A STUDY ON ASSESSMENT OF OUTCOME OF RBSK SCREENING PROGRAMME AMONG BENEFICIARIES AGED 6 TO 18 YEARS IN THIRUVALLUR DISTRICT

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ABSTRACT:

Objectives: Rashtriya Bal Swasthya Karyakram (RBSK) is an important initiative aiming at early identification and early intervention for children from birth to 18 years. The objective of this study was to estimate the number of cases(4 Ds)detected, treated and reffered to higher centres and potential roadblocks in providing treatment and rehabilitation to referred children.

Methods: This study followed a community-based cross-sectional design. The study population consisted of school-going children aged 6 to 18 years who were covered under the RBSK program in Thiruvallur district. A sample size of approximately 300 children was estimated for the study. Data collection took place over a period of two months.

Results: About 54.7% of the children were males. The mean age of the children was 12.2 ± 3.1 years. Anemia was the most common disease identified (27.3%) followed by dental caries (7.3%).

Conclusion: The RBSK screening program in Thiruvallur district successfully identified a significant number of health conditions among school-going children aged 6 to 18 years. Prompt intervention and appropriate management were provided for conditions. Further research and program evaluation are necessary to assess the long-term impact of the RBSK program and to identify any areas for improvement.

Keywords: outcome, RBSK, 6 to 18 years

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INTRODUCTION:

Rashtriya Bal SwasthyaKaryakram (RBSK) is an important initiative aiming at early identification and early intervention for children from birth to 18 years to cover 4 'D's viz. Defects at birth, Deficiencies, Diseases, Development delays including disability.(1) It is important to note that the 0-6 years age group will be specifically managed at District Early Intervention Center (DEIC) level while for 6-18 years age group, management of conditions will be done through existing public health facilities. Outreach screening will be done by dedicated Mobile Health teams for 6 weeks to 6 years at anganwadis centres and 6-18 years children at school.(2) This programme is being run in the state in convergence with education, ICDS, social welfare and other departments. There are mobile health teams functional in the state for health examination of the school and Anganwadi children. Due to difficult geographical conditions, distance of school and AWCs from road and sparse population, existing number of team per district are able to examine each child once a year in school and twice in a year in Anganwadi Centres. As reported by States/UTs, 157.35 crore children have been screened, 10.11 crore children have been identified with selected health conditions and 4.73 crore children have been provided secondary/tertiary care from FY 2013-14 till FY 2022-23 under RBSK.(3) A community based study done in Dharmapuri aimed at finding the pattern of various health conditions screened under the 4D's approach. On analysis of deficiencies, severe anemia was observed commonly in 628 (8.5%) children. There were 250 (3.4%) children with severe acute malnutrition. On analysis of childhood diseases, dental caries were seen in 1719 (23.2%) children and skin conditions in 553 (7.5%) children. About 44 (0.6%) children were found to have rheumatic heart disease. (4) Another study (Estimation of magnitude of various health conditions under 4Ds approach, under RBSK Programme in Devendranagar) Total 26977 children were screened. Out of which 53 children were found to have birth defects, 434 children were found to have some kind of deficiency, 21768 children were found to have diseases and 113 children were found with developmental delay including disabilities. (5) Early intervention and management can prevent these conditions to progress into more severe and debilitating forms, thereby reducing hospitalisation and resulting in improved school attendance.(1-3) Strict monitoring and evaluation of RBSK programme is needed to achieve the objective of the programme. This study evaluates the outcome of RBSK program implementation in school children aged 6 to 18 years in schools of thiruvallur districts of Tamilnadu India by estimating the number of cases (4 Ds)detected, treated and reffered to higher centres and potential roadblocks in providing treatment and rehabilitation to referred children.

Methodology:

This was a school based cross sectional study conducted among 8 schools which are covered under RBSK in Tiruvallur district from October to November 2022. The study population was school going children between the age of 6 years to 18 years. Children who were not available on the day of visit to the school were excluded from the study. Sample size was calculated to be 300 based on the prevalence of anemia in the school children as 52.8% estimated from a previous study (6), at 95% confidence level and assuming 7% absolute precision using the formula, $N = Z\ 2\ 1\text{-}\alpha/2\ [p^*\ (1\text{-}p)]/d2$. All students available on the day of visit were included in the study for data collection. This study was done along with the RBSK mobile health team to identify birth defects, deficiencies, diseases and developmental delays including disabilities in children. The Operational Guidelines of RBSK was followed with them to reach all the target groups of children for health screening (7).

Anthropometry: Weight (in kg), Height (in cm.), Body Mass Index**,** BMI Classification

B-Deficiency:

B1- Severe anaemia- Look for severe palmar pallor

B2- Vitamin A Deficiency - Ask for night blindness/look for Bitot's spot (white patches on sclera)

B3-Vitamin D Deficiency – Look for Wrist Widening/Bowing of legs

B4- Goitre - Any swelling in the neck region

B5- Oedema of both feet

C-Diseases:

C1- Convulsive Disorders – Did the child ever have had spells of unconsciousness and fits?

C2- Otitis Media - Did the child have more than 3 episodes of ear discharge in last 1 year?

Look for Active discharge from ear

C3- Dental Condition - Look for white demineralized/ brown tooth, Discoloration, cavitation, Swollen/bleeding/red gums, Visible Plaque/stains

C4- Skin Condition - Does the child c/o itching on skin (especially at night)? Look for round or oval scaly patches/ pustules in finger webs. Any other lesion on the skin.

C5- Rheumatic Heart Disease - Auscultate for Murmur

C6- Others [Tuberculosis – cough > 2 weeks, Asthma – More than 3 Episodes of increased shortness of breath and difficult breathing and wheezing in past 6 months.

D. Developmental Delays for 6-9 years only:

D1- Does the child have difficulty in seeing, either during day or night? (without spectacles)

D2- Compared with other children of his/her age, did the child have any delay in walking?)

D3- Does the child have stiffness or floppiness and/or reduced strength in his/her arms or legs?

D4- From birth till date, has the child ever had fits, or became rigid, or had sudden jerks or spasms of arms, legs or whole body? Refer if the fits are uncontrolled

D5- Compared to his/her classmates, does the child find it difficult to read or write or to do simple calculations?

D6- Does the child have any difficulty in speaking as compared to other children of his/her age?

D7- Does the child have difficulty in hearing? (without hearing aid)

D8- Compared with other children of his / her age, does the child have difficulty in learning new things?

D9- As compared to children of his/her age, does the child have difficulty in sustaining attention on activities at school, home or play?

Adolescent specific questionnaire (10-18 years):

E1- Do you always find it difficult to handle things in your life that has resulted from changes occurring in your body?

E2- Are you able to say "NO" and leave the place when your friends pressurize you to smoke or drink with them?

E3- Do you feel unduly tired early in the morning or you feel depressed most of the time?

E4- In case of females-Have your menstrual cycles started yet?

E5- Do you have your periods every months (i.e.28 ± 7 days)?

E6- Do you experience any pain or burning sensation while urinating?

E7- Do you have any discharge/ foul smelling discharge from the genitor-urinary area?

E8- Do you feel extreme pain during menstruation so much so that it stops you from doing routine activities/ attend schools?

Data management and analysis: Data would be coded and entered in MS office excel worksheet. Descriptive statistics like percentages and means were used. The profile of the children who were screened like age, sex, place of referral, diagnosis, treatment given and outcome were tabulated and analyzed

Ethical issues: Ethical approval was obtained from Institutional Ethics Committee (IEC) prior to the data collection. Informed Consent is obtained by the RBSK team from the Headmasters of the respective school.

RESULTS:

Totally 300 children were included in our study, about 54.7% of the children were males.

Majority (68.0%) of the children were in the age group of 10 to 18 years (Table 1). The mean age of the children was 12.2 ± 3.1 years.

Table 1. Distribution of participants by age

Age group	Frequency	Percent
6 years to 10 years	114	38.0
10 years to 18 years	186	62.0

Table 2 shows that anemia was found to affect 112 children, resulting in a prevalence of approximately 37.33%. Chronic Suppurative Otitis Media (CSOM) was identified in 6 children, corresponding to a prevalence of 2%. Dental cavity was detected in 22 children, resulting in a prevalence of around 7.33%. Additionally, 4 children were found to experience seizures, leading to a prevalence of approximately 1.2%. Lastly, 2 children were diagnosed with heart disease, resulting in a prevalence of about 0.6%. Among the screened children, 112 cases of anemia were identified, indicating a high burden of this condition in the study population. Corrective measures were initiated to address anemia cases, which include dietary modifications, iron supplementation, and regular follow-up to monitor treatment response. Six cases of Chronic Suppurative Otitis Media (CSOM) were detected during the screening. These children were referred to Thiruvallur General Hospital for appropriate treatment, which include antibiotic therapy and, in severe cases, surgical intervention. Dental cavities were found in 22 children, highlighting the importance of oral health screening within the RBSK program. Follow-up appointments were advised for these cases, emphasizing the need for early intervention and preventive measures. Four cases of seizures were identified among the screened children. It was observed that these children were already receiving regular medication for their condition. Heart disease was detected in two children during the screening. One child underwent ASD closure through right posterior thoracotomy at MGM Hospital on 9/5/22, while the other child underwent surgery for ventricular septal defect at MGM Hospital on 30/4/22.

Table 2. Distribution of participants by diseases

S.NO	Disease	NUMBER OF CHILDREN	PREVALENCE %
1.	SEIZURE DISORDER	**4**	**1.2**
2.	HEART DISEASE	**2**	**0.6**
3.	CSOM	**6**	**2**
4.	ANEMIA	**112**	**37.3**
5.	DENTAL CARIES	**22**	**7.3**

The management and outcomes of these conditions were as follows

1. Anemia: Following the identification of anemia cases, corrective measures were initiated. These measures include dietary modifications, iron supplementation, and regular follow-up to monitor the response to treatment.

2. CSOM: Children diagnosed with CSOM were referred to Thiruvallur General Hospital for appropriate treatment. Treatment options include antibiotic therapy and surgical intervention, depending on the severity of the condition.

3. Dental cavity: Children with dental cavities were advised to follow up with dental care providers for further evaluation and treatment. The importance of oral hygiene practices and preventive measures were emphasized.

4. Seizure: Children with seizures were found to be already taking regular medication.

5. Heart disease: Two cases of heart disease were identified. One child underwent atrial septal defect (ASD) closure through right posterior thoracotomy at MGM Hospital on 9/5/22. The second child underwent surgery for ventricular septal defect at MGM Hospital on 30/4/22. Both surgeries aimed to correct the structural abnormalities and improve cardiac function.

DISCUSSION:

The present study aimed to assess the outcome of the RBSK screening program among beneficiaries aged 6 to 18 years in Thiruvallur district. The findings revealed a substantial burden of health conditions among the school-going children screened under the program.

The prevalence of anemia was found to be 37.3%. The prevalence of severe anemia was 8.5% in a study done in District early intervention centre by Rameshbabu et al (4). Tiwari J et al (5) reported very low prevalence of severe anemia in their community based study. But these findings could not be compared with our study because the prevalence of mild to moderate anemia was not estimated in these studies. The high prevalence of anemia among the screened children is a matter of concern. Anemia is a widespread health issue in India, particularly among children and women. The initiation of corrective measures in identified anemic cases is crucial for addressing this public health problem. However, it is essential to monitor the response to treatment and ensure sustained compliance with dietary modifications and iron supplementation. Additionally, exploring the underlying causes of anemia and implementing preventive strategies may help reduce the burden of this condition in the future.

About 7.3% of the children were found to be affected with dental caries. In one study (4) it was found that dental caries (23.2%) was the commonest condition followed by skin conditions (7.5%). In a community study by Tiwari in Madhya Pradesh, skin diseases (64%) were more prevalent than dental caries (6.8%). (5) The identification of dental caries cases highlights the importance of oral health screening within the RBSK program. Dental cavities, if left untreated, can lead to pain, infection, and impaired overall well-being. The emphasis on follow-up appointments and oral hygiene practices is crucial to prevent the progression of dental caries and encourage early intervention. Collaborating with dental care providers and incorporating oral health education into the school curriculum may further strengthen the oral health component of the RBSK program.

The prevalence of CSOM was 2%. RameshBabu et al (4) reported a slightly higher prevalence (2.5%), whereas the prevalence was very low in another study in Madhya Pradesh (5). The detection of a number of cases of Chronic Suppurative Otitis Media (CSOM) indicates the effectiveness of the RBSK screening program in identifying and referring children with ear-related problems for appropriate treatment. Prompt management of CSOM is essential to prevent complications such as hearing loss and subsequent educational difficulties. Referring children with CSOM to specialized facilities like Thiruvallur General Hospital ensures access to quality care, including antibiotic therapy and surgical intervention when necessary.

About 1.2% of the children were having convulsive disorders. Tiwari J et al (5) reported meagre prevalence of seizures in their study whereas Rameshbabu et al (4) reported a higher prevalence (2%). The detection of a small number of children with seizures who were already on regular medication suggests the presence of

ongoing management and treatment for epilepsy within the community. However, the study did not explore the adequacy of seizure control or the factors influencing treatment adherence. Future research should investigate the effectiveness of epilepsy management and identify potential gaps to improve the overall care and quality of life for these children.

Two children were having congenital heart disease. Ramesh Babu et al (4) reported a prevalence of 5.9% of congenital heart disease and 0.6% of Rheumatic heart disease. The prevalence varied from study to study depending on the study population. In a hospital based study the incidence reported was 3.9/1000 live births.15 In a community based studies, the prevalence ranged from 0.8 to 5.2 per 1000 population.16,17. The identification of heart disease cases underscores the importance of cardiovascular screening within the RBSK program. The surgical interventions performed to correct structural abnormalities in the identified cases demonstrate the program's capability to address complex health conditions. However, it is essential to ensure timely access to specialized cardiac care facilities, as well as long-term follow-up and support for children with congenital heart diseases.

Conclusion:

The study only focused on the prevalence of conditions and the initiation of management, without assessing long-term outcomes or treatment effectiveness. Further research and program evaluation are recommended to assess the long-term impact of the RBSK program on child health outcomes, explore factors influencing treatment adherence, and identify areas for improvement in screening protocols and management strategies. While the findings of this study provide valuable insights into the outcomes of the RBSK screening program in Thiruvallur district, several limitations need to be considered. Moreover, the study was conducted in a specific district, limiting the generalizability of the results to other regions. Future research could employ a longitudinal design to assess the long-term impact of the RBSK program and include a larger and more diverse sample to obtain a comprehensive understanding of the program's effectiveness. In conclusion, the findings of this study demonstrate that the RBSK screening program in Thiruvallur district has successfully identified and initiated management for various health conditions among school-going children. The program's effectiveness in detecting anemia, CSOM, dental cavities, seizures, and heart diseases highlights its potential to improve child health outcomes. However, continuous monitoring, quality improvement efforts, and collaborations with healthcare providers are necessary to ensure comprehensive and sustainable care for the identified cases. Additionally, further research and program evaluation are warranted to measure the long-term impact of the RBSK program and identify areas for improvement in screening.

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