

Populations Growing: Public Health Responses to Global Impacts

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EXPANDED SPEAKER ABSTRACTS AND SPEAKER PANEL DISCUSSION SUMMARIES

The Silent Storm: How Population Growth Impacts Everything We Do

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Population growth is the single most important set of events ever to occur. For most of human history there was scarcely any evidence of human habitation on the planet. Despite the fact that humans have been around for a minimum of 250,000 years in our modern form, it was not until the beginning of the 19th century that we hit the first billion people alive on the planet, and we did not reach the two billion mark until about a quarter way through the 20th century. Yet, in less than a century since then we have reached the point where there are more than six billion of us, and we are climbing toward nine billion by the middle of the 21st century. This remarkable increase in human numbers continues to alter the way of life in even the most remote corners of the earth.

Despite declining birth rates most places in the world today, it remains true that the number of people added to the world each day is unprecedented in history and unparalleled in its consequences. We now live in a world crowded not only with people but also with contradiction. There are more highly educated people than ever before yet also more illiterates; more rich people but also more that are poor; more well-fed children and also more hunger-ravaged babies. We have better control over the environment than ever before, but we are damaging our living space in ways we are afraid to imagine. Europeans and East Asians are fixated on plummeting birth rates and the possibility of depopulation, but Africa, Western Asia, Southern Asia, and the middle Americas are still worried about how to accommodate an ever-larger population.

Our partial mastery of the environment is, indeed, key to understanding why the population is growing. We have learned how to conquer more and more of the diseases that once routinely killed us, and the resulting relentless increase in the population has been fuel for both environmental damage and social upheaval. Population growth is an irresistible force, a silent storm forcing us to change how we live. Virtually every social, political, and economic problem

facing the world has demographic change as one of its root causes. As population size and composition changes in an area—whether it be growth or decline—people have to adjust, and from those adjustments radiate innumerable alterations to the way society operates.

We cannot begin to imagine our future without taking into account the fact that the population of the world at the middle of this century is expected to be half again as large as it is now. To comprehend these changes, we need to appreciate the fact that the demographic transition is not a single phenomenon, but rather is a whole set of interrelated transitions: Usually (but not always) the first transition to occur is the **mortality transition**—the shift from deaths at younger ages due to communicable disease to deaths at older ages due to degenerative diseases. This transition is followed by the **fertility transition**—the shift from natural (and high) to controlled (and low) fertility, typically in a delayed response to the mortality transition. The predictable changes in the age structure (the **age transition**) brought about by the mortality and fertility transitions produce social and economic reactions as societies adjust to constantly changing age distributions. The rapid growth of the population occasioned by the pattern of mortality declining sooner and more rapidly than fertility almost always leads to overpopulation of rural areas, producing the **migration transition**, especially toward urban areas, creating the **urban transition**. The **family and household transition** is occasioned by the massive structural changes that accompany longer life, lower fertility, an older age structure, and urban instead of rural residence—all of which are part and parcel of the demographic transition. The “master transition”—that which is the most powerful proximate cause of social change—is the age transition, because it is the growth in the number of people at particular ages—not simply some overall number—that forces societies to change in order to cope with specific problems that are brought on by, for example, too many unemployed teenagers, a glut of middle-aged workers, or a growing aging dependent population.

The key to a “successful” demographic transition on a global scale is the continuation of fertility declines around the world. A great deal of work remains to be done if that is actually to take place. The crucial element in this storm of change is the status of women. It lies at the center of all issues related to the health of women and their children, and there is still huge variability around the world in the way women, in particular, are incorporated into society. Youthful marriage, leading to children having children, is one of the most egregious examples of this, and it is still practiced widely in sub-Saharan Africa, western Asia, and South Asia—places where fertility remains high and where, as a consequence, some of the problems associated with population remain most obvious.

Population growth makes distinct contributions to issues such as terrorism and conflict in the Middle East, globalization, the backlash against and simultaneous embracing of immigration to the United States, the changing face of Europe, armies of children in sub-Saharan Africa, degradation of the environment, and even the controversy over the value of genetically modified foods. Overall, we need to remind ourselves that the world’s population will continue to increase for the rest our lives, but some parts of the globe will be expanding while others are contracting (simultaneous explosions and implosions), because every society is passing through the several stages of the demographic transition at a different pace, creating a mosaic of change across the globe. Because of this our lives will be different in the future than they are now, and we need to understand this silent storm if we are to cope successfully with those changes.

Family Planning, Reproductive Health Services and Reproductive Rights: Progress Made by the United Nations Population Fund Ten Years after the Cairo Conference

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In 1994, 179 nations met in Cairo at the International Conference on Population and Development (ICPD). They reached consensus on three goals to be achieved by 2015: the reduction of infant, child and maternal mortality; the provision of universal access to education, particularly for girls, and the provision of universal access to a full range of reproductive health services, including family planning.

Overall, the Cairo Conference moved population policy and programmes away from a focus on human numbers to a focus on human beings. It put the emphasis where it should be: on improving the lives of individuals and increasing respect for their human rights, including reproductive rights. As agreed in Cairo, reproductive rights include the rights to decide freely and responsibly the number, spacing and timing of one's children and to have the information and means to do so, and to make decisions concerning reproduction free of discrimination, violence and coercion.

Looking back 10 years after Cairo, we see that its concepts of reproductive health and rights have gained wide acceptance. The vast majority of countries have undertaken a range of legal, policy and programmatic measures to translate the Cairo agenda into relevant action. This is verified by a Global Survey, which was undertaken by UNFPA, to which 169 countries responded.

Significant numbers of the countries have made progress in integrating population factors into development plans, in improving the quality and reach of reproductive health programmes, in promoting gender equality and women's rights, and in strengthening reproductive health policies and programmes to meet the rights of diverse sections of people, including women and adolescents. However, the review found that inadequate resources and persistent gaps in serving the poorest populations are impeding further progress.

There is a need to strengthen data collection, broken down by sex and age, and analysis for the formulation and monitoring of development policies and for designing programmes targeted at poverty reduction, especially for vulnerable groups.

In the area of gender equality and the empowerment of women, the Global Survey shows that while a number of countries have introduced laws and policies, less has been done to translate these into programmes into action. Only a third of countries had formulated policies or programmes and only 13 countries had developed advocacy programmes for gender equality.

Overall, the enforcement of laws and the implementation of policies to protect women's rights remain inadequate.

In the area of reproductive health and rights, the UNFPA Survey shows that significant progress has been made since 1994 on these issues. Over 90 per cent of countries have taken measures to integrate reproductive health into primary health care services and to increase access to these services and 87 per cent of countries reported one or more steps to improve the supply and distribution of contraceptives and condoms. There are increasing attempts to address gender based violence, and progress has been made in bringing various stakeholders together, such as women's and youth groups, to help shape reproductive health programmes.

Despite the progress that has been made, much work remains to be done. Today, 201 million women want to use contraceptives, but do not have access to such services.

Every minute:

- 389 women become pregnant,
- 190 of these did not plan and do not wish to be pregnant,
- 110 women experience a pregnancy-related complication,
- 40 women have an unsafe abortion,
- 650 people become infected with a curable sexually transmitted infection,
- 10 people become infected with HIV, half of them women and young, and
- 1 woman dies needlessly from a pregnancy-related complication.

Despite international agreements, reproductive health continues to elude millions of people. There are many reasons for this. One is the dismal state of the health system in many countries. For hundreds of millions of people, a huge proportion of whom live in sub-Saharan Africa and south Asia, the health system that could and should make effective interventions available, accessible, and used is in crisis, ranging from serious dysfunction to total collapse.

Another cause of poor reproductive health is widespread discrimination against women and girls. Access to services depends in part on the ways in which families value and prioritize the health of women and girls, and the willingness of husbands and partners to take responsibility for women's health and the enjoyment of their human rights. While some headway has been made on this front, a great deal more needs to be done.

The impact of the HIV/AIDS pandemic has been one of the most significant changes in the global landscape since Cairo. HIV/AIDS has become a major impediment to the effective implementation of national development policies and has reversed decades of socio-economic development.

The Survey reveals the need to further strengthen the integration of reproductive health and HIV/AIDS services, and to more fully address the specific needs of women and girls. More fully linking family planning and reproductive health and HIV/AIDS policies and programmes will save lives and money and scale up and speed-up effective responses.

It is painfully clear that the culture of silence surrounding sexuality continues to put young people at enormous risk despite the clear recognition of the need for action.

There is also a new focus since Cairo—the Millennium Development Goals. These goals to reduce poverty, hunger and disease and put the world on a more sustainable path were agreed by world leaders at the United Nations five years ago at the turn of the century. As United Nations Secretary-General Kofi Annan has said: “The Millennium Development Goals, particularly the eradication of poverty and hunger, cannot be achieved if questions of population and reproductive health are not squarely addressed. And that means stronger efforts to promote women’s rights, and greater investment in education and health, including reproductive health and family planning.”

Why the Silence on Population? Implications of an Ease Model of Fertility

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In the past decade, population growth has become a much-maligned subject, and discussing the population factor in the context of environmental challenges is now often viewed as politically incorrect. In our view the problem is caused largely by the dominant paradigm, which assumes that people want many children until some shift in external conditions causes them to change their preferences and seek to have a smaller family. From this model many people infer that lowering fertility may involve abridging rights in some manner, or at least interfering with couples’ privacy, and at worst, possibly coercion.

Demographers have struggled for decades to identify the external factors that spur this change in family size preferences, and today all of the demand-side theoretical explanations for fertility decline have failed, because of evidence from countries whose experiences fail to fit them. Theories that birth rates decline after mortality declines have been countered with observations of a number of countries where the fertility rate declined first, and mortality fell later (e.g., Indonesia, England). Theories that improved education or literacy led to declining birth rates are countered by countries whose fertility declined even where educational levels were low (Bangladesh) and other countries where fertility remains high in spite of high literacy (Philippines). Theories that economic development causes birth rates to fall have been discounted by the discovery that Ghana, Bangladesh, the Ivory Coast and Indonesia all have experienced fertility declines in the absence of significant economic growth. Our research suggests, in contrast, that declines in family size are more likely to follow the degree to which fertility regulation methods are easy for women to obtain, including correct information to make these methods useful for them. Enabling couples, but especially women, to have control over

whether and when to have a child, is at the course of our Ease Model of fertility decline, and we suggest that this is the only factor that appears to fit all instances of fertility decline, and delays therein, everywhere and over all centuries.

In the School of Public Health at Berkeley we have assembled evidence of the entire range of barriers that stand between low-income women in developing countries and the technologies and information they need to meet their fertility goals, and on the fertility decline that occurs when the barriers are removed. The Programme of Action signed at the United Nations 1994 International Conference on Population and Development (ICPD) in Cairo recognized the importance of barriers to family planning.

7.19. As part of the effort to meet unmet needs, all countries should seek to identify and remove all the major remaining barriers to the utilization of family-planning services....

7.20. Governments should make it easier for couples and individuals to take responsibility for their own reproductive health, by removing unnecessary legal, medical, clinical and regulatory barriers to information and to access to family-planning services and methods.

Although the ICPD focused primarily on programs, at Berkeley we are looking not at programs, nor clinics, nor clients, as these terms all imply that some organized service or subsidy exists. Instead we are examining barriers from the consumer perspective, considering whether the individual – and specifically the individual woman – can obtain fertility regulation methods easily if she wants them, from any convenient source, not necessarily from a particular location or service provider. We have focused primarily on low income women in the developing world and the barriers they must surmount in order to meet their fertility goals. In comparison with richer women or with men, poor women and their living children often suffer disproportionately from the consequences of an unintended birth. Gender issues play a major role in barriers: economically and socially marginalized women in low-resource settings often have limited freedom, if any, to obtain the technologies and information they need to manage their own fertility. At the same time, poor women suffer high rates of maternal mortality and morbidity, of which a significant portion is due to lack of realistic access to fertility regulation methods. On a larger scale, there is a growing recognition that steps to economic development, including efforts to reduce poverty, are hindered by persistently large average family size.

We have found that the barriers to family planning are more numerous than most people recognize. One area is, as noted, gender issues where women are not given decision-making power on contraception, even though, as in the Punjab area of Pakistan, they are considered responsible for all matters around childbirth. In some societies, such as Mayan communities, young women may be beaten for exhibiting any knowledge of family planning. In Tanzania women are told they must not use birth control pills if they have varicose veins or if they have given birth to five or more children – rules without any medical basis. In many African countries and in Nepal, women often believe that family planning may be harmful to their health or will inhibit future pregnancies. In Senegal women have been required to pay for and undergo irrelevant medical tests before being issued oral contraceptive pills. Indeed, the traditional medical model of family planning in the United States, including the prescription status of the

Pill (which is for commercial rather than safety reasons) appears to have led to unnecessary restrictions in much of the developing world.

We suggest that when the new Ease of Access model of fertility decline is understood, and with recognition that important elements of freedom, rather than any abridgement of rights, is the driving factor behind declining family size, then once again it will be considered acceptable to discuss the population growth factor influencing conditions of environment, poverty, education, development, and the well-being of families and communities.

Reproductive Health: Making Provider-to-Provider Connections on the Ground

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Reproductive health is both a private personal matter and a pressing global issue. While individuals, families, and communities the world over share many if not all of the same basic health and education needs, access to reproductive health services and information is unequal at best, influenced by a number of political, economic, social, and cultural factors. Planned Parenthood Global Partners has developed a unique peer-learning model that links U.S.-based Planned Parenthood affiliates with colleagues from around the world to exchange expertise in order to overcome disparities in access to health care and to design cultural- and age-appropriate programs and services for the individuals they respectively serve. By and large, global partnerships elicit many more similarities than differences in reproductive health issues and challenges regardless of geographic location, helping to bridge the oft-perceived divide between the U.S. and the world. Partnering organizations have enjoyed valuable, concrete outcomes, such as gaining entrée and building trust within diverse, often underserved communities, identifying creative ways to reach young people and provide for their unique sexual and reproductive health needs, and increasing their fundraising and advocacy expertise.

Because reproductive health services and population programs and policies are heavily influenced by the social and political climate in which they are offered, global partnerships serve a dual function of helping to educate and inspire U.S. activists and communities about the role of the U.S. government in increasing access to family planning and reproductive health information and services worldwide. Global partnerships build long-term community-based support for reproductive rights on a *global* scale by forging linkages and relationships between U.S. communities and communities around the world - creating a personal connection and vested interest in population and development from multiple perspectives. This includes our nation's moral and humanitarian commitments as a global "citizen" of the world community, the relationship between individual health and the environment, and the universality of human rights, including reproductive rights.

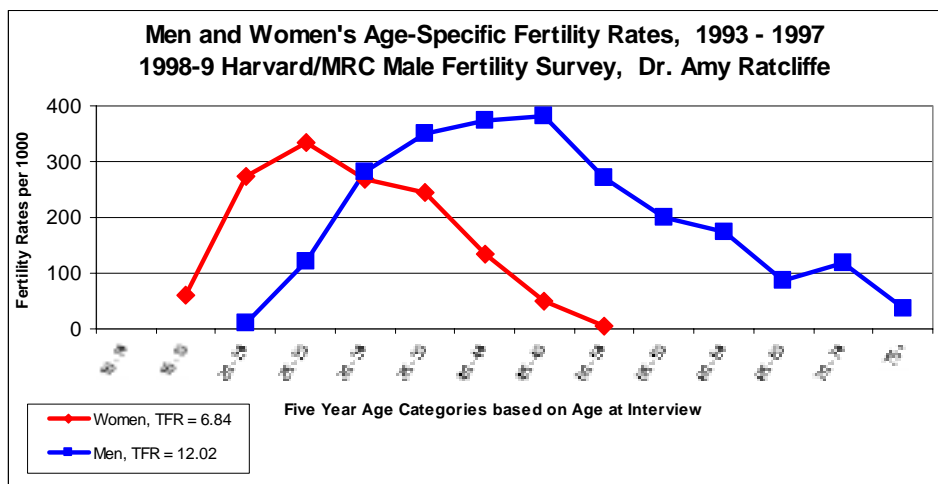
The New Global Demography: Population, Dynamics, Population Health and Development, Examples from Sub-Saharan Africa

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The onset of a sustained fertility decline sub-Saharan Africa, the last redoubt of high fertility in the contemporary world, has diverted international attention from the causes and consequences of rapid population growth to a wider range of new concerns. The prior attention directed to slowing population growth in all low income countries, many in Africa, is being submerged by the importance by the HIV/AIDS epidemic and the social and development consequences of continuing civil wars. Whilst Europe seems taken up with the societal consequences of low fertility and the prospect of major new waves of immigration from countries outside the European Union, Africa still has many decades of rapid population growth ahead of it. International donors now seem distracted from their previous mission of providing affordable and safe contraception to those who settle for smaller families.

Part of the reason for this lack of attention to African population growth is the apparent failure of prolonged and elaborate efforts to promote modern contraception in Africa. Use rates are well below those in Asian countries with comparable levels of income and education. This lack of effect arises from misapprehension of the role of children in African society. In many African societies, children are the glue that hold unions together – indeed, we might consider revisiting our older fertility theories on the basis that the numbers of children born may well be by-products of the type of gender relations between husbands and wives in Africa.

Bearing this out, we find that in rural Gambia, where polygyny is widespread, men and women have very different fertility levels depending on how the calculations are carried out (Figure 1)ⁱ.



In more detailed fieldwork, we find that there were very few concerns about feeding or bringing up large families – the concerns focused much more centrally on women’s reproductive health and their capacity to continue to keep having “children” for their husbands until quite late in the reproductive period. Contraceptives, therefore, were valuable tools to lengthen birth intervals and to protect the health of both mothers and children but they were greatly feared as devices that might ultimately prevent another birth when needed.ⁱⁱ

In African cities, circumstances are different since it is now plain from recent fertility data from urban places that couples have decided very definitely on smaller families. The problem with this situation is that very few are using modern and safe contraception to achieve thee smaller family goals. First, unsafe methods including induced abortion are being widely used by Africans to accomplish their fertility transitions despite the notional availability of a range of safe and reliable contraceptives. For Accra in 2003, where the TFR was only 2.4 births per woman, we can summarize the main proximate determinants of fertility as follows:

Table 1. How women in Accra are limiting their fertility

Age group	High	→	→	Low
18-19	Cx	Ca	Ci	Cc
20-24	Cx	Ca	Ci	Cc
25-29	Cx	Ci	Ca	Cc
30-34	Cx	Ci	Cc	Ca
35-39	Cx	Ci	Cc	Ca
40-44	Cx	Ci	Ca	Cc

Note : Cx = index of intercourse; Ca = index abortion; Ci = index of postpartum infecundability; Cc= index of contraception.

For younger women, later marriage (and intercourse) combined with induced abortion is the combination being used to restrict fertility. Avoidance of intercourse and use of breast-feeding figure large in the older women’s reproductive regimes (Table 1).

A new approach is called for that looks at populations as household units, examining trends and differentials between and within sub-populations as the mortality, health and fertility transitions progress. Understanding the dynamics of the African life course is a key part of the understanding and prerequisite for effective program development.

As expected, the African transitions are distinctive. Social and gender relations are also distinctive so that issues such as negotiating family size norms or contraceptive use cannot be expected to have the same connotations as they do in Europe, North America or Asia. The presence of HIV/AIDS and their associated prevention and treatment programs have altered the

nature of sexual relations and also attitudes to childrenⁱⁱⁱ. The rising levels of orphanhood and a new reliance on the elderly for childcare change the dynamics of family size determinants.

Thus, we find that in both rural Gambia and urban Ghana, the relations between men and women appear to be the determinants of the numbers of children born and not the prevalence of modern contraception. It may be that the fertility is thus a by-product of these relationships. As a consequence, the methods used to achieve the desired pattern of birth – not numbers alone – depend on what is accessible and allowable. This may include avoidance of intercourse, recourse to abortion or methods such as “staying away” after a birth or exploiting the effect of breast feeding on post-partum amenorrhea. The timing and pattern of childbearing is thus very much under social control, not necessarily technologically managed. We find that economic, social and marital stability lead to reduced fertility and abortion and that many so-called modern family planning programs are not meeting the needs of couples for postponing and spacing their births. In addition, contraceptives have social connotations such that condom use is seen as a marker for sexual mobility.

When we turn to examine growth at the regional or global level, we have to keep in mind that for the actors at the most basic levels in the process and especially in Africa where growth rates are the highest, the rate of population growth or future population size have no meaning for most households. Guaranteeing some of the basic rights of couples may be more effective in slowing population growth and protecting the health of the next generation. This new view, considering both local and global factors in the transition, points to some novel intervention strategies and suggestions for future research. The intrusion of rights-based programming and a concern for human development in international research and development assistance is transforming the goals of such assistance and the criteria to be used for judging success.

Adolescent Sexual and Reproductive Health: The Last Frontier

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An unintended consequence of the AIDS pandemic is that the sexual and reproductive health and behavior of adolescents has become a global concern. Adolescents between the ages of 10-19 constitute approximately one-fifth of the world’s population. The vast majority—more than five in six—live in developing countries. Early childbearing has demographic implications, because women who give birth before the age of 20 have larger completed family sizes than those who start later. Moreover, there is evidence that early childbearing is linked to less female educational attainment and greater poverty. Early childbearing is also more dangerous: deaths during childbirth are twice as likely for adolescents aged 15-19 than for women aged 20-24.

As a group, adolescents have still-developing minds and bodies, numerous inhibitions or “shyness”, limited personal resources, lack of life experience and skills, and general dependency

on adults who can withhold education or services. More than one in five youths live on less than \$1 per day. These factors make youth particularly vulnerable to unintended pregnancies, sexually transmitted diseases, violence and despair. It is estimated that about half of the people with HIV are under 25, of whom the majority are now young women. At least 10-14% of all youth have unwanted pregnancies.

Despite impressive gains made in the past decade in codifying adolescent reproductive rights and in addressing their reproductive health needs, youths' reproductive rights remain contentious issues and backsliding is frequent, particularly in Africa where the need is great. As the noted demographer, John Caldwell, wrote in 2002, "The single most serious problem with existing sub-Saharan African family planning programs is their neglect of adolescent needs."

African youth still face considerable obstacles in obtaining necessary information about sexuality and reproductive health, contraceptive services and sexually-transmitted disease treatment. Some of the main obstacles are:

- Parents traditionally do not talk about sex with their children, and other adults often lack correct information or no longer perform this role;
- Teachers are uncomfortable with and not very knowledgeable about sex education so they pick what to teach, if anything;
- Government AIDS school curricula often exclude explicit mention of condoms and contraceptives;
- Youth have difficulty getting sexuality education from teachers due to embarrassment, fear of harassment, or worries that teachers will not be confidential;
- Most churches and elders oppose sexuality education for youth because they believe it leads to sexual immorality;
- Catholic and evangelical churches preach that the HIV virus can pass through "pores" in condoms; and
- Many health providers are reluctant to give youth contraceptives because they believe it encourages promiscuity.

As a result, adolescent girls in Africa continue to have unacceptably high risks of acquiring HIV, becoming infertile from an undiagnosed sexually transmitted disease, dying from an illegal abortion or having an unwanted birth.

Youths in rural areas are especially at risk because they have fewer opportunities to gain information on their own, are often poorer than their urban counterparts, and health providers generally do not treat them kindly and confidentially. In Bungoma District in Western Kenya, focus group discussions conducted in 2003 by the University of California at Los Angeles (UCLA) among boys and girls revealed many misconceptions among youth:

"A friend of mine said: if you don't want to get AIDS, just play sex without thinking about it." (Male, 15-19 yrs.)

"If a youth wants to prevent getting an STI, he should eat well-cleaned and well-cooked foods." (Male, 11-14 yrs.)

“The best way to avoid pregnancy is to swallow aspirin.” (Female, 11-14 yrs.)

The focus group discussions also showed that many youths were treated poorly by health providers in Bungoma district.

“When you go to a clinic, you are treated so harshly. It is like an interrogation: so many questions. If I won’t answer, I am told to go away.” (Male, 11-14 years)

“Once I had a sexually-transmitted disease. The doctor talked with me and then told me to wait. I overheard him tell his son, who is in my class, about my condition. I felt so betrayed I went away. I waited 2 months before I went back.”
(Male, 15-19 years)

“When you go to a clinic, the doctor says your parents have to come. Even if he agrees to see you, he is not confidential. He passes on anything you say to your parents.”
(Female, 15-19 years)

While the situation can seem bleak, programs to reach youths with age-appropriate sexuality education and services can be effective in reducing their vulnerability to pregnancy and disease. It is essential that these programs be implemented in ways that are feasible, acceptable, and sustainable, with maximal participation of the youths themselves. The most promising educational programs have the following components:

- Assist peers to convey sexuality information;
- Use a structured, comprehensive curriculum;
- Develop relevant life skills, such as assertiveness and communication;
- Spend enough time with youths and are interactive;
- Train older youth to educate younger youth; and
- Include out-of-school youth.

For optimal effectiveness, it is best if educational programs are linked to youth-friendly reproductive health services. Because providers often have negative views about young people, programs that use peers to deliver basic counseling and services may be the most beneficial. It is important the services build on what exists and what youths want.

Overall, important gains have been made in the past decade in legitimizing adolescent sexual and reproductive rights and in learning lessons from programs targeting adolescents. However, significant challenges and barriers—cultural, social, economic—to reaching youths with effective education and services, particularly in sub-Saharan Africa, still exist. An ongoing major commitment of resources is needed to assist poor youths to develop life skills, to learn comprehensively about their sexuality, and to access health services that will help them to avoid unwanted pregnancies and diseases.

Family Planning Initiatives of the VIIDAI Project in Baja, California

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VIIDAI (Viaje de Integración Interinstitucional, Docente, Asistencial y de Investigación) is a binational collaboration between multi-disciplinary faculty and student teams from Universidad Autónoma de Baja California (UABC) Facultad de Medicina de Tijuana, the Graduate School of Public Health (GSPH) of SDSU, the School of Medicine of UCSD, and the La Mesa Sunrise Rotary Club. Approximately 120 students, faculty and Rotarians jointly plan biannual 4-day clinical and public health field trips to San Quintín to work in what is considered to be one of the impoverished populations in Mexico: the indigenous colonias and migrant camps. Leveraging limited funding, the VIIDAI team has documented significant health care problems in these communities, but has not had the resources to address these issues. One critical issue for which the community had a high level of interest was in the area of family planning, with a reported common pattern of young women having their first pregnancy in their teen years and an overall unacceptably high parity. This Bixby demonstration grant provided an opportunity for the VIIDAI program to begin to document the reproductive health of the women in this colonia, including the use and access to contraceptives. Other main objectives include determining the acceptability of addressing family planning in this community, and the feasibility of engaging community leaders to perform in potentially key roles as health promotoras, in family planning.

Graduate students from the three universities in public health, medicine, and psychology participated in all aspects of this relatively brief, intensive project. The colonia primary school directors played a liaison role. The project was approved by both the UABC and the SDSU IRBs, and was initiated in February 2005 with focus groups consisting of selected community leaders and the target population. A Bixby project office was established in the vicinity of the colonia by a psychologist (a VIIDAI alum), to assist with logistics and provide family planning support to the colonia. The community- and clinic-based survey, primarily derived from the standardized DHS instrument, was conducted during the VIIDAI field time in March. For this first project, the survey sample was limited to married women, 18 and older, and excluded males – primarily due to potential sensitivities among community members around the subject matter. During VIIDAI, male and female "promotoras/promotores" (female and male community health volunteers) who had been previously recruited by the colonia school directors, primarily from the school teaching staff, were trained in reproductive health by SDSU and UABC students. The focus of this training was on different methods of birth control and the advantages and

disadvantages of each method. A substantial number of misconceptions were addressed, especially those regarding the reversibility of tubal ligation. Diagrams representing skills associated with condom use were also presented, and family planning kits with visual aids, condoms and other family planning tools were distributed for use in household visits and community meetings. Family planning was placed in the overall context of rights to health care access and gender equity.

Additional components of the VIIDAI Bixby project included provision of pelvic exams and Pap smears and contraceptive counseling, offered by Fronteras Unidas Pro Salud. A video was produced, which included consented vignettes and interviews from community members as well as documentation of the Bixby project activities. Project activities, illustrated in video segments and preliminary results of the survey, were presented and discussed.

Behavioral Ecology, Quality of Life and Survival: Can Science Select Culture?

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The question of our future as *Homo sapiens* is not simply will we succeed in surviving, but will we want to survive under future prevailing conditions of declining quality of life. As the world's population grows, the resulting depletion of natural resources, loss of species and the compromise in physical and social environments will significantly decrease the quality of life for the majority of the world's population. Quality is compromised by early and painful death, illnesses and injury, degrading living conditions, by cruel treatment of one another and arguably by a concomitant desensitization to the same degrading living conditions. Principles of biology dictate systems that insure reproduction, but most of the factors that are responsible for quality of life are behavioral. These include important etiological factors for diseases of all kinds, for reproduction, and for creation of cultures, including those that might enable global sustainability and high quality of life. Thus, changing the behavior of individuals and whole populations might reduce population size, reduce consequentially compromised physical and social environments, decrease disease epidemics, decrease cruelty to people and other species and increase overall quality of life.

As societies have benefited from natural and biological sciences, so they might from behavioral science. Understanding and acting on principles of behavior may promote change in individual behavior as well as whole cultures. If radical changes in culture that promote quality of life can be achieved, survival of the species may be possible and desirable. The integration of biological and behavioral principles is embodied in our developing Behavioral Ecological Model. This model informs directions for change in groups' culture. It will provide the logic to suggest that specific change in culture is prerequisite to survival of the species and provide guidance for engineering such culture change. Among the many features of culture that will need to change to

achieve both survival and quality of life, is the control of reproduction. The BEM informs the prerequisite science needed to engineer cultures needed to achieve both control of world population growth and other cultural prerequisites for survival. The BEM sets the stage for future research and applied public health programs from which greater knowledge and control of quality of life - and all the prerequisites - may be achieved.

Will we want to survive under future prevailing conditions of declining quality of life? Ecologists and other scientists argue that the carrying capacity of the earth is probably sufficient to sustain about 2 billion people. However, the current population of more than 6 billion is well beyond the likely carrying capacity; the near future population in excess of 9 billion is certainly more than the resources on earth can sustain.

Degradation in quality of life. It is arguable that current cultures around the globe make the existing population size inhumane, even if within the carrying capacity. People's inhumanity to people, is directed to racial-ethnic minorities, poor and uneducated populations, and most commonly to women. Daily tragedies are pocked by episodic wars including use of weapons of mass destruction and genocide. Many western nations, notably the U.S., have committed war crimes and caused destruction of whole populations. Struggles for economic and military dominance have caused well-educated and wealthy populations to behave as poorly as nations struggling in poverty. These practices are dictated by population size, ecology and culture.

Evolution. Darwinian models of selection of species show how the physical environment interacts with our biology to enable those of us with the environmentally "correct" biology to survive and reproduce. Evolutionary biologists, such as Jared Diamond, describe the accident of birth that places some people in a physical world with sufficiently mild weather, natural resources to develop a farming and ultimately a domineering culture that overwhelms all hunter and gathering societies; that sets off a cascade that results in the dominate cultures of today. However, the missing link is an understanding of similar selection processes that explain individual and population-wide learning. These are the mechanisms by which one culture develops and turns out to dominate another.

The Behavioral Ecological Model (BEM). Based on learning theories, the BEM posits a cascade of interacting contingencies of reinforcement (and punishment) that are responsible for both individual's and group's behavior. Moreover, the social environment following on and interacting with the effects of physical environments, select for cultural practices that compete effectively with other cultures for resources. Reciprocal reinforcing contingencies among small to large groups for similar behavior define a specific culture, whether this be a poker group or an entire nation's population. Defined as such, it becomes possible to dissect contingencies within defined groups and ask how these might be changed in order to alter the "culture" of the group.

All cultures warrant change. Features of specific cultures, or sometimes all cultures, that warrant consideration for change include but are not limited to the following: unconstrained reproduction and runaway population increase, cruelty to others, promotion of and communication of infectious and non-infectious diseases, misdistribution of wealth, destruction of the physical and biological environments, pollution that threatens the extinction of all life on the planet, and development of conceptual models or ideologies that promote all of the above. Among the

cultural practices that are damaging to our collective survival and quality of life, degradation of women is high on the list. Sustaining women in low status, as most cultures do, guarantees sexual intercourse unconstrained by women, and similarly unconstrained birth rates. Almost all populations where women have achieved approximately equal status to that of men, birth rates have declined. While not of certain explanation, this is very likely due to women self-regulating the number of pregnancies and births in a manner that husbands their status and welfare, once it approximates that of high status men.

A science of cultural contingencies. The BEM directs research concerning cultural contingencies that sustain practices of major cultural groups, such as national populations, or international businesses that are no longer restrained well by national governments. More research is needed to identify cultural practices that reduce the likelihood of survival of a given population and most importantly that decreases the likelihood of survival of all life on the earth. More research is needed to identify the social contingencies that are sustaining dangerous cultural practices and to engineer alternative contingencies to select for social practices that will be sustainable and enable high quality life for most species, including humans. This will require engineering contingencies that reduce births, and reduce population size to something closer to 2 billion worldwide. Failing to reduce the population size may preclude success for almost all other important cultural changes and preclude survival.

Population Growth and Terrorism – and a Strategy for Peace

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Every country that provides terrorists today is characterized by high population growth, low status of women, and low access to family planning. With one exception, every country where US troops have been put in harms way since 1990 has had a total fertility rate of 4 or over. Nearly every U.S. presidential administration since Eisenhower has recognized a relationship between rapid population growth and the propensity of a society to create conflict and terrorism. A National Security Council Memorandum in the 1970s warned rapid population growth would “open the way to extremist regimes,” a 1986 task force reporting to George H Bush, warned of unemployed young men who “help form a large pool of potential terrorists,” and the CIA is worried about impact of rapid population growth on security. *The Report of the 9/11 Commission* is particularly explicit, pointing out that high birth rates have “produced a common problem throughout the Muslim world: a large, steadily increasing population of young men without any reasonable expectation of suitable or steady employment – a sure prescription for social turbulence.” What all these reports fail to recognize is that high fertility is not a factor written in stone; it is something that can be reduced by entirely voluntary measures.

We all know that younger men and are more volatile, impetuous and violent than older men. The very word *taliban* means student. Neil Weiner and Christian Mesquite of York University,

Canada have shown a consistent relationship between communal violence and population structure. When the ratio of men 15 to 29 years old equal or exceeds the number of older men in the population, then civil and military unrest is more likely. This was true of fighting between the Plains Indians in the nineteenth century, it was true of Germany at the outbreak of World War II, and it is true of contemporary conflicts. The mean age of the population in Afghanistan, Iraq and Pakistan is 18 to 19. In Sweden the mean age is almost 40. A high ratio of young males in any society can be pictured as a national risk factor for violence – just as smoking is a risk factor for lung cancer. Not all people who smoke die of cancer, but many do; not all nations with a high ratio of younger to older men start wars or spawn terrorists, but many do.

The Islamic Republic of Iran provides a spectacularly encouraging example of rapid fertility decline in the last 15 years with an entirely voluntary program. In the late 1980s informed Iranians saw that rapid population was outpacing economic growth. Although some aspects of the religious leadership are conservative (for example a woman cannot have a surgical operation without her husbands permission), the Holy Qu’ran and Islamic teaching endorse contraception. Ayatollah Khomeini, who had begun by banning family planning, saw the evidence and changed policies. A High Council of Family Planning was created, the Ministry of Health set aside considerable budgets for family planning, condom and Pill factories built, and all engaged couples are required to undergo instruction in family planning. In fifteen years the birth rate in Iran fell as rapidly as it did in China – and without a one-child policy. These demographic changes were accompanied by important social changes. Using the World Bank measure of the Human Development Index, Iran has improved more rapidly than the world average. Today, there are more women in Iranian universities than men. In the 1980s war with Iraq, literally thousands of young Iranians martyred themselves as “human waves” on the battlefield. In the twenty-first century there has not been a single Iranian suicide bomber. Because of family planning, the new generation in Iran is profoundly different and much less frightening than the Iran of 1979 when radical students held US embassy staff hostage for 444 days. Indeed, Mr. Asgharzadeh who was among the bearded radicals who climbed into the US embassy to take the hostages has become one of the leaders of the Iran reformist party. He says, “I made a mistake climbing over the wall once.”

Contrast this situation with Pakistan, where the average mother still has just fewer than five children and neither the government of Pakistan nor international agencies give family planning the support it needs. Extremism and violence are rampant in big cities and the central government has little or no control over the frontier provinces. Osama is one of the most popular names for boy babies.

The experience of Iran shows that family planning is wanted and works, even in conservative society. Studies show that over 120 million couples – many of them in high fertility countries we associate with terrorism - want to limit the size of their families but cannot gain access to modern contraceptives. It is a no-brainer that, given a choice, few women want six or seven children. Wherever voluntary family planning has been offered in a respectful way, family size has fallen.

If ever there was a failure to connect the dots, it has been in the area of family planning and terrorism. Sadly, the Reagan and Bush administrations have become increasingly hostile to family planning. Instead of taking money away from the United Nations Population Fund

(UNFPA), as the Bush administration has done, we should be increasing our support. Given current events, the US might not be an appropriate body to offer family planning in the Middle East, but the United Nations is welcome everywhere. Moreover, the capable leader of the UNFPA is the most senior Saudi woman in the UN system. In 2001 I helped write the international budgets for family planning in Afghanistan – but tragically the rich countries have not come up with the modest budgets we spelt out at that time.

Osama bin Laden is the 17th child of a man who had 54 children by a number of wives. Saddam Hussein's mother is said to have tried to abort him. She was so distressed at his birth she could not bring herself to look at her newborn son. While, dramatic, perhaps policies should not be set on an N=2. Nevertheless, the academic under-pinning for a correlation between rapid population growth and conflict is compelling. The strategy for peace should be to do everything we can to increase the autonomy of women and to make the access to family planning universal.

Population and Environment since “The Bomb”

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Environmental problems continue to grow rapidly and pose greater threats than ever before to public and environmental health, particularly in certain parts of the world. Despite recent successes at slowing population growth, population remains a major driver of environmental destruction. In fact, population growth in rich countries constitutes the largest part of the global problem. This presentation will also offer a 21st century perspective on how “overpopulation occurs when numbers threaten values”, a key message from Dr. Ehrlich's groundbreaking publication *The Population Bomb* (1968).

Speaker Panel Discussion 1: How Best to Attain Population Goals? Lessons Learned from Diverse Settings Around the World

Moderator and rapporteur: Martha M. Campbell, PhD

The United Nations' newest medium level population projection to year 2300 is 9 billion, based on an assumed worldwide average of 2.1 children per family. For its high-level population projection, the UN assumes a slightly higher average of 2.4 children per family. In this scenario, population would soar to 36 billion by 2300. Such a huge increase in population growth would likely lead to significant environmental stress and greater poverty. Studies suggest that low-income countries with high fertility (e.g., Ethiopia with 5.9 children) cannot extricate themselves from poverty. The challenge is how best to assist these countries to achieve a smaller average family size.

Identifying goals: Dr. Hill pointed out that there are often differences between macro perspectives on population size and the number of children people say they want. In West Africa, the stability of the male-female union and the production level of the household trump interests in fertility control. In a discussion about goals, we need to ask, goals for whom? There are sometimes different desired fertility rates for men and women, as women have the burden of childbearing with its attendant impact on their health and that of their children. Dr. Campbell added that even when men and women give similar responses to surveys about desired family size, they often give widely different responses about whether a woman should use contraception, which can be seen as giving a woman more control over her own life and health. The reproductive health of women must be taken into account. There is a large unmet need for family planning, as over 125 million women who say they do not want to have another child now or in the next two years are not using contraception.

Providing incentives and the threat of coercion: There is a fine line between incentives and coercion. In health programs, incentives can be used to promote good health practice in families, as has been done in Mexico. In family planning, however, incentives are usually considered unacceptable and potentially coercive. Coercion cannot be part of the solution. However, given the level of the unmet need for family planning in every high-fertility country today, and given the existence of many barriers to women's family planning use, governments must be encouraged to reduce unnecessary legal, medical, clinical and regulatory barriers to information and to access to family-planning services and methods. At the same time, innovative educational and outreach strategies to assist couples to use contraceptives effectively are needed.

Role of the US government and the need for increased public awareness: While the U.S. is the most influential country in the population arena, Dr. Ehrlich noted that the current Bush administration is generally unsupportive of efforts to achieve international reproductive health goals. Dr. Ehrlich stated, "We have a confederacy of the clueless. We need policies and information to make sensible choices. With a current population of 6 billion, we have 4 billion people over the amount of people that we can support in a decent lifestyle." We need resources to teach about responsible choices, as well as policies that will enable women to be able to make responsible choices. The public needs to be educated about the importance of the population growth, starting from elementary school. At the same time, we must continue to improve contraceptive methods and choices.

Effects of increasing access and availability: According to Dr. Prata, who has spent many years in Africa, improving access to family planning has the greatest effect. It is instructive to compare two low-income countries in southern Africa: Angola and Mozambique. In Mozambique, the population has to pay for education, but family planning services are provided for free. In Angola, the educational level of women has increased, but access to family planning has not. Hence, despite having a population policy in place for the last 10 years, Angola still has a fertility rate of about 6.4 (2005 estimate). As a result, women with higher educations actually have higher fertility rates. In contrast, while Mozambique has only slightly improved female educational levels, the increased access to family planning methods has led to a drop in fertility to about 4.7 (2005 estimate).

As an example of innovative approaches to increase access, Dr. Ehrlich mentioned Tamil Nadu, India, where he found condoms are being sold in barber's shops. A member of the audience stated that availability in terms of physical access is not always the issue; family planning was delivered door-to-door for free in Egypt and the contraception rate only increased from 10 to 29%. Dr. Campbell explained that full access is not just affordability and physical presence of contraceptives, because there are many other barriers--including fear of adverse health effects, biased providers and insensitive treatment of adolescents.

Questions about access: Dr. Hill queried whether there was a contradiction between child survival and fertility reduction programs. Dr. Campbell responded that this contradiction is more apparent than real, because when women are offered realistic access to family planning and safe abortion, with correct information, they generally choose to have smaller families. When children's survival is assured, there is more interest in controlling childbirth. Another question was whether letting women choose the number of children would result in numbers too high. The response was that when women are genuinely free to decide how many children to have, they tend to want fewer children. The odds of death for a woman in childbirth in developing countries are high.

Desire for family planning: Dr. Prata stated that there is indeed a widespread desire for family planning methods. In one African country, boxes of contraceptives and reproductive health materials were stolen. When confronted, the people involved stated that they did not steal the supplies; they "liberated" them. The providers explained that the materials could be harmful without proper instruction, and if the people would give them back, the providers would instruct them and then disburse the supplies. The people countered, "Why not just instruct us now?"

Important roles of men and other family members: It is important to include men in family planning decisions; excluding them is detrimental to family planning efforts. This is not just a woman's issue where men don't matter. Male pressure to have children and men's frequent resistance to contraceptive use illustrate the need to engage them in the process. Mothers-in-law can also be obstacles to contraceptive use. Dr. Hill noted that the mother-in-law often watches the wife's behavior and reports "infractions" to the husband, thereby eliciting beatings for using family planning. This suggests that general community education on the value of fertility control is needed.

Integrating reproductive health into the primary care system: One panelist stated that including reproductive health in the primary care system is important and efficient. But while this route is valuable for people who can reach the primary health system, it is important to recognize that many poor people live far from government-organized primary health care. Dr. Prata pointed out that most people in the three lowest economic quintiles must choose between private health services or no care at all. Berkeley's School of Public Health is teaching its international health students about the critical need for engaging private sector providers of services and products, without whom access to reproductive health care cannot be increased.

The unmet need for family planning is increasing in some countries: In Kenya, for instance, there is an undersupply of birth control pills and injectables, which is leading to an increase in unwanted pregnancies. In fact, all of the key maternal health indicators are going in the wrong

direction. The number of women dying in childbirth in Kenya has increased, and the health of young people is threatened because of HIV.

The barriers to family planning: A member of the audience from India with 30 years of professional experience discussed the wide range of barriers to family planning in his country. These included: the desire to have a child, especially a son; the side effects of contraceptives, and fear adverse health impacts; and the lack of knowledge about how to use contraceptives. He pointed out that abandonment of contraceptive use is very high in India. He concluded that it was important that contraceptives be affordable and socially acceptable, and that men be educated about their usefulness.

Speaker Panel Discussion 2: Population policy and practice in the future: How can universities and donor assistance best address the challenge?

Moderator and rapporteur: Paula Tavrow, PhD

The challenge facing the world is to achieve sustainable, balanced population growth that improves the quality of life, enhances reproductive rights and reduces unwanted pregnancies. Current projections indicate that the world's population may grow from 6 billion to 9 billion in the next 50 years if more action is not taken. The majority of the increase will probably occur in cities of developing countries, where quality of life is already low. Multiple strategies are needed to raise awareness of population issues, to promote sustainable growth, to ensure full and unfettered access to contraceptive information and methods and to guarantee reproductive rights. Universities—both in the United States and abroad—and donors have important roles to play.

Collaborations and coalitions: The multi-faceted nature of the challenge means that coalitions are needed. Businesses, universities, non-governmental organizations, foundations, students, and governments all can be involved in addressing the problem. What is important is to agree on a shared vision and then to take concrete steps in various sectors to achieve them. We need to recognize that different perspectives are valuable. The industrialized world can learn from the developing world, as well as vice versa. An excellent example of coalitions and two-way learning is the Planned Parenthood Two-Way Partnership Program. Universities are well positioned to form coalitions or collaborations with different entities, particularly in developing countries, and to engage the media and students to raise public awareness

Public awareness and engagement: "Most Americans don't know the house is burning." Few Americans are aware of current population projections, as well as of the enormous difficulties that developing countries face in achieving universal access to reproductive health services and in reducing unintended pregnancies. Increased public education is needed on population and environmental dynamics and on reproductive rights. This is the best way to form a constituency to advocate for increased funding for reproductive health initiatives, sustainable technology, and other innovations. Furthermore, the public should be educated on our paltry foreign aid contributions to reproductive health and the importance of raising our total aid allocation. The

detrimental effects of continuing to deny funding to key organizations like the UNFPA need to be documented.

Education and training in academic institutions: To address the challenge, schools and universities need to re-think their curricula. At the elementary and secondary levels, more attention needs to be given to science. Scientific training needs to be provided to students from the elementary levels onward, throughout the world. Education on the philosophy of science, how to use logic, how to answer questions empirically, how to analyze population and environment issues from a scientific standpoint, and other issues would permit young people to grasp the challenges and support sustainable solutions. At the university level, courses should be offered that develop students' abilities to be advocates for change and to understand how to enhance reproductive health services. For instance, UCLA's School of Public Health has introduced a course specifically to build students' advocacy skills for reproductive health. Another new course at UCLA educates students on reproductive health policies and programs in sub-Saharan Africa, so that they could assist countries to improve quality and access. To ensure that the viewpoint of developing countries is integrated into new courses and initiatives, it is recommended that each university set aside funds to support the residency of 2-3 international scholars who specialize in population and reproductive health issues. These scholars could offer classes and symposiums to raise awareness and help to achieve consensus across academic departments, which often operate like fiefdoms.

Policy/advocacy: A number of policies put in place by the current administration are detrimental to achieving our population goals. For instance, the emphasis on abstinence rather than on family planning means that critical dollars are being diverted to programs without scientific evidence of success. The re-introduction of the Global Gag Rule (Mexico City Policy) has led to the closure of family planning clinics in many poor countries, thereby raising the rate of unintended pregnancies. Not permitting emergency contraception to be sold over-the-counter in the United States, despite scientific consensus that it is safe and effective, increases the risk of unwanted pregnancies, particularly among adolescents. Only with public awareness and pressure will these policies be overturned. Moreover, we need to step up research and development to achieve better contraceptive methods.

Funding and research: Increased and targeted donor assistance is required for us to address effectively the population challenges of the 21st century. Funding is needed from diverse sources—public, private, and business—so that ideological proclivities do not set the agenda. Some of this funding should support better data collection and the development of global indicators of health and well being that can be tracked longitudinally. Better data would bolster and sustain a shared vision of the population challenges facing the world. It would also give important information to policy-makers and program managers about the kinds of policies and programs that seem most effective in reducing unwanted pregnancies and raising well-being.

Conclusions: The population challenges are not well known to the general public. We need a multi-faceted strategy involving public-private-academic coalitions to raise public awareness and bring in the perspective of developing countries. A better-informed public with heightened advocacy skills will, in turn, be able to push for increased funding of reproductive health services

worldwide, for the reversal of detrimental social policies that limit reproductive rights, and for ongoing research into population dynamics and global well-being.

Allan Hill footnotes:

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