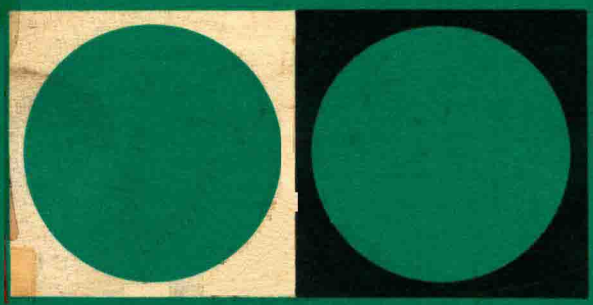
CLIVE WOOD

contraception explained



WORLD HEALTH ORGANIZATION

contraception explained

DR. CLIVE WOOD

WORLD HEALTH ORGANIZATION
Geneva, Switzerland
1975

The author, a specialist in the study of fertility and contraception, has taught reproductive physiology at Oxford University, England. Dr. Wood has written several other books and a large number of scientific papers.

The World Health Organization presents this booklet with the support of the United Nations Fund for Population Activities.

Printed in Switzerland

Introduction

The World Health Organization recognizes that family planning is a significant element in the health of the family, particularly that of mothers and children.

Family planning is described as "a way of thinking and living that is adopted voluntarily, upon the basis of knowledge, attitudes, and responsible decisions by individuals and couples in order to promote the health and welfare of the family group ".[1]

"An overall picture has emerged showing that large family size, high parity, pregnancy at under 18 or over 35 years of age, short intervals between pregnancies, and abrupt weaning are linked to varying degrees of morbidity and mortality for mother, child and family. There are distinct clinical contraindications to pregnancy in which family planning is essential in helping to prevent the aggravation of existing disease. In addition, there are many situations that are highly likely to impair health if childbearing is unregulated. Family planning thus constitutes a vital preventive measure. The impact of childbearing practices on health can also be looked at from the point of view of positive health, in which well-being refers to the quality of life. When children are born at optimum times and are wanted, it is more likely that they will be well cared for, and that their environment will be conducive to normal growth and development, while family members can more easily share an emotionally satisfying relationship that will promote family health." [2]

This booklet is to help people understand the different methods used in family planning. The uses of the various methods are described and discussed.

---

[1] " Health Education in Health Aspects of Family Planning ", World Health Organization (1971), Technical Report Series No. 483, page 5.

[2] " Family Planning in Health Services ", World Health Organization (1971), Technical Report Series No. 476, page 13.

CONTENTS

ILLUSTRATIONS

CHAPTER I

The Control of Fertility

Few subjects are more deeply personal, and at the same time, more universally important than the control of human fertility. The freedom of each couple to decide how many children they want in their family is considered a basic human right in many countries. But the ability to take advantage of that right depends on outside factors which, even today, the majority of couples are unable to completely control.

Many couples have ended up with far more children than either partner ever desired because they lack a way of limiting the number of children which works and is acceptable to both of them. Their efforts at family planning have thus often had little success. The realization that many groups of people in many parts of the world, and over long periods of time, have indeed tried to control the size of the family has been strengthened in the last decade or so by the findings of anthropologists, sociologists and demographers.

For thousands of years couples have limited, or at least spaced out, the birth of their children by either not having sexual intercourse at all, or only at particular times. Abstinence is often (though by no means always) found in times of economic hardship when a large number of children would put considerable stresses on the family and on the society as a whole.

In many cases, partial or complete abstinence is part of religious or cultural tradition. For example, groups in many parts of the

world restrict intercourse for up to a year or more following the birth of a child. A closer study of the reasons why various groups practice abstinence may give valuable information that would help people to more easily accept any comprehensive family planning policy that a government might choose to offer to its population.

Societies have exerted profound effects on family building by carefully regulating the age at which marriage is permitted. The older a woman is when she bears her first child, the less time remains for her to have other children.

Births have often been avoided by aborting the pregnancy. Abortion has played—and still does—a major role in birth control in almost all societies. And finally, in some societies, family size has been limited by killing an infant immediately after its birth.

On the other hand, infertility in either partner is a common barrier to family building. Precise figures are difficult to obtain but it seems that even at a conservative estimate, at least one couple in ten experience periods of involuntary infertility (sometimes temporary, sometimes permanent). They may never achieve conception, or the condition may arise after the birth of one or more children. Doctors around the world know how distressing such infertility can be, and many people are prepared to go to great lengths to have their fertility restored.

Considerable research has been undertaken, particularly in the last twenty-five years, in attempts to overcome some of the principal factors that lead to infertility. Many family planning experts and workers regard the restoration of fertility as an important task in helping couples to achieve the family size that they desire. That their efforts are still far from completely successful reflects the complexity of the human reproductive process and our lack of understanding of many aspects of it.

The desire to regulate fertility is therefore one of man's oldest

and most widely shared desires. What is comparatively new, however, is the largely post-World War II surge in biological and medical attempts to produce the means for restoring fertility to the infertile couple; for providing fertile couples with improved means of contraception; for safer methods of abortion and simplified methods of sterilization, both for men and for women. But these innovations must be considered in relation to those few contraceptive methods which have long been available, and which are still probably more commonly used on a worldwide basis than all the more recently developed methods put together. Attempts to improve the availability and effectiveness of these traditional methods is as important an activity as trying to produce new sorts of contraceptives. Work has indeed been going on in this direction in recent years, although the present results leave much to be desired.

This book is concerned with the contributions that science and medicine have been able to make over the past 10 years or so in developing new methods for the regulation of family size, and more especially for the prevention of unwanted pregnancies. These methods need more research and work so that they can be available, and acceptable, everywhere in the world to ensure that the number of children born would be very close to the number wanted in any family. The book will not only refer to the scientific principles which underlie new contraceptive development, but also mention some of the factors which influence their use. Thus, a contraceptive method which could be ideal for one community may not necessarily be accepted by another. Indeed, one of the general lessons that the last decade of research work has taught us is that all factors, including culture, must be considered by each society before it can decide which forms of birth control are most suitable.

CHAPTER II

Traditional Methods of Birth Control

No contraceptive method existing today is perfect. None answers all the needs. To be ideal, the method would have to be absolutely safe for the user. It would have to be so convenient that it would be acceptable to everyone. This means that it would have to be appealing, extremely cheap (preferably costing nothing), and would need no training or practice nor effort of will or memory for proper use. And, of course, it would have to be highly effective—it would always have to work.

The effectiveness of contraceptive methods may be measured in different ways. The simplest is to consider the number of pregnancies which occur—that is, the failure rate—for every hundred woman years of exposure to sexual intercourse while using a contraceptive method. This index is not ideal, because a hundred women using the method for one year gives the same total figure as two hundred women using the method for six months. The failure rate in the second group may be higher than that in the first group. This is because women who do not like or understand how to use the method are likely to become pregnant fairly quickly. Thereafter, the remaining group of women who do like and understand the method receive its continuing protection. These women therefore become more efficient contraceptive users.

Other ways of expressing failure rates have been devised but, despite its disadvantages, this simple index is convenient to use when considering broad differences in effectiveness between different contraceptive methods. And often, these broad differences are all that we can consider. No one method has a unique or precisely defined failure rate; all contraceptive methods show a range. The lowest figure in the range is the pregnancy rate found among couples who are really interested in family planning, and experienced and happy with the method they are using. It is the closest possible estimate of the method's inherent usefulness under ideal conditions. The highest pregnancy rate reflects the opposite situation. It is the rate found among couples who aren't really interested in family planning, who are careless or unhappy with the method, who are most likely to fail for " personal " rather than " biological " reasons. To put any figure for failure into perspective, it is usually found that if a hundred women have regular sexual intercourse for a year without any contraceptive protection at all, by the end of that time about eighty of them will be pregnant.

Coitus interruptus

With the exception of abortion, the most widely used of all contraceptive methods is probably withdrawal, or coitus interruptus. Using this method, the man removes his penis from the vagina immediately before his orgasm. The semen which he ejaculates therefore does not enter the woman's vagina and there is no possibility for a sperm to reach and fertilize an egg—which is the start of pregnancy.

Despite its very wide use, there have been few studies carried out on withdrawal as a form of family planning. Even its failure rate is difficult to assess. Estimates have been made which suggest that it may be more effective than is usually imagined, with a failure rate of perhaps 15 to 20 pregnancies per hundred woman

years. The reason for failure is obvious. It is because the man does not withdraw early enough. Some men may not be able to judge when ejaculation is starting. Research has also shown that, even before ejaculation, a few sperms may enter the vagina. However, we now know a good deal more about the physical " mechanics " of intercourse and orgasm than we did ten or fifteen years ago. Armed with this knowledge, it might be possible to make men more aware of why the method is likely to fail and teach them to use it better. But such lessons might not be universally acceptable. It would depend to a large degree on male attitudes concerning sexual intercourse, attitudes which differ from one society to another. This method requires no equipment, involves no expense, and, as far as is known, does not disturb the physical or mental health of either partner. Moreover, its widespread use as a means of contraception encourages further exploration of the possibility of teaching men to use it more effectively.

The Condom

The most widely used of all " appliance " methods of contraception—those which require some equipment or device—is undoubtedly the male sheath or condom. Condoms of various types have been used for over four hundred years, and have been made either of cloth, animal intestine, or, beginning in the last century, of vulcanized rubber.

In recent years we have seen a number of developments concerning condoms. In the first place, methods of quality control in production have been much improved. Condoms are now so rigorously tested following their production that it is very unlikely that pregnancies will result from the product splitting or from any " pin-hole " flaws that might be present.

Secondly, in order to reduce costs to an absolute minimum attempts have been made to produce condoms of plastic rather

than rubber. Unfortunately, the plastic lacks elasticity so the results so far have been disappointing. Another development is the production of coloured condoms which in some parts of the world may be more attractive—and therefore are more likely to be used. Attempts are constantly underway to make condoms more pleasant to use by, for instance, lubrication, the use of thinner rubber, and the reintroduction of sheaths made from animal membranes.

Failure rates for the condom vary enormously. Surveys have reported pregnancy rates varying from two to three per hundred woman years, to more than twenty. It seems unlikely that this can be accounted for by any differences in the sheath itself. More likely, the high pregnancy rate results from incorrect use. Sometimes the device may not be put over the penis at the proper time. The problem of premature ejaculation is the same found with coitus interruptus, but probably more frequently the penis is not removed from the vagina soon enough after ejaculation. In this situation the condom may well have slipped, allowing the semen originally deposited into the sheath to enter the vagina.

It is unlikely that further technological advances will be made to produce a condom which is more effective. The device itself probably works as well now as it ever will. However, considerable efforts are underway to make these sheaths both more available and more acceptable as a means of family planning.

Spermicides

In recent years we have seen attempts to improve a long-existing method of family planning—the use of chemicals in the vagina which kill the sperm. Vaginal spermicides have a long history. A pessary made out of honey and acacia tips was used as a contraceptive in ancient Egypt, although the principle by which it worked was not understood. It seems that the fermentation of the acacia may have produced the lactic acid which

killed the sperm. During the nineteenth century a systematic examination of sperm-killing chemicals was made. Since the 1930s a number of spermicides have been marketed for use as vaginal contraceptives. Often, used alone, they gave disappointingly poor results. Pregnancy rates of thirty per hundred woman years or even more have been reported. Indeed, many specialists recommend that a spermicide should only be used at the same time as a rubber diaphragm—a device which blocks the entrance to the cervix and maintains a large amount of spermicide there.

More recently, however, spermicidal preparations have been developed which it is hoped will overcome some of these problems. The difficulty is not in finding safe spermicides, but in making potent mixtures. Small quantities of these substances will kill all the sperm in an ejaculate several times over. The difficulty is keeping enough spermicide concentrated in those regions of the vagina where sperms are likely to be deposited. A promising approach is the development of an aerosol foam which spreads the sperm-killing material thickly and evenly over the whole vaginal surface. Rates of five pregnancies or less per hundred woman years have been recorded, which are very encouraging for such a safe and relatively trouble-free method. Other attempts have been to put the spermicide in a small square of plastic which dissolves in the vagina and which is therefore even simpler to use than the foam method. Because they are so easy to use, some specialists believe that spermicides should be considered more seriously than has been the case in the past.

The Rhythm Method

The human ovary usually sheds only one egg every month. Once the egg enters one of the two Fallopian tubes—the narrow passages that join the uterus to the ovary—it can be fertilized for only a short period of time, probably twenty-four to forty-eight hours. The sperm too, once it enters the woman's body, can

fertilize only for a fairly short period. Estimates vary, as some sperms have been found in the Fallopian tubes up to five days after intercourse, but they probably lose their ability to fertilize an egg within seventy-two hours. For these reasons, a woman can conceive on only about five days of the 28 days of her menstrual cycle. If the time when the egg leaves the ovary—called ovulation—could be accurately known, and intercourse avoided for, say, three days before and three days after, then pregnancy would be unlikely. The difficulty, however, is in detecting the exact time of ovulation in some simple, practical way that would be of use to couples who wish to use this method. It is the only method which is acceptable to the Roman Catholic Church, apart from abstinence.

However, women differ greatly in the timing of ovulation. Not only are there differences between women. Accurate records which have been kept for individual women over a long period of time show that ovulation may vary from one menstrual period to the next in the same woman.

A way of attempting to predict ovulation on the basis of a woman's previous menstrual cycles was developed in the 1930s. Although for some women this proved a fairly reliable contraceptive method, in general the failure rate was very high, with rates of thirty or more pregnancies per hundred woman years having been recorded.

More reliable than the calendar method is the use of a thermometer to detect ovulation. Once an egg leaves the ovary, the body temperature of many women rises slightly. After this rise has been noted, an egg will have lost its capacity to be fertilized and intercourse should be free from the risk of pregnancy. To use this method, a woman must take her temperature first thing in the morning every day and plot it on a monthly chart. But this method also has its drawbacks. There are factors other than ovulation which can influence body temperature. A cold is perhaps the most common of these. Sometimes, too, the tem-

perature rise is not seen at all, or, if it does occur, it takes place before ovulation.

Although some women have used this method effectively for many years, the " temperature rhythm method " failure rate is about fifteen pregnancies per hundred woman years. In theory though, the method offers great advantages. It's inexpensive, is relatively simple to learn, and doesn't need any " appliance " which often disturbs many couples. The search has therefore been, particularly in the last few years, for a simple and foolproof method to detect or even predict ovulation. Unfortunately, however, the results have so far been disappointing. Cheap, improved and disposable thermometers have been developed, which do help. But the unsolved problem is that a woman's ovulation may vary and therefore her " fertile time " can change from month to month. Other regular changes in a woman's body are also being studied. For example, after ovulation the pattern of the sex hormones—the chemical messengers—in her blood and urine changes. This is one sign of ovulation and is very useful in hospital patients who are undergoing treatment for infertility. However, it requires elaborate equipment to detect the change. Such a method cannot, unfortunately, be used by the woman herself.

Also, certain cells lining a woman's vagina undergo changes associated with ovulation, as does the mucus in the cervix. But neither of these changes, at least at present, can be interpreted in a simple, routine way by the woman herself. Many other differences have also been considered. For example, the chemicals in saliva alter during the menstrual cycle, and it is hoped that eventually a simple saliva test—perhaps a change of colour on a slip of paper—might be perfected. The best system would be when ovulation is not detected after it has happened, but predicted before it occurs. So far, however, the problem remains unsolved.

Condoms, withdrawal, spermicides and rhythm are all methods that have been known for a long time. The last three of them could be developed and improved further. The fact that they already exist and are widely used may lead research workers to develop them further. At the same time, other groups have been concerned with the development of new methods, or with the study of methods which have largely been forgotten. These two activities go on side by side, and continue to do so. Our concern in the next three chapters will be with those methods of contraception whose development has been almost entirely within the last ten to fifteen years.

CHAPTER III

Intrauterine Devices

In assessing the contraceptive developments of the last decade, it is often necessary to go back much further in order to trace their sources. So it is with intrauterine devices. No one is sure where the idea of placing something in the womb in order to prevent pregnancy first originated. It is said that certain nomadic African tribes used to place small stones in the wombs of their camels to prevent them from becoming pregnant on long journeys. It has also been suggested that the use of such devices was known to physicians in ancient Greece. But it seems very unlikely that either of these stories was known to a Dr. Richter in Silesia who, in 1909, tried putting silkworm threads in the wombs of some of his female patients to prevent them from having more unwanted pregnancies.

Intrauterine devices—IUDs—made first of silkworm thread, later of silver wire, will always be particularly associated with the name of Dr. Ernst Graefenberg. In the late 1920s he reported the very good results that he had obtained using devices of various designs for several hundred of his women patients over the previous ten years. Such devices might have become firmly established as a contraceptive method over forty years ago, had it not been for the fact that a number of other doctors reported quite disastrous results with it.

It was claimed that many women could not use the method at all. Their wombs simply could not hold the devices. In other