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Family Planning and Birth Control in the Developing World: New Opportunities Thanks to Updated Research

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Abstract

On the basis of a steadily-increasing literature on family planning and birth control the paper addresses central questions in the area of contraception in the developing world. Its aim is to describe the possibilities of contraception in regions with limited resources. It draws attention to the most suitable low-cost effective methods of contraception presently available and provides detailed analyses of their efficacy. In concluding it stipulates expansion of their use as well as intensified education on their practicability.

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Numerous are the publications and websites on birth control and family planning and even more numerous the data presented in the various statistical analyses. [1] Among the pivotal topics in these studies are unwanted pregnancies, abortion, and maternal mortality ratio, ie, the risk of maternal death per 100.000 livebirths. These issues are a focus of interest not only in public health research but also in socio-economic investigations, and one of the frequently addressed problems is cost for birth control methods or contraception. Concerning this issue, attention must be drawn to a recent ACOG statement on the so-called fertility awareness-based methods affirming their low-cost. “They cost very little.” [2]

Besides cost there are other advantages offered by the fertility awareness-based methods, namely safety and efficacy, which are underscored by the ACOG statement: “Many women like the fact that fertility awareness is a form of birth control that does not involve the use of medications or devices.” [2]

In fact, safety and efficacy are the two primary concerns of women envisaging family planning or birth control. Regarding efficacy, the most influential authority on this issue, contraceptive technology research, has investigated not only the problem of contraceptive failure [3] but also the efficacy of contraceptive methods. [4]

Present-day knowledge on this issue is succinctly summarized in a Contraceptive Failure Table which is easily available for the international community. [5] In this table one distinction is made between perfect use and typical use and another one between “first year of use” and “continuing use at first year” (“percentage of women experiencing an unintended pregnancy during the first year of typical use and the first year of perfect use of contraception, and the percentage continuing use at the end of first year. United States.”) [5, Table 3-2]

According to this table, the "Long Acting Reversible Contraceptives," ie, implants and intrauterine devices, appear as the most effective, especially the implant Implanon (precursor of Nexplanon) with a failure rate of 0.05 for both perfect and typical use. Among intrauterine devices, Mirena (Levonorgestrel=LNg) with a perfect and typical use failure rate of 0.2 is superior to ParaGard (copper T) with a perfect use failure rate of 0.6 and a typical use failure rate of 0.8. About equally effective are Depo-Provera with 0.2 perfect use (6 for typical use), NuvaRing 0.3 perfect use (9 for typical use), Evra patch 0.3 perfect use (9 for typical use), as well as combined pill and progestin-only pill with 0.3 perfect use (9 for typical use).

Concerning the so-called "fertility awareness-based" methods, whose typical use failure rate of 24 is based on obsolete data from 1995, [5 note 1] the symptothermal method with a perfect use failure rate of 0.4 appears almost equally effective as pill and progestin-only pill (0.3), Evra patch (0.3), and NuvaRing (0.3), but more effective than ParaGard (copper T) with a perfect use failure rate of 0.6. The ovulation method with a perfect use failure rate of 3 is almost as effective as male condom without spermicide (2 for perfect use) but superior to female condom without spermicide (5 for perfect use). The TwoDay method with a perfect use failure rate of 4 equals coitus interruptus (4 for perfect use), and the Standard Days method with a perfect use failure rate of 5 is superior to diaphragm (with spermicidal cream or jelly) whose perfect use failure rate is 6.

Among the definitive methods, male sterilization with a perfect use failure rate of 0.10 (typical use 0.15) is superior to female sterilization with 0.5 for both perfect and typical use. Concerning Emergency contraception, [6] ie, pills or insertion of a copper intrauterine contraceptive, subsequent to unprotected intercourse, contraceptive technology claims that they substantially reduce the risk of pregnancy. The products marketed specifically for emergency contraception are Ella, Plan B One-Step, and Next Choice.

Lactational Amenorrhea method (LAM) is considered to be a notably effective though only temporary method of contraception, and another method of contraception must be implemented for effective protection against pregnancy, as soon as one of the following conditions arises: menstruation resumes, the frequency or duration of breastfeeds is reduced, bottle feeds are introduced, or the baby reaches 6 months of age.

In describing the mechanism of action of the fertility awareness-based methods, contraceptive technology research specifies that the symptothermal method, the most effective of the so-called "fertility awareness-based methods" due to a 0.4 perfect use failure rate, is based on evaluation of cervical mucus to determine the first fertile day of the cycle and on evaluation of both cervical mucus and temperature to determine the last fertile day. [5 note 6] The two methods based solely on the evaluation of cervical mucus, ie, Ovulation and TwoDay, with perfect use failure rates of 3 and 4 respectively, focus on the special characteristics of the cervical mucus during the fertile phase of the menstrual cycle. The Standard Days method with a perfect use failure rate of 5 is based on cyclic changes, documented with the help of a calendar, and avoids intercourse on cycle day 8 through 19.

Research on cervical mucus, essential for the Ovulation and TwoDay method, has a long history, and recent publications have elucidated the importance of cervicovaginal mucus secretions not only for contraception but also for fertility. [7] As early as 1972 one of the world's leading medical journals published a study on the symptoms and hormonal changes accompanying ovulation. [8] Popularizing publications have described the specific features of the method [9] or provided an overview of the history of research on the method. [10]

As a consequence of intensified research on cervical mucus it is now common knowledge in human physiology that under the influence of estrogen cervical mucus is thinner and more alkaline than under the influence of progesterone. "The mucus is thinnest at the time of ovulation, and its elasticity, or spinnbarkeit, increases so that by mid-cycle, a drop can be stretched into a long, thin thread that may be 8-12 cm or more in length. In addition, it dries in an arborizing, fernlike pattern." [11, p. 402-3]

Given the easy practicability of these methods (which nowadays can be used in conjunction with smart phone applications in contrast to the original "cycle sheet") and the absence of risks as well as adverse events, it remains unresolved why they are excluded from certain surveys such as the one presented by the FDA. [12]

To exclude these methods is unjustifiable not only from an ethical perspective -- since the principle of informed consent requires completeness of information on all available methods -- but also from an international viewpoint. In fact, European research has investigated the issue of contraception as a long-known phenomenon in the history of medicine and has endeavored to establish for each single method its proper failure rate. [13]

Instead of assigning a single failure rate to an entire group of methods, as is customary in U.S.-based publications, European scholars over the years have made efforts to assess each method individually. [14] In the context of a chronological analysis of the phenomenon of contraception in the history of medicine, German researchers have highlighted 15 different methods under the traditional terminology. These methods have been ranked according to the Pearl-Index (number of unwanted pregnancies per 100 woman-years or 1200 months of application), and the ranking shows "tubal sterilization" (Pearl index 0.09-0.4) together with "depot-gestagens" (Pearl index 0.03-0.9), as the most efficacious, followed by "monophasic combined pill" (0.1-1.0), "oral hormonal sequential contraceptives" (0.2-1.4), "minipill" (1), "intrauterine pessary" (0.14-2) and the symptothermal method (0.8). [13, p.60] Concerning the other natural family planning methods, "basal temperature" (Pearl index of 1-3) appears comparable to "diaphragm and spermicide" (Pearl index 2-4) or "condom" (4-5), while "cervical mucus" (15-32) and "calendar" (15-40) roughly approximate the efficacy of "chemical spermicides" (12-20) or "coitus interruptus" (8-38).

Due to the Pearl index of 0.8, the symptothermal method was recognized by German research as the most effective of the natural family planning methods and considered to be one of the "safe contraceptive methods," [13, p.64) -- notwithstanding the problem of irregular cycles, which limits for some women the practicability of this method and necessitates the additional use of other methods.

The high reliability of some of the natural family planning methods, emphasized by international research, is just one benefit of these methods, and an additional advantage is their relevance for fertility. In a study devoted to fertility in AIDS patients using Fertility Awareness-based Methods (FAM) it has been concluded that "FAMs provide effective, economical and accessible options for HIV serodiscordant couples to conceive while minimizing unnecessary viral exposure." [7]

Positive assessments of fertility awareness methods must not obscure the fact that these methods are sometimes ranked as the least effective. [15] Such rankings, however, are not based on recent evidence-based research; rather, they can be traced back to unverifiable and obsolete data from the last century. [16,17] Error-prone descriptions of the fertility awareness-based methods appear sporadically in websites of academic institutions, [18] but most of these websites ascertain their general usefulness and reliability. [19,20]

Conclusion

In view of socio-economic studies emphasizing the cost factor as a crucial problem, the no-cost of fertility awareness methods is of special interest for birth control and family planning in the developing world. According to contemporary research, their safety and efficacy are additional assets. Finally, in the area of fertility treatments these methods have been considered a viable alternative to hormones for special populations.

Implications

Provisions should be made so as to educate women on the issue of fertility awareness. Continued counselling will lead to a better understanding of no-cost natural contraception and thus enable women to enhance the efficacy of their contraceptive pursuits as autonomous individuals, as is required by principles of bioethics.

Conflict of interest: The author declares that there is no conflict of interest.

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