them. So, that is also why I do not do sex selection at all. . . . We cannot continue to keep blind eye.

—*Obstetrician/gynecologist, Government District Hospital*

There are many of them; some come saying it is family planning failure and many other excuses. . . . Most clients are coming for sex determination . . . they will make excuses like family planning failure . . . they will come up with reason but they won't tell us [it is for sex selection].

—*Nurse, Central Government Hospital*

A few providers stated that there would be little or no mention of sex determination in the ultrasound report, which made it difficult for them to identify women with a sex-determination test.

Most of them do not show ultrasound report. They will not have known without doing ultrasound so, when we do a little bit more probing then they will show us ultrasound report. In that report, what is usually done is if woman has male child there will be tick mark, whereas for female child there will be cross-mark. . . . This is what is usually done now.

—*Obstetrician/gynecologist, District Government Hospital*

Discussion

Results from this study suggest that sex-selective abortion happens and presents challenges and potential conflicts of interest for legal abortion providers in Nepal. Providers described women terminating their pregnancies at gestations later than 12 weeks after determining the sex. Some providers believed that many abortion complications treated at hospitals are due to sex-selective abortion because abortions conducted at later gestational ages and by untrained providers are the most dangerous. According to health care workers, Nepali women also travel to India for access to other sex-determination technologies, but it was noted that this practice also existed before legalization. A recent investigation conducted among 1,380 married women of reproductive age along the Nepal–India border found that nearly one fifth of women (28 out of 142) obtaining abortions in the past 5 years had gone to India for the procedure and of those one tenth went to India for sex determination (CREHPA, 2010). India and Nepal's shared border and common sociocultural values provide opportunities for sex determination and abortion.

Our findings suggest that providers want to help women, but are concerned about whether clients are being honest about their reasons for seeking abortion after 12 weeks. The challenge of accurately determining whether women are seeking abortion for legal indications and of being a legal gatekeeper for safe services puts providers in a difficult position. Providers were very concerned that women might resort to unsafe abortion providers and put their health or life at risk when turned away from the hospital. Evidence in India has shown that the apprehension of providers around sex-selective abortion is understandable given their role as protectors of health and also as legal abortion providers (Ganatra, Hirve, & Rao, 2001).

Qualitative studies conducted in the West have shown that health professionals face complex ethical decisions in the area of pre- and postconception sex selection (Ehrich, Williams, Farsides, Sandall, & Scott, 2007; Puri & Nachtigall, 2010). Finding the ideal balance between conformity with legal restrictions, respect for client autonomy, and professional ethics is challenging. Laws prohibiting sex selection place providers in a particularly difficult role as simultaneous guardians of patient health and enforcers of a ban. Indeed, providers' enforcement of bans on sex-selective abortion might have negative consequences for their relationships with patients and for patient health. Further, health care workers come from the same culture as their patients and share their beliefs and values. Rather than

relying exclusively on providers as enforcers of sex-selection bans, a broader approach that addresses the underlying reasons for son preference must also be taken. For example, legislative action to increase gender equality, such as women's right to inherit property and a ban on dowry, along with advocacy and educational programs to discourage gender inequality, have been instituted in Nepal and should be enforced and expanded to increase the status of girls and women.

Our study has some limitations. First, although we interviewed providers in both the hill area and *Terai* (southern plains) of Nepal, we did not include other areas. The number of hospitals and health care professionals interviewed was relatively small and did not include staff from private hospitals and uncertified clinics. The providers we interviewed—who work at government-certified sites—may be more likely to report strict adherence to legal practices, even if their actual practices at times diverge. Nonetheless, we believe that this study offers initial information on sex selection in Nepal and on the challenges providers face in serving women seeking abortion.

Conclusion

Abortion legalization has immense potential to improve maternal mortality and morbidity in Nepal. Efforts to ban sex-selective abortion should be accompanied by policies and social programs that address the underlying problem of son preference. Changes in attitudes regarding gender discrimination and sociocultural norms along with improvements in women's status are needed. Social transformations of this nature will be difficult and demand sustained commitment at all levels of society and the cooperation of policy makers, advocates, and health workers. Sex-selective abortion should be addressed comprehensively; the legal ban alone seems to be insufficient and may contribute to poor health outcomes for women. Outreach, education, and support for health professionals are also needed to enforce the law on sex-selective abortion and to adequately protect patient health, particularly since providers may be aware of women's pressures to abort and of the unsafe providers they may turn to. Other countries have instituted programs, including girl-positive social marketing, financial incentives to parents of daughters, and expanding educational and work opportunities for women. Changes to inheritance and other laws intended to improve the social status of women were passed along with abortion law reform, but continued political attention to the role of women in society are needed to reduce the prevalence of sex-selective abortion.

Acknowledgments

Dr. Henderson is grateful for the support she received to initiate this study as an Ellertson Postdoctoral Fellow. We also thank the study participants for their candid contributions to our investigation.

References

Abrejo, F. G., Shaikh, B. T., & Rizvi, N. (2009). And they kill me, only because I am a girl'… a review of sex-selective abortions in South Asia. *European Journal of Contraception and Reproductive Health Care*, 14, 10–16.

Adhikari, N., Ghimire, A., & Ansari, I. (2008). Sex preference in urban Nepal. *Journal of Institute of Medicine*, 30, 19–23.

Center for Research on Environment Health and Population Activities (CREHPA). (2007). Sex selection: Pervasiveness and preparedness in Nepal. UNFPA. Available: www.unfpa.org/. Accessed January 3, 2010.

Center for Research on Environment Health and Population Activities (CREHPA). (2010, March). Abortion seeking behavior of Nepalese women living in Border Settlements. A paper presented at the dissemination meeting of Situation of Reproductive Health Care along the Border organized by CREHPA. CREHPA and Safe Abortion Action Fund. Kathmandu, Nepal.

Dahal, K. (2004). Legal abortion in Nepal and women in prison. *Lancet*, 363, 1905.

Ehrich, K., Williams, C., Farsides, B., Sandall, J., & Scott, R. (2007). Choosing embryos: ethical complexity and relational autonomy in staff accounts of PGD. *Sociology of Health and Illness*, 29, 1091–1106.

Ganatra, B. (2008). Maintaining access to safe abortion and reducing sex ratio imbalances in Asia. *Reproductive Health Matters*, 16(31 Suppl.), 90–98.

Ganatra, B., Hirve, S., & Rao, V. N. (2001). Sex-selective abortion: Evidence from a community-based study in western India. *Asia-Pacific Population Journal*, 16, 109–124.

Hesketh, T., & Wei Xing, Z. (2006). Abnormal sex ratios in human populations: causes and consequences. *Proceedings of the National Academy of Sciences*, 103, 13271–13275.

Miller, B. D. (2001). Female-selective abortion in Asia: Patterns, policies, and debates. *American Anthropologist*, 103, 1083–1095.

Puri, S., & Nachtigall, R. D. (2010). The ethics of sex selection: A comparison of the attitudes and experiences of primary care physicians and physician providers of clinical sex selection services. *Fertility & Sterility*, 93, 2107–2114.

Rogers, W., Ballantyne, A., & Draper, H. (2007). Is sex-selective abortion morally justified and should it be prohibited? *Bioethics*, 21, 520–524.

Unnithan-Kumar, M. (2010). Female selective abortion—beyond 'culture': Family making and gender inequality in a globalizing India. Culture. *Health & Sexuality*, 12, 153–166.

Visari, L. (2007). Deficit of girls in India: Can it be attributed to female selective abortion? In T. Patel (Ed.), *Sex-selective abortion in India: Gender, society and new reproductive technologies.* New Delhi, India: Sage.

Zilberberg, J. (2007). Sex-selective abortion for social reasons: Is it morally justifiable? Sex selection and restricting abortion and sex-determination. *Bioethics*, 21, 517–519.

Author Descriptions

Prabhat Lamichhane, MSc, is a Research Associate at Center for Research on Environment Health and Population Activities (CREHPA), Kathmandu, Nepal. His work focuses on maternal and reproductive health and gender-based violence research.

Tabetha Harken, MD, MPH, is an Assistant Professor in the Department of Obstetrics & Gynecology at the University of California, Irvine. Her most recent work focuses on increasing the use of long-acting reversible contraception in adolescents.

Mahesh Puri, PhD, is Associate Director at the Center for Research on Environment Health and Population Activities (CREHPA), Kathmandu, Nepal. His recent research focuses on reproductive health and rights.

Philip Darney, MD, MSc, is a Distinguished Professor in the Department of Obstetrics, Gynecology & Reproductive Sciences at the School of Medicine at University of California, San Francisco, and a founding director of the Bixby Center for Global Reproductive Health.

Maya Blum, MPH, is a Project Director at the UCSF Bixby Center for Global Reproductive Health. She has extensive experience designing and implementing reproductive health research studies in the United States and internationally.

Cynthia C. Harper, PhD, is an Associate Professor in the Department of Obstetrics, Gynecology & Reproductive Sciences at the School of Medicine at University of California, San Francisco, and a faculty member of the Bixby Center for Global Reproductive Health. Her research focuses on the impact of health policies and individual behaviors on reproductive health outcomes, specifically in the areas of contraception and sexually transmitted infections (STIs), including HIV.

Jillian Henderson, PhD, MPH, is an Assistant Professor in the Department of Obstetrics, Gynecology & Reproductive Sciences at the School of Medicine at University of California, San Francisco, and a faculty member of the Bixby Center for Global Reproductive Health. She conducts research on women's access to health care, contraception, and reproductive health.