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From 4Ds to Childhood NCDs: RBSK 2.0 and the Changing Landscape of Child Health in India

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Abstract India's child-health programmes have traditionally concentrated on survival, nutrition, communicable diseases, congenital disorders and developmental problems. Rashtriya Bal Swasthya Karyakram (RBSK), introduced in 2013, brought these priorities together through systematic screening of children from birth to 18 years for the four Ds—Defects at birth, Deficiencies, Diseases and Developmental delays including disabilities. The RBSK 2.0 Operational Guidelines released in 2026 represent an important widening of this approach. While retaining the 4Ds, the revised programme incorporates emerging childhood health concerns including diabetes mellitus, hypertension, kidney disorders, behavioural and neurodevelopmental conditions, mental-health concerns and lifestyle-related risks. Healthy eating, physical activity, sleep and digital exposure have also entered the programme framework. Screening is linked with revised Mobile Health Teams, District Early Intervention Centres, specialist referral pathways and a longitudinal digital Health Report Card. This article reviews the major changes introduced through RBSK 2.0 and examines their public-health significance, particularly the emergence of childhood NCD screening within a national child-health programme. The transition is important because risk factors and early manifestations of several adult NCDs begin much earlier in life. At the same time, screening a large paediatric population for chronic and behavioural conditions raises important questions regarding measurement, false-positive referrals, workforce preparedness, confirmatory diagnosis, continuity of care and data use. The success of RBSK 2.0 will therefore depend not merely on the number of children screened, but on whether identified children complete the pathway from screening to diagnosis, treatment and long-term follow-up.

Key Words: RBSK 2.0, Child Health, Non-Communicable Diseases, Hypertension, Diabetes, Screening, Adolescents, Digital Health, India

INTRODUCTION

India's child-health agenda is gradually moving from a predominant concern with survival towards a broader concern with how children grow, develop and enter adulthood. This change has been made possible partly by substantial improvements in child survival. The 2025 UN Inter-Agency Group for Child Mortality Estimation report documented a marked decline in under-five and neonatal mortality in India during the Sustainable Development Goal period [1]. As mortality declines, conditions that may not immediately threaten life but influence long-term health, development, educational attainment and future disease increasingly demand attention.

RBSK was launched nationally in 2013 as an ambitious child-health screening and early-intervention programme covering children from birth to 18 years. Its defining framework was the 4Ds: Defects at birth, Deficiencies, Diseases and Developmental delays including disabilities [2]. Screening through health facilities, Anganwadi Centres and government and government-aided schools, followed by referral to District Early Intervention Centres (DEICs), provided a population-based approach rather than waiting for symptomatic children to reach health facilities.

Thirteen years later, the RBSK 2.0 Operational Guidelines, 2026, retain this foundation but considerably

broaden its meaning [3]. The revised programme recognizes that today's child-health profile includes not only traditional childhood disorders but also obesity and lifestyle risks, hypertension, diabetes, mental and behavioural concerns, neurodevelopmental disorders, problematic digital exposure and sleep-related issues. This change deserves attention beyond the programme itself. RBSK 2.0 potentially marks the beginning of a life-course approach to NCD prevention within India's routine child-health system.

The 4Ds Remain—But their Boundaries have Changed

RBSK 2.0 does not discard the 4Ds. Instead, it expands them. The programme now identifies 38 numbered health-condition categories for newborn and child-health screening and early intervention [3]. These extend from neural tube defects, congenital heart disease and nutritional deficiencies to diabetes mellitus, hypertension, kidney disorders, behavioural disorders, autism spectrum disorder, specific learning disorders and other developmental conditions.

The conceptual change is even wider than the list of conditions. The earlier RBSK was primarily described around early detection and treatment. RBSK 2.0 explicitly combines curative, preventive and promotive approaches, incorporates healthy behaviours and lifestyle factors, strengthens child and family participation and introduces longitudinal digital tracking [3]. Thus, the transition is better understood not as "4Ds versus NCDs", but as an expansion within and beyond the 4Ds.

Childhood NCDs Enter Routine Screening

Perhaps the most notable addition is the explicit recognition of childhood NCDs. Diabetes mellitus—both Type 1 and Type 2—and hypertension are included among childhood diseases under RBSK 2.0 [3].

This is epidemiologically relevant. A systematic review and meta-analysis of 64 Indian studies estimated pooled hypertension prevalence among children and adolescents at 7%, although sustained hypertension based on repeated measurements was lower at approximately 4%. Hypertension was considerably more frequent among children with obesity [4]. More recently, a 2025 systematic review and meta-analysis of 125 studies estimated pooled obesity prevalence among Indian school-going children at approximately 7%, with substantial geographical variation [5].

These findings illustrate why paediatric NCDs can no longer be considered solely specialist-clinic problems. However, they also illustrate why screening is not diagnosis. Blood pressure in children varies with age, sex and body size, and an elevated measurement during a screening encounter should trigger appropriate reassessment rather than immediate labelling of a child as hypertensive.

RBSK 2.0 accordingly strengthens Mobile Health Team equipment by including age-appropriate blood-pressure cuffs and glucometers. For diabetes, the guideline proposes symptom-based screening using the "4Ts"—Toilet, Thirsty, Tired and Thinner—for children up to 18 years, together with risk-based screening for Type 2 diabetes among adolescents. Suspected children undergo random blood glucose testing and those with raised values are referred to NCD clinics for confirmation and further management. This is an important design feature: RBSK is intended to function as an early-identification and referral platform, rather than turning school or Anganwadi screening into definitive NCD diagnosis.

From Disease Detection to Prevention of Future Disease

An equally important change is that RBSK 2.0 addresses the behaviours preceding NCDs. Healthy eating and physical activity are incorporated into counselling and health promotion. The programme specifically recognizes excessive sugar, salt and processed-food consumption, sedentary behaviour and inadequate physical activity as relevant child-health concerns. This reflects the life-course concept of NCD prevention. WHO emphasizes that several NCDs have origins or risk factors beginning in childhood, including unhealthy diets and physical inactivity [6]. WHO also recommends that children and adolescents aged 5–17 years undertake an average of at least 60 minutes of moderate-to-vigorous physical activity per day across the week and limit sedentary time, particularly recreational screen time [7].

The public-health opportunity is therefore larger than identifying a child with high blood pressure or glucose. A school screening visit can potentially become a point for reinforcing healthy food choices, physical activity, adequate sleep and other behaviours before cardiometabolic risk becomes established.

Mental, Behavioural and Neurodevelopmental Health: Another Major Expansion

RBSK 2.0 also brings conditions traditionally separated from routine physical-health screening closer to the mainstream child-health system. The expanded list includes anxiety disorders, ADHD, sleep disorders, autism spectrum disorder and specific learning disorders [3].

This inclusion is significant. Indian evidence has repeatedly demonstrated a substantial burden of child and adolescent mental-health problems, although estimates vary considerably according to setting, definition and measurement method. A systematic review of Indian school-based studies published in 2024 identified depression, anxiety, behavioural and emotional problems, psychological distress and technology-related addiction among the reported concerns [8].

RBSK 2.0 therefore moves closer to the reality that physical development, learning, behaviour and mental well-being cannot be managed as completely separate domains. The challenge, however, will be to maintain the distinction between screening for a possible problem and assigning a psychiatric or developmental diagnosis. Teachers, frontline workers and Mobile Health Teams can identify warning signs; definitive assessment requires appropriately trained professionals and clear referral pathways.

The Screen Itself Has Become a Health Exposure

One of the most contemporary elements of RBSK 2.0 is its treatment of digital exposure as a child-health issue. The guidelines provide age-related questions addressing excessive device use, difficulty reducing use, distress when devices are unavailable, interference with sleep or studies, and loss of interest in non-screen activities. Referral is proposed when digital use substantially interferes with functioning or coexists with significant psychological or behavioural problems. This addition reflects a rapidly changing childhood environment. A recent Indian systematic review and meta-analysis estimated pooled daily screen exposure among children under five at 2.22 hours, although heterogeneity between included studies was extremely high [9].

The value of the RBSK approach is therefore not in declaring every child who uses a smartphone excessively as diseased. Rather, it creates an opportunity to ask whether digital use is displacing sleep, physical activity, learning, family interaction or normal functioning. That functional perspective is more useful for public health than screen duration alone.

A Digital Health Report Card from Childhood to Adolescence

Another structural change is the movement from episodic screening records towards a longitudinal digital child-health record. RBSK 2.0 envisages a digital Health Report Card updated during screening encounters from six weeks to 18 years. It can capture anthropometry, vision, dental health, haemoglobin, BMI and relevant NCD-related parameters. The digital architecture includes Comprehensive Newborn Screening, Mobile Health Team and DEIC modules and proposes interoperability with platforms including JANANI/RCH 2.0, U-WIN, UDISE+, POSHAN Tracker and the wider digital-health ecosystem [3].

This may be one of RBSK 2.0's most consequential changes. A single abnormal BMI has limited value. A BMI trajectory across several years is different. The same principle applies to anaemia, blood pressure, developmental progress and referral history. More importantly, the digital framework attempts to close the referral loop. Children referred but not reaching DEICs can be flagged for follow-up. This responds to a weakness documented in earlier RBSK implementation research. An evaluation from West Bengal reported gaps in staffing, equipment, referral completion and intervention at higher centres and emphasized stronger patient tracking and referral systems [10].

Anganwadi and School as the New Frontiers of Preventive Health

RBSK 2.0 retains three major population platforms: delivery points for newborns, Anganwadi Centres for children aged six weeks to six years, and government/government-aided schools for children aged 6–18 years. Anganwadi children are intended to be screened at least twice annually, while schoolchildren are screened at least once each academic year. This gives India something difficult to reproduce through facility-based medicine: repeated contact with apparently healthy children.

The school therefore becomes more than a place for detecting refractive error or dental caries. It can potentially become a setting for identifying cardiometabolic risk, behavioural concerns, unhealthy dietary practices, physical inactivity and problematic digital use while simultaneously providing health education. This is perhaps the real public-health importance of RBSK 2.0.

From Screening Numbers to Completed Care Cascades

Expansion also brings risk. Adding conditions to a screening programme is relatively easy on paper; building the capacity to confirm, counsel, refer, treat and follow every positive screen is considerably harder.

Three implementation issues deserve particular attention. First, quality must accompany coverage. Measuring paediatric blood pressure correctly, interpreting anthropometry, recognising developmental red flags and discussing mental-health concerns require competencies that cannot be achieved through checklists alone. RBSK 2.0 appropriately proposes five-day foundational MHT training, advanced DEIC training and integrated training of frontline workers.

Second, screen-positive children must not become lost referrals. Programme performance should therefore move beyond the number screened to a cascade such as:

- Eligible → Screened → Screen-positive → Referred → Reached referral facility → Confirmed diagnosis → Treatment initiated → Follow-up completed

Third, the expansion should avoid unnecessary medicalisation. Childhood is a period of rapid physiological, emotional and behavioural change. A screening programme of this scale must continually examine false-positive referrals, repeat testing, referral burden, family anxiety and the capacity of downstream services.

The Road Ahead

RBSK 2.0 provides India with an unusual opportunity: to connect newborn screening, nutrition, development,

Table 1: From The 4Ds to A Life-Course Approach: Key Shifts Introduced Under RBSK 2.0

Domain	Earlier RBSK approach	RBSK 2.0 approach	Public health significance
Overall framework	Screening and early intervention centred on the 4Ds—Defects at birth, Deficiencies, Diseases and Developmental delays	Retains the 4Ds while expanding attention to NCDs, mental and behavioural conditions, lifestyle risks, kidney disorders, digital exposure, sleep and social determinants	Broadens child health from detection of established conditions towards prevention, risk identification and longitudinal care
Conditions covered	Predominantly congenital defects, nutritional deficiencies, common childhood diseases and developmental delays	38 numbered health-condition categories, including newly emphasized and emerging child-health concerns	Reflects the changing morbidity profile of Indian children; importantly, these are 38 categories, not 38 NCDs
Childhood NCDs	Limited explicit focus on systematic childhood NCD risk identification	Explicit inclusion of diabetes mellitus (Type 1 and Type 2), hypertension and other NCD-related risks, with obesity/risk assessment incorporated into the broader approach	Creates an opportunity to identify NCD risk and disease before adulthood, while linking screen-positive children to confirmatory care
Diabetes screening	Not a major structured component of the original 4D framework	Symptom screening using the 4Ts—Toilet, Thirsty, Tired and Thinner; risk-based Type 2 diabetes screening among adolescents; random blood sugar for suspected cases	Moves diabetes recognition closer to schools and communities, but screening does not equal diagnosis; suspected cases require confirmation and clinical management
Hypertension	No prominent population-facing childhood hypertension pathway	BP assessment supported through MHTs with age-appropriate BP cuffs, referral and convergence with NP-NCD	Extends the NCD continuum into childhood and may facilitate earlier recognition of elevated BP
Mental, behavioural and neurodevelopmental health	Developmental delay formed part of the original 4Ds	Explicit attention to anxiety, ADHD, sleep disorders, autism spectrum disorder, specific learning disorders and other developmental concerns	Moves RBSK towards a more comprehensive concept of health encompassing physical, developmental and psychosocial well-being
Digital exposure	Not part of the original programme architecture	Age-specific questions assess problematic digital use, including effects on sleep, studies, relationships and daily functioning, with defined referral triggers	Recognizes digital behaviour as an emerging child-health concern rather than treating screen exposure solely as a parental or educational issue
Prevention and health promotion	Greater emphasis on identification, referral and treatment	Greater emphasis on healthy diet, physical activity, sleep, appropriate screen habits, counselling and family/community participation	Shifts the programme upstream from disease detection towards healthy behaviours and prevention across the life course
Screening platforms	Newborn screening, Anganwadi Centres and schools	Retains these platforms with screening from birth to 18 years; Anganwadi screening at least twice annually and school screening at least once every academic year	Uses existing population platforms to create repeated opportunities for early identification across childhood and adolescence
Digital health architecture	Basic programme portal and predominantly episode-based records	Longitudinal digital Health Report Card, with provision for ABHA linkage and interoperability with RCH 2.0, U-WIN, UDISE+, POSHAN Tracker and other systems	Offers the possibility of following a child's health trajectory rather than recording isolated screening encounters
Referral and continuity of care	Screening followed by referral, with DEIC as an important referral point	Strengthened MHT–DEIC–secondary/tertiary care pathway, digital follow-up, referral tracking, hub-and-spoke linkages and telemedicine	Makes completion of the care cascade, rather than screening numbers alone, central to programme performance
Programme convergence	RBSK largely implemented through child-health structures	Stronger convergence with NP-NCD, RKSK, NMHP/DMHP, oral health, eye health and other programmes, alongside WCD, Education and Social Justice sectors	Positions child health as a multisectoral and continuum-of-care responsibility
Measure of programme success	Strong focus on children screened and conditions detected	Greater scope to monitor screening → referral → referral completion → diagnosis → treatment → follow-up	Encourages movement from programme outputs to health outcomes and exposes losses at each stage of the care cascade

Abbreviations: ABHA, Ayushman Bharat Health Account; ADHD, attention-deficit/hyperactivity disorder; DEIC, District Early Intervention Centre; DMHP, District Mental Health Programme; MHT, Mobile Health Team; NCD, noncommunicable disease; NMHP, National Mental Health Programme; NP-NCD, National Programme for Prevention and Control of Non-Communicable Diseases; RBSK, Rashtriya Bal Swasthya Karyakram; RKSK, Rashtriya Kishor Swasthya Karyakram; WCD, Women and Child Development

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school health, adolescent health, mental well-being and NCD prevention within a longitudinal public-health platform Table 1.

Its impact should therefore be evaluated through more than screening coverage. States should monitor referral completion, time from screening to confirmation, treatment initiation, loss to follow-up, geographical inequities and long-term outcomes. The digital platform could additionally permit district-level identification of clusters of obesity, hypertension, anaemia, developmental problems or poor referral completion, allowing programme responses to become increasingly data-driven. The guidelines themselves envisage geographical and cluster-based analysis for precisely such programme intelligence. Operational research will be especially important during the early years of

implementation. We need to know not merely whether childhood NCD screening can be performed at scale, but whether it improves early diagnosis and outcomes without generating an unmanageable burden of false positives and referrals.

CONCLUSIONS

RBSK 2.0 represents an important evolution in India's approach to child health. The original 4Ds have not disappeared; they have been widened to reflect a generation of children growing up amid nutritional transition, declining physical activity, increasing digital exposure and emerging cardiometabolic, behavioural and mental-health concerns. Diabetes and hypertension now sit alongside congenital disorders, nutritional deficiencies and developmental delays within a national child-health framework.

The larger change, however, is conceptual. Child health is beginning to be viewed not only as protection from childhood disease, but also as the foundation of adult health. If RBSK 2.0 succeeds in combining good-quality screening with confirmatory diagnosis, referral completion, treatment and longitudinal follow-up, India may move from detecting NCDs predominantly after they become established in adulthood towards recognising risk and disease much earlier in the life course. In that sense, the journey from the 4Ds to childhood NCDs is not simply an expansion of a screening list—it is a change in when India begins to think about prevention.

REFERENCES

[1] United Nations Inter-Agency Group for Child Mortality Estimation. *Levels and Trends in Child Mortality 2025*. United Nations Children's Fund, 2026, https://data.unicef.org/resources/levels-and-trends-in-child-mortality-2025/. Accessed 17 Sept. 2026.

[2] Ministry of Health and Family Welfare, Government of India. *Operational Guidelines: Rashtriya Bal Swasthya Karyakram (RBSK), Child Health Screening and Early Intervention Services under NRHM*. Ministry of Health and Family Welfare, 2013, https://nhm.gov.in/images/pdf/programmes/RBSK/Operational_Guidelines/Operational%20Guidelines_RBSK.pdf. Accessed 17 Sept. 2026.

[3] Ministry of Health and Family Welfare, Government of India. *Rashtriya Bal Swasthya Karyakram (RBSK 2.0): Operational Guidelines 2026*. Child Health Division, Ministry of Health and Family Welfare, 2026, https://nhm.gov.in/index4.php?lang=1&level=0&lid=775&linkid=535. Accessed 17 Sept. 2026.

[4] Meena, J. *et al.* "Prevalence of Hypertension among Children and Adolescents in India: A Systematic Review and Meta-Analysis." *Indian Journal of Pediatrics*, vol. 88, no. 11, 2021, pp. 1107–1114. https://doi.org/10.1007/s12098-021-03686-9.

[5] Deepa, C. *et al.* "Prevalence of Obesity among School-Going Children in India: A Comprehensive Systematic Review, Meta-Analysis, and Spatial Analysis." *Indian Journal of Community Medicine*, vol. 50, no. 6, 2025, pp. 897–905. https://doi.org/10.4103/ijcm.ijcm_476_24.

[6] World Health Organization. "Prevention of Noncommunicable Diseases: Child Health and Development." *World Health Organization*, https://www.who.int/teams/maternal-newborn-child-adolescent-health-and-ageing/child-health/prevention-of-noncommunicable-diseases. Accessed 17 Sept. 2026.

[7] World Health Organization. *WHO Guidelines on Physical Activity and Sedentary Behaviour*. World Health Organization, 2020, https://www.who.int/publications/i/item/9789240015128. Accessed 17 Sept. 2026.

[8] Balamurugan, G. *et al.* "Mental Health Issues among School Children and Adolescents in India: A Systematic Review." *Cureus*, vol. 16, no. 5, 2024, article e61035. https://doi.org/10.7759/cureus.61035.

[9] Khobragade, A.W. and M.S. Shenoy. "Screen Time among Under-Five Children in India: A Systematic Review and Meta-Analysis." *Cureus*, vol. 17, no. 6, 2025, article e85458. https://doi.org/10.7759/cureus.85458.

[10] Chakraborty, S. *et al.* "Evaluation of the Rashtriya Bal Swasthya Karyakram (RBSK): A National Children Healthcare Program in a Health District of West Bengal, India." *Indian Journal of Public Health*, vol. 66, no. 3, 2022, pp. 307–312. https://doi.org/10.4103/ijph.ijph_1690_21.