

# A Study to Assess the Knowledge and Attitude of Prospective Parents Regarding Cord Blood Banking in Selected Areas of Vadodara

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**Abstract--- Background:** *The concept of Umbilical Cord blood (UCB) stem cells is emerging as a non-invasive, efficacious alternative source of hematopoietic stem cells to treat a variety of blood and bone marrow diseases, blood cancers, metabolic disorders and immune deficiencies.*

**Aim:** *To assess the level of knowledge and attitude about cord blood banking among prospective parents.*

**Material & Methods:** *The descriptive research design was adopted and 100 samples were recruited by non-probability convenient sampling technique among prospective parents. The data was collected by a structured knowledge questionnaire and attitude scale. The collected data optimized and analyzed by using descriptive and inferential statistics.*

**Results:** *The study revealed that majority of the subjects 78 (78%) had inadequate knowledge and subjects 22(22%) had moderate knowledge on cord blood banking with mean score of 6.3 and standard deviation of 2.57. With regards to overall attitude, majority of the subjects 95 (95%) neutral attitude and 5 (5 %) had a favourable attitude towards cord blood banking with mean score of 66.04 and standard deviation of 5.16.*

**Conclusion:** *The present study concluded that nearly one fourth of the participants had moderate knowledge and majority of them had neutral attitude about cord blood banking. Therefore, the health care workers have to initiate a strict awareness program regarding cord blood banking among prospective parents.*

**Keywords---** *Cord Blood Banking, Stem Cells, Knowledge, Attitude, Prospective Parents, Descriptive, Urban.*

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## I. INTRODUCTION

Stem Cells are the basic building blocks of the body and have the potential to replenish other cells and give rise to number of tissues which constitute different organs<sup>1</sup>. Major sources of stem cells are bone marrow, peripheral blood, cord blood or placenta, and embryo<sup>2</sup>. The placenta representing a significant source of fetal blood stem cells was discarded after birth. Since the evaluation by researchers of umbilical cord blood being a potential source for haemopoietic stem cells (HPSC), and the evidence of advantages over bone marrow, attention has shifted to the

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establishment of umbilical cord blood banks.<sup>3</sup>

The first clinically documented use of cord blood stem cells was in the successful treatment of a six-year-old boy afflicted by Fanon's anaemia by Dr. Elaine Gluck men in 1988, in Paris. Since then, cord blood has become increasingly recognized as a source of stem cells that can be used in stem cell therapy.<sup>4</sup> Cord blood is the blood remaining in a baby's umbilical cord and placenta following birth. It is one of the richest and non-controversial sources of stem cells<sup>5</sup>. The collection procedure is very safe and poses no risk or discomfort to mother or baby<sup>6</sup>. Today, umbilical cord stem cells have been successfully used in the treatment of more than 80 life-threatening diseases (primarily blood diseases). The amazing speed of research and clinical trials using umbilical cord stem cells has led to diseases being treated that no one could have predicted. Many of these new treatments use the patient's own stem cells.<sup>7</sup>

**Aim:** The aim was to assess the knowledge and attitude of antenatal mothers about cord blood banking.

### **Hypothesis**

**H<sub>1</sub>:** There will be a significant co-relation between the knowledge and attitude regarding cord blood banking among prospective parents.

**H<sub>2</sub>:** There will be a significant association between the level of knowledge and attitude with selected socio demographic variables.

## **II. MATERIAL AND METHODS**

The cross sectional, descriptive research design was adopted and carried out in the Urban Primary Health Centers of Kapurai and Kishanwadi, Vadodara. Out of 134 subjects, 100 subjects were selected by using non-probability convenience sampling technique. Prospective parents those who are available during a period of data collection and can understand and read Gujarati or English were included. Prospective parents those who are not willing to participate in the study and not feeling well during a period of data collection. Formal written permission was obtained from the District Medical Health Officer, Vadodara urban. The data collection was carried out in the month of January 2020. Primarily, the investigator surveyed the selected area to identify the number of prospective parents. The participants were approached during their free time. All the participants were informed about intention of the study and obtained written consent with their anonymity and confidentiality of data. Investigators collected data using structured knowledge questionnaire and structured attitude scale regarding cord blood banking. About 30 to 45 minutes was spent by each subject for answering the questions. Approximately 6 to 8 subjects were assessed per day.

The obtained data were analyzed using SPSS-20 software. More specifically, descriptive statistics (frequency and percentage, mean, standard deviation) were used to describe the subjects' characteristics, the level of knowledge and attitude. Further, spearman's correlation coefficient (r) was used to explore a possible relationship between level of knowledge and attitude. Finally, Chi-square test used in order to find out the association between the level of knowledge and attitude with demographic variables. The level of significance was set at  $p < 0.05$ .

### III. FINDINGS

One hundred (100) prospective parents were participated in the study for final analysis, Where, majority of the subjects 53 (53%) were belongs to the age group 26 -30 years and 100(100 %) were female. Among the participants, majority of the subjects 69 (69%) were belongs to Hindu. Regarding the Gravida, the majority of the subjects 65 (65%) were belongs to multigravida. The majority of the subjects 43 (43%) belongs to second trimester. Nearly more than half percentage of participants were living in a joint family 56 (56%). Majority of the subjects 33 (33%) were studied secondary school.

On considering the overall knowledge scores of prospective parents revealed that majority of the subjects 78 (78%) had inadequate knowledge and subject 22(22%) had moderate knowledge on cord blood banking, As per attitude, findings revealed that subjects 95 (95%) had neutral attitude towards cord blood banking and the subjects 5 (5 %) had a favorable attitude towards cord blood banking. The calculated correlation coefficient (r) value between knowledge and attitude is 0.141 at 0.05 level. So there is weak positive correlation exists between knowledge and attitude. Study showed that there is no significant association between level of knowledge and attitude with socio demographic variables such as age in years, gender, religion, gravida, period of gestation, type of family, educational status, employment status, awareness and source of awareness.

### IV. DISCUSSION

Cord blood is an excellent source of stem cells for hematopoietic stem cell transplantation in children with some fatal diseases. Cord blood transplantation offers another method of definitive therapy for infants, children, and adults with certain hematologic malignancies, hemoglobinopathies, severe forms of T-lymphocyte and other immunodeficiencies, and metabolic diseases. In the past decade, the number of studies on stem cells has increased dramatically.<sup>8</sup>The present study revealed that majority of the subjects 53 (53%) belongs to the age group 26 -30 years, all of the subjects 100(100 %) were female, majority of the subjects 33 (33%) were studied upto secondary education. A study conducted by Dunia Jawdat, Sumaiman AIT Wijri, Hadeel Alsemari et al (2017), findings revealed that the majority of the participants were female (88%), 19–25 years old (26%), who were college graduates (57%)<sup>9</sup>.

Majority of the subjects 20 (57%) had source of information is family members, 8 (23%) of the subjects had source of information is media, 5 (14%) of the subjects had source of information is health care personnel.

A study conducted by (Dunia Jawdat, 2017), findings revealed source of information was social media for most participants (51%), followed by traditional media (25%), hospital educational materials (14%), and medical personnel (10%)<sup>9</sup>.

Majority 20 (57%) of the prospective parents source of information was family members. The study conducted by Fatma Guducu Tufekci, the primary source of information of mothers was the media and the internet and the secondary source was healthcare professionals. In a previous study on pregnant women's level of knowledge about cord blood banking (Karagiorgou et al., 2014; Screnci et al., 2012), it was found that women received information primarily from their health care personnel's. In another study, it was found that the source of information (Dinc &

Sahin, 2009) was the internet and media and the secondary source was the obstetricians, which is in compliance with our research.<sup>10</sup>

The study conducted by Fatma Guducu Tufekci, findings revealed that total of 79% of pregnant women had little awareness of cord blood banking and 58% of women had heard of the therapeutic benefits of cord blood, of which 21% received information from midwives and obstetricians.

The present study reveals that majority of the subjects 78 (78%) had inadequate knowledge and 22(22%) of the subjects had moderate knowledge on cord blood banking. 95 (95 %) of the subjects had neutral attitude and 5 (5%) of the subjects had a favorable attitude towards cord blood banking. The study conducted by Fatma Guducu Tufekci examined the attitudes and knowledge of Turkish mothers about cord blood and cord blood banking. Similar when pregnant women were asked about their knowledge about UCB stem cell banking, over half of the participants (54%) reported no prior knowledge.<sup>10</sup> A supportive study conducted by Peberdy L, Young J, Massey DL, Keamey L, et al (2018), revealed that parents' knowledge of cord banking as low and parents were found to have positive attitudes towards cord blood donation<sup>11</sup>. Savita, Seema Barnabass, Harjit, et al (2018), findings revealed that majority 55% of antenatal mothers had average knowledge and 26.5% had below average knowledge<sup>12</sup>. A study conducted by OzturkSibel, et al (2017), the subjective assessment of the overall knowledge about cord blood banking was poor, as the majority (66%) assessed their level of knowledge to be inadequate, while 29% judged to be satisfactory and 5% superior<sup>10</sup>.

A study conducted by Poomalar G. K., Jayasree M, et al (2016) findings revealed that 45% of pregnant women had knowledge about uses of umbilical cord blood usage during pregnancy. Only 5 % of pregnant women knew about cost of stem cell storage. Less than 1% knew about availability of public cord blood banking. The analysis finding indicates that maximum (49.5%) antenatal women had below average knowledge, followed by 39% had average knowledge and only 11.3% had good knowledge regarding umbilical cord blood stem cells banking. As per attitude towards umbilical cord blood stem cells banking, maximum number of antenatal women (72.6%) had negative attitude whereas remaining (27.3%) had positive attitude regarding umbilical cord blood stem cells banking.<sup>13</sup>

The study findings revealed that, inferential analysis using correlation coefficient showed that there was correlation exists between knowledge and attitude of prospective parents. A study conducted by Sandeep Kaur (2016), findings revealed that as per relationship, there was a positive correlation between the knowledge and attitude regarding umbilical cord blood stem cells banking among antenatal women positive attitude regarding umbilical cord blood stem cells banking<sup>14</sup>.

In the present study, there is no significant association of prospective parents level of knowledge and attitude with demographic variables. A study conducted by Dinc&Sahin, 2009, findings revealed that the attitudes of mothers got better and their level of knowledge increased in accordance with their educational status ( $p < 0.001$ ). Mothers' age and the number of children they had did not affect their knowledge and attitudes<sup>8</sup>

## V. CONCLUSION

The present study concluded that nearly one fourth of the participants had moderate knowledge, majority of them had neutral attitude and none of them had an unfavorable attitude towards cord blood banking. These results may have important implications for increasing the awareness about cord blood banking and to motivate its utilization by prospective parents and general public to move towards this bio health insurance. Therefore, the health care workers should play a more active role in initiate the strict awareness program regarding cord blood banking among prospective parents.

### *Conflict of Interest*

The author declares that they have no conflicts of interest

### *Source of Funding*

The study is not funded by any external sources and all expenses were borne by the investigators.

### *Ethical Clearance*

Since the study involved human subjects, a formal ethical approval received from institutional ethical committee.

## REFERENCES

- [1] In't Anker PS, Scherjon SA, Kleijburg- Van der Keur C, De Groot- Swings GM, Claas FH, Fibbe WE, Kanhai HH. Isolation of mesenchymal stem cells of fetal or maternal origin from human placenta. *Journal of Stem cells*. 2004 Dec; 22(7):Pp: 1338-45.
- [2] Wagner JE, Broxmeyer HE, Cooper S. Umbilical cord and placental blood hematopoietic stem cells: collection, cryopreservation, and storage. *International Journal of hematology*. 1992 summer. 1(2): Pp: 167-73.
- [3] Hiroaki Okae, Hidehiro Toh, Tetsuya Sato, Hitoshi Hiura, Sota Takahashi, Kenjiro Shirane. Derivation of Human trophoblast Stem Cells. *Cell stem Cell*, 2018; 22(1): Pp:50 -55
- [4] Alok Singh & Sandeep Mondal, "Systematic Review and Research Agenda on Blood Supply Chain", *International Journal of Business Management & Research (IJBMR)*, Vol. 8, Issue 6, pp. 9-18
- [5] Kalamakis G, Brune D, Ravichandran S, et al. Quiescence Modulates Stem Cell Maintenance and Regenerative Capacity in the Aging Brain. *Cell*. 2019; 176 (6): 1407-1419.
- [6] Bojanić I, GolubićCepulić B. Umbilical cord blood as a source of stemcells. *Acta Med Croatica*. 2006 June: 60(3): Pp: 215-25.
- [7] Rambabu Undi, Ravinder Kandi, Prathibha Reddy Tummala & Ravi K. Gutti, "Cord Blood Banking: Current Developments and Future Regenerative Transplant Medicine" *International Journal of General Medicine and Pharmacy (IJGMP)*, Vol.1, Issue 1, pp. 36-52
- [8] Nietfeld JJ, Pasquini MC, Logan BR, Verter F, Horowitz MM. On the probability of using cord blood. *Biol Blood Marrow Transplant*. 2008 June: 14(6):724-5.
- [9] Waller-Wise R. Umbilical cord blood: Information for childbirth educators. *Journal of Perinat Education*. 2011 winter; 20(1): Pp: 54-60.
- [10] Bolaji OS, Uthman-Izobo SO, Ojurongbe O, Opaleye OO & Adeyeba OA, "Filariasis among Asymptomatic Blood Donors in General Hospital, Odan Marina-Lagos, Nigeria", *IMPACT: International Journal of Research in Applied, Natural and Social Sciences (IMPACT: IJRANSS)*, Vol. 2, Issue 6, pp. 177-182
- [11] Dinç H, Sahin NH. Pregnant women's knowledge and attitudes about stem cells and cord blood banking. *IntNurs Rev*. 2009 June; 56(2):250-6
- [12] R. Suchitra, M. Lalithya Sannitha, J. Ravikanth, G. Anusha & B. Abhilash , "Location Based Online Blood Bank System", *BEST: International Journal of Management, Information Technology and Engineering (BEST: IJMITE)*, Vol. 3, Issue 4, pp. 1-4

- [13] Dunia Jawdat, Sulaiman A Twijri, Hadeel A Semari, Mayssa Saade, and Ahmed Alaskar Hindawi Stem Cells International.2018 :(3)Pp:5- 10.
- [14] Ozturk Sibel, Tufekci Guducu Fatma, Kara Ayfer, and Kilic Meral. Knowledge and Attitudes about Cord Blood and Cord Blood Banking: Cross Sectional Study. *International Journal of Caring Sciences*. January–April 2017 : 10 (1) Pp: 335-341
- [15] Kola M Owonikoko, Adeolu Adeoye, Adewale S Adeyemi & Adetunji Oadeniji, “Assessment of Blood Transfusion Practices at Caesarean Section in a Teaching Hospital in South-Western Nigeria”, *International Journal of Medicine and Pharmaceutical Sciences (IJMPS)*, Vol . 4, Issue 6, pp. 69-76
- [16] Peberdy L, Young J, Massey DL, Kearney L. Parents' knowledge, awareness and attitudes of cord blood donation and banking options: an integrative review. *Biomedical Central Pregnancy Childbirth*. 2018 Oct 10;18(1):395
- [17] Badger-Emeka Lorina, Emeka Promise & Egbu Victor, “Prevalence of Malaria Plasmodium Parasite among Blood Donors at Nsukka Area, Southeast Nigeria”, *BEST: International Journal of Humanities, Arts, Medicine and Sciences (BEST: IJHAMS)*, Vol. 1, Issue 2, pp. 45-50
- [18] Savita, Seema Barnabass and Harjit. Knowledge of Antenatal Mothers regarding Cord Blood Banking. *International Journal of Current Research*. May, 2015. 7(5), Pp.15732-35,
- [19] Poomalar G.K., JayasreeM.Awareness of cord blood banking among pregnant women in semi urban area *International Journal of Reproduction, Contraception, Obstetrics and Gynecology International Journal of Reproductive Contraceptive Obstetrical Gynecology*. 2016 August; 5(8).
- [20] Sandeep Kaur. Knowledge and attitude regarding umbilical cord blood stem cells banking among antenatal women. *International Journal of Obstetrics and Gynaecological Nursing*. 2016; 1(1):8-12.