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GIVE ME CHILDREN...LET ME LIVE: Combating the Misery of Infertility and Preventing Maternal Mortality.

By

OLABISI MOREBISE LOTO

Professor of Obstetrics and Gynaecology

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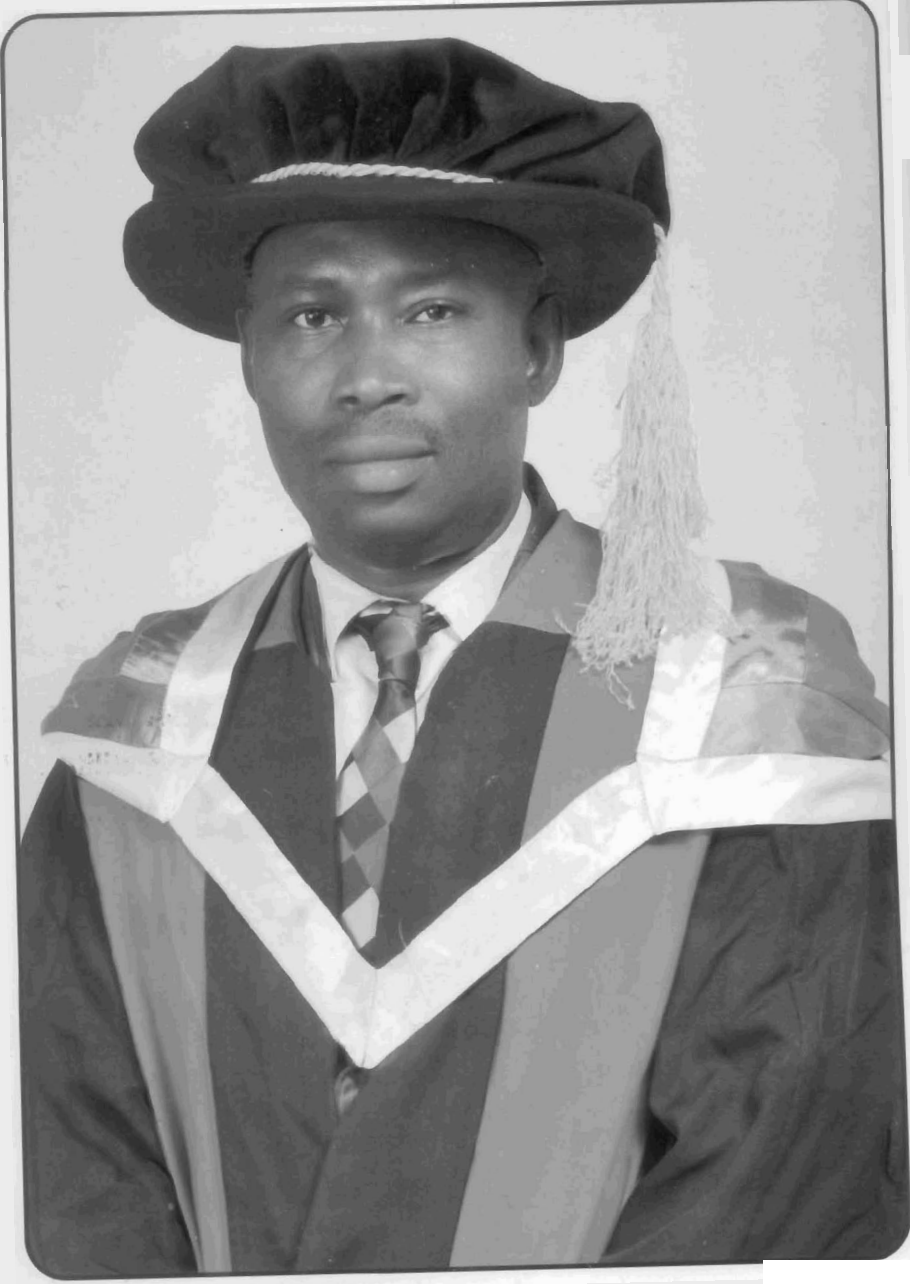

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An Inaugural Lecture Delivered at Oduduwa Hall, Obafemi Awolowo University, Ile-Ife, Nigeria On Tuesday, 11th July, 2017

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OLABISI MOREBISE LOTO
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Preamble

Mr. Vice Chancellor Sir, Principal Officers of the University, Members of the University Council, Members of Senate, Provosts, Deans, Directors, Heads of Departments, Invited guests, Gentlemen of the press, Distinguished Ladies and Gentlemen.

It is with immense gratitude to God Almighty that I stand before you today to deliver the 305th Inaugural Lecture of the Obafemi Awolowo University, Ile-Ife. I am grateful to this University not only for giving me the opportunity to be a student but also for providing the platform for me to be a practising scientist who through the pursuit of academic excellence and the unlimited grace of God is contributing immensely to solving some health challenges within and outside this epistemic community. I am thankful for this occasion to be counted among the erudite scholars who have given inaugural lectures in our Citadel of Learning. This Lecture is the fourth from the Department of Obstetrics, Gynaecology and Perinatology. The first, titled 'Efforts at Making Pregnancy Safer', was delivered by Professor S.O. Ogunniyi of blessed memory. 'Journey Within the Tunnel: Women's Health Care and Interventions' is the title of the second lecture, which was delivered by Professor O.B. Fasubaa while Professor E.O. Orji delivered the third lecture titled 'Opening the Womb of Life: An Adventure of an Obstetrician and Gynaecologist'. These are all erudite scholars, renowned clinicians and trail blazers whose footsteps I try to follow as I give today's Lecture.

Mr. Vice Chancellor Sir, the journey to this podium did not come by the will of man. I never wanted to partake of the 'publish or perish syndrome' associated with academic career. Having graduated from the Obafemi Awolowo University Medical School as the best student in surgery and surgical specialities, all I wanted to be was a specialist rendering care to patients. But then, Prophet Jeremiah aptly captures my odyssey, when he said: "...no one is the master of his own destiny: no person has control over his own life" (Jeremiah chapter 10 verse 23: Good news Bible). Thus when I heard the call of destiny in both the consulting room and the

classroom, I yielded wholeheartedly, treating patients tenderly and enthusiastically as well as teaching students diligently and unreservedly. In doing so, I have become not only a good care-giver but also a great candlestick that lights others in the field of Obstetrics and Gynaecology. Mr. Vice Chancellor Sir, every candle of greatness, however, has a source. It is like a divine thread in human tapestry, comprising both God and human elements. My choice of Obstetrics and Gynaecology is a function of God and the people whom He placed on my path as teachers. Given that I was the best graduating student in Surgery, rationality and cerebral logics offered me Surgery but revelation gave me Obstetrics and Gynaecology and to the glory of God, I had a quantum leap to the echelon of the specialty and became Professor of Obstetrics and Gynaecology within a period of eight years of joining the Department.

Certainly my choice of and exploits in Obstetrics and Gynaecology are also traceable to the influence of great teachers whose commitment to the teaching of the subject stimulated my interest in the field. To this end, I am eternally grateful to all my teachers from the preclinical to the residency days. Professors Onwudiegwu and Ogunniyi deserve special mention. The former admitted me into the residency programme in October, 1995 to be trained as a specialist in Obstetrics and Gynaecology, a programme I completed in a record time of 4 years in October, 1999, while the latter recruited me into the academic Department in September, 2005 having worked as a consultant at the Federal Medical Centre, Owo from 2000 to 2005.

The agonies of our mothers, sisters, wives, nieces, and aunties in labour, including an obstructed labour need a compassionate heart. The unimaginable dilemmas and pains of couples grappling with difficulties of infertility demand a caring hand and a compassionate heart. The joy of seeing a woman in labour suddenly smiling with her baby by her side after a successful vaginal delivery or caesarean operation and the glowing faces of couples who moved from being infertile to become expectant

parents are all unquantifiable psychological rewards. For over fifteen years, I have been caring for these categories of patients. My daughter, when she was just five years, once asked me, 'Daddy why do you treat only women? When I grow up I will be a doctor and I will treat everybody.' Mr. Vice Chancellor Sir, the answer to her protest-cum-question lies in the fact that women bear more burdens of pregnancy and infertility than men. Obstetricians and Gynaecologists are not only physicians and surgeons, they are both combined. They are also advocates, human right activists, counsellors and maybe priests, all in one. As a result, every Obstetrician and Gynaecologist wears a coat of many colours, albeit without any colour riot. Therefore to render an account of my academic stewardship in the field of Obstetrics and Gynaecology, I have come with my coat of many colours, reflecting in the title of this Lecture: **'Give me children... Let me live: Combating the Misery of Infertility and Preventing Maternal Mortality'**

Introduction

The lived and narrated experiences of Rachael and her husband, Jacob, in the Holy Bible informed and inspired my Lecture's title. Rachel at the peak of her infertility crises vehemently vented her frustrations in these six words: 'Give me children or I die'. Therefore, the imaginative worlds and the lived experiences that informed the title collectively attest to the enduring importance of human reproduction to the way of giving meaning to life that profoundly resonates with a set of deeply held beliefs of a given society. Accordingly, the title explicitly suggests that the meanings of living, dying, life and death are all implicated in child-bearing. As such, giving birth as a biosocial activity is of great importance not only to mortals but also to immortal beings. Mr. Vice Chancellor Sir, depending on the prevailing belief system, human, God, Satan, angels, demons and ancestors are often mentioned as critical stakeholders in a successful or failed child-bearing experience.

In the beginning, God charged humans, after the creation, to be fruitful and multiply and replenish the earth. This charge is

popularly known as the divine mandate. However while many couples have been struggling to realise the mandate, some have fallen apart while pursuing it. Worse still, others have lost their lives in the process of fulfilling their God-given mandate. The latter category often leaves behind distraught husbands, children, parents and siblings who continue to ask questions without acceptable answers. Infertility and maternal death are therefore the twin robbers that rob couples of thei. God-given mandate.

I am pleased to announce to this gathering that I have in many instances, at different geographical locations and over a period of fifteen years arrested the robbers, retrieved and restored the mandate to the affected couples. It is my experiences with retrieving and restoring the lost mandate to the affected couples as well as a set of newly emergent research ideas, which I intent to pursue to ensure that couples conquer infertility and maternal death that collectively form the bulk of today's Lecture.

In some traditions, the inaugural lecturer presents a new area of research that he/she hopes to pursue, while in others, the lecturer gives account of his/her stewardship leading to the chair. In this lecture, however, the two are combined. This is because I have a new research interest in the area of Infertility and In Vitro fertilisation as well as an unfinished business of maternal mortality prevention.

Professor Isaac Adewole, in his inaugural lecture at the University of Ibadan titled-"From Womb to Tomb: Protecting the Gate from the Crab" stated that:

> While our counterparts in the developed world would like to bother themselves about in-vitro fertilisation, cloning, developing new generation contraceptives, intrauterine monitors, perfecting laser techniques and pinhole surgery, we in the developing world have the real agenda of safeguarding the lives of our women (Adewole, 2000).

That was more than 16 years ago, and he was right at that time. Almost two decades after, we still have unfinished agenda with the reduction of maternal mortality and morbidity. However, we just cannot turn a deaf ear to the deafening sobs of infertile women and men in less developed countries of the world who continue to exist miserably on account of their childlessness and look on while couples with the same problem in developed countries, have their infertility resolved through the use of modern assisted reproductive technologies such as In-vitro fertilisation/Intra Cytoplasmic Sperm Injection (IVF/ICSI). While those who are rich may embark on medical tourism to resolve their infertility often at huge financial costs, what becomes the lot of those who cannot afford the financially lacerating cost of medical tourism? Mr. Vice Chancellor Sir, I have good news: The poor need not die in sorrowful silence. Even the rich no longer need to carry the huge financial cost of medical tourism. For God has now placed at our finger tips the amazing power of scientific and technological advancements to turn a sorrowfully sobbing infertile into a joyfully singing parent. And today's Lecture substantially captures some milestone research and heart-warming clinical experiences with these newly emergent technologies as well as what has been done so far with the unfinished agenda. The Lecture is divided as follows:

1. Obstetrics and Gynaecology: Mapping the Shifting Landscape
2. Infertility: Causes, Psychosocial Effects, Current Management and my Contributions
3. Maternal Mortality: Causes, Prevention and our Interventions
4. Our Life Together: Bridging the Town and Gown Divide
5. Capacity Building: Towards Institutionalization of Sound and Safe Maternal Health
6. Recommendations and Conclusion

Obstetrics and Gynaecology: Mapping the Shifting Landscape

Mr. Vice Chancellor Sir, the Oxford Dictionary defines obstetrics as the branch of medicine that is concerned with the birth of children, and gynaecology as the scientific study and treatment of

the functions and diseases peculiar to women. Obstetrics started as midwifery, and it is as old as humankind. In current use, obstetrics appears to mean difficult midwifery. Obstetrics is derived from the latin word *obstare*, which means I stand by or *opstare*, meaning to render aid. In the past, gynaecology was part of general surgery and the history can be traced back to antiquity. The word gynaecology was first used in its proper sense in the middle of the 19th century to mean the physiology and pathology of the non-pregnant state. The landscape of Obstetrics has had several shifts, reflecting changes in practitioners, practices and ethics of the field. From time immemorial, what is known today as obstetrics was originally midwifery and remained woman's exclusive territory. It was not until about AD325-403 that history recorded Oribasius as a male obstetrician in Byzantium. Politics and practices that paved the way for the entrance of the male folk into the field are however outside the coverage of this Lecture. But worthy of note is the fact that the entrance of the male folk into the field has done more good than harm. We, both male and female, as obstetricians and gynaecologists collectively render aid to women, not only by our professional activities but by being their advocates. We stand by them to render aids.

Professor Mahmood Fathalla, a former International Federation of Gynaecology and Obstetrics (FIGO) president affirmed that:
Delivering babies and cure of pelvic organ disease are not all what our noble profession is about. Our profession is the profession of women's health care. And we are fully aware that women's health is not simply determined by their biological destiny but also, and even more, by how societies view and value their role. FIGO is committed to stand beside women and to stand behind women in their struggle for their human rights. Women can rely upon us when they look for supporters of their just cause. We will always be there standing up, ready to be counted. (Fathalla 1997 at FIGO Congress Opening Ceremony, Copenhagen).

Women are often neglected in the scheme of things, they are not allowed to make decisions on their own health and policies and

even cultures are not women-friendly. As a result, obstetricians and gynaecologists are human rights activists and advocates in addition to being health care professionals.

There are several research tracks in the field of obstetrics and gynaecology. Mr. Vice Chancellor Sir, my earlier contribution to the field is mainly in the area of maternal mortality prevention through research efforts aimed at achieving a better management of labour in order to reduce labour complications while my new area of interest is in the management of infertility through the use of modern techniques including in-vitro fertilisation and embryo transfer (IVF-ET).

Infertility: Causes, Psychosocial Effect and Current Management

But Rachael had not borne Jacob any children.....and said to Jacob,' Give me children or I will die'. (Genesis 30: 1, GNB)

She was deeply distressed and she cried bitterly as she prayed to the Lord...She was praying silently, her lips were moving, but she made no sound. So Eli thought she was drunk, and said stop making a drunken show of yourself. 1 Samuel 1:13, 14.

Both stories of Rachael and Hannah above provide a tip-of-the-iceberg illustration of the anguish that infertile women go through every day. While some might contemplate suicide as a result of frustrations; others are mistaken for drunkards because of their predicaments. Infertility is defined as the failure of a couple to 'achieve conception despite adequate unprotected intercourse for a period of one year' which could be primary or secondary. In primary infertility, there has never been any pregnancy while in secondary infertility at least one pregnancy has occurred irrespective of the outcome of such pregnancy i.e whether a live birth or an abortion. Infertility is very prevalent in our environment and affects about 20 % of married couple. Infertility results in strained relationships within the marital union; unfortunately, women are often at the receiving end.

Infertility is not only a medical problem; it is as well a social problem, especially in Africa where high premium is placed on childbearing. In Africa, most of the blame of infertility is placed on the woman while the male partners rarely present for investigation. The social consequences of infertility are great and demeaning. Some women even take their own life as a result. In traditional African societies, some are labelled witches and treated as outcasts. They are excluded from the inheritance and battered by husbands and in-laws. When they die, they are buried far away from the farmlands so that the land will not be cursed with bareness. Infertile women are made laughingstock in the neighbourhood. They dare not correct any child or they will be reminded of their childlessness and infertility.Abuse is frequently reported and intimate partner violence is common, making the home unsafe for them. According to Fathalla,

> You can say that violence, in general, is pervasive and we all may be exposed to it. But you can protect yourself if you go inside your home, close all doors, shut all windows, and feel safe in the company of your close family. For women, *especially infertile women* violence occurs behind these closed doors, hidden from the public view, and the aggressor is one who is supposed to be your loving protective intimate partner"(italics mine).(Fathalla, 2005)

The infertile women are subjected to ridicule and scorn; marginalized in family / community; excluded from contact with children and are accused of witchcraft.

Even in biblical times, a man must beget children. If a man dies without a child, the widow is given to the brother so as to rear children for the dead man. God killed Onah for not helping his dead brother achieve fatherhood. (Genesis 38:9).This underlies the importance of childbearing in ancient times, which is still the same today. As a result, the consequences of childlessness have varying dimensions. Box 1 and Figure 1 show some psychosocial

consequences of infertility and a continuum of the severity of the consequences of infertility, respectively.

Box 1: Showing Psychosocial Consequences of Infertility

- Loss of gender identity
- Systematic loss of self esteem
- Marital instability
- Isolation and loss of social status
- Ostracism and abuse
- Anxiety, depression

The continuum comprises six levels: At the first level, individuals feel guilty and engage in self-blame. At the second, high levels of anxiety and depression only comparable to those found in women with coronary disease, cancer and AIDS take hold of the infertile individuals.(Domar, Broome, Zuttermeister, Seibel, & Friedman, 1992).

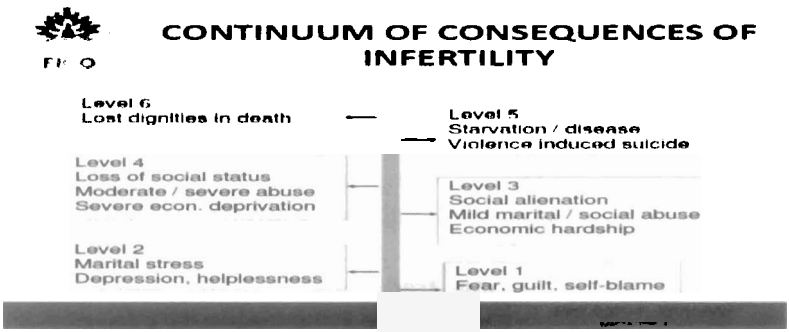

Figure 1.The continuum of consequences of infertility

These high levels of anxiety and depression may also be accompanied by other forms of marital distress. In a study of 200 infertile women in Nigeria, it was observed that 40% of the male partners engage in extra-marital affairs, 30% take a second wife and 12% considered divorce(Umezulike & Efetie, 2004). These actions of male partners contribute significantly to the burden of

infertile wives. They suffer from psychological distress and depression, have repeated failed marriages and are at increased risk of HIV/AIDS (Dyer, Abrahams, Mokoena, Lombard, & van der Spuy, 2005; Orji, Kuti, & Fasubaa, 2002; Ukpong & Orji, 2006).

At the third level, there is mild social abuse and isolation(Cui, 2010; F. E Okonofua, Harris, Odebiyi, Kane, & Snow, 1997). They are subjected to stigmatization, ridicule and scorn from neighbours and in-laws; marginalised in family and community; excluded from contact with children and accused of witchcraft. The quotes below, from infertile women, emphasise this point:
"My mother in law called me a 'eunuch', blamed and threatened me, said that I will be thrown out. Not that I wanted my own child so badly.....but I wanted to prove that I am a woman."(Widge, 2005).

"I cannot be anybody in the world if I cannot bear children."(S. Dyer, Abrahams, Hoffman, & van der Spuy, 2002)

There is loss of social status as the infertile woman has no child to assist her in domestic/subsistence related tasks and no health care and old age security. In traditional African societies, social status is dependent on the number of children, especially sons and fertility is considered as a blessing from God and the ancestor while infertility is a curse or a punishment that warrants no compassion. According to Tola-Olu Pearce, a childless woman will not be listened to in public among traditional Yoruba ethnic group (Pearce, 1999). Adulthood is achieved through relationships and reproduction is considered a public matter. An infertile woman is nameless because women are named after their children e.g Mother of David. A woman without a child might be excluded from inheritance. Domestic violence is common and as observed by Ali in 400 infertile women in urban Karachi, 97.5% reported verbal abuse from husbands and 80% reported physical abuse from husbands. 97% also reported verbal abuse from in- laws while 57.5% reported physical abuse from in-laws (Ali & Bustamante-Gavino, 2007).

Infertile women are prone to starvation, disease and suicide. A study conducted in Tanzania involving 154 infertile women and 259 fertile controls showed an HIV-1 prevalence rate of 18.2% in the subjects compared to 6.6% in the controls (Favot et al., 1997). In India 4.3% of 187 suicides were found to be due to infertility (Shukla, Verma, & Mishra, 1990).

The final level of the continuum is the loss of dignity in death. At this level, the infertile woman has no child to conduct funeral or mourn her. In some tribes in Nigeria, the corpse of a childless woman is not buried in village or town land for fear of diminished fertility of the soil(Hollos, 2003). They are thought to be excluded from reincarnation in Southern Chad (Leonard, 2002). In Mozambique, infertile women have different burial rites, their corpses are marked with charcoal before burial (Mariano, 2004).

The psychological and social consequences of infertility are lessened by the status of women, the available social support and access to infertility treatment. Infertile women with higher socioeconomic status experience less distress and stigma. There is an inverse relationship between available social support and psychological distress but when pregnancy happens, it wipes out all the distress and stigma.

Pregnancy occurs when a mature ovum is fertilised by a normal sperm and the resulting embryo implants successfully in the womb. The ovum is released from the ovary and has to pass through the fallopian tube where it is fertilised by the sperm before moving to the endometrial cavity (womb) for implantation. Any problem in the above process will lead to infertility. To this end, the major causes of infertility are ovulation problems, fallopian tube blockage and sperm problems.

These problems can be in both husband and wife or in one of them. The problems may not even be traceable to any of them. These possibilities are shown in Figure 2. In a small group of couple, there are no abnormalities in the basic tests performed on both

husbands and wife and this is referred to as unexplained infertility, while in another minority of couples, problems exist in both partners.

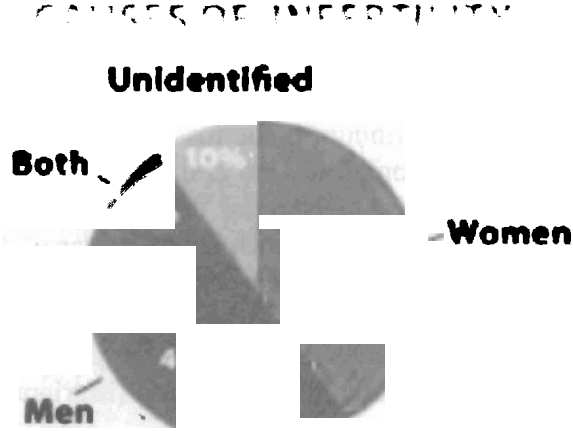

Figure 2. Diagram Showing contributions to infertility.

Specific causes of infertility in women are textually and pictorially presented in Box 2 and Figure 3. The causes in men are shown in both Box 3 and Figure 4.

Box 2: Showing specific causes of infertility in women

- damage to the fallopian tubes
- ovulatory problems
- endometriosis
- conditions affecting the uterus
- a combination of factors
- no identifiable reason.

Other factors that may play a part include:

- age – female fertility declines sharply after the age of 35
- Polycystic Ovary Syndrome (PCOS)
- gynaecological problems such as previous ectopic pregnancy or having had more than one miscarriage
- medical conditions such as diabetes, epilepsy, and thyroid and bowel diseases
- lifestyle factors such as stress, being overweight or underweight, and smoking.

Possible causes of infertility

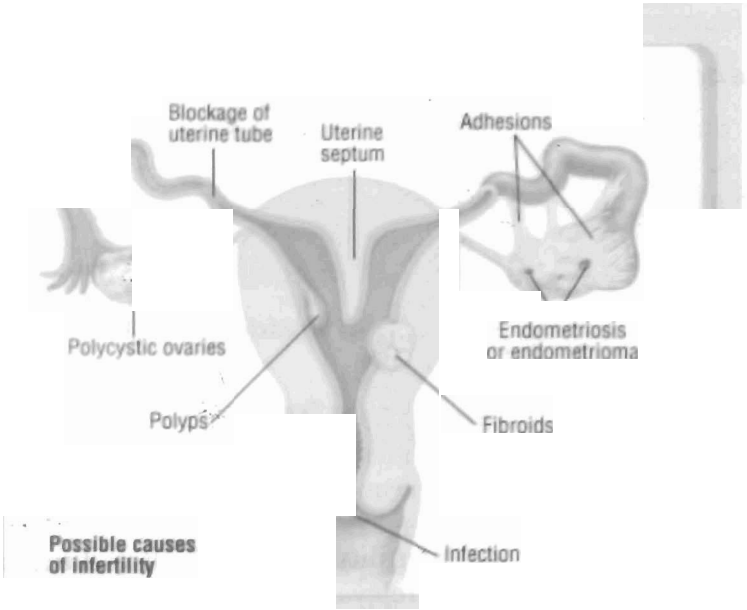

Figure 3. Diagram showing possible causes of Female infertility.

Box 3: Showing specific causes of infertility in men

- low sperm count or quality
- problems with the tubes carrying sperm
- problems getting an erection
- problems ejaculating.

Other factors that may play a part in infertility include:

- having had inflamed testes (orchitis)
- a past bacterial infection that caused scarring and blocked tubes within the epididymis as it joins the vas deference
- having received medical treatment such as drug treatment, radiotherapy or surgery – for example to correct a hernia, undescended testes or twisted testicles
- genetic problems
- diabetes
- lifestyle factors such as being overweight or having a job that involves contact with chemicals or radiation.

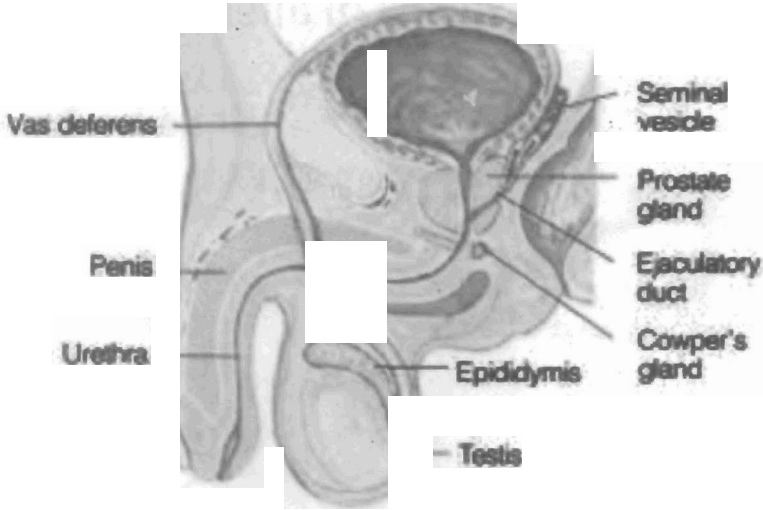

Figure 4. Male reproductive system

A successful treatment of infertility is hinged on a number of factors such as proper history, relevant investigations and therapy directed at the causes that are identified from the evaluation. Management of infertility include couples education on basic biology of reproduction, use of ovulation induction agents, Intrauterine Insemination (IUI) where indicated, In-vitro Fertilisation and Embryo Transfer (IVF-ET), Intracytoplasmic Sperm Injection (ICSI), surgical treatment for surgically correctable conditions etc.

My Contributions

Mr Vice Chancellor sir, my contributions begin with the menstrual cycle through childbirth to the prevention of maternal death. I will spend the rest of this Lecture to highlight these milestones. Women start bearing the burden of reproduction from the time they start menstruating. Menarche (the first menses) signifies the beginning of reproductive maturity although for optimal outcome of reproduction, there is also the need for emotional maturity as well as physical maturity (Loto,. Ezechi, et al., 2004). Menstruation can be very unstable at times. The hormonal changes in the menstrual cycle may be associated with mood disorders in the women

(Adewuya, Loto, & Adewumi, 2008, 2009;. Loto, Adewumi, & Adewuya, 2008). The woman may also suffer from pain during menstruation (Loto et al., 2008). All these are in preparation for getting pregnant and when the expected pregnancy does not occur, women suffer the social consequences mostly. In one of our studies, we found out that the prevalence of painful menses (dysmenorrhoea) was 53.3% among first year university undergraduates. About half of the students reported that menstrual pain interferes with their normal daily activity. The independent predictors of dysmenorhea were longer days of menstrual flow, younger age at menarche and lower scores on extraversion scale (Loto et al., 2008).

We investigated the incidence of premenstrual syndrome (PMS) in one of our studies. Female University students (n=409) completed questionnaires detailing socio demographic, menstruation/ gynecological history and personality traits. They were then rated with a checklist for premenstrual symptoms. The most frequent premenstrual symptoms were 'breast tenderness' (35.5%), 'sleeplessness' (15.6%), 'decreased interest in usual activities' (15.4%), 'lethargy/easy fatigability/lack of energy' (13.2%) and 'change in appetite' (13.2%). The prevalence of premenstrual symptomatology was 50.1% and the correlates of increasing premenstrual symptomatology included increasing age, increasing severity of menstrual pain, personality traits of neuroticism and agreeableness and increasing body mass index. Although the rate of premenstrual symptomatology in sub-Saharan African women was comparable with that in the western cultures, there may be cross-cultural differences in the pattern of presentation (Adewuya et al., 2009). The study revealed that while emotional symptoms predominates PMS in western cultures, somatic symptoms predominate in our culture.

The rate of Premenstrual Dysphoric Disorder (PMDD) amongst sub-Saharan Africans is unknown. We also conducted a study to see the rate of PMDD among undergraduates and to evaluate psychosocial correlates and comorbid psychiatric conditions.

Female university students (n=410) completed questionnaires detailing sociodemographic, menstruation, and gynaecological history. They also completed the Big Five Personality Inventory (BFI), and the presence of PMDD and any other Diagnostic and Statistical Manual-IV (DSM-IV) axis 1 psychiatric diagnosis was assessed with the Mini International Neuropsychiatric Interview (MINI). The prevalence of PMDD was 6.1% and the correlates included older age (p=0.001), painful menstruation (p=0.006), and high score on neuroticism scale (p=0.019). Compared with participants without PMDD, participants with PMDD have significantly higher rates for the following psychiatric diagnoses: dysthymia (odds ratio [OR], 3.82; 95% confidence interval [CI], 1.68–8.69); major depressive disorder (OR, 17.00; 95% CI, 6.72–43.00); panic disorder (OR, 4.39; 95% CI, 1.35–14.30), and generalised anxiety disorder (OR, 1.21; 95%CI, 1.21–17.83). The rate of PMDD in this environment is comparable to that found in western countries (Adewuya *et al.*, 2008).

Traditionally, women are blamed for a couple's inability to conceive and men hardly present in the clinic for evaluation. Recent studies have shown that problems in the man and the woman occur in almost the same frequency as a cause of infertility in couples. Couples suffering from infertility need to be properly assessed as soon as possible, so that the cause of the infertility is known and appropriate therapy applied as soon as possible. A complete evaluation is possible within one to three months (Loto & Ijarotimi, 2015).

In one of our studies, we examined the semen analysis of husbands in infertile marraige and we found out that male factor contribution was over 42%. This shows that men contribute significantly to infertility. It also foregrounds the need for early involvement of men in infertility evaluation, which can never be over emphasized (Loto, Fadahunsi, Osuolale, & Okon, 2004). Male factor infertility is usually as a result of abnormal seminal parameters and may occasionally be due to retrograde ejaculation (Makinde *et al.*, 2012).

Tubal factor infertility is common in Nigeria as a result of the high prevalence of pelvic infection following Pelvic Inflammatory Disease (PID), complications of abortion, delivery under unhygienic condition and adhesions from pelvic surgeries. Diagnosis of tubal blockage is commonly done using hysterosalpingograpy (HSG) or laparoscopy. However, both tests are complimentary (Okonofua, Essen, & Nimalaraj, 1989). HSG is commonly available as a test of tubal patency, but sometimes the result of the test is inconclusive warranting the use of laparoscopy and dye test which is not available in many hospitals. As a result Mr Vice Chancellor Sir, we developed a method of minilaparotomy and chromopertubation as an alternative to laparoscopy in cases where HSG is inconclusive and laparoscopy is not available (Loto, Adesoji, & Adebayo, 2006). Through these procedures, other incidental findings such as adhesiolysis, removal of small fibroids etc., can also be carried out.

Ovulation problem is also a common cause of infertility. The main causes of anovulation are hormonal disorders which can be congenital or acquired. Most congenital causes of anovulation are usually recognized at puberty when menstruation fails to occur. Polycystic Ovary Syndrome (PCOS) is a fairly common cause of anovulation in our environment though not commonly recognized (Loto & Akintayo, 2012). Anovulation is a more common cause of infertility in developed countries compared to developing countries where tubal blockage is predominant.

The use of ineffective treatments may lead to unnecessary delay. A couple may start with a diagnosis, but as the woman's age advances she may end up with anovulation. It is in trying to treat infertility that women may be subjected to numerous ineffective treatments which are expensive and time consuming by quacks and even some supposedly professionals. In the case of an infertile woman, any time wasted on unnecessary treatment is harmful because her biological clock continues to tick each passing day with each tick representing a stroke in the dimming of her hope for fertility for life as it pulls her towards menopause.

Fertility decreases with the age of the woman mainly as a result of anovulation. A woman's chance of ovulation can be assessed by tests of ovarian reserve.

There are various methods of ovarian reserve testing, which include basal follicle stimulating hormone (FSH), antral follicular count (AFC) and serum antimullarian hormone (AMH). My colleagues and I conducted a pilot study for generation of age-specific nomograms for FSH and AMH among fertile women in Ile-Ife, Nigeria. The study involved 65 fertile women within the age range of 18-45 years who were prospectively and consecutively recruited from November, 2014 to January, 2015. Peripheral blood samples were taken for basal serum FSH and random serum AMH. The samples were processed using enzyme linked immunosorbent (ELISA) assays. The Age-specific FSH nomogram showed a gradual increase which became steeper at age 35 years with an average yearly increase of 0.2 IU/L in basal serum FSH as shown in Figure 5, while age-specific AMH nomogram showed a peak at 25 years and then; an average yearly decrease of 0.11 ng/ml in random serum AMH from 25 years as shown in Figure 6.(Okunola *et al.*, 2016)

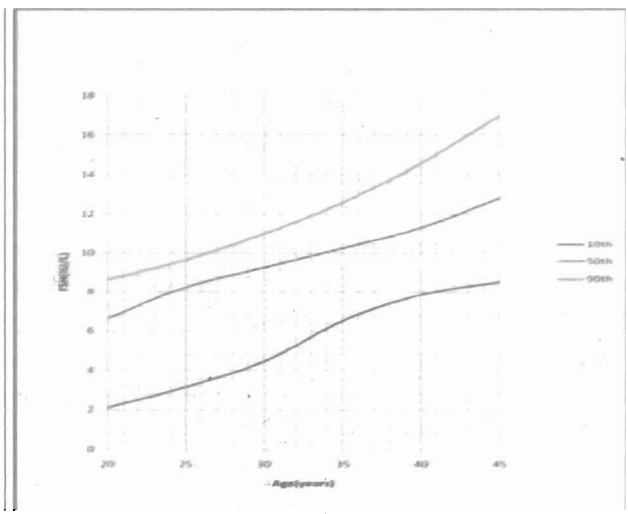

Figure 5. Age Specific normogram for FSH in Ile-Ife. Source Okunola *et al.* (2016).

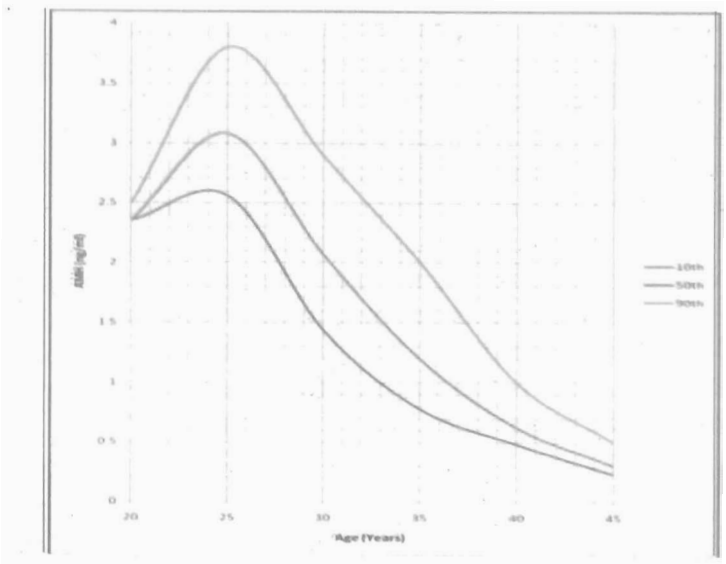

Figure 6. Age specific Nomogram for AMH at Ile-Ife. Source: Okunola *et al.* (2016).

We further conducted a study to know if there is a difference in these hormone levels between fertile and infertile women (Okunola, Ajenifuja, Loto, Salawu, & Omitinde, 2017). The result, as shown in Table 1, revealed a significant difference in the serum levels of these hormones among the women.

Table1. Comparison of anti-Mullerian hormone (AMH) and follicle stimulation hormone (FSH) between fertile and Infertile women.

	Fertile (mean ± SD)	Infertile (mean ± SD)	Mean difference	95% CI	t statistics	P value
FSH (IU/L)	6.97 ± 3.34	13.34 ± 5.24	-6.37	-11.36- -1.38	-2.55	0.013*
AMH (ng/ml)	2.71 ± 1.91	1.60 ± 2.51	1.11	1.06-1.83	1.21	0.029*

CI: Confidence interval and *; Statistically significant.

Source: Okunola, Ajenifuja, Loto et *al* (2016).

The findings from this study suggest that reduced ovarian reserve in regularly menstruating women may be associated with early ovarian ageing or subfertility.

Mr. Vice Chancellor Sir, I realised the fact that basic treatment will not solve many couples' infertility problems as noted from a study from Benin (Orhue & Aziken, 2008) and embarked on a trip to India to the Institute of Reproductive Medicine (IRM) of the Madras Medical Mission in Chennai. Here, I was able to learn the advanced methods of treating infertility including In-vitro fertilization and embryo transfer (IVF-ET). I learnt under the tutelage of Professor Thankam Varma. The embryology laboratory of this Institute which was the best in the Asian Sub continent at that time was headed by Dr V.M Thomas as the Chief Embryologist. Some of the pictures from that professional voyage for medical knowledge are presented from Figures 7 to11:

Figure 7. The Madras Medical Mission (MMM) Hospital, Chennai, India.

Figure 8. Professor Thankam R Varma. Director, Institute of Reproductive Medicine (IRM), MMM Hospital Chennai.

Figure 9. The Inaugural Lecturer with some of the staff at IRM- L to R, the Inaugural Lecturer, Dr. Arti, Dr. V.M Thomas, and two other embryologists.

Figure 10. The Inaugural Lecturer with some embryologists at IRM

Figure 11. The Inaugural Lecturer with the ICSI machine at IRM.

In-Vitro Fertilization (IVF)

In-vitro fertilization and embryo transfer is the process of bringing the sperm and the female eggs together outside the body and transferring the resulting embryo back into the womb of the woman. It is a modern method of managing infertility that is not amenable to traditional treatment modalities. It involves fertilization of the female eggs in the laboratory and replacing the resulting embryos into the womb for the pregnancy to continue so that the woman can deliver her baby at term. IVF involves some basic steps which are: pituitary down regulation, controlled ovarian hyperstimulation (COH), ultrasound guided egg retrieval, sperm collection and preparation, fertilisation of the collected eggs, incubation and monitoring of the embryos in the embryology laboratory, transfer of the embryo into the prepared uterus on day 3 or day 5 after egg retrieval and hormonal support to improve the chance of implantation. Obtaining sufficient ova (eggs) from the woman during COH depends on the ovarian reserve of the woman.

It was initially developed to overcome infertility due to tubal blockage, but it has since expanded in application to treating medical conditions that include severe male factor infertility, prevention of inheritable diseases and reproduction after cancer therapy.

The procedure was first successfully carried out by Edward and Steptoe culminating in the birth of Louis Brown in England in 1978. This was followed by several success stories all over the world. In Nigeria and indeed West Africa, Professors Giwa-Osagie and Oladapo Ashiru in Lagos were credited with the birth of the first IVF baby (Ezechi *et al.*, 2008). Dr Ibrahim Wada of Nisa Premier Hospital, Abuja was responsible for the birth of the first baby in Northern Nigeria. This was followed by successes at the Bridge Clinic, Lagos led by Dr Richard Ajayi and then The Nordica Fertility Centre in Lagos headed by Dr Abayomi Ajayi.

Currently there are several IVF clinics in Nigeria today and the number of babies born by this technique is on the increase.

Mr. Vice Chancellor Sir, the good news is that both the knowledge and skills required to carry out IVF are currently being institutionalised in our University Teaching Hospitals. And very soon the hospital will record its first set of babies. While waiting for the complete institutionalisation, I meticulously preserve the knowledge and skills gained from my trip to India by honing the skills at the Paramount Fertility Clinic in neighboring Ondo town in Ondo State using the excellent laboratory of the Gani Fawehinmi Diagnostic (Mecure) Laboratory for hormonal tests.

These efforts Mr. Vice Chancellor Sir, have yielded outstanding results attracting newspaper headlines. Specifically, the efforts resulted in the birth of the first IVF babies (a set of twins) in Ondo State, which was widely reported in the press as shown in Figure 12.

Figure 12. Report of the first IVF twins in Ondo State in the Hope Newspaper.

Figure 13, is the pictures of the first IVF twins in Ondo State.

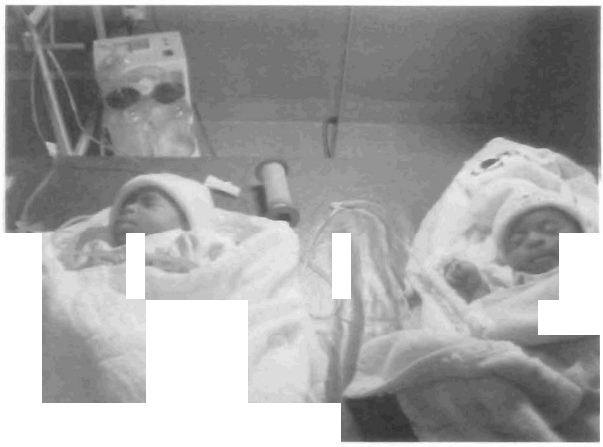

Figure 13. The first IVF twins in Ondo State.

Mr. Vice Chancellor Sir, the case of the twins was followed by several success stories, some of which were also widely reported in the press. Among these success stories is the case of a couple who was delivered of a baby after 20 years of bareness, even when the wife was already 48 years, just 42 years younger than Sarah of the Bible. Figure 14 shows the press coverage of the case of the 48 years old. As at today and to the Glory of God, over 83 babies have been delivered to infertile couples from the efforts at Paramount Fertility Centre with many more ongoing pregnancies.

Woman, 48, delivers through IVF

...after 20 years of barrenness

Electricity fixed charge remains -NERC

Figure 14. Another success story reported by the Hope newspaper

The press reports culminated in the visit of a high powered delegation sent by the then Governor of Ondo State, Dr. Olusegun

Mimiko and led by the then Hon. Commissioner for Health, Dr. Dayo Adeyanju to the clinic on the 28th of October 2014. Pictures of the baby born after 20 years of bareness and the visit from the government officials are shown from Figures 15 to 20

Figure 15. The IVF baby born after 20 years of infertility.

Figure 16. L-R, Hon Commisioner Dr. Dayo Adeyanju, the Inaugural Lecturer,, Dr Moibi and Dr. Oyeneyin (Former CMD, Mother and Child Hospital Ondo).

Figure 17. L-R, Dr Adeyanju, Dr (Mrs) Loto, Dr. Moibi, the Inaugural Lecturer, Dr. Oyeneyin and Dr. Emmanuel (embryologist).

Figure 18. Group Photography during the visit of the Governor's delegation

Figure 19. The Honourable Commissioner for Health and his team.

The Governor's delegation saw some developing embryos in the embryology laboratory as well as the woman who delivered after 20 years of infertility.

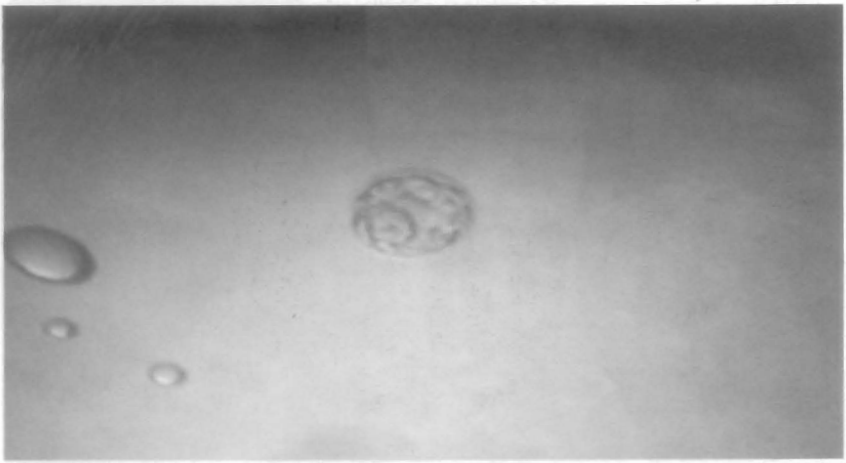

Figure 20. A developing Day 5 (Blastocyst) embryo at Paramount fertility clinic

Figure 21. Embryo transfer at Paramount fertility clinic

Mr. Vice Chancellor Sir, we were also responsible for the delivery of a set of IVF quadruplets at the Wesley Guild Hospital, Ilesa following the transfer of 3 embryos (Loto, Akindojutimi, Emmanuel, & Kuti, 2017). The quadruplets are now 2years old, their pictures after the delivery are shown in Figure 22

Figure 22. The Quadruplets. Source. Loto *et al.* (2017).

Intra-uterine Insemination (IUI) is a cheaper method of managing some forms of infertility in comparison with IVF. It also produces results, but not all infertile women will benefit from its use. We reported on the outcome of 50 consecutive IUI procedures with a pregnancy rate of 20% (Loto, Akindojutimi, Akinwole, & Ademulegun, 2017). This shows that this procedure can be useful in some couples. We have organised training on this technique so that more eligible patients will benefit from its use.
Some pictures from the training are shown below.

Figure 23. Participants at Intrauterine insemination training workshop.

Figure 24. The Lecturer demonstrating the procedure of intrauterine insemination to participants.

Figure 25. The Inaugural Lecturer giving a talk at the intrauterine insemination workshop.

Figure 26. Practical demonstration at the intrauterine insemination workshop.

Uterine Fibroids and Infertility

Uterine fibroids are benign tumors of the uterus. The relationship between fibroids and infertility is somewhat reciprocal, while an infertile woman may develop fibroid, fibroids and its treatment might compromise fertility. Depending on their size, they could prevent conception due to the areas they occupy in the womb. Infertility was associated with uterine fibroids in over 30% of the total number of cases reviewed (Owolabi, Bakare, Kuti, & Loto, 2010),(Okogbo, Ezechi, Loto, & Ezeobi, 2011). Large fibroids have to be removed by myomectomy to improve the chance of a woman going through pregnancy successfully. In our study on the presentation and management outcome of uterine fibroids, common complaints were menstrual irregularities (47.7%), abdominal swelling (39.1%) and infertility (31.9%). Other presentations are as shown in Table 2.

Table 2. Distribution of Presenting symptoms in 1161 uterine leiomyoma over a 25 year Period.

Presentations	Number of Cases (%)
Menstrual symptoms	554(47.7)
Menorrhagia	355(30.6)
Dysmenorrhoea	219(18.9)
Irregular menstrual period	199(17.1)
Abdominal swelling	454(39.1)
Infertility	370(31.9)
Abdominal pain/discomfort	281(24.2)
Weakness/dizziness especially after menstrual periods	261(22.5)
Recurrent Miscarriages	113(9.7)
Pressure symptoms	26(2.2)
Urinary urgency	15(1.3)
Recurrent urinary tract infection	9(0.8)
Acute urinary retention	2(0.2)
Recurrent fibroid (after previous myomectomy)	11(1.0)
Weight loss	9(0.8)
Bloody vaginal discharge	5(0.4)

There is an incontrovertible connection between uterine fibroid and infertility. However the actual degree of the contribution of fibroid to infertility remains controversial. Many of the studies examining relationship between fibroid and infertility are retrospective and non-randomised (Evans & Brunsell, 2007). Current evidence suggests that submucosal and intramural fibroids that distort the uterine cavity can impair in vitro fertilisation attempts (Rackow & Arici, 2005). The impact of intramural and subserosal fibroids that do not distort the intrauterine cavity is unclear. Despite the lack of clear evidence of their role in preventing conception, submucosal fibroid, intramural fibroids that distort the uterine cavity , fibroids larger than 5cm, and multiple fibroids are often treated in patients with otherwise unexplained infertility (Bajekal & Li, 2000).

However one fact is clear, infertility, either voluntary or involuntary is likely to be followed in time by the development of uterine fibroid. Unarguably, once fibroid have developed, fertility is likely to be compromised (Witherspoon, 1935). Uterine fibroids are frequently associated with chronic pelvic inflammatory disease and this may be the cause of the infertility (Buttran & Reiter, 1981; Ezem & Otubu, 1981; Ogunniyi & Fasubaa, 1990).

Some fibroids could grow very large to the extent that they might be mistaken for pregnancy. The pictures of large fibroids successfully operated on by the Inaugural Lecturer and his team at Wesley Guild Hospital (W.G.H), Ilesa are shown from Figures 27 to 30.

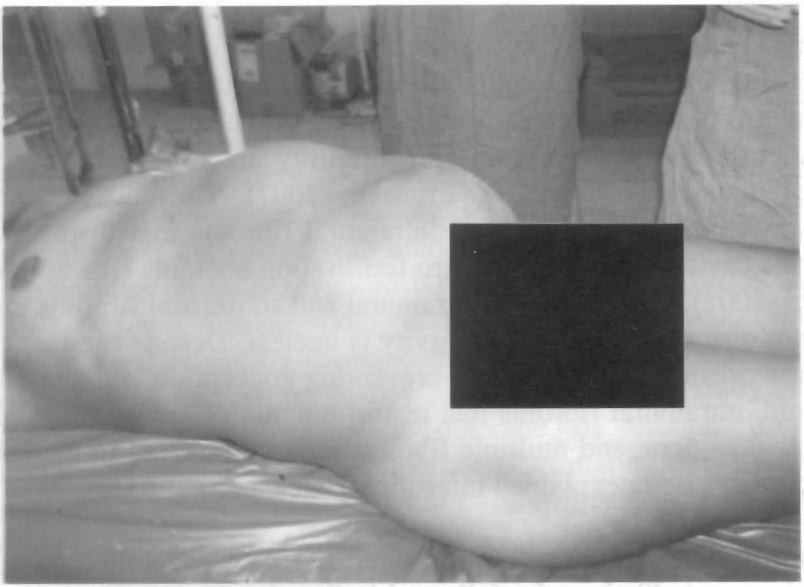

Figure 27. Woman with massive uterine fibroids before operation by the Inaugural Lecturer and his team at Wesley Guild Hospital, Ilesa.

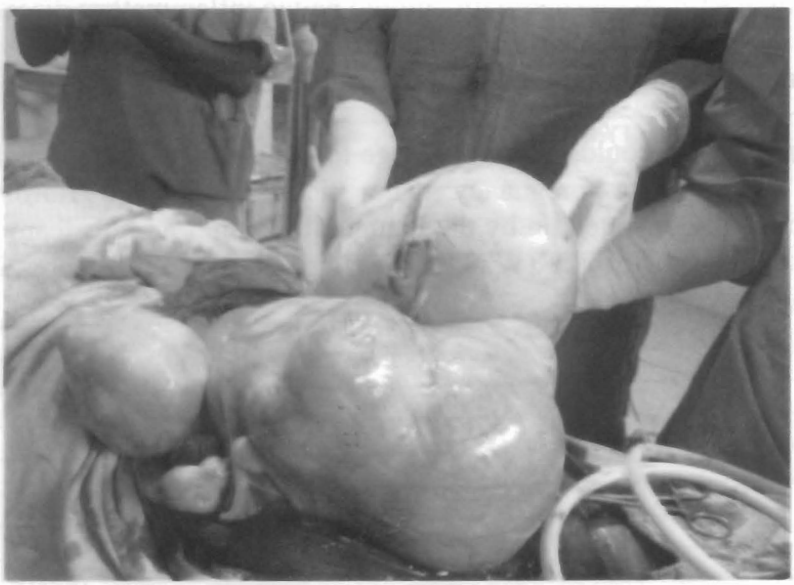

Figure 28. The Inaugural lecturer and his team exteriorizing huge Uterine Fibroids before removal

Figure 29.The Inaugural Lecturer and his team battling huge uterine fibroids.

Figure 30. Some fibroids removed by the Inaugural Lecturer and his team.

Apart from inhibiting conception, Fibroids might also interfere with delivery in a woman that is lucky to get pregnant while they are still in her. This requires operation to remove both the baby and the fibroid (Owolabi, Kuti, Loto, Makinde, & Adeyemi, 2007; Owolabi, Loto, Kuti, Ehinmitan, & Ibrahim, 2007). The cause of uterine fibroids is unknown, however it is believe to be a hormone responsive tumor and estrogen and progesterone receptors have been implicated in their growth. In one of our studies, intraoperative biopsy samples of leiomyomata and adjacent myometrial specimens were obtained from premenopausal women with uterine leiomyomata treated at the Obafemi Awolowo University Teaching Hospital Complex (OAUTHC) here. Immunohistochemistry for ERα and PR expression was performed on the samples. The immunoscores of both receptors were correlated with the size and symptoms of the leiomyomata. The results revealed that leiomyomata had a higher mean expression of ERα (H-score 193.42 ± 64.55 vs 153.29 ± 69.13; P=0.01) and PR (214.86 ± 66.56 vs 171.53 ± 63.53; P<0.001) than did myometrial tissues. The tumor diameter correlated negatively with the immunoscores of both receptors irrespective of age, parity, and body mass index, but this was only significant for PR (ρ=–0.44; P<0.001). Downregulation of PR on leiomyomata was predicted to occur at a diameter of 11 cm. Menorrhagia, dysmenorrhea, and infertility occurred independently of steroid-receptor expression. Leiomyomata seem to depend on steroid hormones, but only during early tumor development. This could have implications for the selection of patients for medical management, especially with steroid-receptor modulators. (Awowole et al., 2016). Mr. Vice Chancellor Sir, this our study was rated as one of the best research articles from lower and middle income countries published in the International Journal of Gynaecology and Obstetrics for the year 2016. The certificate of award is displayed in Figure 31.

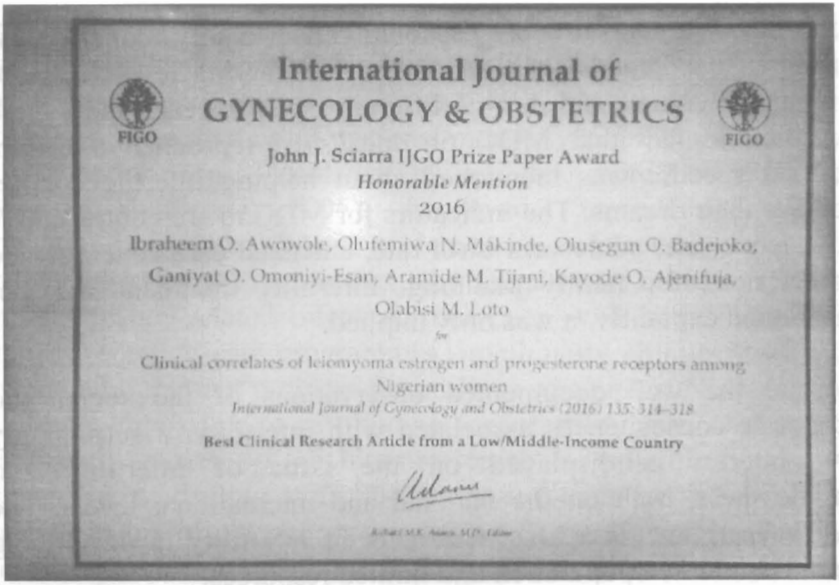

Figure 31. Award from IJGO 2016.

Access to Assisted Reproductive Technology (ART)

In the management of infertility, a lot needs to be done to make assisted conception available and affordable for Nigerians. The global community is more interested in population control rather than helping infertile couples achieve their dreams. In the millennium declaration, the fifth Millennium Development Goal (MDG 5) is focused on reducing maternal mortality by 75% by the year 2015. The indicators for MDG 5 were maternal mortality ratio and proportion of births attended by skilled attendants. The reproductive health aspect was later added as a 'post term pregnancy' and it states that we should achieve, by 2015, universal access to reproductive health which is defined by the International Conference on Population and Development (ICPD) as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and processes. ICPD places a strong emphasis on the needs and rights of individuals and disadvantaged populations, and upon the influence of the wider context on the achievement of sexual and reproductive health. The

concept of "universal access" should reflect equity (equal access for equal need) and is dependent on the varying levels of need among individuals and during different times for each individual. Despite the fact that MDG 5b speaks of reproductive health, nothing specific was mentioned about helping infertile couples achieve their dreams. The indicators for MDG5b are contraceptive prevalence rate, adolescent birth rate, antenatal care coverage and unmet need for family planning. Infertility treatment was not mentioned explicitly, it was only implied.

Despite the well documented observations of the social and economic consequences associated with infertility, a surprisingly low interest is displayed on the issue of infertility and childlessness, both on the national and international levels. The two key arguments against treatment of infertility in developing countries are overpopulation and limited resources.

Proponents of the argument of overpopulation suggest that in countries where overpopulation poses a demographic problem, infertility management should not be supported by the government. Even if infertility treatment could be made more accessible in developing countries, it would probably account for less than 1% of all deliveries. Increasing efforts on family planning and health education can readily overcome this small contribution to the fertility rate. Denying infertile couples access to infertility care is not a fair population control strategy. United Nations data not only show that the majority of developing countries already succeeded in dropping their global fertility rate below 2.5, but also reveals that the expected population growth in developing countries is mainly due to an improved life expectancy and not to high fertility rates (United Nations, Department of Economic and Social Affairs, & Population Division, 2007).

The limited resources argument claims that it is hard to justify expensive fertility treatment in settings with few resources and more important challenges to deal with. According to this argument, we cannot justify expensive techniques in countries

where poverty is still an important issue and where health care systems still struggle with the huge problem of infectious diseases such as malaria, tuberculosis and HIV. In most developing countries, the reduction of maternal mortality and the promotion of contraception are considered to be the reproductive health priorities(Aboulghar, 2005). Improved "reproductive health education programmes" have proven to be an excellent preventive tool against overpopulation, Sexually Transmitted Diseases (STDs) and pregnancy-related infections but even with better education and preventative care programmes, involuntary childlessness will remain an important problem for millions of couples. Nowadays, it is almost impossible to get funding for infertility care. Ombelet *et al* recently carried out an Internet search for possible donors. A questionnaire dealing with the scope of their actions and the interest in infertility care in developing countries was sent to the most important foundations, NGOs and international societies linked to reproductive health. They all showed interest in the issue of childlessness in developing countries, but in none of these organisations had infertility care been funded before and no future projects were planned (Ombelet, 2012).

It is not only the resource constraint that prevents the provision of infertility services in many developing countries. With the dominant discourse focusing on controlling overpopulation, it is no wonder that infertile women are marginalised and consequently excluded from health sector interventions. Infertile women are victims of the systematic process of 'cultural' exclusion in some countries and being institutionally excluded in others (Ombelet, 2012). There are several international statements on reproductive health, but as far as infertility is concerned, the international health community has intentionally lost the political and social will to help infertile couples. Consequently, the best of their efforts are merely statements with no action. Some of the statements are reproduced below:

"Men and woman of full age, without any limitation due to race, nationality or religion, have the right to marry and to raise a

family". This statement was adopted 60 years ago at the 1948 United Nations Universal Declaration of human rights. The United Nations International Conference on Population and Development held in Cairo in 1994 held that, "reproductive health therefore implies that people have the capability to reproduce and the freedom to decide if, when and how often to do so ... and to have the information and the means to do so ...". In 2004 the World health assembly proposed five core statements, including "the provision of high-quality services for family-planning, including infertility services" (World health assembly, 2004). The international Federation of Obstetricians and Gynaecologists (FIGO) stated that "women and men have the right to the highest available standard of health care for all aspects of their sexual and reproductive health" (FIGO, 2003).

It is noteworthy that with all these grandeur promises, infertile women and men are still left unattended to in most countries especially in developing countries. This is a failure of the global community to live up to expectation when it comes to fulfilling their promises to this subgroup of the population.

Maternal Mortality: Causes, Prevention and our interventions

".... the time came for Rachael to have her baby, and she was having difficult labour. ...But she was dying and she breathed her last..." (Genesis 35: 16, 18, GNB).

Mr. Vice chancellor Sir, the earliest reference to maternal mortality in the Bible was that of Rachael in the Bible verse quoted above. The first part of Rachael's unveiled threat, "Give me children...or I die" covertly implies a voluntary death, a suicide. Obstetricians and Gynaecologists have risen, as demanded by the tenets of our profession, to the challenge of helping women, who have Rachael's voice in them, to conceive and have children. The unsaid part of Rachael's threat is that an involuntary death may occur in the course of trying to have the child(ren). This, in professional terms, is described as maternal mortality. This also foreshadows Rachael's eventual death from maternal mortality.

The Tenth Revision of the International Classification of Diseases (ICD-10) defines a maternal death as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (WHO 1992). The 42-day limit is somewhat arbitrary, and in recognition of the fact that modern life-sustaining procedures and technologies can prolong dying and delay death, ICD-10 introduced a new category, namely the late maternal death, which is defined as the death of a woman from direct or indirect obstetric causes more than 42 days but less than one year after termination of pregnancy.

According to ICD-10, maternal deaths should be divided into two groups:
Direct obstetric deaths are those resulting from obstetric complications of the pregnant state (pregnancy, labour and the puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.

Indirect obstetric deaths are those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but was aggravated by physiologic effects of pregnancy.

Maternal mortality has received global attention since the mid 80s. However in developing countries, it can best be described as motion without movement as the problem still persists. Some of the earlier landmark publications and events that drew attention to maternal mortality include:

Rosenfield & Maine in Maternal mortality – a neglected tragedy: Where is the M in MCH? argued that "The 'M' which should have stood for maternal health instead often stands for maternal deaths, missed opportunities, muddled thinking, mistaken priorities and messy organization of health services".(Rosenfield & Maine, 1985).

Harrison's – Childbearing, health and social priorities: a survey of 22,774 consecutive hospital births in Northern Nigeria, identified social, cultural and education factors as important underlying factors for maternal mortality and morbidity; and the association of early marriages (6% of mothers under 15 accounting for 30% of maternal deaths). (Harrison, 1985).

According to the 1987 Safe Motherhood Conference, Nairobi [World Bank, WHO, UNDP, UNFPA Carnegie Corp etc.] about 500,000 women die annually from complications of pregnancy and childbirth while several million more suffer severe morbidity. Other national and international meetings that drew attention to the magnitude of maternal mortality and morbidity include the 1990 Abuja Safe Motherhood Conference; the 1986- 1997 The Carnegie Corporation Prevention of Maternal Mortality Network in West Africa; the 1997 - Safe motherhood Conference in Colombo, Sri Lanka where the maternal mortality was put at 585,000 deaths. In 1998, the World Health Day which was celebrated on April 7th has as the theme "Pregnancy is Special: Let us Make it Safe". The United Nations (UN) General Assembly in 1999 recommended increasing the proportion of birth assisted by health professionals to 80% to reduce maternal mortality ratio (MMR). In year 2000, the WHO, UNICEF & UNFPA estimated the maternal mortality to be about 529,000.

The UN Millennium Development Goal Number 5 was to reduce by 2015 Maternal Mortality Rate by 75% compared with 1990 level, even though this was not achieved.

Recently, we have the Sustainable Development Goals. The Global Strategy for Women's, Children's and Adolescents' Health (2016-2030) was launched in September 2015. It sets ambitious objectives to improve women's, children's and adolescents' health in alignment with the Sustainable Development Goals (SDGs) along three axes: 1) Survive (end preventable deaths); 2) Thrive (ensure health and well-being); and 3) Transform (expand enabling environments). Specific objectives include: reducing mortality

rates (reducing global maternal mortality to less than 70 per 100 000 live births and neonatal and under-5 mortality to at least as low as 12 and 25 per 1000 live births, respectively.

From 1990 to 2015, the global maternal mortality ratio declined by 44% – from 385 deaths to 216 deaths per 100,000 live births, according to UN inter-agency estimates. This translates to an average annual reduction rate of 2.3 per cent. While impressive, this is less than half the 5.5 per cent annual rate needed to achieve the three-quarters reduction in maternal mortality targeted for 2015 in Millennium Development Goal 5, hence the MDG 5 was not achieved.

Mr. Vice Chancellor Sir, although there was an improvement in every region of the world, the levels of maternal mortality and morbidity remain high in sub-Saharan Africa. Almost all maternal deaths can be prevented, as evidenced by the huge disparities found between the richest and poorest countries. The lifetime risk of maternal death in high-income countries is 1 in 3,300, compared to 1 in 41 in low-income. (UNICEF 2015).

The lifetime risk of maternal death is the probability that a 15-year-old girl will die from complications of pregnancy or childbirth over her lifetime. It takes into account both the maternal mortality ratio and the total fertility rate (average number of births per woman during her reproductive years under current age-specific fertility rates). Thus, in a high-fertility setting, a woman faces the risk of maternal death multiple times, and her lifetime risk of death will be higher than in a low-fertility setting. Similar to maternal mortality ratio, the lifetime risk of maternal death varies largely across countries. In 2015, the lifetime risk of maternal death in low income countries as a whole was 1 in 41 compared to 1 in 3,300 in high-income countries. Among regions, women in sub-Saharan Africa face the highest lifetime risk (1 in 36), Nigeria is even doing worse than the regional average at 1 in 22. The South Asia region has an average lifetime risk of 1 in 200.

Data in Table 3 show these stark realities on regional basis at a glance.

Table 3. Adult lifetime risk of maternal death, 2015

MDG region (in bold)	MMR[a]	Range of MMR uncertainty (80% UI)		Number of maternal deaths[b]	Lifetime risk of maternal death:[c] 1 in
		Lower estimate	Upper estimate		
World	216	207	249	303 000	180
Developed regions[d]	12	11	14	1 700	4 900
Developing regions	239	229	275	302 000	150
Northern Africa[e]	70	56	92	3 100	450
Sub-Saharan Africa[f]	546	511	652	201 000	36
Eastern Asia[g]	27	23	33	4 800	2 300
Eastern Asia excluding China	43	24	86	378	1 500
Southern Asia[h]	176	153	216	66 000	210
Southern Asia excluding India	180	147	249	21 000	190
South-eastern Asia[i]	110	95	142	13 000	380
Western Asia[j]	91	73	125	4 700	360
Caucasus and Central Asia[k]	33	27	45	610	1 100
Latin America and the Caribbean	67	64	77	7 300	670
Latin America[l]	60	57	66	6 600	760
Caribbean[m]	175	130	265	1 300	250
Oceania[n]	187	95	381	500	150

Source: WHO, UNICEF, UNFPA and The World Bank, Trends in Maternal Mortality: 1990 to 2015, WHO, Geneva, 2015.

In the 2015 estimate Nigeria contributes 19.1% of global maternal mortality while it accounts for only 2.6% of world population. Nigeria has not fared well in the fight against maternal mortality. A comparison with other countries is shown below.

Table 4. MATERNAL MORTALITY IN YEAR 2000
WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division Maternal Mortality Estimation Inter-Agency Group

COUNTRY	MATERNAL MORTALITY RATIO(MMR)	MATERNAL DEATHS	LIVE BIRTHS	PROPORTION OF MATERNAL DEATHS AMONG DEATHS OF FEMALE OF REPRODUCTIVE AGE (PM%)
	Per 100,000 live births(LB)	Numbers	Thousands	
ETHIIOPIA	897[718-1100]	26000	2909	23.4
INDIA	374[324-437]	104000	27884	13.0
NIGERIA	1170[866-1520]	62000	5290	28.2
NORWAY	7[6-8]	4	58	0.5
SOUTH AFRICA	85[83-87]	930	1097	1.2
SWEDEN	5[5-6]	5	91	0.4
UNITED KINGDOM	12[11-12]	80	696	0.7
USA	12[12-12]	480	4004	0.6
ZIMBABWE	590[534-664]	2400	410	3.6
GHANA	467[342-645]	3100	654	13.1
FINLAND	5[4-6]	3	57	0.2

Table 5. MATERNAL MORTALITY IN YEAR 2010
WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division Maternal Mortality Estimation Inter-Agency Group.

COUNTRY	MATERNAL MORTALITY RATIO	MATERNAL DEATHS	LIVE BIRTHS	PROPORTION OF MATERNAL DEATHS AMONG DEATHS OF FEMALE OF REPRODUCTIVE AGE(PM%)
	Per 100,000 live births(LB)	Numbers	Thousands	
ETHIOPIA	523[391-743]	16000	3039	17.6
INDIA	215[183-255]	57000	26566	7.6
NIGERIA	867[673-1130]	57000	6573	22.6
NORWAY	6[5-7]	3	60	0.5
SOUTH AFRICA	154[151-157]	1700	1111	1.5
SWEDEN	4[4-5]	5	113	0.5
UNITED KINGDOM	10[9-11]	80	795	0.8
USA	14[14-15]	580	4092	0.8
ZIMBABWE	446[392-510]	2300	510	7.7
GHANA	325[237-437]	2700	820	10.0
FINLAND	3[3-4]	2	59	0.2

Table 6. MATERNAL MORTALITY FOR YEAR 2015

COUNTRY	MATERNAL MORTALITY RATIO	MATERNAL DEATHS	LIVE BIRTHS	PROPORTION OF MATERNAL DEATHS AMONG DEATHS OF FEMALE OF REPRODUCTIVE AGE (PM%)
	Per 100,000 live births(LB}	Numbers	Thousands	
ETHIOPIA	353[247-567]	11000	3176	16.7
INDIA	174[139-217]	45000	25794	6.2
NIGERIA	814[596-1180]	58000	7133	25.6
NORWAY	5[4-6]	3	61	0.5
SOUTH AFRICA	138[124-154]	1500	1111	1.7
SWEDEN	4[3-5]	5	119	0.5
UNITED KINGDOM	9[8-11]	74	813	0.8
USA	14[12-16]	550	4025	0.5
ZIMBABWE	443[363-563]	2400	539	13.2
GHANA	319[216-458]	2800	884	11.3
FINLAND	3[2-3]	2	59	0.2

My Contributions

Mr. Vice Chancellor Sir, while these statistics are gloomy, the good news is that they are reversible. Maternal death is preventable. My Research, teaching and community services are geared toward the prevention of maternal death. One of the earlier research projects I embarked upon on joining the academic Department was to examine the trends in maternal mortality in Ile-Ife over a period of 20 years. The study revealed that the causes of death remained largely the same despite all the efforts put into studies aimed at identifying those causes (Loto, Owolabi, Orji, Fasubaa, & Ogunniyi, 2008) . The maternal mortality ranged from 214/100000 live birth in 1992 to 1,839/100000 live births in 2002. The 3 major causes of maternal mortality were obstetric haemorrhage, Septicaemia and pregnancy induced hypertension.

Table 7.
Maternal Mortality in OAUTHC

Year	Live Birth	Maternal Mortality	Ratio/100000 Live Births
1985	2670	16	599
1986	2032	24	1181
1987	1200	14	1166
1988	1307	21	1607
1989	1468	05	341
1990	1566	05	319
1991	1824	06	329
1992	1872	04	214
1993	1632	09	551
1994	1260	12	952
1995	1858	27	1453
1996	1704	18	1056
1997	1672	16	946
1998	1668	10	600
1999	1377	19	1380
2000	1428	12	840
2001	1177	18	1529
2002	1033	19	1839
2003	1466	17	1159
2004	1204	17	1330
Total	31438	288	917

Table 8. CAUSES OF MATERNAL DEATHS

S/NO	CAUSES OF DEATH N=251	No	%
1	Obstetric Haemorrhage (APH &PPH)	68	27
2	Septicaemia	63	25
3	Pregnancy Induced Hypertension/Eclampsia	43	17
4	Ruptured Uterus	36	14
5	Complications of Abortion	30	12
6	Heart Failure	02	0.8
7	Amniotic Fluid Embolism	01	0.4
8	Sickle cell Crises	03	1.2
9	Medellson Syndrome	01	0.4
10	Abdominal Burkitt	02	0.8
11	Choriocarcinoma	02	0.8

Mr. Vice Chancellor Sir, recognising the fact that most maternal deaths occur around the time of labour and delivery, we conducted further research into the factors that are associated with higher risks in pregnancy and labour as well as proffering ways of reducing the risks especially through better management of high risk pregnancies and labour (Ade-Ojo, Kuti, Loto, & Ogunniyi, 2011; Badejoko *et al.*, 2012; Fasubaa *et al.*, 2002; Loto, Ayuba, Adebara, & Ikuomola, 2010; Loto, Ikuomola, Ayuba, & Onwudiegwu, 2012; Oladapo, Akinola, et al., 2009; Oladapo, Fawole, *et al.*, 2009). It has also been observed that factors responsible for majority of maternal mortality do not act alone, they are reinforced by what has been termed the three phases of delay namely delay in seeking care, transportation delay and delay in receiving care (Orji, Loto, & Orji, 2007; Thaddeus & Maine, 1994).

In Nigeria, where a woman cannot give consent for life saving operations unless the husband or another man in the family gives the consent, this can lead to needless delay in getting care even though the woman is in the health facility. This is a form of phase 3B delay i.e delay in getting consent for appropriate and sometimes life-saving operations on the woman because the husband or a significant person is not around (Okogbo, Isabu, Okogbenin, Eigbefoh, & Loto, 2007).

While obstetric haemorrhage is a leading cause of death among our women (Loto & Onile, 2008),Primary postpartum haemorrhage (PPH) account for majority of these cases. PPH is bleeding from the genital tract after delivery of the baby and could be prevented by active management of the third stage of labour (AMTSL). The third stage of labour refers to the period from the delivery of the baby to the delivery of the placenta. With this in mind, we conducted studies on how labour especially the third stage of labour could be better managed (Badejoko *et al.*, 2012; Oladapo, Akinola, et al., 2009; Oladapo, Fawole, et al., 2009; Orji, Agwu, Loto, & Olaleye, 2008). I also participated in the international trial of tanexamic acid in the management of primary post partum

haemorrhage. This landmark study was published in the Lancet Journal (WOMAN Trial Collaborators (Wesley Guild Hospital-Loto), 2017). Twenty thousand and sixty women were enrolled and randomly assigned to receive tranexamic acid (n=10051) or placebo (n=10009), of whom 10036 and 9985, respectively, were included in the analysis. Death due to bleeding was significantly reduced in women given tranexamic acid (155 [1·5%] of 10036 patients vs 191 [1·9%] of 9985 in the placebo group, risk ratio [RR] 0·81, 95% CI 0·65-1·00; p=0·045), especially in women given treatment within 3 hours of giving birth (89 [1·2%] in the tranexamic acid group vs 127 [1·7%] in the placebo group, RR 0·69, 95% CI 0·52-0·91; p=0·008). Based on the findings of these studies and other efforts from the department, we were able to drastically reduce deaths from postpartum heamorrhage and current data from the unit now places septicemia as the leading cause of maternal mortality in Ile-Ife. Tranexamic acid administration needs to be included as one of the early interventions when PPH is diagnosed in addition to current treatments as evidence show that it will reduce the risk of death from PPH drastically if administered within the first three hours of bleeding following delivery.

Our team made significant contributions towards reducing the currently high maternal mortality in Nigeria (Loto & Okogbo, 2008). We have described novel methods of reducing the risk involved and minimizing the cost of care during labour. Our work on misoprostol established the safety and efficacy of this drug for induction of labour in low-resource setting using basic clinical tools for monitoring in the absence of the expensive gadgets in developed countries (Loto, Fadahunsi, & Kolade, 2004). The advantage of misoprostol use in labour and delivery is that it is stable in room temperature and does not require special storage condition; hence it will be very useful in selected patients in our environment where unstable electricity has resulted in reduced potency of oxytocin as a result of unfavourable storage conditions.

We were also able to determine the appropriate dose of this cheap drug through some of our other research efforts (Badejoko *et al.*, 2012; Loto *et al.*, 2012) Our research also confirms that misoprostol is as effective as the standard oxytocin in induction of labour (O.M Loto et al., 2010).

In our study in which we compared misoprostol with oxytocin in induction of labour, misoprostol compared favourably with the standard oxytocin in all the parameters measured as shown in the Table 9.

Table 9. Events in Labour of the parturients: A Randomized Clinical Trial of Misoprostol and Oxytocin for Induction of Labour.

Variable	**Study**	**control**	**P-value**
Dose of Misoprostol μg	98.53 +/- 17.21	0.0 +/- 0.0	0.000**S**
Duration of labour in hours	12.67 +/- 3.28	13.37 +/- 2.78	0.354NS
Induction delivery interval in hrs	12.62 +/- 3.28	13.32 +/- 2.78	0.350NS
Apgar score at 1 minute	8.72 +/- 2.47	8.93 +/- 2.49	0.907NS
Apgar score at 5 minutes	9.12 +/- 2.43	9.09 +/- 2.44	0.940NS
Estimated blood loss (ml)	302.35 +/- 97.27	296.69 +/- 70.41	0.100NS

Source: Loto *et al.* (2010)

We followed up the above study to determine the appropriate dosage of misoprostol for induction of labour. Our findings revealed that the 25 microgram of the drug is associated with less complications even though the 50 microgram resulted in shorter labour (Loto *et al.*, 2012).

In another of our studies, we compared the 60 and the 30minutes dose incremental schedules for induction of labour with oxytocin and observed that the 60 minutes group carries less risk to both mother and the fetus (Ade-Ojo, Kuti, Loto, & Ogunniyi, 2011).

We carried out a survey of the healthcare providers in order to assess their knowledge on AMTSL. It was observed that although

the term active management of third stage of labour (AMTSL) was familiar, it was poorly understood among obstetrics care providers (Oladapo, Fawole, *et al.*, 2009). This study was followed by another study aimed at determining the correct use of active management of the third stage of labour and comparing the outcome in women that had the full complements and those that did not. The survey reveals substantial definition-dependent variation in the providers' adherence to recommended AMTSL practices (Oladapo, Akinola, *et al.*, 2009). We therefore recommended education for those involved in routine delivery care (Oladapo, Fawole, et al., 2009)

Caesarean Section (CS) is a major procedure in obstetrics and there is a high aversion of our women to the operation. Delivery by caesarean section is seen by our women as demeaning to the very concept of womanhood or motherhood. We conducted studies to look at the self esteem of women delivered by caesarean section compared with those that delivered vaginally (Loto *et al.*, 2010; . Loto *et al.*, 2009). Our results revealed that women delivered by caesarean section had lower self esteem than women with spontaneous vaginal delivery (SVD). The correlates of low self-esteem in the CS group included polygamy (odd ratio (OR) 4.99, 95% confidence interval 1.62-15.33) and emergency CS OR 4.66 95% CI 1.55-16.75. (Loto *et al.*,2009).

We also looked at the effect of the lowered self esteem on parenting in the immediate postpartum period and observed that CS in Nigerian women is associated with lowered self esteem and predicts poor parenting self-efficacy in the post natal period.

We conducted studies aimed at reducing the morbidity associated with the operation as a way to improving acceptance (Fasubaa *et al.*, 2002; Ijarotimi *et al.*, 2013; Loto et al., 2010; Loto et al., 2009; . Orji, Olaleye, Loto, & Ogunniyi, 2008). We looked at the reason for the aversion to caesarean section in the community and realized it was not only cultural but also economic (Loto, 2011). Furthermore, we pioneered and alternative method of delivery of

fetus at caesarean section in prolonged obstructed labour with head impacted in the pelvis. In this study, we compared two methods of delivery of the impacted fetal head during caesarean section for obstructed labour and found out that the pull method of delivery is associated with better outcome (Fasubaa et al., 2002) This was associated with less maternal and perinatal morbidity and mortality.

Part of the reasons why maternal mortality remained high in our environment is the fact that many of our women do not utilise antenatal care and/or do not have a skilled birth attendant at delivery. Their inability to utilise these services in addition to their aversion for caesarean section may also be a reflection of their perception of the quality of care received in the health facilities. Owing to this, some of them book and eventually deliver outside the hospital. In one of our studies, we were able to identify those women who were likely to default after antenatal care (Ezechi et al., 2004). These defaulters can be singled out for in depth counseling during antenatal care in order to effect a change of behaviour.

We carried out a number of prospective randomized clinical studies aimed at providing evidence based best practices in the care given to parturient during labour and delivery. We strongly believe that this, on the long run, will increase satisfaction and ultimately health facilities patronage(Fasubaa *et al.*, 2002; Loto *et al.*, 2010; Loto *et al.*, 2012; Oboro, Tabowei, Loto, & Bosah, 2003; E. Orji *et al.*, 2008; E. O. Orji *et al.*, 2008). This will eventually lead to reduction in maternal and/or perinatal mortality and morbidity. In one of our works, we were able to reveal that the two-layer repair of episiotomies or perineal lacerations is associated with reduced postpartum perineal pain and dyspareunia (Oboro *et al.*, 2003).

We compared two methods of uterine closure at caesarean section and found out exteriorization of the uterus is associated with less complications than non exteriorization (. Orji *et al.*, 2008).

In one of our studies, we were able to show that prophylactic use of oxytocin in the third stage management of labour is as effective as ergometrine in the prevention of primary postpartum haemorrahge without the undesirable side effects of ergometrine. We therefore recommended its use in place of ergometrine (Orji *et al.*, 2008).

We determined the attitude of rural pregnant women towards routine antenatal HIV screening years before routine antenatal screening of pregnant women became an established practice. We observed that almost 90% of the women included in the study, were willing to accept routine antenatal screening (Loto *et al.*, 2005). This paper along with the works of other researchers led to the incorporation of routine HIV screening into antenatal care (Fasubaa *et al.*, 2000).

In the area of antepartum monitoring of the fetus, in conjunction with our colleagues in the Department of Radiology, we developed a nomogram for the umbilical artery Doppler indices among women in our population (Ayoola *et al.*, 2016). The study involved 400 pregnant women within the gestational ages of 15weeks and 39 weeks. The normative data so generated could serve as reference ranges for evaluation of the umbilical artery circulation in this locality, as shown in Table 10.

Table. 10. Nomogram for the umbilical artery Doppler indices among pregnant women

GA (weeks)	PI			RI			S/D ratio		
	Percentile			Percentile			Percentile		
	5th	50th	95th	5th	50th	95th	5th	50th	95th
15	1.094	1.265	1.422	0.594	0.760	0.789	2.906	4.068	5.100
16	1.073	1.247	1.415	0.580	0.753	0.787	2.834	3.997	5.036
17	1.051	1.229	1.408	0.567	0.746	0.784	2.763	3.926	4.972
18	1.030	1.211	1.402	0.554	0.738	0.781	2.692	3.855	4.907
19	1.009	1.192	1.395	0.541	0.731	0.778	2.621	3.784	4.843
20	0.988	1.174	1.388	0.528	0.724	0.775	2.549	3.713	4.779
21	0.967	1.156	1.381	0.514	0.716	0.772	2.478	3.642	4.715
22	0.946	1.138	1.375	0.501	0.709	0.769	2.407	3.571	4.651
23	0.925	1.120	1.368	0.488	0.702	0.766	2.335	3.500	4.587
24	0.904	1.102	1.361	0.475	0.694	0.763	2.264	3.429	4.523
25	0.883	1.083	1.354	0.462	0.687	0.760	2.193	3.358	4.459
26	0.862	1.065	1.348	0.448	0.680	0.758	2.121	3.288	4.395
27	0.841	1.047	1.341	0.435	0.673	0.755	2.050	3.217	4.331
28	0.820	1.029	1.334	0.422	0.665	0.752	1.979	3.146	4.267
29	0.799	1.011	1.327	0.409	0.658	0.749	1.907	3.075	4.203
30	0.778	0.992	1.321	0.396	0.651	0.746	1.836	3.004	4.138
31	0.757	0.974	1.314	0.382	0.643	0.743	1.765	2.933	4.074
32	0.736	0.956	1.307	0.369	0.636	0.740	1.694	2.862	4.010
33	0.715	0.938	1.300	0.356	0.629	0.737	1.622	2.791	3.946
34	0.694	0.920	1.294	0.343	0.621	0.734	1.551	2.720	3.882
35	0.673	0.902	1.287	0.330	0.614	0.732	1.480	2.649	3.818
36	0.652	0.883	1.280	0.317	0.607	0.729	1.408	2.578	3.754
37	0.630	0.865	1.273	0.303	0.599	0.726	1.337	2.507	3.690
38	0.609	0.847	1.267	0.290	0.592	0.723	1.266	2.436	3.626
39	0.588	0.829	1.260	0.277	0.585	0.720	1.194	2.365	3.562

GA, gestational age; PI, pulsatility index; RI, resistivity index; S/D, systolic/diastolic.

Source: Ayoola et al 2016

We also developed the reference ranges of fetal cerebral lateral ventricle parameters by ultasonography (Ishola *et al* 2016).

Tuberculosis is now getting more common in pregnancy in this era of HIV/AIDS. The diagnosis and treatment of this condition pose a dilemma to the clinician because pregnancy might mask the weight loss associated with the disease, hence the need for high index of suspicion in the diagnosis and management of this disease in pregnancy (Loto & Awowole 2012; Awowole *et al.*, 2013).

Our life together: Brigding the town and gown divide

Mr Vice Chancellor Sir, a great chasm exists between scientists and laypeople. This gap, often known as the town-and-gown divide, has produced and projected the image of scientists as that of a high priest who is not touched by the feelings and infirmities of the masses. In the popular imagination, scientists are seen as belonging to a different world, where they speak big grammar, solve algebra and calculus, and advise their colleagues -'publish or you perish'. But the good news about my various studies, Mr. Vice Chancellor Sir, is not only that the findings were published in high

impact factor journals and received global awards. They were also used to empower laypeople at the grassroots, who might not have had access to health care services in our hospitals. In doing so, I substantially abridged the town-and-gown divide. I achieved this feat through my unalloyed commitment to community services, which unfolded in multiple spaces and places.

Mr. Vice Chancellor Sir, for one year, precisely between 2006 and 2007, I held public lecture on Infertility on Ondo State Radiovision Corporation (OSRC). It was a moderated programme that brought a great relief to many couples. Since my qualification as Consultant in Obstetrics and Gynecology, I have held many public lectures on health in churches, fellowships and schools. For instance, I was the guest lecturer at the Ondo State Nigerian Medical Association Annual General Meeting titled: 'HIV/AIDS Protecting the unborn Child 2004'; the guest speaker on 'Law and Ethics in Medical Practice' hosted by the Ondo State Nigerian Medical Association Continuing Medical Education Lecture in 2005; and the guest lecturer, Ekiti State Nigerian Medical Association Physician week on reducing maternal mortality 2006. I was also a guest lecturer at the Medical and Dental Consultant Association (MDCAN) Ondo State Chapter Annual Scientific Conference in 2012 where I spoke on Male infertility. My findings were thus generously disseminated through these platforms to reduce maternal mortality and solve the problems of infertility.

Capacity Building: Towards Institutionalization of Sound and Safe Maternal Health.

Mr. Vice Chancellor Sir, the battle against infertility and maternal death is lost and won in health institutions. A strong, efficient and effective health institution is indispensable in our efforts to safeguard maternal health. To this end, since my return to Nigeria from India, I have been working with my colleagues to set up an IVF Unit in the Teaching Hospitals. Our efforts, Mr Vice chancellor Sir, have started yielding fruits. Financial challenge impeding our progress is almost becoming a thing of the past. The

hospital's management has decided to set up IVF Unit through public private partnership (PPP) initiative.

The private investor will build and equip the Unit, while we in the Department will run the facility. We hope to have our first baby from IVF at the teaching hospital before the end of next year.
With the completion of this project, OAUTHC will join other teaching hospitals providing IVF services in Nigeria. Some of these hospitals include but not limited to the National Hospital, Abuja, University of Benin Teaching Hospital, University of Ilorin Teaching Hospital, Ilorin, Lagos State University Teaching Hospital, Ikeja and Lagos University Teaching Hospital, Idi-Araba, Lagos. The number of public hospital rendering this services show that it is achievable and sustainable (Aziken, 2016; Orhue, 2013).

In addition to this, Mr. Vice Chancellor Sir, 'success with successor is failure in disguise'. To this end, I have trained and mentored able-bodied men and women who are already globetrotting, and empowering couples to win over infertility and maternal death not only in Nigeria, but also in the United States of America, the United Kingdom, to mention a few. Mr. Vice Chancellor Sir, I have successfully supervised over 20 postgraduate doctors by research or long essay. I am also an external examiner to various medical schools in Nigeria including but not limited to the Ambros Alli University, Ekpoma; the Ladoke Akintola University of Science and Technology, Ogbomoso; The Bowen University Iwo. I am also an examiner at the National Postgraduate Medical College of Nigeria at the Part 1 and Part 2 (Final) Fellowship Examinations as well as an Instructor at the Medical and Dental Council of Nigeria (MDCN). These efforts collectively have contributed immensely toward the institutionalization of sound and safe maternal health in Nigeria.

Recommendations

My recommendations as I end this Lecture are directed to three groups of people; the individual, the healthcare providers and the government and policy makers.

1. Concerning infertility, prevention is clearly better and cheaper than cure Prevention is achieved through the avoidance of risky sexual behaviours that leads to pelvic infections, unwanted pregnancies and its termination as well as delivering babies in unhygienic places, which may lead to puerperal sepsis. Also living healthy lifestyles, such as avoiding alcohol, smoking and unhealthy dietary habits will help to reduce the risk of infertility.

2. Health care providers should use every opportunity to canvas for healthy lifestyle and talk about prevention. They should avoid unnecessary pelvic operations in young women and manage pelvic infections promptly using the recommended evidence based guidelines.

3. Couples with infertility problems should always seek medical services early in government approved hospitals. This is because in trying to treat infertility women may be subjected to numerous ineffective treatments which are expensive and time consuming by quacks and even some supposedly professionals.

4. The government and policymakers should ensure that our hospitals are not merely consulting clinics but a place where there is provision of adequate funding for the procurement of standard equipments and staffing.

5. Government should set up highly subsidised IVF Units to manage the infertile couples whose only option is IVF for the resolution of their infertility problems. The cost of accessing this treatment still remains prohibitive because infertility treatment is excluded from the insurance scheme and couples

have to pay out of pocket. To this is added the cost of transportation and lodging as most of the IVF centers are located in the big cities of Abuja, Lagos and Port-Harcourt. While so many NGO's spend millions of dollars on family planning to reduce the population, none is spending money to help infertile couples achieve their aim of parenthood. It is unfair to impose the burden of over-population on women and men suffering from infertility as all children contribute equally to the problem of overpopulation and not just those born from fertility treatment (FIGO 2015). Also, overpopulation bears its fangs on all, fertile or infertile.

6. Infertility treatment should be part of an integrated reproductive care programme including family planning and contraception, mother care, and reproductive health issues. We need to transform the paradigm of family planning into the planning of a family, and deploy human and material resources into helping infertile women and men become loving and caring parents.

7. We must change the existing moral and socio-cultural beliefs to a level where childless couples are no longer isolated, stigmatized and discriminated against. The media, patient organisations and interested politicians are needed in this regard. This will definitely not be a stroll in the park; obstacles will be numerous depending on local sociocultural, political and religious influences but it is achievable.

In the prevention of maternal mortality, my recommendations are also directed to the three levels above; individuals, healthcare personnel, government and policy makers.

1. At the level of the individual, the pregnant woman should always be prepared, knowing that pregnancy is a nine month journey (birth preparedness and complication readiness). She and her husband should put some money apart in case of

emergency and also liaise with a transporter for emergency transportation at night, if need be.

2. Health providers should constantly update their skills and knowledge so as to be aware of the current evidence-based best practices in the management of pregnancy, labour and delivery. They also need to improve their relationships with patients and their relatives so that they do not, inadvertently, drive them away from the hospital as a result of their attitude.

3. The government and policy makers need to make sure that our hospitals do away with the mere consulting clinic status that they have come to be known for over the years. They should be transformed to real functioning hospitals by improving on the funding, infrastructural development and the human capital development in these hospitals. The government also needs to expand the National Health Insurance Scheme (NHIS) to cover more of the populace as well as provide more therapeutic interventions to reduce the crippling out of pocket expenditure by patients.

Conclusion

Mr. Vice Chancellor Sir, the causes, consequences and cure for infertility as well as how to prevent maternal death are clearly highlighted in this Lecture. The causative factors in maternal mortality in Nigeria can be divided into four: medical, socio-cultural, health service and reproductive factors. Socio-cultural factors contributing to maternal mortality include low status of women, poverty, poor nutrition [in childhood, adolescence and adulthood], ignorance/illiteracy, religious beliefs [that act as barriers to utilization of available health services] and harmful traditional practices.

The health service related factors are numerous and include lack of access to essential obstetric care, lack of access to family planning [FP] counselling and service, lack of drugs, blood, equipment, essential materials, instruments, consumables etc in hospital, non-availability of health workers on essential duties caused by

incessant strikes, deficient transportation, communication and utility (power, water etc) facilities.

These factors often act synergistically to produce fatally skewed consequences. Women are discriminated against when they are in an infertile relationship and neglected when pregnant and about to give birth. When their prayers are eventually answered, we should ensure that the woman does not end up dying. Even when they say, "give me a child, let me die", it is a not a voluntary death. Women have been handed the short end of the stick and infertile women the shorter end. They are culturally disadvantaged, emotionally abused, economically subjugated and psychologically subdued. But the strains of insanity present in the mind of an infertile person caused by societal abuse and stigmatisation only mirrors the mental stability of the society as the accuser.

Mr Vice Chancellor Sir, according to Mahmoud Fathalla (2013) we owe these women of the world an apology. We express our regret and we confess our guilt, although we cannot dare to ask for or expect forgiveness. Mothers sacrificed their lives when we had no means to save them. But after the world had the knowledge and means to make motherhood safer for women, mothers in many parts of the world were left to die in the line of duty, because the world turned a deaf ear to their screams.

An inconvenient truth is that these mothers are not dying because of conditions we cannot prevent or treat. To put it bluntly, they are dying because societies had yet to make the decision that their lives are worth the cost of saving. The tragedy of maternal mortality is a question of how much the life of a mother and a woman is worth in the collective psyche of leaders, fathers, policy makers, healthcare givers and the society at large. The economic invisibility of women unveils itself in that their works, much as it counts, is not counted. Few women are in decision making capacities about the allocation of resources, particularly in countries where these resources are scarce (Fathalla, 2013).

These dangerous consequences women faced during childbirth are exemplified in our African folklore in which a mother tells her children, "I am going to the sea to fetch a new baby; the journey is dangerous and I may not return". Many are still not returning today.

Mr. Vice Chancellor Sir, "women's lives matter". This Lecture has offered both curative and preventive measures. It is the obligation of health workers, policymakers and husbands to contribute positively towards safe maternal health so that every woman who goes on the nine-month journey will return no matter the degree of danger involved. Therefore, health workers need to continually update their knowledge of the current best practices in the speciality as it affects management of patient. It is generally believed that half of what is printed in textbook is out-dated by the time the book is published, but the problem is that we don't know which half. This is the era of evidence-based medicine and hence all practitioners must be able to make use of the outcome of systematic reviews in making clinical decisions. It is well recognised that knowledge reduces as years go by after graduation from medical school. Hence, doctors will need to regularly update themselves to keep abreast with the developments of international best practices in their specialties.

When practitioners fail to update themselves, their knowledge of evidence-based current practice reduces with the passage of time. The chart in Figure 32 presents this claim vividly.

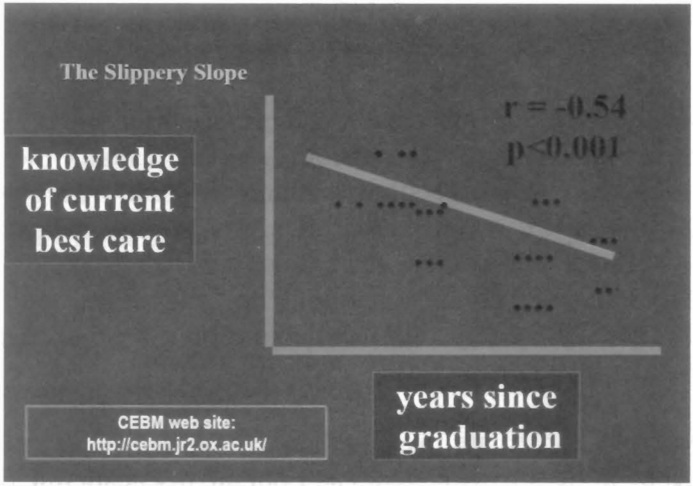

Figure 32. The slippery Slope

Insanity according to Albert Einstein is doing something the same way and expecting a different result. We have been running our health institutions the same inefficient way for too long, and we still expect results. Wisdom is the correct application of knowledge. Various researchers have generated knowledge; yet as a country, we lack the correct application. Little wonder then we still have pitiable health indices when compared to those of other countries. To this end, Mr. Vice Chancellor Sir, I am persuaded that implementing the recommendations of this Lecture at individual and institutional levels will change the grim statistics and lead us to the Promise land, where none shall be barren; where none shall cast their young ones; where no pregnant mother will be buried; where all who enter into labor shall live to enjoy the fruit of their labour.

I want to thank this great University once again for providing the platform for me to realise my academic potentials. I am also grateful to my late parents, my father Rev Richard Aseyito Loto who filled my JAMB form himself despite my protestation that I wanted to become an architect and my mother Mrs. Mariam Loto

who encouraged us to excel in our studies. I also want to appreciate my Priests and Pastors for their prayers.

I want to thank my in- laws and my family members especially my siblings for their support and encouragement. I thank the staff of Obafemi Awolowo University Teaching Hospitals Complex both at Ilesa and Ile-Ife as well as colleagues in the Department of Obstetrics, Gynecology and Perinatology for their cooperation. I appreciate all my research partners and associates within and outside the University for collaboration and exchange of knowledge in this special field.

I also want to appreciate my daughter Oluwaseun who has to bear my absence in her growing years as I pursue my academic career. Finally I want to appreciate my wife, Dr (Mrs.) Anthonia Blessing Loto. She is a truly virtuous woman. 'Two are better than one, for their work brings a higher reward'. Ecclesiastes 4:9. With the high *'mortality'* associated with the fellowship examinations and the *'misery'* associated with the failure thereof, my wife was always fasting and praying for my success each time I go to Ibadan or Lagos and God answered her prayers on all occasions as I passed all stages of the examinations of both the National postgraduate medical college and the West African college of Surgeons at single attempts. In her I was able to experience the true power of a praying wife. As stated in the book of proverbs 'Many women have done wonders, but you surpass them all. Charm is deceptive; beauty is useless; the woman who fears the Lord deserves praise. May she enjoy the fruits of her labour, and let her works praise her at the city gates.' Proverbs 31 vs 29-31.

Mr. Vice Chancellor Sir, Distinguished Ladies and Gentlemen, I have presented to you my account of stewardship in this race to safeguard our world from extinction by helping our women to become mothers safely. In our daily professional interactions with patients as obstetricians and gynecologists, the voice of Rachael will continue to resonate in the voices of men and women battling infertility. My opinion is that we must listen with our inner ears

and be empathic in our listening. We must hear this as a plea to be helped, to be saved from shame, disgrace, and ostracisation. Even when they say "give me a child…or I die" or "give me a child…let me die", we must hear this passionate plea as "give me a child…let me live".

I thank you all for your presence and attention. God bless you all.

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