

# Knowledge, attitude, and awareness of childhood cancer among undergraduate medical students in South India

M. Sneha Latha, Kumaravel Chitralakshmi, Manipriya Ravindran, P. Ravichandran Angeline, Lakshminarayanan Kannan<sup>1</sup>, Julius Xavier Scott

## Abstract

**Background:** In India roughly 60000 childhood cancer cases are diagnosed annually with only nearly 100 pediatric oncologists. So it's pertinent that the physicians and pediatricians are adequately equipped to recognize and refer them appropriately. Hence this study was conducted to assess the knowledge, attitude and awareness of childhood cancer among undergraduate medical students in South India. **Materials and Methods:** The study was conducted among 240 undergraduate students from all over South India in a undergraduate pediatric clinical training. A 24 point questionnaire was given to assess their understanding of pediatric malignancies and their interest towards pediatric oncology. Statistical analysis was done with SPSS 18.V software. **Results:** 50% were interested in pursuing pediatrics as their career but 80% of them were not interested in pursuing pediatric oncology as their career. 55% of the students have not encountered any pediatric oncology patients in the ward. 40% did not have any lecture classes on pediatric oncology. 65.5% felt that their knowledge of childhood cancer did not make them competent to suspect and refer appropriately during their practice. 84% supported that there is a need to improve pediatric oncology teaching in their medical curriculum. **Conclusions:** The study unambiguously states that the future physicians lack confidence in identifying and managing childhood malignancies and pediatric oncology is far down in their career options. There is a need to reform the undergraduate medical students by increasing their exposure to pediatric oncology to improve their competence levels and interest in pursuing it as a career also.

**Key words:** Awareness, childhood cancer, undergraduates

## Introduction

The estimated number of new cancers diagnosed in India every year is 700–900,000.<sup>[1]</sup> Cancer remains the leading cause of death in children aged between 1 and 14 years of age.<sup>[2]</sup> However, in spite of the increased incidence of childhood cancer over the last 25 years, we hardly have <100 pediatric oncologists catering to our cancer children. Though there has been some progress in Pediatric Oncology in the last few decades, in India, we are still far behind the current international standards.

The diagnosis of childhood cancer is complex and many variables play an important role. Inadequate familiarity with the warning signs and symptoms of childhood cancer results in delayed referral to a physician for diagnosis and treatment. Early diagnosis of childhood cancer is a fundamental goal in pediatric oncology because it allows an opportunity for timely treatment while disease burden is still in its earliest stages. Consequently, prognosis may improve, and a cure can be attained with minimal side or late effects. Hence, we conducted a survey to determine the level of childhood cancer awareness among undergraduate students and their attitude toward pediatric oncology career as it would help us to identify the strategies to strengthen knowledge of our future primary caregivers and increase their interest in this field.

## Materials and Methods

Though childhood cancer survival rate in India is influenced by multiple factors, we wanted to focus on two main issues: Causes for delayed diagnosis and paucity of dedicated pediatric oncologists in India. Hence, we prepared a questionnaire to assess the knowledge of the final year medical students about the symptoms of common childhood cancers and their interest/attitude toward pediatric oncology as a career.

The survey was conducted in a 2-day pediatric revision course for final year MBBS medical students, who came from all over South India. The undergraduates participated represented both Government and Private institutions. The conference was attended by 240 students and the participation in the survey was voluntary. 206 of them participated in the survey and gave their inputs. The survey was a 24 point questionnaire pertaining to their knowledge and clinical exposure toward pediatric oncology [Annexure 1]. The data were analyzed using the SPSS 18.V software (SPSS Inc., 233 South Wacker Drive, 11<sup>th</sup> Floor, Chicago).

## Results

A total of 206 (85%) of the 240 undergraduate medical students volunteered for this study. 86 (41%) of the respondents were males, and 120 (58%) were females. The students were from various private and government medical colleges of South India. 144 (70%) of them answered correctly the basic questions about childhood cancer.

82 (40%) of the individuals reported that they do not have a pediatric oncology unit in their institution. 113 (55%) of the undergraduates had never attended to any pediatric oncology patients during their curriculum.

81 (40%) of the students have never attended a lecture class on pediatric oncology and of the 124 (60%) who attended lectures a majority of 90 (44%) have attended less than three lectures on pediatric oncology.

Regarding the question as to which factor contributed the most to the failure of effective treatment of childhood cancer, 61 (29.6%) undergraduates have replied that late diagnosis and referral was the leading cause while 49 (23.8%) of them replied that the huge cost of treatment was the main factor leading to failure. 44 (21.4%) of them felt that the less availability of trained personnel was the major determinant leading to the failure, while 19 (9.2%) were of the opinion that unwillingness to undergo treatment due to misconception and social stigma was another cause. 6 (2.9%) individuals felt that the main cause for failure was the lack of treatment facilities availability in the country.

164 (80%) of the students were not interested in pursuing pediatric oncology. The main reason for the lack of interest in pediatric oncology as a subspecialty turned out to be an

Access this article online

Quick Response Code:



Website: www.sajc.org

DOI: 10.4103/2278-330X.155680

Department of Pediatrics, Division of Pediatric Hemato Oncology and <sup>1</sup>Department of Community Medicine, Sri Ramachandra University, Porur, Chennai, Tamil Nadu, India

**Correspondence to:** Dr. Julius Xavier Scott, E-mail: jxscott@hotmail.com

interesting question with an majority of 61 (29.6%) saying that it was too depressing to be taken as a career, while 35 (17%) have replied that they did not want to pursue the field as it had an unpredictable outcome among patients. 33 (16%) individuals have said that they did not possess adequate knowledge regarding this field which acted as a hurdle for them to take up this field. 15 (7.3%) felt that insufficient financial compensation led to their lack of interest while 15 (7.3%) were not interested in this field because of the huge workload involved.

135 (65.5%) have agreed that they do not possess sufficient information in pediatric oncology to suspect and refer a child during their practice. This is supported with an overwhelming majority of 173 (84%) replying that there was a need to improve the teaching of pediatric oncology in their curriculum.

Regarding the question as to the best way to increase the awareness of childhood cancer in our society, 80 (39%) felt that improving pediatric oncology education in the medical curriculum was the best way to imprint awareness on childhood malignancies. 72 (35%) have replied that mass media creating awareness among the public was the best tool in raising awareness. 23 (11.2%) are of the opinion that conducting seminars and lectures was the best way forward. 15 (7.3%) felt that launching national cancer control programs by the government would be the best way to imprint awareness.

Regarding the best way to support pediatric oncology patients, 49 (23.8%) of the undergraduates wanted to donate blood as a way of support. 68 (33%) replied that they will function as a volunteer. Interestingly, 46 (22.3%) were ready to raise funds for these patients. 20 (19.7%) have said that they would take up a career in pediatric oncology.

## Discussion

In developed countries, pediatric oncology has been advancing to greater strides due to the major advances in cancer research and improvements in cancer management, wherein the children affected with cancer are being treated by targeted therapy. In India, the long-term survival has gradually improved from 20% to 60% in acute lymphoblastic leukemia, <70% to >90% in Hodgkin's disease, 30% to 70% in nonHodgkin's lymphoma, and 10% to 40% in acute myeloid leukemia, but the survival rates are still considerably poor when compared with developed countries.<sup>[3-5]</sup>

While, worldwide studies are being done to identify the barriers impeding the discovery, research and technological development in the field of oncology,<sup>[6]</sup> we in the developing countries are still striving to bridge the gap between the need and availability in various sectors like infrastructure, trained staff personnel and fund resources. This has led to a situation wherein pediatric oncology has no attractive scope for the medical students and the various constraints in management of childhood cancer has made them consider this field of specialty as too depressing. Hence, it's no wonder that the present study reflects the same concepts, as 80% of them who want to take pediatrics do not want to take pediatric oncology. The causes are multifactorial as >50% of medical colleges has no facilities or expertise for treating cancer children, no diagnostic modalities such as immunophenotyping, cytogenetics, nuclear imaging, no trained oncology nurses, nutritionists, no radiotherapy, and nonavailability of blood components. Compounding this burden are the sociocultural factors such as financial constraints and cancer illiteracy.<sup>[7-9]</sup> This in turn has made

them consider it as too depressing, with an unpredictable outcome, as they do not have much to do for these children. Pediatric oncology has multiple tiers and it needs a multiple faceted approach to overcome its barriers like government's support for a fully competent infrastructure and cancer research, training of staff involved in cancer treatment, support groups to facilitate cancer treatment in form of funding for chemotherapy, blood products, providing free accommodation and setting up of palliative care. This in turn will open up the gates for more medical students to pursue pediatric oncology as a specialty as there is more scope for improving the survival rate, quality of care, and research activities.

In the present day study, about half of the respondents have not attended enough lecture class on pediatric oncology. Lack of postings in pediatric oncology leads to lack of knowledge and preparedness to diagnose childhood cancer early. As evident in the present study, the existent structure of the curriculum does not permit exposure to cancer patients during undergraduate years. This explains the fact why their interest in pediatric oncology is so poor, as Cull *et al.* have shown that residents are likely to be interested in a subspecialty if they had previous exposure in terms of formal training or have assisted in research in the particular field during their course of study.<sup>[10]</sup> Literature review about the status of oncology education among undergraduate students in both developed and developing countries have emphasized the fact that the undergraduate students are long way from the standard knowledge and skills required in oncology and they have all recommended the inclusion of clinical oncology rotation in undergraduate syllabus.<sup>[11-13]</sup> Understanding the disparity in the medical curriculum among various teaching institutions, most of the countries have started short summer training programs for their undergraduate students to make them more knowledgeable in the field of medial oncology.<sup>[14]</sup> There are numerous studies which have revealed the significant impact of these training programs wherein the oncologists would be introducing them to cancer medicine by teaching diagnosis and treatment of most common tumors, interactive case presentations and discussions. It has been proven beyond doubt that cancer patients have an important role in teaching undergraduate communication skills.<sup>[15]</sup>

It is welcoming to note that though the majority of the students are not interested in career options of pediatric oncology, they are very much forthcoming to help these children in whatever way is feasible for them like blood donations, help in raising funds, being a volunteer in other social activities related to cancer treatment. About 39% of the students have correctly re enforced the fact that introduction of pediatric oncology in the undergraduate medical curriculum was the best way to improve childhood cancer awareness which in turn will lead to early diagnosis and referral to an appropriate specialist.

The study reveals that although the current undergraduate curriculum has made them knowledgeable about the theoretical aspects of childhood cancer from textbooks, still there is a pressing need to improve, to meet the current demands and develop a proper attitude toward all cancer related issues.

## Conclusion

There is worryingly low exposure to childhood cancer patients and very few dedicated lecture classes on pediatric oncology during undergraduate training, which contributes to the

late diagnosis and referral. Our country faces a shortage of pediatric subspecialties. Hence policy makers should make use of results of such studies to quantify the burden of childhood cancer management in India and introduce uniformity in the undergraduate medical curriculum all over the country. As very limited number of colleges has oncology departments, the students could be offered a training program wherein the oncologists would be talking about the various issues involved in childhood cancer treatment and includes real case presentations and interactive discussions which would increase their confidence and improve their clinical skills.

## References

- Burden of Cancer in India. Available from: <http://www.icmr.nic.in/ncrp/bcifuture.pdf>. [Last cited on 2010 Jan 01].
- Arceci R, Ettinger A, Forman E, Haase GM, Hammond GD, Hoffman R, *et al.* National action plan for childhood cancer: Report of the national summit meetings on childhood cancer. *CA Cancer J Clin* 2002;52:377-9.
- Swaminathan R, Rama R, Shanta V. Childhood cancers in Chennai, India, 1990-2001: Incidence and survival. *Int J Cancer* 2008;122:2607-11.
- Magrath I, Shanta V, Advani S, Adde M, Arya LS, Banavali S, *et al.* Treatment of acute lymphoblastic leukaemia in countries with limited resources; lessons from use of a single protocol in India over a twenty year period [corrected]. *Eur J Cancer* 2005;41:1570-83.
- Arya LS, Dinand V, Thavaraj V, Bakhshi S, Dawar R, Rath GK, *et al.* Hodgkin's disease in Indian children: Outcome with chemotherapy alone. *Pediatr Blood Cancer* 2006;46:26-34.
- Newhauser WD, Scheurer ME, Faupel-Badger JM, Clague J, Weitzel J, Woods KV. The future workforce in cancer prevention: Advancing discovery, research, and technology. *J Cancer Educ* 2012;27 Suppl 2:S128-35.
- Shenoy S, Christo GG, Venkatesh A. Pediatric cancer care in India. A national survey. *Indian J Cancer* 1990;27:91-6.
- Arora R, Arora B. Delivering childhood cancer service across India: Current provisions and future options. *Pediatr Blood Cancer* 2009;53:827.
- Arora B, Kurkure P, Parikh P. Childhood cancers: Perspectives in India. *J Indian Med Assoc* 2005;103:479-82.
- Cull WL, Yudkowsky BK, Schonfeld DJ, Berkowitz CD, Pan RJ. Research exposure during pediatric residency: Influence on career expectations. *J Pediatr* 2003;143:564-9.
- Amgad M, Shash E, Gaafar R. Cancer education for medical students in developing countries: Where do we stand and how to improve? *Crit Rev Oncol Hematol* 2012;84:122-9.
- Smith WT, Tattersall MH, Irwig LM, Langlands AO. Undergraduate education about cancer. *Eur J Cancer* 1991;27:1448-53.
- Biswal BM, Zakaria A, Baba AA, Ja'afar R. Assessment of knowledge, attitude and exposure to oncology and palliative care in undergraduate medical students. *Med J Malaysia* 2004;59:78-83.
- Pavlidis N, Vermorken JB, Stahel R, Bernier J, Cervantes A, Pentheroudakis G, *et al.* Undergraduate training in oncology: An ESO continuing challenge for medical students. *Surg Oncol* 2012;21:15-21.
- Gaffan J, Dacre J, Jones A. Educating undergraduate medical students about oncology: A literature review. *J Clin Oncol* 2006;24:1932-9.

**How to cite this article:** Latha MS, Chitralakshmi K, Ravindran M, Angeline PR, Kannan L, Scott JX. Knowledge, attitude, and awareness of childhood cancer among undergraduate medical students in South India. *South Asian J Cancer* 2015;4:75-7.  
**Source of Support:** Nil. **Conflict of Interest:** None declared.

## Annexure I

### CHILDHOOD CANCER AWARENESS AMONG UNDERGRADUATE MEDICAL STUDENTS IN SOUTH INDIA

NAME: (optional)

GENDER: Male/Female

UNDERGRADUATE/CRRI

SEMESTER (for undergraduates):

INSTITUTION:

UNIVERSITY:

- What is the most common childhood malignancy?
  - Leukemia
  - Retinoblastoma
  - Brain tumors
  - Lymphoma
- How much percentage of the childhood cancer is curable completely?
  - 80%
  - 60%
  - 40%
  - 20%
- What is the most common etiology of childhood malignancies?
  - Genetic predisposition
  - Radiation exposure
  - Viral infection
  - Unknown
- Apart from tuberculosis, chronic, progressive, persistent lymphadenopathy in children should lead to a high index of suspicion for which of the following malignancy?
  - Metastatic lymphnode cancer
  - Follicular lymphoma
  - Mantle cell lymphoma
  - Hodgkin's lymphoma
- Which is the earliest manifestation of retinoblastoma in children?
  - White eye reflex
  - Red eye reflex
  - Proptosis
  - Eye discharge and squint
- What is the most common modality of treatment for children with malignancies?
  - Surgery
  - Radiotherapy
  - Chemotherapy
  - Stem cell therapy
- A child with bimanually palpable, ballotable abdominal mass, hematuria and hypertension should be suspected to have
  - Wilm's Tumor
  - Hepatoblastoma
  - Lymphoma
  - Rhabdomyosarcoma
- In your opinion, which of the following factors contributes the most to the "failure in effective treatment" of childhood cancers in India?
  - Late diagnosis and referral
  - Cost of treatment
  - Unwillingness to undergo treatment due to misconception and social stigmata
  - Genetic variability leading to poor response
  - Lack of trained personnel in pediatric oncology field
  - Lack of treatment availability
- Have you encountered pediatric oncology patients during your clinical postings?
  - Yes
  - No
- Do you have pediatric oncology unit in your institution?
  - Yes
  - No
- Are you interested in pursuing pediatrics as your career after MBBS?
  - Yes
  - No
- If yes, are you interested in pursuing pediatric oncology as a subspecialty?
  - Yes
  - No, if yes give reason.
- Why are you not interested in pediatric oncology as a career?
  - Too depressing
  - Unpredictable outcome
  - Inadequate knowledge
  - Not enough financial compensation
  - Heavy work load
  - If any other mention .....
- Have you attended any lecture class on pediatric oncology topic during your medical curriculum?
  - Yes
  - No, if yes, how many.
- Do you think the information you have on pediatric oncology is enough to suspect and refer appropriately during your practice?
  - Yes
  - No
- Do you think that there is a need to improve pediatric oncology teaching in your curriculum?
  - Yes
  - No
- As a medical student give the best option to imprint awareness on childhood malignancies?
  - Conduct seminars, lectures for practitioners
  - Mass media communication to improve society awareness
  - Improve pediatric oncology education in medical curriculum for UGs
  - Introduction of national cancer control program by the Govt.
  - Others please specify.
- In which way are you interested in supporting the pediatric oncology patients?
  - Blood donation
  - Fund raising
  - Take up the career in pediatric hemato oncology
  - Volunteer
  - Others please specify.

I hereby give my consent to use this questionnaire for research and publications

SIGNATURE: