



The Ugandan Journal of Management and Public Policy Studies (UJMPPS)

June 2024, Vol. 24, No. 2, pp. 71-91

ISSN: 2078-7049 (Print), 2959-4316 (Online)

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Published by Uganda Management Institute

Ethics and Assisted Reproductive Technology in Uganda: An Analysis of the Perceived Mediating Role of Culture

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Article History

Received: November 18, 2023

Revised: Feb 23, 2024

Accepted: March 03, 2023

Abstract

The study analysed educated youths' perceptions regarding the ethics associated with assisted reproductive technology (ART) in Uganda. The guiding specific objectives were: (1) to analyze the youths' perceptions of the relationship between ethics and culture; (2) to explore the relationship between culture and ART; and (3) to assess the effect of ethics on ART. A cross-sectional design was employed for the study. Graduates from various universities, various disciplines and gender compositions were included. Data collection methods were mainly two: (a) a purposely constructed questionnaire and (b) a documentary review. It was found that there was a low positive significant relationship between ethics and culture. Secondly, culture had a moderate positive significant effect on ART. Thirdly, Ethics had a positive significant relationship with ART. The mediation analysis revealed that culture contributed 31% to the relationship between ethics and ART. The remaining 69% operated directly. Two important actions are proposed by this study: (i) the Fertility Centres / Hospitals that offer ART services to form an Association; (ii) The Association to formulate an Ethics Policy that would guide all providers of ART services in the country. All this falls in the ambit of self-regulation which would lead to effective ethical observance in the fertility centres that offer those services.

Keywords: Ethics, Culture, Assisted Reproductive Technology, Ethics policy



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Introduction

The procreation of children is central in marriages. In most Ugandan societies, couples always wish to have children in their marriage. In the Anglican Book of Common Prayer (p.246), it is stated that marriage was first and foremost “*ordained for the procreation of children, to be brought up in the fear and nurture of the Lord, and to the praise of his holy Name.*” All this illustrates that reproduction is one of those things they swear to achieve. Many couples are prepared to resort to Assisted Reproductive Technology (ART) to have children if getting them normally fails. Producing children is as cultural as it is a biological necessity.

The cardinal task of the current study was to analyse the perceptions of the educated youths regarding ethics and assisted reproductive technology (ART), as mediated by culture in Uganda.

The term ethics originated from the Greek term *ethikos* which meant character, conduct or behaviour that is valued (Singer, 2023). Actions are valued if they affect people positively or negatively. Actions that fall in the former category are ethical while those that end up in the latter category are dubbed unethical (George & Chrissyides, 1995). It has been noted that there are ethical issues in assisted reproductive technology use (Schenkler & Eisenberg, 1997).

The practice of Assisted Reproductive Technology (ART) raises some the ethical concerns including, first, the existence of debates surrounding claims relating to the right to life. One view argues that it is a violation of rights when unused embryos are discarded (Sher, 2016). For them, embryos are regarded life, in its earliest form. Proponents of this claim, similar to claims against abortion, advance an argument that denying such embryos a chance to live becomes a hindrance or denial of their right to life. Others have contended that the embryos should be destroyed (Krishef, 2014). A counter claim would be to the effect that the choice to have an embryo continue to live is a right of the mother/couple and hence reflects those inclined to “pro-choice” claims. Secondly, surrogacy is allowed in Uganda (Selectivif, 2023). When a sperm is donated or sold to an infertile couple, the kids that result would have the DNA disconnected from the biological parents. However, this is unethical in as far as the right to a biological belonging is distorted. While in the Western cultural setting, this may not be so much of a concern, for traditional settings such as Ugandan culture, having a paternal claim (belonging) is still taken seriously. Hence, in many communities, and among even the elite, it is socially difficult for people to accept children who do not share blood relationships with them. Hence, we argue that, while most beneficiaries of ART belong to the elite class, their rootedness in string cultural traditions means that these children may still experience stigma and possibly discrimination among the broader cultural structure. A counterargument to this is that in a number of African cultures, being assisted to procreate is not something new. When a couple struggled with having children, arrangements were often made to have a donor (male or female), who was often a close relative or friend, assist them in having children. While this was and still may be the case, of utmost concern are cases where the donor may be unknown. This is where surrogacy is debated, with regard to whether it is a wish fulfilment or an exploitation (Steinfeld, 2020). How are future social acceptance and identity issues surrounding such children to be handled and planned for? This is important

where there could be laxity in regulation of such a practice as ART. In Uganda, surrogacy is fearfully expensive, costing between \$5,000 and \$22,000 (Selectivif, 2023). This translates to between UGX 20,000,000/= and 83,000,000/=. This cost is beyond what most citizens can afford. Hence the ethical question: Whom does ART seek to serve? Yet it ought to contribute to the greatest happiness of the greatest number of citizens (George & Chrissydes, 1995).

Third, when eggs are extracted, they are analysed and good quality ones are selected, others are discarded which is unethical as it is tampering with early form of life. On grounds of equity and equal opportunities, this is problematic. While in cases such as planned abortion, parents who foresee problematic health issues may opt to terminate the pregnancy, pro-life proponents claim that there are cases where, given a chance, such foetuses have grown up and lived lives that are fulfilling. Hence, deciding at such a stage denies those foetuses a chance to life. Fourthly, it is unethical to conduct unnatural sex like masturbation so as to extract sperm from a male. Such action leads to lust, thereby being unethical. This view leans more towards religious ethics and those linked to strong cultural traditions. While societies are evolving and people may be exposed to various influences to their behaviour and decision making, we argue that for many of those in African settings, the influence of culture and religion makes many resist such a practice. Hence, those faced with the options of undergoing these practices may be exposed to complex ethical dilemma regarding what choices to opt for. Furthermore, it is still unknown whether after the psychosocial issues that such people encounter, they are followed up and/or addressed by those offering ART services.

When the modern technology was introduced in Uganda in 2004 (Platteau *et. al.*, 2008), it was estimated that as many as 30% of couples in Uganda battled the problem of either primary or secondary infertility (Larsen, 2000). The difference between primary and secondary infertility is that in the former case, a woman has never conceived at all, and in the latter case, a woman had had at least one pregnancy but failed to conceive again. Given the above findings, it implied that there were many couples who were desirous of getting assisted to have children. The assisted reproductive technology or ART, especially the In Vitro Fertilisation (IVF) and Intracytoplasmic Sperm Injection (ICSI) emerges as the most common method in Ugandan fertility clinics / hospital.

Between 2004 and 2022, our counting estimates that over 35 fertility centres have been established in Uganda, mainly in Kampala city. This implied that every year, at least two fertility centres open doors to offer services. Consequently, children have been born through the use of ART.

Statement of the problem

It was presumed that the general codes of ethics like the Hippocratic Oath which medical doctors swear to abide by would enable the fertility centres to handle their patients ethically. However, it seems that the ethical issues associated with ART were not given due attention. Besides that, it was observed that in Ugandan societies, a culture that supported reproduction (Achen, et al. 2021) prevailed. Many fertility clinics have been established in the country to deal with the **“increasing rate of infertility among men and reproductive complications**

among women” (Akankwatsa, 2021). Between 10% and 15%, which is about five million couples in Uganda, experience involuntary infertility (Musimenta, 2023). This explains the popularity of ART service in the country.

In spite of the fact that over thirty fertility centres were established in Kampala between 2018 and 2020 there were still ethics-related questions about the ART services. These include:

- (a) Prohibitive costs of ART in Uganda – costs range between \$5,000 and \$30,000 (Monitor newspaper, 2021). This cost is regarded unethical because it discriminates people of low income. The virtue of egalitarianism is shelved in this case.
- (b) Some people were led to donate eggs when they were not fully informed of the implications. This goes against Kantian theory of treating human being as an end in themselves (Stanford, 2022) and not as a stepping stone to some other end.
- (c) Lack of authenticity of parenthood -- The use of eggs from other people to produce children for another couple, even with the consent of the egg owner, is still unethical. The child will never be able to trace the biological (real) parents. In this case, the virtue of honesty is compromised. Parents live with guilt of pretending to be the parents when they are not.
- (d) In 2017, it was argued that sexual and reproductive health rights were being compromised (Moreau, 2017), thereby raising ethical questions.
- (e) In 2021, a government minister noted that there were no laws or framework to regulate activities of fertility service providers (Abaho, n.d).
- (f) Even though Ugandan culture emphasises and values reproduction, there is overwhelming importance placed on biological parenthood. Otherwise, the virtue of contentment is shelved.

All the above issues are ethical questions raised by ART services in Uganda. So, whereas ART has its benefits, there was still a challenge of “ensuring quality service and promotion of ethical medical conduct” (*Parliament of Uganda: Bill on Surrogacy...2021*) necessitating the current study with specific reference to the educated youth.

Specific objectives

- (1) To analyse relationship between Ethics and culture as perceived by the youth in Uganda;
- (2) To assess the relationship between Ethics and ART as perceived by the youth in Uganda;
- (3) To examine how much culture mediates the relationship between Ethics and ART as perceived by the youth in Uganda.

Null hypotheses

$H0_1$ There is no significant relationship between Ethics and culture in Uganda

$H0_2$ There is no significant relationship between Ethics and ART in Uganda

$H0_3$ There is no significant mediation effect of culture (M) on the relationship between Ethics (X) and ART (Y) in Uganda.

Literature Review

Literature survey

This section attempts to explore the available literature on the topic. The intention was to find out the gaps and ensure that the current study filled them.

The issue of ART and the law was addressed by Nampewo (2021). She argued that “the practice of ART especially IVF, which was the most commonly practised in Uganda, was largely unregulated”. On the other hand, Kirabo (2023) stated that a Bill had been tabled in Parliament on surrogacy. Notwithstanding the absence of a formal regulation, Baloyi (2017) had contended that it was common in Africa for men to divorce their wives due to barrenness. She argued further that childlessness promoted gender inequality and abuse levelled against women. The debate and observations as pointed out above, those credible, did not address the issues being addressed by the current study.

Furthermore, Mukasa (2013) argued for ethical and sociocultural considerations when programmes for women’s reproductive health were concerned. This call had been made a decade earlier, but no ethics policy had been promulgated as far as ART was concerned. Other commentators like Kanyike (2023) contended that it was possible for ART to have a specific Bill. In spite of those observations, the fact remained that there was a gap in the available literature which did not address the interplay among educated youths, ethics, culture and ART in Uganda. This gap was to be filled by the current study, hence its justification.

Bioethics concept

The term bioethics is a branch of applied ethics that focuses on analysis of philosophical, social, and legal matters associated with provision of medical and other life science services. The primary concern of bioethics is human life and well-being of people (Chadwick, n.d.). In that way, others (Irving, 2001) have contended that unlike the traditional medical ethics, bioethics focuses on the utilitarian principle of maximizing human happiness. Irving discards the Hippocrates and the Catholic Teaching on the sacrosanctity of human life and instead embraces Singer’s views.

Another philosophy of bioethics was raised by Francis Fukuyama who in 2002 postulated that human nature was “the sum of the behaviour and characteristics that are typical of the human species, arising from genetics rather than environmental factors” (Fukuyama, 2002). In that way he seemed to underline the view that genetic characteristics were the basis for human values. Given that view, Fukuyama opposed that Assisted Reproductive Technology because of the possibility to change the genetics of people. This was like to endanger human values and dignity. Fukuyama, in that way, supported ART to be used only in therapeutic uses (Thaldar, 2009).

Western versus African bioethics

There is a view that a difference exists between Western and African bioethics (Barugahare, 2018). Western bioethicists have tended to be influenced by the individualism. That is why, principles of bioethics (Beauchamp & Childress, 1994) tend to emphasise individual rights. The approach had been supported by other writers (Pellegrino, 1992; Callahan, 1992). In that way, there seems to be limited contribution of African bioethics to the debate about the subject (Tangwa, 2017). Others advanced the view that it was time to embrace the indigenous African bioethics (Behrens, 2013). Whereas the debate may have its merit, it does not necessarily answer the questions raised by the current study.

Culture and ethics

The relationship between culture and ethics has been underscored (Turner, 2006). It is not appropriate to equate culture to ethnicity. Rather, it serves as a heuristic device at various levels of analysis. Culture also influences the moral reasoning of bioethicists (Turner, 2006). There are different cultures of looking at life-related issues including human reproduction. On the other hand, it was argued that reproduction was being affected by economic factors and not culture per se (Miller, 2018).

Some scholars (Gowans, 2008; Ten Have & Gordijn, 2011; Bracanovic, 2011) supported the view that universal principles could be suitable in guiding moral decisions without giving due attention to the cultural context. In a way, the above authors did not give serious consideration to cultural diversity. The premises of moral universalism show how this approach imports and imposes moral notions of Western society and leads to harm in non-western cultures is challenged by Chattopadhyay & De Vries (2013) who disagreed with the above notion of using the same approach to decision making regardless the culture in which such decisions are being made.

It is argued that bioethics gets influences from different cultural backgrounds (Chukwunke, et al. 2014). In Asia it was stated that given the cultural differences between East and West, there could be no outright adaptation of Western ideas because it was likely to encounter problems including rejection (Tai & Lin, 2001). Cultures are about values and norms that a people hold, and how they respond to new ideas from different value systems in very much the same way. In Africa, and Uganda for that matter, there are many communities whose attitudes to child-bearing differ. So the term global as often used in area of bioethics may not be appreciated in the same way by the educated youths of the 21st century.

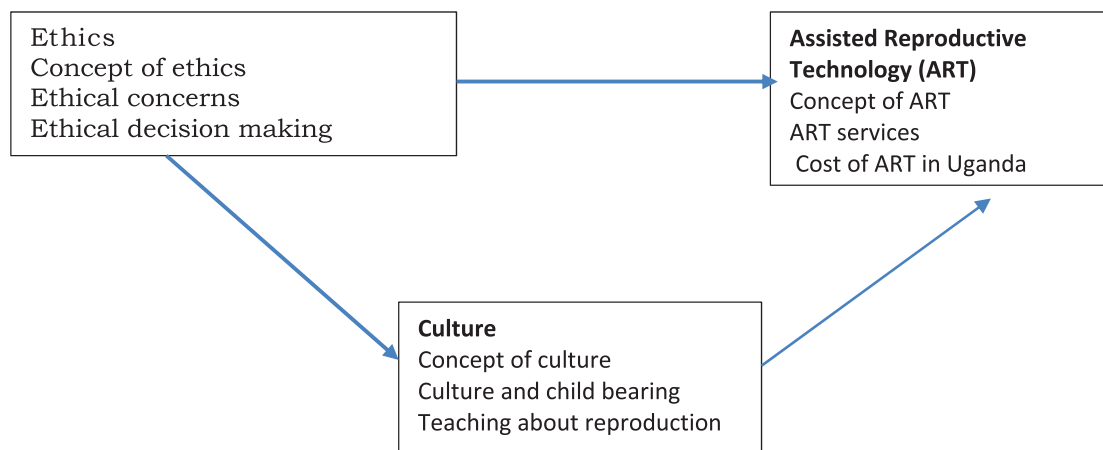
Assisted reproductive Technology and bioethical principles

The principles of bioethics are presented as beneficence, non-maleficence, autonomy and justice (Beauchamp & Childress, 1994; Varkey, 2021). Studies carried out by Moslem scholars found that the four principles applied equally to all societies regardless of their faith or culture (Askoy & Tenik, 2002). Whereas the four principles are acceptable, it is not clear whether in the Ugandan context, the educated youth are prepared to use those principles when dealing

with the issues of assisted reproductive technology.

Assisted Reproductive Technology

The term Assisted Reproductive Technology refers to the all procedures undertaken to establish a pregnancy. Such procedures include In Vitro Fertilisation, trans-cervical embryo transfer, gamete intrafallopian transfer, zygote intrafallopian transfer, tubal embryo transfer, gamete and embryo cryopreservation, oocyte and embryo donation and gestational surrogacy (Vayena, et al. 2002). As already noted, In Vitro Fertilisation (IVF) or Intracytoplasmic Sperm Injection (ICSI) are the two most common procedures or methods used in Ugandan fertility centres. However, the ethics of ART is examined through the relationships of variables as given in the conceptual framework.



Source: Adopted from Askoy & Tenik, 2002; Turner, 2006 and modified by researchers

The conceptual framework shows that Ethics is the independent variable that must have an effect on assisted reproductive technology which is the dependent variable. Culture in this study plays the roles of mediating variable. In other words, ethics must be understood as a culture if it is to have a clear efficacy on the Assisted Reproductive Technology in a Ugandan setting.

Regulation of ART

Debates surrounding the need to regulate the conduct of various forms of ART are not new. In some countries, such debates resulted into the institutionalization and adoption of appropriate frameworks that govern these practices – in the interest of all stakeholders (Kolata, 1986). In some instances, regulation has included debates regarding the parameters of what ought to be regulated. From a gender perspective, for example, some advocates challenge the practice of gender selection of fertilized eggs (Merhi & Pal, 2008). A dominant view argues that as long as the selection is not biased on medical grounds, beneficiaries of these services have a choice over what gender of a child they prefer. As noted earlier, some of these debates are similar to what exists in debates surrounding the right to life and its termination. Dilemmas regarding

whose right is of immediate importance do emerge – especially between the right of the one seeking the service and the prospective foetus (Guttmacher Institute, 1987).

Advancements in regulation seem to exist among the more developed countries compared to some developing countries such as among the African ones. Okonta et. al. (2018) observed that there was need to regulate ART among countries on the continent. Such regulation would oversee the practices of those who provide the ART service and provide parameters within which ethical concerns that emerge on the part of all stakeholders involved in the practice could be addressed.

Several gaps could be identified in the above literature. First there is a contextual gap. A number of people have studied the subject of Assisted Reproductive Technology but in different contexts; it cannot be generalized that what is done in Korea, Canada, USA or Europe will necessarily apply in Uganda and have the same implications. A Ugandan study must be carried out to help and inform policy makers in the country and inculcate the ethics to be followed by ART service seekers and providers. All efforts must start with the potential players (the youths) in the human reproduction arena where ART is apparently set to play a significant role.

Methodology

Research design

The study applied the correlational design. This design was preferred because of the nature of the study. According to (Bhandari, 2021), a correlational research design investigates relationships between variables without the researcher controlling or manipulating any of them. This study on ethics issues of ART falls in that category. The respondents who were educated to university level completed items on a questionnaire. The research team chose this method because data was collected once and, as Jeffers (2002) indicated, this method was appropriate for quantitative analysis.

Area of study

The study area was in Kampala, the capital city of Uganda. This was because this was the district that had the highest concentration of fertility clinics in the country; it had over 13 universities and numerous tertiary institutions.

Target population

Educated youth are the ones who were targeted because they were the people who were informed and yet were involved in reproduction in a way that would raise questions.

Sample size

In the absence of a formal register of educated youth in Kampala, it was deemed appropriate to determine the sample size using Roscoes' (1975) rule-of-the-thumb. He contended that in social science research, any figure between 30 and 500 was sufficient to give credible research results. This study was able to get responses from 310 educated youth in Kampala area. Kampala was the ideal area for the study because almost 40 fertility centres were based there. More than 10 universities had campuses in Kampala. So, for the above reasons, the sample and the setting for the research were justified.

Convenience Sampling

This is technique where the questionnaire was administered to educated youth who happened to be available at the time of field research and willing to complete the questionnaire.

Data Collection Method

The method that was used to collect data for the current study was the survey method. This was deemed suitable because information could be gathered from a big number of educated youths, female and male, from several universities.

Ethical issues

The PI obtained research ethics clearance from Nkumba University. Respondents were provided with all the necessary information required for them to provide informed consent. The data collected was treated with anonymity and confidentiality. Questionnaires were shared with selected prospective respondents and these helped to identify others (snow-balling). All the feedback was given online and none of the identifiers of the respondent are provided in this report.

Presentation of Results and Interpretation

The educated youths who participated in the current study had the following demographic characteristics. According to Uganda's National Youth Policy, a person who falls in the category of the youth should be aged between 18 and 30. Uganda is a member of the East African Community (EAC) which defines the youth as those between 15 and 35 years. The United Nations defines the youth as those in the age bracket between 15 and 24 years. From the three definitions, it is safer to state that in Uganda youth are between 18 and 35 years. In the current study those who fell within the age bracket of 18 to 35 constituted 79%. This meant that the majority of the respondents were actually youth.

Regarding family size in Uganda, the average household size was 4.6 or 5 people per household in 2022. It was calculated by dividing the household population by total households. Although the majority were still in the age bracket of youth, given their age between 20 and 35 years, it meant that they were within the reproductive age bracket.

All respondents had completed a course or more at the University as indicated in Table 1.

Education level	Frequency	Percent
Diploma	2	.6
Bachelor's	105	33.9
Master's	137	44.2
Doctorate	66	21.3
Total	310	100.0

Source: Field data, 2022.

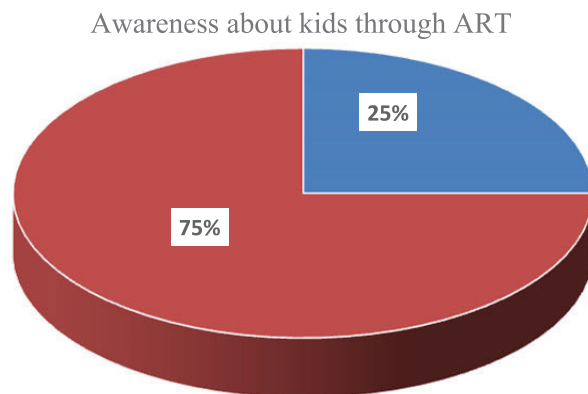
It can be noted from Table 1 that the majority (99.4%) of the respondents had obtained a degree from the university. Some (44.2%) had gone on to do a Master's course, while a few (21.3%) had embarked on doctorate degrees. The fact that all respondents had had a university education, implies that they had the capacity to respond adequately to the questions related to the Assisted Reproductive Technology in the country.

As far as the sex of respondents was concerned, 43% were male and 57% were female. The difference of 14% was in favour in female respondents. This was even better to get more perceptions of females because it is women who conceive and it is women who deliver kids, or carry pregnancies as surrogates for infertile couples.

Awareness about children produced through Assisted Reproductive Technology

When asked about their awareness of children who had been born through ART clinics in Kampala, the respondents' responses were as shown in Figure 2.

Figure 2: The youths' awareness of the children born in ART clinic



Although the majority (89%) of the respondents were aware of existence and location of Fertility Centres in their city, from figure 2, it was only 25% of them who knew about children who had been born in ART clinics. The remaining 75% were not aware of any such child. This means that the ART clinics keep the information confidential. The general public would not know the people who received services from the ART clinics successfully. Although confidentiality is ethical practice, there is another perspective to it; that is some couples who experience primary or secondary infertility tend to fear stigma and for that reason keep information about their recourse to ART confidential.

Ethics and culture

The decision to have children is often tinged with ethical issues. This becomes even more critical when it comes to getting them through Assisted Reproductive Technology. Regarding ethical issues, educated youths who participated in current study gave their perceptions as indicated in Table 2.

Table 2: Ethical issues considered

<i>Ethical issue</i>	<i>Score</i>	<i>Value</i>
1. For a couple to have biological children	64%	Ethical
2. Fertilizing a baby in a tube is right and acceptable	65%	Ethical
3. For doctors to use unwanted fertilised eggs elsewhere	32%	Unethical
4. Donated eggs' DNA and donor's is disconnected	32%	Unethical
5. To throw away eggs that are not selected	47%	Unethical
6. For a woman to become pregnant without sex	61%	Ethical
7. Doctors act in the best interest of client couples	75%	Ethical
8. Doctors endeavour to prevent harm to the clients	79%	Ethical
9. Clients in fertility centres are well respected	86%	Ethical
10. Couples who seek assistance first get full information	68%	Ethical
11. Couples are always adults who decide freely	82%	Ethical
12. Information about infertile couples is kept confidential	86%	Ethical

Source: Field research data 2022

The relationship between ethics and culture was assessed first by running Pearson's Product Moment correlation which yielded the results of $r(310) = .193, p < 0.01$. This meant that there was a low positive significant relationship between the two variables. A simple linear regression was also executed. First it revealed an Adj. R^2 of 0.037. Ethics explained about 4% of the cultural perspectives on youths' views about ART. Furthermore, the regression test gave $F(1, 308) = 11.945, p < 0.01$. This meant that a change in one of the variables would lead to a change in the other.

The coefficients of the linear regression (Beta = .193, $p < 0.01$) confirmed that ethics and

culture had a positive relationship. For that reason, the null hypothesis which stated that, “there is no significant relationship between ethics and culture” was rejected and instead the alternate hypothesis, “there is a significant relationship between ethics and culture” was supported.

Ethics and ART

Assisted Reproductive Technology has been described as the treatments or procedures through which *in vitro* processing of oocytes and sperms, or embryos, is performed in order to bring about a pregnancy (Kruger, 2012; Zegers-Hochschild et al, 2009). In Uganda, the most common forms of ART are In-Vitro Fertilization (IVF) or Intracytoplasmic Sperm Injection (ICSI) facilities. The two methods, IVF and ICSI, differ only in that with the former, the egg and sperm are left in a petri dish to fertilise on their own, while in the latter, one sperm is directly injected into the egg (Widling, 2019). So, as far as Uganda is concerned, ART mostly refers to these two.

Table 4 ART aspects

	<i>ART aspects</i>	<i>%</i>	<i>Perceptions</i>
1	Knowledge about ART clinics	89%	ART clinics are available
2	The Cost of ART services is realistic	75%	The cost is reasonable
3	Everybody can afford the cost of ART	36%	Many are poor and can't afford
4	ART is done professionally	79%	Only qualified people offer ART
5	Unwanted fertilised eggs used elsewhere	32%	Youth don't approve of this
6	Eggs not selected are thrown away	47%	Majority not happy about it
7	Awareness of those who got babies from ART	25%	ART information is confidential

Source: Field research data

The IVF is a process that increases the efficiency of human reproduction, which is often not very efficient naturally.

Table 5 The average cost of ART in Kampala, Uganda

	<i>Approximate cost of ART in Ugandan clinics</i>	<i>Uganda Shillings</i>
In Vitro Fertilisation (IVF)	Medical consultations	772,200
	Nurse Planning	449,800
	Various tests (for Hep B and C, CBC, blood group, syphilis, serum)	670,700
	IVF cycle (ultrasound scan, egg collection, embryo culture transfer, etc.)	9,792,000
	Drugs of ovarian stimulation, ovulation trigger, down regulation, etc	5,508,000
	Extra tests and drugs	500,000

Intracytoplasmic Sperm Injection (ICSI)	Initial costs	1,222,000
	Drugs for down regulation and luteal phase support	3,508,000
	Extra tests and drugs	500,000
	IVF cycle	10,792,000
	Drugs of ovarian stimulation, ovulation trigger, down regulation, etc	5,508,000
	Sex selection	2,000,000

Sources: Platteau (2008); *Monitor*, (2021) Lifesure Fertility and gynaecology Centre (accessed 2022)

It is estimated that ART in Uganda on average costs about UGX14m per cycle. It was pointed out by Platteau et al. (2008) that fertility centres in Uganda offered also fertility treatment to a category of patients who would have never been able to pay for it (50% of the couples that consult at the clinic, cannot afford IVF treatment). Some patients come from as far afield as Kenya, Tanzania, Rwanda, Congo, Sudan, Somalia and Ethiopia. The ART providers in Kampala assert that IVF treatment may not be affordable for these couples (Platteau et al., 2008). A last category of patients are expatriate patients for whom treatment at Kampala clinic is much cheaper than in their home countries and those who are in need of oocyte donation. When compared with clinic in Europe, it was noted to be more difficult to find and was three times more expensive (Platteau et al., 2008). So ART in Kampala was affordable though expensive for the ordinary low-income Ugandans.

The second null hypothesis was tested first using Pearson’s PMC. The results [$r(310) = .389, p < 0.01$] indicated that there was a low positive significant relationship between Ethics and ART as perceived by the educated youth.

The hypothesis was further tested using a simple linear regression. This test gave the R^2 of .151 which meant that the model explained 15% only. The test indicated that there was linearity between ethics and ART [$F(1, 308) = 54.915, p < 0.01$]. The third test of null hypothesis stated that there was no significant relationship between ethics and ART. The coefficient of regression (Beta .389, $p < 0.01$) revealed that the null hypothesis was rejected and the alternate supported. This implied that ethics and ART have to go hand in hand.

Mediation analysis of culture using process procedure

For the current study, the PROCESS procedure version 3.5 for SPSS of Andrew F. Hayes was used with bootstrapping to carry out the mediation. The following were the results.

Table 6 Outcome of the mediation test

Variable	Coeff.	se	t	p	LLC1	ULC1
Ethics and Culture	.4066	.1176	3.4552	.0006	.1751	.6381
Culture and ART	.3924	.0587	6.6815	.0000	.2768	.5079
Ethics and ART	.4273	.0279	15.3105	.0000	.3724	.4822
<i>Total effects</i>						

Total effect of X on Y	.5661	.0764	.7105	.0000	.4158	.7164
Total direct effect of X on Y	.3924	.0587	6.6815	.0000	.2768	.5079
Total indirect effect X on Y	.1737	.0559	-	-	.0657	.2856

Interpretation of the results of mediation output

The above results give facts in line with the three hypotheses that were developed for this study. The first hypothesis (*H1*) stated that “Ethics (X) has no significant relationship with culture (M).” The effect of ethics on culture had a coefficient = 0.4066; the t-value = 3.4562; and $p < 0.001$. This meant that ethics had a significant relationship with culture. This statistic jettisoned the first null hypothesis (*H1*) that “Ethics (X) had no significant relationship with culture” (M). Regarding the second null hypothesis (*H2*), “Ethics (X) had no significant effect on ART” (Y), the results yielded were coefficient = 0.4273; t-value = 15.3105, and $p < 0.001$. This meant that the second null hypothesis (*H2*) was not supported as Ethics had a significant effect on the ART in Uganda.

The third hypothesis (*H3*) “culture (M) mediates the relationship between ethics (X) and ART (Y) required computation and analysis. This was intended to determine how much of the relationship between ethics and ART operated indirectly through culture. The results revealed that the total direct effect of ethics on ART was coefficient 0.3924, t-test 6.6815, $p < 0.001$; and the total indirect effect was 0.1737, the bootstrapping being 0.0657 (lower) and 0.2856 (upper). Since the zero fell outside of the lower and the upper bounds, it meant that the indirect effect (Culture) had a clear significance. When the total indirect effect of 0.1737 was divided by the total direct effect of 0.5661, it yielded 0.3123 or 31% mediation effect. This implied that 31% of the relationship between Ethics and ART was explained indirectly or depended on the Culture in Uganda. The remaining 69% of the relationship operated directly. The implication here was that culture plays a clear role in influencing the youths’ decisions about assisted reproductive technology. It means therefore that ethics should be part and parcel of culture seeking and utilising ART. This was further attested by the results of multiple regression as given in Table 7.

Table 7: Coefficients of Culture and Ethics effect on ART

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.302	.187		1.617	.107
Culture	.427	.028	.618	15.310	.000
Ethics	.392	.059	.270	6.681	.000

In Table 7, the multiple regression test showed that both Culture and Ethics have a positive effect on the decisions to embrace assisted reproductive technology in Uganda.

Discussion

First, how much ethics and culture correlated. Culture also reflects the moral and ethical standards of how people should interact with each other, while ethics characterizes moral principles that guide individuals in determining right and wrong. It was observed that culture reflected a particular people's moral values and ethical norms. The current study found a positive relationship between ethics and culture. May explains the theory of cultural relativism, whereby there is no one particular truth on which to base ethical behaviour. This is because the moral truth is always as influenced by culture. As used in modern parlance, culture can be defined as values that influence human activities and the symbolic structures that give such activities significance and importance. It is appropriate to assert that every society has a culture. In other words, each and every society has a set of values which are reflected in symbols and activities.

In the light of the above perception, the educated youth supported the ART as long as the sperm and eggs were from the same couple. No third person's natural resources (sperm or eggs) should be brought in. This was the reason why the use of fertilised eggs elsewhere had a low score of 32%. As the DNA, that of the baby and that of the professed parents do not always tally, such a process is objectionable. All that implied that ART was only ethical if it focused on the couples' resources. The above objection to the use of the resources of the third person was buttressed by Kantian ethics. One of Kant's categorical imperatives is that "Act in such a way that you always treat humanity never as a means, but always and at the same time as an end" (Massey n.d; Fieser, 2017). In that way, using biological resources of another person to get a baby, including gestational surrogacy, is unethical because other people are used as a means and not an end.

The educated youth intimated that it was ethical for a couple to have biological children. This perception rhymed well with Aquinas' natural law which observed that "Procreation of off-springs and their education" was endowed by God for the sole purpose of perpetuating human race (Murphy, 2019). Since precreation of children fulfilled the matrimonial purpose, it was ethical (Slavin, 1933). So, every free human being had a duty to procreate.

The study findings prompted it to propose the need to create an association vested with the responsibility of overseeing the ethical conduct in each Fertility Centre. This means that when an association is put in place, it will also formulate an ethics policy that members must adhere to. The Association of ART providers would be a mouthpiece for all and would also oversee ethical conduct of all. The association would have a structure of leadership. It is the association that would have the responsibility of training the staff of ART clinics in matters of ethics.

Regarding the ethics policy, the following principles would be emphasised. The ethics policy ought to be guided by ethical theory of communitarian servership. This is an ethic that prioritises communitarian servership, communal values, mutual responsibility and care, integrity, autonomy and communal work among others (Mande, 1996; Mande, 2017). The implication of this is that ART clinics have to establish ethical systems and the staff have to

be ethical in their dealing with client couples and when executing their professional duties. Similarly, the fundamental principles for ethics policy could include the following:

Table 8: Ethics embedded in fundamental principles

	<i>Fundamental principles</i>	<i>Embedded ethics</i>
a)	To set out the standards of good ART practice	Virtues
b)	Offer service without discrimination	Communal / Justice
c)	Disclose accurate information to couples	Virtues
d)	Act fairly and reasonably	Justice and virtues
e)	Respect and maintain confidentiality	Virtues
f)	Ensure reliability of systems and technology	Virtues and deontology
g)	Always seek the consent of the couples	Kantianism
h)	Let couples make decisions freely	Justice
i)	Mutual respect	Virtues
j)	Charge services fairly	Virtues / Justice

Fertility clinics as organizations can be regarded to be moral persons who have a conscience and therefore the language of ethics applying to them. This is possible because the moral responsibility of persons can be projected to Fertility Centres and Hospitals. Moral responsibility is based on three things:

- (a) Someone to blame – the casual sense
- (b) Something has to be done – the duty
- (c) Some trustworthiness expected – the credibility

The causal sense can be applied to legal and moral contexts in that the cause of actions and events can be traced. For that matter, moral responsibility here has to do with finding out who is answerable in a given situation. The aim is to determine someone's intention, free will, degree of participation, and appropriate reward or punishment. Since Fertility Centres can be rewarded or punished, it means they are moral persons. For that matter, they can be held morally responsible. In view of the foregoing discussion, it is right to infer that the ethics policy when formulated would apply to both the fertility centres and the client couples who make decisions regarding the ART services.

This study advances a need for national regulation or medical institutional regulation of ART in Uganda. Having a policy in place and an institutional structure that oversees ART service providers may offer a platform where some of the ethical concerns can be addressed. Given the limited scope of the study, the findings are relevant for stimulating debates and concerns regarding ART. There is need for broader studies within the area to help garner the need for regulation, in the light of current and future ethical concerns that may have psychosocial and socio-cultural impacts on individuals and society.

Conclusion

The current study analysed the perceptions of the educated youth in Uganda about the ethics, culture and how the two relate to Assisted Reproductive Technology. The results of the perceptions indicated that the youth approved of the value and importance of ethics and culture in the ART service provision. This meant that it was necessary to amalgamate ethics with culture as far as ART services were concerned. In view of all that the study has suggested two important ways forward: (i) the creation of a Fertility Centres / Hospitals Association; (ii) The formulation of an Ethics Policy for all the providers of the ART services in the country. With self-regulation, ethical observance is likely to be effective in the fertility centres that offer those services.

Acknowledgments

We are grateful to the Directorate of Postgraduate Studies and Research of Nkumba University whose ethics committee approved the field research. Each respondent freely consented to complete the questionnaire. All the data obtained was used anonymously. No individual respondent's name or organisation is mentioned as a source of data. The secondary literature cited has been duly referenced.

Conflict of Interest

We have no conflict of interest.

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