

Sperm Switch: A New Trend in Reducing Maternal Mortality

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ABSTRACT: *The study looked at the emerging practice of switching sperm to reduce maternal mortality in Ekiti State. Secondary data from the chosen health facilities in Ekiti State was used in the study. The major beneficiaries of family planning programs have historically been women, and men have been seen as the services' invisible partners. The study's ideas included male involvement in family planning, the effect caused by sperm switching on family planning, its difficulties, ways to use sperm switching to lower maternal death rates, and the responsibilities of midwives and the government in the process. The study's implications for nursing practice are that nurses and midwives undergoing training should be able to apply the sperm switch approach, and nurses should conduct additional research on new trends in family planning, particularly sperm switching, as well as the advantages of male involvement in family planning. The suggestion is that political commitment, priorities, effective governance, and enough financing should be given top priority. In addition, men should receive advice regarding the reversibility of the sperm switch method, and more awareness should be raised regarding the sperm switch strategy's positive effects on health when used with male contraceptives for family planning.*

KEYWORD: sperm switch, contraceptive, family planning, men, health, maternal mortality, midwife

INTRODUCTION

In all things pertaining to the reproductive system and to its function and process, reproductive health is defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (ICPD 1994). Reproductive health encompasses the freedom to determine if, when, and how many children to have. It also includes the opportunity to have a fulfilling and safe sexual life. It also includes the right to information, access, and cheap,

acceptable, and safe family planning options, as well as the right to appropriate health care that will guarantee a healthy pregnancy, delivery, and infancy. Thus, the definition of reproductive health can also be expanded to include the accumulation of strategies, tools, and services that aid in the prevention and treatment of issues related to reproductive health. Family planning and information services are two important facets of reproductive health.

In order to ensure the well-being of both parents and children, family planning involves the use of various fertility control techniques to help people (men and women) or couples have the number of children they want, when they want them, and at the time they want them. Simply put, family planning refers to using effective preventative measures to avoid unintended pregnancies. This was supported in Cairo in 1994, during the International Conference on Population and Development, in such a way that it is regarded as a fundamental human right of every single person or couple. Programs for family planning offer services that assist people in achieving the following:

- the number of children they want to have
- minimize the number of unintended pregnancies
- reduction in risk of sexually transmitted infections, especially by using condoms., and
- spacing births thus improving both women's and children's health. The service should supply the following to fulfill the aforementioned objectives:
 - a variety of birth control methods and counseling to help women make informed decisions
 - screening and monitoring
 - integrated services such as STI prevention and treatment

Objectives

- i. To explain the idea of male in family planning participation
- ii. To emphasize family planning role in lowering rates of maternal, infant mortality, and morbidity
- iii. To illuminate status update of reproductive health in achieving population stabilization
- iv. To identify the role played by midwives in improving the maternal morbidity in Nigeria.

LITERATURE REVIEW

Overview of Family Planning

A number of health benefits are associated with the use of particular family planning products, for instance, tablets, injections, and implants that have been linked to protection against uterine cancer, cancer of the ovary or ovarian cysts, and benign breast and pelvic inflammatory diseases (PIDs) (Bongaarts et al., 2019).

Family planning is a reasonable intervention for development and public health. Pregnancies that are planned generally result in healthier babies than unplanned pregnancies since they are safer for the mother. Family planning is a tool that both single people and married couples can use to plan

their reproductive lives. The cost of avoiding unwanted births is remarkably low when compared to the costs of unintended pregnancies to the family and the country (Cleland et al., 2016). In addition, family planning programs have a greater impact on reducing maternal and infant morbidity and mortality than other public health interventions (Mwaikambo et al., 2017; Yeaky et al., 2019). Through family planning, couples can realize their full potential, and the woman can perform her responsibilities as a wife, mother, wage worker, and community member more successfully. The husband too, might take up his duties as a family provider, a husband, and a father more fully (Chimbwete et al., 2015). This has contributed to the slowing down of population growth, reducing juvenile dependency, improving health indicators for the nation, and elevating the socioeconomic situation. Additionally, this will help Africa to advance in meeting all of the sustainable development objectives (SDGs).

Concept of Male Involvement in Family Planning

Male participation in family planning is found in at least one of the following activities including support, encouragement, and approval of the husband's use of contraceptives. According to estimates from the World Health Organization (WHO) for 2018, 287,000 maternal fatalities were reported. In 2010, Sub-Saharan Africa (56%) and Southern Asia (29%) were the regions with the greatest burden of maternal mortality globally (WHO, 2018). Amo-Adjei et al. (2017) opined that men are viewed as being largely blamed for the poor reproductive health that their female partners experience. Male participation is believed to aid in the acceptance of a contraceptive as well as its continued and effective use (Gbenga-Epebinu et al., 2020). Communication between spouses over contraception and reproductive objectives points to an egalitarian dynamic in the couple's relationship. According to existing studies, couples who talk about how many kids they want or how they want to have them are more likely to use a contraceptive and fulfill their reproductive objectives than couples who do not (Ashraf et al., 2020).

Husbands frequently have an impact on the family planning practices that women choose to utilize. Male participation in obtaining or giving information about sexuality, reproductive health, or birth spacing has historically been low (Aliyu et al., 2018). As family planning is seen as a woman's affair, women have also been disregarded or excluded in one way or another from many family planning programs. Men traditionally serve as household heads and make all decisions related to their separate households (Bankole et al., 2018). The number of children to have, family planning, and how to use the family's resources are all decisions made by men (Gbenga-Epebinu & Ogunrinde 2020).

Furthermore, research has revealed that because men make decisions, it is expected of them to start conversations about family planning and the number of children the couple wants to have (Doepke et al., 2019). In the eyes of society, the only people who could provide for their families were men. Women were not seen as making decisions; rather, they were perceived as carrying out the decisions made by men without questioning them.

Studies (Hener & Timo, 2015) in Nigeria have shown a high degree of awareness of contraception but a relatively low level of use. The use of contraceptives has a number of challenges in Nigeria. Studies in Nigeria and other countries in sub-Saharan Africa have revealed that myths, disinformation, rumors, and unverified information spread through social networks are significant barriers to the adoption of modern contraceptive behavior. Other explanations for this lack of family planning use include worry about problems, ignorance of the procedures, and worry over the husband's objection. Females and men from India, Nepal, and Nigeria were shown to be afraid of the negative side effects of family planning, according to Nadia et al. Since the International Conference on Population and Development (ICPD) in 1994, there has been an increase in interest in men's involvement in reproductive health. According to evidence, enhanced spousal communication caused by male involvement may boost the use of contraceptives (Cleland et al., 2016).

Family planning works to help couples have the number of children that they want while also managing the spacing and timing of births. For wives and children who are from low- and middle-income families (LMICs), this has severe ramifications. Significant efforts have been made in LMICs to provide family planning services (FPS) at a reasonable price (UNFPA, 2018). However, there is still a sizable unfulfilled demand for family planning services among women in the majority of Sub-Saharan African countries, particularly in rural regions (UN DESA, 2015). This stagnation shows that significant demand-side constraints still exist (Ashraf et al., 2014).

The degree of the husband's engagement in the decision-making process has been examined in a number of field trials to see if it might explain the poor uptake of family planning services, but the results are conflicting. Involving the husband decreases the uptake of contraceptives at a nearby private health clinic, according to Ashraf et al. (2014). In situations where men want more children and have greater negotiating power than women, as it occurs in the case of many low-income countries, women may have to by-pass the husband in order to use contraception. However, the choice to have fewer children is a personal one that a husband and wife must make together.

Impact of Sperm Switch on Family Planning

In the past, women have been the main beneficiaries of family planning programs, while men have been seen as the services' invisible partners. The amount of viable sperm ejected into the vagina must be reduced for a male contraceptive to effectively prevent pregnancy (Hazel et al., 2019). There is broad consensus that men, like women, must fully regulate their fertility, which is a significant worldwide health issue. But over the past 100 years, little has changed with regard to contraceptives that primarily depend on male physiology.

These options are still limited to the non-surgical methods of using a condom, abstinence, and timely withdrawal (coitus interruptus), or the surgical vas occlusion (vasectomy) procedure, which prevents the release of sperm during ejaculation. Condoms work well to prevent unintended pregnancies and to protect against sexually transmitted diseases when they are not faulty and are used properly (Miller et al., 2020). The typical-use failure rates for condoms, abstinence, and

timely withdrawal are higher, but vasectomy is not recommended for younger men because it is mostly irreversible (Miller et al., 2020). Achieving male contraception that is safe, efficient, reversible, and inexpensive has remained a difficult task.

Male contraceptives work to stop the contact of sperm and eggs, fertilization, and subsequent development of an embryo and pregnancy (McCarthy et al., 2019). In order to achieve this, one can (I) suppress or prevent sperm production in the testes; (II) block sperm maturation in the epididymis; (III) prevent spermatozoa from reaching the site of fertilization; (IV) prevent spermatozoa from being capacitation in the female reproductive tract; and (V) interfere with or prevent sperm-egg interaction and fertilization (Jones, 2015). All of the available male contraceptive techniques today work by preventing sperm from reaching the egg, either through barrier methods (such as condoms and vasectomy) or device-free traditional methods (such as abstinence and withdrawal) (Sharlip et al., 2015).

Vasectomy is a surgical male contraceptive that involves ligating the vas or surgically eliminating a section of the muscular tubes, known as the vas deferens, which transport spermatozoa to the penis. The operation is standard and has no known adverse effects on a man's libido or reproductive system. Although microsurgery can sometimes undo a vasectomy, the likelihood of pregnancy after reversal surgery is minimal and mostly depends on the surgeon's ability and the amount of time that has passed after the procedure (Tulsiani et al., 2017). The method is mostly irreversible, so it stands to reason that it may not be ideal for the desires of younger men to have many children in the future.

In addition to vasectomy, a novel procedure termed sperm switch entails attaching a switch to the spermatic canal. A male birth control method called Sperm Switch is currently being developed. With the flick of a switch, this device stops the passage of sperm through the vas deferens. In the short term, this renders a man sterile. The gadget resembles a gummy bear in size. It is made from a polymer that is also used to make other types of medical implants. Sperm flow can be managed by turning the switch on or off. The German carpenter Clemens Bimex created the male contraceptive switch, which acts as a valve to control the flow of sperm via the vas deferens. The one-inch valve, which weighs < 0.1 ounce and is positioned beneath the skin of the scrotum, is surgically implanted during the 30-minute surgery (Li et al., 2015).

How Is the Device Implanted?

A man would first need to have a medical examination to make sure that the device is appropriate for him. If it is, he would be scheduled for outpatient surgery. Surgery is done under local anesthesia and takes 30 minutes. During the procedure, the doctor makes a small incision in the scrotum. The doctor then cuts each spermatic cord. The tube that transports sperm from the testicles, the vas deferens, is located within them.

The spermatic cord's severed ends are subsequently joined to the apparatus. For the duration that the device is in the scrotum, these will stay together. The spermatic cord and device are reinserted into the scrotum, and the wound is then stitched closed.



Figure 1.0 Diagram of Sperm “Switch”

How the Sperm ‘Switch’ Works

To be effective, two implants must be made, one in each vas deferens. In its most basic form, the mechanism is just a simple on/off valve that regulates semen flow in the vas deferens. The vas deferens is transected during implantation, and the ends are connected to the corresponding in/out tubes of the apparatus (Jones, 2015). By pressing a switch that can be felt via the scrotum, the valve can be shut off. When the device is in the closed position, semen is theoretically diverted from the vas deferens and into the scrotal tissue, where it is digested and safely absorbed. A different safety button must be held down while the switch is moved back into the open position in order to re-open the valve. In addition to some non-magnetic metallic components, the device is constructed from PEEK Optima, a biocompatible polymer frequently used in implants (Jones, 2015).

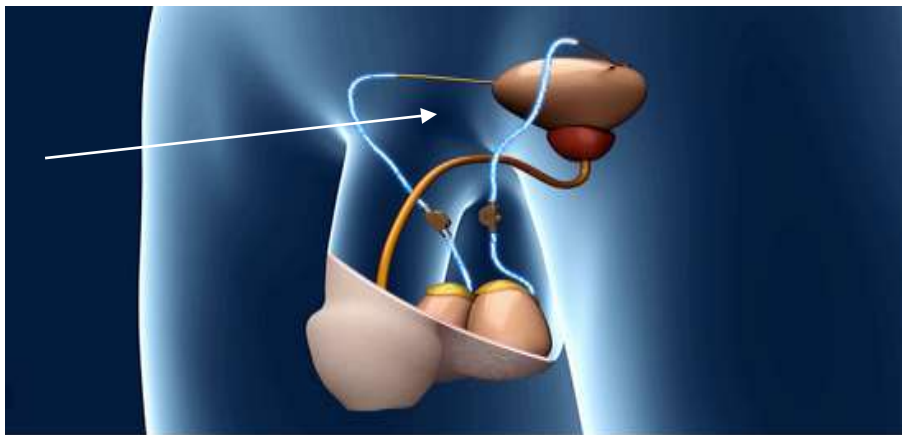


Figure 2.0 Diagrams of Installed Sperm “Switch”

According to Guha et al. (2017), men must wait three to six months after the switch is installed before their sperm is eliminated from the duct. Therefore, if the switch is installed as a form of birth control, further security would be required.

Challenges of Sperm Switch

1. There is a risk that men will resume unprotected sex without knowing if their semen is really free of sperm
2. Doctors have some concerns about the implant including scar tissue that could develop around the valve and make the switch hard to flip
3. There is some concern that the valve could clog with sperm if left in the opening position for a long period, such clogging might require periodic doctor's visits for line-cleaning which may be unpleasant

Strategies of Sperm Switch Approach in Reducing Maternal Mortality Rate

The use of a contraceptive method is more likely to occur when a person chooses one of several available methods rather than one of just two, according to research (Blanc et al., 2015). Men, women, and couples must all receive thorough information about all available contraceptive methods, and there must be support for individuals making their own family planning decisions in order to boost the use of the sperm swap technique. Studies have also revealed that nations with easy access to a variety of contraceptive methods for all couples had more balanced method mixes and greater rates of overall contraceptive usage than nations with restricted access to diverse contraceptives (Awasthi et al., 2015).

The key family planning measures going forward should be to

(a) Expand the range of contraceptives, including (i) giving couples a choice of contraceptive methods; (ii) enlightening users; (iii) increasing provider competency; and (iv) improving client-provider relationships;

(b) Increase access to contraceptives, both financially and physically: (i) affordable contraceptives; (ii) more sales locations for convenient access; (iii) follow-up and re-contact mechanisms; (iv) a suitable constellation of services with appropriate information, education, and communication (IEC) and interpersonal communication (IPC) programs; and (v) promoting new acceptance, retaining current users, and increasing contraceptive use are all important factors; and

(c) increasing the knowledge and understanding of both providers and acceptors through: (i) effective IEC and IPC programs; (ii) free or discounted access to techniques; or (iii) the provision of incentives could convince more people to become new acceptors. The "healthy family" component of family planning and the fact that spacing out children is good for the whole family, both financially and health-wise, should be emphasized in order to engage men in family planning. As a result, there should be an increase in the use of contraceptives. Encouragement of increased contraceptive use is one method for promoting a decline in maternal mortality and improving both mother and child health.

Role of The Midwife and Government in Family Planning

In all circumstances, no matter where on the globe they reside or what their circumstances are, midwifery is important for all childbearing women, their infants, and their families. According to research (Renfrew et al., 2014), skilled, knowledgeable, and compassionate midwifery care lowers maternal mortality and improves health and well-being. By doing this, midwifery has a beneficial effect on the global health system as well as the economic viability of communities and countries. Midwives should promote family planning, particularly the current family planning trend. Males should be included in the new family planning trend by midwives so that they can understand its significance for population stabilization.

There should be more family planning clinics available in all the health centers, either in primary health care, secondary health care, or tertiary health care settings. Every provider of maternal care should feel at ease discussing contraceptive options with patients and conducting routine checks on males to rule out prostatitis.

Implications for Nursing Education, Research, and Practice

Nursing education

Nurses and Midwives in training should have skills in applying the sperm switch approach and orientations for nurses on improved family planning services. The application of the sperm switch technique should be taught in nursing and midwifery programs.

Nursing Practice

This concerned the midwives roles in enhancing family planning services, particularly when males are involved in efforts to lower the rate of maternal mortality. Studies on the new methods of family planning, particularly the sperm switch, which allowed women to enjoy their sexual lives, are vital. Midwives should be trained on the new trend and the positive effect of male involvement in family planning.

Nursing Research

There is a need for more research and information on other methods of reversibility of family planning and avoidance of unwanted pregnancy, which in turn reduce the mortality rate.

CONCLUSION

The most popular method of family planning in Nigeria is spacing out contraceptives, which demonstrates that there is still a desire for contraceptives among this population. Therefore, it may be easier to encourage use through advertising and service delivery that present male contraception as a way to spread out births and enhance mother and child health.

Improving family planning that involves men will give women peace of mind. Hence, preventing unwanted pregnancy, poverty, etc. will eventually reduce the rate of women's deaths. In view of

this, a long-term solution to the issue of women who are responsible for family planning is provided by male involvement in the practice. Therefore, as a benefit for population control, contraception should be strongly pushed for reasons of socioeconomic development, health, and SDG achievement.

Suggestions

1. Adequate money, strong governance, and a significant shift in political priorities are required to support new family planning program trends.
2. In order to enhance family planning practices, efforts must be increased to promote partner dialogue and male participation.
3. Men should also receive advice on the reversibility of the sperm switch method.
4. Lastly, the health advantages of the sperm switch method for male contraceptives in family planning should be made known in hospitals.

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