

Evaluation of Awareness and Attitude Regarding Umbilical Cord Stem Cell Banking Among Pregnant Women

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Abstract

Aim: To evaluate the awareness and attitude regarding umbilical cord stem cell banking among pregnant women.

Materials and methods: A structured questionnaire pretested by experts was prepared. The questionnaire consisted of 20 yes/no type questions, 3 short descriptive type questions, and 4 multiple type questions. Each set of questionnaire was accompanied by a consent proforma. The questionnaires were distributed among the pregnant women in one of the reputed Maternity hospital of the city. The data was collected from these pregnant women and it was followed by personal interaction with pregnant women by the investigator. The purpose was to appraise them about umbilical cord stem cell banking which may be a lifesaver for child and family. Pregnant women along with their family or relatives who visited the hospital were made aware regarding this. In this regard help from the doctors, nurses and the allied staff was taken in the general awareness campaign. Furthermore, the purpose was to enable them to take the right decision at the right time and for the right cause.

Results: The data collected in the form of questionnaires were analyzed and it was found that uneducated people were generally unaware of umbilical cord stem cells or their banking. Moreover they were not interested to learn about it. Educated people had mixed responses and more than 50% of them did not have confidence in believing that the umbilical cord contains stem cells. 50% of the married men were not willing to pay the bank fees.

Conclusion: Counseling of pregnant women regarding banking of stem cells is needed. It is important that pregnant women should be made aware of the potential of stem cells. There is also a need for educating husbands and other family members of pregnant women about umbilical cord stem cell banking because these people play a major role in reluctance shown by the pregnant women towards this matter. A major step by hospitals should be taken regarding counselling of pregnant women and creating awareness in them.

Keywords: Umbilical Cord Stem Cells, Umbilical Cord Stem Cell Banking, Stem cells, Pregnant women,

Counseling.

Introduction

Umbilical cord commonly known as a birth cord connects the developing embryo or fetus with the placenta. The cord isn't directly attached to the mother's circulatory framework, rather joins the placenta, which facilitates the exchange of materials with the maternal blood. It forms by the fifth week of development and serves as the source of nutrients for the developing embryo. In humans, the umbilical cord contains three blood vessels- one vein and two arteries [1, 2]. A gelatinous substance called Wharton's jelly surrounds the three blood vessels. This jelly protects these vessels and prevents their compression. Umbilical vein supplies oxygenated, nutrient-rich blood from the placenta to the fetus while the umbilical arteries carry away the deoxygenated and nutrient-depleted blood from fetal heart to the placenta. The blood that remains in the placenta and umbilical cord after childbirth is known as umbilical cord blood or simply Cord blood. In terms of the constitution, except for a few differences, umbilical cord blood is almost similar to whole blood. It consists of a highly heterogeneous mixture of cells like leucocytes, erythrocytes, and hematopoietic stem cells [3-7].

There are three known accessible sources of autologous adult stem cells in humans: bone marrow, adipose tissue and blood. Stem cells can also be taken from umbilical cord blood just after birth [8-10]. Studies have shown the presence of hematopoietic progenitor cells in human cord blood [11-14]. Umbilical cord and cord blood were treated as a medical waste till now but the abundance of stem cells and progenitor cells in cord blood has generated interest in it as an alternative source of stem cells [6, 15-17]. As compared to bone marrow (BM), harvestation of hematopoietic stem cells (HSCs) from cord blood is comparatively easier and safer. Furthermore, these cells are abundantly available in cord blood, require less compatibility with the patient and possess higher proliferative capacity than adult stem cells. Although cord blood offers various advantages over other sources of stem cells yet certain challenges are associated with it like the umbilical cord is available only during the birth of a child and needs to be preserved with special methodology [4, 18, 19].

As stem cells have major implications in the field of regenerative medicine, cord blood is being considered as a successful alternative to bone marrow as a source of HSCs for treating a variety of hematologic disorders and malignant/non-malignant diseases such as leukemia, lymphoma, and sickle cell anemia [17, 20]. But it is very ironical that in our country, most of the people are not aware of the therapeutic potential of umbilical cord blood derived stem cells and it is still discarded as a medical waste. As pregnant women are more concerned about the safety and health of their babies, they must understand the significance of stem cell banking [19, 21]. Pivot of decision making to preserve umbilical cord stem cells lies with mother and she can create awareness amongst family members or other pregnant women. In other words, a positive attitude needs to be developed among pregnant women. Therefore this study was designed to evaluate the awareness and attitude regarding umbilical cord stem cell banking among pregnant women. This was followed by appraising them with the

significance of cord blood banking. The rationale of the study was to evaluate awareness amongst pregnant women and enhance their knowledge in this context.

Material and methods

Study population

The study was conducted among a total of 50 subjects chosen at random. All the respondents, were pregnant females visiting one of the reputed maternity hospital i.e. Chawla Nursing Home and Maternity Hospital, Jalandhar, Punjab. A written consent was obtained from all the participating subjects after explaining to them in detail the aim of the study, extent of their involvement, and the freedom of choice in participation.

Data collection

To analyze the awareness and attitude regarding umbilical cord stem cell banking among pregnant women, a questionnaire was designed. The questionnaire consisted of 20 yes/no type questions, 3 short descriptive type questions, and 4 multiple type questions. The questionnaires were distributed among the chosen subjects/population. After explaining the aim of the study and extent of their involvement, pregnant women were motivated to answer the questionnaire. After the survey, an awareness campaign was organized regarding the umbilical cord blood banking.

Data analysis

The responses of the subjects to each question were studied, evaluated and analyzed.

Results

Study population

Out of the total 50 respondents, 40 i.e. 80% were pregnant for the first time, while 6 (12%) were expecting for the second time and 4 respondents (8%) already had two or more children. Majority of the respondents i.e. 62% were in the age group of 26 to 30 years, 22% were in the age group of 31 to 35 years, 12% were in the age group of 21 to 15 years, and 4% were above 36 years. Considering the educational qualifications, it was observed that 20% were undergraduates, 34% were graduates, and 46% were having post-graduate degrees. Out of the total 50 respondents, 68% were housewives and 32% were working ladies. The respondents were segregated for survey analysis on the basis of their educational qualifications as shown in Fig . 1

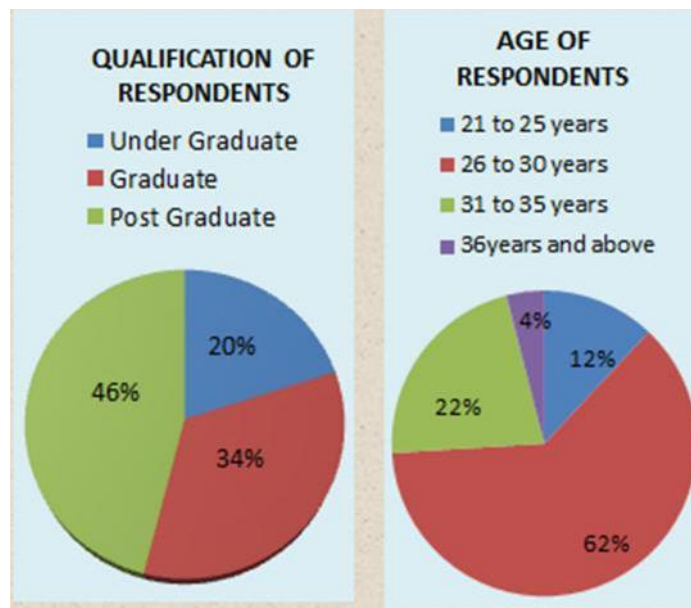


Fig. 1: Graphical representation for qualification and age of respondents. Analysis of awareness and attitude regarding Umbilical Cord Stem Cell Banking i)

Undergraduate group of respondents

Out of the respondents of this category (n=10), 90% of respondents were aware that for many diseases treatment is not available for the present time. Also, 90% were interested in providing a child with a healthy safe and secure life. 60% was an awareness that humans fall ill when the body's cells get damaged. 50% were Awareness of the advance treatments that are available to the patients. Awareness about the treatments that were under research and trails was low and only represented 20%. The knowledge about stem cells as a potential lifesaver was not known to anybody. Awareness about umbilical cord contains stem cells were known to only 10%, but also this 10% had no knowledge about its usage. Moreover, 80% were willing to preserve the baby's umbilical cord, but out of them, only 50% were willing to pay the bank fees. Husbands of 50% were not in support of their wives for banking stem cells.

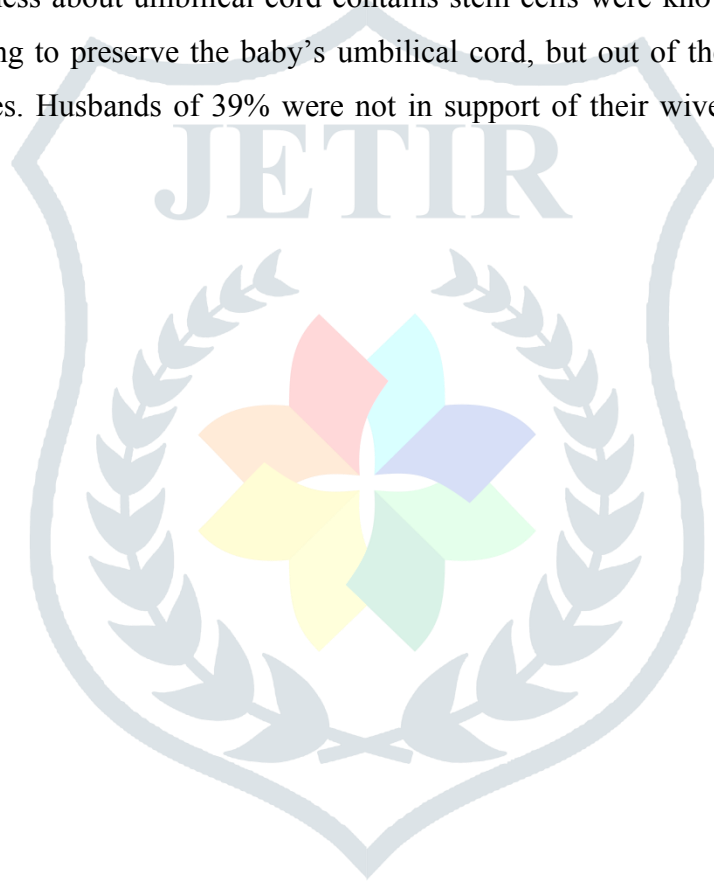
ii) Graduate group of respondents

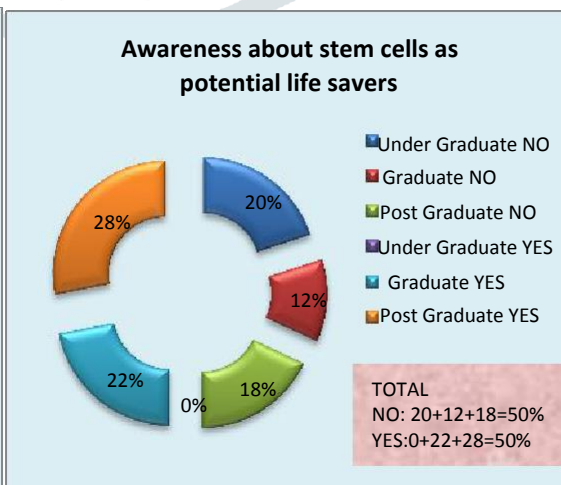
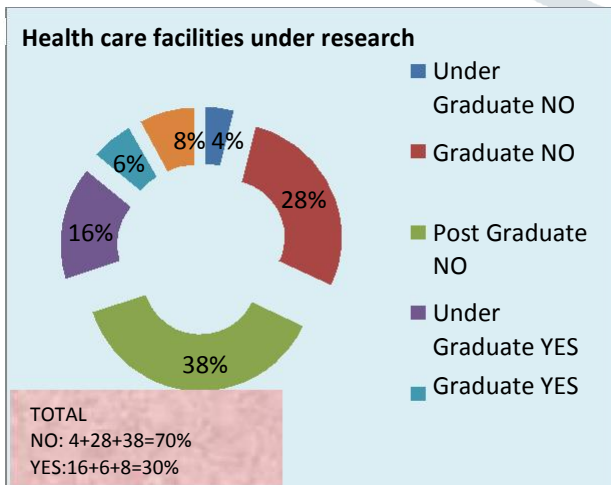
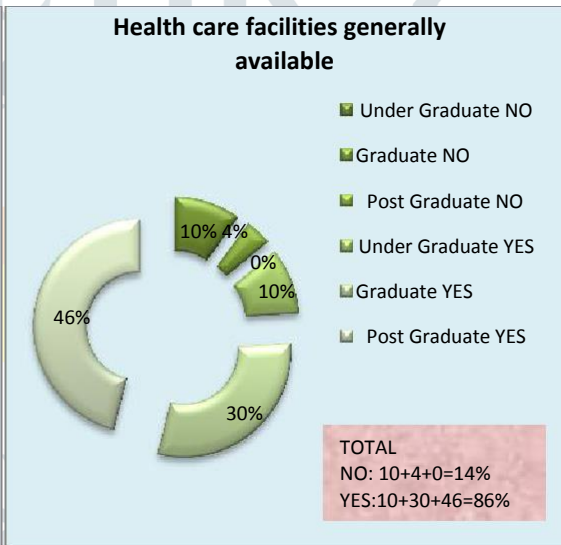
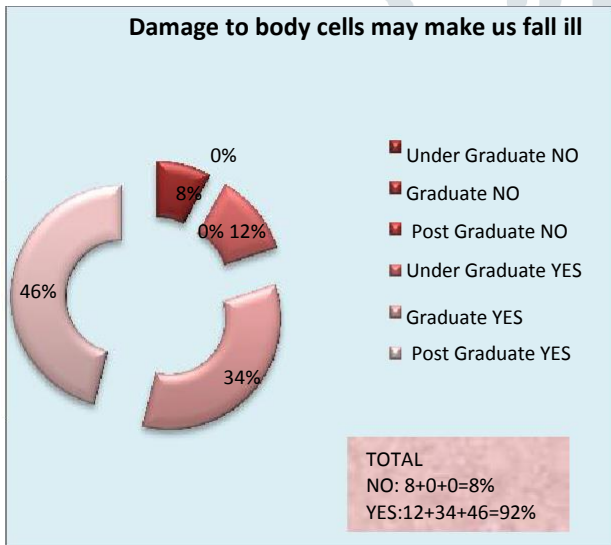
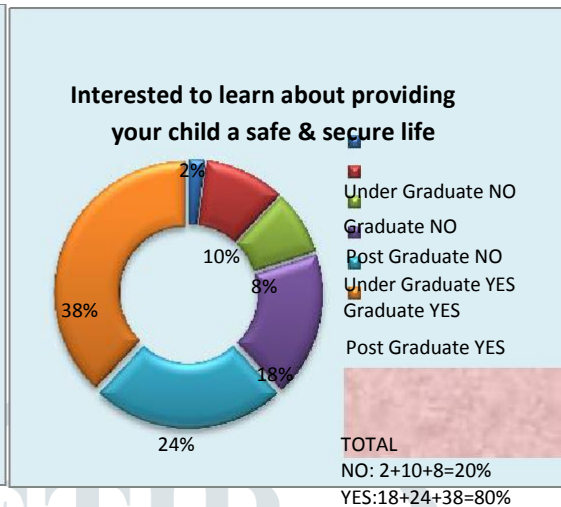
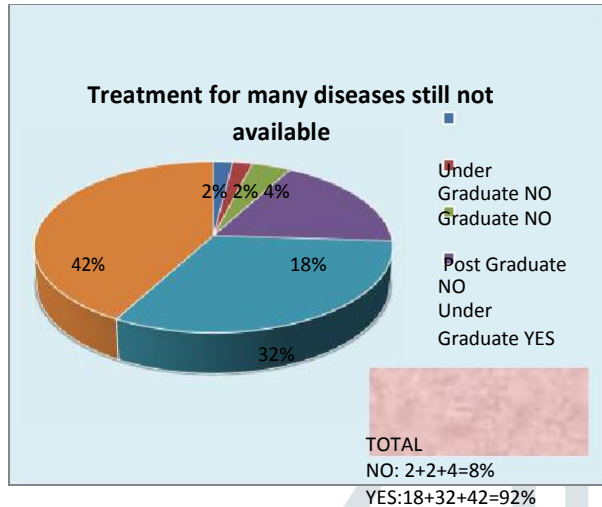
Out of the respondents of this category (17), 94% of respondents were aware that for many diseases treatment is not available for the present time. 71% were interested in providing a child with a healthy safe and secure life. 100% was an awareness that humans fall ill when the body's cells get damaged. 88% were Awareness of the advance treatments that are generally available to the patients. There was only 18% of the respondents in this group had knowledge about the treatments that were under research and trails. The knowledge about stem cells as a potential lifesaver was found in 65% of this group respondents. Awareness about umbilical cord contains stem cells were known to be only 29%. Moreover, 94% were willing to preserve the baby's umbilical cord, but out of them, only 53% were

willing to pay the bank fees. Husbands of 65% were not in support of their wives for banking stem cells.

iii) Post-graduate group of respondents

Out of the respondents of this category (n=23), 91% of respondents were aware that for many diseases treatment is not available for the present time. 83% were interested in providing a child with a healthy safe and secure life. 100% was an awareness that humans fall ill when the body's cells get damaged. 100% were Awareness of the advance treatments that are generally available to the patients. There was only 17% of the respondents in this group had knowledge about the treatments that were under research and trails. The knowledge about stem cells as a potential lifesaver was found in 61% of this group respondents. Awareness about umbilical cord contains stem cells were known to be only 48%. Moreover, 87% were willing to preserve the baby's umbilical cord, but out of them, only 52% were willing to pay the bank fees. Husbands of 39% were not in support of their wives for banking stem cells.





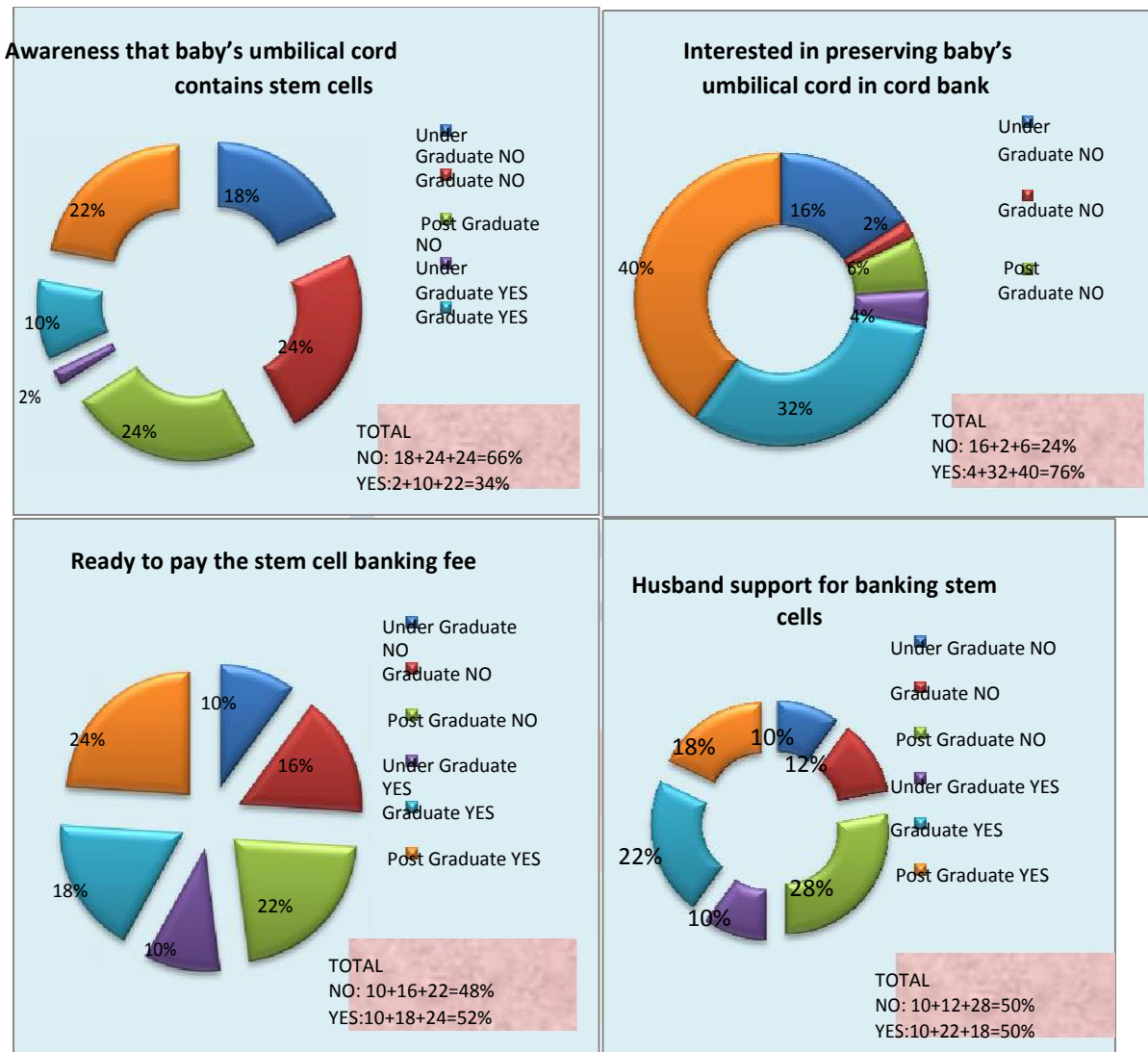


Fig. 2: Graphical representation depicting overall response of all respondents obtained through questionnaire.

Out of the respondents of all categories (n=50), 92% of respondents were aware that for many diseases treatment is not available for the present time. 80% were interested in providing a child with a healthy safe and secure life. 92% were aware that humans fall ill when the body's cells get damaged. 86% were Awareness of the advance treatments that are generally available to the patients. There was only 30% of the respondents in this group had knowledge about the treatments that were under research and trails. The knowledge about stem cells as a potential lifesaver was found in 50% of this group respondents. Awareness about umbilical cord contains stem cells were known to be only 34%. Moreover, 76% were willing to preserve the baby's umbilical cord, but out of them, only 52% were willing to pay the bank fees. Husbands of 50% were not in support of their wives for banking stem cells.

Discussion

Based on the data evaluation, it was found that none of the respondents who were under-graduate had knowledge and awareness that umbilical cord blood contains stem cells. Even most of the graduate respondents were also not having awareness about that. However, post-graduate respondents had better knowledge about this concept. Overall only 34% of the pregnant ladies were aware that the baby's umbilical cord contains stem cells. After the interaction and briefing of the respondents, 76% of the total respondents were interested in storing the umbilical cord. These respondents were really interested and found the campaign useful. But after learning about the fees and other charges to be paid to bank the stem cells, the scenario became different. Only about 52% were willing to pay the stem cell banking fee. 50% of respondents agreed that their husband would support them for banking stem cells.

Conclusion

It can be concluded that people with lower education are generally unaware of the umbilical cord stem cells and they are not interested to know about it. The present scenario among the educated population is mixed and more than 50% of them still do not have confidence in believing that the umbilical cord contains stem cells. It may also be concluded that 50% of the married men were not willing to pay the bank fees which perhaps may be due to lack of awareness in them. So one of the grey areas is the lack of awareness regarding umbilical cord stem cells amongst men. As most of the women need their husband's support, joint counseling sessions of couples entering parenthood need to be carried out.

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