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REVIEW ARTICLE

Autism Spectrum Disorder: From Diagnosis to Public and Family Resource Constraints – A Narrative Review

Chua Chin TEO
Educational Therapist, Private Practice, Singapore

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Corresponding author's email: teochuachin@gmail.com

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ABSTRACT

Autism spectrum disorder is a heterogeneous neurodevelopmental condition whose management requires more than diagnostic classification. This narrative review examines clinical features, genetic and environmental influences, diagnosis, educational-therapy evaluation, co- and multi-morbidities, and public and family resource constraints. The main literature coverage period is from January 2017 until August 2026, with some important exceptions from the past. Complexity of intervention takes into account the interaction of communication, sensory, cognitive, adaptive and health requirements and not the number of subtypes that are known. Psychiatric diagnosis and educational evaluation provide complementary evidence. Cognitive profiling informs learning support but does not independently diagnose autism. Cognition-Conation-Affect-Sensation and Hierarchy of Abilities and Skills are considered alongside Cattell-Horn-Carroll theory. Country examples from Israel, mainland China and Singapore illustrate demand, household costs and inclusion challenges. An explicitly conceptual supply and demand for support model compares domain-specific needs with sustainable family capacity and accessible public provision. Sustainable support requires coordinated assessment, proportionate intervention, accommodations, caregiver protection and transparent review, with outcomes judged by participation, safety and wellbeing.

Keywords: autism spectrum disorder, educational therapy, family caregiving, functional assessment, inclusive education, service access support

1. INTRODUCTION

Autism spectrum disorder (ASD) is defined by persistent differences or difficulties in social communication and interaction together with restricted or repetitive behaviours, interests or activities, including sensory features. Features originate in the developmental period, cause clinically significant

impairment and vary with developmental level and context [1]. A diagnostic label does not establish a uniform cognitive profile, predictable support requirements or a single appropriate intervention [2]. The practical challenge is to translate diagnosis into meaningful improvements in communication, participation, safety and quality of life [2]. The WHO International Classification of Diseases 11th Revision (ICD-11) and Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) both organise ASD around persistent social-communication difficulties and restricted, repetitive or inflexible patterns of behaviour, but DSM-5-TR requires all three social-communication features and at least two restricted/repetitive features, whereas ICD-11 uses a two-domain formulation and does not make sensory hyper or hypo-reactivity a separately required criterion [1, 3].

Increasing identification raises demand for diagnostic, educational and social-care services. Israeli administrative data show recorded prevalence among children aged 1 to 17 years, which rose from 0.49% in 2017 to 0.96% in 2021 [4]. In China, a study of 3,236 families identified substantial nonmedical expenditure and parental productivity losses [5]. Such findings connect clinical heterogeneity to workforce capacity and household opportunity costs, rather than simply to therapy fees.

This narrative review starts with clinical presentation and aetiology followed by diagnosis, educational evaluation and functional profiling for planning. It uses the Cognition-Conation-Affect-Sensation (CCAS) framework [6-9], Hierarchy of Abilities and Skills (HAS) framework [10] and Cattell-Horn-Carroll (CHC) model [11] as different lenses for profiling integration with real-world experience. It aims to evaluate the real strain on families and public resources and proposes a planning framework on demand and supply for support.

2. METHODS

2.1 Review Approach and Coverage Period

This targeted narrative review was informed by SANRA principles for explaining importance, objectives, literature selection, referencing and scientific reasoning [12]. The principal literature coverage period was 1 January 2017 to 31 August 2026. August 2026 is the publication eligibility cut-off, allowing subsequent synthesis and manuscript preparation; it is not presented as a retrospectively verified date on which all searches were completed. No contemporaneous comprehensive search log or prospectively registered protocol is available.

Targeted searches used PubMed records, publisher pages and authoritative clinical and professional guidance. Search concepts combined ASD with symptoms, heterogeneity, genetic overlap, diagnosis, educational therapy, cognitive profiling, co- and multi-morbidities, profound autism, caregiver burden, economic evaluation, task-sharing and resource allocation. Country terms included Israel, China and Singapore. This was not an exhaustive bibliographic database search; no systematic review screening counts or pooled estimates are claimed.

2.2 Selection and Interpretive Safeguards

English-language peer-reviewed clinical studies, reviews and economic evaluations were prioritised. Selected pre-2017 exceptions were retained for foundational assessment and management guidance, conceptual frameworks, cognitive profiling and late-diagnosis experience. Diagnostic manuals and authoritative service or professional guidance were used to clarify standards and scope, not as intervention-effectiveness studies. Undated professional guidance is identified as such. Research published after August 2026 was excluded.

Interpretation considered the study methodology and generalisability: correlations do not prove causation, qualitative descriptions do not measure incidence or prevalence, and calculated cost savings are based on assumptions. Bibliographic details were verified against PubMed records or publisher pages where available. The support need equation, prioritisation scheme and implementation schedule are author-derived concept models, not clinically validated measurement tools or service provision guidelines.

3. CLINICAL FEATURES AND GENETIC–ENVIRONMENTAL HETEROGENEITY

3.1 ASD Symptoms and Complexity of Intervention

Core social-communication features concern social-emotional reciprocity, nonverbal communication and developing or understanding relationships. Examples include difficulty sustaining back-and-forth interaction, coordinating gesture with speech, or adjusting communication to social context. Restricted/repetitive features include repetitive movement or speech, insistence on sameness, intense or inflexible interests, and sensory hyper- or hypo-reactivity. Not all of these features occur in every individual. Language impairment and intellectual disability may accompany autism, but they are specifiers rather than diagnostic criteria [1]. The signs must be developmentally considered and contextualised rather than based on a single behaviour or a short clinical visit [13].

ASD is not uniformly more difficult to support than every other neurodevelopmental condition. Complexity depends on the individual, co-occurring conditions, multimorbidity and environmental demands. Intervention may nevertheless require broad coordination when communication barriers, sensory distress, cognitive inflexibility, adaptive limitations and physical or mental-health problems interact [2]. An individual may understand a task but be unable to demonstrate knowledge in a noisy classroom or during anxiety. Treating only the visible behaviour may miss pain, fatigue, communication breakdown or inappropriate task demands. Similarly, we must understand what the individual can do in structured conditions and everyday life. Only then can we select goals based on safety, health, communication and valued participation [14, 15].

Risk genes, genetic syndromes and statistical research clusters are different categories and should not be counted interchangeably. A 2025 study identified four phenotype-based groups with differing genetic associations; these findings advance biological hypotheses rather than replace diagnostic criteria or establish treatment-allocation categories [16]. Heterogeneity complicates recruitment, outcome measurement and generalisation: an average trial result need not predict a particular individual's response.

Shared genetic liability adds scientific interest without providing a simple explanation. A cross-disorder analysis of eight psychiatric conditions identified 109 loci associated with at least two disorders; the analysed conditions included ASD, ADHD, schizophrenia and others [17]. This finding demonstrates pleiotropy across psychiatric diagnostic categories; it does not establish 109 autism subtypes or a single shared genetic defect. Shared risk does not make diagnoses identical or justify transferring a treatment without evidence.

The CHC model profiles the cognitive strengths and weaknesses of an individual but it does not diagnose ASD and cannot capture all sensory, adaptive or health needs [11]. Basic accommodations and urgent care should not wait for a complete cognitive battery.

ASD attracts multidisciplinary research because diverse developmental pathways coincide with substantial support needs and unanswered questions about which supports work for whom, in what context and at what cost [2].

3.2 Genetic Architecture and Environmental Influences

ASD liability involves rare and common genetic variation, with effects across multiple developmental pathways rather than one universal lesion [2]. Genetic findings can be informative in selected clinical situations, but they are not a stand-alone diagnosis. NICE recommends considering genetic investigations in light of clinical findings and appropriate specialist advice, rather than routine testing of every child to establish ASD [13].

Prenatal and perinatal exposures have been associated with ASD risk, although many findings are observational and vulnerable to confounding and ascertainment bias. Genetic susceptibility, biological development and environmental influences should therefore be considered interacting contributors, not competing explanations [2]. Candidate maternal, immune, metabolic and other biomarkers remain investigational; no single marker replaces a careful developmental assessment [14]. Figure 1 presents a simplified interaction model without implying that any pathway is necessary or sufficient for an individual presentation [14, 18].

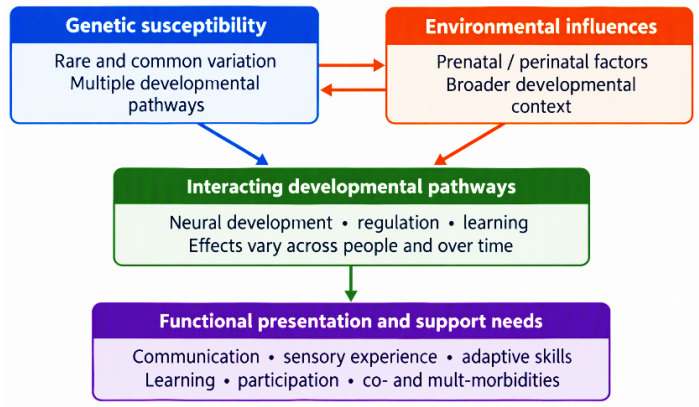

Figure 1. Multiple interacting influences and heterogeneous functional presentations. Arrows represent proposed relationships, not proof of causation in an individual with ASD [18].

3.3 Multi-morbidities in Profound Autism

Co- and multi-morbidities are used throughout this review to acknowledge additional conditions and their cumulative interactions, rather than reducing every presentation to a single index diagnosis. In an index-condition formulation, an additional disorder is a co-occurring condition; multi-morbidities emphasise multiple coexisting conditions without necessarily privileging one as primary. Relevant conditions include ADHD, intellectual disability, language disorder, anxiety, depression, epilepsy, sleep and feeding problems, and gastrointestinal difficulties [2, 18]. Frequencies differ by age, ascertainment and support needs. Sensory features within the ASD criteria should not automatically be counted as a separate disorder.

The clinical issue is the interaction of conditions, not simply their number. Sleep disturbance can worsen attention and emotional regulation; communication difficulties can obscure pain; anxiety can restrict participation despite strong reasoning skills. Diagnostic overshadowing occurs when such problems are attributed to autism without appropriate investigation. Educational observations can reveal patterns and support referral, but cannot replace clinical assessment of suspected medical or psychiatric causes [13]. The Lancet Commission proposed profound autism as a descriptor intended to improve recognition and planning for people requiring very substantial support, often including minimal language, severe intellectual limitations and continuous access to an adult caregiver. This is not a separate formal diagnostic subtype [2]. Profound autism should not be treated as synonymous with multi-morbidities, nor should the label alone determine an individual's capacity or priorities. People with very high support

needs must be included in research and planning for communication access, health care, safeguarding, respite and sustained daily living support.

The review proposes prioritising immediate safety and treatable health concerns alongside accessible communication, followed by barriers to essential routines and meaningful participation. This is not a rigid universal hierarchy. For a child whose sleep disruption and suspected pain prevent engagement, increasing academic drills without clinical review may be poorly matched to the problem; clinical care, communication support and environmental adjustments may proceed together. Priorities demand shared professional opinion, input from caregivers, the individual's preferences where accessible, and evaluation of benefits observed [2].

4. SCREENING, DIAGNOSIS AND EDUCATIONAL EVALUATION

4.1 Screening and Early Recognition

Developmental surveillance and structured screening support referral, but a positive screen does not confirm ASD and a negative screen does not exclude it. Diagnostic assessment combines developmental history, direct observation, medical information and reports from caregivers and education settings [13]. Support for identified communication or learning needs need not await diagnostic completion [2]. Earlier identification is useful only when connected to timely, accessible assessment and meaningful support.

4.2 Biomarkers, Delayed Recognition and Diagnostic Overlap

Biomarker and computational approaches remain research tools or potential adjuncts rather than substitutes for clinical developmental assessment [14]. Recognition may be delayed when ADHD or anxiety obscures the broader presentation. One study found that children and adolescents previously diagnosed with ADHD received an ASD diagnosis an average of 1.8 years later than those without a previous ADHD diagnosis [19]. This does not negate ADHD; both disorders need to be assessed and supported.

Camouflaging and context-dependent performance can obscure difficulties, especially in girls and women [15]. Accounts from late-diagnosed women describe repeated misattributions and adverse experiences [20]. Assessment should therefore consider history, coping strategies and functioning across contexts. New evidence warrants review rather than assuming that a previous negative assessment, fluent speech or good eye contact rule out ASD [13].

4.3 Differences and Limitations of Psychiatric Diagnosis and Educational Therapy Assessment

Psychiatric assessment asks whether diagnostic criteria are met, what differential diagnoses or co- and multi-morbidities require attention, and which medical or mental health investigations and treatments are indicated. Diagnosis is not reserved exclusively to psychiatrists: appropriately trained paediatricians, psychologists and multidisciplinary teams may contribute or diagnose within local requirements. NICE identifies a core team including a paediatrician and/or child psychiatrist, a speech and language therapist and an experienced psychologist [13].

Educational therapy assessment asks how the learner acquires and applies skills, which barriers impede participation and what teaching or accommodations improve performance. It can integrate educational assessment, work samples, observation, teacher/caregiver information and intervention response. The Association of Educational Therapists describes formal and informal educational assessment within the practitioner's qualifications, synthesis of information and individualised intervention planning; its fact sheet explicitly excludes diagnosis and cognitive or psychological testing

unless separately qualified [21]. This is professional scope guidance, not a universal statement of law; jurisdictional rules and instrument-specific qualifications must be checked. Educational therapist and educational psychologist are not interchangeable titles. The distinction is therefore one of purpose as well as professional role.

A psychiatric diagnostic formulation determines whether the developmental history and current presentation satisfy DSM-5-TR or ICD-11 criteria, identifies differential diagnoses and co- and multi-morbidities, and determines whether medical, psychiatric or safeguarding assessment is required. Its principal limitation is that a categorical diagnosis does not, by itself, specify the functional barriers affecting learning, the teaching supports required, or the extent to which clinic performance generalises to home and school. Educational-therapy assessment addresses those questions directly by examining functional performance, differential barriers to participation, instructional response and environmental demands; its principal limitation is that it cannot independently establish ASD or exclude medical and psychiatric causes [1, 13, 21].

The approaches are complementary. A clinically sound diagnosis may offer insufficient detail for classroom teaching, whereas an educational evaluation may identify learning barriers without resolving epilepsy, pain, psychiatric illness or another developmental explanation. Neither a single psychiatric consultation nor a test profile is sufficient in every case. Language, cultural expectations, sensory conditions, motor demands, anxiety, fatigue and test-floor effects can affect results. Discrepancies between clinic performance and home or school reports should prompt further information gathering and, where appropriate, observation in another setting [13]. Table 1 summarises the division of contribution and the need for coordinated interpretation.

Table 1. Complementary Assessment Roles and Limits

Aspect	Clinical / psychiatric assessment	Educational-therapy assessment
Central question	Does the developmental presentation meet diagnostic criteria; what else requires clinical care?	How does the learner acquire and apply skills; what instructional support and accommodations are required?
Typical evidence	Developmental and medical history; direct observation; differential diagnosis; multidisciplinary reports.	Educational tasks; observation; work samples; teacher and family reports; authorised educational measures.
Principal output	Diagnostic formulation and clinical recommendations; contribution to needs planning.	Individualised learning goals, teaching plan, accommodations and progress data.
Limitations	A diagnostic label does not determine teaching methods or capture all daily functioning.	A learning profile does not independently establish ASD or exclude medical or psychiatric problems.
Shared safeguard	Use multiple sources, competent practice and the individual's context; refer beyond scope.	Work within qualifications, refer clinical concerns and share relevant findings with consent.

Note. Synthesised from NICE diagnostic guidance [13] and the Association of Educational Therapists fact sheet [21]. Local professional rules apply.

5. INTEGRATIVE FUNCTIONAL PROFILING: CCAS, HAS AND CHC

5.1 Lens to an ASD Profile

Intentional (conative) and cognitive control [6], social responsiveness (Affect) [7] and sensory processing differences [8] may be integrated into a CCAS framework for identifying and characterising the functional phenotype of ASD as well as other intellectual and developmental disabilities [9]. This is illustrated in Figure 2.

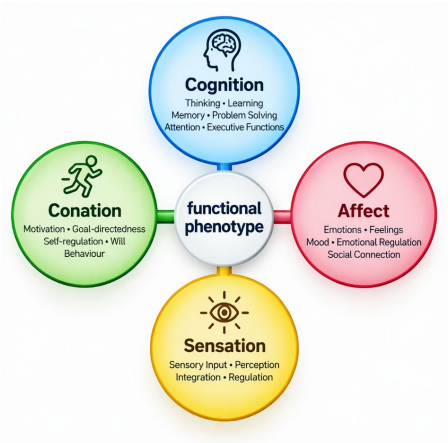

Figure 2. Interactions of the CCAS domains [6–9].

The HAS framework provides a developmental organising lens of innate abilities, sensory abilities, adaptive behavioural abilities, social-emotional abilities, cognitive abilities and metacognitive abilities. It distinguishes capacity in structured settings from performance in daily life [10].

CHC theory categorises cognitive abilities into:

Stratum III	:	General intelligence (g)
Stratum II	:	Broad abilities such as fluid reasoning (Gf), visual processing (Gv), comprehension-knowledge (Gc), processing speed (Gs), and working memory (Gwm)
Stratum I	:	Narrow abilities such as quantitative reasoning (Gf-RQ), flexibility of closure (Gv-CF), general verbal information (Gc-K0), rate of test-taking (Gs-R9) and memory span (Gwm-MS) [11]

Group-level cognitive findings should not become an assumed ASD-wide profile [22]. Low timed-task performance, for example, may reflect motor demands, attention, anxiety or unfamiliarity as well as processing efficiency. Test scores alone do not establish a mechanism or prove which intervention will help.

Figure 3 shows how the profiling lenses sit alongside adaptive assessment, health information, observation and family priorities [2, 10, 11, 13]. Proposed integration requires evidence of reliability, validity, incremental clinical usefulness and cultural fairness before diagnostic or allocation use. It must not become a prerequisite for support or an unvalidated gatekeeping score. A plan should identify the target activity, baseline performance, support provided and review criterion, not merely list test deficits.

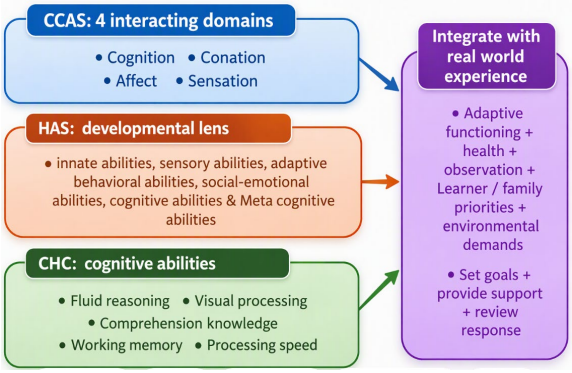

Figure 3. Different lenses and one individualised plan.

5.2 Developmental Change, Gender and Generalisation

Support priorities change across development: early communication and shared engagement may give way to friendships, self-advocacy, educational access and community participation [23]. Strong verbal skills, a favourable IQ score or camouflaging do not establish low support needs [15, 16]. The discrepancy between assessed ability and sustained daily performance is often the practical target of accommodations. Intervention should support meaningful participation and reduced distress rather than suppress harmless differences solely for conformity.

6. PUBLIC AND FAMILY RESOURCE CONSTRAINTS

6.1 Country Examples: Distinct Lessons

Israel illustrates demand pressure from rising recorded identification, especially among young children, which makes a review of staffing adequacy urgent [4]. A national overview reports substantial public funding of services but inequitable access, particularly for minority and rural populations [24].

Earlier diagnosis alone does not establish shorter waits, sufficient intervention capacity or better outcomes. The planning task is to link identification data to the referral, assessment and support stages and to examine which groups remain underserved.

Mainland China illustrates household costs and the need for geographically sensitive planning. The national survey of 3,236 families across 30 provinces highlights why non-medical costs and parental lost productivity should be incorporated into service evaluation [5]. These data do not establish uniform provincial provision or the effectiveness of one national delivery model. Community and parent-mediated approaches should be judged on competence, uptake, family workload and outcomes, rather than assumed to solve regional capacity differences. Table 2 shows annual family costs by category.

Table 2. Annual family costs per child with ASD (aged 2–6 years) in China, by category [5]. The total is the sum of the reported components; the authors state a total of US$34,206.50, which does not equal this sum.

Cost Category	Annual Cost per Child (US$)
Direct medical costs	6,009.20
Direct non-medical costs	18,859.80
Indirect costs (parental productivity losses resulting from resignation or job adjustment)	13,990.70
Sum of mean annual costs	38,859.70



Figure 4. Priorities identified by service providers, autistic adults and caregivers in Singapore [25].

An example is that of Singapore where 21 interviews conducted with service providers, autistics and their caregivers revealed their desire for flexible supports, destigmatisation and social changes [25]. This evidence is qualitative, not a national estimate of unmet need. Its practical implication is that planning should address educational and community participation, family navigation and attitudes alongside specialist service capacity. The three main themes are shown in Figure 4.

These examples involve administrative prevalence, a family-cost survey and qualitative interviews, respectively. Their different populations, measures and denominators prevent direct effectiveness comparisons.

6.2 Coordinated Clinical, Educational and Social-care Pathways

A resource-efficient approach should avoid duplicating history-taking and testing, and should include a named coordinator and shared information through consent. Efficient inter-agency communication and profiling based on need across health, education and social care are suggested by NICE [13]. Clinical assessment and practical learning supports can proceed in parallel when safe and appropriate. The review proposes tracking time from first concern to referral, assessment, support initiation and review, because reducing one waiting list can merely move the bottleneck downstream.

Proportionate care provides a clear route to more intensive support when needed. Accessible information, classroom adjustments and communication supports can be widely available. Specialist and mainstream education can both be appropriate; placement should reflect the individual's needs and preferences and the support available, rather than a presumed hierarchy.

Clinical services alone cannot address caregiver assistance, employment flexibility or accessible community environments. Social workers can help families access benefits, respite, safeguarding and transitions to supported living, with individualised assessment and review. These actions operationalise the Commission's cross-sector, lifespan approach rather than treating health services alone as responsible for every support gap [2]. Table 3 identifies proposed delivery safeguards.

Table 3. Proposed actions for sustainable support (review synthesis, not a validated allocation rule)

Action	ıblic / service contribution	Family protection and review
Coordinate assessment	Named contact; shared clinical and education information; avoid duplication.	Track time to meaningful support and repeated private assessment costs.
Allocate by need	Consider safety, functioning, access, preferences and response; preserve urgent specialist routes.	Do not ration by IQ, diagnosis alone, caregiver wealth or an unvalidated profile.
Support education and inclusion	Fund accommodations, trained staff, specialist pathways and transition planning.	Check attendance, participation and wellbeing, not placement labels alone.
Share tasks safely	Train community and school staff for defined roles; fund supervision and referral backup.	Measure competence, reach, quality and adverse events.
Protect caregivers	Offer flexible coaching, respite, navigation and welfare/social-work support.	Assess unpaid time, stress, employment effects, dropout and preferences.

Note. Proposed delivery and monitoring actions require local evaluation and do not constitute an allocation score.

6.3 Task-sharing, Intervention and Circumvention

Although task-sharing may extend access, it requires appropriate training, supervision, fidelity monitoring and referral criteria. These factors must be taken into account because community members do not substitute experts in every situation [26]. The work of educational therapists could include

assessment and intervention in the areas of learning, though any medical or mental health issues would have to be referred [21].

Caregiver-mediated support should be offered as a supported choice, not an unpaid obligation or a prerequisite for specialist care. Families supporting profound autism or complex co- and multi-morbidities may first need respite, direct assistance or flexible delivery. Apparent efficiency obtained by shifting burden to exhausted caregivers, or excluding families unable to participate, is not sustainable efficiency [2]. Programme evaluation should therefore record caregiver time, strain, uptake and reasons for discontinuation as well as child outcomes.

Circumvention changes the environment or route to a goal rather than requiring an underlying ability to change. Visual schedules, accessible communication, predictable routines, sensory adjustments and modified task demands may improve participation when matched to individual need [27]. For example, a visual task sequence or reduced copying demand may provide immediate educational access while further assessment proceeds. Accommodations should not be withheld until a full CHC battery is completed, and neither accommodations nor therapy should be assumed effective without reviewing actual functioning.

6.4 Economic Evidence and Accountability

Clinical effectiveness, affordability, cost-effectiveness and cost-saving are different claims. Tinelli and colleagues modelled the Preschool Autism Communication Trial intervention across four European settings. Intervention costs exceeded usual treatment at 13 months, whereas six-year modelling indicated societal savings, particularly through reduced unpaid parental care [28]. These are context-dependent modelled results, not guaranteed savings elsewhere. Local decisions require transparent assumptions about staffing, supervision, uptake, household time, duration of benefit and budget impact.

The review proposes a small monitoring set: waiting time; uptake by income, language and support need; meaningful participation; caregiver strain and unpaid hours; educational access; safety events; and planned versus crisis service use. These are suggested domains, not a validated composite score. Review and appeal routes should protect people with very high needs and those whose strong test scores mask daily difficulties. Autistic individuals and their caregivers must be involved in setting priorities and assessing the usability of services [2, 25].

6.5 Identify Costs, Capacity and Unmet Needs

Section 6.1 highlights costs of nonmedical spending and parental productivity losses [5] and unmet needs for flexible services, inclusion and attitudes rather than only the number of autism-specific sessions [25]. Household costs can make provision appear affordable to an agency while remaining unsustainable for a family.

A public-payer perspective records agency expenditure; a societal perspective also considers unpaid care and productivity effects. Budget savings in one sector may transfer workload to families or costs to another sector. Financial resources, professional time, classroom capacity and caregiver wellbeing should therefore be recorded separately before any transparent conversion into comparable units. Emotional distress is not a positive contribution to available support, and lost income is a cost rather than an additional resource [5, 28].

6.6 A Conceptual Supply and Demand Balance of Support

To conceptualise the relationship between support demand (D) and support supply (S), individual support requirements are aggregated into domain-specific demand and compared with domain-specific

support availability. All variables are functions of time, t. The equations proposed define conceptual quantities and have not been empirically calibrated or validated for resource allocation. Table 4 defines the symbols used in the equations.

$$D_k(t) = \sum_{i=1}^{N(t)} n_{ik}(t) \quad (1)$$

$$S_k(t) = F_k^{sust}(t) + P_k^{eff}(t) \quad (2)$$

$$G_k(t) = max\{0, D_k(t) - S_k(t)\} \quad (3)$$

$$D_k(t) \leq S_k(t), for\ every\ domain\ k \quad (4)$$

Note. The operator max {0, Dk(t) − Sk(t)} in equation (3) constrains the unmet support gap to non-negative values. A gap is recorded only when aggregate demand exceeds available support supply; otherwise, the gap is set to zero

Table 4. Definitions of symbols in equations

Symbol	Definition
$D_k(t)$	Aggregate assessed demand in support domain k
N(t)	Number of assessed ASD individuals
$n_{ik}(t)$	Required support for individual i in domain k
$\sum_{i=1}^{N(t)} n_{ik}(t)$	Sum of individual support requirements across all assessed individuals in domain k
$S_k(t)$	Total available support supply in domain k
$F_k^{sust}(t)$	Sustainable family-provided support capacity in domain k
$P_k^{eff}(t)$	Effective and accessible public support provision in domain k
$G_k(t)$	Unmet support gap in domain k
i	Individual index
k	Support domain index
t	Time period

Sustainable family-provided support capacity in domain k refers to the care time and practical support that families can provide without harming caregiver health, employment or wellbeing. Family costs are not part of this capacity: direct medical costs, direct non-medical costs and indirect costs from productivity loss through resignation or job adjustment [5] are burdens that constrain it. If care time is monetised, analysts must avoid counting the same lost work hours again as both time cost and lost earnings. The separate reporting of out-of-pocket costs, productivity loss, informal care and unpaid care time, with safeguards against double counting, is consistent with societal-perspective economic evaluation [28]. Because family capacity is summed across all assessed individuals, $F_k^{sust}(t)$ is itself an aggregate.

Effective and accessible public support provision in domain k may include publicly funded or commissioned clinical services, intervention and circumvention supports, specialist and inclusive mainstream education, social work, welfare and supported living, respite and caregiver assistance. Figure 5 shows a non-exhaustive list of public support available in Singapore [25]. Note that $P_k^{eff}(t)$ is itself an aggregate across providers. For example, each Special Education School (provider j) contributes the places it offers to autistic students and students with other special needs, and summing over providers gives the public supply in that domain.

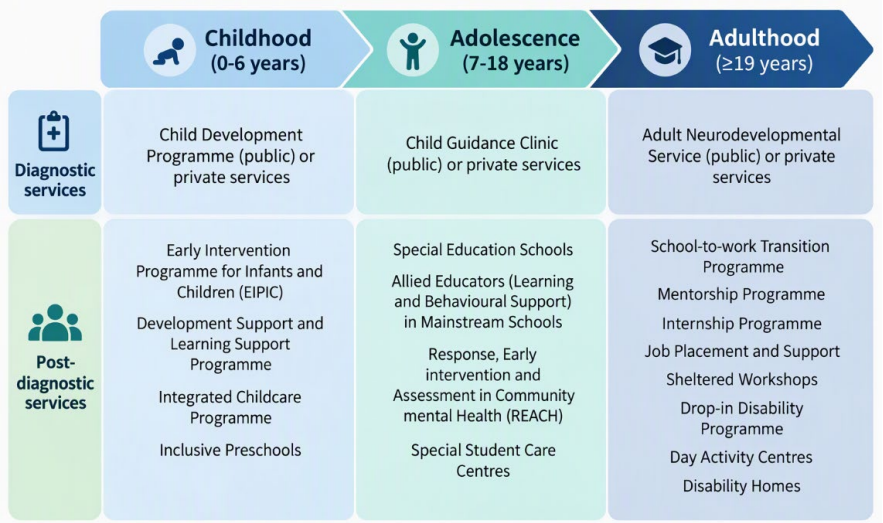

Figure 5. Public support available in Singapore [25].

Equation 4, $D_k(t) \leq S_k(t)$, is a conceptual planning target, not evidence that resources are sufficient in practice. A zero numerical gap may conceal poor quality, inappropriate skill mix, inaccessible services, geographical inequity or a few severely underserved individuals. Conversely, an apparent gap can reflect incomplete data. Family contributions must not become a condition for entitlement, and unpaid care cannot be assumed to be unlimited. The conceptual model is useful for exposing assumptions and discussing responsibility. Its measurement, predictive value and fairness may be improved via local testing such as on real-world feasibility of caregiver-mediated services and the impact of differing service funding models. Figure 6 depicts the proposed relationship.

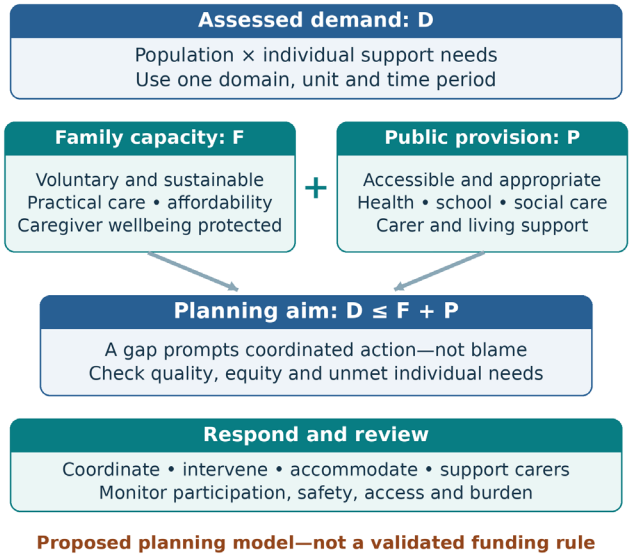

Figure 6. Proposed domain-specific support-demand balance and response to a gap. Demand and capacity require matching units and time periods. Family burden is a separate constraint. Conceptual author proposal; not a validated funding or allocation formula. Cost categories adapted from [5].

7. CLINICAL PRACTICE AND RESEARCH PRIORITIES

Clinical and educational teams should integrate developmental history, differential diagnosis, health review, learning assessment and everyday observation. Medication may target selected co-occurring symptoms but is not a treatment for the complete ASD presentation [2]. Plans should specify practical

targets, expected benefit, workload and review criteria. Generalisation beyond the assessment or therapy room must be evaluated, not presumed from improved scores.
Priorities for research include identifying which interventions suit which people and settings, including minimally speaking people and those with profound autism, evaluating transitions across the lifespan, and testing whether proposed profiling approaches add useful information beyond established assessment. Resource studies should report supervision, reach, uptake, caregiver burden and equity alongside costs and outcomes [2]. The demand and supply support conceptual model needs operational definitions and prospective testing of whether gap estimates predict access and outcomes; it must never be used to determine entitlement automatically.

8. DISCUSSION

ASD intervention complexity arises from interacting developmental, health and environmental needs rather than an established count of subtypes. Psychiatric diagnosis and educational-therapy evaluation answer complementary questions, but neither alone prescribes support. The central resource issue is whether coordinated provision can meet assessed needs without unsafe or involuntary transfers of burden to families [2]. The proposed demand and supply support conceptual model makes these trade-offs explicit while preserving domain-specific bottlenecks and caregiver safeguards.

8.1 Limitations

This targeted narrative review is vulnerable to selection, publication and language biases and is not a comprehensive systematic review. Searches drew on PubMed records, publisher pages and guidance websites, and no auditable screening record is available. Publication cut-off does not establish a historical search-completion date. Country evidence is heterogeneous, not directly comparable and cannot support national rankings. Foundational and professional-guidance exceptions fall outside the principal research window. CCAS and HAS material and their proposed integration are conceptual. Profiling might fail to capture support needs that fluctuate over time. The support–demand model is unvalidated. Economic findings may not transfer between systems. This review cannot estimate comparative programme effectiveness or establish resource thresholds.

9. CONCLUSION

ASD support requires integration of clinical diagnosis, educational evaluation, assessment of co- and multi-morbidities, and the individual's daily context. This review recommends that sustainable care balance domain-specific demand with accessible public provision and sustainable family capacity, while protecting caregiver health and educational rights. Its success should be judged by participation, safety and wellbeing rather than diagnostic throughput or therapy hours alone.

10. ACKNOWLEDGEMENTS

None.

11. COMPETING INTERESTS

The author declares no competing interests.

12. FINANCIAL DISCLOSURE

No funding has been obtained.

13. ARTIFICIAL INTELLIGENCE DISCLOSURE

During the preparation of this manuscript, the author used Perplexity to assist with summarising literature and generating figures during manuscript preparation. All outputs were thoroughly reviewed and edited by the author, who accepts full responsibility for the final content.

14. DATA AVAILABILITY STATEMENT

Data supporting the findings of this study are available within the article.

15. ETHICS APPROVAL

Not applicable

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