



# KNOWLEDGE AND ATTITUDE REGARDING STEM CELL HARVESTING AMONG NURSING STUDENTS IN SELECTED NURSING INSTITUTES OF GUWAHATI, ASSAM WITH THE VIEW TO DEVELOP AN INFORMATION BOOKLET : A DESCRIPTIVE STUDY

Odessey Pangkam<sup>1</sup>, Rashmi Rekha Borah<sup>2</sup>

MSc. Nursing, Department of Obstetrics and Gynecology Nursing, Asian Institute of Nursing Education, Guwahati, Assam, India<sup>1</sup>,

Assistant Professor, Department of Child Health (Pediatric) Nursing, Royal Global University, Guwahati, Assam, India<sup>2</sup>

## **Abstract:**

### **Background**

Cell is the basic structural and functional unit of life forms. Every cell consists of a cytoplasm enclosed within a membrane, and contains many biomolecules such as DNA, RNA and protein as well as many small molecules of nutrients and metabolites. The term comes from the Latin word cellula meaning 'small room'. Cells can acquire specified function and carry out various tasks within the cell such as replication, DNA repair, protein synthesis, and motility. Cells are capable of specialization and mobility within the cell. Most cells are measured in micrometers due to their small size.

### **METHODS AND MATERIALS**

A descriptive study design was used to accomplish the objectives. Study was undertaken on 110 nursing students in selected nursing institutes of Guwahati, Assam by using non probability convenience sampling technique. Participants were selected based on inclusion and exclusion criteria. Structured knowledge questionnaire and 5-point Likert Scale were used to assess the level of knowledge and attitude.

### **RESULTS**

The findings of the study depicts that out of 110-nursing students, majority, majority of the nursing students i.e., 92 (83.64%) have moderately adequately knowledge, 10 (9.09 %) have inadequate knowledge and 8 (7.27%) adequate knowledge. Regarding attitude majority i.e., 63 (57.27%) have moderate attitude, 47(42.73 %) have undesirable attitude with no desirable attitude towards stem cell harvesting. There was a positive correlation ( $r=0.504$ ) between knowledge and attitude.

### **CONCLUSION**

From this study, it was concluded that majority of the Nursing students had moderately adequate knowledge and majority of the Nursing students had desirable attitude regarding stem cell harvesting. Therefore, the investigator concluded that proper education; hands on training regarding stem cell harvesting are needed in order to improve the knowledge and attitude of nursing students.

**KEY WORDS-** Knowledge, attitude, stem cell, harvesting.

## INTRODUCTION

Stem cell research has the potential to revolutionize the way we treat many conditions, including degenerative diseases for which few effective treatments currently exist. Great hope is invested in this field by researchers, governments, and the general public alike, based on the expectation that we will learn how to replace damaged cells in patients with new, healthy cells grown or produced in the laboratory, or by inducing organ regeneration from stem cells in the body. The field has attracted priority status in many countries and has advanced rapidly. Indeed, some basic research findings are now being translated into new treatments. Furthermore, with the discovery of iPS cells the field has recently provided a step-change in biological understanding that will affect the way new drugs are identified and tested, and potentially, the way that cells can be generated in the laboratory. Amid this unprecedented growth, stem cell research has also raised new ethical issues, not only regarding initial concerns about the use of embryos for research and the possibilities of reproductive cloning, but, more recently, regarding the broader challenges of regulation and ensuring fair access to treatments. In addition, some regions now offer unlicensed interventions that are unsupported by scientific and clinical evidence of benefit but claim to cure a wide range of conditions while, at the same time, new evidence-based treatment strategies are beginning to make the challenging transition from lab to clinic<sup>1</sup>.

Stem cells, whether they occur in the body or in the lab, are defined by two cardinal properties: they can self-renew (generate perfect copies of themselves upon division) and differentiate (produce specialized cell types that perform specific functions in the body). The promise of stem cells as new tools for benefiting human health resides in these twin properties that, in principle, allow production of unlimited quantities of defined cell types (e.g., for use in drug screening or transplantation). Beyond this primary definition, stem cells are classified into two major sub-types, based on the range of specialized cells they can generate.

Tissue (or adult) stem cells are found throughout the body, where they function to maintain the organ or tissue in which they reside, throughout the lifespan. Under normal physiological conditions, each type of tissue stem cell only generates cells of the organ or tissue system to which it belongs: the blood (hematopoietic) stem cell generates blood; the skin stem cell generates skin, and so on. An exception is the mesenchymal stem cell, which can generate bone, cartilage, and muscle (Bianco et al., 2013)<sup>2</sup>; however, while the mesenchymal stem cell field has generated much valuable research, it has also attracted controversy. Pluripotent stem cells, in contrast, have the potential to generate any type of cell found in the body.

Pluripotent stem cells are generated in the laboratory by capturing or recreating cell types that exist only transiently during embryonic development, and have not been identified in the adult body. There are currently three types of pluripotent stem cell, each generated by a different route: Embryonic stem (ES) cells are derived from early-stage, pre-implantation embryos, and were the first type of pluripotent stem cells to be discovered: first in mice (Evans and Kaufman, 1981, Martin, 1981)<sup>3</sup> and then in humans (Thomson et al., 1998)<sup>4</sup> and several additional species. Epiblast stem cells are a type of pluripotent mouse stem cells derived from a slightly later stage of embryonic development than mouse ES cells; they more closely resemble the hES cells (Tesar et al., 2007<sup>5</sup>, Brons et al., 2007)<sup>6</sup>. Induced pluripotent stem (iPS) cells were discovered in 2006 using mouse cells (Takahashi and Yamanaka, 2006)<sup>7</sup>; just a year later, this finding was replicated in human cells (Takahashi et al., 2007, Yu et al., 2007)<sup>8</sup>. iPS cells are generated from specialized cells by using a technique called “reprogramming”. This groundbreaking work was awarded the Nobel Prize in Physiology or Medicine in 2012. Researchers have rapidly adopted iPS cells for study, although there is ongoing discussion in the field about whether they are completely interchangeable with ES cells (Yamanaka, 2012)<sup>9</sup>.

## OBJECTIVE OF THE STUDY

- To assess the level of knowledge regarding stem cell harvesting among nursing students of selected nursing institutes.
- To assess the level of attitude regarding stem cell harvesting among nursing students of selected nursing institutes.
- To correlate the level of knowledge and attitude regarding stem cell harvesting among nursing students of selected nursing institutes.
- To determine the association between the knowledge and attitude regarding stem cell harvesting among nursing students with their selected demographic variables.
- To develop and validate the information booklet regarding stem cell harvesting

## MATERIAL AND METHODS

A descriptive study design was used to accomplish the objective. Study was undertaken on 110 B.Sc Nursing students in selected nursing colleges of Guwahati, Assam by using non probability convenience sampling technique. Participants were selected based on inclusion and exclusion criteria. Structured knowledge questionnaire and 5 point Likert Scale were used to assess the level of knowledge and attitude.

### DESCRIPTION OF THE TOOL

In order to meet the objectives of the study, the following tools were constructed which consists of Three sections:

SECTION I- Demographic Data

SECTION II –Knowledge questionnaire

SECTION III –Attitude scale

### DATA COLLECTION:

The data collection period was scheduled between 22<sup>nd</sup> November to 23<sup>rd</sup> December 2022 in five selected nursing colleges. The time schedule was 9am to 2pm. After getting ethical clearance from the INS trust ethics committee (GNRC Complex), Dispur, Guwahati, Assam, a formal written permission was obtained from the following Nursing colleges

- Purbanchal Educational Welfare Society (PEWS) Group of Institution, Guwahati
- Apollo College of Nursing, Guwahati
- Arya Nursing college, Guwahati
- Hayat Institute Of Nursing Education, Guwahati
- Faculty of Nursing(Assam Downtown University, Guwahati)

## RESULT

Section-I  
Table-I

Frequency and percentage distribution of nursing students according to their age

n=110

DEMOGRAPHIC VARIABLES	FREQUENCY (f)	PERCENTAGE (%)
<b>Age ( in years )</b>		
21-23 years	62	56.4
24-26 years	39	35.5
27-29 years	5	4.5
30 years and above	4	3.6
<b>TOTAL</b>	110	100

The data present in table I depicts that out of 110, majority i.e., 62 (56.4%) were between the age group of 21-23 years, 39 (35.5%) were between the age group of 24-26 years, 5 (4.5%) were between 27-29 years only 4 (3.6%) were 30 years and above.

**Table-II****Frequency and percentage distribution of nursing students according their educational qualification****n = 110**

<b>Educational Qualification</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
B.Sc. Nursing Students	65	59.1
Post Basic Nursing	45	40.9
<b>TOTAL</b>	<b>110</b>	<b>100</b>

The data present in table II depicts that out of 110, majority i.e., 65 (59.1%) were B.Sc. Nursing students whereas 45 (40.9%) were Post Basic Nursing students.

**Table-III****Frequency and percentage distribution of nursing students according to their religion****n = 110**

<b>Religion</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Islam	12	10.9
Christian	34	30.9
Hindu	49	44.5
Others	15	13.7
<b>TOTAL</b>	<b>110</b>	<b>100</b>

The data presented in table III depicts that out of 110, majority i.e., 49 (44.5%) were Hindu, 34 (34%) were Christian, 15 (13.7%) were of other religion only 12 (10.9%) were Islam.

**Table-IV****Frequency and percentage distribution of nursing students according to their marital status****n = 110**

<b>Marital status</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Married	7	6.4
Unmarried	103	93.6
<b>TOTAL</b>	<b>110</b>	<b>100</b>

The data present in table IV depicts that out of 110, majority i.e., 103 (93.6%) were unmarried whereas 7 (6.4%) were married.

Table-V

**Frequency and percentage distribution of nursing students according to their type of family**

n= 110

Type of family	Frequency (f)	Percentage (%)
Nuclear family	97	88.2
Joint family	13	11.8
Extended family	-	-
<b>TOTAL</b>	<b>110</b>	<b>100</b>

The data present in table VI depicts that out of 110, majority i.e., 97 (88.2%) belongs to nuclear family, 13 (11.8 %) belongs to joint family and none of them belongs to extended family.

Table-VI

**Frequency and percentage distribution of nursing students according to any special training attended regarding stem cell and harvesting?**

n = 110

Any special training attended regarding stem cell and harvesting?	Frequency (f)	Percentage (%)
No	107	97.3
Yes	3	2.7
<b>TOTAL</b>	<b>110</b>	<b>100</b>

The data present in table V depicts that out of 110, majority i.e., 107 (97.3%) have not attended any training regarding stem cell and harvesting only 3 (2.7 %) have attended.

**Section-II**

Table-VII

**Frequency and percentage distribution of level of knowledge regarding stem cell harvesting among nursing students.**

n= 110

Level of Knowledge	Frequency	Percentage (%)
Inadequate (0 – 8)	10	9.09
Moderate (9 – 16)	92	83.64
Adequate ( $\geq 17$ )	8	7.27

The data present in table VII depicts that out of 110, majority i.e. 92 (83.64%) have moderate knowledge, 10 (9.09 %) have inadequate knowledge with 8 (7.27%) adequate knowledge.

### Section-III

**Table-VIII**

**Frequency and percentage distribution of level of attitude regarding stem cell harvesting among nursing students.**

**n= 110**

Level of Attitude	Frequency	Percentage (%)
Undesirable ( $\leq 30$ )	47	42.73
Moderate (31 – 45)	63	57.27
Desirable ( $\geq 46$ )	-	-

The data present in table VIII depicts that out of 110, majority i.e. 63 (57.27%) have moderate attitude, 47(42.73 %) have undesirable attitude with no desirable attitude.

### Section-IV

**Table-IX**

**Correlation between knowledge and attitude regarding stem cell harvesting among nursing students**

**n=110**

Variables	Mean	S.D	Karl Pearson's Correlation 'r' Value
Knowledge	12.01	2.96	<b>r = 0.504</b> <b>p=0.0001, S***</b>
Attitude	30.04	5.99	

**NOTE: p<0.01, S – Significant**

The table XI shows that the mean score of knowledge was  $12.01 \pm 2.96$  and the mean score of attitude was  $30.04 \pm 5.99$ . The calculated Karl Pearson's Correlation value of  $r=0.504$  shows a positive correlation between knowledge and attitude which was found to be statistically significant at  $p<0.01$  level. This clearly infers that when knowledge regarding stem cell harvesting among nursing students increases then their attitude towards it also increases.

## Section-V

Table-X

**Association of level of knowledge regarding stem cell harvesting among nursing students with their selected demographic variables**

Fisher Exact test was used to assess the association between knowledge of stem cell harvesting among nursing students with their demographic variables.

n=110

DEMOGRAPHIC VARIABLES	FISHER EXACT TEST P-VALUE	REMARKS
Age in years	P= 0.360	N.S
Educational qualification	P= 0.127	N.S
Religion	P=0.355	N.S
Marital status	p=0.355	N.S
Type of family	P=0.701	N.S
Any special training regarding stem cell and harvesting	P=0.418	N.S

**NOTE:**\* $p < 0.05$ , s- significant,  $p > 0.05$  NS- Non significant

The data in table x depicts the association of level of knowledge regarding stem cell harvesting among nursing students with their selected demographic variables.

**INTERPRETATION:**

**AGE-** As the p value is 0.360 and is greater than 0.05 (level of significance) hence there is no significant association between the level of knowledge and age of the respondents.

**EDUCATIONAL QUALIFICATION-** As the p value is 0.127 and is more than 0.05 (level of significance) hence there is no association between the level of knowledge and educational qualification of the respondent.

**RELIGION-** As the p value is 0.355 and is greater than 0.05 (level of significant) hence there is no significant association between level of knowledge and religion of the respondents.

**MARITAL STATUS-** As the p value is 0.321 and is more than 0.05 (level of significance) hence there is a no significant association between level of knowledge and marital status of the respondents.

**TYPE OF FAMILY-** As the p value is 0.701 and is more than 0.05 (level of significance) hence there is a no significant association between level of knowledge and type of family of the respondents.

The analysis depicted that the selected demographic variables had no statistically significant association with the level of knowledge regarding stem cell harvesting among nursing students.

**ANY SPECIAL TRAINING ATTENDED REGARDING STEM CELL AND HARVESTING-**

As the p value is 0.418 and is more than 0.05 (level of significance) hence there is a no significant association between level of knowledge and any training attended by the respondent.

**Section-VI****Table-XI**

**Association of level of attitude regarding stem cell harvesting among nursing students with their selected demographic variables**

Fisher exact test was used to assess the association between attitude of stem cell harvesting among nursing students and with their demographic variables.

n=110

DEMOGRAPHIC VARIABLES	FISHER EXACT TEST P-VALUE	REMARKS
Age in years	P= 0.698	N.S
Educational qualification	P= 0.845	N.S
Religion	P=0.694	N.S
Marital status	P=0.696	N.S
Type of family	P=1.000	N.S
Any special training regarding stem cell and harvesting	P=1.000	N.S

**NOTE:**  $p < 0.05$ , s- significant,  $p > 0.05$  NS- Non significant

The data in table XI depicts the association of level of attitude regarding stem cell harvesting among nursing students with their selected demographic variables.

**INTERPRETATION:**

**AGE-** As the p value is 0.698 and is greater than 0.05 (level of significance) hence there is no significant association between the level of attitude and age of respondents.

**EDUCATIONAL QUALIFICATION-** As the p value is 0.845 and is more than 0.05 (level of significance) hence there is no association between the level of attitude and educational qualification.

**RELIGION-** As the p value is 0.694 and is greater than 0.05 (level of significant) hence there is no significant association between level of attitude and religion of the respondents.



**MARITAL STATUS**– As the p value is 0.696 and is more than 0.05 (level of significance) hence there is a no significant association between level of attitude and marital status of the respondents.

**TYPE OF FAMILY**- As the p value is 1.000 and is more than 0.05 (level of significance) hence there is a no significant association between level of and type of family knowledge of the respondents.

**ANY SPECIAL TRAINING ATTENDED REGARDING STEM CELL AND HARVESTING**- As the p value is 1.000 and is more than 0.05 (level of significance) hence there is a no significant association between level of knowledge and any training attended by the respondent.

The analysis depicted that the demographic variable did not show statistically significant association with level of attitude regarding stem cell harvesting among nursing students.

## CONCLUSION

A descriptive study was conducted to assess the knowledge and attitude regarding stem cell harvesting among nursing students in selected nursing colleges of Guwahati, Assam with the view to develop the information booklet. The findings of the study shows that out of 110 nursing students, majority i.e. 92 (83.64%) have moderately adequately knowledge, 10 (9.09 %) have inadequate knowledge with 8 (7.27%) adequate knowledge.

Whereas in attitude, majority i.e., 63 (57.27%) have moderate attitude, 47(42.73 %) have undesirable attitude with no desirable attitude.

There was a positive correlation (calculated by Karl Pearson's Correlation value of  $r=0.504$ ) between knowledge and attitude which was found to be statistically significant at  $p<0.01$  level. This clearly infers that when knowledge regarding stem cell harvesting among nursing students increases then their attitude towards it also increases.

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