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Perception of Pregnant Women towards Stem Cells and Cord Blood Banks

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ABSTRACT
In many cases, stem cell therapy can be a viable treatment option for a wide range of conditions. However, it's essential to carefully consider various factors before choosing the right treatment for one. The internet is filled with conflicting and sometimes misleading information about stem cells, which can make it difficult to research and select the best treatment provider. At Stem Cell Care India, it prioritizes care, commitment, and quality, ensuring access to only top-tier stem cell therapies. This study aimed to find out the perception of pregnant women towards stem cells and cord blood banks in Erode District. Questionnaire was used to collect information from the pregnant women in Erode District by using convenience sampling. 100 pregnant women were chosen as sample in the study area. Many families turn to stem cell therapies out of hope for a possible solution when conventional treatments have failed, and all other options seem exhausted. Because public awareness and understanding of stem cell research and therapy are often very limited or entirely lacking. However, the significant financial costs associated with these therapies raise ethical concerns.

Keywords: Stem Cell, Information,Therapies, Treatment, Ethical concerns.

I. INTRODUCTION

Transplanted stem cells, like any organ transplant, can be recognized as foreign by the immune system, leading to rejection. In cases of organ transplants such as liver, kidney, or heart, recipients must take immunosuppressive drugs for life to prevent their immune system from attacking the transplanted organ.The likelihood of immune rejection for tissue derived from embryonic stem cells depends on its origin. Stem cells obtained from IVF embryos will have a genetic makeup that does not match the recipient, prompting the immune system to recognize them as foreign and potentially reject them, unless the recipient is on strong immunosuppressants. The same applies to adult stem cells from a donor.In contrast, stem cells produced through somatic cell nuclear transfer (SCNT) or induced pluripotent stem (iPS) cell technology are genetically identical to the recipient. The immune system is likely to accept these transplanted cells as part of the body. However, some experts caution that even perfectly matched cells might still attract immune attention; for instance, cancer cells, which share the same genetic makeup as surrounding tissue, can still be targeted and destroyed by the immune system. Until more data is gathered from animal studies, it remains uncertain whether patient-specific transplanted cells will evade immune detection.A significant challenge in stem cell therapy is directing stem cells to differentiate into a specific cell type. This vital process involves maturing stem cells from one state into another. For a stem cell therapy to be approved by the FDA for human trials, it must be produced under good manufacturing practice (GMP) conditions. GMP standards require that each batch of cells be cultivated in a consistent, sterile environment to ensure uniformity and quality across treatments.

Need for the study

Stem cells hold promise in cancer treatment, and India is increasingly adopting regenerative therapies that emphasize personalized and targeted approaches. The pharmaceutical sector is driving innovation to develop effective therapies. Often referred to as the building blocks of life, stem cells represent a beacon of hope in modern medicine, particularly in the fight against cancer. As India embraces stem cell therapy, understanding the fundamentals of this groundbreaking approach becomes crucial.

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Problem of the Study

Stem cells are a unique type of cell with two key characteristics: they can self-renew, meaning they can produce more cells like themselves, and they can differentiate into various specialized cell types. Found in nearly all tissues of the body, stem cells play a crucial role in tissue maintenance and repair after injury.Depending on their location, stem cells can develop into different types of tissues. For instance, hematopoietic stem cells are located in the bone marrow and can generate all the various cells found in blood. Stem cells can also differentiate into brain cells, heart muscle cells, bone cells, and more.There are several types of stem cells, with embryonic stem cells being the most versatile, as they can develop into any cell type in a developing fetus. Most adult stem cells, however, have more limited capabilities and primarily assist in maintaining and repairing the tissues in which they are found.No other cells in the body possess the same capacity to generate new cell types. While research into adult stem cells shows promise, they may not be as versatile or resilient as embryonic stem cells, and their ability to be manipulated for various treatments is limited.Common side effects of stem cell therapy can include fatigue, headaches, chills, nausea, and low-grade fever. These side effects typically resolve quickly and can vary from person to person; not everyone experiences them. Generally, they are mild and short-lived, with the intensity depending on the type of stem cells used, the dosage, and the method of administration.It's important for individuals to carefully consider potential side effects and consult with a doctor to determine if stem cell therapy is the right choice for them.

Objective of the study

This study aimed to find out the perception of pregnant women towards stem cells and cord blood banks in Erode District.

II. MATERIALS AND METHODS

Pisula et al. (2021) tried to classify women's knowledge, awareness, preferences and attitude towards Umbilical Cord Blood (UCB) banking in Poland. The questionnaire-based study was undertaken through Google Forms to collect the opinion about attitudes and knowledge about the UCB collecting procedure and banking also sociodemographic and obstetric factors entirely online among Facebook female users. It was found that social media were measured as the main source of information and the selected women mostly specified the doctor as their preferred source of reliable information. Also, the knowledge and awareness regarding the possibilities of umbilical cord blood storage and banking among women in Poland was still low. The researchers had revealed that medical personnel, especially doctors should deliver reliable information to pregnant women. Though, the general attitude towards UCB banking had been highly promising. Kaur and Salwan (2020) conducted a pre-experimental study to evaluate the effectiveness of a structured teaching program (STP) on knowledge, awareness, and preferences related to stem cells and umbilical cord blood banking among pregnant women. The study employed a quantitative approach and involved a sample of 30 pregnant women attending antenatal outpatient departments, selected through convenient sampling. The collected data were analyzed using statistical methods, including descriptive statistics, paired t-tests, and Chi-square tests. The researchers established a null hypothesis to assess the significant differences in the effectiveness of the STP on knowledge, awareness, and preferences regarding stem cells and umbilical cord blood banking. The findings indicated that the STP was effective in enhancing the participants' knowledge, awareness, and preferences in these areas. Overall, the study showed a significant improvement in the post-test scores of knowledges, awareness, and preferences among pregnant women following the STP.

This study relies entirely on primary data collected from a sample of 100 pregnant women in Erode District. The geographical area chosen for the study is Erode District, selected using a convenience sampling method. Data were gathered from the respondents through a questionnaire, and Anovatest was utilized for the analysis.

III. RESULTS AND DISCUSSIONS

The present study presents the association between perception of pregnant women on stem cell preservation and selected independent variables that were studied. The Anova test of the study is given below.

Hypotheses

H_O : Perception of pregnant women on stem cells have no relationship with the independent variables.

H_1 : Perception of pregnant women on stem cells have a relationship with the independent variables.

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Table 1
Anova- Pregnancy stage and Perception

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4763.105	1	4763.105	135.365	.000
Within Groups	3448.335	98	35.187		
Total	8211.440	99			
Sig. at 1% level					

From the Anova test, it is inferred that the 'F' value is 133.365 at 0.000 significant level and null hypothesis is rejected. Therefore, it is found from the Anovatestthat there is a relationship between pregnancy stage and perception of pregnant women on preserving stem cells.

Table 2
Anova- Age and Pregnancy stage

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1145.068	2	572.534	7.859	.001
Within Groups	7066.372	97	72.849		
Total	8211.440	99			
Sig. at 1% level					

From the Anova test, it is inferred that the 'F' value is 7.859 at 0.000 significant level and so null hypothesis is rejected. Therefore, it is found from the Anovatestthat there is a relationship between age and perception of pregnant women on preserving stem cells.

Table 3
Anova- Educational qualification and Perception

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1850.398	4	462.600	6.909	.000
Within Groups	6361.042	95	66.958		
Total	8211.440	99			
Sig. at 1% level					

From the Anova test, it is inferred that the 'F' value is 6.909 at 0.000 significant level and null hypothesis is rejected. Therefore, it is found from the Anovatest that there is a relationship between educational qualification and perception of pregnant women on preserving stem cells.

Table 4
Anova- Income level and Perception

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2362.898	2	1181.449	19.595	.000
Within Groups	5848.542	97	60.294		
Total	8211.440	99			
Sig. at 1% level					

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From the Anova test, it is inferred that the 'F' value is 19.595 at 0.000 significant level and null hypothesis is rejected. Therefore, it is found from the Anovatestthat there is a relationship between income level and perception of pregnant women on preserving stem cells.

Table 5
Anova- Religion and Perception

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	80.672	3	26.891	.317	.813
Within Groups	8130.768	96	84.695		
Total	8211.440	99			

Not Sig. at 5% level

From the Anova test, it is inferred that the 'F' value is 0.313 at 0.813 significant level and null hypothesis is accepted. Therefore, it is found from the Anovatest that there is norelationship between religion and perception of pregnant women on preserving stem cells.

IV. RECOMMENDATIONS AND CONCLUSION

The use of human stem cells in research is already widely discussed in the public sphere. Stem cells are unique cells capable of transforming into different types of cells. They hold the potential to regenerate damaged tissues and organs, offering a promising avenue for treating various medical conditions. Now-s-day, stem cell therapy is an evolving field that has made notable advancements recently. However, there remains a significant gap in public awareness and understanding of the approved treatments and clinical trials available. Additionally, concerns about the trustworthiness of hospitals and research centers conducting stem cell research persist.Although the future of stem cell research is highly promising, it is crucial to tackle the challenges and ethical issues associated with these groundbreaking developments.The field of stem cell research is still in its early stages, and the potential opportunities are limitless. Hence, the future research on this field may extend to do at macro level.

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