

# Medical Screening as an Effective Preventive Strategy among School Children of Boarding Schools: A Cross Sectional Study

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**Abstract:** ***Background:** Schools have direct contact with more than 95% of our nation's young people aged 5 to 17 years, for about 6 hours per day and up to 13 critical years of their social, psychological, physical, and intellectual development. Schools play an important role in promoting the health and safety of children and adolescents by helping them to establish lifelong health patterns. Healthy students are better learners, and academic achievement bears a lifetime benefit for health. Schools are an ideal setting to teach and provide students with opportunities to improve health related behaviours and manage their chronic health conditions (asthma, diabetes, epilepsy, food allergies, and poor oral health). Regular check - ups and medical screening programmes help to ensure normal development, healthy growth, and protection from preventable disease. Regular medical screening programmes not only help to make complete medical records available to a child/parent/doctor/school but also suggest corrective medical interventions and appropriate referrals whenever required. When school health screening policies and practices are put in place, students can grow to be healthy and become successful adults. Recent research illustrates that higher academic grades are associated with more positive individual and cumulative health behaviours among high school students. **Objective:** To conduct and analyse the medical screening reports of the cadets in Sainik schools. **Methods:** Quantitative research approach with cross sectional research design was chosen. Study was conducted at Sainik school, Andhra Pradesh. Enumerative sampling method was adopted. Medical screening done as per the protocols of sainik school medical board. Data collection took almost 3 months. Health screening reports of total 686 cadets were analysed by descriptive statistics by using SPSS statistics. For the study, permission obtained from the institutional medical board. Category of fitness of cadets done as per the National Defence Academy. **Results:** Analysis of medical screening reports of 686 cadets revealed that, majority of cadets are boys & are in the age group of 10 - 12 years. Most of the (75.80%) of cadets are medically fit. About 22.01 % of cadets were in the category of temporarily unfit and very few (1.31%) are in the category of fit but, need specialist consultation followed by less than 1% (0.87%) are only in the category of medically unfit. The reasons for medical unfitness are due to myopia, psoriasis and other persistent skin infections. About 29.1% of cadets were temporarily unfit due to overweight followed by (17.9%) under height and underweight. Other reasons for temporarily unfit are DNS, anaemia, underweight, flat foot, colour vision, tooth decay, pes planus, hydrocele, deformed chest, past cardiac surgery, slurred speech and nasal polyp. **Conclusion:** More than 40% of school - aged children and adolescents have at least one chronic health condition, such as asthma, obesity, other physical conditions, and behaviour/learning problems. The healthcare needs of children with chronic illness can be complex and continuous and includes both daily management and addressing potential emergencies. Evidence - based, effectively coordinated and strategically planned school medical screening programs and services are also necessary for closing the academic achievement gap and promoting health equity.*

**Keywords:** Medical screening, School children, Preventive strategy, Boarding school, National Defence Academy

## 1. Introduction

Health is vitally important for every human being in the world. Whatever our differences may be, health is our most important commodity. Health services in schools are a key component of the Whole School, Whole Community, Whole Child Model.<sup>3</sup>

Schools play a significant role in helping students to establish lifelong healthy behaviours. Health screening is an integral part of school health thus, contributing for children's development and well - being. Because childhood health problems can eventually develop into chronic adult conditions. The tests, checkups, and thorough screenings that students are given in school can help to detect potential health problems and improve the overall health of every student. Annual medical screening of children in schools include monitoring of height, weight, blood pressure, BMI, eye checkup, dental and ENT and other routine health screening will help in early diagnosis and intervention and to prevent long - term problems later in life. "

Sainik Schools are the system of schools in India established and managed by the Sainik Schools Society under the Ministry of Defence. Sainik Schools are wholly residential schools run - on public - school lines. The primary aim of the school is to prepare students academically, physically and mentally for entry into the National Defence Academy.<sup>5</sup> The National Defence Academy is an iconic institution and hallmark of global excellence in the sphere of military education. The NDA is the institution that trains young individuals to become officers in the Indian Armed Forces. Candidates must pass the NDA Medical Test to be eligible for admission to the academy. The medical examination is conducted to ensure that candidates meet the physical and mental fitness standards required for officers in the Indian Armed Forces. In Sainik schools the medical screening will be done as per the standards laid down by National Defence Academy. A review of the literature shows that very few research studies have been conducted in this area.

## 2. Background

Children's health was once a subset of adult medicine. In the 19th and early 20th century, people recognized paediatrics as a medical specialty because of the gradual awareness that the health problems of children are different from those of adults. It was also recognized that a child's response to illness, medications, and the environment depends upon the age of the child.

Regular medical screening plays as an effective preventive strategy in early detection of illness and maintaining health, particularly children's health. For children, the right to health is vital because they are vulnerable beings, more risk to illness and health complications. In children, when health problems are detected early and promptly treated, they can grow into healthy adults, contribute to the development of dynamic and productive societies.

Students with chronic health conditions may struggle with chronic absenteeism or have other needs that can affect academic achievement. The long - term effects of chronic absenteeism can lead to a population that is less educated, underemployed, less financially stable and less healthy, because a lifetime of good health correlates with receiving more education.<sup>4</sup>In many places, health systems are not equipped to support routine health interactions among children, families and caregivers. Without regular monitoring, some children miss out on specialized health services and developmental support that could help them fulfill their potential (UNICEF). The aim of health screening among school children is to detect and treat diseases early in children and adolescents including identification of malnutrition, growth and developmental delay, chronic health problems, hidden medical conditions, skin infections, scoliosis, problems of ENT, dental caries, visual acuity including colour blindness, nutritional deficiencies like anaemia, concerns related to mental health etc. Medical screening not only helps identify illness but also helps for appropriate referrals to primary health care centres and hospitals.

The first medical examination takes place when the cadets join the school at their admission into school. Thereafter annual medical examination is performed by the medical inspectors of the school in keeping the view for assessing the cadet's medical fitness for NDA. Medical inspectors are the Doctors appointed by the school either on parttime or full - time basis. Medical examination is exhaustive and includes examination of teeth, throat, ears, lungs and heart. It also includes observation of mental development of child.<sup>1</sup>Health data of children also helps the school to study overall health trend of children and take necessary remedial action. Furthermore, preventive health check - ups specially in boarding schools draw attention of parents to health problems in their children.

### 3. Materials and Methods

For the present study, a quantitative research approach with cross sectional research design was chosen. Annual medical

examination was conducted for total 686 cadets. Medical screening was conducted with standard medical proforma. Medical screening was organised and conducted as per the protocols laid down by the members of medical board of the school. The members of medical board comprise school Principal, administrative officer, school medical officer, school health nurse, senior master, house masters hostel warden and medical assistant. Health screening was conducted at medical inspection room located in the school campus. School medical officer (SMO) and school health nurse (SHN) were the leading members for entire planning, execution and compiling the reports of medical screening. The entire process of data collection took almost 3 months. The final medical reports of individual cadets were put up for the final approval of medical board. Reports of the cadets who were unfit, reasons for unfit, cadets who need additional investigations, specialist consultation, follow - up checkups and referral to other health centres were communicated to their respective parents. Parents were appropriately guided by medical professionals for the decision of referral and treatment.

The obtained data of medical screening was analysed by descriptive statistics by using SPSS statistics. Medical screening data is tabulated and presented in the following sections.

**Section I:** Frequency and percentage distribution of cadets according to demographic variables.

**Section II:** Frequency and percentage distribution of cadets based on categories of fitness.

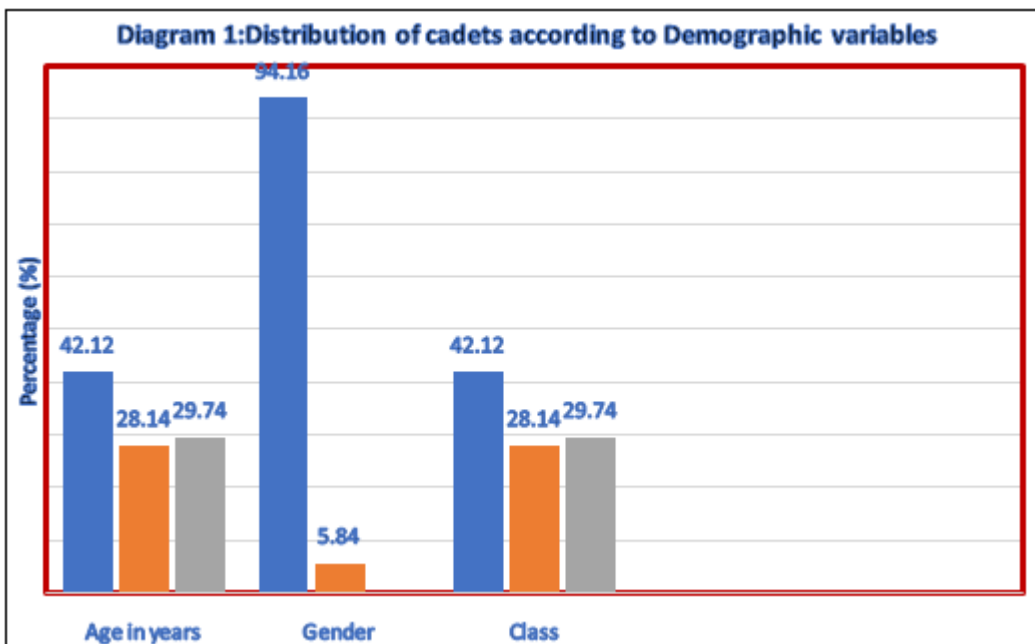
**Section III:** Frequency and percent distribution of cadets based on reasons under each category of fitness.

#### Section - I

**Table 1:** Distribution of cadets according to the demographic variables. (n=686)

Demographic variable	Frequency	Percentage (%)
Age in years		
(a) 10 - 12	289	42.12
(b) 13 - 15	193	28.14
(c) 16 and above	204	29.74
Gender		
(a) Male	646	94.16
(b) Female	40	5.84
Class		
(a) 6 - 8	289	42.12
(b) 9 - 10	193	28.14
(c) 11 - 12	204	29.74
Category of Fitness		
(a) Fit	520	75.8
(b) Fit but needs specialist consultation	9	1.31
(c) Temporarily unfit	151	22.01
(d) Unfit	6	0.87

Table 1: Shows that majority of (42.12%) cadets are in the age group of 10 - 12 years and from class 6<sup>th</sup> to 8<sup>th</sup>. It is also observed that the majority (94.16%) of cadets are boys.

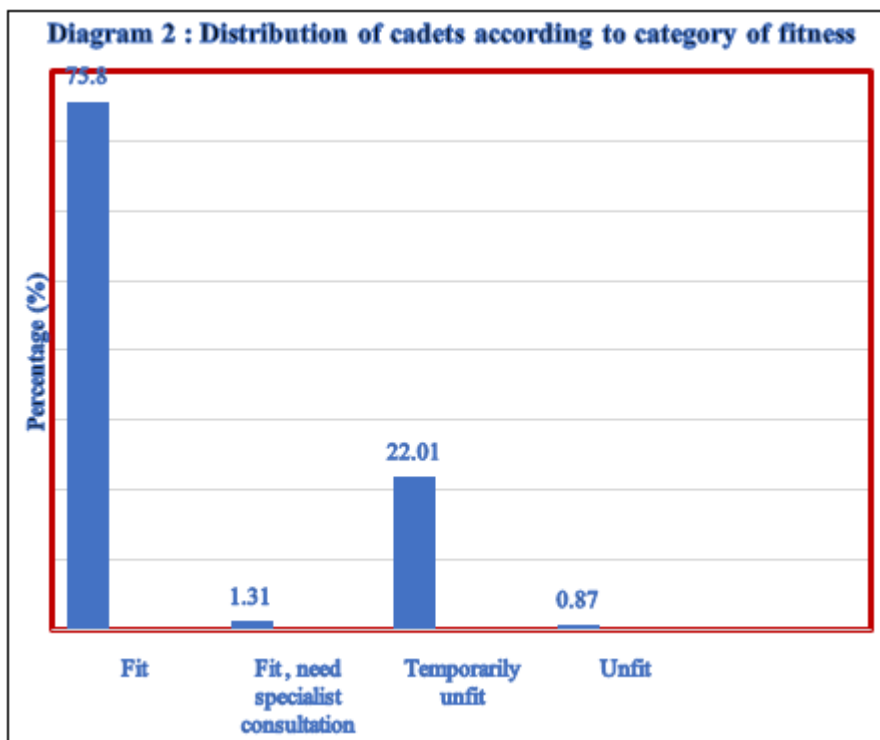


Section II

Table 2: Distribution of cadets according to category of fitness (NDA Standards)

Category of Fitness	Frequency	Percentage (%)
(a) Fit	520	75.80
(b) Fit but needs specialist consultation	9	1.31
(c) Temporarily unfit	151	22.01
(d) Unfit	6	0.87

Table 2: Majority (75.80%) of cadets are medically fit. About 22.01 % of cadets are in the category of temporarily unfit and very few (1.31%) are fit but, need specialist consultation followed by less than 1% (0.87%) are only in the category of medically unfit.



Section - III

**Table 3:** Distribution of cadets according to reasons under each category of fitness (NDA Standards)

**Table 3:** Distribution of cadets based on reason for unfit (n=6)

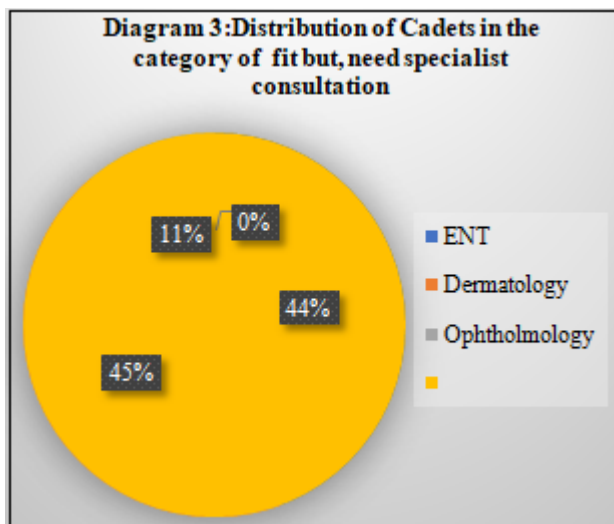
Reason for unfit	Frequency	Percentage (%)
a) Myopia	5	83.33
b) Psoriasis and persistent skin infections	1	16.67

Table 3: Shows that majority (83.33%) of cadets are medical unfit due myopia and remaining 16.67% are medically unfit due to psoriasis and other persistent skin infections.

**Table 4:** Distribution of cadets based on reason for fit but, need specialist consultation

Fit but need specialist consultation	Frequency	Percentage (%)
(a) Dermatology	4	44.44
(b) ENT (Ear, Nose, Throat)	1	11.12
(c) Ophthalmology	4	44.44

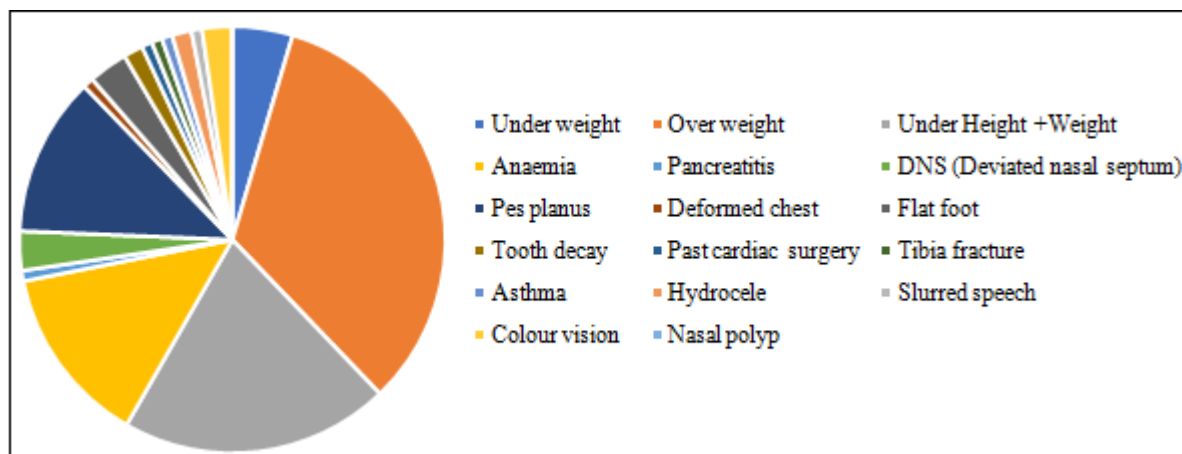
Table 4 shows that the cadets who are medically fit but need specialist consultation are for dermatology (44.44%) and ophthalmology (44.44%) and only 1% of cadets require ENT (Ear, Nose& Throat) consultation.



**Table 5:** Distribution of cadets based on reason for temporarily unfit

Temporarily unfit	Frequency	Percentage (%)
Under height	18	11.9
Under weight	6	4
Over weight	44	29.1
Under Height +Weight	27	17.9
Anaemia	18	11.9
Pancreatitis	1	0.7
DNS (Deviated nasal septum)	4	2.6
Pes planus	16	10.6
Deformed chest	1	0.7
Flat foot	4	2.6
Tooth decay	2	1.3
Past cardiac surgery	1	0.7
Tibia fracture	1	0.7
Asthma	1	0.7
Hydrocele	2	1.3
Slurred speech	1	0.7
Colour vision	3	2
Nasal polyp	1	0.7

Table 5: Shows that majority of cadets (29.1%) were temporarily unfit due to the reason of overweight followed by (17.9%) under height and underweight. Other reasons for temporarily unfit are DNS, anaemia, underweight, flat foot, colour vision, tooth decay, pes planus, hydrocele, deformed chest, past cardiac surgery, slurred speech and nasal polyp.



**Diagram 4:** Distribution of cadets based on reason for temporarily unfit

#### 4. Discussion

Analysis of medical screening reports of 686 cadets revealed that, majority of (42.12%) cadets are in the age group of 10 - 12 years and from class 6<sup>th</sup> to 8<sup>th</sup>. It is also observed that the majority (94.16%) of cadets are boys. Majority (75.80%) of cadets are medically fit. About 22.01 % of cadets are in the category of temporarily unfit and very few (1.31%) are fit but, need specialist consultation followed by less than 1% (0.87%) are only in the category of medically unfit. majority (83.33%) of cadets are medical unfit due myopia and remaining 16.67% are medically unfit due to psoriasis and other persistent skin infections. majority of cadets (29.1%) were temporarily unfit due to the reason of overweight followed by (17.9%) under height and underweight. Other reasons for temporarily unfit are DNS, anaemia, underweight, flat foot, colour vision, tooth decay, pes planus, hydrocele, deformed chest, past cardiac surgery, slurred speech and nasal polyp.

#### 5. Conclusion

School health screenings are essential especially in boarding schools like Sainik schools. Because the primary aim of Sainik schools is to prepare the students academically, physically and medically fit for entry into NDA (National Defence Academy). Children require extra attention in order to enjoy the best possible health. Generally, a child who benefit from appropriate health care will enjoy a better state of health during all the stages of childhood and can become a healthy adult. Health screenings also allow school staff to check the fitness of students and tailor physical activity curriculum accordingly. Discussing the medical screening reports of cadets with parents is vital part of school health because parents have a powerful role in supporting their children's health and learning. Engaged parents help, guide their children successfully through school, advocate their children, and can help in shaping a healthy school environment.8

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