

Epidemiology of infertility: social problems of the infertile couples

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Summary

Infertility is of public health importance in Nigeria and many other developing nations because of its high prevalence and especially due to its serious social implications. A review of the epidemiology of infertility in Nigeria and other parts of Sub-Saharan Africa is presented and socio-cultural issues including the social impact on couples are discussed. The major cause of infertility in Africa is infection – STDs, post-abortal and puerperal sepsis. Beliefs about causes, and failure of orthodox methods of treatment have led many couples to seek solution from traditional doctors and faith healers without success. Infertility causes marital disharmony, which often leads to divorce. Women are often blamed for the infertility and men engage in polygyny in an attempt to have children. The couple can also suffer stress from the management of the infertility. Adoption is not popular and assisted reproduction has medico-legal implications. Preventive measures are suggested, including counselling at every stage of the management.

Keywords: *Infertility, Social impact, Couples, Nigeria, Sub-Saharan Africa*

Résumé

L'infertilité a d'importance dans la santé publique au Nigéria et dans plusieurs autres pays en voie de développement à cause de sa haute prévalence et spécialement à cause de ses sérieuses implications sociales. Une revue de l'épidémiologie de l'infertilité au Nigeria et dans d'autres parties de l'Afrique Sud du Sahara est présentée et les issues socio-culturelles qui incluent l'impact social sur les couples ont été discutées. La cause majeure de l'infertilité en Afrique est l'infection. Les STDs, les sepsis post-avortement et puerpéraux. Les croyances sur les causes et l'échec des méthodes de traitement orthodoxe ont conduit plusieurs couples à chercher des solutions auprès des médecins traditionnels et spirituels. L'infertilité cause de la désaffection matrimoniale qui le plus souvent conduit au divorce. On reproche l'infertilité aux femmes et les hommes deviennent polygames afin d'avoir des progénitures. Le couple devient ennuyé par le traitement. L'adoption n'est pas populaire et la reproduction artificielle a des implications médico-légales. Les mesures préventives sont suggérées, ainsi que des conseils à chaque étape du traitement.

Introduction

Infertility which has been defined by WHO as an inability of a couple of childbearing age to conceive over 12 months of exposure to regular unprotected sexual intercourse is a problem of public health importance in Nigeria and many parts of Africa especially sub-saharan region. This is not only because of the high prevalence but also due to the important social effects on affected couples and families. Impaired fertility is measured by childlessness, sub-fertility and infertility. Primary infertility refers to nulliparous couples who are unable to reproduce

The population of African countries ranges between less than 1 million to over 100 million. This is associated with a rapid annual rate of natural population increase ranging from 1.7 percent in Tunisia to 3.6 percent in Togo¹. This rapid increase in population has not been accompanied with an increase in social and economic development. The population problem in Africa and many other developing countries led to the development of population policies and expansion of family planning services. However, helping infertile couples to achieve pregnancy, which is one of the objectives of family planning should not be neglected. New technologies for assisted reproduction have led to a great demand for fertility enhancing services. These have however generated intense ethical, legal and social debates in some countries.

Epidemiology

Ironically, infertility and sub-fertility are prevalent within the high fertility zones of Africa². Areas with high rates include Central Africa Gabon, Central African Republic, Democratic Republic of Congo; Chad and the Cameroon. Also, intermediate rates of infertility exist in parts of West and East Africa. In Nigeria, over 800,000 couples are said to have difficulty in achieving desired pregnancy. The concomitantly high rates of fertility increase the demand for sensitivity on the part of health care providers.

Infertility accounts for more than half of the cases seen in gynaecology clinics in the developing countries of the world^{3,4}. The incidence varies between and within countries. An analysis of the most recent World Fertility Survey (WFS) or Demographic and health Survey (DHS)⁵ is shown in table 1. The range of infertility rate is between 8.6 percent and 21.5 percent. Eastern Africa tends to have the lowest rate while Southern Africa has the highest. West Africa contains areas of high infertility rates (e.g.) Mauritania, and low infertility rates (e.g. Niger). The sub-Saharan infertility rate is between 12.5 and 16.0 percent (mid-point is 14.5 percent). However, there is evidence of a declining trend in infertility rates in parts of sub-Saharan Africa Such as Cameroon and Nigeria⁶.

Sex

The female factors are more widely studied in Africa than the male factors because it is commonly assumed that the woman is primarily responsible for infertility. However, studies have shown that the contributing male factor to infertility is also high 20 – 40 percent^{3,4,7,8}. The male factor is associated with a greater percentage of cases of primary rather than secondary infertility⁹.

Age

The occurrence of infertility also varies by age. As indicated in table 2 there are variations across age-groups, however the prevalence of infertility increases with age.

Residence

As shown in table 2, there is regional variation in the

prevalence of infertility in Nigeria. Infertility declined between the WFS and the DHS in each region, except among the oldest women in Southwest, reasons for which are unclear. The prevalence of infertility was lowest at the Southwest, and highest at the Northeast. It has been suggested that the regional variation may be a reflection of differences in the prevalence of STDs¹⁰.

Urban residence is an important socio-cultural factor in infertility. Urban dwellers are at greater risk of infertility than rural dwellers⁵. This is because of high reservoir of infection and greater chances of having sex with infected partners.

Social

Fertility is affected by many different cultural, environmental and socio-economic factors in Africa. Culture influences sexual behaviour, marriage practices and access to health services¹¹. Poverty, poor access to maternal health care and illegal abortion (usually performed under unsafe conditions) all contribute to the high prevalence of infertility¹². It appears then that infertility will be more common among low socio-economic groups than among those of higher social class, but the incidence of STDs is also high among the latter. Also, a higher prevalence is expected among cultural groups with practices associated with high risk of infertility. For example, female genital mutilation could predispose women to infertility secondary to infection and early marriage leads to early childbearing which is associated with an increase in the incidence of complicated deliveries, thereby increasing the risk of infection and subsequently, infertility especially when there is poor access to good maternal services.

The generally low status of women puts them at a disadvantage especially due to lack of decision-making power. In a study of 27 African nations. It was found that infertility is strongly associated with social, behavioural and cultural factors which put women at risk of STDs and other RTIs⁵. There is an imbalance in the power relations between men and women to such an extent that the later may be unable to refuse sex with a partner or insist on the use of condom, even in the face of suspected infection in the male¹³. This could jeopardise the women's fertility. Although the primary cause of infertility may be an infection; some underlying or contributing factors reflect social disorganisation such as prostitution sequel to rural-urban migration.

Early exposure to sexual intercourse is a predisposing factor to infection and infertility^{14,15}. Additional evidence for this is from the Nigerian Demographic and health Survey (NDHS); at ages 20 – 24 years. Fifteen percent of those who had sexual intercourse before age 13 were infertile compared with 4 percent of those who delayed sexual intercourse until after age 19 years¹⁶.

As analysed from WFS and DHS data⁵, infertility rates vary between cultural groups. These differences have been explained by cultural differences in sexual histories and other risk factors. In Southern Africa with high infertility rate, the rates are fairly uniform among culturally homogeneous groups in Botswana, Lesotho and Zimbabwe. In countries like Namibia with cultural diversity, the infertility rates are also diverse – the Nama-Damara had the highest (32 percent), followed by the Lozi (21 percent) then the Ovambo (14 percent). The Zambian Lozi infertility rate of 20.1 percent is similar to that of Namibian Lozi but is significantly higher than the Bemba infertility rate of 13.1 percent⁵.

In East Africa, culturally homogeneous Burundi and Rwanda had similarly low infertility rates. These low infertility rates are similar to the rates found among related ethnic groups

in adjacent nations such as the Ganda and Akole of southern Uganda and the Haya of western Tanzania, all of whom had average infertility rates each less than 10 percent. The Nilotic groups of Kenya and Tanzania also had low infertility rates of below 10 percent while the cultural groups along western borders of Kenya and Tanzania had high infertility rates⁵.

In western African, according to the analysis of the WFS and the DHS⁵, the Hausas of Niger have an infertility rate of 14.3 percent, which is not significantly different from that of the Fulanis and Kanuris in that country. These rates were higher than that of the Zarma (5.8 percent), and the Taureg (8 percent) in that country. The Hausas of northern Nigeria had a similar infertility rate to that of the Hausas of Niger. The infertility rates of the Fulanis and Kanuris were also similar in both nations: although the sample size of the Fulani and the Kanuri sub-groups appear rather small. Altogether, the Hausas, the Fulanis and the Kanuris of northern Nigeria had an infertility rate between 13.5 and 14.3 percent. While the infertility rate among the Yorubas was 14 percent, lower rates were found among other cultural groups such as the Tiv (10 percent), the Nupes (10.5 percent) and the Chaamba (6.9 percent). However, higher rates were found among the Ibos (19.1 percent) and the ethnic groups in Cross River State (16 percent).

In Cameroon, infertility rates were high among the Fulanis (22.7 percent), and the Chadic-speaking groups of the far north (28 percent). The cultural specificity of infertility is reflected in the lower rates among other cultural groups in the same region such as the Shuwa Arabs (12 percent) and the Baya (4.2 percent). The highest infertility rates were found among the Fang (33 percent) who reside in the south along the borders between Cameroon and Gabon. Similarly, there were high infertility rates among the Fang-dominated Gabon. The largest cultural group in Cameroon: the Bamileke, had a relatively low infertility rate of 4.5 percent⁵. It must be noted however, that the use of WFS and DHS data for the study of infertility have limitations. They were designed to study fertility, and inferences for infertility are indirect. The inference is dependent on the recall of relevant data which could be unreliable.

Aetiology

The aetiology of infertility in Africa is well understood and it is mainly due to preventable causes. Comprehensive figures on the incidence of etiological factors are not readily available. There is epidemiological evidence that African women have the highest rates of disease-induced infertility in the world¹⁷. In most parts of sub-Saharan Africa secondary infertility is diagnosed much more than primary^{18,19,20,21}. This is also shown in table 1 where primary infertility is of relatively low proportion. The most common cause of female infertility is bilateral tubal occlusion pelvic adhesion resulting from STDs and post-abortal or puerperal sepsis^{3,4,7}. Between 50 to 80 percent of infertility in Sub-Saharan African is due to infection. The increase in the prevalence of STDs which is due to social change whereby there is an increase in pre-marital sex, multiplicity of sex partners, and involvement with casual and/or commercial partners^{22,23,24,25} has increased the risk of infertility. However, the situation is more complex. Related biological and social conditions also affect the incidence e.g. the development of antimicrobial agents, and the health-seeking behaviour of sufferers.

Gonorrhoea is a significant cause of infertility in women^{26,27,28}. It also causes epididymitis and subsequently, infertility in men. Although the availability of effective therapy ought to prevent complications, the usual asymptomatic state of gonorrhoea infection in females until complications develop

poses a problem. Even then symptoms are recognised by the female early, there are social problems that prevent prompt treatment. These include embarrassment, fear of being stigmatised, lack of access to and non-affordability of services. In some communities, it is believed that men infected with gonorrhoea would be cured by having sex with virgins. The practice will lead to infection in the girls and compromise their fertility.

Non-gonococcal infections associated with infertility include Chlamydia^{29,30} and genital tuberculosis^{31,32}. Others are lepromatous leprosy and mumps in males. Studies in Sudan have shown an association between filariasis and infertility².

There are also non-infective causes of infertility. These include malnutrition, which has an indirect association with infertility as a result of irregular menses or even amenorrhoea. Stress has been described as a cause of infertility in only a few cases³³. It has been suggested that stress is an effect rather than a cause. The aetiology of infertility also includes coital problems (such as in female genital mutilation), endometriosis, hormonal disorders, congenital anomalies, varicocele, testicular failure, etc. Endometriosis and anovulation are common causes in higher social classes in developed countries. Multiple relatively minor abnormalities in one or both partners account for

about 30 percent of infertility. However, over 5 percent of couples have no demonstrable abnormality³⁴. Studies have linked infertility with higher risk of HIV infection, although the nature of the relationship has not been fully understood^{35,36}.

Social implications to couple

Most cultures place a high social value on fertility, particularly as a demonstration of the consummation of the marriage and as an expression of the couple's social role. A couple of months after marriage if there is no evidence that the wife has conceived, a lot of anxiety is generated. This has led an author to suggest the following definition for infertility "the inability of a couple of reproductive age to establish pregnancy despite regular and unprotected sexual intercourse, within a period of their desire"³⁷. In some cultures such as in Uganda, a marriage is not considered consummated until the birth of children and their survival through infancy. Furthermore, at the Science Summit in India in 1993, the African Academy of Sciences issued a dissenting statement, stressing the importance of fertility to Africans³⁸. Various practices and expressions exist in Nigeria which reflect the value placed on childbearing. For example, among the Yorubas, after marriage, statements such as "eyin iyawo ko ni

Table 1 National infertility prevalences

Nation	Survey(year)	Range (%) (n)	Midpoint %	Infertility rates	
				Prior infertility	Primary infertility
Lowest quartile:					
Barundi	DHS (1987)	8.6 - 11.5 (2581)	10.5	10.5	1.3
Niger	DHS (1992)	8.9 - 12.0 (4528)	10.5	10.2	1.9
Rwanda	DHS (1992)	9.3 - 12.0 (3287)	10.6	9.6	0.8
Uganda	DHS (1988)	9.9 - 13.5 (3139)	11.7	11.7	5.3
Ghana	DHS (1988)	10.1 - 13.5 (2727)	11.8	5.2	1.6
Tanzania	DHS (1991 - 92)	10.7 - 12.0 (5099)	11.4	13.7	4.1
Sudan*	DHS (1989 - 90)	10.6 - 14.0 (4791)	12.3	10.1	3.1
Middle quartile:					
Nigeria	DHS (1990)	10.5 - 14.6 (6206)	12.6	13.6	4.0
Togo	DHS (1988)	10.7 - 15.8 (1567)	13.3	14.4	2.9
Cote D'Ivoire	WFS (1980 - 81)	11.5 - 14.8 (3879)	13.2	11.3	5.0
The Gambia	GCPFDS (1990)*	11.6 - 15.2 (1499)	13.4	-	2.0
Malawi	DHS (1992)	12.2 - 15.0 (2181)	13.6	15.8	1.1
Cameroon	DHS (1991)	12.7 - 15.2(2278)	14.0	13.4	10.3
Kenya	DHS (1989)	13.7 - 16.7 (3823)	15.2	13.2	2.7
Mali	DHS (1987)	13.7 - 16.7 (1815)	15.2	16.1	3.1
Senegal	DHS (1986)	13.7 - 16.7 (2677)	15.2	10.4	5.2
Zambia	DHS (1992)	13.8 - 17.5 (4050)	15.7	13.0	1.4
Benin	WFS (1982)	14.0 - 16.8 (3617)	15.4	10.3	3.9
Liberia	DHS (1986)	14.0 -17.6 (3617)	15.8	16.2	2.6
Burkina Faso	DHS (1992/3)	16.6 - 17.2 (2607)	16.9	10.4	3.1
Highest quartile:					
Cameroon (WFS)	WFS (1978)	15.6 - 19.4 (5647)	17.5	9.9	13.9
Botswana	DHS (1988)	14.9 - 21.0 (2203)	18.0	17.0	3.6
Madagascar	DHS (1992/3)	16.2 -20.4(2267)	18.3	10.7	8.9
Namibia	DHS (1992)	16.2 - 20.8 (2801)	18.5	14.7	2.8
Mauritania	WFS (1981)	16.2 - 21.2 (2801)	18.5	10.9	3.7
Zimbabwe	DHS (1988)	16.8 - 22.4 (1671)	19.6	12.7	2.8
Lesotho	WFS (1977)	17.1 - 21.5 (3009)	19.3	11.6	4.0
Sub-Saharan average		12.5 - 16.0	14.5		

*Comparison nations.

*Gambian data are from the Gambian Contraceptive Prevalence and Fertility Determinants Survey. Center for Applied Research in Population and Development (CARPOD), the Gambian Medical and Health Services Department, the Gambian National Population Commission and the Population Council, January, 1993.

**Source: Karen Ericksen and Tracy Brunette (1996).
Social Science Medicine 42, 2: 209 - 220

men” are made as a form of prayer by friends, relatives and other well-wishers. This means that the couple should not have periods of infertility. The Ibos celebrate the attainment of high fertility (10 children) by a woman.

It has been suggested that the low contraceptive prevalence rates in most African countries could be a result of fear of jeopardising their fertility from the use of contraceptives³⁹. This leads to high fertility from unmet needs for contraceptives. However, analysis of the DHS data showed that contraceptive users had lower odds of being infertile¹⁶. In some cultural settings, an infertile woman can in order to keep her marriage, “marry” a woman who will bear children for her through her husband. Wealth has often been measured in part by the number of children a couple has. Children are important for inheritance of family property. Because of the high premium placed on childbearing, individuals and couples can go to any length to have children. For example, criminal cases of the sale of babies have been reported in the media.

Infertility has often been a source of pain, anxiety and shame. It leaves couples unfulfilled as they are unable to realize their goals of childbearing. It is accepted as a basis for divorce⁴⁰, and whether as a cause or effect, childlessness is often seen among divorcees in many cultures. Impotence which could lead

to infertility is also a ground for divorce. When a woman is divorced for infertility among the Bangangte tribe in Cameroon, she loses access to the land distributed by her husband. If she is not divorced, she receives fewer gifts from him and she is abandoned in old age with no child to till the land for her⁴¹.

Often the woman is blamed for the infertility and it could lead to polygyny, usually without considering which of the partners is affected. There is an adage in Yoruba which says “Ko si agan okunrin”. This means that there is no infertile man. Interviewers in a study were quoted as saying that “even if the man had married ten wives who could not conceive, people will say that it was his destiny to marry an infertile woman” without considering the fact that he could be the cause⁴². Many of the people who believe that a man cannot be infertile often confuse fertility with potency³⁹.

The relationship between the women and their in-laws is usually strained and a lot of emotional distress is generated⁴³. Polygyny is usually the outcome of pressure on the man from his relatives and/or friends. It is a common belief that the presence of children (usually the woman’s step-children) within the home can “attract” children to the couple.

Causes of the infertility are sometimes ascribed to witchcraft and evil spirits^{21,39,42}. This could generate further conflicts.

Table 2 Percentage of women infertile subsequent to marriage or a live birth, by country and region of residence at survey, according to five-year age-group

Region	N	Age-group				
		20 – 24	25 – 29	30 – 34	35 – 39	40 – 44
Cameroon						
<i>East</i>						
WFS	583	21	29	38	49	64
DHS	105	20	27	40	69	90
<i>Center-south</i>						
WFS	887	23	35	46	60	78
DHS	461	14	25	41	62	87
<i>Littoral & Southwest</i>						
WFS	921	14	22	34	50	69
DHS	455	12	21	29	49	72
<i>West</i>						
WFS	864	8	14	23	35	51
DHS	301	5	11	24	36	49
<i>North</i>						
WFS	1,131	28	42	59	68	79
DHS	598	18	25	34	48	67
Nigeria						
<i>Northwest</i>						
WFS	1,235	14	29	44	58	74
DHS	1,236	14	22	33	41	66
<i>Southeast</i>						
WFS	1,474	7	16	31	51	74
DHS	1,229	5	9	22	38	59
<i>Northwest</i>						
WFS	1,422	19	25	39	48	59
DHS	1,058	9	12	26	42	76
<i>Southwest</i>						
WFS	1,391	5	9	20	35	61
DHS	1,343	3	7	17	32	49

Note: Region of residence at survey was unknown for 45 women in the Cameroon WFS sample.

** Source: Ulla Larssen, *HP*, 21; 4: 140, 1995

Because of their belief in these underlying causes, and because of the perceived lack of privacy in the health facility, many patients seek remedies from traditional doctors and faith healers. Often the couple or specifically, the woman is subjected to treatment with such things as urine and faeces of animals, scarifications and use of concoctions usually with disastrous consequences. Rituals are also performed to appease the gods. The woman may be sexually abused by the traditional healers. Also, the couple is usually exploited financially. Many come to health facilities as a last resort, sometimes because of the complications that arise from traditional methods of treatment¹⁸. It is believed in the African society that some of the children that are born following traditional treatment of the infertility might have spiritual problems. Although there is no evidence that this has resulted in any pregnancy. This could be of great concern to the infertile couple who use such services and it could be a source of anxiety.

In some cultural settings infertility could lead to stigmatisation. As reported among a matrilineal ethnic group in Mozambique, the consequences of infertility include exclusion of the infertile women from certain social activities and traditional ceremonies⁴⁴. It has been reported that among the Ekitis of south-western Nigeria, infertile women are treated as outcasts and their bodies are buried in the outskirts of the town with those of demented persons⁴⁵.

Studies have shown that infertility causes tension between couples and affects sexual and marital relationships. It could lead to physical violence which has implications for human rights abuse against African women^{39,43}. The sexual problems include decreased frequency of intercourse and anorgasmia in the wife. It has been reported that infertile women may engage in extra-marital sexual intercourse with the hope of achieving pregnancy^{42,44}. In addition to the pressure on infertile couple from relatives, friends and the community, they suffer stress from the investigations and treatment and from the frustration of failure. Where no cause for the infertility can be demonstrated, no specific treatment is possible. This is difficult for patients to accept, and it leads many to seek alternative medicine. The management of infertility places a heavy financial burden on couples. This is even worse in the present state of economic recession. It has been argued that the development of new reproductive technologies in developing countries is not cost-effective⁴⁶.

Males have varied attitudes to the management of infertility. Cooperation between couples is essential as reluctance by one partner may jeopardise the outcome of treatment. A study among partners of women who attended gynaecology clinic for infertility showed good cooperation in 37 percent, fair in 25 percent and complete lack of cooperation in 38 percent⁴⁷. The men in monogynous unions were more cooperative than those in polygynous who were more likely to lay claim to fertility as a result of children from other women/wives. The birth of the children is not an evidence of male fertility. It could be a case of secondary male infertility after the birth of those children, but from available evidence it is possible that the man is primary infertile but the women/wives have used other men to achieve the pregnancy^{39,42}. This is with or without the man/husband's awareness. The report further stated that the man often accepts the child even when he is aware of the facts. The community also accepts the child as his. This suggests that having children may be more important than biological paternity.

However, the process of adoption could be cumbersome and it has been reported that couples have poor attitudes to

it^{42,48}. Improvement in technology provides for artificial insemination of donor semen. This is said to be unacceptable to many couples even though one would expect that this procedure that avoids engaging in extra-marital sexual intercourse might be attractive. There is a religious aspect to this, which suggests that the use of donated semen even by artificial insemination could be adulterous.

It is encouraging that new technology provides assistance with reproduction for couples even with such conditions as hysterectomy and bilateral salpingectomy. However, the issue of surrogate motherhood is controversial and it has provoked medicolegal and ethnical reactions^{49,50}. In addition, ownership of the baby could be contested.

Conclusion

Infertile couples, especially the women suffer profound social consequences. They suffer physically and emotionally. Given that health care facilities and other resources are limited in Africa, and that infertility is difficult and costly to treat, efforts should be directed at preventive measures. Prevention of infertility is very important for the attainment of health for all. This could be achieved largely through the prevention and control of STDs/AIDS. Improvement in maternal health services including family planning, enhancing the status of women and eradication of harmful traditional practices. The services should be integrated into other reproductive health services.

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