Knowledge, Attitude, and Practice Regarding Prematurity and its Complications Among Medical Students

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Background: The neonatal period constitutes the most important period to determine a child's survival. Calls have been made to reassess the curriculum of medical schools throughout the world to adopt competence-based programs that address the healthcare needs of society. India is a country characterized by a high neonatal mortality rate of 20 per 1000 live births in the year 2018 [1]. So, it is necessary to include a curriculum that addresses this issue.
Objective: To determine the knowledge of medical students about prematurity and its complications.
Methods: A hospital-based cross-sectional study was carried out at Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, IND between March 2022 and June 2022. Data were collected through a semi-structured questionnaire. Data were entered into Microsoft Excel, and descriptive analysis was conducted.
Results: A total of 164 students were assessed, who belonged to the pre-final year, final year, and internship. About 82% of the students correctly identified basic definitions. More students were knowledgeable about ocular complications than respiratory complications. Most students had sufficient knowledge about nutritional supplementation for preterm infants. The role of antenatal steroids was known only by 53% of the students. There was a significant correlation between the students' year of study and their scores (p=0.004).

Keywords: prematurity, knowledge, medical students, neonates, prematurity complications.

1. Introduction

The WHO defines preterm as babies born alive less than 37 weeks of pregnancy and low birth weight as2500grams and less . [2,3]

Approximately 13.4 million babies are born preterm, that is more than 1 in 10 babies and this is increasing. Preterm complications are one of the leading causes of mortality among children under 5, which constituted about 1 million deaths in 2015 [2]. Disproportion in survival rates around the world are evident. In low socioeconomic places, most of the babies born at or below 32 weeks die due to inadequate care and lack of cost effective care, such as breastfeeding support, warmth and basic neonatal resuscitation facility. Whereas in high socioeconomic places, almost all babies survive. Sub-optimal use of technology in middle – income places is causing an increased overload of disability among preterm babies who survive the neonatal period. [4]

In India, 27 million babies are born every year (2010 data) out of which 3.5 million are born prematurely which exposes them to an enormous risk of dying early, often shortly after their birth [5]. Most of the preterm birth occur spontaneously, but some are due to early caesarean delivery or induction of labor for medical or non-medical indications. Common causes for preterm delivery include infections, chronic conditions line diabetes and hypertension and multiple pregnancies. Most of the time no cause is identified and there could be a genetic influence also. A greater understanding of the causes will further the development of solutions to prevent preterm birth. [4]

On this context, every newborn action plan (ENAP) was established as a global roadmap to end preventable newborn deaths and still births by 2035. India was one of the countries which finalized its national newborn action plans. Twenty countries were targeted for data collection through the use of a progress tracking tool. [6]

There seems to be a gap in the knowledge on prematurity by some health workers who are the major source of information to mothers. Therefore, it is necessary to evaluate the knowledge of medical students who will soon become a major force among health workers so as to breach the gap in knowledge.

2. Methodology:

Study design:

This is a hospital based cross-sectional study.

Study area and population:

Interns, final year and pre-final year students of Saveetha medical college.

Study duration:

The study was carried out from March 2022 to June 2022.

Sampling method:

Convenient sampling was done.

Sample size:

The sample size for the study was determined using previous studies and convenient sample size was selected. Therefore, the sample size selected for this study is 164.

Inclusion criteria:

Pre-final year, final year and interns of Saveetha medical college

Exclusion criteria:

Those who are not filling to participate.

Study tool and data collection method:

A semi-structured pretested questionnaire was used to analyze the students' knowledge about prematurity. The questionnaire contained basic questions about prematurity and complications of preterm birth.

Informed consent:

Informed oral consent were obtained from the students involved in this study before administering the questionnaire.

Statistical analysis:

The data was analyzed using Microsoft excel. The descriptive statistics were depicted using frequency tables and graphs. Factors associated with the study variables were analyzed by calculating the significance using P value.

3. Result:

The study sample comprised 164 pre-final, final year students, and interns who completed a validated questionnaire. The distribution of medical students who participated in the study is presented in Table 1.

Table 1. Distribution of medical students participated in the study, Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, IND

Academic year	Overall N = 164 N (%)
Pre-final year	18 (10.98)
Final year	94 (57.32)
Internship	52 (31.71)

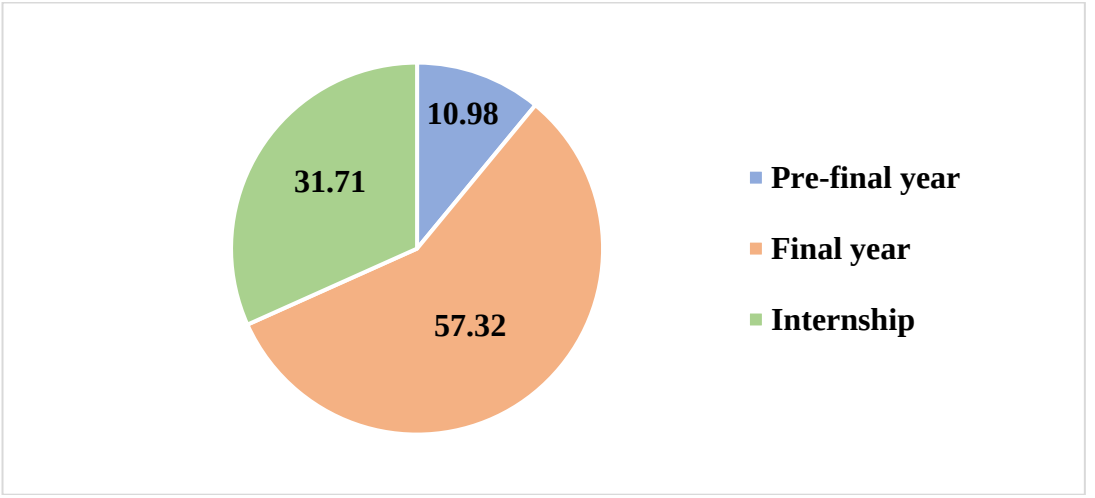

Figure 1: Pie chart of pre-final year students, final year students and interns participated in the study, Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, IND

Among the 164 students, 10.98% were in their pre-final year, 57.32% were in their final year, and 31.71% were interns. Figure 2 provides an overview of the distribution of prematurity knowledge scores for all study participants. Specifically, 3.05% of students scored between 0 to 25%, 21.34% scored between 25 to 50%, 45.12% scored between 50 to 75%, and only 30.49% scored between 75 to 100%.

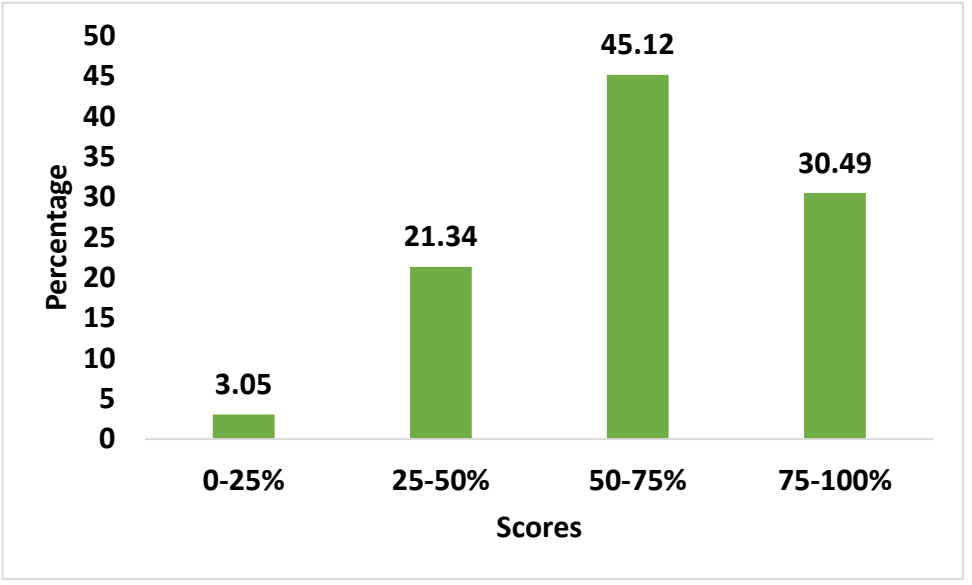

Figure 2: Prematurity knowledge scores obtained by the overall students participated in the study

Table 2, 3, and 4 provide details regarding the distribution of prematurity knowledge scores among pre-final year students, final year students, and interns, respectively. Among pre-final year students, 11.11% scored between 0 to 25%, 22.22% scored between 25 to 50%, 27.78% scored between 50 to 75%, and 38.89% scored between 75 to 100%. The majority of pre-final year students, 38.89%, scored between 75 to 100%.

For final year students, 2.13% scored between 0 to 25%, 30.85% scored between 25 to 50%, 45.74% scored between 50 to 75%, and 21.28% scored between 75 to 100%. The highest percentage of final year students, 45.74%, scored between 50 to 75%.

Among interns, 1.92% scored between 0 to 25%, 3.85% scored between 25 to 50%, 50% scored between 50 to 75%, and 44.23% scored between 75 to 100%. The largest proportion of interns, 50%, scored between 50 to 75%.

Interns had the highest percentage of students scoring between 75 to 100% (44.23%), while final year students had the lowest percentage (21.28%). A comparison of prematurity knowledge scores among pre-final year students, final year students, and interns is illustrated in Figure 2.

Table 2 Distribution of prematurity knowledge scores for the pre-final year students of Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, IND

Scores	Pre-final year N = 18 N (%)
0-25%	2 (11.11)
25-50%	4 (22.22)
50-75%	5 (27.78)
75-100%	7 (38.89)

Table 3 Distribution of prematurity knowledge scores obtained by the final year students of Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, IND

Scores	Final year N = 94 N (%)
0-25%	2 (2.13)
25-50%	29 (30.85)
50-75%	43 (45.74)
75-100%	20 (21.28)

Table 4 Distribution of prematurity knowledge scores obtained by the internship students of Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, IND

Scores	Internship N = 52 N (%)
0-25%	1 (1.92)
25-50%	2 (3.85)
50-75%	26 (50)

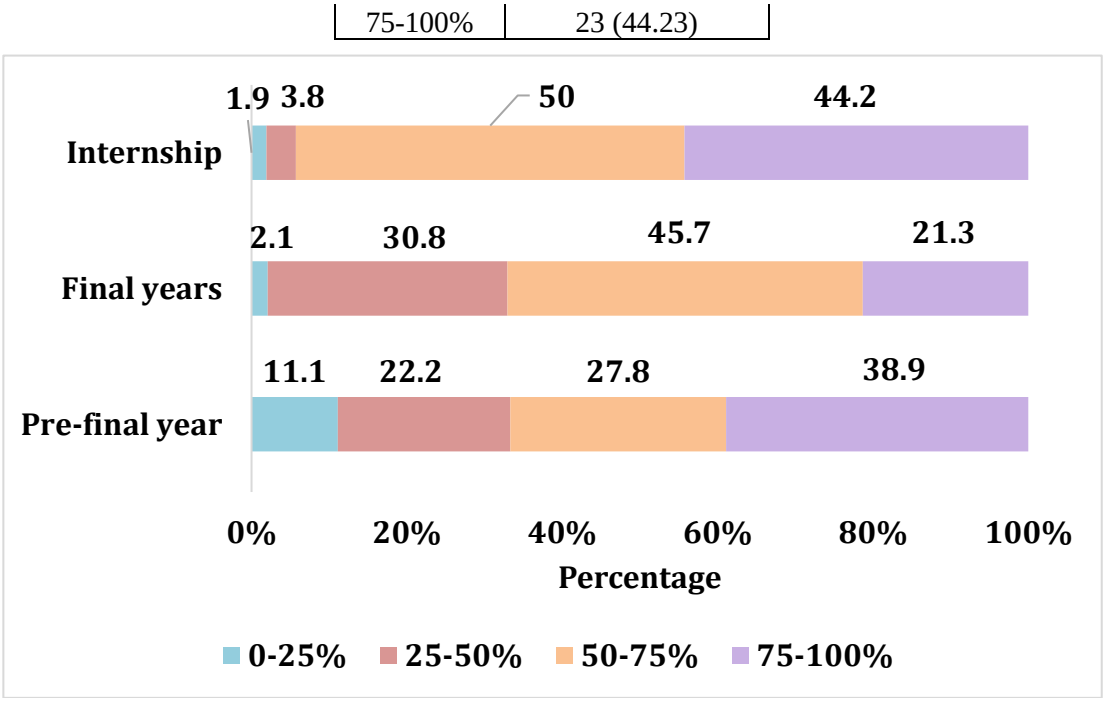

Figure 2: Comparison of prematurity knowledge scores obtained by the pre-final year students, final year students and interns participated in the study, Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, IND

The association between the study year of the students and their scores on knowledge of prematurity is presented in Table 5, indicating a significant correlation between these two parameters as evidenced by the low p-value of 0.004.

Table 5 Association between the study year of the students and their scores of knowledge of prematurity

Academic year	Scores N (%)				P value
	0 - 25%	25 - 50%	50 - 75%	75 - 100%	
Pre-final year	2 (11.11)	4 (22.22)	5 (27.78)	7 (38.89)	0.004*
Final year	2 (2.13)	29 (30.85)	43 (45.74)	20 (21.28)	
Internship	1 (1.92)	2 (3.85)	26 (50)	23 (44.23)	

Table 6 provides data on the number of students who answered each question correctly. Questions 1 to 5 pertain to basic definitions, while questions 6 to 10 address complications observed in premature infants. Questions 11 to 17 focus on steroid prophylaxis and supplementation in premature infants. More than 75% of students answered questions 1, 2, 3, 12, 14, and 15 correctly. However, the majority of questions were not answered correctly by most students, with less than 75% correctly answering questions 4, 5, 6, 7, 8, 9, 10, 11, 13,

16, and 17. Approximately 95% of students were unable to answer basic questions such as identifying who low birth weight babies are.

Table 6 Questions correctly answered by the study participants

Q.no	Questions	Correctly answered N (%)	Not Correctly answered N (%)
1	What is preterm birth?	135 (82.32)	29 (17.68)
2	What is extremely preterm?	141 (85.98)	23 (14.02)
3	What is very preterm?	145 (88.41)	19 (11.59)
4	What late preterm?	25 (15.24)	139 (84.76)
5	Who are low birth weight babies?	8 (4.88)	156 (95.12)
6	What is the most common cardiac complication seen in premature infants?	111 (67.68)	53 (32.32)
7	Which is an ocular complication of premature infants	116 (70.73)	48 (29.27)
8	Which is the most common surgical emergency in premature infants?	88 (53.66)	76 (46.34)
9	Which is not a short term respiratory complication in preterm infants?	40 (24.39)	124 (75.61)
10	Which is not a risk factor of retinopathy of prematurity?	107 (65.24)	57 (34.76)
11	Antenatal steroid helps in the prevention of the following except?	87 (53.05)	77 (46.95)
12	Immunoprophylaxis with palivizumab (Synagis) is recommended in the first year of life during the respiratory syncytial virus season for all infants born before 29 weeks' gestation to decrease the risk of hospitalization.	125 (76.22)	39 (23.78)
13	What is the nutritional supplement for babies weighing 1.5 – 2.5 kg?	120 (73.17)	44 (26.83)
14	What is the nutritional supplement for babies weighing less than 1.5kg?	136 (82.93)	28 (17.07)
15	What is the dose of vitamin D?	125 (76.22)	39 (23.78)
16	What is the dose of iron?	106 (64.63)	58 (35.37)
17	What is hypocalcemia in preterm infants?	103 (62.8)	61 (37.2)

4. Discussion

The survey was completed by a total of 164 students, with pre-final year, final year, and interns constituting 10.98%, 57.82%, and 31.71% of the participants, respectively. Over 80% of students were familiar with the definitions of preterm, extremely preterm, and very term, possibly due to their engagement in pediatric postings since the 2nd year of their studies. Notably, 44.2% of interns achieved the highest score, reflecting their extensive theoretical and practical exposure to the subject matter. However, pre-final year students did not perform as well, likely due to their recent initiation into postings. This finding aligns with a similar study by Maryam and Hassan, which found that 400L students had limited knowledge compared to other years, particularly on the topic of neonatal jaundice [7].

Among the inquiries regarding the complications observed in premature infants, it was noted that the respiratory complications garnered the least number of correct responses, while questions concerning ocular complications received the highest accuracy rate. This discrepancy can be elucidated by considering the recent completion of ophthalmology postings by final year students, thus enhancing their familiarity with ocular issues. Conversely, pre-final year students, currently engaged in ophthalmology postings, may have benefited from ongoing exposure to related concepts, contributing to their comparatively higher success rate in answering questions regarding ocular complications.

Only 53% of the students were aware of the utilization of antenatal steroids as a preventive measure against complications, indicating a limited exposure to neonatal complication topics. However, there was a more robust understanding among students regarding nutritional supplementation for premature infants. Specifically, 76% of students were knowledgeable about the appropriate doses of iron, while 64% were aware of the recommended doses of vitamin D for premature infants.

Considering these findings, alongside the customary responsibilities of diagnosing and treating diseases, it is imperative to equip students with the skills necessary for advocating for community health initiatives and engaging at governance levels to shape policies conducive to health advancement [5]. The overarching objective of neonatal education should aim to instill in students a comprehensive proficiency in fundamental care skills that are reflective of the broader healthcare system. This notion aligns seamlessly with the perspective advocated by HE Jeffery [8], emphasizing the importance of nurturing well-rounded competencies among students in the realm of neonatal care.

Incorporating a more comprehensive focus on neonatal health within pediatric curriculum is essential to provide students with extensive exposure to this critical subject matter. Clinical postings should be expanded to include dedicated neonatology rotations, enabling students to gain firsthand experience in managing neonatal cases. Additionally, the integration of skills training laboratories would offer students an engaging and hands-on learning environment, moving away from traditional classroom-based teaching methods. The utilization of simulation manikins has garnered positive feedback and widespread acceptance among students [9,10], proving particularly beneficial in settings with limited teaching faculty, as evidenced by Treadwell's findings [11] on the efficacy of newborn teaching strategies for undergraduate students.

It is imperative to recognize that medical education is an ongoing process, with the primary objective of aligning the curriculum with the evolving needs of society [12]. This necessitates periodic reviews and revisions of the curriculum, as observed in countries like Rwanda [13] and India [14], to ensure that medical education remains relevant and responsive to the healthcare landscape.

5. Conclusion:

The study showed that the knowledge and attitude about prematurity was generally fair among interns compared to the other years. There will be need for the medical students to have continued teachings, reminder and exposure on neonatology so they will be able to educate other healthcare workers and mothers when they graduate so as to prevent the severe morbidity and mortality associated with premature infants and low birth weight babies.

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Disclosures

Human subjects: All authors have confirmed that this study involves human participants and Oral consent was taken from them prior to presenting the questionaire. Relevant ethical clearance was obtained from IRB Board, Saveetha Medical College.

Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following: Payment/services info: All authors have declared that no financial support was received from any organization for the submitted work. Financial relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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