

**SURVEY OF OPINION OF PREGNANT YORUBA WOMEN ON
THE USE OF UMBILICAL CORD BLOOD FOR RESEARCH IN
IBADAN, OYO STATE**

BY

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CERTIFICATION

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DEDICATION

This research work is dedicated to: The Almighty God

And

To my dear sister (OmoIyáàmi) **Late Deaconess Olanike Idowu** may your soul rest in perfect peace, I love you.

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I sincerely give my greatest gratitude to the highest God the creator of the whole universe, the Almighty God for His faithfulness and mercy over me.

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ABSTRACT

Cultural beliefs and practices may affect attitude and practices with respect to research participation. This is particularly is with respect to the donation of tissue and biological samples to research. While, the use of samples like blood and urine may not engender much reaction because of increased familiarity with their use in medical tests, donation of other biological samples may not be so straightforward. This is particularly so with regards to biological samples that has strong cultural or folk attachments. In this study of umbilical cord blood a prototype of body part.

In Africa, as in many parts of the world, cultural beliefs and practices around the births of children are quite strong and these beliefs may have impact on donation of such tissues for research. Such beliefs and practices include how the “afterbirth”, usually umbilical cord and placenta should be handled. In some communities for example, this is given to an elderly female relative to dispose of, usually the oldest living female relative to the household. Such practices emanate from beliefs about how events surrounding the birth of a child may influence the child’s physical, social, economic and spiritual life course. There is need to know the knowledge and attitude of pregnant women to disposal of umbilical cord blood, its cultural significance i.e. and how it should be handled also assess factors that will influence women’s attitudes to donate umbilical cord blood for research.

The study surveyed the opinion of pregnant Yoruba women on the use of umbilical cord blood for research in Ibadan, Oyo State, the study utilized qualitative method: i.e. focused group discussion and key informant interview 2 focused group among pregnant women and women of child bearing age (2) key informant interview with traditional birth

attendant, Nurses and Midwives and traditional religion priest were conducted to collect data, same analysed with direct quotations from the participants.

The findings of the study shows that the traditional beliefs of Yoruba people about umbilical cord and its blood is that it connects the child to the mother. They believe that evil can be perpetuated through its manipulation and they will not release their child's umbilical cord and its blood for research. The study concluded that attitude of pregnant women on donation of umbilical cord blood for research is the manifestation of the traditional beliefs among Yoruba people, therefore pregnant women should be educated and encouraged to donate umbilical cord blood for research so as to have tissue for research. It appears that given proper information, they are willing to do so as shown by publications of research using umbilical cord from these communities.

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CHAPTER ONE

INTRODUCTION

Cultural beliefs and practices may affect attitude and practices with respect to research participation. This is particularly so with respect to the donation of tissue and biological samples to research. While, the use of samples like blood and urine may not engender much reaction because of increased familiarity with their use in medical tests, donation of other biological samples may not be so straightforward. This is particularly so with regards to biological samples that has strong cultural or folk attachment. In this study, umbilical cord blood has been chosen as a prototype of such a body part.

In Africa, as in many parts of the world cultural beliefs and practices around the birth of children are quite strong and these beliefs may have impact on donation of such tissues for research (Lefebber and Voorhoever 1998). Such beliefs and practices include how the “afterbirth” – usually umbilical cord and placenta should be handled. In some communities, for example, this is given to an elderly female relative to dispose of, usually the oldest living female relative in the household (Jansen 2006) (Lefebber and Voorhoever 1998). Such practices emanate from beliefs about how events surrounding the birth of a child may influence the child’s physical, social, economic and spiritual life course. In Zambia, for example, beliefs about the umbilical cord include the need for the placenta to be completely expelled before the cord is cut and the birth attendant should be singing while cutting the cord. It is also recommended that special precautions need to be taken with disposal of placenta and cord to ensure future fertility of the mother because of the

belief that witches may interfere with this during the childbirth processes (Mainbolwa, Yamba et al. 2003).

Culture and beliefs are strong influences in determining whether an individual participates in research or not and what kind of research the individual chooses to participate in. Decisions made by individuals to participate in scientific research are influenced by their comprehension of information and the meaning attached to the information communicated to them regarding the purpose and procedure of the research. Where the research activity borders on issues, about which there are very strong cultural beliefs, such beliefs may positively or negatively influence potential participants' decision on research participation.

Autonomy of individual is very important in research ethics and is an important moral philosophical requirement for valid informed consent (Ethics needs principles – that can encompass the rest- and respect for autonomy should first among equals” (Gillon 2003) To comply with this requirement, researchers need to respect participants as autonomous agents. At a minimum this means to acknowledge a person's right to hold views, make choices, and take actions based on personal values and beliefs. Such respect *involves* respectful action, not merely a respectful attitude. It also requires more than non-interference in other's personal affairs. It includes, at least in some contexts, obligations to build up or maintain other capacities for autonomous choice while helping to allay fears and other conditions that destroy or disrupt their autonomous action, respect on this account involves acknowledging decision-making rights and enabling persons to act autonomously (Mainbolwa, Yamba et al. 2003) (Emanuel, Wendler et al. 2000).

The use of cord blood for research

Several kinds of research studies can be conducted on the blood samples taken from the umbilical cord. Such studies include toxicology research designed to evaluate intra-uterine exposure to toxins and their transfer to the newborn immunological and infectious diseases research that examine neonates' level of immunity and presence of infectious agents in the cord and placenta obstetrics and gynecological studies as well as perinatology research.

These uses of umbilical cord blood provide an example of a nexus between research requirement beliefs as well as cultural practices. Therefore it provides an interesting opportunity to research the interaction between folk belief, modern research ethics and the impact that these have on each other. Since, the taking of the umbilical cord that would otherwise be discarded poses no scientific risk to the baby or the mother, one wouldn't think that there would be much of an issue with its donation for research but anecdotal experience suggests that this may not be so.

1.1 BACKGROUND OF THE STUDY

The umbilical cord connects the foetus to the mother, through the placenta from the fifth week of pregnancy until birth. During this period, the placenta supplies all materials for foetal growth and removes the waste products. (Pillitteri 2003) In some developing countries, most Christians see the placenta and umbilical cord as something that is "useless" after the delivery and they generally discarded it. On the other hand, traditionalists and some Muslims see the placenta and its umbilical cord as the 'older child' or 'older twin' of the new born that died during the delivery (Jansen 1999) In some African

cultures, the placenta and its umbilical cord is buried with the same respect and ceremony as is accorded to people. The place where it is buried is considered important for the newborn and when he/she has problems in life, he/she can go to the spot to receive “support”. In other cultures, it is believed that the placenta, umbilical cord and its blood will meet the child’s grandmother in the ‘the ancestral world’ (Jansen 1999).

1.2 STATEMENT OF THE PROBLEM

In Nigeria, participation rates in research are still very high. However little is known about the interface between strongly held traditional beliefs about certain body tissues and their donation for use in research. Hence this study is to survey the knowledge, attitude and practices of potential research participants to the use of umbilical cord in research in Ibadan Oyo State of Nigeria.

1.3 OBJECTIVES OF THE STUDY

BROAD OBJECTIVE

Africans have strong cultural reasons for the method used to manage the afterbirth (placenta) (Ibiomo or Olobiomo) and this is rooted in traditional beliefs and cultural practices. These beliefs are a potential barrier to the use of umbilical cord blood for research. Anecdotal evidence suggests that these cultural factors are still very relevant today, but there is little empirical evidence for this. The objective of this study is to explore the cultural association and beliefs about umbilical cord and its blood content, the current strength of these beliefs and their impact on the use of umbilical cord blood for research.

SPECIFIC OBJECTIVES OF THE RESEARCH

- a. To know the current knowledge and attitude of pregnant women to disposal of the umbilical cord after birth, its cultural significance and how it should be handled.
- b. To determine the knowledge and attitude of pregnant women to research in general and research involving umbilical cord and its blood in particular.
- c. To assess factors that influence women's attitude to donate umbilical cord blood for research.

1.4 RESEARCH QUESTIONS

- i. What are the beliefs of Yoruba people in Ibadan about umbilical cord and its blood?
- ii. How strong are those beliefs today?
- iii. How does belief influence attitude and practices in respect of the use of umbilical cord blood for research?
- iv. What are the religious, cultural, economic and educational factors that affect pregnant women's knowledge, attitude and practice of donating umbilical cord blood for research?
- v. How will pregnant women respond to requests for their baby's umbilical cord blood been taken for research?

1.5 SIGNIFICANCE AND JUSTIFICATION OF THE STUDY

The findings of the study will provide information on how umbilical cord associated with strong cultural belief (about umbilical cord and how it should be disposed of) interact with routine research requirements for tissue donation. The result of this study will improve understanding of how current cultural practices are changing, if at all and how relevant these changes are to ethical conduct of research. In effect the study will contribute to the building up of data and thus expanding the frontiers of existing opinion in ethical research as well as providing materials for teaching and further studies.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 DESCRIPTION OF THE UMBILICAL CORD

The umbilical cord is a unique tissue that extends from the foetus to the placenta. The whole umbilical cord is covered in a layer of amnion, which is continuous with that covering the placental (Jacob,2005). At birth the mature cord is about 50-60cm in length and 12mm in diameter, and extends normally from the centre of the placenta (Decherney and Nathan, 2003).

While umbilical cord blood is the blood that remains in the placenta and in the attached umbilical cord after child –birth (today’s focus on fact is cord blood America. Inc CBAI) Saturday; August 21st, 2010)

2.2 FUNCTIONS OF UMBILICAL CORD

During pregnancy, the placenta supplies all materials needed for foetal growth and removes waste products. Blood flowing through the umbilical cord brings nutrients and oxygen to the foetus and carries away carbon dioxide and metabolic waste. At delivery, the umbilical cord must be cut to separate the newborn from the placenta, after which the placenta is detached from the uterus, and it is referred to as the afterbirth.(Jacob 2005)

2.3 CULTURAL ATTITUDES TO UMBILICAL CORD FROM DIFFERENT PARTS OF THE WORLD

The placenta and its umbilical cord blood often play an important role in various human cultures with many societies conducting rituals regarding its disposal. As well as honoring the baby's placenta and the umbilical cord, these practices are believed to spiritually safeguard the baby and mother during the major transition of birth. In Cambodia for example the baby's placenta and umbilical cord which traditional healers call "the globe of the origin of the soul" must be buried in the right location and orientation to protect the baby. Fishing communities in Amarung (North Sulawesi) conceive of the placenta and the umbilical cord as the younger "soul sibling" and protective spirit of the child; It is treated with respect by giving it the same care that is given to the newborn baby and is then buried in the family's yard (Cedercreutz 1999)

In some countries the placenta and its umbilical cord blood may be considered to hold the ability to protect and heal the living body if given the appropriate treatment after delivery. Conversely, they are a potential site of vulnerability if it is treated inappropriately. In areas of Peru, for example, careful burial of the placenta where it will not be exposed to dangerous "air" is believed to protect the body of the new mother (Davidson 2005) . In the Marquesas', burying the placenta with umbilical cord blood in a wet location is believed to protect the mother's health (Spencer 2000) The burial place may be covered with a spiking plant to keep evil spirits and dogs from interfering with it because such interference could have long term negative effects on the mother's mental health (Eisenbruch 1997.). In Cambodia, children are considered safe as long as they don't stray too far from where their placenta and umbilical cord blood are buried (Dunham 2001) while in Java the

placement of the placenta with its umbilical cord blood in one's birth home is at times intended simply to remind a child where he or she came from and, in doing so, to prevent the child from straying too far during his or her adult life (Seligman 2004).

In Cameroon, as urban migration has increased, the burial of the placenta with its umbilical cord is taken to express the importance of and best wishes for maintaining family connections despite the force of a global economy (Liamputtong-Rice 1999). Among the Hmong, even if a child eventually leaves home, it is believed by some that the placenta must be recovered by the child's spirit before he or she can continue on the journey after death. Each person's spirit must retrace the journeys taken during one's lifetime on earth and return to its original home – the site of the placenta and its umbilical cord blood into collect it and move to the next lifetime (Liamputtong-Rice 1999). Dona Mirian a traditional midwife from Costa Rica described wrapping the newborn placenta and umbilical cord in paper burying it in a dry hole which is then covered with ashes from a stove. This ritual is believed to protect the mother from *entueños*: retained blood clots, cramps and infection (Turecky 2003). Muslim and Hindu women in Bengal bury the placenta and the umbilical cord in the ground under the premises that it “belongs to the earth” and that burial protects the mother and child from attacks by harmful spirits (Fruzzetti 2002)

In some areas of North Sulawesi, parts of the umbilical cord are included in pouches that are believed to protect individuals from harm or converted into traditional medicines that are believed to strengthen and heal the body (Cedercreutz 1999). Costa Ricans living near the oceans sometimes throw the placenta and its umbilical cord into the waves to protect a child from death by drowning (Jenkins 2005).

The Kwakiutl of British Columbia are reported to believe that burying a daughter's placenta ensures that she would grow up to be skilled at digging for clams. A Kwakiutl son's placenta and umbilical cord are exposed at the high tide mark so that ravens can devour it thus ensuring that he would gain prophetic vision in later life (Quintner 1999). In Turkey, the placenta which is known as the friend or comrade of the baby, is wrapped in a clean cloth and buried. The cord may be buried in the courtyard of a mosque if the parents wish their child to be devout in later life. Similarly, if the parents want their child to be well educated they may throw the cord over a courtyard wall (2004). In Nepal for example the placenta is known as bucha-co-satti (the baby's friend), while in Malaysia when a baby smiles unexpectedly he/she is said to be playing with the older sibling - the placenta (Tradition to do with birth).

Treatment of the placenta with its umbilical cord blood is considered in some cultures to help establish certain qualities in a child's social identity. In central Java, burying the placenta and umbilical cord with slips of paper with writings on them can ensure literacy later in life, whereas in the northern coast of Java the placenta and umbilical cord might be carried to the sea to make a boy a successful sea trader or enable a girl secure a husband from a distant area. (Seligman 2004). In the Trobriands, burying the placenta in a yam garden is considered part of the "birth magic" that 'helps make a child a good gardener. (Spencer 2000)). The manner of disposition of the umbilical cord among the Ojibwa of Wisconsin was similarly believed to help produce good and appropriate adult life skills in children. (Hilger 2004).

The Cuna communities in South America designate a newborn's lifelong rights to harvesting from certain trees, which are key agricultural resources, by burying the placenta

and its umbilical cord at their bases. (Keeler 2002). In Japan however childless women who desire pregnancy would borrow the petticoat of a pregnant friend and deliberately step over a baby's newly buried placenta with its umbilical cord. In Transylvania, a couple who desire no more children would burn their baby's placenta with its umbilical cord and mix it with ashes. The husband would then drink this to render himself infertile (Kitzinger 2000).

In Malaysia the placenta and its umbilical cord are carefully cleaned, ritually treated and buried with prayers for the dead. Also in Malaysia, dried umbilical cord may be used as medicine to treat childhood illnesses and it also hoped that it decreases "Family friction" (Laderman 2003). The Igbo people of Nigeria are said to treat the placenta as the baby's death twin and give it full burial rites.(Demaue 1993). In addition, among the Igbo of Nigeria, a man's claim to social fatherhood for a child born by his wife, even if the child has been biological fathered by another man – is created when he buries the child's placenta and its umbilical cord. (Leith-Ross 2002).

In traditional Ukrainian culture, a midwife would claim to divine from the newborn's placenta and umbilical cord how many more children the mother would bear. The placenta and umbilical cord are later buried where it would not be stepped over. If it were buried under the doorway, it is believed that the mother would become infertile (Eisenbruch 1997.)).The placenta with its umbilical cord has also been related to fertility control in a variety of setting. Among the Pomo tribe of the Pacific region of North America, the burial of the placenta and its umbilical cord may be used in an attempt to prevent further pregnancies in the mother, although it is believed that if the burial place of

the placenta is discovered by an enemy, it may be used for sorcery against the family as a whole. (Aginsky 2000).

In the United State among Mexican-Americans some believe that careless handling of the placenta and its Umbilical Cord Blood after delivery could negatively affect the future wellbeing of the newborn (Sugarman 1997) By contrast, some in the women's health movement in the United States have engaged in overt attempts to change cultural ideology by advocating such practices as burying in the placenta under a tree or other symbol of life.

Placentophagy is another way used to invoke the "medicinal and magical properties" of placenta with its umbilical cord blood. (Ober 1999). In ancient Peru, for example a sick child is given dried umbilical cord to chew (Spencer 2000)).The placenta and its umbilical cord also figure in the "production of personhood" the process through which each society's youngest will come to achieve the status of persons, how they will be recognized and granted a place within a human community. (Conklin, Morgan 1996).The burial, cremation or placement of the placenta with its umbilical cord blood in a corner of the home or in a door way, tree, or other socially significant place may create reinforce, or symbolize in physical link between a child and his or her place of birth. This may also connote a spiritual attachment and continuity with the land and with ancestors, as in parts of Tahiti (Saura 2002).

The placenta with its umbilical cord blood is often perceived as important in promotion of health. Across cultures, both placenta and umbilical cord blood may play a role in ensuring the social wellbeing of the individual and his or her community. Such cultural meaning of placenta and umbilical cord blood are flexible and dynamic. They

change over time and vary not only between, but also within communities. Keeping this in mind, we provide some examples to depict the wide range of meanings. (Table1).

Table 1:- Selected socio-cultural meanings of the placenta with its umbilical cord blood.

Role	Some areas reported	Authors names	Page number
Companion to child	Malaysia	Carsten. J	233-241 Cansten, J. The substance of kinship and the heat of the hearth: feeding, personhood, and relatedness among Malays in PulauLangkawi. American Ethnologist 1995; 22 – 223 – 41.
	North Sulawesi	Cedercreutz. S	Cedercreutz, S. Every infant is born with its “younger sibling”: childbirth and care among Amurang Fisherman: Loizos P, Heady P eds. Conceiving persons: ethnographies of procreation, fertility and growth: London, UK: Athlone Press: 1999: 89 – 122.
Protection and healing	Peru	Davidson. J.R	Davidson, J. R. The shadow of life: psychosocial explanations for placenta rituals. Cult Med Psychiatr 1985: 75 – 92.
	Bengal	Fruzzetti	Fruzzetti, L. M. Kinship and ritual in Bengal: anthropological essays: New Delhi, India: South Asian Publishers; 2002. No page published in 2002 Research field notes 2003

	Costa Rica	Jenkins. G.L	
Link child to community	Tahiti	Saura B.	Saura, B. Continuity of bodies: the infant's placenta and the island's navel in Eastern Polynesia. J. Polynesian Soc 2002; 111: 127 – 45.
	Bolivia	Canessa,A.	Canessa, A. making persons, making difference: procreation beliefs in highland Bolivia. In: Loizos P. Heady P eds. Conceiving persons: ethnographies of procreation, fertility and growth. London, UK: Athlone press 1999: 69 – 87.
	Cambodia	Eisenbruch,M.	Eisenbruch, M. The cry for the lost placenta: cultural bereavement and cultural survival among Cambodians who resettled, were repatriated, or stayed home. In: Tilburg MALV, Vingershoets AJJM, eds. The psychological aspects of geographical moves: home sickness and acculturation stress. Tilburg, The Netherlands: Tilburg University Press; 1997: 109 – 31.

Placenta and its umbilical and blood has been grouped together as waste during the discussion on umbilical cord blood property right; but this attitude may now change given that umbilical cord blood is now potentially valuable for research (Munzer 1999).

There are conflicting positions about who actually owns the umbilical cord blood. On one hand it is argued that being a part of the mother's body it is her property. On the other, since it formed an integral and biological part of the child in the womb it is said to belong to the child. This issue is yet to be resolved (Munzer 1999). The use of cord blood for any purpose raises a different issue. There are still arguments going on as to whether the child will have any right over the given out cord blood once he or she turn 18. In all probability, the cord will be treated as a gift from the mother to society and the child will have no claims over it (Marshall 1996).

The issue of who owns umbilical cord blood has yet to be tested in the courts. It has been suggest that the cord is more likely to be the property of the child on the basis that it is developmentally, biologically and genetically part of the child (Munzer 1999). It may also be proposed that it is more likely that the blood is the property of the mother once the cord is cut e.g. the mother's unfettered right to consent to what is done to her own body means that once the cord is cut she is free to refuse to consent to the removal of the afterbirth. Legal rights of property are not generally founded on genetic identity.

2.5 INFORMED CONSENT

Since newborn infants cannot consent to donate their umbilical cord blood for research, parent must make this decision on their behalf. It is agreed that cord blood donated for research is not waste materials and that informed consent is required. For

mothers to give informed consent, they must be provided with information about the use of the umbilical cord blood for research. They should know what measures will be taken to ensure that personal and medical information will be kept confidential.

The consent process is difficult, if not impossible, to achieve during labour, when women are distracted by the physical and emotional stress of the intrapartum experience. Postponing the consent procedure until after labor improves efficiency and reduces recruitment costs with no additional burden on prenatal care providers however, umbilical cord blood is collected before the parents' knowledge and explicit consent. The working group on ethical issues in umbilical cord blood for research and the American Academy of Paediatrics consider intrapartum and after collection consent unethical and recommend that written informed consent be obtained during prenatal care, before the commencement of labour followed by confirmation of consent after delivery (Sugarman 1997)).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 STUDY SITE

Ibadan, the location of this research work is the capital city of Oyo State and Nigeria's most populous city after Kano and Lagos. The provisional result of Census of 2006 puts the population of Ibadan at 2,550,593. The principal inhabitants of the city are the Yoruba people. The city was founded in the 1829, by a team of Yoruba renegades led by a hunter called Lagelu. The most striking characteristic of Ibadan is its rapid and impressive changes. The changes are reflected in the evolution of the city, from the initial, rural Yoruba war-camp, to a farming village, then a colonial administrative centre and a modern town.

Population: Ibadan people are amiable and quite welcoming, which made for its expansion. As in any typical Yoruba city, its population comprises sub-groups of Ibadan, Egba, Ijebu, Ijesha and Ondo. In addition, other ethnic groups with lower, but still significant importance in the city's social and economic development are the Igbo, Hausa, Edo, Ebirra, Urhobo, Efik, Ijaw, Ibibio, Itsekiri and Tiv.

Urbanization: Ibadan presents a fascinating landscape of tradition and modern features, prominent in its old, indigenous core area are the king's market (Oja'ba) and the king's palace. From Mapo Hill, one can easily see the sea of rusted brown roofs and buildings in places like Agugu, Ajaye, Idi Arere, Odinjo, Gege and Foko, to mention but a few. Other places are at the periphery of the core centre. They include Odo-Ona, Apata-Ganga and

Owode Estate, to the west. To South is Challenge, Molete, Felele areas. Those to the north are Orogun, Ojoo, Sasaetc, while to the north-east are Bodija, Akobo, Monatan and Isebo.

Education: Ibadan is an exceptional educational centre. It has numerous primary and post primary institutions, such as the University of Ibadan, the first university in the country, and world renowned. There are also The Polytechnic and several research institutes, such as the Nigerian Horticultural Research Institute (NIHORT), the International Institute of Tropical Agriculture (IITA), the Nigerian Institute of Social and Economic Research (NISER) and the Institute of Agriculture Research and Training (IAR & T) and a host of private secondary institutions.

Health: The city also enjoys modern health facilities. All the three tiers of health facilities are well represented in the city, with the University College Hospital (UCH), Ring Road and Yemetu State Hospitals and myriad of clinics, dispensaries, maternal and child health centres.

3.2 RESEARCH DESIGN

This study utilized qualitative research methods. Focus-group interviews are becoming increasingly popular in health research for exploring what individuals believe or feel as well as why they behave in the way they do. They offer a useful vehicle for involving users in care management and strategy development, needs assessment, participatory planning, and evaluation of health promotion and nutrition intervention programmes (Basch, 1987; Gregory, 1991; Duke et al. 1994; Kitzinger, 1995; Higingbottom, 1998; Richardson & Rabiee, 2001) Focus Group Discussion (FGD) and Key informant interview were respectively used to enrich the study. Two Focus Group Discussions (FGD) were

conducted for men and women of childbearing age with 10 participants in each group. Four key-informant interviews with nurses at Adeoyo Maternity Hospital, Ibadan, four key informant interviews with traditional birth attendants, six key informant interviews with pregnant women at Adeoyo Maternity Hospital and one key informant interview with traditional religious priest.

Focus Group Discussions

The female participants were women of child bearing age (15–49 years) who have had 2 – 4 successful deliveries. The women residing within the community where the FGD was conducted were contacted individually to participate and give consent voluntarily. (Appendix 1). Each FGD comprised of ten (10) participants and was conducted in a location affording a maximum degree of privacy to participants. The sitting arrangement was in a circular form which enabled the moderator to see all the participants at once. The discussion was moderated by investigator using an FGD guide (Appendix 2) and assisted by note taker. The moderator (investigator) introduced all the discussant to the topic of discussion and told them to turn off their cell phones so that it does not interrupt the discussion.

The topic was raised and all members of the group were encouraged to participate actively, and this was recorded accordingly by the note taker. All discussion sessions were tape recorded. Discussants were encouraged to ask or seek for clarification where necessary and the whole discussion lasted 2 hours.

Different focus group discussions were done for these categories of participants:

Pregnant women

Women of child bearing age

Nurses and midwives

Traditional birth attendants

Traditional religion priest (Babalawo) because the study dealt with Yoruba.

Key Informant Interviews

After informed consent (Appendix 3) in-depth interviews were conducted with traditional religion priest, traditional birth attendants (TBAs) Senior Nursing Staff, selected pregnant women and Community leaders on Yoruba traditional beliefs and culture with regards to use of umbilical cord blood for research.

1. **Key Informant Interviews with 2 traditional religion priests.** These were conducted in the traditional religion priests' sitting room in order to make the interviewees relaxed. The interviews were conducted by the investigator with the use of an interview guide (Appendix 4) and she was assisted by a note taker. The investigator introduced herself to the priest, and the topic of the interview was raised. The priest was encouraged to talk on the basis or root of the belief of Yoruba people on handling of the umbilical cord after birth and the comments were recorded by the note taker and tape recorder.
2. **Key Informant Interviews with Traditional Birth Attendant (TBAs).** In-depth interview was conducted with four TBAs selected from the church register for traditional birth attendants. The criteria for selection to be interviewed included that the TBA must have operated in the community for not less than 6 month before the

survey. Interviews were conducted by the use of interview guide, notes were taken and the interview was recorded.

3. **Key Informant Interviews with Senior Nursing Staff in Ibadan** Permission was obtained from the Director of Adeoyo State Maternity Hospital and female nurses and midwives who had worked for over ten years in maternity section particularly in labour ward were approached to participate in the research. Four Nursing Officers in the hospital were interviewed. An interview guide was used to elicit their knowledge, practice on the attitude of women to umbilical cord blood and what they think about its use for research. Notes were taken and the interview recorded.
4. **Key Informant Interviews with pregnant women.** Permission was obtained from Director of Adeoyo State Maternity Hospital and after informed consent; eight pregnant women were interviewed using the interview guide to elicit the traditional belief and culture about the umbilical cord and its use in research. Notes were taken and the interview was recorded by tape recorder.

3.3 ETHICAL CONSIDERATION

The proposal was submitted to the Oyo State Ministry of Health Ethical Review Committee for review and approval before the commencement of the project. This study constitutes only minimal risk of harm and no invasive procedure was involved. The duration of interviews or focus group discussions was between 1-2 hours. All participants were treated with dignity and respect; confidentiality of all information obtained was maintained. Informed consent was obtained from all participants who signed or thumb

printed. No participant was forced to participate in the research. None declined and withdrew their participation. Participants were given refreshments as an incentive for participation in the research.

Interview guide was generated from a review of the literature and the researcher's personal experiences as a member of the community, involvement in family affairs, and working experience related to handling umbilical cord and placenta. It was ensured that all the themes have been exhaustively discussed when all the questions in the interview have been answered and there was no new information gathered from the respondents, during the interview.

CHAPTER FOUR

RESULT

4.1 FOCUS GROUP RESULTS

Research Question 1: What are the beliefs of Yoruba people about umbilical cord and its blood?

The participants were generally quite responsive when answering “What do you think about when they hear about umbilical cord or afterbirth”. Very few people hesitated or chose not to answer. Some of the excerpts:

A 55 years old woman:

When woman is giving birth they will not congratulate her until the umbilical cord and afterbirth has come out and the nurse will give it to the father of the child and congratulate him.

A 45 years old car repairman:

Umbilical cord or afterbirth is a dangerous thing to play with in Yoruba land, since this connected the child to them other, Yoruba believe that how they are handled can affect the destiny of a child.

This is why many pregnant women fear during childbirth and are eager to collect the umbilical cord and after birth and give it to their husbands.

A 45 years old male mechanical engineer:

They can curse the umbilical cord and after birth of newly born child and this negative word will affects the destiny of the child that is why they don't give it to anybody except the father of the child.

This point was buttressed by the traditional religious priest (Babalawo).

Umbilical cord and afterbirth is a delicate thing in childbearing, if this umbilical cord is not out, one cannot congratulate the mother, until this afterbirth is out that is the only time they congratulate the parents.

Because of “Alaye” they [people] can do anything with it,” they can change and destroy the child’s destiny through this umbilical cord and after birth; they can even punish the mother of the child through this umbilical cord and afterbirth.

Yoruba used to say “ki aye ma fi bi omo mu wa” They can attack mother through umbilical cord and after birth. The Babalawo also pointed out that burning the umbilical cord is best thing to do and it must be done when people are not around, may be in the night at a location that is wet, so that that child’s life will be cool and prosperous.

Yoruba believe that once the umbilical cord blood and after birth “is not properly buried or not handled well it will affect the wellbeing of a child and the mother may lose her fertility”.

This is illustrated by the submission of nurses interviewed, who said that they only give umbilical cord to the mother of the child, who later gives it to her husband.

One of the nurses has this to say:

As a Christian, I don’t believe, that the child’s life and destiny can be destroy through umbilical cord and after birth, but Yoruba believes that the umbilical or afterbirth can be used for ritual e.g. making money, other believes that if they are from polygamous family, family rivals can use it to destroy the life course of a child.

Another nurse from Adeoyo hospital said this:

The importance of the afterbirth is that after a woman has had sex with a man, and missed her period, God will put the placenta beside the foetus and this brings about the cordial relationship between mother and child that is responsible for the child's breath and the child's feedings.

A 40 years old hairdresser:

Umbilical cord and after birth is put inside calabash with cover, father will go and bury, I gave it to my husband to bury it.

45 years old mechanical engineer:

In the past umbilical cord is put inside the calabash, father of the child will go secretly to a place to bury it.

A 35 years old Food seller:

It is the duty of the father to bury it. It was discovered that most women were afraid of who carries the umbilical cord of their child because of the prevalent belief of Yoruba about the umbilical cord and its blood that they can use umbilical cord and after birth to do evil.

The traditional beliefs of Yoruba people about umbilical cord and its blood derive from the fact that it connects the child to the mother. They believe that evil that can be perpetuated through its manipulation. Many of the men and women interviewed say they will not release their child's umbilical cord and its blood for research because they believe that it can be used to do evil to the child and the parents.

Research Question 2: How strong are those beliefs today?

When participants were asked "Are you willing to donate your baby's umbilical cord for research?" "Give reasons for your answer?" Many participants stated that they are not willing to donate their child's umbilical cord for research because they believe that evil can be done through umbilical cord and afterbirth

A 54 years old electrical engineer:

It is not possible to leave the umbilical cord and afterbirth of my child, since this child is my future, I cannot do it. Let anybody that want to do research use her own child umbilical cord and afterbirth

A 46years old woman trader

No, it is not proper to release it for research work; people can use it for negative things which will affect the child in the future. For example a step mother cooked the placenta for the mother of a child as a meal and this woman died immediately after eating it, and because of the strong belief of Yoruba about this umbilical cord, nobody will ever try and give umbilical cord and after birth again to anybody.

A 56 years old business man:

We have to pray to the umbilical cord and after birth in order to make the child live good life before burying it. We don't give it to another person to bury it because of the future of the child and I cannot release it for research.

Other people, particularly men, believed that umbilical cord is very important for the family in Yoruba land.

Yoruba belief that if umbilical cord is not properly buried, it will affect the child, and the parents may not have another child again. This is a strong belief of the Yoruba about umbilical cord and afterbirth.

These findings were buttressed by some of the Traditional Birth Attendance (TBA) interviewees at a Church in Old-Ife Road, Ibadan. In this church it was observed that maternity care was provided using traditional birth attendant (TBA) because these are widely trusted in these communities. A traditional birth attendant said:

We give the placenta to the father of the baby; I do not believe the prevalence notion of Yoruba about the umbilical cord, because Jesus has power over everything, but we don't give it out anyhow.

Another traditional birth attendance said this:

Yoruba believe that if umbilical cord is not handled well, if the child is a female, this will affect the destiny of that child and she will become a prostitute and. that is why they bury it. We don't give to another person to bury because the person can use it for evil.

This is supported by interviews with pregnant women in Adeoyo Maternity Hospital, Ibadan, Nigeria.

When I gave birth I released the afterbirth to my husband to bury it, I cannot give afterbirth for research purpose, my husband will kill me if I try to give umbilical cord and after birth for research.

Another interviewee said this:

No, I cannot do it, because it is dangerous to release umbilical cord in the history of Yoruba land.

Other pregnant women have this to say:

Yoruba believe that umbilical cord and afterbirth must be buried, because of the wicked people around.

It is very important for the family, that umbilical cord and afterbirth should be given to the father who must use a pot with cover to bury it so that the child will be successful in life and the use of nylon bag is not traditional because nylon produces heat, and that can make the child's life unsuccessful. Some think that some children become wayward nowadays because their parents did not take proper care of their umbilical cord and afterbirth. It is believed that once the afterbirth is buried carefully in the correct traditional manner, the child will be successful in life.

Yoruba strongly believe that the umbilical cord must be buried in secret so that nobody will go and remove it. Yoruba also believe that it should be buried close to source of water or where rain usually falls because if the location is cool, the life of that child will be "cool" and successful.

To support this, an interview conducted with the traditional religious priest has this to say:

"They bury it at entrance of the house where rain usually falls or at the back of the bathroom so that water will pass through it every time, Yoruba belief strongly that as water wets umbilical cord and afterbirth, the life of the child is also cool".

Yoruba are very careful with umbilical cord and afterbirth of children because they believe that everything about that child is attached to the umbilical cord or afterbirth. These beliefs are a potential barrier to the use of umbilical cord for research.

The policy and practice of the nurses and midwives at Adeoyo State Maternity Hospital is to give the afterbirth to the parent.

Research Question 3: How does belief influence attitude and practices towards use of umbilical cord for research?

Key informant interview with nurses working at the labour ward, Adeoyo Maternity Hospital.

One of the nurses had this to say:

Umbilical cord is the life of a child, if it is not handled well it can lead to the death of that child, even that of the mother of the baby. After delivery, we pack the umbilicus inside a nylon bag and keep it, when the women are strong, we give it to them and they will give it to their husbands to go and bury. Improper handling of the afterbirth can generate conflicts and raise suspicions about paternity.

An interview conducted with a traditional birth attendance confirmed this:

There have been series of conflict in the past about who should collect the umbilical cord and after-birth of a new born child. Because of this conflict, we ask for the father of the child and hand over the umbilical cord and afterbirth directly to him.

An interviewee has this to say: A 50 years old Nursing Officer

That we give umbilical cord and afterbirth to the mother if the father is not around and mother gives it to the father of the child for burial.

Another nurse has this to say:

She has witnessed a conflict about giving out umbilical cord and afterbirth so she doesn't give it to the mother of the child until the father of the child comes because some women will want to give it to another man.

Regardless of this general opinion on disposal of the afterbirth, some of the nurses confirmed that this attitude is not by any means uniform. Interview conducted with staff nurse confirmed this:

After delivery, we can also flush the umbilicus down the toilet in case the new parents do not want to go with or they are afraid it may fall into the hands of wicked people

It is the beliefs of the patients (mothers) that dictates the disposal these tissues. There was no record of amount that the hospital disposed and no records of amount given to the parents.

Research Question 4: What are the religious, cultural, economic and educational factors that affect pregnant women's knowledge, attitude and practice of donating umbilical cord blood for research?

A 59 years old woman:

When one is not mad, what kind of money, anybody that wants to do research with umbilical cord should use his/her own child's umbilical cord and afterbirth.

56 years old business man

No amount of money is enough to sell the destiny of my child, because if the umbilical cord is not well disposed it will affect the future of that child.

The participants does not view research as evil but they believe that once their way of handling the cord is not followed, evil will result to child.

A 52 years old civil servant:

If the umbilical cord is not handled according to cultural beliefs, this will affect the growth, success and destiny of the child. That is why Yoruba believe in burial of the umbilical cord and afterbirth. There is no parent in Yoruba land that can release umbilical cord and after birth for research.

45years old woman trader

Umbilical cord and after birth is very important, Yoruba believe that it must properly be handled and must be buried in a secret place.

A 35 years old full-time housewife

No, that means the mother has exchanged her child's destiny with money, if she releases it for research and collects money. A mother must not give it to any other person because people can alter the child glory and destiny through this umbilical cord and afterbirth which will affect child negatively in the future.

During a key informant interview with traditional birth attendant, it was revealed that most pregnant women are not ready to donate their child umbilical cord and afterbirth. This fact was buttressed by the response of a TBA.

Because of the beliefs that wicked people can do evil through this umbilical cord and afterbirth, that is why they don't release it. After labour, the first thing they ask for is the baby's umbilical cord and afterbirth.

Another traditional birth attendance

I cannot say, my own role is to deliver the umbilical cord and afterbirth to the mother. It is not good for mother to sell the afterbirth.

The respondent's religion, economic and level of education did not appear to significantly affect this cultural belief

Another key informant interviewee, a labour room nurse has this to say:

No, it is very delicate and it is the life of the child. We are always careful who to give the umbilical cord and afterbirth to. On many occasion we have witnessed fights on why it was given to a particular person. It was because of Yoruba beliefs about umbilical cord and afterbirth that is why pregnant women do not trust anybody except the father of the child.

Another nurse said this:

There are some mothers who do not collect the umbilical cord and afterbirth and we have to flush it down the toilet while some drop it inside the dustbin or toilet. We can never ask them to give us, even to use it for examination many of them are not ready to give it out.

Research Question 5: Are you aware of beliefs and traditions that may hinder the use of umbilical cord blood for research in your community?

Since newborn infants cannot consent to donate their umbilical cord for research, parent must make this decision on their behalf.

When participants were asked "Are you aware of beliefs and traditions that may hinder the use of umbilical cord blood for research in your community?" many responded with "Yes" This was supported by the focus group discussions participants:

A 30 years old trader:

Pregnant women believed that umbilical cord blood is a child destiny, anything that happens to the umbilical cord and afterbirth will definitely happen to that child too. It is not possible to leave it for research.

55years- old food seller

It is a secret thing and need to be handled secretly, because of the baby's future. I cannot donate it for research, it my property. It belongs to my child.

A 50 years old mechanical engineer

I don't think I can donate it for anything, am sorry. I will take it to where I live, and bury it there and pray on it so that the child can prosper in life, that is why I cannot donate it for research.

When the pregnant women were asked the following questions:

- i. Do you think that there will be negative effects if the umbilical cord is not handled according to cultural dictates? What negative effect might these be?
- ii. Are you aware of beliefs and traditions that may hinder the use of umbilical cord blood for research in your community?

The key informant interview with pregnant women revealed that most of the pregnant women are not ready to donate umbilical cord and afterbirth since they believe that the umbilical cord and after birth controls the destiny of their babies.

This fact was buttressed by the response of a pregnant woman in Adeoyo Maternity Hospital.

Since umbilical cord blood has great impact on the life of my baby I cannot donate it for research. It is the duty of my husband to handle. It is not my business at all.

Another pregnant woman:

If not properly cared for, a lot of things can happen to the umbilical cord and afterbirth, for example, if a dog eats it, that the child will become sexually promiscuous, that is why sensible women will never donate it for research. This umbilical cord belongs to my baby. I cannot give it out.

The pregnant women interviewed said giving out the umbilical cord blood is most dangerous and the most important thing in the life of the babies and the parents. No woman will joke with umbilical cord blood after carrying a pregnancy for nine months and then donate the umbilical cordlike that. Donating it is like destroying the future of that baby.

My husband always buried it, it's doesn't concern me, It belongs to the baby.

Pregnant women believe that donating the umbilical cord blood for research is not good, since it belongs to new born baby, it not fair to donate it. They don't see it as their own property but their child property that is why it will be hard to donate it for research.

4.2 DISCUSSION

The findings from the study suggest that there is a strong cultural belief about the umbilical cord and its disposition. It shows that Yoruba believe that the afterbirth should be disposed off properly otherwise there can be negative effects on the health of mothers or the destiny of the child. Our study suggests that these folk beliefs about the umbilical cord are still very strong today despite high levels of education and orthodox religious practice. It was found out that level of education of the participants (pregnant women) in the focus group discussion did not correlate with willingness to donate umbilical cord blood for research. Participants said they cannot donate umbilical cord blood for research because of their beliefs on its importance in the lives of their children. Despite nominal beliefs to the contrary, religious affiliation also did not appear to affect this attitude to cord blood. While Christians see the after birth as something that is ‘useless’ after the delivery, that it is ugly, unhygienic and bury it. Moslems see umbilical cord blood as something delicate perhaps because these families are often polygamous. A traditional religion worshipper also sees it as delicate thing that can be used to control and destroyed the destiny of a baby. These are the reasons why they can never release it for research.

This study showed that the prevalent knowledge and attitudes to disposal of the umbilical cord among the Yoruba is to give it to the child’s father to either bury or burn, typically in secret and in a cool environment. This is because the Yoruba believe that the mode of disposal of the umbilical cord is crucial to the destiny of the child and improper disposal may have grave consequences. Improper handling is seen as avenue for “wicked people” to do evil to the child and his/her family. Particularly prevalent is the belief that if the “after-birth” is eaten by a dog, the child will grow up to be promiscuous. These findings

are similar to studies from different parts of the world that showed that different communities and nationalities have specific folk beliefs about the afterbirth and how it should be handled. (Eisenbruch, 1997, Aginsky, 2005, Lengh-Ross, 2002, Ceder Creutz, 1999, Spencer, 2000, Dunham, 2001, Liamputtong Rice, 1999, Turecky, 2003, Fruzzetti, 2002, Hilger, 2004, Conkhin, Morgan, 1996 Saura, 2002) This strong cultural reason may interfere with willingness of parents to voluntarily donate this material (umbilical cord) to scientists for research.

Voluntariness is important in research even though cultural reasons affect participation. By voluntariness, we mean that the person involved has legal capacity to give consent and is so situated as to be able to exercise free power of choice without the intervention of any element of force, fraud, deceit, duress, overreaching or other form of constraint or coercion, and should have sufficient knowledge and comprehension of the elements of the subject matter involved, as to enable him to make an informed decision. The findings from the study suggest that there is a strong cultural belief about the umbilical cord and its disposition. It shows that Yoruba believe that the afterbirth should be disposed off properly otherwise there can be negative effects on the health of mothers or the destiny of the child. Our study suggests that these folk beliefs about the umbilical cord are still very strong today despite high levels of education and orthodox religious practice. It was found out that level of education of the participants (pregnant women) in the focus group discussion was not correlated with willingness to donate umbilical cord blood for research. Participants said they cannot donate umbilical cord blood for research because of their beliefs on its importance in the lives of their children. Despite nominal beliefs to the contrary, religious affiliation also did not appear to affect this attitude to cord blood. While

Christians see the after birth as something that is ‘useless’ after the delivery, that it is ugly, unhygienic and bury it. Moslems see umbilical cord blood as something delicate because of their family setting (polygamous family). A traditional religion worshipper also sees it as delicate thing that can be used to control and destroyed the destiny of a baby. These are the reasons why they can never release it for research.

During a focus group discussion, in this particular study a Christian woman said, I don’t believe that a child’s life and destiny can be destroyed by donating umbilical cord blood and afterbirth, because God gave her the child and her belief is that nothing evil can happen to her child if she donates it.

In African traditional ethics, individual autonomy is constrained by communalism because African societies put more value on belonging to the group and an individual exists corporately in terms of family, clan and the ethnic group. So the individual cannot do things that will oppose the tradition, belief and culture of his/her community. (Robert 2000). This affects the individual’s attitude to donation of samples that are associated with strong communal beliefs including the umbilical cord. A tension therefore arises between the individual’s autonomy and allegiance to communal beliefs. Our study suggests that such conflicts are resolved in favor of communal beliefs, at least as far as it relates to umbilical cord blood.

Nevertheless, the use of umbilical cord blood for research cannot be abandoned and there is ample evidence in the literature of conduct of research using umbilical cord blood among the Yoruba. A search of PubMed using ("fetal blood" [MeSH Terms] OR ("fetal" [All Fields] AND "blood" [All Fields]) OR "fetal blood" [All Fields] OR ("umbilical" [All

Fields] AND "cord"[All Fields] AND "blood "[All Fields]) OR "umbilical cord blood "[All Fields]) AND ("Nigeria"[MeSH Terms] OR "Nigeria"[All Fields]) showed 281 papers by May 2012. How therefore does one reconcile our finding with the experience of researchers regarding this issue? There are several possible explanations.

It is well known that individuals do not often do what they say, particularly if the opinion is volunteered where there may be pressure to conform to acceptable group, peer or community attitudes and beliefs. This may explain why despite the seemingly high prevalence of beliefs about the umbilical cord blood, researchers do not appear to be meeting greater than expected resistance from participants in its use in this environment. The implication of this is that researchers need to be aware of such conflicts between practice and beliefs so that they are not deterred by seemingly highly prevalent and strongly held folk beliefs. Secondly, while participants may be unwilling to donate the entire afterbirth, they may be willing to donate parts of it. This possibility was not adequately explored in this study and represents one of its limitations. Thirdly, given adequate education and information about a research and its potential benefits, participants may conclude that the benefits outweigh the risk. Therefore researchers who develop comprehensive public outreach or awareness and education programs so that the participants can be educated on what is expected of them when donating umbilical cord blood for research may be more successful with obtaining cord blood samples.

CHAPTER FIVE

5.1 SUMMARY OF THE FINDINGS

This study showed that Yoruba living in Ibadan still have strong beliefs about how the placenta and umbilical cord are to be handled after birth, and these beliefs may interfere with their attitude to donation of these biological materials to researchers. These beliefs may influence attitude and practice of pregnant women to discussions about donating the umbilical cord for research. The beliefs cut across sex, educational level and religion, even those health care workers who said they do not believe it indicated that it influences their practice.

5.2 CONCLUSIONS

Attitude of pregnant women on donation of umbilical cord blood for research is the manifestation of the traditional beliefs among Yoruba people, therefore pregnant women should be educated and encouraged to donate umbilical cord blood for research so as to have tissue for research. Evidence from the literature suggests that they do donate the materials after being properly informed.

5.3 RECOMMENDATIONS

The study has identified the opinion of pregnant women on the use of umbilical cord blood for research in Ibadan. The following recommendations are based on the findings of the study.

Despite prevalent folk beliefs, it is possible to obtain umbilical cord blood for research after valid consent.

Researchers should provide adequate information on the research to be conducted that will involve the use of umbilical cord blood.

Pregnant women should be informed how the umbilical cord will be disposed after research in order to reassure them that communal beliefs will be respected.

5.4 LIMITATION

The following limitations of this research include:

This research was limited by the level of literacy of the participants and this necessitated the translation of the focused group discussion and key informant interview guides into local language and one – on – one interview which was time consuming.

Some participants were reluctant to participate, because they felt that the researcher was probing into their personal decisions on things related to their unborn children.

Appendix 1: Consent for Focus Group Discussion

CONSENT FORM

Title of Research:-

SURVEY ON OPINION OF PREGNANT WOMAN ON THE USE OF UMBILICAL CORD BLOOD FOR RESEARCH IN IBADAN OYO STATE.

Principal investigator: - **Adeleke** Banke Catherine Matric No: - 142439, MSC Bioethics

Department of Surgery Faculty of clinical science, university of Ibadan

Purpose of the Study:-

The purpose of this research is to provide information on how a strong cultural belief (about umbilical cord and how it should be disposed of) interact with routine research requirements for tissue donation.

Procedure of the Research

Focus group discussion will be conducted among adult male and female of child bearing age (20 – 59 years) to elicit information from them, while key informant interview will be conducted among two traditional religious priest, two traditional birth attendants, two pregnancy women and Senior Nursing Officers.

Risk

This research poses no risks to you and your participation in this research will only required 1 – 2 hours of your time, you will be given numbers during the procedure and names will not be recorded, you participation in this research is entirely voluntary.

Incentives

Each participant will be given an egg buns and a bottle of water, as the discussion and interview will require them talking for some time and spending some time away from other activities in which they may be involved.

Voluntariness

Your participation in this research is entirely voluntary

Alternative to participant

Participants who do not wish to continue with this study can withdraw from the study at any point in time without any penalty attached to it please note that some of the information obtained about you before you choose to withdraw may be used in reports and publications.

Conflict of interest

None

Confidentiality and Anonymity

Confidentiality and Anonymity of information will be maintained. The researcher will be mindful of the used to accord due regards and fundamental human right to them. This will be achieved by showing them courtesy.

This research has been approved by the Oyo State Ministry of Health Ethical Review Committee.

The chairman of this committee can be contacted at the Oyo State Ministry of Health, Secretariat Ibadan. If you have any question about your participation in this research, you can contact the Principal Investigator. Mrs. Adeleke Banke Catherine of School of Midwifery, University College Hospital, Ibadan also on the mobile number 08070506715.

Statement of person giving consent

I have read the description of the research and have had it translated into the language I can understand. I understand that my participant is voluntary. I know enough about its purpose, method, risks and benefits of the research study before I decided that I want to take part in it. I understand that I may freely stop being part of this study any time. I have received a copy of this consent form.

Date _____

Participant signature / Thumb print

Statement of person obtaining informed consent

I have fully explained this research to the participants and have given sufficient information about the risks and benefit to make an informed decision.

Date _____ Principal Investigator Signature _____

Before the interviews, the participants were fully informed of the nature, purpose, and the extent of the study and the duration of the interview in Yoruba Language, which they all understood before they signed the consent forms.

Appendix 2: Focus group discussion guide.

FOCUS GROUP DISCUSSION GUIDE FOR MEN AND WOMEN OF CHILD BEARING AGE

This is a focus group discussion to investigate your opinion about the use of umbilical cord blood for research in Ibadan. Your honest response and cooperation will highly appreciate. Thank you.

What do participants think about when they hear about umbilical cord or afterbirth?

In your culture, how is the umbilical cord (afterbirth) handled after delivery?

Do you think that there will be negative effects if the umbilical cord is not handled according to cultural dictates? What negative effects might these be?

Are you willing to donate your baby's umbilical cord blood for research? Give reasons for your answer

Are you aware of beliefs and traditions that may hinder the use of umbilical cord blood for research in your community?

Appendix 3: Key Informant Interview Guide

KEY INFORMANT INTERVIEW GUIDE FOR NURSES

This interview is a research into the impact of cultural beliefs on use of body tissue in research, your honest response and cooperation will highly be appreciated.

What are the local names for placenta and umbilical cord that you are aware of?

In your practice have you ever had controversy on the handling of the afterbirth of a newborn baby?

In your experience, who usually collects the afterbirth of a newborn baby and what is commonly done with it?

It is the beliefs of the patients (mothers) that dictates the disposal these tissues. There was no record of amount that the hospital disposed and no records of amount given to the parents.

Describe your own beliefs and practices with respect to the afterbirth of your children?

In your experience, do new mothers easily give away the afterbirth of their babies? Please explain your answer.

If the afterbirth is used for research do you think the mother should be paid?

If the umbilical cord is not handled according to the cultural beliefs, what do you think will happen to the child or the parents?

KEY INFORMANT INTERVIEW GUIDE WITH PREGNANT WOMEN IN THE USE OF UMBILICAL CORD BLOOD FOR RESEARCH.

This is a focus group discussion to investigate your opinion about the use of umbilical cord blood for research in Ibadan. Your honest response and cooperation will highly appreciate. Thank you.

What do participants think about when they hear about umbilical cord or afterbirth?

In your culture, how is the umbilical cord (afterbirth) handled after delivery?

Do you think that there will be negative effects if the umbilical cord is not handled according to cultural dictates? What negative effects might these be?

Are you willing to donate your baby's umbilical cord blood for research? Give reasons for your answer

Are you aware of beliefs and traditions that may hinder the use of umbilical cord blood for research in your community?

Will you like to donate your subsequent baby's umbilical cord blood for research?

KEY INFORMANT INTERVIEW GUIDE FOR TRADITIONAL BIRTH ATTENDANTS

This interview is a research into the impact of cultural beliefs on the use of body tissue in research, your honest response and co-operation will highly appreciate.

Thank you.

What do you understand by blood?

What do you understand by placenta?

What do you understand by umbilical cord blood?

What are the local names for placenta or umbilical cord?

Of what importance is blood in human relation and interactions

How can you describe it?

Is there any difference in the blood of male/female, adult/children?

Describe your beliefs about the value of umbilical cord blood

Do you think people should give their baby's umbilical cord or even placenta for use in research?

Who owns the umbilical cord, placenta or blood from the Umbilical cord?

Is it the father?

Is it the mother?

Is it the baby?

If the umbilical cord is not handled according to the cultural practices, what will happen to the owner of the said umbilical cord blood?

In your practice have you had controversy on the handling of the after birth of a new born baby?

In your experience, who usually collect the afterbirth of a new born baby?

What is commonly done with the after birth?

Describe your own beliefs and practices with respect to the afterbirth of your children?

In your experience, do new mothers easily give away the afterbirth of their baby?

Please explain your answer?

If the afterbirth is used for research, do you think the mothers should be paid?

If the umbilical cord is not handled according to the cultural beliefs, what do you think will happen to the child or the parents?

d. KEY INFORMANT INTERVIEW GUIDE FOR TRADITIONAL RELIGION PRIEST.

This interview is a research into the impact of cultural beliefs on use of body tissue in research, your honest response and co-operation will highly appreciate.

Thank you.

What do you understand by blood?

What do you understand by placenta?

What do you understand by umbilical cord blood?

What are the local names for placenta or umbilical cord?

Of what importance is blood in human relation and interactions?

How can you describe it

Is there any difference in the blood of male / female, adult / children?

Describe your beliefs about the value of umbilical cord blood

Do you think people should give their baby's umbilical cord or even placenta for use in research?

Who owns the umbilical cord, placenta or blood from the umbilical cord?

Is it the father?

Is it the mother?

Is it the baby?

If the umbilical cord is not handled according to the cultural practices

What will happen to the owner of the said umbilical cord blood?

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