

# recent advances in fertility regulation



symposium  
beijing 1980



RECENT ADVANCES  
IN  
FERTILITY REGULATION



# RECENT ADVANCES IN FERTILITY REGULATION

Proceedings of a Symposium organized by the  
Ministry of Public Health of the People's Republic of China  
and the World Health Organization's Special Programme of Research  
Development and Research Training in Human Reproduction

BEIJING, 2 — 5 September 1980

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OPENING SPEECH

*Li Xiuzhen*

Deputy Head of the State Council's Family Planning  
Leading Group and Director of Birth Control Office

Respected friends and delegates:

I declare the Symposium on Recent Advances in Fertility Regulation now open. This Symposium is jointly sponsored by the Ministry of Public Health of the People's Republic of China and the World Health Organization in accordance with their agreement on collaboration in scientific research on human reproduction. It marks a good beginning to the cooperation between China and WHO in scientific research on family planning and provides an excellent opportunity for strengthening international communication and conducting academic exchange. First of all, please allow me, on behalf of the Ministry of Public Health and the Office of the Family Planning Leading Group of the State Council, to extend our warm welcome to all the experts and scientists from various countries who have accepted our invitation to the Symposium; and to extend our cordial greetings to the scientists from the departments concerned who have dedicated themselves to research in family planning.

More than a hundred scientists from China and other countries are assembling here to exchange experiences and learn from each other. It will benefit China in family planning research, further strengthen international cooperation in science and technology and promote friendship between the peoples of all countries.

Family planning research is a new peripheral multi-disciplinary science, and has been recently developed in China. Since the founding of the new China, thanks to the leadership of the people's government at all levels and the efforts made by our scientists and technologists, certain advances in family planning research and in controlling population growth have been made in China. However, because of inadequate scientific equipment, weakness in basic theoretical research, and especially of the turmoil and upheaval during the decade of "Cultural Revolution", the scientific development of this country has been seriously hindered and interrupted. The gap between China's scientific level and that of the advanced scientific countries of the

world has been widened. Our scientific research on human reproduction lags behind and is disadvantageous to the early realization of the four modernizations in China.

With great effort and enthusiasm, the vast numbers of our scientists and technologists are determined to work for the control of population growth in China and contribute to the welfare of mankind.

Friends and comrades, let us work together for the success of the Symposium and combine our efforts to develop scientific research in family planning, scale new heights and make a due contribution to our common cause.

I wish the Symposium complete success.

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MESSAGE TO THE SYMPOSIUM

*H. Mahler, M.D.*  
Director General  
World Health Organization

Research in family planning has been given high priority in the People's Republic of China. It is also, in the World Health Organization, the focus of a Special Programme of Research and Research Training. Thus, it is very natural that this Symposium on Recent Advances in Fertility Regulation should be held in Beijing, under the joint auspices of the Ministry of Public Health, the State Leading Group for Family Planning, and the World Health Organization.

Chinese scientists have shown, and are continuing to show, great commitment and imagination in the search for improved methods of birth control. They have been signally successful in bringing together the many disciplines required for this research from the biological, physical and engineering sciences. Despite this, it is acknowledged in China, as it is elsewhere in the world, that much still needs to be done if we are to provide men and women of reproductive age with the safe and appropriate means of fertility control which they desire.

This Symposium is one of the ways of achieving this objective. It provides an opportunity for taking stock of the present situation and of looking towards the frontiers of knowledge for new ideas and new approaches. We are fortunate in having brought together a most eminent group of scientists from inside and outside China. The Proceedings of this Symposium will be published rapidly in Chinese and in English in order to make available to as wide an audience as possible the benefit of their thoughts.

This dissemination of information and ideas is the most fundamental and vital part of technical cooperation between countries. Only through a free flow of information can one hope for scientific advances and their application to the good of mankind.

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GENERAL SITUATION OF FAMILY PLANNING RESEARCH IN CHINA

*Lin Jiamei*

Deputy Director

Office of the Family Planning Leading Group  
of the State Council

Friends and colleagues.

I would like to take this opportunity today to give you a brief account of the general situation of research in family planning in China.

China is a country with a very large population, constituting 22% of that of the world. Since the founding of the People's Republic of China and with the change of the social system and the development of the national economy, our culture, education, and health work have developed rapidly. The health of the people has steadily improved and the death rate, particularly that of infants, has sharply decreased. As a result, the natural population growth has increased correspondingly. Sixty three percent of our population are under the age of 29, hence people of childbearing age constitute a large proportion of the population. There are on average, over 10 million marriages every year. The Chinese government, therefore, attaches much importance to the population issue and regards the promotion of family planning work as an important policy matter.

As our family planning work intensifies, the people place higher demands on our scientists and technologists. Research in family planning has, therefore, been incorporated into the plans of all departments of medical and pharmaceutical research under the guidance of the central government.

In the past few years, as a result of the concentrated efforts of leaders of the people's governments at all levels and with the cooperation of scientists and technologists and workers of production departments, much scientific research, propaganda and education work has been carried out and many kinds of contraceptive methods have been provided for couples of childbearing age. This has enabled the natural population growth rate to decrease from 23.4 per thousand in 1971 to 11.7 per

thousand in 1979, thus making an important contribution to the control of population growth.

The principle of “prevention first” has guided our research. Thus, for the sake of the people’s health we have endeavoured to provide the population with safe, highly effective, economical, simple and convenient contraceptives as well as to improve surgical sterilization methods.

During the 1950s, we mainly popularized the use of the condom, vaginal diaphragm and IUD. We also performed induced abortion by vacuum aspiration, which is a reasonably safe and convenient procedure for women willing to terminate a pregnancy after failure of contraception. In the early 1960s, we began research on steroid oral contraceptives for women. After a decade of work, we now have short- and long-acting contraceptives in oral tablet and injection form, given in regimens such as 22 tablets a month, or 1 tablet or 1 injection per month. We also have quick-acting pills for people on home leave. After years of research on traditional Chinese medicinal herbs, our scientists have successfully developed Trichosanthin and Yuanhuacine for termination of pregnancy, as well as gossypol, a male oral contraceptive. Only by adhering to the following principles have we been able to achieve these results.

#### *A. Comprehensive measures to suit different people*

Keeping in mind the actual conditions of the chemical and pharmaceutical industries in different places and the different customs and habits of the local people, while publicizing scientific knowledge and disseminating advice on family planning, our scientists recommend different contraceptive methods for couples according to their age, health status and living conditions. The couples then decide for themselves which method is most suitable for them. For example, women in the countryside prefer simple and convenient methods. At present, about 50% of the women in the countryside preferring contraception, use IUDs. In some areas this proportion is as high as 70%. In towns and cities, pills and other devices are most popular. As for sterilization, tubal ligation or vasectomy are used in different places. People’s preferences and local technical conditions are the deciding factors in the methods used.

#### *B. Adhering to the policy of self-reliance and self-sufficiency while simultaneously importing and incorporating foreign advanced technology*

During the past 2 decades, under unfavourable technical conditions our scientists have designed and manufactured many contraceptive drugs and devices. Now China

can manufacture sufficient IUDs and contraceptives for the whole country. However, we also want to learn from foreign advanced technology in order to speed up our work. From the scientific point of view, we are ready to import or incorporate any foreign scientific achievements that are good for the people's health.

#### *C. Exploring and screening effective contraceptives*

Chinese traditional medicine has many herbs with antifertility effects but before their introduction into clinical use, many scientific experiments are required. Many pharmacologists have gone to the countryside to investigate and collect contraceptive prescriptions for screening, testing and proving in laboratories. Gossypol, Trichosanthin and Yuanhuacine have been discovered and developed by this procedure of scientific experiments and clinical trial.

#### *D. Coordinating nationwide research on major subjects and problems*

Research topics are assigned to different localities according to their level of equipment and ability in order to make full use of their talents. Long-acting oral contraceptives for women and gossypol for men are the results of strenuous joint efforts by scientists in different places and institutions.

Turning now to our recent work, the state scientific and technological commission has set up a special group for family planning research which is responsible for coordinating the research activities of institutions, drawing up programmes and monitoring their progress, helping to solve problems and assessing and approving results of scientific research. We are also considering to set up, gradually, institutions in charge of family planning at the national and provincial levels.

The present emphasis of our research in family planning is mainly on the following areas:

#### *A. Improving contraceptive devices and sterilizations*

1. IUDs are popular among the people, but the problems of expulsion, profuse menstrual bleeding and accidental pregnancies remain to be solved. In order to increase the efficacy and reduce the expulsion rate and bleeding, our scientists have designed some new types of IUD, such as the Flower IUD, V Shape Copper IUD, etc. More attention must also be paid to research on the mechanism of action of the IUD, bleeding mechanisms, menstrual blood loss, insertion instruments and instruments for measuring the uterine cavity. In recent years, a new hormone releasing IUD has been studied.

2. Improving condom quality. Research on materials, compatability and technology are in progress, in the hope of improving the thinness, evenness, and transparency of these devices.

3. Research on spermicidal drugs applicable to both women and men and on other drug formulations is also very important. We are making efforts not only to improve the quality of drugs available but also to search for new types.

4. The proximal-end-embedding method of tubal ligation has low failure and complication rates, while the direct-vision-clamping method of vasectomy requires little equipment, is simple, and causes less bleeding and complications. Being simple and convenient, the use of this method forms a large proportion of male contraception in Sichuan Province. Since 1976, the injection of drugs to block fallopian tubes or spermatic ducts has been used in many areas.

5. Research on steroid contraceptives. During the last ten years or so, much progress has been made in research on the synthesis, pharmacology, clinical use, and basic theory of steroid contraceptives. We have discovered anordrin. Now research on long-term effectiveness, reduction of side-effects, and improvement of steroid drug formulations is underway.

#### *B. Research on antireproduction drugs from medicinal plants*

The successful isolation of gossypol and Yuanhuacine is a breakthrough for our research in this regard. It provides us with data for many new methods and approaches for research on the screening, pharmacology, purification, chemical structure, synthesis, and mechanism of action of medicinal plants. Although some achievements have already been made, there are still many questions to study and solve. We will continue to seek new contraceptive drugs both for women and for men.

#### *C. Basic research*

The development of research in family planning has also promoted and stimulated fundamental research on reproductive biology, reproductive physiology, reproductive endocrinology, pharmacodynamics, and experimental techniques. Combined with the research on the mechanism of action of drugs and devices, we have also conducted research on the interrelationship of the hypothalamo-pituitary-gonadal axis, the physiology of blastocyst implantation, ovum transport, sperm capacitation and the antifertility mechanism of LH-RH and the abortifacient function of prostaglandins.

*D. Encouraging every couple except national minorities to have only one child*

This is the current policy in China. To implement this policy, serious attention should be paid to perinatal care; care for women during menstruation, pregnancy, parturition and breast-feeding; infant health care, and disease prevention. In order to achieve the objective of “fewer-delivered and better reared”, it is important to monitor foetal condition, terminate pregnancies with congenitally deficient fetuses immediately, and discourage childbearing couples with severe genetic diseases from having children. We are going to set up, step-by-step, genetic counselling clinics and publicize knowledge about the significance of eugenics to ensure a prosperous and healthy growth of the Chinese nation.

Comrades and colleagues, although we have made some achievements in family planning research, we are still far behind the demands of our government and people. Compared with the advanced countries, we still lag behind. Through this Symposium, we would like to exchange experience with our foreign colleagues and learn from each other. Let us make concerted efforts to find better and more satisfactory methods for birth control and contribute to mankind's future.

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GLOBAL NEEDS FOR RESEARCH IN FERTILITY REGULATION AND  
THE WHO SPECIAL PROGRAMME OF RESEARCH, DEVELOPMENT AND  
RESEARCH TRAINING IN HUMAN REPRODUCTION

*A. Kessler<sup>1</sup> & C.C. Standley<sup>2</sup>*

Reproduction is more than a physiological phenomenon: it is also conditioned by behavioural, social and cultural factors and has profound economic and political repercussions. As might therefore be expected, its regulation is complex at both personal and societal levels. Family planning, particularly during the past 15 years, has been advocated for health reasons (Omran & Standley, 1976), on demographic grounds (United Nations, 1975a), and as a basic human right (United Nations, 1975b). Almost all industrialized countries provide family planning services, and more than 65 countries containing nearly 95% of the population of the developing world have officially adopted family planning policies.

Despite this gain in family planning acceptance at the governmental level, there is still a wide gap between the populations in need of and demanding such service and those actually practising family planning. Excluding the People's Republic of China, there are about 300 million married women of reproductive age in the developing countries. It is estimated (Parker Mauldin, 1979) that the number of current users of contraception is approximately 45 million, or 15% of the married women of reproductive age in these countries, but the rates vary widely from country to country. In Kenya, for instance, in 1977, 4% of married women of childbearing age were using contraceptives, whereas the figures for Pakistan were 6%, for Indonesia 19%, for Mexico and Egypt 21%, Malaysia 34%, and Hong Kong 64% (World Bank, 1979). For the USA, Sweden and the United Kingdom, the corresponding figures are between 70% and 80%. Although these figures for developed countries seem high, in fact a substantial number of unintended births occur to married women: in the USA,

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these have been estimated to represent one-third of all births to such women (Menken et al, 1979). These figures do not include conceptions that are aborted, nor do they include the increasingly large numbers of unwanted pregnancies in adolescent girls.

There are differences of opinion on the reasons for the gap between need for family planning and its practice. Some consider that the gap could be bridged by better birth control technology, that is by the development of a wider range of effective, safe and acceptable contraceptives. Others point out that, where motivation is high and the service infrastructure satisfactory, currently available methods are largely adequate. Indeed, they stress that if the social and cultural aspects and the delivery networks are neglected, technology, no matter how appropriate, will remain unused.

Yet others recognize the shortcomings of both the technology and the services, and their mutual interdependence. They point to the inadequacy of present technology and to the gaps in the choice of methods available. They stress that family planning is a relatively new area of care, with strong personal and cultural connotations that frequently are not understood, and that it demands a delivery system suited to reaching very large portions of the population and to local circumstances.

All three viewpoints are represented among the Member States of WHO. It was in response to their requests, as expressed through resolutions of the World Health Assembly and through the demands of individual governments, that the WHO Special Programme of Research, Development and Research Training in Human Reproduction (World Health Organization, 1979) was established in 1972 and has evolved since then.

This Programme addresses itself to research on fertility regulation, and to the strengthening of capabilities for such research. In both these pursuits, it is directed to the needs of developing countries. In 1979, in a collaborative effort, it marshalled the talents, skills and resources of scientists from 70 countries, of which 45 are developing countries.

In research, the Programme addresses itself to fertility regulation, including infertility, through studies on:

- safety and effectiveness of current methods of birth control;
- improvement of these methods, and the development of a variety of new techniques;
- psychosocial aspects of family planning;
- delivery of family planning care;
- diagnosis and treatment of infertility.