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Integrating the HALVES Model to Evaluate Adolescent Wellbeing: A Comparative Study of International Trends and Regional Paradigms in Malappuram, Kerala

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ABSTRACT

Adolescent wellbeing is an intricate, multidimensional construct shaped by a confluence of domestic environments, societal expectations, peer interactions, cultural norms, and institutional structures. This complexity becomes acutely salient during high school years, when young individuals face mounting academic pressures while simultaneously navigating the psychosocial challenges of adolescent development. The present study integrates the HALVES model—a theoretically grounded framework encompassing Health (H), Autonomy (A), Learning Engagement (L), Values (V), Equity (E), and School Culture (S)—to conduct a rigorous comparative analysis of international trends in adolescent wellbeing from 2012 to 2024 alongside regional empirical data from Malappuram, Kerala, India. Employing a longitudinal mixed-methods design (n=500, spanning multiple urban and rural localities in Malappuram across CBSE-affiliated schools, 2022–2025), this study combined quantitative survey instruments with qualitative interview protocols. Confirmatory Factor Analysis (CFA) validated the internal consistency of the HALVES Inventory (Cronbach's α=0.92; CFI=0.95; RMSEA=0.04), and Structural Equation Modelling (SEM) delineated causal pathways between macro-level social factors and academic outcomes (r=0.28, p<0.001). Findings underscore a persistent "academic trade-off" phenomenon, wherein students systematically sacrifice micro-level wellbeing needs—including physical health and personal autonomy—in favour of macro-level achievement demands imposed by families, schools, and broader cultural contexts. The study proposes culturally responsive, HALVES-aligned interventions integrating social emotional learning (SEL) frameworks consistent with India's National Education Policy (NEP) 2020 objectives. These insights have significant implications for curriculum designers, school counsellors, policymakers, and educators seeking to foster holistic adolescent development and reduce academic stress in South Asian educational settings.

***Keywords**: Adolescent Wellbeing, HALVES Model, Family Dynamics, Academic Stress, School Culture, Kerala Education, Social-Emotional Learning, NEP 2020, Mixed-Methods Research.*

Introduction

Contemporary secondary education globally is undergoing a paradigmatic shift—one that increasingly recognises student wellbeing not merely as a peripheral concern but as a central determinant of educational quality. The traditional emphasis on academic performance metrics, while necessary, has long overshadowed the equally critical dimensions of psychological resilience, social connectedness, physical health, and ethical development that collectively constitute holistic student

growth. This tension is particularly pronounced in high-stakes examination cultures across South and East Asia, where parental and institutional expectations often translate directly into chronic stress, diminished autonomy, and compromised health among secondary school students.

Malappuram, a district in Kerala, India, presents a compelling and paradoxical case study. Kerala consistently ranks among India's leading states in educational attainment, with high literacy rates, robust school enrolment figures, and competitive examination outcomes (Government of Kerala, 2022). Yet beneath these aggregate indicators lies a more nuanced picture: students in Malappuram frequently report high levels of academic stress, constrained personal agency, sleep deficits, and relational challenges within both family and school contexts. These issues reflect a broader global pattern documented extensively in the adolescent wellbeing literature, wherein academic achievement coexists with wellbeing deficits.

This study employs the HALVES model—an original integrative framework developed to map both micro-level psychological factors (Health, Autonomy, Learning Engagement) and macro-level societal factors (Values, Equity, School Culture) onto a unified wellbeing assessment schema. Unlike unidimensional models focused exclusively on mental health or academic performance, HALVES captures the full ecological complexity of adolescent experience. Drawing on international systematic review data from databases including ERIC, ProQuest Education, and PsycINFO (covering 2012– 2024), this study situates local findings within a broader global discourse on adolescent wellbeing.

The objectives of this study are fourfold: (1) to analyse the influence of family dynamics and school environments on the psychological, social, and academic wellbeing of high school students in Malappuram; (2) to identify and characterise the 'academic trade-off' pattern observed among adolescents; (3) to compare regional empirical findings with international trends across the HALVES dimensions; and (4) to propose evidence-based interventions for embedding social-emotional learning within school curricula in alignment with NEP 2020 and global Sustainable Development Goal 4 (SDG 4). These objectives collectively frame a study that is simultaneously locally grounded and globally relevant.

Literature Review

Theoretical Foundations: The HALVES Model

The HALVES model synthesises insights from multiple theoretical traditions—including developmental psychology, ecological systems theory, positive psychology, and educational sociology—to produce a comprehensive framework for evaluating adolescent wellbeing across six interrelated dimensions. Bronfenbrenner's (1979) ecological systems theory, which posits that individual development is shaped by nested environmental contexts (microsystem, mesosystem, exosystem, macrosystem), provides the structural scaffolding for HALVES' distinction between micro and macro factors. Micro-level dimensions (Health, Autonomy, Learning Engagement) capture the immediate, individual-level experiences of adolescents, while macro-level dimensions (Values, Equity, School Culture) reflect the broader institutional and societal forces that mediate those experiences.

The Health (H) dimension addresses both physical and mental health as foundational components of student functioning. International research consistently links poor sleep quality, sedentary behaviour, and nutritional deficiencies to diminished academic performance and psychological wellbeing (Dewald et al., 2010; Sahu & Rath, 2016). Among Indian adolescents, exhaustion and sleep deprivation are frequently reported consequences of prolonged study hours and examination preparation schedules, particularly during the critical Grade 10 and Grade 12 board examination years. The Autonomy (A) dimension draws from Self-Determination Theory (Deci & Ryan, 1985), which posits that intrinsic motivation, self-regulation, and psychological wellbeing are fundamentally dependent on the satisfaction of autonomy needs. Students who experience greater agency in their academic choices report higher levels of self-efficacy, lower anxiety, and stronger academic engagement (Niemiec & Ryan, 2009).

Learning Engagement (L), the third micro-dimension, reflects the degree to which students find academic content meaningful, stimulating, and relevant to their lives. Research demonstrates that high engagement reduces dropout risk, enhances knowledge retention, and fosters intrinsic academic motivation (Fredricks, Blumenfeld & Paris, 2004). Among adolescents in competitive South Asian educational environments, engagement often competes with rote-learning mandates and examination focused pedagogy, creating significant tension within the learning experience.

At the macro level, the Values (V) dimension addresses the ethical and prosocial orientations transmitted through family, school, and community contexts. Studies indicate that the emphasis on

competitive achievement in many South Asian educational cultures frequently displaces values-based education, resulting in increased performance anxiety and reduced empathic development (Saraswathi & Pai, 1997). The Equity (E) dimension examines differential access to educational resources across socioeconomic, gender, and geographic lines. Equity disparities in Malappuram reflect broader patterns documented across India, where students from lower-income rural households face significant disadvantages in access to quality instruction, digital resources, and extracurricular opportunities (ASER, 2023). Finally, School Culture (S) encompasses the relational climate, institutional norms, and structural supports that either facilitate or hinder student wellbeing. Supportive school cultures characterised by teacher warmth, peer cooperation, and mindfulness-based programming have been associated with significantly improved wellbeing outcomes (Waters, 2011).

International Trends in Adolescent Wellbeing (2012–2024)

A systematic review of international literature from 2012 to 2024 reveals several converging trends in adolescent wellbeing that provide critical contextual grounding for the present study. Across diverse national contexts—including the United Kingdom, United States, Singapore, South Korea, and Australia—researchers have documented rising rates of adolescent anxiety, depression, and academic burnout, particularly in the years following the COVID-19 pandemic (Racine et al., 2021). The OECD's Programme for International Student Assessment (PISA) has consistently reported that students in high-performing East Asian educational systems, despite achieving exceptional academic outcomes, frequently report among the lowest levels of subjective life satisfaction and school belonging of any surveyed populations (OECD, 2019).

International research further underscores the salience of family dynamics in shaping adolescent wellbeing. Authoritative parenting styles, characterised by warmth, structure, and responsiveness, are associated with superior wellbeing outcomes compared to authoritarian approaches that prioritise compliance and achievement over relational quality (Baumrind, 2013). Studies from the United Kingdom and Australia specifically highlight the buffering role of family cohesion in mitigating academic stress, suggesting that strong familial relationships serve as a critical protective factor even in high-pressure educational environments (Hampel & Petermann, 2006).

School-based interventions targeting social-emotional learning have emerged as a prominent strategy for enhancing adolescent wellbeing in international educational contexts. Meta-analytic evidence from Durlak et al. (2011) demonstrates that well-implemented SEL programmes produce measurable improvements in social skills, emotional regulation, academic achievement, and reductions in internalising and externalising behavioural problems. Randomised controlled trials of mindfulness-based interventions in school settings have reported wellbeing gains of approximately 15% relative to control conditions, with effects sustained at six-month follow-up assessments (Kuyken et al., 2013). These findings provide strong empirical support for the incorporation of SEL components within the HALVES framework.

Digital technology and social media represent increasingly prominent determinants of adolescent wellbeing in contemporary international literature. Longitudinal studies from the United Kingdom and United States report U-shaped relationships between screen time and wellbeing, with moderate use associated with positive social connectedness and excessive use linked to displacement of sleep, physical activity, and face-to-face social interaction (Przybylski & Weinstein, 2017). These patterns are increasingly relevant for Indian adolescents, among whom smartphone penetration and social media engagement have expanded dramatically over the study period.

Wellbeing Frameworks and Assessment Tools

The conceptualisation and measurement of adolescent wellbeing has evolved substantially over the past two decades, moving from deficit-oriented models focused exclusively on the absence of psychopathology toward positive psychology frameworks emphasising flourishing, resilience, and thriving. The World Health Organization's (WHO-5) Well-Being Index (Topp et al., 2021), a widely validated five-item screening instrument, provides a foundational benchmark for subjective wellbeing assessment that has been cross-culturally validated in diverse national contexts. The HALVES Inventory developed for this study draws on and extends the WHO-5 by incorporating domain-specific items relevant to the Indian educational context.

Seligman's PERMA model (2011)—Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment—provides additional theoretical scaffolding for the multidimensional conception of

wellbeing embedded within HALVES. The integration of academic competence, social relationships, and self-efficacy within the present study's wellbeing assessment aligns with the PERMA framework's emphasis on comprehensive flourishing across multiple life domains. Ryan and Deci's (2000) Self-Determination Theory, with its identification of autonomy, competence, and relatedness as universal psychological needs, further corroborates the inclusion of autonomy as a central micro-dimension within HALVES.

Within the Indian educational literature, the NEP 2020 represents a landmark policy document that explicitly acknowledges the primacy of holistic student development, well beyond the narrow metrics of examination performance. Chapter 4.20 of NEP 2020 specifically mandates the embedding of social-emotional learning within school curricula, the development of holistic progress cards, and the implementation of competency-based assessment frameworks. The present study's HALVESaligned interventions are designed to operationalise these NEP 2020 commitments within the specific sociocultural context of Malappuram.

Family Dynamics and Regional Context in Malappuram

Malappuram district, located in northern Kerala, presents a distinctive sociocultural profile that significantly shapes adolescent educational experiences. With a predominantly Muslim population, Malappuram has historically demonstrated strong community investment in formal education, yet also exhibits particular pressures around academic achievement tied to familial honour, community reputation, and economic aspirations (Zacharias, 2018). Family structures in Malappuram are predominantly nuclear or joint, with extended kinship networks playing an active role in educational decision-making. Parental educational aspirations in the district are consistently high, with a majority of parents expressing expectations for higher education completion and professional career attainment.

Research on family dynamics in the Kerala educational context highlights the dual role of familial support as both a protective factor and a source of academic pressure. Supportive family environments characterised by open communication, emotional validation, and shared academic engagement are associated with stronger academic resilience and positive psychological outcomes among Malappuram adolescents (Nair & Thomas, 2020). Conversely, authoritarian family climates characterised by high achievement demands, limited autonomy, and punitive responses to academic underperformance are linked to elevated anxiety, reduced self-efficacy, and increased psychosomatic complaints. The 'academic trade-off' identified in the present study—wherein micro-level wellbeing needs are sacrificed in service of macro-level achievement expectations—is directly traceable to these familial dynamics.

Teacher-student relationships constitute another critical determinant of wellbeing in Malappuram's educational landscape. Research documents significant variation in relational quality across school types, with government school students frequently reporting more distant, task-oriented teacher relationships compared to those in private aided and unaided institutions. Cultural norms around teacher authority and student deference further constrain the expression of autonomy and creative engagement in classroom settings, contributing to the micro-level wellbeing deficits identified in the present study.

Method

Research Design

This study adopted a longitudinal mixed-methods comparative design, integrating two complementary research components. The first component comprised a systematic international literature review (2012–2024), drawing on three major academic databases: ERIC, ProQuest Education, and PsycINFO. Inclusion criteria required peer-reviewed empirical studies focusing on adolescent wellbeing, school climate, family dynamics, or social-emotional learning in secondary educational settings published between January 2012 and December 2024. Studies were excluded if they focused exclusively on clinical populations, did not employ validated wellbeing assessment instruments, or lacked relevance to school-based contexts. A total of 87 studies met inclusion criteria and were subjected to thematic synthesis.

The second component comprised a regional empirical study employing stratified random sampling across multiple urban and rural localities within Malappuram district. Participants (n=500 adolescents; age range 14–17 years) were recruited from CBSE-affiliated high schools spanning four cities in Malappuram, with proportional representation across urban and rural school locations, gender,

socioeconomic background, and academic achievement levels. Data were collected at two time points—baseline (2022) and follow-up (2025)—enabling longitudinal tracking of wellbeing trajectories across the study period.

Ethical approval for the regional empirical component was obtained from the Institutional Review Board of Vels Institute of Science, Technology and Advanced Studies, Chennai. Informed consent was secured from school principals, parents or legal guardians, and participating adolescents prior to data collection. All participant data were anonymised and stored securely in compliance with applicable data protection regulations.

Instruments

The primary quantitative instrument was the HALVES Inventory, a purpose-developed 36item scale assessing the six HALVES dimensions using a 5-point Likert response format (1 = Strongly Disagree; 5 = Strongly Agree). The inventory was developed through a rigorous process of item generation, expert review, cognitive interviewing with student participants, and iterative refinement. Items were adapted for linguistic and cultural appropriateness within the Indian educational context, with particular attention to idioms, educational terminology, and culturally specific examples.

The HALVES Inventory was complemented by a 15-item Wellbeing Scale covering three subdomains: psychological wellbeing (self-efficacy and emotional regulation; 5 items), social wellbeing (peer relationships and school connectedness; 5 items), and academic wellbeing (academic competence and classroom climate; 5 items). Academic performance was operationalised using students' most recent examination percentage scores, obtained from school records with appropriate permissions. Qualitative data were gathered through semi-structured interviews with a purposive subsample of 50 participants, drawn to ensure representation across gender, school type, and urban/rural location.

The interview protocol explored participants' subjective experiences of academic pressure, family expectations, school relationships, health and sleep patterns, and sense of personal agency. Interviews were conducted in Malayalam, audio-recorded with participant consent, and subsequently transcribed and translated into English for analysis. Member checking and peer debriefing were employed as credibility-enhancing strategies.

Data Analysis

Quantitative data were analysed using SPSS (Version 28) and AMOS (Version 24). Descriptive statistics (means, standard deviations, frequencies) characterised the sample and HALVES dimension scores. Independent samples t-tests and one-way ANOVA examined differences across gender, school type, and urban/rural location. Pearson product-moment correlations assessed bivariate relationships between HALVES dimensions and wellbeing sub-domain scores.

Confirmatory Factor Analysis (CFA) in AMOS evaluated the structural validity and measurement fit of the HALVES Inventory. Model fit was assessed using multiple indices: the

Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardised Root Mean Square Residual (SRMR). Structural Equation Modelling (SEM) was employed to examine hypothesised causal pathways between macro HALVES factors, micro HALVES factors, and the three wellbeing sub-domain outcomes.

Qualitative data from semi-structured interviews were analysed thematically using NVivo (Version 12), following the six-phase thematic analysis protocol described by Braun and Clarke (2006). Themes were identified through iterative open, axial, and selective coding, with emerging thematic categories triangulated against quantitative findings to produce an integrated mixed-methods interpretation.

Results

Confirmatory Factor Analysis and Instrument Validation

CFA confirmed the six-factor structure of the HALVES Inventory with excellent model fit: CFI=0.95, RMSEA=0.04 (90% CI [0.03, 0.05]), SRMR=0.06. Overall scale reliability was high

(Cronbach's α=0.92), with individual dimension reliabilities ranging from α=0.78 (Equity) to α=0.89 (School Culture). Factor loadings ranged from 0.61 to 0.87 across all 36 items, confirming convergent validity. Discriminant validity was established through comparison of average variance extracted (AVE) values against shared variances between dimension pairs, with all AVE values exceeding interconstruct shared variances.

The 15-item Wellbeing Scale similarly demonstrated strong internal consistency (α=0.87) and confirmed factorial validity for the three-factor structure (psychological, social, and academic wellbeing sub-domains). Bivariate correlations between HALVES dimension scores and wellbeing sub-domain scores were all statistically significant ($p<0.05$), providing preliminary evidence of criterion validity.

Descriptive Statistics and HALVES Dimension Scores

Table 1: HALVES Inventory Dimension Scores and Correlations with Academic Performance (n=500)

HALVES Dimension	Mean (SD)	α	Corr. with Academic Performance	p-value
Health (H)	3.52 (0.85)	0.81	r = 0.15	0.01
Autonomy (A)	3.71 (0.72)	0.83	r = 0.22	0.001
Learning Engagement (L)	3.65 (0.79)	0.80	r = 0.25	< 0.001
Values (V)	3.44 (0.91)	0.82	r = 0.21	0.001
Equity (E)	3.29 (0.98)	0.78	r = 0.18	0.01
School Culture (S)	3.58 (0.88)	0.89	r = 0.30	< 0.001

School Culture (S) demonstrated the strongest correlation with academic performance ($r=0.30$, $p<0.001$), underscoring the central role of institutional climate in supporting academic outcomes. Equity (E) obtained the lowest mean score ($M=3.29$, $SD=0.98$), reflecting persistent resource disparities between urban and rural school settings within Malappuram. Autonomy (A) showed the highest mean score ($M=3.71$, $SD=0.72$), suggesting that students perceive moderate levels of personal agency, though qualitative data nuance this finding considerably.

The Academic Trade-Off: Quantitative Evidence

Structural Equation Modelling revealed significant indirect pathways through which macro HALVES factors (Values, Equity, School Culture) mediated the relationship between family achievement expectations and micro-level wellbeing outcomes. Macro factors collectively explained 28% of the variance in academic wellbeing outcomes ($\beta=0.28$, $p<0.001$). Critically, higher macro factor scores were associated with lower scores on the Health sub-dimension ($\beta=-0.19$, $p=0.004$) and the Autonomy sub-dimension ($\beta=-0.16$, $p=0.012$), providing quantitative confirmation of the academic trade-off hypothesis.

ANOVA revealed no statistically significant differences in overall HALVES wellbeing scores by gender ($p=0.14$) or family structure type (nuclear vs. joint; $p=0.21$), suggesting that the academic trade-off phenomenon operates relatively uniformly across these demographic variables within the Malappuram context. However, significant differences were observed between urban and rural school students on the Equity dimension ($F(1,498)=12.34$, $p<0.001$), with rural students reporting significantly lower equity scores ($M=3.08$, $SD=1.02$) compared to urban counterparts ($M=3.48$, $SD=0.91$).

Table 2: HALVES Dimensions — Micro and Macro Classification with Key Descriptors

Dimension	Level	Key Characteristics	Primary Wellbeing Domain
Health (H)	Micro	Sleep quality, physical health, exhaustion patterns	Psychological
Autonomy (A)	Micro	Self-efficacy, decisionmaking, intrinsic motivation	Psychological
Learning Engagement (L)	Micro	Academic curiosity, classroom participation, boredom avoidance	Academic
Values (V)	Macro	Empathy, prosocial orientation, performance vs. relational ethics	Social
Equity (E)	Macro	Resource access, socioeconomic fairness, gender equity	Social / Academic
School Culture (S)	Macro	Teacher warmth, mindfulness programming, peer safety climate	Social / Academic

Qualitative Findings: Student Voices

Thematic analysis of semi-structured interview data generated four overarching themes that enrich and contextualise the quantitative findings: (1) 'Living Under the Grade': the pervasive experience of academic performance as the primary organising principle of adolescent identity; (2) 'The Invisible Toll': the hidden physical and psychological costs of academic prioritisation; (3) 'Between Family and Self': the negotiation of personal aspirations against familial achievement expectations; and (4) 'What School Could Be': adolescent imaginings of more supportive and equitable educational environments.

Within the first theme, participants consistently described a sense of their entire self-worth being contingent on examination performance. One participant articulated this experience as feeling 'like a number, not a person'—a sentiment that resonated widely across the interview subsample. This finding aligns with international literature on academic contingent self-worth in high-pressure examination cultures (Crocker & Park, 2004). The invisible toll of this academic prioritisation manifested in reports of chronic sleep deprivation, skipped meals, reduced physical activity, and suppressed emotional expression—all consistent with the micro-level wellbeing deficits quantitatively identified in the HALVES Health dimension scores.

The theme of family-self negotiation revealed considerable complexity. Participants expressed genuine appreciation for parental concern and investment in their education, alongside frustration with the limited space for personal exploration and autonomous choice-making. Several participants described elaborate strategies for managing parental expectations, including concealing academic difficulties, avoiding conversations about personal interests, and performing compliance while privately harbouring different aspirations. These findings illuminate the relational complexity underlying the academic trade-off phenomenon and underscore the importance of family-based intervention components.

Discussion

The Academic Trade-Off: A Regional and Global Phenomenon

The academic trade-off identified in this study—wherein students systematically sacrifice micro-level wellbeing resources in service of macro-level achievement expectations—represents a critically important finding that resonates across the international adolescent wellbeing literature. The pattern documented in Malappuram is structurally analogous to phenomena reported in South Korean, Singaporean, and Chinese educational contexts, where similarly high-stakes examination cultures produce comparable wellbeing sacrifices (Kim & Kim, 2018; Ng, 2015). However, the present study advances understanding of this phenomenon by demonstrating its operation through the HALVES framework, which provides a more granular and multidimensional account of the specific wellbeing domains implicated in the trade-off.

The SEM findings, which reveal significant negative pathways from macro factors to health and autonomy sub-dimensions, suggest that the academic trade-off operates through specific mechanisms: elevated school culture expectations and values around achievement performance directly suppress students' reported health status and sense of personal agency. These findings extend Seligman's (2011) PERMA model by identifying a 'dark side' of high macro-level social engagement, wherein intense institutional and familial investment in achievement paradoxically undermines the foundational psychological resources necessary for sustainable academic performance.

Critically, the absence of significant gender or family-type differences in HALVES wellbeing scores suggests that the academic trade-off in Malappuram operates as a structural, culturally embedded phenomenon rather than a product of individual or demographic variation. This finding has important implications for intervention design: universal, system-level interventions targeting school culture and family communication patterns are likely to be more effective than individually targeted support programmes. The significant urban-rural equity differential, however, identifies resource equity as a dimension requiring targeted, context-specific intervention.

Family Dynamics as a Primary Wellbeing Architecture

Consistent with the international literature reviewed, this study positions the family as the primary 'wellbeing architect' for Malappuram adolescents. Family-level variables—including parenting style, communicative openness, academic expectations, and emotional validation—emerge as foundational determinants of wellbeing across all three sub-domains assessed. This finding aligns with Bronfenbrenner's (1979) microsystem concept, which identifies the immediate family environment as the most proximate and influential context for child and adolescent development.

The finding that supportive family dynamics function as a significant protective factor against academic stress corroborates the extensive international literature on authoritative parenting (Baumrind, 2013) and family resilience (Walsh, 2016). Malappuram families that demonstrated higher levels of open communication, academic involvement without authoritarian imposition, and emotional responsiveness were consistently associated with adolescents reporting stronger HALVES scores across both micro and macro dimensions. These families appeared to operationalise a 'both/and' orientation—supporting academic achievement while simultaneously maintaining space for health, autonomy, and relational wellbeing.

Conversely, families characterised by high achievement demands, limited emotional responsiveness, and punitive responses to underperformance demonstrated significant associations with suppressed micro-level wellbeing scores. The interview data reveal that adolescents in such family contexts were particularly likely to employ emotional concealment strategies, thereby further impairing their psychological wellbeing through the suppression of authentic self-expression. These findings point toward the need for family-based psychoeducational interventions as an integral component of any comprehensive HALVES-aligned wellbeing programme.

School Culture as a Modifiable Institutional Variable

School Culture (S) emerged as the HALVES dimension most strongly correlated with academic performance ($r=0.30$, $p<0.001$), establishing it as a high-priority target for institutional intervention. This finding is consistent with a substantial international evidence base demonstrating that school climate significantly moderates the relationship between individual student characteristics and academic outcomes (Wang & Degol, 2016). In Malappuram's CBSE schools, school culture manifests across multiple observable dimensions: teacher-student relational quality, classroom psychological safety, the degree to which school norms prioritise competitive performance versus holistic development, and the presence or absence of structured wellbeing programming.

International evidence for mindfulness-based school interventions is particularly compelling. The Mindfulness in Schools Project (MiSP) in the United Kingdom, along with multiple other randomised controlled trials, has demonstrated that mindfulness-based programmes embedded within school curricula produce sustained improvements in adolescent wellbeing, stress reduction, and attentional functioning (Kuyken et al., 2013). The present study's findings provide regional empirical grounding for the implementation of analogous programmes within Malappuram schools, contextualised for local cultural norms around contemplative practice and meditation.

Alignment with NEP 2020 and SDG 4

The findings of this study are directly consonant with the objectives articulated in India's National Education Policy 2020, particularly its emphasis on holistic and multidimensional student development, social-emotional learning integration, and the cultivation of ethical, empathetic, and globally aware citizens. NEP 2020's mandate for the development of Holistic Progress Cards, competency-based assessment frameworks, and the embedding of life skills and emotional wellbeing components within school curricula provides an enabling policy environment for the implementation of HALVES-aligned interventions in Malappuram and beyond.

At the global level, the study's findings contribute to the evidence base informing Sustainable Development Goal 4—Quality Education—which explicitly encompasses wellbeing as an integral dimension of educational quality. Target 4.7 of SDG 4 specifically calls for education that promotes sustainable development, including through social-emotional learning, global citizenship education, and the cultivation of individual and collective wellbeing. The HALVES model, as operationalised in this study, provides a theoretically grounded and empirically validated instrument for tracking progress toward these goals within South Asian educational contexts.

Proposed Interventions

- **HALVES-Aligned Social-Emotional Learning Curriculum**

The most comprehensive and sustainable intervention proposed by this study is the integration of a HALVES-aligned SEL curriculum across all grade levels in Malappuram's CBSE high schools. Drawing on the Collaborative for Academic, Social, and Emotional Learning (CASEL) framework as an international model, and adapting it for the Indian educational context through culturally responsive content, this curriculum would address all six HALVES dimensions through structured classroom activities, reflective practices, cooperative learning structures, and community engagement components.

For the micro dimensions (Health, Autonomy, Learning Engagement), the curriculum would incorporate psychoeducation on sleep hygiene, stress management strategies, physical activity integration, and study skills development. Autonomy-supportive pedagogical strategies—including student choice in assessment formats, project-based learning opportunities, and collaborative goalsetting—would be systematically embedded across subject areas. For the macro dimensions (Values, Equity, School Culture), the curriculum would include structured ethics discussions, service learning components, peer mentoring programmes, and whole-school mindfulness practices.

- **Family Psychoeducation and Engagement Programmes**

Given the centrality of family dynamics in shaping adolescent wellbeing, a complementary family psychoeducation programme is proposed as an essential component of the HALVES-aligned intervention package. This programme would engage parents and caregivers through structured workshops, facilitated discussion groups, and take-home resource materials addressing the academic trade-off phenomenon, the psychological needs of adolescents, autonomy-supportive parenting practices, and effective family communication strategies.

The programme design would draw on evidence-based parenting interventions including the Strengthening Families Programme (SFP) and the Triple P Positive Parenting Programme, adapted for the sociocultural context of Malappuram. Community facilitation through mosque committees, local women's groups, and neighbourhood associations would be leveraged to maximise engagement among parents who may be resistant to school-initiated family intervention programmes.

- **Teacher Professional Development in Wellbeing-Supportive Pedagogy**

Teachers represent the most proximate institutional influence on student wellbeing and are, accordingly, critical intervention targets. A structured professional development programme in wellbeing-supportive pedagogy would equip teachers with the knowledge, skills, and reflective capacities necessary to create autonomy-supportive, relationally warm, and psychologically safe classroom environments. Content areas would include the neuroscience of adolescent development and stress, trauma-informed teaching practices, formative assessment strategies that reduce highstakes examination anxiety, culturally responsive classroom management, and self-care practices to support teacher wellbeing and prevent burnout.

Evidence from international implementations of teacher professional development in SEL demonstrates significant effects on student wellbeing outcomes when sustained teacher learning and institutional support are maintained over a minimum of one academic year (Jennings & Greenberg, 2009). Accordingly, the proposed professional development programme is designed as a yearlong, blended learning initiative combining face-to-face workshops, peer coaching, classroom observation, and reflective journaling.

- **Equity-Focused Resource Distribution**

The significant urban-rural equity differential identified in the Equity dimension scores underscores the need for targeted resource distribution interventions. Specific recommendations include the provision of digital learning infrastructure (broadband connectivity, device access) to rural Malappuram schools; the deployment of school counsellors and psychologists to under-resourced government schools; the expansion of extracurricular programming in rural settings; and the development of peer tutoring and mentoring networks that bridge urban-rural resource disparities.

Policy-level advocacy for equity-focused allocation of state and central government educational resources, informed by HALVES equity assessment data, is recommended as a complementary systemic strategy. The HALVES Equity sub-scale, validated through the present study, provides a practical instrument for monitoring equity progress across schools and districts over time.

Limitations and Future Directions

Several limitations of the present study merit explicit acknowledgement. First, the regional sampling strategy, while stratified across urban/rural locations and school types, is confined to Malappuram district and thus restricts the generalisability of findings to other districts in Kerala, other

South Indian states, or other South Asian educational contexts. Future research should replicate the HALVES framework study across diverse Indian districts, including metropolitan urban centres, tribal and remote rural communities, and regions with different religious and linguistic majorities.

Second, while the longitudinal design (baseline-follow-up) represents a methodological strength relative to cross-sectional studies, the three-year follow-up period may be insufficient to capture longer-term wellbeing trajectories across the full span of secondary schooling. Future studies should employ extended longitudinal designs spanning five to seven years, tracking participants from Grade 8 through Grade 12 and beyond into higher education transitions.

Third, reliance on self-report measures for both HALVES dimensions and wellbeing outcomes introduces potential common method bias. Future studies should incorporate multi-informant designs, including parent and teacher reports, physiological wellbeing indicators (e.g., salivary cortisol as a measure of stress), and behavioural outcome data (e.g., attendance rates, counsellor referrals) to provide a more comprehensive and multi-source wellbeing assessment.

Fourth, the absence of an active intervention condition in the present study limits causal inferences regarding the effectiveness of HALVES-aligned interventions. Randomised controlled trials of the proposed intervention components—using CONSORT reporting standards and including appropriate control or active comparison conditions—are strongly recommended as a priority for future research. Thick qualitative description of implementation processes and intervention fidelity monitoring would further enhance the replicability and transferability of intervention findings.

Conclusion

This study advances the adolescent wellbeing literature by introducing and validating the HALVES model as a theoretically grounded, empirically robust, and culturally responsive framework for comprehensive wellbeing assessment among Indian secondary school students. Through a rigorous longitudinal mixed-methods design integrating international systematic review evidence with regional empirical data from Malappuram, Kerala, this research has confirmed the existence and operational mechanisms of an 'academic trade-off' phenomenon that represents a significant and systemic threat to the holistic development of Indian adolescents.

The HALVES model's conceptual architecture—distinguishing micro-level psychological factors (Health, Autonomy, Learning Engagement) from macro-level societal factors (Values, Equity, School Culture)—provides educational researchers, policymakers, and practitioners with a nuanced diagnostic lens for understanding the multidimensional nature of adolescent wellbeing challenges. The study's proposed interventions, spanning SEL curriculum integration, family psychoeducation, teacher professional development, and equity-focused resource distribution, offer a comprehensive evidencebased response to the wellbeing deficits identified.

Embedding HALVES-aligned wellbeing frameworks within the implementation of NEP 2020 commitments represents both an empirically justified and practically feasible strategy for advancing quality education in India. As India's educational system continues its ambitious reform journey, the HALVES model offers a rigorous and adaptable tool for ensuring that the nation's adolescents are equipped not merely with the academic competencies required for examination success, but with the holistic wellbeing resources necessary for flourishing, purposeful, and socially engaged lives.

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