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# Associations between special educational needs and physical and mental health conditions in children and young people in England: a population-based cross-sectional study

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## ABSTRACT

**Objective** Children and young people (CYP) with special educational needs (SENs) have an increased risk of psychopathology and long-term physical conditions (LTCs) compared with their peers. Yet, exploring the overlap between SEN, psychopathology and physical health using population-based data is lacking. We explored this association in a large, nationally representative survey of school-age children aged 5–16 in England.

**Design** A secondary analysis of the Mental Health of Children and Young People 2017 survey, applying multiple imputation and logistic regression models.

**Setting** A nationally representative community-based sample of children in England.

**Patients** 6673 children aged 5–16 years, with parent-reported data on SEN status, Education, Health and Care Plan (EHCP) status and LTCs, and clinically rated Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) psychiatric diagnoses (via the Development and Well-being Assessment).

**Interventions** None.

**Main outcome measures** Parent-reported SEN status; EHCP status

**Results** Among CYPs with SEN (n=559), 73% (n=409) had a DSM-5 disorder and/or at least one LTC. CYP with psychiatric disorders or LTCs showed substantially higher odds of having SEN (adjusted OR (AOR) DSM-5=7.76, 95% CI 6.41 to 9.39; AOR LTC=2.76, 95% CI 2.31 to 3.29) compared with non-affected peers. The interaction between psychiatric disorder and male gender was significant, indicating stronger associations with SEN and EHCP for boys than for girls, whereas disorder-specific interactions were not significant.

**Conclusions** For CYPs with SEN, comorbidity with psychopathology and LTC is common, which underscores the need for effective liaison between education, healthcare and social services to ensure comprehensive support for CYPs with complex needs.

### WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Children and young people (CYP) with special educational needs (SENs) have higher rates of psychopathology and long-term physical conditions (LTCs) than their peers. However, large-scale, population-based studies exploring the association between SENs, psychiatric disorders and LTCs are rare.

### WHAT THIS STUDY ADDS

⇒ This study, using a large, nationally representative sample, confirmed that comorbidity between SENs, psychiatric disorders and LTCs is common. It quantifies significantly increased odds of SENs in children with psychiatric disorders or LTCs. Gender differences are most evident for overall psychiatric morbidity, with stronger associations with SEN and Education, Health and Care Plan (EHCP) in boys than girls.

### HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ These findings emphasise the need for integrated, multi-agency collaboration, as addressing LTCs, mental health, or SENs in isolation may not meet CYP's complex needs.

## INTRODUCTION

In England, 'special educational needs' (SENs) is a statutory term from the *Children and Families Act 2014*, referring to children and young people (CYP) who require educational provision beyond that available to their peers due to a learning difficulty or disability. 'SEN' is broader than international terms such as 'special education' or 'learning difficulties and disabilities'; being categorised into four broad 'types' as outlined in the 'SEND Code of Practice': (1) communication and interaction, (2) cognition and learning, (3) social, emotional and mental health and (4) sensory and/or physical needs.[1] Children may present with more than one SEN 'type', reflecting overlapping difficulties. The prevalence of both psychiatric disorders and SENs among CYP in England has increased significantly in recent years,[1–3] becoming a current policy focus and presenting a significant challenge for contemporary education, social care and health services. Current estimates suggest that approximately one in five school-aged children may have a probable mental health disorder,[4] while 18.4% have been identified with SEN.[5] Additionally, childhood disability

affects 11% of UK children, with long-term physical conditions (LTCs) impacting about 35% of 5–15 years old in England.[6 7]

The relationship between psychiatric disorders, LTCs and SENs is complex and multifaceted.[8] The directionality of the relationship between psychiatric disorders and SENs is not fully understood and likely varies across different psychiatric conditions. Educational difficulties are inherent to some neurodevelopmental psychiatric conditions like attention-deficit/hyperactivity disorder (ADHD),[9] and the direct or indirect consequences of unmet educational needs may precipitate and perpetuate poor mental health. Several factors, including social disadvantage, academic engagement and access to support services, may mediate this relationship. Similarly, children with LTCs face barriers to learning, such as increased absences and exclusions compared with healthy peers, which may increase their likelihood of requiring SEN provision.[6 10 11] Consistent with this, children with SENs often report poorer subjective well-being, greater mental health difficulties and greater coexisting comorbidities (eg, epilepsy, diabetes).[12 13]

In England, a minority of children with SENs receive an Education, Health and Care Plan (EHCP), a legally binding framework outlining required support. Approximately 13.6% of the total school population—representing nearly three-quarters of all pupils with SENs—rely solely on school-based SEN support,[5] which varies considerably based on budget and expertise. This has led to concerns about unmet needs, especially since children with SENs often face additional social disadvantages.[14 15] Children with SENs who lack an EHCP are notably more susceptible to school suspensions and exclusions than their peers with an EHCP.[16] Surprisingly, the inter-relationships between psychiatric disorders, LTCs and SENs, and how these factors relate to the allocation of EHCPs, have not been substantially explored in large epidemiological studies despite the likelihood of significant overlap.

This study had three aims related to CYP aged 5–16 who have SEN or an EHCP. First, using a hierarchical diagnostic approach that assigns each child to a single primary psychiatric disorder group, we aimed to describe the extent to which CYP with SEN would show co-occurring psychiatric disorders and LTCs, including the occurrence of more than one SEN 'type' across different psychiatric diagnostic groups. Second, we aimed to conduct an exploratory analysis of the distribution and association of SEN presence and EHCP status using the same hierarchical approach across different psychiatric disorders, and examine gender differences. Finally, we aimed to examine whether both Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) disorders and LTCs would be independently associated with SEN presence or EHCP status when controlling for covariates.

## METHOD

The Mental Health of Children and Young People (MHCYP) surveys are nationally representative studies commissioned by NHS (National Health Service) Digital to monitor the prevalence and trends of psychiatric disorders among CYP in England, conducted in 1999, 2004 and 2017.[17 18] The MHCYP 2017 survey used in this study included a representative sample of CYP aged 2–19 years living in England, selected via a stratified probability sample of postcode sectors, further stratified by factors associated with psychiatric disorders, such as housing tenure, employment status and socio-economic activity. The MHCYP 2017 survey included 9117 participants. Data collection involved face-to-face interviews with parents and children, with self-completion for more sensitive topics.[17 18] Our analysis focused on school-aged CYP aged 5–16 with complete data on parent-reported SEN status (N=6673) and therefore excluded those younger than 5 or older than 17 (n=2399). Only 45 participants were excluded before any analysis due to missing outcome data on SEN status, a negligible proportion of the total sample (0.6%).

The presence of psychiatric disorders within the survey was assessed using the Development and Well-being Assessment (DAWBA). This structured instrument, based on DSM-5 and ICD-10 (International Classification of Diseases, 10th Revision) diagnostic criteria, combines reports from parents, children aged >11 years and teachers, with semi-structured probes to clarify problem areas.[19] All informant data were reviewed and clinically evaluated by a trained team to assign DSM-5 diagnoses.

Consistent with previous MHCYP analyses, disorders were classified according to DSM-5 criteria using a hierarchical approach to create mutually exclusive diagnostic groups and address comorbidity.[20] The hierarchy consisted of: 'autism'; 'ADHD [attention deficit hyperactivity disorder] without autism'; 'DBD (disruptive behaviour disorder comprising conduct disorder and oppositional defiant disorder) without autism or ADHD'; 'emotional disorders (EDs; including anxiety and depressive disorders) without autism, ADHD or DBD'. Thus, children meeting criteria for autism were classified in the autism group regardless of additional diagnoses, while, for example, a child with both ADHD and DBD but no autism was classified in the ADHD group. Parents reported whether their child had SEN (yes/no). If SENs were present, parents were asked whether their child had an EHCP (yes/no) and about the specific SEN 'type': (1) 'speech, language and communication needs'; (2) 'social, emotional and mental health needs'; (3) 'cognition and learning needs'; (4) 'sensory and/or physical needs'.

Parents were presented with a checklist of possible LTCs and asked whether their child had any of them,[21] creating a binary variable indicating the presence of LTC at the time of assessment (yes/no). Based on the consensus definition of childhood chronic health,[20 22] LTCs included asthma, eczema, hay fever, epilepsy, cerebral palsy, muscle disease, coordination problems, heart problems, food allergy, kidney/urinary tract problems, a condition present since birth (eg, clubfoot or cleft palate), deformities, spina bifida, cystic fibrosis, blood disorders, missing limb(s), diabetes, cancer, vision problems, hearing problems.

The analysis was conducted in RStudio (V.2024.04.7).[23] All analyses incorporated the data weighting procedure used by the original survey team. Survey weights adjusted for unequal selection probabilities, household and individual non-response and were calibrated to Office for National Statistics population benchmarks for age, sex, region, ethnicity and household structure, ensuring the data were representative of CYP living in England. More detailed information on survey weighting is available in the survey design and methods report.[17]

To address the first aim of our study, we used descriptive analyses to examine the prevalence of SENs among children with psychiatric disorders and LTCs, and assessed the extent to which children presented with more than one SEN 'type' across diagnostic groups.

For the second aim, we fitted disorder-specific multivariable logistic regression models for SEN and EHCP, including disorder status, gender, a 'disorder×gender' interaction term and age. Gender-specific adjusted ORs (AORs) were derived from these interaction models, with 'female children without any psychiatric disorder' as our reference group.

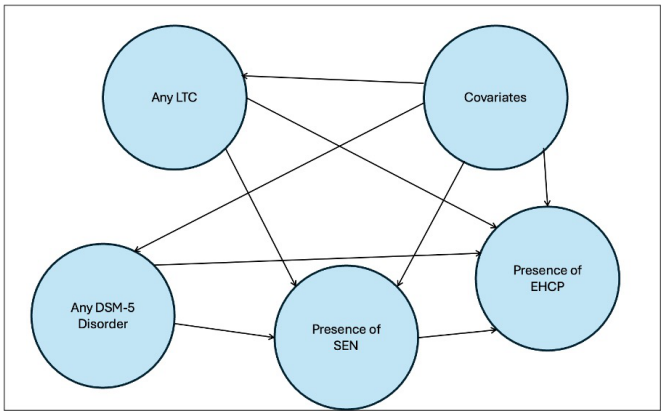


**Figure 1** Directed Acyclic Graph illustrating hypothesised associations between child mental and physical health status, and educational outcomes. Note: SENs and EHCPs were parent-reported (EHCP asked if SEN present); DSM-5 diagnoses derived from DAWBA; LTCs were parent-reported physical health conditions; covariates included age, gender, housing tenure, equivalised household income, parental employment status, parental educational qualification and income benefits. DAWBA, Development and Well-being Assessment; DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; EHCP, Education, Health and Care Plan; LTC, long-term physical condition; SEN, special educational need.

For the third aim, univariable and multivariable regression models were fitted to the multiple imputed dataset generated using 'multiple imputation by chained equations' in R.[24] Following recommended practice,[25] 20 imputed datasets were generated, each with 10 iterations, and results were pooled using Rubin's rules.[26] These models examined associations between LTCs and psychiatric disorders with SEN and EHCP outcomes, controlling for covariates identified in the literature,[27 28] including: age, gender, housing tenure, equivalised household income, parental employment status and income benefits, and the educational qualification of the parent who completed the interview. Multiple imputation (MI) was used in the third aim as several covariates had non-trivial missingness. Figure 1 illustrates the hypothesised relationships underlying these models. Complete-case analyses were conducted for comparison with covariate missing data explored (online supplemental Tables S1 and S2) in supplementary). Little's test[29] rejected the assumption that data were missing completely at random ($p<0.001$), supporting the use of MI.

The survey received ethical clearance from West London and the GTAC Research Ethics Committee and adhered to the principles outlined in the Declaration of Helsinki.[30] Data were accessed through the UK Data Access Request Service (DARS, reference DARS-NIC-424336-T7K7T). No additional ethical approval was required for this secondary analysis. Our research group receives funding from Place2Be, a third-sector organisation that provides mental health training and school interventions for research methods consultancy. The Department of Psychiatry, University of Cambridge, receives support from the National Institute for Health Research (NIHR) Cambridge Biomedical Research Centre (NIHR203312) and the NIHR Applied Research Collaboration East of England.

**Table 1** Distribution of SENs and EHCPs across groups defined by DSM-5 psychiatric disorder status and LTCs (N=6673)

| Group (exposure) | Total n | SEN n (%) (95% CI) | EHCP n (%) (95% CI) |
|---|---|---|---|
| Neither DSM-5 nor LTC | 4241 | 150 (4) (3 to 4) | 61 (1) (1 to 2) |
| DSM-5 only | 526 | 125 (24) (20 to 28) | 59 (11) (8 to 14) |
| LTC only | 1516 | 127 (8) (7 to 10) | 65 (4) (3 to 5) |
| Both DSM-5+LTC | 390 | 157 (40) (36 to 45) | 91 (23) (19 to 28) |
| Total | 6673 | 559 (8) (8 to 9) | 276 (4) (4 to 5) |

DSM-5=presence of any psychiatric disorder. LTC=presence of long-term physical health condition (asthma, eczema, hay fever, epilepsy, cerebral palsy, muscle disease, coordination problems, heart problems, food allergy, kidney/urinary tract problems, a condition present since birth (eg, clubfoot or cleft palate), deformities, spina bifida, cystic fibrosis, blood disorders, missing limb(s), diabetes, cancer, vision problems, hearing problems). Percentages are row percentages (proportion within each exposure group).
DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; EHCP, Education, Health and Care Plan (UK statutory plan for children with complex needs); LTC, long-term physical condition; SEN, special educational need.

## RESULTS

Within this sample (N=6673), 29% (n=1906) reported ≥1 LTCs, while 14% (n=916) met the criteria for any DSM-5 disorder. SEN was identified in 8% (n=559), of whom 49% (n=276) had an EHCP, representing 4% of the total sample.

Tables 1 and 2 address aim 1. Table 1 presents the overlaps between SEN or EHCP, with psychiatric disorders and LTCs. Among children with SENs, 73% (n=409) had a DSM-5 disorder and/or ≥1 LTCs. For children with an EHCP, 78% (n=215) had a DSM-5 disorder and/or ≥1 LTCs.

Table 2 presents the distribution of different SEN 'types' across DSM-5 diagnostic categories. Autistic CYP (n=85) showed the highest prevalence of SEN, with 66% (95% CI 55 to 75) of the autistic CYP sample having 'speech, language and communication needs', 86% (95% CI 77 to 92) having 'social, emotional and mental health needs' and 78% (95% CI 68 to 85) having multiple types of SENs. 'ADHD without autism' sample (n=174) also showed a high prevalence of SEN, particularly in social/emotional (44%, 95% CI 37 to 52) and cognitive/learning domains (40%, 95% CI 33 to 48). The CYP with only ED showed a lower prevalence, ranging from 4% (95% CI 2 to 7) for sensory/physical needs to 9% (95% CI 6 to 14) for cognition/learning needs. In contrast, CYP without DSM-5 disorders had consistently low SEN rates across all categories, ranging from 1% to 3%.

Table 3 addresses aim two, presenting prevalence and AORs for SEN and EHCP from interaction models of disorder and gender (adjusted for age). SEN and EHCP were uncommon in children without psychiatric disorders (girls: 4% SEN, 2% EHCP; boys: 6% SEN, 2% EHCP), but substantially higher in those with disorders (girls: 20% SEN, 11% EHCP; boys: 38% SEN, 20% EHCP). The presence of any DSM-5 disorder was associated with higher odds of SEN (girls AOR 5.5, 95% CI 4.0 to 7.6; boys AOR 14.1, 95% CI 11.0 to 18.2) and EHCP (girls AOR 5.4, 95% CI 3.5 to 8.1; boys AOR 11.5, 95% CI 8.3 to 16.0). The interaction between any DSM disorder and gender was statistically significant for both SEN (OR 1.9, 95% CI 1.3 to 2.8) and EHCP (OR 2.0, 95% CI 1.2 to 3.3), indicating significantly stronger associations in boys than girls for both outcomes. No other diagnostic subgroup showed significant gender interactions, although autism comparisons were unstable due to small sample sizes. Table 4 addresses aim three, with univariable and multivariable regression models (N=6673) revealing strong associations between psychiatric disorders, LTCs and SENs. In the univariable models, CYP with any DSM-5 disorder were nearly nine times more likely to have SEN (OR 8.80, 95% CI 7.31 to 10.59) and EHCP (OR 8.75, 95% CI 6.82 to 11.22) compared with those without disorders. CYP with any LTC were nearly three times as likely to have parent-reported SEN (OR 2.86, 95% CI 2.40 to 3.41) and approximately

**Table 2** SEN types (1-4) by DSM-5 diagnostic hierarchical categories in this MHCYP 2017 sample of children and young people (N=6673) (%)*

| DSM-5 hierarchical diagnoses subgroup | Speech, language and communication SEN n (%) (95% CI) | Social, emotional and mental health SEN n (%) (95% CI) | Cognition and learning SEN n (%) (95% CI) | Sensory/ physical SEN n (%) (95% CI) | More than one type of SEN n (%) (95% CI) |
|---|---|---|---|---|---|
| No disorder (n=5757) | 92 (2) (1 to 2) | 50 (1) (1 to 1) | 209 (3) (3 to 4) | 54 (1) (1 to 1) | 80 (1) (1 to 2) |
| Any DSM-5 disorder (n=916) | 135 (15) (12 to 17) | 218 (24) (21 to 27) | 200 (22) (19 to 25) | 90 (10) (8 to 12) | 187 (20) (18 to 23) |
| Autism (n=85) | 56 (66) (55 to 75) | 73 (86) (77 to 92) | 57 (67) (57 to 76) | 41 (48) (38 to 59) | 66 (78) (68 to 85) |
| ADHD without autism (n=174) | 33 (19) (14 to 25) | 77 (44) (37 to 52) | 70 (40) (33 to 48) | 19 (11) (7 to 16) | 62 (36) (29 to 43) |
| DBD without autism or ADHD (n=221) | 28 (13) (9 to 17) | 46 (21) (16 to 26) | 38 (17) (13 to 23) | 16 (7) (5 to 11) | 37 (17) (12 to 22) |
| ED without autism, ADHD or DBD (n=266) | <10 (<4) | 16 (6) (4 to 10) | 25 (9) (6 to 14) | 10 (4) (2 to 7) | 15 (6) (3 to 9) |

*The proportion of children with each type of SEN may add to more than 100%, given that children can have more than one type of SEN. Percentages are calculated within each diagnostic subgroup (row percentage). Cells with fewer than 10 participants are displayed as '<10'.
ADHD, attention-deficit/hyperactivity disorder; DBDs, disruptive behavioural disorders (including conduct disorder and oppositional defiant disorder); DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; EDs, emotional disorders (including anxiety and depressive disorders); MHCYP, Mental Health of Children and Young People; SENs, special educational needs.

three times more likely to have EHCP (OR 3.45, 95%CI 2.70 to 4.41) than those without LTCs. In the multivariable models, these associations were attenuated but remained significant after adjusting for age, gender, housing tenure, equivalised household income, parental employment status, parental educational qualification and income benefits. CYP with any DSM-5 disorder remained approximately eight times more likely to have SEN (AOR 7.76, 95%CI 6.41 to 9.39) and an EHCP (AOR 7.69, 95%CI 5.95 to 9.94) than those without a disorder. Similarly, CYP with any LTC remained approximately three times more likely to have SEN (AOR 2.76, 95%CI 2.31 to 3.29) and an EHCP (AOR 3.30, 95%CI 2.58 to 4.22) compared with their peers without LTCs. The complete case analysis (n=5170) for aim three is presented in the supplementary materials (online supplemental Table S1). Missing participants from the complete-case analysis are described in the supplementary materials (online supplemental Table S2). Most exclusions from complete case (n=1503) arose from missing data on parental education (missing: 715), income (missing: 654) and benefits (missing: 564). Results from complete case models were highly consistent with the MI analyses.

## DISCUSSION

Using a large representative population sample, this paper explored the relationship between SEN and mental and physical health among school-aged children in England. This study revealed three main insights. First, we found that most pupils with SEN/EHCP also have a mental and/or physical health condition. There was a significant presence of SEN types (1–4) across all the diagnostic categories examined, with many children experiencing more than one type of SEN.

**Table 3** Prevalence of SEN and EHCP and AORs from interaction logistic regression models of disorder and gender (adjusted for age)

| Group | n (%) (95% CI) with SEN | AOR for SEN (95% CI) | n(%) (95% CI) with EHCP | AOR for EHCP (95% CI) |
|---|---|---|---|---|
| No disorder—female (reference) (n=2959) | 124 (4) (4 to 5) | 1.00 (ref) | 62 (2) (2 to 3) | 1.00 (ref) |
| No disorder—male (n=2798) | 168 (6) (5 to 7) | 1.4 (1.1 to 1.7) | 67 (2) (2 to 3) | 1.1 (0.8 to 1.6) |
| Any DSM-5 disorder—female (n=367) | 73 (20) (16 to 24) | 5.5 (4.0 to 7.6) | 40 (11) (8 to 15) | 5.4 (3.5 to 8.1) |
| Any DSM-5 disorder—male (n=549) | 209 (38) (34 to 42) | 14.1 (11.0 to 18.2) | 110 (20) (17 to 24) | 11.5 (8.3 to 16.0) |
| Interaction: DSM-5×male (vs female) | – | 1.9 (1.3 to 2.8) | – | 2.0 (1.2 to 3.3) |
| Autism—female (n=18) | 18 (100) (82 to 100) | >200 (0.00 to >200) | 15 (83) (61 to 94) | >200 (65.8 to >200) |
| Autism—male (n=67) | 60 (90) (80 to 95) | 199 (89 to >200) | 40 (60) (48 to 71) | 70.1 (40.4 to 121.8) |
| Interaction: Autism×male (vs female) | – | 0.0 (0.0 to >200) | – | 0.3 (0.1 to 1.1) |
| ADHD without autism—female (n=38) | 19 (50) (35 to 65) | 23.0 (11.9 to 44.5) | 10 (26) (15 to 42) | 16.7 (7.7 to 35.9) |
| ADHD without autism—male (n=136) | 80 (59) (35 to 65) | 33.0 (22.4 to 48.6) | 43 (32) (24 to 40) | 21.8 (14.0 to 33.9) |
| Interaction: ADHD without autism×male (vs female) | – | 1.0 (0.5 to 2.2) | – | 1.2 (0.5 to 2.8) |
| DBD without autism/ADHD—female (n=95) | 19 (20) (13 to 29) | 5.5 (3.2 to 9.4) | <10 (<10%) | 4.6 (2.2 to 9.6) |
| DBD without autism/ADHD—male (n=126) | 38 (30) (23 to 39) | 9.8 (6.4 to 15.0) | 17 (13) (9 to 21) | 7.1 (4.0 to 12.6) |
| Interaction: DBD without autism/ADHD×male (vs female) | – | 1.25 (0.6 to 2.5) | – | 1.39 (0.55 to 3.52) |
| ED only, female (n=167) | 15 (9) (6 to 14) | 2.1 (1.2 to 3.7) | <10 (<6%) | 1.5 (0.7 to 3.6) |
| ED only, male (n=99) | 18 (18) (12 to 27) | 4.9 (2.9 to 8.5) | <10 (<10%) | 3.4 (1.49 to 7.53) |
| Interaction: ED only×male (vs female) | – | 1.7 (0.8 to 3.6) | – | 1.95 (0.6 to 6.3) |
| Age (per year) | – | 1.0 (1.0 to 1.1) | – | 1.1 (1.0 to 1.1) |

AORs were derived from separate multivariable logistic regression models fitted for each psychiatric disorder category and outcome (SEN and EHCP). Each model included disorder status, gender, a disorder×gender interaction term and age. Gender-specific AORs were derived from the interaction models. Female children with no psychiatric disorder constituted the reference group in each model. Cells with fewer than 10 participants are displayed as '<10'.
ADHD, attention-deficit/hyperactivity disorder; AOR, adjusted OR; DBDs, disruptive behavioural disorders (including conduct disorder and oppositional defiant disorder); DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; EDs, emotional disorders (including anxiety and depressive disorders); EHCP, Education, Health and Care Plan (UK statutory plan for children with complex needs); SENs, special educational needs.

**Table 4** AORs for SEN and EHCP as binary outcomes (multiple imputation)

| Outcome: Parent-reported SEN | | |
|---|---|---|
| **Predictor:** | **OR (95% CI)** | **AOR (95% CI)** |
| Any DSM-5 | 8.80 (7.31 to 10.59) | 7.76 (6.41 to 9.39) |
| Any LTC | 2.86 (2.40 to 3.41) | 2.76 (2.31 to 3.29) |
| **Outcome: Parent-reported EHCP** | **OR (95% CI)** | **AOR (95% CI)** |
| **Predictor:** | | |
| Any DSM-5 | 8.75 (6.82 to 11.22) | 7.69 (5.95 to 9.94) |
| Any LTC | 3.45 (2.70 to 4.41) | 3.30 (2.58 to 4.22) |

OR (univariable models); AOR are from a model including both any DSM-5 and any LTC simultaneously (mutually adjusted), plus covariates: age, gender, housing tenure, equivalised household income, parental employment status, parental educational qualification and income benefits; N=6673. Ref for AOR model: no DSM-5 disorder; no LTC. Ref for OR models: no DSM-5 disorder (1) and no LTC.
AOR, adjusted OR; DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; EHCP, Education, Health and Care Plan; LTC, long-term physical condition; SEN, special educational need.

Second, we found that the associations between psychiatric disorders and SEN/EHCP were stronger for boys than for girls. This suggests that gender differences in educational support may be more apparent when considering overall psychiatric morbidity rather than specific diagnostic subgroups. These findings raise questions about how SENs are identified and managed across genders. Boys may be more likely to present with co-occurring learning difficulties alongside psychiatric disorders, potentially increasing the likelihood of SEN identification,[31] while differences in how emotional needs are recognised in younger children may further contribute to gender variation in SEN allocation.[32] Longitudinal research is needed to clarify how psychiatric difficulties and educational support needs interact over development, and how schools can ensure fair provision of SEN to both girls and boys. Thirdly, the presence of DSM-5 disorders and LTC is each independently and significantly associated with SEN, even after adjusting for other key characteristics.

Overall, our findings emphasise the importance of comprehensive assessment for comorbidities across physical health, mental health and SENs. A more context-sensitive, collaborative, interdisciplinary approach is necessary to effectively identify and address the full spectrum of additional needs in CYP, moving beyond the limitations of existing regulatory approaches.[33]

This study addresses a critical literature gap about the relationship between SEN presence, psychiatric disorders and LTCs. Our findings underscore the urgency of SEN reform in the UK system,[15 34] particularly given the post-COVID educational disruptions affecting children with SENs.[35 36] The use of MI as the primary method for handling missing data, with the consistency of the complete-case analysis providing reassurance about the robustness of the findings.

The primary limitation is the cross-sectional survey design, which precludes causal inferences about the likely bidirectional associations observed and cannot capture temporal changes. In some cases, psychiatric disorders or LTCs may be the very reason that children are identified as having SEN, rather than independent risk factors for SEN (eg, autism or epilepsy may necessitate additional educational support). Longitudinal data is needed to disentangle these temporal and causal pathways. The reliance on parental reports for SEN and LTC creates shared method variance, introducing bias into the data.[37] Regarding the use of DAWBA, some misclassification of DSM-5 disorders is inevitable, as no diagnostic instrument is perfect. The DAWBA mitigates this by using multi-informant data and a combination of structured items, semi-structured probes and clinician ratings, thereby enhancing validity.[38] It has been validated on UK samples, with high agreement in clinical samples, and shown to be a better-suited clinical practice tool than comparable instruments.[39]

While the effort involved in gaining an EHCP makes accurate reporting likely, parent-reported SEN may differ from school-identified SEN, as parents might recognise needs that the school has not formally identified, let alone supported. Although our SEN prevalence (8%) was lower than 2018–2019 government statistics (15%), while the EHCP prevalence was slightly higher (4% vs 3%),[40] the lack of CIs in government data and paucity of literature comparing parent and teacher-reported SEN limits our understanding of this discrepancy. The lower SEN prevalence could reflect over-identification in the SEN register or under-reporting by parents. Future research could address these discrepancies by linking study data to the Department for Education's SEN register, reducing reporting burden and directly comparing parent-reported and official SEN prevalence. Alternatively, including teachers' SEN reports could help reconcile differences between parent-reported and officially recorded SEN prevalence, yielding a more accurate understanding of educational needs.

Additionally, parental reports of LTCs did not include any assessment of severity or chronicity, so they will necessarily include some children with milder conditions. Without comprehensive information about lived experiences, categorising by severity would be inappropriate. Instead, we should recognise that LTCs may impact daily functioning in varied ways, making them an important consideration when evaluating educational support needs. Additionally, the hierarchical diagnostic method, while conserving sample size and differentiating disorder impacts without double-counting those with comorbid disorders, may have limited association accuracy. Linkage of survey data with education and health records could enhance data triangulation and address these issues. Our gender analysis, especially for specific DSM-5 diagnostic subgroups, was exploratory and underpowered, necessitating cautious interpretation. Still, our results suggest further research is needed. Secondary analysis is always limited by the data available, and we lacked the specific measures for learning disorders, which are associated with SEN as well as poor mental and physical health.[31]

## CONCLUSION

For CYP with SEN, comorbidity with either psychopathology or LTC or both is common and highlights the potential value of healthcare provider involvement in ensuring effective systems supporting pupils with SENs. Given the large degree of overlap, attempting to manage SEN in isolation from physical and mental health may be insufficient. Although EHCPs provide a more nuanced, context-based approach that considers the overlap between educational, physical and mental health needs, our findings suggest all students with SENs might benefit from such a holistic approach, regardless of meeting EHCP status. Such comprehensive support could be more beneficial and lead to better health and educational outcomes.

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