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Original Research Article

Acceptance of Umbilical Cord Blood as an Alternative to Adult Blood Transfusion by Pregnant Women in Makurdi, Nigeria

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ABSTRACT

Background: One way of addressing the problem of shortage of blood for transfusion is to consider the use of Umbilical Cord Blood (UCB) as an alternative to adult blood.
Objectives: We sought to determine the acceptance of UCB as an alternative to adult blood transfusion by pregnant women in Makurdi, North central, Nigeria.
Methods: With the use of structured questionnaire, information was 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: The median age of the respondents was 29 years. Majority was Tiv (84.2%), Civil servants (45.3%), Christians (95.1%), and 62.4% had tertiary education. Twenty-one percent of the women were willing to accept UCB as an alternative to adult blood transfusion. Twenty percent were willing to accept UCB for their babies. The reasons for not willing to accept UCB included; the feeling that UCB is not safe (44.4%), that UCB transfusion is not a usual practice (34.9%), the feeling that UCB may be injurious to their health (12.7%) and that UCB transfusion is against their faith (8.0%).
Conclusion: Acceptance of UCB as an alternative to adult blood transfusion by pregnant women in Makurdi is low. The major reasons for rejecting UCB was the feeling that cord blood is not safe for transfusion and that it was not a usual practice. For a successful establishment of cord blood banking in Makurdi, massive public awareness program will have to be carried out.

Key Words: Acceptance, Umbilical cord blood, Blood transfusion, Pregnant women, Makurdi.

INTRODUCTION

After birth, the placenta is normally discarded. But placental cord blood, because of its rich mix of fetal and adult hemoglobin, plasma, and high platelet count has the potential to be a safe alternative to adult blood. [1] The practice of UCB transfusion is increasingly being practiced in other parts of the world. [2-3]

In the Nigeria today, the demand for blood and blood products far outweighs supply.[4] The current practice is a dependence on relatives, friends or paid donors. It was reported that Lagos state, Southwest, Nigeria, largely depend on commercial donors since only 10 percent of

blood needs in the State are being met. [4] In Nigeria with a population of about 160 million, [5] just over 36,200 units of whole blood were collected in 2010 by the National Blood Transfusion Service (NBTS).[6] As at 2005, an estimated 1,500,000 unit were needed by Nigerians. [7] The indicator for the general availability of blood in the country is whole blood donations (units) per 1,000 populations. WHO recommends that 10 per 1000 population is required to meet clinical demand in resource-limited settings. [8] Nigeria is far from this recommendation as her whole blood donations (units) per 1,000 population stands at 0.2. [8] Paid (unsafe) donors still make up large percentage of blood donations in our public and private health facilities. High rate of maternal death has also been attributed to unavailability of safe, and affordable blood for transfusion. [9] The challenge of unavailability of blood in our health facilities is enormous. One of the ways of addressing this is to consider the use of UCB as an alternative to adult blood transfusion as it is readily available.

MATERIALS & METHODS

This cross sectional survey was carried out at the Benue State University Teaching Hospital, Makurdi, Nigeria. The population of study comprised pregnant women attending the antenatal clinic of the hospital. The sample size calculated with the Yaro-Yamen's formula was 302. With the use of a pre-tested, structured questionnaire, with an internal consistency of 0.8 Cronbach's alpha, information on socio-demography, acceptance of UCB as an alternative to adult blood, and factors responsible for rejecting UCB were collected from 302 respondents. Data generated was analyzed with Statistical Package for Social Sciences version 19. Results were presented in percentages. The association of socio-demographic factors and acceptance of UCB was tested with the chi-square test.

RESULTS

The median age of the respondents was 29 years. Majority was Tiv (84.2%), Civil servants (45.3%), Christians (95.1%), and 62.4% had tertiary education. Greater proportion (39.4%) was having their first pregnancy. Twenty-one percent of the women were willing to accept UCB as an alternative to adult blood transfusion. Twenty percent were willing to accept UCB for their babies. Acceptance of UCB was did not show any association with, religion, educational level, marital status, or number of pregnancies.

Table 1; Socio-demographic characteristics of respondents.

Parameter	Category	Number	Percent
Age	***19-24***	32	10.7
	25-30	182	60.1
	31-36	55	18.2
	37-44	33	11.0
Tribe	***Tiv***	254	84.2
	Idoma	25	8.1
	Ibo	12	4.2
	Igede/Igala	11	3.5
Occupation	***Civil***	137	45.3
	servants	94	31.2
	Students	22	7.2
	Traders	49	16.3
Religion	***Farmers***	287	95.1
	Christians	5	1.7
	Muslims	10	3.2
Educational level	***Traditional***	189	62.4
	Tertiary	59	19.5
	Secondary	12	4.1
	Primary	42	14.0
Number of Pregnancies	***None***	119	39.4
	One	55	18.2
	Two	65	21.4
	Three	63	21.0
	>Three		

The reasons given for not willing to accept UCB included; the feeling that UCB is not safe (44.4%), that UCB transfusion is not a usual practice (34.9%), the feeling the UCB may be injurious to their health (12.7%) and that UCB transfusion is against their faith (8.0%).

Table 2; Response of the respondents to the questions "will accept UCB for blood transfusion for yourself and for your baby

Question	Response	Number	Percentage
Will you accept UCB for yourself	Yes	60	20.0
	No	242	80.0
Will you accept UCB for your baby	Yes	63	21.0
	No	239	79.0

Table 3; Factors responsible for unwillingness to accept UCB by pregnant women in Makurdi

Factor	Number	Percentage
UCB is not safe	135	44.4
UCB transfusion not usual	105	34.9
UCB may be injurious to health	38	12.7
UCB is against their faith	24	8.0
Total	302	100.0

DISCUSSION

The supply of blood for transfusion in health facilities in Nigeria is inadequate. We must start to consider other alternatives to voluntary blood donation in order to address this challenge. One of these alternatives is umbilical cord blood which is readily available. For a successful establishment of an UCB bank, the public must be willing to accept this form of blood, especially for paediatrics where the volume of UCB is usually adequate for transfusion. Our study showed that the acceptance level of UCB as an alternative to adult blood transfusion by pregnant women in the study centre is 21.0% and 20.0% for their children. There is scarcity of data on this subject matter for proper comparisons among centres and regions. Suffice this to say that these levels of acceptances recorded in our centre are low and would not support the UCB banking as majority of the collected UCB will end up being discarded. In 2003, researchers in Ghana were able to collect an average volume of 85ml ± 28ml and this amount of blood was sufficient to raise the haemoglobin concentrations of children needing transfusions in the same hospital, by 30 g/L. [10]

Niranjan [11] in his study in India has postulated that UCB, because of its rich mix of foetal and adult haemoglobin, high platelet and WBC counts, hypo-antigenic nature, altered metabolic profile and high affinity for oxygen as well as its anti-malarial effect, is an ideal choice in malaria patients with anaemia, necessitating blood transfusion. In this Indian study, the collected volume of cord blood from each placenta (Unit) varied from 52 ml to 143 ml, with a mean packed cell volume of 48.9 ± 4.1% and a mean haemoglobin concentration of 16.4 Gm percent ± 1.6 Gm percent. He also noted that, the rise of haemoglobin within 72 hours of two units of freshly collected cord blood transfusion was 0.5 gm/dl to 1.6 gm/dl.

Bhattacharya [12] in another study, transfused 129 informed consenting patients with 413 U (range 50 mL to 146 mL; mean 86 mL+/-7.6 mL SD; median 80 mL; mean packed cell volume 48+/-4.1% SD; mean haemoglobin concentration 16.2 g/dL+/-1.8 g/dL SD) of placental umbilical cord whole blood, and reported that, he did not encountered a single case of immunologic or non-immunologic reaction. Though we could not easily determine the level of acceptance among these patients, but important is the absence of any form of reactions among them. This supports the fact that UCB is relatively safer than adult blood because it (UCB) is immunologically naïve. The other advantage of UCB is that it is and readily available.

Analysis of the reasons adduced for rejecting UCB showed that, there is a lot of ignorance and misconceptions about UCB transfusion by the study group. These problems can easily be dealt with by proper awareness campaign on the advantages and safety of UCB by Health professionals. The only group that may not be easy to deal with are those that were not willing to accept UCB on religious ground. Religious leaders will play a big role in this direction.

CONCLUSION

The level of acceptance of UCB by pregnant women in Makurdi is low. The major reasons for not willing to accept cord blood were the feeling that UCB is not safe and that UCB transfusion is not a usual practice. Public enlightenment will be required for a successful UCB banking in Makurdi.

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