

Cord Cell Banking Provided by Hospital; A Study

By

Kshama Singh

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2015-2017



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TO WHOMSOEVER MAY CONCERN

This is to certify that Kshama Singh student of MBA Hospital and Health Management/
Pharmaceutical / Rural Management/ Human Resource Management in Health and Hospitals
from The IIHMR University, Jaipur has undergone dissertation training at Cocoon Hospotel ,
Jaipur from 6 February 2017 to 5 may 2017.

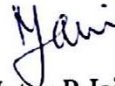
The Candidate has successfully carried out the study designated to her during dissertation
training and her approach to the study has been sincere, scientific and analytical.

The Dissertation is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



Col(Dr.) Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Dr. Nutan P Jain
Professor
The IIHMR University, Jaipur



— the birthing style statement —

This Certificate is awarded to

Dr. Kshama Singh

In recognition of having successfully completed her
Internship in the department of
Clinical Administration

And has successfully completed her Project on
CORD CELL BANKING PROVIDED BY HOSPITAL: A STUDY

Date: may 6, 2017

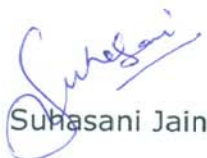
At

Cocoon Hospotel, Jaipur

She comes across as a committed, sincere & diligent person who has

A strong drive and zeal for learning

We wish her all the best for future endeavours

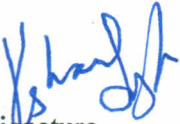

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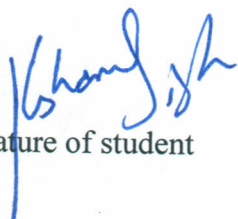
This is to certify that the dissertation titled Cord Cell Banking provided by hospital: A study submitted by Dr. Kshama Singh, Enrollment No. IIHMR-U/01/2015-17/0296 under the supervision of Dr. Nutan P. Jain for award of Postgraduate Diploma in Hospital and Health/Pharmaceutical/Rural Management of the University carried out during the period from 6 February 2017 to 5 May 2017 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.


Signature

THE IIMMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that all ethical issues have been considered while collecting data for my dissertation titled "Cord Cell Banking by Hospitals- A study".

A handwritten signature in blue ink, appearing to read 'Khanji Sh', is written over the printed text 'Signature of student'.

Signature of student

CORD CELL BANKING PROVIDED BY HOSPITAL: A STUDY

ABSTRACT

BACKGROUND:

There are two types of stem cells, a) embryonic stem cells and b) adult stem cells. Apart from them in a new born baby through the umbilical cord also highly potent stem cells can be isolated. Umbilical cord blood banking is a procedure wherein blood from the umbilical cord at birth and stored it in a blood bank because this blood is rich in stem cells. Banking cord blood is a way of preserving potentially life-saving cells that usually get thrown away after birth.

OBJECTIVES OF THE STUDY: The objectives of the study are to: (i) review the benefits of cord cell banking; (ii) study the three perspectives: Managers (hospital), providers (cord cell banking company) and users (pregnant mothers) towards the use of “Cord Cell Banking” at Cocoon Hospital, and (iii) suggest ways to synergize the three perspectives if they are different or not matching.

METHODOLOGY: The study is descriptive in nature. Steps taken for the study were: literature review was done by which identification of themes (important points) were identified, each for users, providers and managers; development of checklist of different themes for users; data collection; content analysis by themes; and documentation.

CONCLUSION:

The content analysis shows that family protection and painless procedure were two main important themes that were matching in all three perspectives of users, providers and managers. Future hope, easy to collect and tissue multiplication possible and return on capital/ profit were topics there were matching between any two perspectives. It is suggested that continuous capacity building of the providers and managers as a team may synergize the three perspectives. Once the providers and managers have the same perspective, most likely they will be able to influence by better communication with the users same way.

Key words: Cord Cell Banking (CCB); benefits of CCB; awareness of CCB, Uses of CCB

ACKNOWLEDGEMENT

Every project is successful only due to the efforts of a number of all the people who have given their valuable advice and time or a helping hand. I sincerely appreciate the inspiration and guidance of all the people who have been instrumental in making the project a success.

My institute – Indian Institute of Health Management Research (IIHMR) , Jaipur deserves the foremost appreciation for providing me the opportunities to undertake my dissertation in Cocoon Hospotal, Jaipur. My sincere thanks to Dr Ashok Kaushik, Dean , IIHMR University and my guide Dr. Nutan.P.Jain in completion of the dissertation and providing me valuable suggestions.

I, Dr. Kshama Singh, the student of IIHMR University, am extremely grateful to “COCOON HOSPOTEL” for the confidence bestowed in me and entrusting my project.

At this occasion I feel deeply honoured in expressing my sincere thanks to Dr. Suhasani Jain for making me resources available at right time, guiding me and providing valuable insights leading to the successful completion of my project.

This asservation would be half complete if I forgo the mention of Mr. Vikram Girdhar, Regional Sales Head of Cryoviva , as his efforts to make this project a success were thorough and enlightening.

I express my sincere appreciation of the help rendered by staff of Cocoon Hospotel. My data collection and learning would not be possible without their involvement.

Last but not the least I extend deep sense of gratitude to my family and friends who have been constant source of inspiration throughout my life.

Dr. Kshama Singh

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PREFACE

Every era presents unique challenges to wellness care arrangement, and the start of the twenty-first century has been no different. Today there is unprecedented attention on the health services. Never have health care exercises been subject to so much examination, have providers been financially rewarded for complying with best practice, or have health insurance company refused to remuneration for the care of patients who experience potentially avoidable complication. These developments are just a few of an ever increasing number of reasons why latest technology is strategically vital to the oeuvre of all healthcare professional people. the old ways of treatment won't suffice as the issues are composite and interest are too high.

As an answer comes the stem cell banking, this study is based on umbilical stem cell banking and in today's world with their protection, preservation and usage it is becoming an integral part of the Cocoon hospotel's infrastructure too. A qualitative study is conducted here with respect to not only the Managers but also the Providers and Uses point of view to understand this phenomenon in greater depths.

INTRODUCTION

The unparalleled advent in medical science can be attributed to many phenomena's, one of those being Stem cells. These cells have the ability to differentiate themselves in order to do the required repair in the body. Given their capacity to change in any type of cells they find their use in almost all arenas of medicine.

There are mainly 2 types of stem cells:

embryonic stem cells being the first and second is adult stem cells.

Apart from them in a new born baby through the umbilical cord also highly potent stem cells can be isolated. Umbilical cord blood banking is a procedure wherein blood, at the time of birth is taken from the umbilical cord of the baby, processed in laboratory and then is stored in a bank as this blood is rich in stem cells. Banking umbilical cord blood is a method of preserving potentially life-saving stem cells that otherwise gets thrown away after the birth.

The overall method of doing umbilical cord banking is a fairly easy phenomenon, a collection kit goes with the expectant parents to the delivery centre then upon birth, the healthcare provider clamps and cuts the umbilical cord as normal. It is here that the healthcare provider extracts the cord blood from the umbilical cord. The correct baseline data basing is done and collection kit goes to the lab where it gets checks for contamination. After that it is processed, preserved and protected. Bags are overwrapped so that added protection can be given and led "controlled-rate freezing" is a technique which is used so that the cells can be prepared for long-term storage. The overwrapped bag is put in a protective metal cassette and is then placed in vapour-phase liquid nitrogen freezer for its long-term preservation.

Though the chances of a child using the cord cells are small but it is known that they can be used for the siblings, twins, blood relatives. Although immunosuppressant's are a necessity when a patient receives stem cells but in case of umbilical cord blood stem cells because

these are less mature cells hence the chances of a recipients body of rejecting them is quite low.

Given the undue changes in the lifestyle and the increasing rush of lifestyle diseases, Stem cells are used in a number of medicinal therapies for instance bone marrow transplants. The untiring efforts of scientists is also yielding result in stem cell being used for the treatments of lymphoma, leukemia, sickle cell anemia, but not only that stem cells also find their use in helping patients cope up with chemotherapy and radiation.

OBJECTIVES:

To review the benefits of cord cell banking provided in the hospitals for its future use for the child and immediate family.

To study the three perspectives: Managers (hospital), providers (cord cell banking company) and users (pregnant mothers) towards the use of “Cord Cell Banking” at Cocoon Hospital.

To suggest ways to synergize the three perspectives if they are different or not matching.

METHODOLOGY:

The study is descriptive and qualitative in nature. A comprehensive study has been conducted to find the areas where cocoon hospotel can work on to increase the user satisfaction regarding cord cell banking.

STEPS taken:

1. Literature Review: firstly literature review was done by which identification of themes (important points) were identified, each for Users, Providers and Managers.
2. Data collection was done.
3. Content analysis was done according to the given themes
4. Documentation was done.

STUDY AREA: Cocoon Hospital, Jaipur

STUDY RESPONDENTS:

- Hospital managers, to give an insight that why hospital offers Cord Cell Banking
- Users to understand why they buy the Cord Cell Banking.
- Provider , from the company who offers Cord Cell Banking

STUDY DESIGN: The study is Descriptive in nature.

Inclusion criteria: all the women who are expecting a baby and visiting Cocoon hospital for one or other reasons.

Exclusion criteria: women who are expecting, attending Cocoon hospital but have blood related disorders and/or anaemic.

DATA COLLECTION METHODS AND TOOL

Checklist with 16 parameters for expecting mothers.

Detailed interview with managers and providers

DURATION OF STUDY:

The study is carried out in three months duration (February 2017 – April 2017)

DATA ANALYSIS PROCEDURE: we will take the thematic terms by doing literature reviews and then analysing them narratives manually

ETHICAL CONSIDERATIONS:

- Informed consent was taken from the organization as well as the respondent
- Purpose of the study was explained to all the staff.
- Confidentiality of the data collected was maintained as results will be shared after compilation.
- Voluntary participation

ANALYSIS PLAN:

Perspectives	Measures	Indicators
Customer perspective	Patient satisfaction Patient assurance Patient safety	Tangibility of services Reliability of services Responsiveness of service provider Courtesy of service provider Competence of service provider Communication skill of service provider
Provider perspective	Return of capital and profit Goodwill Expansion	Intangible business asset • Connections • Reputation • Trade name Profit
Administrator perspective	Providing Technology Medical Treatments Revenue Jump Quality of service	Tangibility • Infrastructure • Facility Profit

STUDY LIMITATION

Less data was available because of following reasons:

1. The whole process of presentations, counselling and filling of form is a time consuming process and many patients find it difficult to spare time of that extent.
2. 20 bedded hospital so less patients are there and because of which data collected was less in number

Chapter 1

Introduction to the study

Social insurance will be a merchandise that practically individuals will compelling reason In some chance for their exists. Those part of physicians, hospitals, insurers, What's more support aggregations may be quick turning into An blend about wandering needs. The joint requisition states that “healthcare may be portrayed Toward monetary competition, asset limitations, Furthermore new conveyance sites—a noteworthy extent about which are not liable to outer surveillance” (Joint requisition looking into accreditation of social insurance Organizations, 1990, p. 7).

Personal satisfaction need distinctive intending should distinctive individuals. Exactly patients feel that getting calibre health awareness implies gathering those specialist right away, constantly dealt with politely What's more nicely Toward those specialist or doctor's facility staff, alternately using great deal of time with specialist.

Similarly as a clinic we profoundly get it Also determinedly consent that all things said over are extremely important, we have confidence that more critical may be clinical nature of mind. Why? in light of advertising high-quality Furthermore evidence-based forethought prompts that's only the tip of the iceberg amount for exists spared Furthermore lesquerella the long haul used in the healing facility.

Health awareness calibre by six attributes:.

- security - patients ought not make hurt by the consideration that is exceptional on assistance them.
- Patient-Centred - Forethought ought to make In view of individual needs.
- auspicious - sits tight What's more postponements clinched alongside Forethought ought to make decreased.
- viable - consideration ought to a chance to be evidence-based.
- proficient - lessen waste.
- fair - consideration ought to a chance to be equivalent for every last bit people.

An alternate approach from claiming taking a gander at this might a chance to be to say that the association execution Similarly as An doctor's facility is administered by the personal satisfaction from claiming its methods – prominent transform conveys prominent service, In the least could be allowed expense Also on time.

BANKING A BABY'S CORD BLOOD CELL

Parents who are expecting a baby do all different kinds of things for child's safety. They cover up electrical sockets, childproof their drawers, and replace all flammable things in house with others, buy child monitors -- all months before their baby is born.

Some are choosing cord blood banking for their child's safety of future from many diseases.

In this procedure, blood is taken in gravity motion from the umbilical cord of the baby at the time of birth and then processed and preserved in cord cell banks for a fee. as this blood is rich in stem cells .stem cells are the cells that have the ability to transform into any human cell, it can be used in certain diseases treatment. It can also be used by immediate family members after checking of HLA. Banking cord blood is a way of preserving potentially life-saving cells that usually get thrown away after birth.

WHY IS CORD BLOOD WORTH SAVING?

some units are immature: units that could both imitate themselves Also have those possibility should turn under Different sorts for units. There, would a few sorts. The ones over umbilical blood What's more bone marrow are called hematopoietic progenitor units (HPCs).

A few people for specific illnesses - such as leukaemia, lymphoma, sickle cell anaemia, also how – others can be injected for these HPC stem units on recharging their blood supply with new, solid units. The stem units canwood Additionally help those constitution recoup starting with some tumor medicines like chemotherapy or radiation.

Despite both string blood Also bone marrow hold the same sort HPC come cells, the individuals starting with string blood might bring A percentage preferences. Phones starting with string blood are lesquerella develop over phones starting with a adult's bone marrow, thus a recipient's particular figure is more improbable will reject them.

Although both cord blood and bone marrow contain the same sort of HPC stem cells, those from cord blood may have some advantages. Cells from cord blood are less mature than cells from an adult's bone marrow, so a recipient's body is less likely to reject them.

"My personal feeling is that stem cells that come from an umbilical cord are going to be more robust than those you get from a 50-year old man," Feig tells WebMD.

Taking cord blood is a very simple, easy to take and painless procedure. It is very much more effective and less painful than bone marrow donation. Some people say it is a very wise decision to take as it can save life of many from different deadly diseases.

COLLECTING AND PROCESSING

While banking cord blood is a new experience for many parents, thankfully, the healthcare provider and the cord blood bank do most of the work:

- The cord blood bank sends them a collection kit.
- The collection kit goes with the expectant parents to the delivery center.
- Upon admission, the mother's blood is collected to be tested for any infectious diseases as mandated by federal regulations.
- Upon birth, the healthcare provider clamps and cut the umbilical cord as normal before the placenta is delivered. Here the healthcare provider extracts the cord blood from the umbilical cord.
- There is no risk factor related to this process in regards to both mother and child and it is a painless procedure.
- The collection bag with the baby's cord blood and the vials with the mother's blood are placed back inside the collection kit.

PROCESSING AND CRYO-PRESERVATION

Upon landing toward those bank, the string blood will be tried to microbiological contamination, and the mother's blood may be tried for irresistible infections. String blood may be afterward transformed to decrease those amount from claiming red platelets Furthermore disconnect the undifferentiated phones. These phones would then blended for a cryo-protectant Furthermore saved clinched alongside a cryo-bag.

Furthermore At long last cryo protection may be done In -196 degree celsius.

CORD BLOOD IN DISEASE TREATMENT

String blood need an immense sum for undifferentiated cells, and the utilization of those stem phones therapeutically need been growing at a fast pace. Today, undifferentiated organism medicines What's more transplants would performed more than 35,000 times around the globe to treat growths (counting lymphoma Also leukemia), inherited metabolic issue and a lot of people more issues. Umbilical blood will be affirmed Eventually Tom's perusing the sustenance and medication regardless organization (FDA) to the medication about more than 80 sicknesses. Also this rundown may be developing. Fortunately hopeful guardians might collect, a portion of the best undifferentiated phones during those the long haul for baby's conception Eventually Tom's perusing the umbilical. This is the reason pregnancy may be an incredible good fortune to gather information and bank An baby's string blood.

CORD TISSUE'S STEM CELLS

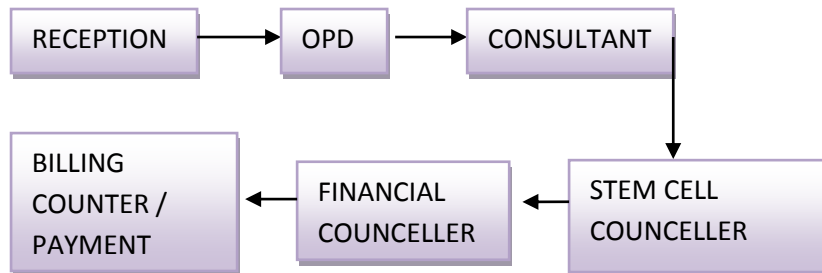
There are other stem cells that can be collected during the cord blood banking process. One type is found in the tissue surrounding the umbilical cord's vein and other vessels. Cord tissue, or Wharton's jelly, is rich in mesenchymal stem cells (MSCs). Mesenchymal stem cells can become a host of cells including those found in your nervous system, sensory organs, circulatory tissues, skin, bone, cartilage, and more. These stem cells are currently undergoing clinical trials for sports injuries, heart and kidney disease, ALS, wound healing and autoimmune disease.

COLLECTION

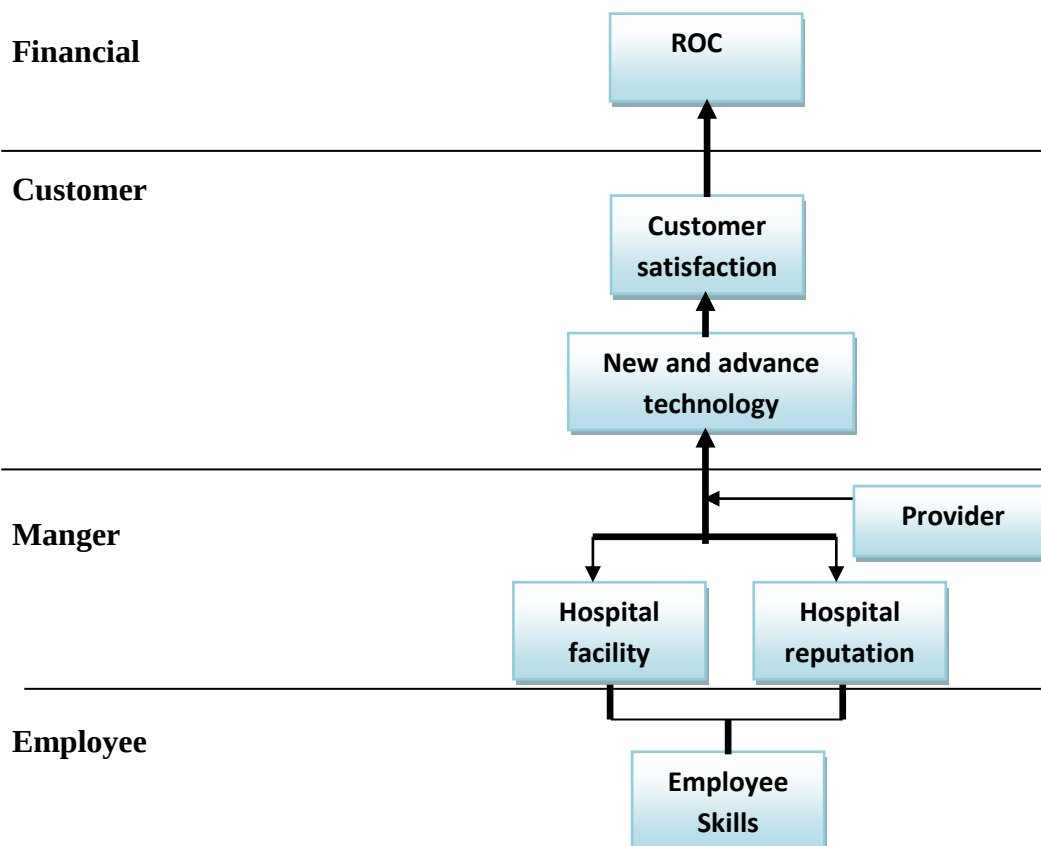
Those blood starting with the string is gathered after those baby will be conveyed. The string will be clasped and the child is after that differentiated starting with those string Furthermore from that point onwards moved starting with the birthing range. Specialist collects the blood starting with the string by inserting a needle under those string vein and then, emptying the blood under the blood pack. The system will be therefore, easy What's more hazard free for tolerant too those baby. The entirety gathering methodology takes around 3 to 4 minutes following those conveyance.

WORK FLOW

PATIENT FLOW



Cause and Effect Relationship:



Rationale:

Healthcare organisations are getting concerned about the quality of care provided and recognise where and how healthcare adds value. Hospital care is complex so It involves providing quality care and with a wide range of illnesses and injuries and differing expectations and needs. It also includes the service functions of waiting time, process cycle on time, staff behaviour etc. Now the hospitals want to use the latest technology and provide the same to their patients as it brings them in a good light and is beneficial for their revenue generation as well, so they identify the areas, which can bring about the change. So, to connect the practices, outcome, quality, value and costs, healthcare organisations are using umbilical cord banking. It retains an emphasis on achieving financial objectives, but also includes the latest technology to be used objective. This being a new phenomenon we as managers are also finding ourselves attracted towards it as it provides good scope of study, awareness and improvement. This study also comes handy when trying to understand what perspective people hold towards these new introductions to the healthcare market. Latest technology needs to be provided to users that's an important reason. Approximately 85 diseases like, thalassaemia, muscular dystrophy for which treatment is possible with cord cells and there are Ongoing research is for about 150 health problems which may be treatable in future

Literature Review

A study was conducted by H. Dinç & N.H. Sahin at the Istanbul University Medical Faculty and the Okmeydani, Mother–Child Health and Family Planning Center, in Istanbul between October 2005 and June 2006, to determine pregnant women's knowledge towards stem cells and cord blood banking. As widely known, cord cell banking is an important and controversial topic of today. This descriptive study was conducted in Istanbul. Data were collected in interview form.

Stem cells are the master cells that can form into any tissue in the human body. Scientists believe research in this area can generate treatment for many diseases

The collection of cord blood is carried out by trained personnel the collection of cord cell is a painless and non invasive procedure. This is the reason; there has been an increase in stem cell banking

The recent knowledge in Turkey regarding stem cells banking highlights the need to determine pregnant women's attitudes towards this topic.

The pregnant women, who were thinking about storage of cord blood, were doing this because either it will be necessary in the coming future (48.9%) or because they may regret not having performed it in the future (10.2%) or because it was good to store what would have been thrown out (9.8%) and lastly, because it is beneficial (22.1%) The pregnant women who were not thinking about storing the cord blood gave the following reasons: because it was not necessary (68.7%); because they did not had enough information on this (21.2%); because their husbands would made the decision about the given subject (7.1%); and because they did not trust the banks (3%).

Discussion There have been a significant increase in stem cell research in the recent years. Scientific studies have been conducted in stem cell in which ethical and religious issues were also discussed. When the tissue is not vital to the life of the donor; its donation can be done without any inhibition. Stem cells, that are stored in cord blood banks and blood are evaluated as being mature stem cells. As umbilical cord blood is especially rich in stem cells, some parents choose to save it as it is a cheaper alternative to bone marrow. According to research, as a result of haematopoietic stem cell transplantation, some types of cancers can be treated .Turkish culture, attributes great importance to having children. In this study, it was found that the pregnant women's knowledge level were main important factor in their knowledge about stem cell. In both studies, the women with higher education also had greater interest and awareness about the same, which was an expected result.

This survey also shows the importance the media, has in providing information. It is necessary for news not to be based on unscientific information, as it can be misleading. This study also shows light on the fact that women would rely obstretician and nurses for the information. The idea that the infant and mother are not at any health risk during or after the blood remaining in the umbilical cord is collected was supported more by those with a higher educational level. However, because of less or no knowledge there were those who thought umbilical cord banking will harm their infant.

Pregnant women who have been informed, and agreed to the procedure previously can have access to this service at any hospital that provides prenatal care. According to the survey, Almost all the pregnant women had positive attitudes, on the subject of everyone being able to use cord blood that belonged to their infants if stored in public cord bank. Nevertheless, the study has limitations as well, including that it consists of a small, select sample of women in two antenatal outpatient clinics, in Istanbul, so the results cannot be generalized of society.

However, the results are so valuable because this study was the first to be conducted in Turkey on this subject of stem cell and cord blood. The baseline data of the study is hoped to be used for solving the future purposes as well.

Comparison of different companies which provide Cord Cell Banking:

Parameters	CRYOVIVA	LIFECCELL	CORDLIFE	BABYCELL
Company	CRYOVIVA	LIFECCELL	CORDLIFE	BABYCELL
Estd. In India	2006	2004	2006	2009
Years	10	12	10	6
Holding Company	RJ Corp	Lifecell India International Pvt. Ltd	CORDLIFE Group limited	Regenerative Medical Service (RMS)
Revenue of the group	22,000 Cr	1252 Cr	1120 Cr	251Cr
Other major stake holders	100% RJ	Bennett, Coleman and Company, Brand Capital and helion Ventures	Lighthouse Capital Management LLC,Nanjing Xinjiekou Department Store Co. Ltd.,China Cord Blood Corp.	Satyan Pharmaceuticals Pvt. Ltd
Global Presence	YES	Yes	Yes	No
No. of Countries	15	1	5	0
Other Healthcare companies	DIAGNO LABS, AFRO MEDANTA,COCO ON HOSPITAL.	Baby Shield	Nil	Regrow
Automatic				
Technology Used for Cord blood Processing	SEPAX	No Data available	SEPAX-2	No Data Available

Accredited process in no. of countries	140	No Data available	140	No Data Available
TNCC Count	76%	No Data available	76%	No Data Available
Viability (minimum criteria)	85%	No Data available	80%	No Data Available
RBC Removal	89%	No Data available	89%	No Data Available
CD34	74%	No Data available	74%	No Data Available
Plan Name	BLESSINGS	No Data available	CORD SURE	No Data Available
Price(Rs)	57,000	No Data available	60,000	No Data Available
Manual				
Technology Used for Cord blood Processing	DENSITY GRADIENT	Hetastarch	DENSITY GRADIENT	Double SPIN DEPLETION(DSS)
Viability	80%	70%	80%	70%
TNCC Count	44%	45	44%	44%
RBC Removal	1%	3%	2%	3%
CD34	52.4%	56.5%	52.4%	52.4%
Plan Name	SAVER	Babycord	Basic	BABYCELL
Price	45,000	Rs 44,000	Rs 50,000	Rs 60,000
Cord Tissue				
Patented Cord tissue Processing	YES, IN ASSOCIATION WITH DAVINCI BIOSCIENCES	NO	NO	NO
Technology Name	Patented EXPLANT	In house	In house	In house
As Per ICMR/ISCT guidelines	YES, ONLY COMPANY WORKING CURRENTLY IN INDIA	YES, ONLY COMPANY WORKING CURRENTLY IN INDIA	YES, ONLY COMPANY WORKING CURRENTLY IN INDIA	YES, ONLY COMPANY WORKING CURRENTLY IN INDIA

+ve & -ve marker test for MSC confirmation	YES, ONLY COMPANY WORKING CURRENTLY IN INDIA	only +ve marker test	only +ve marker test	only +ve marker test
Purpose of usage Mentioned in WHO GMP/GLP/ISO certificate for Human application & clinical trials	YES, ONLY COMPANY WORKING CURRENTLY IN INDIA	No	No	No
In-House Research lab for cord tissue stem cell usage	YES, REVIVA CELL	NO	NO	NO
Global Accreditation	AABB, GMP, CGMO, ISOCAP, DCGI, NABL	AABB, GMP, GLP, ISO, CAP, DCGI, NABL	AABB, GMP, GLP, ISO, DCGI	DCGI
AABB for Somatic cells	YES	YES	NO	NO
Benefits				
Add on Cord blood Sample	YES	YES	YES	YES
CFU Testing	YES	YES	YES	YES
Free Worldwide Shipment	YES	YES	YES	YES
Transit Coverage (Mentioned)	YES	NO	NO	NO

d in Agreement)				
Dual check Process in each step of lab operations	YES	NO	NO	NO
Double Data backup (Records)	YES	No Data available	No Data available	No Data available
Annual temperature log of cryopreserved sample	YES	yes	No	no
Cord Blood Retrievals (India)	22	34	2	
No. of International Storage facility	5	1	3	0
Countries	INDIA,BANGLADESH, SINGAPORE,THAILAND, AFRICA	Middle East	Singapore,Hongkong, India	nil
Other brands from the group	PEPSI, KFC, PIZZAHUT, DPS,COSTA COFFEE, LEMON TREE HOTELS ETC	None	None	None
No. of Customer in India	1,18,000	2,00,000	45,000	17,000

Table 1.1

OBJECTIVES:

To review the benefits of cord cell banking provided in the hospitals

To study the three perspectives: Managers (hospital), providers (cord cell banking company) and users (pregnant mothers) towards the use of “Cord Cell Banking” at Cocoon Hospital.

To suggest ways to synergize the three perspectives if they are different or not matching.

METHODOLOGY:

The study is descriptive in nature. A comprehensive study has been conducted to find the areas where cocoon hospotel can work on to increase the user understanding regarding cord cell banking.

Steps taken for the study were:

1. Literature review: literature review was done to find out the benefits of Cord Cell Banking and then identification of themes (important points) was done, each for users, providers and managers.

Few papers studied were:

- Merlin G. Butler et al, “umbilical cord blood banking : an update”, PMC, may 2011
- H. Dinc et al, “pregnant women's knowledge and attitudes about stem cells and cord blood banking”, PMC July 2009
- Jennifer D. Newcomb et al, “Umbilical Cord Blood Research: Current and Future Perspectives”, PMC august 2009
- “umbilical cord blood banking”, Royal College of Obstetricians and Gynaecologists, June 2006

2. Benefits of cord cell banking were reviewed.

3. Development of Checklist of different themes for users

4. Data collection was done by Self-administered checklist; narratives along with suggestions for betterment

5. Content analysis was done according to the given themes

6. Documentation was done.

User perspective:

To find out the reasons that user think are important regarding Cord Cell Banking because of which they think they should buy it for their child and the family.

The following indicators are taken into consideration for finding out the reasons why patients feel cord cell banking is important:

- Family Protection
- Better Treatment Outcomes
- No Surgical Intervention
- Painless Procedure
- Volume Of Blood Collected is Good
- Future Hope
- Potentiality of Stem Cells are High
- HLA more Acceptable
- No Risk
- Easy to collect
- Tissue multiplication possible
- Patent and Globally Accredited
- Other offers attached
- Treatment assistance
- Flexibility in Payments
- Refunds

Provider perspective:

To find out the features of Cord Cell Banking that provider think are important from their perspective.

Themes:

- Family Protection
- Easy to collect
- Tissue multiplication possible
- No Surgical Intervention
- No outside market needed to sell if sitting in maternity hospital
- Company goodwill and share increment
- Painless Procedure
- Volume Of Blood Collected is Good

- HLA more Acceptable
- Less Chances Of GFHD
- Return on Capital/ PROFIT

Managers perspective:

To find out the reasons why managers of the hospital want to provide the facility of Cord cell Banking in cocoon hospital.

Themes:

- Family Protection
- Better Treatment Outcomes
- Future hope
- Easy to collect
- High revenue generation
- Technological advancement
- Addition of facilities in the organisation

STUDY AREA:

The study was conducted at Cocoon Hospotel, Jaipur. The study was done in OPD of the hospotel, which is located on the first floor of the hospotel.

STUDY RESPONDENTS:

- Hospital managers, to give an insight that why hospital offers Cord Cell Banking
- Users to understand why they buy the Cord Cell Banking.
- Provider , from the company who offers Cord Cell Banking

STUDY DESIGN:

The study is Descriptive in nature.

Inclusion criteria: all the women who are expecting a baby and visiting Cocoon hospital for one or other reasons.

Exclusion criteria: women who are expecting, attending Cocoon hospital but have blood related disorders and/or anaemic.

DURATION OF STUDY:

The study is carried out in three months duration (February 2017 – April 2017)

DATA ANALYSIS PROCEDURE: we will take the thematic terms by doing literature reviews and then analysing them narratives manually.

ETHICAL CONSIDERATIONS:

- Informed consent was taken from the organization as well as the respondent
- Purpose of the study was explained to all the staff.
- Confidentiality of the data collected was maintained as results will be shared after compilation.
- Voluntary participation

CHAPTER 2

FINDINGS OF THE STUDY:

User perspective:

A checklist of 16 parameters was prepared and was filled by in total 30 pregnant females to know their perspective on cord cell banking.

Serial no	Family protection	Better Treatment outcomes	No Surgical Intervention	Painless Procedure	Volume of blood collected is good	Future Hope	Potentiality of stem cells are High	HLA more acceptable
1	Yes	Yes				Yes		
2	Yes			yes		Yes		
3	Yes	Yes			Yes			
4	Yes			Yes	Yes			Yes
5			Yes	Yes		Yes		Yes
6				Yes		Yes		Yes
7	Yes					Yes		Yes
8	Yes			Yes			Yes	
9			Yes			Yes	Yes	Yes
10	Yes			Yes		Yes		
11			Yes				Yes	
12	Yes		Yes		Yes	Yes	Yes	
13		Yes		Yes	Yes	Yes		
14	Yes	Yes				Yes		
15	Yes	Yes		Yes		Yes	Yes	
16	Yes			Yes		Yes		
17	Yes	Yes			Yes	Yes	Yes	
18	Yes	Yes				Yes		Yes
19		Yes	Yes		Yes	Yes	Yes	
20			Yes					Yes
21	Yes			Yes				
22		Yes						Yes
23			Yes			Yes	Yes	
24	Yes		Yes	Yes				
25				Yes		Yes	Yes	
26	Yes		Yes	Yes				
27	Yes			Yes		Yes	Yes	Yes
28	Yes		Yes	Yes		Yes		
29	Yes			Yes		Yes		
30	Yes			Yes	Yes	Yes	Yes	Yes
TOTAL	20	9	10	17	7	21	11	10

Table 2.1

serial no	No Risk	Easy to collect	Tissue Multiplication possible	Patent and globally Accredited	Other offers attached	Treatment assistance	Flexibility in Payments	Refunds
1			Yes	Yes				
2	Yes	Yes				Yes		
3	Yes	Yes			Yes			Yes
4	Yes			Yes		Yes		
5	Yes	Yes	Yes					
6	Yes		Yes			Yes		Yes
7	Yes				Yes			Yes
8			Yes	Yes				Yes
9			Yes	Yes				
10			Yes					
11			Yes			Yes		Yes
12		Yes	Yes					Yes
13	Yes		Yes		Yes	Yes		
14	Yes	Yes						
15	Yes		Yes	Yes		Yes		
16								
17	Yes	Yes	Yes	Yes	Yes	Yes		
18	Yes	Yes	Yes	Yes				
19	Yes		Yes		Yes			
20	Yes	Yes			Yes	Yes	Yes	Yes
21			Yes		Yes		Yes	
22	Yes		Yes		Yes			
23		Yes			Yes			
24	Yes							Yes
25	Yes		Yes	Yes				
26	Yes							
27	Yes		Yes					
28			Yes				Yes	Yes
29								
30	Yes	Yes	Yes	Yes				
Total	19	10	19	9	9	8	3	9

Table 2.2

PARAMETERS	Yes
Future Hope	21
Family protection	20
No risk	19
Tissue Multiplication possible	19
Painless Procedure	17
Potentiality of stem cells are High	11
No Surgical Intervention	10
HLA more acceptable	10
Easy to collect	10
Patent and globally Accredited	9
Other offers attached	9
Better Treatment outcomes	9
Refunds	9
Treatment assistance	8
Volume of blood collected is good	7
Flexibility in Payments	3

Table 2.3

From all the parameters that were given in the tool, following were the criteria which got most of the yes i.e the reason as why pregnant females go for Cord Cell Banking:

1. Family protection:
2. Painless procedures.
3. Future hope of treatment.
4. No risk
5. Tissue Multiplication Possible

Provider perspective:

According to the providers of cord cell banking, some of the major reasons that were given were that:

- Firstly it is easy to collect and non invasive and painless method in which no surgical intervention is needed.
- Secondly HLA (Human Leukocyte Antigen) match is easy.
- Thirdly there are very less chances of GFHD i.e. Graft versus Host Diseases are there as cell from cord cell does not have surface markers.
- Fourthly, tissue multiplication at the time of requirement is also possible.
- Lastly, return of capital is high.

Manager perspective:

Detailed written letter of feedback was taken by managers of the hospital by which I could conclude that there are many reasons of making cord cell banking available in their hospital. Mainly the reasons include:

1. The future safety of the child from many diseases.
2. Product can be easily purchased by parents keeping in view its benefits and affordable price, due to increasing competition.
3. Its therapies are proving to be life saving.
4. It is the latest and the best technology that a mother and child care hospital can provide.
5. It can provide full family protection.
6. It generates good revenue for the organisation.

Final outcomes of the study:

Parameters	Users	Providers	Managers
Family protection	Yes	Yes	Yes
Better treatment outcomes			Yes
No surgical intervention		Yes	
Painless procedure	Yes	Yes	Yes
Volume of blood collected is good		Yes	
Future hope	Yes		Yes
HLA more acceptable		Yes	
No risk	Yes		
Easy to collect		Yes	Yes
Tissue multiplication possible	Yes	Yes	
Less chances of GFHD		Yes	
Return on capital/ PROFIT		Yes	Yes

Table 2.4

An in depth analysis of the perspective of the varied user base in cocoon towards stem cell banking has the following results , wherein maximum users which categorically takes into count expecting mothers, affirmed to the benefit of family protection and future advantages of stem cell banking. Contrary to the universal notion of stem cell banking being a daunting task and a tall order, more than 50% of end users confirmed to the painless technique involved in the procedure of cord blood banking. The benefit of ease of operation tagged with the process coupled with private stem cell banks being globally accredited also draws a huge user base. As along the end users, the providers also second the concept of the procedure being completely painless, paired with the easy HLA matching and tapered chances of GVHD. All of these factors amounting to escalating Return on Investments monetarily as well as for the family future needs.

From the point of view of managers, a detailed feedback from the recipients of stem cell banking in Cocoon Hospotel substantiated the major factors driving expecting parents towards the very idea. Factors range from the future safety of the child from many diseases, to the product being affordable, to therapies serving as life savors, to stem cell banking being a niche technology ensuring full family protection. Another reason for managers to advocate cord blood banking is the humongous revenue being generated for the organization.

SUGGESTIONS BY USERS, PROVIDERS AND MANAGERS:

- Increase in training sessions; technical, academic, customer relationship etc.
- Improvement in performance through transparency, promoting values, ethics and better participation of employees.
- Creating strong team environment.
- Increase in communication through more surveys, suggestion boxes and team meetings.
- A reduction in price will enable the company and the hospital to cover more demography and result in facility reaching to the masses.
- Provider could tie up with the government agencies and other non government organization.
- There could be several more interactive session between client and the provider in order to create better understanding

Recommendations:

- ▶ Extensive trainings for both providers and managers:
 - ▶ Technical issues
 - ▶ Customer relations
 - ▶ Research
 - ▶ Better communication
 - ▶ Team building
- ▶ Price reduction to cover more demography.

CONCLUSION

An essential role of the healthcare professional caring for the expectant woman and her family is to impart unbiased, evidence based information in order to assist parents to make decisions about their care that best suits the needs of their family and reflects their own values, beliefs and priorities. For expectant parents, the decision to donate or privately store cord blood is an extremely personal one. An increasing number are seeking information from their antenatal care provider about stem cell banking options or requesting their assistance in the same. It is therefore timely that in depth analysis into healthcare professionals' as well as user's perspective concerning the collection and storage of stem cell be conducted to identify gaps, which exist, that may influence decisions for expectant parents about their options. India has great potential for stem cell banking due to a high birth rate and genetic diversity. However, to-date the count of such procedures performed in India has been very low mainly due to high cost and limited number of stem cell banking units available. Nevertheless, with the existence of entities such as Cocoon Hospotel, Jaipur providing such facilities, the figures are likely to improve in the coming years. This will offer a diverse source of high quality grafts for patients of Indian origin worldwide. Private stem cell banks continue to grow in India, as many families opt private banks over government banks for the possible advantages in degenerative disorders in the future. Not to forget that to meet the future transplantation needs of the country, full participation and substantial investment by the Government is necessary

QUESTIONNAIRE:

FOR USER:

Help us to know what attracts you towards cord cell banking:**Kindly checkmark on the field of choice**

SERIAL No	PARAMETERS	REMARKS
1	Family protection	
2	Better Treatment outcomes	
3	No Surgical Intervention	
4	Painless Procedure	
5	Volume of blood collected is good	
6	Future Hope	
7	Potentiality of stem cells are High	
8	HLA more acceptable	
9	No Risk	
10	Easy to collect	
11	Tissue Multiplication possible	
12	Patent and globally Accredited	
13	Other offers attached	
14	Treatment assistance	
15	Flexibility in Payments	
16	Refunds	

Name:**Date:****Signature:**

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