

Umbilical Cord Blood Donation and Banking: Awareness Among Pregnant Women, in Makurdi, Nigeria

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Abstract : *Background: Umbilical Cord Blood (UCB) donation and banking is transforming transfusion medicine around the world. There is a dearth of data on awareness and perception of this practice among pregnant women in our setting.*

Objectives: *We sought to determine the awareness of UCB donation and banking by pregnant women in Makurdi, North central, Nigeria.*

Methods: *With the use of structured questionnaire, information on socio-demography, awareness of UCB donation and banking, and sources of information on UCB were collected from 302 pregnant women attending the antenatal clinic of Benue State University Teaching Hospital, Makurdi. Data generated was analyzed with Statistical Package for Social Sciences version 19.*

Results: *Majority of the respondents was aged 25-30 years (52.0%). They were predominantly Tiv (84.2%), Civil servants (45.3%), Christians (95.1%), and 62.4% had tertiary education. Nineteen percent of the women were aware of UCB donation and banking. The sources of information on UCB were hospital (30.2%), media (39.0%), friends, (24.0%), the internet (6.8%). Awareness of UCB as an alternative to adult blood transfusion was not influenced by socio-demographic characteristics of the respondents.*

Conclusion: *Awareness of UCB donation and banking by pregnant women in Makurdi is low. The major source of information on UCB was from the media. Public awareness programs will have to be instituted especially in the health facilities. These programs if properly implemented will improve the willingness of pregnant women to donate UCB and also enhance the acceptance of UCB as a treatment option.*

I. Introduction

The practice of Umbilical cord blood (UCB) donation and banking is increasingly being practiced in many parts of the world.^{1,2} In Nigeria, the demand for blood and blood products far outweigh supply.³ The current practice is a dependence on relatives, friends or paid donors. With a population of about 160 million,⁴ just over 36,200 units of whole blood were collected in 2010 by the National Blood Transfusion Service (NBTS).⁵ As at 2005, an estimated 1,500,000 unit were needed by Nigerians.⁶ Nigeria is far from the WHO recommendation as her whole blood donations (units) per 1,000 population stands at 0.2.⁷ Paid (unsafe) donors still make up large percentage of blood donations in the public and private health facilities. The challenge of unavailability of blood in our health facilities is enormous. One way of addressing this is to consider the use of UCB as treatment and transfusion option to Nigerians. The key to improving the willingness to donate UCB and the acceptance of UCB as treatment option depends on the awareness of the usefulness of UCB to the public. We therefore explored the awareness level of this practice among pregnant women in Makurdi, Nigeria.

II. Materials And Methods

This study was approved by the ethics review board. It was a cross sectional study carried out in a tertiary hospital in Nigeria. The population of study comprised pregnant women attending the antenatal clinic of the hospital. The sample size as calculated with the Yaro-Yamen's formula was 302. Non-pregnant females were excluded from the study. The instrument for data collection was structured questionnaire which was pretested and all ambiguous questions restructured for easier understanding. The questionnaire had an internal consistency of 0.72 Cronbach's alpha and is therefore suitable for the study. The questionnaire was administered to the subjects by the clinic nurse and it takes an average of five to seven minutes to complete. Information on socio-demography, awareness of use of UCB donation and banking, and source of information on UCB were collected from the respondents. The 302 questionnaires were duly completed and were used for analysis. Data generated was analyzed with Statistical Package for Social Sciences version 19. Results were presented in percentages. The association of socio-demographic factors and awareness of use of UCB donation and banking was tested with the chi-square test.

III. Results

Majority of the respondents was aged 25-30 years (60.1%). They were predominantly Tiv (84.2%), Civil servants (45.3%), Christians (95.1%), primigravida (39.4%) and with tertiary education (62.4%). Table 1. Table 1; Socio-demographic characteristics of the respondents.

Parameter	Category	Number	Percent
Age	25-30	182	60.1
	31-36	55	18.2
	37-44	33	11.0
	>44	25	8.1
Tribe	Tiv	254	84.2
	Idoma	25	8.1
	Ibo	12	4.2
	Igede/Igala	11	3.5
Occupation	Civil servants	137	45.3
	Students	94	31.2
	Traders	22	7.2
	Farmers	49	16.3
Religion	Christians	287	95.1
	Muslims	5	1.7
	Traditional	10	3.2
Educational level	Tertiary	189	62.4
	Secondary	59	19.5
	Primary	12	4.1
	None	42	14.0
Number of Pregnancies	One	119	39.4
	Two	55	18.2
	Three	65	21.4
	>Three	63	21.0

Nineteen percent of the women were aware of UCB donation and banking. Table2.

Table 2; Response of the respondents to the questions “Are you aware of UCB donation and banking.”

Question	Response	Number	Percentage
Are you aware of UCB donation and banking	Yes	5	1.9
	No	245	81.0

The sources of information on UCB were hospitals (30.2%), media (39.0%), friends, (24.0%), and the internet (6.8%). Awareness of UCB donation and banking was neither influenced by socio-demographic characteristics nor number of pregnancies of the respondents.

IV. Discussion

The supply of safe and quality blood for transfusion in health facilities in Nigeria is inadequate. As a result, we must begin to consider other alternatives to voluntary blood donation. One of such alternatives is umbilical cord blood (UCB) which is readily available. The practice of UCB donation and banking is on the increase in many parts of the world. Since 1988 when the first UCB was used for treatment,8 more than 6,000 unrelated donor cord-blood transplants have been done in 150 locations worldwide.9 Cord blood transplants have been recommended and performed for a variety of diseases including leukaemias, lymphomas, sarcomas, immune deficiencies, and some metabolic disorders.10-14 An average of about 100ml of blood can be harvested from a placenta, and in Nigeria about 5 million children are born annually (UNICEF Nigeria 2007). This amounts to about 500,000,000 ml of blood wasted on annual basis. If UCB is put to use in Nigeria, it will become a major relieve to the issue of shortage of blood. Cord blood is collected by an obstetrician or other licensed practitioner, either before or after delivery of the placenta. “In utero” collection is performed after delivery of the newborn but before delivery of the placenta, “ex utero” after the delivery of the placenta.15 In both methods, the umbilical cord is clamped at one end, a needle is inserted into the umbilical vein on the unclamped end, and the blood is allowed to flow through the needle into a collection bag .16 The success of UCB donation and banking depends heavily on the level of awareness of the benefits of UCB among pregnant women who are to donate the cord blood. Awareness will impact positively on their willingness to donate UCB and on their acceptance of UCB as treatment option. Awareness of this type of transfusion and its benefits will improve the willingness to donate UCB and also to accept it as an alternative to adult blood and as a treatment option for a number of inherited and acquired medical conditions.

The awareness of UCB donation and banking in this study was 19.0%. This contrasted with 63.0% that was recorded among patients in Arizona, United States of America.17 In the US study, 74% described themselves as minimally informed, 2.6% described themselves as extremely knowledgeable, 45% of patients were unaware of the potential for cord blood use by a sibling and 14% of patients were educated by their

healthcare provider on cord blood banking. Similar published studies conducted in other countries¹⁸ have shown the majority of surveyed women had little knowledge of cord blood banking and donation. The majority of those surveyed would choose to donate their infant's umbilical cord blood if given the opportunity. For instance, in a study in Turkey,¹⁸ only 26% of surveyed women had information or knowledge about cord blood banking and donation. In that same study 74% of women would donate to a public bank if given the opportunity. These awareness levels though low, are however higher than the 19% recorded in our study. The reason for the very low awareness in our study is as a result of the absence of UCB donation and banking in our country. Unlike in Nigeria, some other developing countries are already practicing UCB donation and banking.¹⁹⁻²¹ However awareness of this practice among pregnant women in these countries has not been widely reported. Analysis of the source of information on UCB showed that media was the major source of knowledge on UCB donation and use. This is because the hospital for study has not commenced the practice of UCB donation and banking so there was no need to educate the women on the use of this product.

V. Conclusion;

The level of awareness of UCB donation and banking by pregnant women in Makurdi is low. Every pregnant woman should be educated about the benefits of Umbilical cord blood donation and banking as this is central to the success of UCB donation and banking in the country.

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Disclosure of interests

We have no conflicts of interest to disclose

Contribution to authorship

The authors have all contributed in conception of the research topic, data collection, analysis, result interpretation and drafting of the Manuscript

Details of ethics approval

This study was approved by the institutional ethic review board.

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