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A Descriptive Study to Assess the Knowledge of Menstrual Blood Stem Cell Banking among Women Residing in Selected Urban Area, Maharashtra

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Abstract: ***Aim of the study: The aim of study to assess the knowledge of menstrual blood stem cell banking among women residing in selected urban area, Maharashtra. Problem statement: A study to assess the knowledge of menstrual blood stem cell banking among women residing in selected urban area, Maharashtra. Objective: Primary objective: The primary objective was used to assess the knowledge regarding menstrual blood stem cell banking among women residing in urban area. Secondary objectives: To find out the association between the knowledge of menstrual blood stem cell banking and demographic variables of women. Method: A descriptive research design used for the study. It was conducted over 150 women residing in urban area by using purposive sampling technique. Result: The study was conducted among 150 women of reproductive age group residing in selected urban area o, it was observed that the percentage of knowledge score of urban women regarding menstrual blood stem cell banking, majority of women that is 82 (54.6%) of them had poor knowledge, where no one is having very good knowledge 10 (7.5), 7 (4.7%) of them had good knowledge, 49 (32.7%) of them had average knowledge and 12 (8%) had very poor knowledge regarding menstrual stem cell banking this indicates urban women have poor knowledge regarding menstrual stem cell banking. Interpretation and conclusion: The findings of present study, The study assessed the knowledge of menstrual blood stem cell banking among 150 urban women of reproductive age. The findings revealed that a majority of women (54.6%) demonstrated poor knowledge, with a mean knowledge score of 11.52 ± 3.85. This clearly indicates that awareness regarding menstrual blood stem cell banking is inadequate in the studied population. When exploring associations with demographic variables, qualification and occupation were significantly related to knowledge levels. Women with higher education and professional occupations showed comparatively better awareness, suggesting that education plays a key role in shaping knowledge. In contrast, no significant association was observed with religion and family income, implying that socio-economic status alone may not determine awareness unless supported by proper health education initiatives. The findings emphasize the importance of developing awareness campaigns, health education programs, and inclusion of menstrual blood stem cell banking in health-related curricula. Nurses, midwives, and other health professionals have a pivotal role in disseminating information and motivating women to explore this novel, non-invasive, and potentially life-saving technology. Overall, the study highlights a critical gap in women's awareness and calls for strategic interventions to improve knowledge, attitudes, and practices toward menstrual blood stem cell banking, ultimately contributing to better acceptance and utilization of this emerging biomedical innovation.***

Keywords: Knowledge Assessment, Menstrual blood stem cell banking, women of reproductive age group, urban community, awareness, & regenerative medicine.

1. Introduction

Stem cells are located throughout bodies, like a reserve army offering regenerating and repair. Menstrual blood banking offers hope of new cure. Menstruation is the outward sign of cyclic and periodic physiological uterinebleeding brought on by endometrial loss. In order to receive a fertilized ovum, the uterus endures changes in endometrial thickness, vascular systemproliferation, and gland secretions.[1] The menstrual cell comes from a woman's endometrium, or lining of the uterus, derived from her monthly menstrual cycle. So- far, menstrual blood has been discarded as an unsanitary waste. However, current research has established that the menstrual blood contains large number of self-renewing stem cells. These cells multiply fastlyand can differentiate into many other types of cells such as neural, cardiac, bone, fat, cartilage and possibly others, demonstrating great potential for cell therapy. [2] The concept of menstrual blood stem cells banking was initiated in the year 2007 by an American company Cryo cell, and in India it was embarked by life cell international on march 8, 2011 by film actress Lisa Ray, who won the battle with cancer and recovered from deadly disease.[4] All these study results revolves the regenerative medicines into a new universe, disseminating these information and updating the knowledge on menstrual stem cell among women of age group 18 to 45 years from menarche to the menopause who are the main key change agents are essential.[5] The sample collection process of menstrualblood is pretty simple, like a tampon, a silicone cup is inserted into the vaginaon the day of the heaviest flow. The cup is required to be placed inside the vagina for at least three hours so as to collect approximately 20 ml of blood. This is then poured in the collection kit and is sent back to the menstrual blood bank laboratory, where it is processed, frozen and stored for future useso Menstrual Blood Banking has an extensive scope in future. Hence the researcher felt enhancing the knowledge regarding menstrual blood bankingis important among womens.[6]

2. Need of the Study

Stem cells offer exciting promise for future therapies, but all this will only be possible through intensive research work in

this field moreover in India stem cell made an explosive entry and the companies like life cell are widelyavailable for this cause, but the main hindrance for stem cell banking in Indiais lack of awareness among the population. For the growth of stem cell banking in India the people need to be made aware of its facts and about its future benefits. They must be encouraged to contribute for this cause so thatthe generations ahead them are saved and are promised with a healthy life. Thus in order to make it practicable the health providers and the midwives must come forward to advocate and educate the antenatal mothers for stem cell and cord blood banking.[10] The goal of mesenchymal cell therapy is to treat diseases of non-hematopoietic tissues in an analogous fashion to treating leukaemia with hematopoietic stem cell transplantation. Menstrual stem cells have the potential to differentiate into possibly every other cell type in the human body.[11] Nurses, midwives, and other healthcare professionals play a central role in educating women about reproductive and regenerative health. However, effective education is possible only when the baseline level of women's knowledge is clearly identified. Assessing women's awareness provides evidence for planning targeted health education interventions, incorporating the subject into nursing curricula, and designing public health policies that encourage informed decision-making. The assessment and analysis of previous study shown that general women including health works had less knowledge regarding menstrual blood stem cell banking Hence there is need to create awareness about menstrual blood stem cell banking and improve the knowledge of Women about Menstrual blood stem cell banking.

3. Review of Literature

Review of literature was carried out on recent and ongoing research relevant to the present study. The review of literature is done under following areas of menstrual blood stem cell banking

- Physiology of menstruation
- Importance of menstrual blood stem cell
- Menstrual blood stem cell banking
- Knowledge of women regarding menstrual blood stem cell banking

4. Limitations

The study was limited to –

- Assessment of knowledge
- 150 women of reproductive age
- 150 Selected urban areas, Maharashtra

Hypothesis:
H1: There is a knowledge regarding menstrual blood stem cell banking among women residing in urban area.
H2: There is a association between knowledge score on menstrual blood stem cell banking with selected demographic variables of women.

Research approach: Quantitative research approach
Research design: A descriptive research design was used.

Variables under study:

Independent variable: Menstrual blood stem cell banking
Dependent variable: Knowledge of women residing in urban area.

Accessible population- Urban women whom study finding are generalized will be the target population were considered as accessible population
Sample and sampling technique Sample: urban women of reproductive age group
Sample size: 150 urban women
Sampling technique: Purposive sampling technique

Inclusion criteria:

- Women who will give consented to participated in the study.
- Those women are available at the time of data collection

Exclusion criteria:

- Urban women who are mentally ill and incompetent.
- Women those who do not understand Marathi.

Tool Preparation

Description of Tools:

1) Section I - Semi structured questionnaire of demographic variables
2) Section II Questioner on menstrual blood stem cell banking

Tool Validity
Content validity of SIS were established in consultation with 8 experts from the field of Nursing Expert (5), Gynaecologist (1), Statistician (1) Language expert (1). The suggestions of subject experts were taken into consideration and reframed the same.

Tool Reliability
In this study, Karl Pearson's correlation coefficient was calculated and questioner was found to be reliable r = 0.93. Hence, the SIS was considered reliable.

Pilot Study

The pilot study was conducted among 15 women residing in selected urban area, to find out the feasibility of study. Written permission wasobtained from concern authorized and data was collected on December 2023. Collected data were coded, tabulated, analysed by using descriptive study and inferential statistic.

5. Result

Section -1
In this study the findings of the present study revealed that the majority of urban women belong to the age 32-39 years 55 (36.7%), most of them are graduate and above 72 (48%), majority of them are Hindu 81 (54%), most of them are house wife 66 (44%) and the majority of women have a family income of 15001 to 20,000, 54 (36%).

Table 1: Socio Demographic characteristics of sample, n=150

Sr. No.	Variables	Frequency	Percentage
1	**Age (in year)**		
a.	18 - 24 yrs.	40	26.60%
b.	25 - 31 yrs.	42	28%
c.	32 - 39 yrs.	55	36.70%
d.	40 - 47 yrs.	13	8.70%
2	**Qualification**		
a.	Illiterate	4	2.70%
b.	Primary education	32	21.30%
c.	Secondary education	42	28%
d.	Graduation and above	72	48%
3	**Religion**		
a.	Hindu	81	54%
b.	Muslim	11	7.40%
c.	Buddhism	49	32.60%
d.	Others	9	6%
4	**Occupation**		
a.	House wife	66	44%
b.	Private job	11	7.30%
c.	Government servant	8	5.30%
d.	Others	65	43.40%
5	**Family income**		
a.	Rs. 20001 and above	39	26%
b.	Rs. 15001-20000	54	36%
c.	Rs. 10001-15000	26	17%
d.	Rs. 10000 and below	31	20%

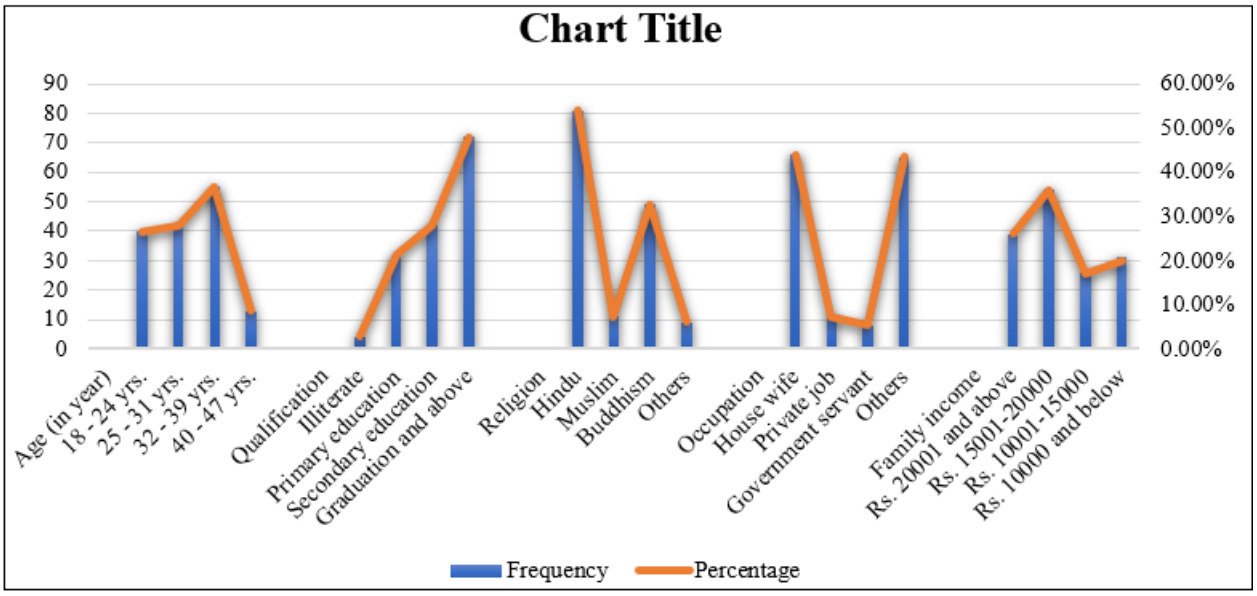

Figure 1: Distribution of Socio Demographic characteristics of sample

Section -II

Assessment of knowledge regarding menstrual blood stem cell banking among urban women-

Data presented in Table 2 shown that majority of women that is 82 (54.6%) of them had poor knowledge, where no one is having very good knowledge 10 (7.5), 7 (4.7%) of them had good knowledge, 49 (32.7%) of them had average knowledge and 12 (8%) had very poor knowledge regarding menstrual stem cell banking this indicates urban women have poor knowledge regarding menstrual stem cell banking. Mean compliance score was 11.52 ± 3.85.

Table 2: Distribution of Level of Knowledge Among Urban Women

Level of knowledge	Score	Frequency	Percentage
Very good	21 – 25	0	0%
Good	16 – 20	7	4.70%
Average	11-15	49	32.70%
Poor	6-10	82	54.60%
Very poor	5 & below	12	8%

Figure 2: Distribution of Level of Knowledge among Urban Women

Table 3: Level of knowledge of urban women regarding menstrual blood stem cell banking.

Variable	Mean	Median	SD	Mean %
Knowledge	11.52	12	3.85	38.40%

Table 4: Association between level of knowledge of urban women and demographic variable

Sr.no.	Level of knowledge	χ^2 value	p-value
1	Age	12.45	P<0.05*
2	Qualification	18.32	0.037* P<0.05
3	Religion	3.28	0.349 p>0.05
4	Occupation	10.56	0.028* p<0.05
5	Family income	9.87	0.850* p>0.05

Table no. 4 depicts that there is a significant association between age, qualification, occupation and family income. No significant association between religion.

Association of level of knowledge on menstrual blood stem cell baking among women residing in selected urban area in relation to demographic variables.

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	15.741	3	5.247	6.381	0
	Within Groups	120.052	146	0.822		
	Total	135.793	149			
Qualification	Between Groups	6.386	3	2.129	2.91	0.037
	Within Groups	106.787	146	0.731		
	Total	113.173	149			
Religion	Between Groups	3.66	3	1.22	1.106	0.349
	Within Groups	161.034	146	1.103		
	Total	164.693	149			
Occupation	Between Groups	18.027	3	6.009	3.117	0.028
	Within Groups	281.413	146	1.927		
	Total	299.44	149			
Income	Between Groups	0.94	3	0.313	0.266	0.85
	Within Groups	172.054	146	1.178		
	Total	172.993	149			

Analysis of one way ANOVA was conducted to examine the association between women's knowledge regarding menstrual blood stem cell banking and selected demographic variables. The findings are presented below:

- **Age:** There was a statistically significant difference in knowledge scores across age groups (F = 6.381, p = 0.000). This indicates that women's knowledge varied significantly with age.
- **Qualification:** Knowledge scores also differed significantly according to educational qualification (F = 2.910, p = 0.037). Women with higher educational attainment demonstrated better knowledge than those with lower education levels.
- **Religion:** No significant association was found between religion and knowledge scores (F = 1.106, p = 0.349), suggesting that religious affiliation does not influence awareness regarding menstrual blood stem cell banking.

- **Occupation:** A significant difference in knowledge scores was observed among different occupational groups (F = 3.117, p = 0.028). Women engaged in professional or skilled occupations had higher knowledge compared to homemakers and unskilled workers.
- **Income:** No statistically significant difference was observed between income groups (F = 0.266, p = 0.850), indicating that economic status alone does not affect women's knowledge levels.

6. Conclusion

The present study concludes that urban women of reproductive age have limited knowledge about menstrual blood stem cell banking, with more than half of the respondents scoring in the poor category. Knowledge was found to be significantly associated with educational qualification and occupation, but not with religion or income.

The findings emphasize the importance of developing awareness campaigns, health education programs, and inclusion of menstrual blood stem cell banking in health-related curricula. Nurses, midwives, and other health professionals have a pivotal role in disseminating information and motivating women to explore this novel, non-invasive, and potentially life-saving technology. Overall, the study highlights a critical gap in women's awareness and calls for strategic interventions to improve knowledge, attitudes, and practices toward menstrual blood stem cell banking, ultimately contributing to better acceptance and utilization of this emerging biomedical innovation.

7. Recommendation

- A similar study can be replicated on a nursing students in the different nursing college.
- A similar study can be done to assess knowledge on menstrual blood stem cell banking.
- Women from different population in urban areas.
- Interventional study can be done to assess the knowledge on menstrual blood stem cell banking among staff nurses of selected hospitals.
- A comparative study can be done to assess the knowledge on menstrual blood stem cell banking among nursing students.

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