

Knowledge and attitude on umbilical cord blood stem cell therapy among bachelor nursing students in Lalitpur Metropolitan City

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ABSTRACT

Background: Stem cells are immature cells that have the ability to mature into different types of functioning cells as needed by the body. Umbilical cord blood is one of the richest sources of stem cells. It is vital for nurses to keep up-to-date with current advances in stem cell science and nurses can play a crucial role in providing first-hand information to the public about stem cells and umbilical cord blood banking. Therefore, this study is aimed to identify the knowledge and attitude regarding umbilical cord blood stem cell therapy among bachelor nursing students.

Method: A descriptive cross-sectional research design was used to assess the knowledge and attitude of 263 nurses studying bachelor in nursing science and post-basic bachelor in nursing in different selected nursing colleges of Lalitpur metropolitan city. Multi-stage cluster sampling was used to select respondents. Data was collected using a self-developed self-administered Google form questionnaire. Knowledge level was classified as good, moderate and poor, and attitude as favourable, neutral and unfavourable. Descriptive and inferential statistical methods were used to analyze data.

Results: Nearly half of the nurses had poor knowledge (49.4%) and the only 6.8% nurses had good knowledge. However, the majority of nurses (93.9%) had a favorable attitude regarding umbilical cord blood stem cell therapy. There is no association between knowledge level and attitude ($p=0.224$).

Conclusion: Nurses had poor knowledge and favorable attitudes regarding umbilical cord blood stem cell therapy. Nurses have the potential to play a vital role in providing information to the general population regarding stem cell therapy, therefore, it is most important to include these areas in the nursing curriculum.

Keywords: Attitude, Knowledge, Nurse, Stem cell, Umbilical cord blood

INTRODUCTION

Stem cells are unspecialized cells of the human body. They can differentiate into any cell of an organism and have the ability to self-renewal [1]. Stem cell treatments have been applied to address a wide range of medical conditions such as myocardial infarction, diabetes, liver cirrhosis, systemic lupus erythematosus, crohn's disease etc. Stem cells can be sourced from umbilical cord blood, bone marrow, adipose and placental tissue, [2,3]. Awareness levels among the healthcare providers when increased, about the concept of stem cell therapy, can work positively towards making stem cell banking an integral part of healthcare. [4]. In Nepal, cancer patients

have been successfully treated with stem cell therapy in Nobel and Civil hospitals [5].

In 2017, research carried out in Saudi Arabia among healthcare providers revealed that just 31.2% demonstrated a good knowledge and interestingly, majority 76.4% of participants, displayed a favorable attitude towards the utilization of stem cells [6]. A study conducted in India in 2016 among nurses of labor and maternity wards revealed that 42.8% of nurses had average knowledge followed by an equal number of nurses (28.6%) with good and poor knowledge. None of them had excellent knowledge. Only 19.6% of nurses had a favorable attitude [7]. A study conducted in Malaysia in 2015 among nursing

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students revealed that 92.0% of participants had moderate awareness and 76.1% had a good attitude toward stem cells. [8]

During literature review, only a limited study on knowledge and attitude regarding stem cell therapy was found in Nepal. Thus, the present study may contribute to address the gap in Nepalese research. The nurses' role in collection of cord blood, tube labelling, packaging and providing first-hand information to the parents about umbilical cord blood stem cell therapy is crucial. To provide the quality nursing service nurses need to be knowledgeable about it. Hence, this research is planned to assess the knowledge and attitude of bachelor student nurses towards umbilical cord blood stem cell therapy.

METHODS

The cross-sectional descriptive study was carried out to identify the knowledge and attitude towards umbilical cord blood stem cell therapy among bachelor nursing students from February to March 2022. A total of 263 nursing students studying for bachelor in nursing in the first, second, and third year from five nursing colleges of Lalitpur Metropolitan City, Nepal were included in the study. The selected colleges were: Asian College for Advance Studies (ACAS) Satdobato, B & B Medical Institute (Pvt) Ltd Gwarko, Hope International College Satdobato, Janamaitri Foundation Pvt. Ltd. Institute of Health Science Hattiban, and Patan Academy of Health Sciences, School of Nursing and Midwifery, Sanepa.

Multi-stage cluster sampling technique was used to select bachelor nursing students of nursing colleges of Lalitpur Metropolitan City. A self-administered Google form questionnaire was used for data collection. The level of knowledge was classified as good knowledge (>75%), moderate knowledge (50% to 75%), and poor knowledge (<50%) [6]. The level of attitude was categorized as most favorable attitude (100%), neutral attitude (60%), and most unfavorable attitude (20%) [9]. The knowledge-related questionnaire consisted of 9 questions. The attitude-related questionnaire consisted of 13 questions. For knowledge-related items, a score of 1 was given for each correct answer, and score of zero (0) was given for an incorrect answer, and for multiple responses score of 1 was given for each correct response.

The administrative approval was taken from the administration of the nursing colleges. Ethical clearance was taken from IRC TU IOM (Ref:343/078/079) prior to the commencement of the research study. Google form was sent to all student nurses for data collection. On receiving and clicking the link the participants were auto-directed to the information about the study. After they clicked "Agree" on written informed consent, a set of questions appeared sequentially, which the participants could answer. Two weeks were given to fill up the Google form. A reminder email was sent at the end of the first week and one day before the end of the second week and who hadn't filled up the form and were excluded from study who had not sent the form till the two-week time duration. The form was set up in such a way that one participant could submit only one form. The anonymity of the participants was maintained by using code numbers and not revealing the individual identity anywhere.

Data analysis was done by using the Statistical Package of Social Science (SPSS) software version 16. Descriptive statistical methods such as frequency, percentage, mean, and standard deviation were used to assess sociodemographic variables, and the Inferential Statistics method such as the chi-square test was used to analyze the association between the level of knowledge and socio-demographic characteristics. The Fisher Extract test was used to assess the association between knowledge and attitude.

RESULTS

The study population was 263 nurses studying bachelor in nursing science (BNS) and post basic bachelor in nursing (PBBN) in different selected nursing college of Lalitpur metropolitan city. Data collection was done by using self-developed self-administered google form questionnaire.

Table 1 shows that the majority (75.7%) of students were 21 to 25 age group. The median was 24, Q1 was 22 and Q2 was 25. Less than half (35.4%) of the students had experience in the maternity ward.

Table 1: Background information of the students, n= 263

Characteristics	Frequency	Percent
Age (in years) [Median 24, IQR=22-25, Range=18-37]		
≤20	10	3.8
21 - 25	199	75.7
26 - 30	50	19.0
> 30	4	1.5
Experience in maternity ward		
Yes	93	35.4
No	170	64.6

Table 2 shows nearly half (49.5%) of the students had poor knowledge and the least of students (6.8%) had good knowledge regarding umbilical cord blood stem cell therapy. The majority (93.9%) of students had favorable attitudes and the least of students (5.7%) had unfavorable attitudes.

Table 2: Level of knowledge and attitude on stem cell therapy, n= 263

Parameters	Frequency	Percent
Knowledge		
Poor	130	49.5
Moderate	115	43.7
Good	18	6.8
Attitude		
Unfavorable	15	5.7
Neutral	1	0.4
Favorable	247	93.9

Table 3 shows that there is no association between the level of knowledge with age and experience in the maternity ward.

Table 4 shows that there is no association between the level of attitude with the age, experience in the maternity ward, and knowledge level of students.

Table 3: Association between level of knowledge with age and experience of students, n= 263

Variables	Level of Knowledge			χ ² Value	p-value
	Poor	Moderate	Good		
Age up to 24	82(48.50%)	74(43.80%)	13(7.70%)	0.576	0.75
Above 24	48(51.10%)	41(43.60%)	5(5.30%)		
Experienced in maternity ward	44(47.30%)	42(45.20%)	7(7.50%)	0.296	0.862
Not experienced	86(50.60%)	73(42.90%)	11(6.50%)		

Table 4: Association between level of attitude with age, experience, and knowledge level of students, n= 263

Variables	Level of Attitude		χ ² Value	p-value
	Favorable	Unfavorable		
Age up to 24	11(6.50%)	157(93.50%)	0.587	0.583
Above 24	4(4.30%)	90(95.70%)		
Experienced in maternity ward	7(7.50%)	86(92.50%)	0.867	0.352
Not experienced	8(4.70%)	161(95.30%)		
Level of knowledge			2.81	0.224*
Poor	9(7.00%)	120(93.00%)		
Moderate	4(3.50%)	111(96.50%)		
Good	4(11.10%)	16(88.90%)		

DISCUSSION

Stem cells are versatile cells capable of developing into nearly any type of tissue found in the human body, making stem cell research exceptionally significant. The current investigation aimed to evaluate the knowledge and attitudes of nurses concerning stem cell therapy. A strong grasp of the subject and a positive outlook among nurses would establish them as reliable sources of information, ultimately empowering patients to make informed decisions about adopting stem cell therapy as a cutting-edge treatment option. The present study revealed that less than half (35.4%) having experience in the maternity ward. A study conducted among 56 nurses in India presented that the majority (60.7%) of the nurses were working in the labor room [7]. The study revealed most of the staff nurses (49.4%) had poor knowledge, less than half (43.7%) had moderate knowledge and only 6.8% had good knowledge regarding umbilical cord stem cell therapy. This result is similar to the Quasi-experimental design (pre and post-intervention) study conducted among 53 staff nurses in Egypt revealed that only 3.8% of the participants had good knowledge about cord blood stem cells before intervention [10]. Similarly, another study in India found that only (10%) of nurses had excellent knowledge regarding stem cell umbilical cord blood banking, and 51% of nurses had moderately favorable attitudes regarding stem cells and umbilical cord blood banking [11].

In our current research, the majority of participants, specifically 93.9%, displayed a favorable outlook when it came to stem cell therapy. Likewise, in a separate study involving 250 healthcare providers from the Saudi Arab, a significant majority, or 76.4%, also held a positive view of stem cell therapy [6]. This discovery stands in contrast to the results of a study conducted in India, where it was found that nurses had good knowledge in 42.86% of cases [7].

The current research findings indicate that there was no discernible link between knowledge levels and factors like age or experience in the maternity ward. The results of a study carried out among college students in Bangalore demonstrated that there was no connection between sociodemographic variables and the levels of knowledge and attitude. These findings align with the outcomes of the present study [12].

The current research uncovered that there was no link between attitude and the age or experience in the maternity ward. This finding differs from a study conducted among 53 staff nurses in Egypt, which showed a significant relationship ($p \leq 0.1$) between attitude with age, and experience [10]. In a study involving 56 nurses in India, it was observed that there was a significant positive correlation ($r=0.532$; $p<0.01$) between nurses' knowledge scores and their attitudes concerning stem cells and the banking of umbilical cord blood [7]. Likewise, a study carried out among college students in India found that there were no noteworthy connections between attitude and sociodemographic variables, aligning with the results of this current study [12].

The results of this study are very useful for other researchers to conduct the same type of study among larger populations focusing on educational intervention. Due to limited studies conducted on this topic, we highly recommend various educational intervention studies among medical, nursing, and other paramedics.

The study was conducted among student nurses of nursing college/school of only Lalitpur metropolitan city; therefore, sample size might not be representative to give a generalization for the entire population.

CONCLUSION

Nearly half of the students had poor knowledge and few had good knowledge regarding umbilical cord blood stem cell therapy. However, the majority of students had

favourable attitude and less had unfavourable attitude. It can be concluded that nurses had poor knowledge but favourable attitude regarding umbilical cord blood stem cell therapy. Nurses have the potential to play a vital role in providing information to the general population regarding stem cell therapy, therefore, it is most important to include these areas in the nursing curriculum.

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Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable

Author Contributions:

KB, SS, IL reviewed the literature, conceptualized and designed the research, KB, SS, IL did data collection, DJ did data analysis, KB, DJ did data interpretation, prepare result, KB drafted the manuscript and all authors reviewed the manuscript and approved the final version of the manuscript. All authors agreed to be accountable for all aspects of the research work.

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Layman summary: Umbilical cord blood is one of the richest sources of stem cells. The rich umbilical cord blood stem cells can easily mature into all common types of blood cells, which can be used to treat and cure many conditions such as different cancers, genetic diseases and blood disorders. So it is vital for nurses or health care providers to keep up-to-date of current advances in stem cell science, and nurses can play crucial role in providing first-hand information to the general public about stem cell and umbilical cord blood banking. This research is aimed to identify the knowledge and attitude regarding umbilical cord blood stem cell therapy among bachelor nursing students.

Self-administered questionnaire-based result shows that nurses had poor knowledge but favourable attitude regarding umbilical cord blood stem cell therapy. Also, there was no significant link between knowledge and attitude, and the factors like age or experience in the maternity ward.

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