Funding Options for Assisted Reproductive Technologies in Developing Countries

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Introduction

Infertility remains a major gynaecological problem globally, developed and developing countries alike. It threatens the basic foundation of families and the society generally. Most developing countries including Nigeria which sits on the infertility belt of Africa place good premium on procreation. Over the years traditional medical management of infertility has met with some success but at the same time fraught with failures and disappointments. The advent of assisted reproductive technology appears to have provided a ray of hope to many such couples.

Assisted reproduction in developing countries until recent times has received limited attention at both regional and global levels respectively, basically due to the belief that infertility is not a problem of the developing countries but rather for the developed countries [1]. Again there is the belief that assisted reproductive technology (ART) is very costly thereby having a direct or indirect effect on the already over stretched health care budgets in developing countries. Also this development is coming with significant impediment occasioned by the prohibitive cost of the procedure in an environment where poverty is prevalent. In most developing countries, funding of in vitro fertilization treatment remains a major challenge. Limited expertise in the ART field also compounds the situation in such countries [2].

The Burden of Infertility and the Role of Assisted Conceptions

Infertility has been described by The International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) as a disease of the reproductive system that is defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse [3]. It is generally estimated that infertility affects 10-25% of couples worldwide, the prevalence is still on the increase. The absolute number of couples affected by infertility increased from 42.0 million (39.6 million–44.8 million) in 1990 to 48.5 million (45.0 million–52.6 million) in 2010; and sub-Sahara Africa is among the worst affected regions of the world [4]. Hospital based data shows that 40-60% of gynaecological outpatient consultations in many Nigerian hospitals were for infertility [5,6].

Assisted reproductive technology includes all treatments or procedures that include the in vitro handling of both human oocytes and sperm, or embryos, for the purpose of establishing a pregnancy [3]. There is strong desire for parenthood among couples occasioned by the influence of culture and religion, and the stabilizing effects that childbirths has on the African family life. The age at childbirth has increased, the prevalence of tubal diseases in developing countries like Nigeria and outcome of surgical treatment is poor, and the option of child adoption remains not so popular [7-10]. These set the stage for increasing utilization of assisted reproductive technology in developing countries.

Cost of In Vitro Fertilization Services

Assisted conception is considered expensive worldwide. Costs associated with ART treatment has been described as ‘direct’ costs; attributed to providing ART treatment itself, and ‘indirect’ costs; those occurring as a consequence of ART treatment [11]. Considering the influence of such costs on infertile couples, some countries like France, Spain and Israel cover ART costs fully, while Portugal, Turkey and Sweden cover varying percentages of the cost [12]. Most developing countries including India do not cover such costs, making ART inaccessible to those who might need it the most. Nigeria, the direct cost of conventional in vitro fertilization and embryo transfer is between $10,500 and $14,000 per treatment cycle [13]. In vitro fertilization with donor eggs costs almost about twice this amount. When the indirect cost of antenatal care and delivery, the cost of care of preterm deliveries occasioned by IVF and the cost of other adjunct services are included, the burden on individuals is enormous. In South Africa the average cost is estimated at E3.255+576 [14], while in Ukraine, Belarus and Kazakhstan it ranges from $2,599 to $5,509 [15].

In addition to the high costs of in vitro fertilization, is the inherent risk of failure of the procedure. Success rate defined as the take home baby rate ranges between 20 and 25% which translates to 1 success out of every 4 or 5 couples who undergo the procedure. Pregnancy rates are highest between the ages of 25 and 35 years and decline steeply after 35 years. In the UK Human Fertilisation and Embryology Authority database, the average live birth rate per IVF cycle in 2006-2007 was 24%; the equivalent average figure in the USA is 36% [16]. National data on costs and success rate is not yet available in Nigeria due to lack of regulatory framework. While this success rate is understandable to the medical community who have knowledge of the natural human fecundability of about 20% [7] utilization of IVF services by clients will be affected by the high likelihood of not going home with a baby after paying so much.

Options of IVF Financing in Nigeria

There is wide range of variation in the access to funding of assisted reproduction among countries, from completely public funded, to subsidised treatment, to completely privately funded services [11]. In developing countries like Nigeria, unlike the high income settings of
the developed world, the options of financing IVF treatment are considerably limited.

Generally, healthcare in many developing countries is largely self-funded, either as out-of-pocket payment or through third parties mainly employers or privately operated health insurance. In 2012, private expenditure on health in Nigeria was 67% of total expenditure on health [17]. While government still struggles with funding basic healthcare in Nigeria, it becomes impracticable to expect funding of advance infertility treatment in the immediate future. Yet, the overall expenditure on fertility treatment is not likely going to negatively impact health expenditure when the distressing nature of infertility and the long term benefit of a reproductively healthy society are brought into scrutiny. Out of pocket payment for *in vitro* fertilization is very difficult for individuals. Experiences from countries where health including advanced infertility treatment is fully government funded shows that public reimbursement relieves the pressure on both the physicians and the patients for achievement of pregnancy with the minimum number of treatment attempts, consequently leading to a decrease in the number of embryos transferred and in multiple pregnancies [18]. Although Nigeria’s National Health Insurance Scheme was established in 1999 to ensure health insurance coverage for the general population, less than 2% of women in reproductive age have health insurance plans; and most of these are employer-based [19]. In most developing countries, fertility is not considered a major health problem, and this contributes to the limited accessibility of health insurance enrollees to policies that cover fertility treatment. Such policies are very expensive; and most employers in the public and private sectors prefer to limit these employees to health care plans that exclude infertility treatments apparently as a way of saving cost. Even in some developed countries, public-funded health insurance schemes rarely finance *in vitro* fertilization; and if they do, there is limit to the numbers of treatment cycles allowed. Making health insurance schemes with fertility treatment accessible to the couple is a viable option of making *in vitro* fertilization services available to infertile couples in developing countries. To begin with, health insurance coverage must be scaled up; and infertility must be accorded its due place as a disease of public health importance. Private organisations/institutions and government agencies, should be encouraged or compelled to take up the responsibility of financing fertility treatment including assisted conceptions, even if it requires subjecting access to such services to stringent regulations and limitations including curtailting the numbers of treatment attempts allowed.

*In vitro* fertilization has been shown to have a net profit value for the society [15]. Availability of loans from financial institutions will make funding for couples. However, barriers to this are multiple including prohibitive interest rates, unavailability of the required collaterals and requirements that qualify them for a loan; and the fear of not being able to pay back and its attendant consequences. Improvement of access to no or low interest loan facilities for the purpose of *in vitro* fertilizations will be achieved if financial institutions are specifically supported by government regulatory agencies to make funds available for fertility treatment at lower interest rates. This will birth the evolution of various forms of bank-client-provider programs that will further enhance access to funds.

Attention has also shifted to the *in vitro* fertilization services providers as a source of full or partial sponsorship of treatments. These are subjects to terms and conditions fully at the discretion of the providers. This presents in different forms including free or subsidised subsequent treatment cycle after previous failed cycles, various forms of compensation to clients whose procedure failed, or periodic free or subsidized services as a form of promotion, usually disseminated through the media. There is limit to the number of IVF seekers such programs can reach.

A number of initiatives which seek to improve access to infertility care including *in vitro* fertilization in low cost settings has been identified, and these include the development of the FIGO fertility toolbox by the reproductive medicine committee of the organization; initiatives by the task force on Infertility in developing countries of the European Society of Human Reproduction and Embryology; and the establishment of Low-cost IVF Foundation which seek to reduce the cost of ART [18,19]. A call for low-cost ART protocols have attempted to reduce the overall current cost of IVF through limiting the required laboratory investigations, modifying the stimulation regimen, simplification of *in vitro* culture, elective single embryo transfer, and purchasing low-priced pre-used machines and instruments; although there is the fear of the output quality being compromised with such approach [18-21].

Occasionally, fertility treatment has been sponsored by non-governmental organizations and religious bodies. These options are not open to regulation; neither are these organisations under any obligations to do so. The number of access this provides is highly limited.

**Conclusion**

Assisted reproductive technologies are now well-established treatments for many types of subfertility, representing substantial economic and healthcare implications for patients, healthcare providers and society as a whole [7,11]. With increasing demand for *in vitro* fertilization services, the challenge of funding is taking central stage. Public services must first recognise infertility as a distressing reproductive health problem of high prevalence in the country, and consider public financing of infertility as a worthy project in the near future. The most viable option of *in vitro* fertilization financing in developing countries at the present time is health insurance which is emerging albeit too slowly as national health financing alternative in most developing countries. Likewise, making available low interest loans from financial institutions will make treatment more readily available to more patients. As more assisted conception competent centres sprouts across the country with increased competition for clients, the expected natural results include increasing service quality, improving treatment outcomes, and expectedly decreasing cost of treatment.

**References**


