

REPRODUCTIVE HEALTH: GLOBAL INFERTILITY TREND

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I am highly delighted to be called upon to give a keynote address in this very important conference and on the theme: "Reproductive Health: Global Infertility Trend". Initially, I was a bit worried why a Gynaecologist should be called upon to address a gathering of very seasoned Physiologists but when I remembered that the journey to Gynaecology started with Physiology and Physiology is the bed-rock of all Clinical Sciences, I was encouraged that I can come to stimulate discussion. I then looked at the theme of the conference, "Reproductive Health: Global Infertility Trend"; purely gynaecological. This unfolded to me the much clinical orientation our Physiology today has taken, to the great advantage of our medical students.

What is Reproductive Health?

The World Health Organization (WHO) defines health as "a state of complete physical, mental, social and spiritual well-being and not merely the absence of disease or infirmity. Within the context of this definition, Reproductive Health is therefore defined as "a condition in which the reproductive process is accomplished in a state of complete physical, mental, social and spiritual well being and not merely the absence of disease or disorders of the reproductive process". Reproductive health thus, implies that people have the ability to reproduce, to regulate their fertility and to practice and enjoy sexual relationships. It further implies that reproduction is carried to a successful outcome through infant and child survival, growth and healthy development. It finally implies that women can go safely through pregnancy and childbirth, that fertility regulation can be achieved without health hazards, and that people are safe in having sex (Fathalla, 1988; ICPD, 1994; Akande 2002).

The Birth of Productive Health

In the past 3 decades a number of International Conferences on Population have taken place. For example, in 1974, the World Population Conference was held in Bucharest and in 1984, the International Conference on Population was held in Mexico City. In all these conferences, the emphasis was on:

- Population size versus resources as well as population growth versus economic development.
- The Major players were economists and development planners.

In 1994, the International Conference on Population and Development (ICPD) took place in Cairo. The Cairo conference represented a significant shift in the world's perception of population dynamics (ICPD, 1994). For the first time, the conference not only focused on population but also on development. The emphasis now shifted to

- Human Rights; Reproductive health and Individual choice
- The major players were health professionals and human right activists.
- The concept of sexual and Reproductive Health and Rights was therefore firmly put in place. Significantly, it also placed Sexual and Reproductive Health at the centre of the development efforts making it clear that the aim of interventions is to enhance Reproductive Health and promote Reproductive Rights rather than population policies and fertility control. This implies the empowerment of women (through better access to education among others); the involvement of women and young people in the development and implementation of programmes and services; reaching out to the poor, the marginalized and the excluded; and fostering more responsible reproductive health behaviour among men. In effect, quality of life was now the main focus.

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The Importance of Reproductive Health

Reproductive Health has an impact that extends beyond the individual and family, to the society at large and even to the world as a whole. This impact involves crucial areas of global concern such as health, population, development, status of women and the environment. Reproductive health is a crucial part of general health and a central feature of development. It is a reflection of health during childhood, and it is crucial during adolescence and adulthood. It sets the stage for health beyond the reproductive years for both women and men, and affects the health of the next generation. The health of the newborn is largely a function of the mother's health and nutritional status and her access to health care.

Reproductive health, though a universal concern, is of special importance to women particularly during their reproductive years. Even in old age, the general health continues to reflect earlier reproductive health life events. Men also have reproductive health concerns and needs, though their general health is affected

by reproductive health to a lesser extent than women. Men have particular roles and responsibilities in terms of women's reproductive health because of their decision-making powers in reproductive health matters.

Reproductive health contributes enormously to physical and physiological comfort and closeness, and to personal and social maturation, poor reproductive health is frequently associated with disease, abuse, exploitation, unwanted pregnancy and even death. At each stage of life, individual needs differ. There is however, a cumulative along the course of life events at each phase having important implications for future well being. Failure to deal with problems at any stage in life sets the stage for later health and developmental problems.

Reproductive health is a prerequisite for social, economic and human development. The highest attainable level of health is not only a fundamental human right for all, it is also a social and economic imperative because human energy and creativity are the driving force of development.

Components of Reproductive Health

The components of Reproductive Health include:

- Fertility Regulation
- Infertility: Prevention and Treatment

- Safe Motherhood
- Unsafe Abortion – Prevention and Management
 - Sexually Transmitted Diseases including HIV/AIDS
 - Reproductive Tract Malignancies
 - Infant and child survival, growth and development
 - Menopause
 - Adolescent Reproductive Health
 - Gender issues including prevention of unsafe practices and violence.

From the theme of this conference, the aspect of Reproductive Health which concerns us today is Infertility and probably its global picture.

What do we mean by Infertility?

Infertility is defined as a failure of a couple to achieve a pregnancy after one year of regular unprotected coital exposure (WHO, 1987). Infertility can be primary if a pregnancy has never occurred and secondary if there has been a preceding pregnancy, irrespective of the outcome of the pregnancy. Although secondary infertility implies that there may be no natural barriers to conception, it nevertheless suggests the presence of a supervening pathology that may severely compromise fertility.

The Global Trend in Infertility

The prevalence of infertility in the United Kingdom is estimated to be in the region of 6%. In the United States of America it is about 10%. By contrast, most countries in Sub-Saharan Africa have prevalence rates of infertility of 20-30%. An infertility belt has been described in Africa. This stretches from West Africa, through Central to East Africa. Several countries with high rates of infertility that lie within this belt include: Nigeria, Cameroon, Gabon, Democratic Republic of Congo, Central African Republic, Chad, Burundi, Uganda and Kenya. In Gabon, it is estimated that more than 33% of women are childless at the end of their reproductive lives (Okonofua 2003). In some parts of Nigeria, community base studies have reported rates of infertility as high as 20% (Okonofua, 2003) and 45% (Adetoro, 1991). Since infertility is more or less a problem of Africa and other Developing countries, this discussion will now be emphasizing infertility as it affects Africa.

Causes of Infertility

It is now generally agreed, particularly in Africa, that the incidence of the causes of

infertility is equally distributed among men and women. In Africa about 40% of infertility cases are attributed to male factors, while another 40% are due to female factors. About 15% are due to factors present in both partners and the remaining 5% are due to cases where no causes are found in either partner after extensive investigations (unexplained infertility). In the developed nations female infertility is caused by factors such as endometriosis, anovulation from polycystic ovarian disease, Hyperprolactinaemia with or without galactorrhoea, Hypogonadotrophic Hypogonadism, premature ovarian failure and cervical and endometrial factors.

Available evidence indicates that the high level of infertility in Africa is due largely to reproductive tract infections (Fathalla, 1988). The most commonly implicated infections that cause infertility are sexually transmitted diseases, post abortion infections and puerperal infections. These infections produce extensive damage to the fallopian tubes leading to tubal occlusion and peritubal adhesions. The proof of this is given by studies that show significantly higher rates of lower genital tract infections as well as antigenococcal and anti-chlamydial antibodies (Okonofua, 1997) in infertile women compared to fertile controls. In addition, the epidemiology of infertility in Africa conforms to sections and regions in the continent that have comparatively higher rates of sexually transmitted infections (Okonofua, 2003).

Infection associated with unsafe abortion is another leading cause of infertility in Africa. Abortion is not permitted under the law in many African countries including Nigeria. Consequently, women with unwanted pregnancies frequently resort to self-induced abortions or abortions done improperly under unhygienic conditions, leading to high rates of infections. These infections often damage the tubes, resulting in irreversible bilateral tubal occlusion. In addition, unsafe abortion can lead to infertility as a result of Asherman's Syndrome produced by excessive curettage of the uterine endometrium during dilatation and curettage. Several studies from various parts of Africa have shown high rates of self-reports of previous induced abortions in women seeking infertility treatment (Adekunle and Ladipo, 1992; Okonofua and Snow, 1995; Rosenfield, 1994). Again, a case control study from Nigeria reported that infertile women are seven times more likely to report previous induced abortions

as compared to fertilepregnant controls (Okonofua, 1994).

Another cause of infertility in African women is infection arising From puerperal sepsis. Trained providers attend to very few pregnant women in many African countries at the time of delivery (Etuk, Itam and Asuquo, 1999). Traditional birth attendants and churches where non sterile delivery procedures are practiced are utilized by women at delivery (Etuk, Itam, Asuquo 1999; Etuk, Itam, Asuquo, 2000). The result will be a high rate of pelvic infections. In addition, prolonged obstructed labour is a frequent complication of pregnancy in many African countries. Prolonged labour is often complicated by pelvic infections and can result in either maternal death or severe tubal damage. Considering male infertility, it is shown that hormonal factors, hyperprolactinaemia, Hypogonadotrophic Hypogonadism produced by tumours or functional failures at the pituitary or hypothalamic levels, testicular failure, feature prominently as causes of male infertility in the developed world. By contrast, in Africa, available evidence suggests that sexually transmitted diseases especially *Neisseria gonorrhoeae* and *Chlamydia trachomatis* account for a significant proportion of cases (Faro, 1993). These infections typically cause chronic epididymitis resulting in occlusion of the vas deferens and oligospermia or azospermia. Male infertility may also be due to other infections, especially severe epididymo-orchitis either due to pyogenic organisms or to mumps.

Previous genitourinary surgery where the vas deferens is inadvertently damaged, such as herniorrhaphy, may also cause male infertility while some cases have been attributed to congenital testicular maldescent. The role of varicocele of the testicular veins as a cause of infertility in African men is still not fully understood. Some authors believe that varicocele causes oligospermia by elevating the temperature around the testicles and, therefore, recommend varicocoelectomy in every case of male infertility in which a varicocoele is detected (Nieschlag, 1992) A few others disagree and argue that varicocoelectomy has no place in the management of male infertility (O'Donovan et al, 1993). Hence, further studies are required to identify the relationship between male infertility and varicocoeles.

It must be noted that there is still a lot that is unknown about the causes of female and male infertility particularly in Africa. The role of

malnutrition that is prevalent in communities throughout Africa remains largely unknown. Also unknown is the contribution of parasitic infection/infestations including Malaria, Cultural practices such as female genital mutilation and medical illnesses such as sickle cell disease, tuberculosis, diabetes mellitus, chronic renal failure and chronic anaemia that are increasingly prevalent in the continent (Okonofua, 2003). Certainly, a lot of studies are needed to determine the role of these factors and to elucidate the various social, epidemiological and medical risk factors for infertility in this region.

Infertility and Reproductive Health in Africa

In spite of the high incidence of infertility in Africa, there has been very little systematic elucidation of the implications of infertility on reproductive health in the continent. In the past, it was assumed that infertility in Africa did not warrant specific interventions and programmatic efforts since many African countries have concomitantly high rates of fertility. With the paradigm shift that took place after the 1994 International Conference on Population and Development in Cairo, it is now evident that a conceptual rethink about infertility in African is needed.

Several adverse consequences of infertility for women's reproductive health in Africa are now being increasingly recognized. For years, many studies have documented the high premium placed on child bearing in several African societies, which makes infertility a major disaster for couples. Thus, infertility is a major cause of marital disharmony in Africa and it exposes women to ostracisation, social discrimination, and physical violence (Okonofua *et al.*, 1997). In this regard, it is conceivable that infertility can aggravate the problem of human rights abuse against African women, and can lead to socio-economic disempowerment of women on a scale that exceeds that associated with other major reproductive health problems. Additionally, emerging evidence suggests that there is an association between infertility and the HIV/AIDS epidemic in the continent. Recent studies in Tanzania and other East African countries demonstrate both higher rate of infertility among HIV positive women and higher incidence of HIV in infertile patients (Favot *et al.*, 1997). This implies that infertility may lead to a long-term higher rate of mortality in women as a result of higher rates of acquisition of HIV. Clearly, infertile women in Africa are a higher risk group requiring targeted

and focused reproductive health interventions and programming in the future.

The prevention of sexually transmitted infections, post-abortion and postpartum sepsis are carried out in many African countries as independent programmes without attempts being made to link them with the prevention of infertility. And yet there is evidence that when linked with the prevention of infertility, such programmes can stimulate greater participation of African women in reproductive health programmes. In particular, there is an increasing need to identify a sustainable framework for integrating the prevention of infertility into various reproductive health programmes in Africa especially maternity care, family planning, post-abortion care, and STDs/HIV prevention and treatment.

Another programmatic requirement for infertility in Africa is to provide treatment and counseling for the large number of couples who are currently infertile. As part of an effort to promote the reproductive health of such couples, it is important that they have ready access to qualitative treatment and counseling services. However, the conventional treatment of infertility is necessarily expensive and may not be easily affordable in many African countries. To date, many conventional treatments of infertility available in Africa have not proven to be effective due to their lack of standardization, and the new reproductive technologies known to couples in developed countries are not cost effective in Africa (Okonofua, 1999). Many infertile couples in Africa to date, still seek traditional methods of treatment, whose efficacy and effectiveness have not been systematically investigated.

The Way Forward

From the discussion so far, it is clear that a better approach to infertility in Africa is to direct programmes towards its prevention. Fortunately, a large proportion of the causes of infertility in Africa can be prevented. A comprehensive strategy using primary, Secondary and tertiary preventive methods have been advocated (Okonofua, 2003). Primary prevention consists of the prevention of infections that lead to infertility. These include the prevention of sexually transmitted diseases, post-abortion infections and puerperal infections. In this way, the primary prevention of infertility ought to be carefully integrated into the full complement of packages aimed at preventing reproductive tract infections in women and men. The primary

prevention of infertility should consist of community education on behaviour change, modifications on sexual practices, effective contraception including the use of barrier methods of contraception. Contraception is particularly important as it would reduce the number of unwanted pregnancies thereby reducing the number of post abortion infections and abortion related infertility. Also important is the use of effective and qualitative maternity care services.

Secondary prevention of infertility involves the early recognition and treatment of sexually transmitted diseases and the prompt treatment of abortion and puerperal infections. Obstetricians and Gynaecologists should always tailor their treatment of pelvic complications towards the prevention of future infertility. A case in point is the treatment of pelvic inflammatory disease. Even when simple orally, active antibiotics may be effective in treating mild to moderate types of pelvic inflammatory disease, it may be wiser to administer highly potent antibiotics parenterally in efforts to prevent future infertility. All cases of spontaneous and induced abortions should be promptly treated and antibiotics administered to prevent pelvic infection and future infertility.

Tertiary prevention includes the use of methods to mitigate the effects of infertility on couples. These include systematic counseling with conventional methods, and where cost is not a problem, the use of one of the new reproductive techniques. Besides, couples with difficult and irreversible forms of infertility should be counseled to accept their fate, and to adopt or foster children. In particular, clinicians managing couples with infertility in Africa should be acutely aware of the social consequences of infertility, especially for women and are requested to use innovative methods to secure the couples' accurate and realistic understanding of the condition so as to reduce the intensity of the social problems.

There is need for more specific research and programme evaluation in relation to infertility in Africa. Research is needed to determine and proximate medical and social determinants of infertility in Africa. The short- and long-term consequences of infertility for women's reproductive health in Africa also need to be investigated, with special focus on the effects of infertility on women's economic and social lives. Thereafter, specific community based intervention programmes can be designed and implemented to identify a framework for

ameliorating the negative consequences of infertility for women in Africa.

Again, specific intervention research is needed to evaluate both direct and indirect methods for preventing infertility in Africa as well as to evaluate the cost-effectiveness of traditional and orthodox methods proffered for infertility treatment in Africa. Greater programming on infertility in Africa is one way to demonstrate our commitment to the resolutions at the Cairo and Beijing International Conferences which sought to promote women's reproductive health from a broader perspective (Okonofua, 1999).

Conclusion

May I conclude that no single issue, illustrates the abuse of women's reproductive rights more eloquently than infertility occurring in African women. National and International policy makers and agencies concerned with health should recognize infertility as an important area requiring focused interventions and programming. Prevention and early management of pelvic infection particularly those due to botched abortions, STD and puerperal infections should be accorded the highest priority in reproductive health programmes in Africa. Training and re-training programmes for doctors, midwives, family planning practitioners and other health workers should emphasize the concept of prevention of pelvic infections in the curricula. Public health education programmes should be designed and promoted to heighten community awareness of the causes, prevention and treatment of sexually transmitted diseases, unwanted pregnancies and infertility. To promote health and social well being in Africa, efforts should be made to consolidate and improve on the conventional treatment of infertility. There may be need to regionalize infertility treatment services in Africa. The best approach, probably, may be to integrate infertility prevention and treatment within primary health care and family planning programmes. It may be necessary to promote adoption as a valuable method for resolving infertility in couples that remain intractably infertile.

References

- Adekunle, OA and Ladipo, OA (1992). Reproductive tract infections in Nigeria: Challenges for a fragile health infrastructure. In: German. A et al (Eds). *Reproductive*

- Tract Infection*. New York: Pierum Press, 297-316.
- Adetoro, OO and Ebomoyi, EW (1991). Prevalence of Infertility in a rural Nigerian Community. *Afr. J. Med. med. Sci.* 20:23-27.
- Akande, E.O (2002). Reproductive and Sexual Health and Rights. *Arch. Ibadan Med.* 3:1-3.
- Etuk, SJ, Itam IH, Asuquo EEJ (1999). Role of the spiritual churches in antenatal clinic default in Calabar. Nigeria. *East Afr. Med. J.* 76(11): 639-643.
- Etuk SJ, Itam IH, Asuquo EEJ (2000). Morbidity and Mortality in booked women who deliver outside orthodox health facilities in Calabar, Nigeria. *Acta Tropica* 75: 309-313.
- Faro S (1993). Infection and Infertility. *Infect. Dis. Obstet. Gynaecol.* 51-57.
- Fathalla, FM (1988). Promotion of research in human reproduction: Global needs and perspectives. *Human Reprod.* 3:7-10.
- Favot I, Ngalula J, Mgala Z, Klokke AH, Gumodoka B, Boerima JT (1997). HIV infection and sexual behaviour among women with infertility in Tanzania: a hospital-based study. *Int. J. Epidemiol.* 26(2):414-419.
- International Conference in Population and Development (ICPD) Cairo, September 1994. Programme of Action: Cairo, 5-13.
- Nieschlag E (1992). Care for infertile male. *Clin. Endocrinol.* 38: 123-133.
- O'Donovan PA, Vandekerckhove P, Lilford RJ and Hughes E. (1993). Treatment of male infertility is it effective? Review and meta-analysis of published randomized controlled trials. *Human Reprod.* 8:1209-1222.
- Okonofua, FE (1994). Induced abortion – a risk factor for infertility in Nigeria women. *J. Obstet. Gynaecol.* 14:272-2.
- Okonofua, FE and Snow, RC (March 1995). Prevalence and Risk factors for Infertility in Ile-Ife, Nigeria. Report of a study presented to the Food Foundation, New York.
- Okonofua, FE (2003). Infertility in Sub-Saharan Africa. In: *Contemporary Obstetrics and Gynaecology for Developing Countries*, Okonofua F and Odunsi L (eds) Women's Health and Action Research Centre, 128-156.
- Okonofua, FE, Snow RW, Kane T and Wyshak G. Infertility and reproductive health in South West Nigeria. *Social Science Research on Childlessness in a Global Perspective*. SCO: Kohnstaun Institute, 175-185.
- Okonofua, FE, Ako-Nai, KA and Dighitogh, MD (1995). Lower genital tract infection in infertile Nigerian women compared with controls. *Genitourinary Med.* 71:163-168.
- Okonofua, FE, Snow, RC, Alemnji, GA et al (1997). Serological and Clinical Correlates to Gonorrhoea and Syphilis in fertile and infertile Nigerian women. *Genitourinary Med.* 73:194-197.
- Okonofua, FE, Harris D, Odebiyi A, Kane T, Snow RC (1997). The Social meaning of infertility in South West Nigeria. *Health Transition Rev.* 7: 205-220.
- Okonofua, FE (1996). The Case against the development of new reproductive technologies in developing countries. *Bri. J. Obstet. Gynaecol.* 103:957-962.
- Okonofua, FE (1999). Infertility and Women's reproductive health in Africa. *Afr. J. Reprod Health.* 3(1): 7-9.
- Rosenfield, A (1994). Abortion and Women's reproductive health. *Int. J. Gynaecol. Obstet.* 46:173-179.
- World Health Organization (1987). Infections, pregnancies and Infertility; perspectives on prevention. *Fertility Steril* 47:964-968.