



# Ethical Considerations of Conception in Elderly Women, Worldwide

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## Authors' contributions

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## ABSTRACT

**Background:** The advancement in science has brought about better medicines and preventive measures hence improved quality of life leading to higher life expectancy. This has also led to advancement in assisted reproductive technology (ART) such as In vitro fertilization (IVF) which is helping women of advanced maternal age to conceive however this has a lot of ethical issues to consider.

**Aim:** The aim of this paper is to look at those aged  $\geq 60$  years who had live births and the ethical issues surrounding these births.

**Methods and Materials:** This is a retrospective cross-sectional study of cases reports of elderly women who delivered live babies. Journals, newspapers and magazines including on-line media from credible sites reporting women aged  $\geq 60$  years who had live babies globally were analyzed.

**Results:** There were 75 elderly women worldwide that had live births ever. Majority (99.7%) of the women were within the youngest old age group ranging from 60-74 years while 96% had IVF with primary infertility without children from either partners seen in 55.6% of cases. Ethical issues

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identified include medical health challenges associated with advanced maternal age and those associated with ART which includes: the unnatural means of conception, inequitable access to the intervention due to its high cost, lack of regulatory body, safety of the procedure, and fate of the embryos, surrogacy, sex selection, gamete donation and reproductive tourism. India had the highest number of women consisting of 18.7% of the study population while Nigeria had the highest number in Africa with 5.3% of the women. Ukraine was the most visited country for reproductive tourism, while Switzerland was the country whose women undertook reproductive tourism most.

**Conclusion:** The ethical considerations regarding child birth in elderly women that is those above 60 years are several and can be biological, social or religious. Legal rules guiding ART vary from country to country. The decision to bear children is a fundamental human reproductive right but the actualization takes critical assessment by competent specialists. There is need for uniform regulations and legislation worldwide to assist these women who were not able to achieve conception at a younger age.

*Keywords: Advanced; conception; considerations; elderly; ethical; older; women.*

## 1. INTRODUCTION

Those termed elderly are defined as those aged 60 years and above, although there is no clear cut definition which is accepted worldwide since there are arguments that now consider biological aging to be more reliable than chronological aging hence the popular saying age is just a number [1]. The improved quality of life due to advancement in science, technology and medicine has not just extended human living on earth but has also brought about the ability to reproduce in advanced age [2]. The term elderly primigravida is defined as those women giving birth for the first time at an age more than 35 years of age [3,4]. Synonyms such as advanced maternal age and geriatric pregnancy are also used interchangeably [5]. As more women above 60 years (geriatric age) are giving birth in this era, the real definition of geriatric pregnancy has come to be which can be defined as child birth in the geriatric age group [2]. The term ethics refers to the set of moral principles that guide an activity undertaken by an individual or a group [6]. This paper intends to examine women in the geriatric group who gave birth worldwide and the ethical issues that arose regarding their pregnancy and delivery. The ethical considerations in conception in elderly women would be looked at two levels; 1) the age of conception that is ethical issues rising from giving birth at  $\geq 60$  years and method of conception that is ethical issues from the procedure of in vitro fertilization (IVF) [7,8]. Conception at age  $\geq 60$  years from natural conception is rare, with a few case reports but has now been made possible for more women as IVF has become available and more affordable [7-9]. The method of conception is mostly due to IVF because natural conception at

this age is restricted due to reduced quantity and quality of eggs or complete cessation of egg production [3,8]. The time when human life actually begins is quite controversial and raises an ethical dilemma. Human life begins when the human egg is fertilized by sperm or otherwise stimulated to cause cell division to begin. When human life translates to being a person is another ethical dilemma, since a person is someone who is conferred upon the full moral rights and responsibilities [7].

## 2. METHODS AND MATERIALS

The study is a retrospective cross-sectional study of elderly women with live births. Journals, newspaper and magazine publications of case reports of women who were 60 years and above who gave birth to live babies worldwide were analyzed. Those who were in their 60th year were included in the study and those who had still births or other pregnancy outcomes such as calcified babies were excluded from the study. Mothers who died during the peripartum period and those whose ages were not confirmed were also excluded from the study. An internet-based search of credible web sites such as [www.guardian.ng](http://www.guardian.ng), [www.dailymail.co.uk](http://www.dailymail.co.uk), [www.medicaldaily.com](http://www.medicaldaily.com), [www.bbc.news.com](http://www.bbc.news.com), [www.punchng.com](http://www.punchng.com), [www.pulse.ng](http://www.pulse.ng), [www.guinnessworldrecords.com](http://www.guinnessworldrecords.com), [www.pubmed.gov](http://www.pubmed.gov), [www.cnn.com](http://www.cnn.com), [www.thesun.co.uk](http://www.thesun.co.uk) and [www.cbs.com](http://www.cbs.com) was also done to verify information and analysis of various factors were carried out. These factors were the biodata including age, profession and nationality of the woman, reason for conception at an advanced age, means of conception (natural versus assisted reproduction), and place of assisted reproduction procedure. The age of partners and sources of oocyte and sperm were

also noted. The data was analyzed using simple arithmetic calculation using Techno Camon 16 calculator application since the data was small and were represented in tables for easy visualization. The various legal regulations and laws of different countries with regards to ART, IVF and surrogacy were also searched for from the internet from various sites as well.

### 3. RESULTS

Majority (99.7%) of the women were within the youngest old age group ranging from 60-74 years. Slightly less than one third, 30.5% (22) had their professions indicated from the reported sources. There was a variety of professions from which the women engaged in. Housewives were noted to be the highest number consisting of 22.8% (5), then farmers 13.6%(3) of which one had no formal education, teachers at different levels 13.6%(3) followed by health workers 13.6%(3) which included a retired nurse, retired doctor and a psychiatrist; businesswomen were 9.1% (2) and the rest were an actress (4.5%), a

retired factory worker(4.5%), a retired civil administrator (4.5%), a pastor(4.5%), a bank worker(4.5%) and a royal princess(4.5%). In other to receive some fertility treatments which are age restricted 4.2% (3) had to lie about their age. It also noted that the age of partners tend affect the choice of wanting babies in older women. 16% (12) of the women had partners who were younger them and 6.7% (5) were >10 years younger than their partners. In the reports about 22.7% (17) of the women were yet to be identified or choose to remain anonymous.

The two cases that were for sex selection were from India and UK. The two were seeking for male children. The UK woman needed another male child as companion for her son while the Indian woman needed a male child for inheritance purpose according to the laws of her town. Those who were refused adoption were from Bulgaria and Italy, both women were 62 years when they gave birth. The law on IVF at that time was not in place in Italy.

**Table 1. Age range of participants**

Age range	Number(N)	Frequency (%)	Cumulative frequency (%)
60-64	51	68	68
65-69	18	24	92
>70years	6	8	100

**Table 2. Reflecting the frequency of Birth country**

Country	Frequency	%
India	14	18.7
United States of America	9	12.0
United Kingdom	8	10.7
Nigeria, Switzerland,	2(4)	2(5.3)
Italy	3	4.0
Australia, Brazil, China, Ghana, Greece, Israel, Japan, Romania, Russia, Serbia, Spain	11(2)	11(2.7)
Austria, Bulgaria, Canada, Denmark, France, Germany, Montenegro, Netherland, Turkey, United Arab Emirate, Ukraine,	11(1)	11(1.3)
Total	75	100

**Table 3. Reason for Assisted reproduction**

Reason	Frequency	%
Primary infertility without children from either partners	40	55.6
Primary Infertility with children from previous union by one or both partners	17	23.6
Secondary infertility with loss of previous children( two were refused adoption)	4	5.6
Secondary Infertility without loss of children( two were for sex selection)	5	6.9
Gestational Surrogacy	6	8.3
	72	100

**Table 4. Natural versus Assisted reproductive technique**

Method of Conception	Number	%	Average Age
Natural	3	4	63.0
IVF	72	96	62.6
Total	75	100	62.8

**Table 5. Place of IVF: Home versus Abroad**

Place of IVF	Frequency	%c
Country of residence	53	73.6
Abroad	19	26.4
Total	58	100

The three with natural conception were not planning for more pregnancies since they already had children and one was even a grandmother. One was receiving hormonal therapy for other health condition while the other was on herbal remedies. Two of them were UK citizens while one was from China. Some of those who had ART were assessed and all had undergone in vitro fertilization either using donor eggs 95.8% (69) either from anonymous donors or relatives and all were postmenopausal while 4.2% (3) used their own preserved frozen eggs of which one of these women was still in her premenopausal phase. There were those who had to receive anonymous sperm donation (ASD) 13.9% (10) and these were mainly those that were single without male partners, husbands or boyfriends. One of them, a Spanish lady received from two AS donors to get her twins. Those who had male partners amongst those received ASD were 20% (2); a 60 year old Serbian woman had a partner who refused to be the father of her child, thus she had to get an ASD while an Indian woman had to get an ASD because her egg donor was the niece of her husband and the sperm came from her husband's niece's husband. Previously in vitro fertilization was noted to have been carried out in about 29.1% (21) of them; of which 71.4% (15) had failed attempts while 28.6% (6) had IVF successfully. Those who had one failed attempt were 26.6% (4), two failed attempts 13.3% (2), three failed attempts 33.3% (5), four failed

attempts 6.7% (1), five failed attempts 13.3% (2) and 6 failed attempts 6.7% (1). Out of 31.6% (6) who had previous successful IVFs, 33.3% (2) were noted to have achieved this in their 60's as well. A British woman at 60 years and an Austrian woman at 61 years were the ones noted to have achieved this feat twice. IVF was successful for 6.9% (5) of the older mothers at first attempt in their 60's. Four of them (80%) had children previously out of which one was acting as a gestational surrogate for her own 43 year old daughter who had made 7 attempts at IVF and was told she was unable to conceive.

Miscarriages have been noted to have occurred prior successful IVF attempts. This was reported in 2.8% (2) of cases.

Switzerland was the country with the highest number of persons 5.6% (4) who went out of their country of residence for "reproductive medical tourism". This is followed by Denmark and Israel who had 2.8% (2) persons each.

Ukraine was the most visited place for 'reproductive medical tourism' or fertility tourism, although India had more persons over 60 years giving birth but had only one person from outside Indian residence, who came in to utilize reproductive services, although the person is of Indian descent. Other places also visited commonly were Italy, United Kingdom, United States of America and South Africa.

**Table 6. Gestational Surrogacy**

Age	Country	Beneficiary	Indication	Oocyte Donor	Sperm Donor
60	Brazil	Daughter	Infertility of daughter	Daughter	Son-law
61	Japan	Daughter	Infertility of daughter	Daughter	Son-law
61	USA	Son	Gay couple	Son-in-law's sister	Son
61	USA	Daughter	Infertility of daughter	Daughter	Son-in-law
66	UK	Son	Infertility of son	Daughter -in-law	Son
67	Greece	Daughter	Infertility of daughter	Daughter	Son-in-law

It has been recorded that only 5.3% (4) of these women who had child births  $\geq 60$  years at who have been known to be deceased from reports with 75% living more than 5 years.

#### 4. DISCUSSION

The age range of the women in the study belong to the younger old age group as seen in Table 1. This shows that depending on the health of the of the woman and a good healthy uterus she can still have babies. The saying that 60 is now the new 40 seems to hold true for some women as they seem to be healthier than some women far younger than them. This factor might be tied to the fact that genetics which influences biological aging must be placed into consideration [10]. Even though the ages of attaining natural birth have been fixed at an average of forty two years; [9] conceptions at this age was not a willing choice for several persons. Age is an important factor because it is known that older women are more likely than men to have chronic, or ongoing, health conditions – such as arthritis, high blood pressure, and osteoporosis. Older women are also more likely to have memory or other “cognitive” problems, and difficulty carrying out daily activities such as dressing, walking, or bathing without help [11,12]. The various professions and careers which women engage in who come from the different nations as seen in table 2 highlights the universality of infertility and the common desire for women to fulfill their biological function in becoming mothers, no matter how long it seems to have taken [13]. This desire to have their own babies would push some to even compromise their morals by lying to their physicians in order to benefit from fertility services given to women of younger age as seen in a few cases in this study. Age discrimination benefits are being frowned in many cases such as health insurance, life insurance and retirement benefits [14]. Age discrimination with regards to childbirth may gradually become extinct as more women at an advanced age have successful pregnancy outcome. The age of the partner is also important factor in these women giving birth at an advanced age especially for those who had previously had children. A few had younger male partners who have never been fathers before. It has been shown that for a successful delivery of a baby particularly the first child of the couple both partners must desire to do so for it to be achievable [15]. Child birth above 60 years is a rare event that comes with a lot of mixed feelings and reactions from different people. This study showed more than one quarter of these women

choosing to remain unidentified or anonymous. This may reflect their desire to maintain their privacy or it could also arise from the fact that their countries have restricted laws on assisted reproductive techniques for mothers above a certain age.

The reasons from the analysis of women who had babies at this age include prolonged period of primary infertility, having a younger partner or spouse, sex selection, previous child loss, natural unexpected birth. Primary infertility without children from either partners still remain the major reason why those in advanced age still persist in their desire to have children. This re-enforces the fact that the couple have to be in agreement to actually have children and in 75% of cases they succeed [2,15]. The other reasons as seen in the table 3; are also causes of seeking for children. Sex selection is another area that raises a lot of ethical challenges such as gender bias, reproductive liberty; unpredictable risk to the offspring, potential genetic diseases and the slippery slope concern. The slippery slope concern is an argument that once IVF technology is allowed for a non-essential indication such as sex selection it may also give rise to couples or persons seeking for particular physical traits [16]. Sex selection might also be stemmed from certain laws of a particular custom or government that grants benefit to a particular sex most times the male sex as seen in this study in which a couple who had female children and were also grandparents had to seek for a male child because it confers some benefits with regards to getting land for the family. The desire to have children for a partner who doesn't have any or the desire for a couple to have their own children despite having children in previous relationships are part of reproductive rights, however the health of the mother is an important factor [17]. The loss of children can be devastating and seeking replacement to fulfill that desire to be a parent again especially when there are no grandchildren is an understandable decision. The laws guiding adoption which was an option sought by some of the women was unfavourable to a few of them that sought for children this way as a result of their age. This is a factor that may have to be reconsidered in various countries where applicable because no one can truly ascertain how long a person would live.

Age can be said to be just a number, as Table 4 highlights how those  $\geq 60$  conceived. The number with natural births was few. This brings

the possibility of using contraception in that age if going to be on any form of treatment that can boost fertility and enhance conception. It also shows that different biological clocks can exist for different women. Contraception for women have been advised to stop at the age of 55 because menopause usually averages between 46-51 for most women and it would be exceptionally rare for women to conceive naturally at this age [18]. The use of in vitro fertilization techniques was predominantly the means of conception for women  $\geq 60$  years. Ethical issues arising from this assisted method of conception include: the unnatural means of conception, inequitable access to the intervention due to its high cost, lack of regulatory body, safety of the procedure, and fate of the embryos, surrogacy, sex selection, and gamete donation [2,7,8,10-12].

The high cost of ART is what may discourage women from engaging in IVF earlier causing them to save a great deal of their livelihood and even selling their property. In this study group most had made up to three attempts or more before actually having a live birth. This is not just economically draining but also emotionally and morally draining [19,20]; nevertheless the stigma of not having a child at all, which includes both self and social stigmatization outweighs the challenges of IVF for a couple [21]. The failed attempts at adoption, demise of offspring and the issue of sex selection would have also fuelled the determination to have children. Adoption laws vary from country to country. The Bulgarian law on adoption law in 2010 may have changed overtime, however the law may still prefer those less than 55years [22]. Italian law as at 1994 did not allow adoption of children for those more than 40 years older than the child and only increased this age difference to 45 years in 2001. The law also requires that the adopter should be married at least for three years and living together with spouse for those three years [23]. Since 2004 there are now stricter laws on ART which limits those above 60 years [24].

A few women delivered via natural conception which shows that the biological clock of several women differs. Two of them had some form of treatment which was hormonal therapy and use of Chinese herbs for treatment for other ailments. This should give medical scientists a thought on possible fertility boosting potential of certain treatments used for other purposes. This may also require women to be on contraception even into the 7<sup>th</sup> decade of their lives if they don't want to conceive as it was seen in the case of two of

these women who had natural conception in their 60's. This may cause scientists to reflect on how many women within this age worldwide have actually conceived and may have terminated the pregnancies for not wanting to have more babies or for medical reasons related to their health [25].

IVF was the major ART done in majority of the women in this study and it is not without its own challenges such as getting an egg and sperm donor as it was seen in this study, although is not peculiar to just this age group. The main motivation for egg donation is financial gain in majority of cases and this can present a slippery slope where egg donors may think the higher the financial gain the better and forget that there may be possible consequences in undergoing egg donation [26,27]. It is the duty of the nurses and health counselors to inform potential egg donors on the possible complications of egg donation [26,27]. Some of the complications of egg donation include damage to the internal organs, bleeding, infection, injection bruises, allergic reactions medication side effects such as ovarian hyper stimulation syndrome (OHSS) [28]. Sperm donation seemed to be easier if the woman had a partner either in form of a boyfriend or husband; however in a few cases as seen in this study sperm donation may be sought. The issue of having babies at this age might not be entirely the dream of the couple particularly if the male partner has other children as seen in this case of one of the Serbian woman. Sperm donation also have its own ethical considerations from financial benefits to breaching of human rights, anonymity, freedom from responsibility on the part of the donor to biological offspring, the breach of donor's limitation, the concept of 'donorsexuality' and the chances of consanguinity amongst biological offspring [29]. The concept of being donorsexual is credited to Trent Arsenault who is a prolific sperm donor who has fathered more than 10 children and decides to live a life of celibacy [30]. This in turn has its own ethical issues and laws have been put in by several countries to limit the number of times a sperm donor can donate his sperm to different couples [29,30].

IVF failure rate are high among those who are 60 years and above as seen in this study. The reasons have been attributed to several factors such as the quantity and quality of the eggs/embryo, the quantity and quality of sperm, the stimulation protocols and the timing of ovulation; for implantation, the receptivity of the endometrium, or lining of the uterus and the ease

of the embryo transfer process [31]. These factors may not just be chronological age dependent and may be more related to the biological age of the individual, genetic makeup and wellbeing of the person [2]. This study also shows that a few had successful procedure at the first attempt. There those who had miscarriages on the first attempt but they were also those who had successful pregnancies carried to term. The case of a mother being a successful surrogate at first attempt for her daughter who had seven IVF attempts makes a strong case that age is not sole factor in failure of IVF. The cost of IVF and the emotional trauma of an unsuccessful IVF make several attempts undesirable; [31] however this study shows that a few would still persist and achieve their aim. The number of attempts and the prolonged period of infertility also show how many years that these couple would have been trying to achieve pregnancy via ART [2] The couple would certainly have started during a younger age hoping all this while to have gotten children long before they become older adults.

ART have given rise to a special type of medical tourism which has been termed reproductive medical tourism or fertility tourism or reproductive tourism for the purpose of describing it clearly and separating it with the well-known health tourism which has to seek for one's own physical wellbeing [32,33]. Different countries have different laws concerning ART and the upper limit at which a woman should have IVF or ART is fixed. Some countries have more rigid laws than others and this will certainly cause some women to seek care outside their countries as seen in this study [32,34]. Sex selection was seen in a few cases as seen in this study can be a reason why women despite the advanced age would still desire to have a child. Gender based sex selection in favour of males have known to grown in different parts of Asia and the cause which has been rooted in the tradition of patrilineal male inheritance and reliance on the males to provide economic support [35]. This may also influence the laws of this countries were such traditional customs are upheld and create sympathy on the path of health regulators who share similar customs. India in this study had the highest number of women aged  $\geq 60$  years and holds the world record of the oldest woman to give birth, up until recently the laws concerning IVF in India have been not be really regulated and in the future there might be tighter regulations. The new age for fertility treatment have been capped at 21-50 years for women and 21-55 years for

males [36]. IVF regulatory laws is yet to fully be regulated in some countries such as Nigeria probably IVF may be a relatively new technology that may require more understanding by healthcare workers and those in authority of health institutions [8]. Switzerland had the highest number of women seeking fertility tourism or reproductive tourism. This is understandable because of the laws that have been put in place are quite rigid having an age restriction, limited to married couples and the ban on surrogacy [33,34,37]. Denmark and Israel have their own age restrictions as seen in the study. Although Denmark seem to have favourable IVF package and a lot of women from other countries flock into the country, the age restriction remains at 45 years [38]. Israel gives a lot of support to the women irrespective of their marital status and sexual orientation for IVF as long as they are less than 45 years. There is IVF funding for the first two children [39,40]. Egg donation is allowed for women from 18 -54 years [40]. Other modalities such as Intra Insemination Sperm Injection (ICSI) are also being funded if necessary in Israel which is a highly pronatal country just like Japan where it is also believed that a woman is supposed to have children to carry on the family [34,39,40]. Ukraine was the most visited place for 'reproductive medical tourism' or fertility tourism. Ukraine has laws that are friendly to both its citizens and foreigners seeking for ART services. Ukraine is one of the few countries in the world where egg donation and IVF are completely legal and accessible to both Ukrainians and foreigners. The cost is relatively affordable. Egg donation is prohibited in Italy and Germany. In Poland, Portugal, Spain, only no cost donation of gametes is allowed. There appears to be no age and gender restriction to ART as long as you are an adult unlike several countries such as Netherland, Sweden, Japan [34,41]. Countries such as the United Kingdom and the United States of America apparently to have laws restricting women to receive egg donation or ART therapy and they are liberal about who receive ART irrespective of sexual orientation and marital status [34].

Within the Sub Saharan Africa (SSA) region, South Africa, Nigeria and Ghana are referred to as 'comparative regional success stories with regards to ART. Nigeria was the first sub-Saharan African country to open an IVF clinic, in 1984 [42] South Africa has a favourable policy of having free egg and sperm donation with the donors being anonymous unlike in the United

kingdom and Australia where the child has the right to seek out the biological parent when they become adults [34,43]. The storage for embryo is limited to ten years and both single and married persons are legally allowed to access services [43].

In Nigeria the laws on IVF has yet to be regulated up till date and their issues that may arise with regard to inheritance of babies from the IVF process particularly if it involves donor eggs and sperm [44]. The argument may arise that parents may be assigned the biological roles by birth but may not possess the genetic make-up of the family members. Some traditional laws which are also respected by customary courts consider only those of the blood line to attain positions such as royal rulers. The Association for Fertility and Reproductive Health of Nigeria is active as a regulatory framework and provides ethical guidelines for ART [45]. In Ghana too, there are no assisted reproductive technology legislation or professional guidelines leaving the doctors to act as moral pioneers in this field [42]. It is reported as common practice to transfer up to five embryos at once in Nigeria, Ghana, Mali and Uganda. African women reportedly wish for and do not mind multiple gestations, the complications notwithstanding, particularly when they are over 35 years old with a long history of infertility [8,42,45].

Gestational surrogacy was seen in some cases as displayed in Table 6. The women were all in the young old age group and all did surrogacy for their close relatives. This shows that regardless of one's age, people are willing to assist their loved ones in dealing with the issue of infertility [1,10]. In all these cases the egg donor and sperm donor were related to the recipients either biologically or legally as shown in the Table 6. This also buttresses fact that the health of the individual and the health of the uterus are factors that may be more important than just the age of the patient [10]. The ethics of surrogacy and necessary documentation must be adhered to with all parties understanding the legal implications in terms of whom does the child belong to and the possible complications that can arise from being a surrogate mother. Legislation about surrogacy from different countries might be a reason a why this practice of a grandmother giving birth to her own grandchild is not yet a global practice. In Switzerland surrogacy is not allowed as well as gamete donation, cryopreservation of eggs and pre-implantation genetic diagnosis (limited to monogenic diseases

like Down syndrome), hence the high level of reproductive tourism [33,37]. Surrogacy is allowed in some countries such as Ukraine, Georgia and in some states in United States of America [37]. In Netherlands and Canada, commercial surrogacy is prohibited while Sweden commercial surrogacy remains a challenge. There is an age restriction to women aged 45 and men age 56 to access ART treatment. In Spain surrogacy is not recognized, France does not allow surrogacy and ART therapies are age restricted; while surrogacy has not been addressed in Ireland. In the United Kingdom (UK) surrogacy is legal but the agreement made by both parties is not enforceable by the UK law [34,46]. Legal parenthood can be transferred by parental order or adoption after the child is born. In case of a disagreement about who the child's legal parents should be, the courts will make a decision based on the best interests of the child [46].

In India commercialized surrogacy has been allowed while in places such as Nigeria no regulations govern the issues of surrogacy. In South Africa commercialized surrogacy is not allowed [43]. In Brazil commercialized surrogacy is not allowed either but the surrogate should be a close relative of one of the intending parent and currently has restricted the age to <50 years [47]. With the legalization of same sex marriage in some countries, this may cause mothers > 60 to volunteer as surrogates wanting to preserve the family tree as seen in this study. Despite the risks that these within this age group may face, the overwhelming joy of having a life time dream being accomplished by a couple or a single woman has been shown to prolong life from studies shown [48]. Some countries such as Greece the government have recently increased its age restriction from 50 to 54 for women to have access to medically assisted reproduction technology. This was done to aid its shrinking population and curb the increasing reproductive tourism [49]. This trend may soon be adopted by several other countries particularly in the face of COVID pandemic that has caused a high mortality reducing the population of the world drastically thus affecting the workforce and the human economy. The restriction of women from having children at any age may not be entirely possible because it would might just result in more unethical behaviour and have a rippling effect of more rules that may adversely affect the population. The reproductive laws are for all persons regardless of the age but much attention has not been given to women of older age group



who chose to have conception. Surrogacy by a younger woman and adoption can be options that can be made available to these persons which can be guided by appropriate laws to assist these women to fulfill their dreams with lesser compromise on their physical health.

Another ethical consideration for parents at this age would be the amount of time available for them to be actual parents to the child. How would their own quality of life be, would they have the ability to instill the necessary discipline and have the strength to take care of their child, particularly in the first years of life that demands so much attention?. The children who were born to gestational surrogates, may not be affected by this directly since in this study all have been close relations and have some genetic relationship with the children they are carrying and with those that they are being surrogates for who are actually are younger persons but then disputes may arise in the future of who actually owns the child because human emotions and human laws may change with time.

The global healthy life expectancy (HALE) is defined as average number of years in full health a person can be expected to live based on current rates of ill-health and mortality. This has been usually tagged at age 60; [50] hence it would logically be unfair to have babies at this time. This however does not rule out the reality of life itself that things happen to people at different ages. The live expectancy varies from country to country. Americans are known to have high life expectancy with an increase of those within the age group  $\geq 65$  years growing exponentially every decade. The average American at 60 who is a non-smoker have high chances of living up to 30 extra years [51]. The questions that certainly would arise is "who would be responsible for them in the event of the death of their parents and what psychological consequences would losing their parents at a young age bring to these children? These are issues that who certainly need to be addressed by the would be parents particularly if both parents are in the older age group as some of the mothers in study actually have partners that are much more younger. There are more persons who have lived more than 5 years after child birth as this study shows. The circumstances may differ for each individual or couple as life can be unpredictable. In this study a Spanish departmental store worker had passed on after two and half years of giving birth to her twins that she had at 66 years [52]. She had

ovarian cancer and her nephew took over their care. On the other hand there is the case of the Romanian university teacher who gave birth at a slightly younger age and is still alive taking care of her daughter who is now an adult [53]. Further studies may be done prospectively or retrospectively on the life expectancy of these women who gave birth at  $\geq 60$  years.

## 5. CONCLUSION

The fact still remains that infertility is of great public health importance and there is need for health organizations to take it more seriously. The ethical considerations regarding child birth in elderly women that is those above 60 years are several and can be biological, genetic, religious or social. Legal rules guiding ART vary from country to country. The desire to have a child by a couple or single lady far outweighs all the restrictions and perceived risk which is highly individualized. The challenge of infertility for most women in this study had begun when they were much younger. The decision to bear children is a fundamental human reproductive right but the actualization takes critical assessment by competent specialists. There is need for uniform regulations and legislation worldwide to assist these women who were not able to achieve conception at a younger age but defy the odds to achieve a goal which brings to bear the determined spirit of human nature to be fruitful and multiply.

## 6. LIMITATIONS

The limitation of this study was that most the data were gotten from online magazines and newspapers and very few journals. There was variation in data concerning some factors such as the age of the women. There was incomplete data for some of the factors assessed such as the profession, IVF attempts, oocyte donor, sperm donor, outcome of conception and any complications during pregnancy or postpartum period.

## CONSENT

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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