

Additional files

Title: Total and domain-specific sedentary time in relation to internalizing problems
in Chinese adolescents: a cross-sectional study

Journal: BMC Public Health

Submission ID: 104511f2-7db2-4467-be51-28518d327422

Table S1 Comparison of coefficients before and after cluster adjustment

Variable	Unadjusted β (95% CI)	<i>P</i>	Mixed model β (95% CI)	<i>P</i>
SB_rec	0.533 (0.394, 0.673)	<0.001	0.533 (0.394, 0.673)	<0.001
SB_edu	-0.074 (-0.310, 0.162)	0.539	-0.074 (-0.310, 0.162)	0.539
SB_study	0.346 (0.105, 0.586)	0.005	0.346 (0.105, 0.586)	0.005
SB_social	0.185 (-0.117, 0.487)	0.229	0.185 (-0.117, 0.487)	0.229

Note: Linear mixed models with random intercepts at the school level were fitted to account for clustering. The model produced a singular fit, with ICC = 0.000, indicating negligible between-school variance. Coefficients and P-values remained virtually identical after adjustment. SB_rec: recreational screen-based sedentary time; SB_edu: educational sedentary time; SB_study: cultural sedentary time; SB_social: social/entertainment sedentary time. CI: confidence interval.

Table S2 RCS knot sensitivity analysis (25/50/75 vs. 10/50/90)

Sedentary domain	<i>P</i> (25/50/75)	<i>P</i> (10/50/90)	Consistent
Recreational screen-based	<0.001	<0.001	Yes
Educational	0.012	0.012	Yes
Cultural	<0.001	<0.001	Yes
Social/entertainment	<0.001	<0.001	Yes

Note: Restricted cubic spline (RCS) models were fitted with three knots at the 25th, 50th, and 75th percentiles (primary analysis) and at the 10th, 50th, and 90th percentiles (sensitivity analysis, as recommended by Harrell, 2010). Both knot schemes yielded consistent conclusions for all four sedentary domains, confirming the robustness of the non-linearity findings.

Table S3 Model selection comparison for educational sedentary time

Model	AIC	BIC	R ²	Adj_R ²	<i>P</i> vs. Linear
Linear	18790.22	18853.65	0.0379	0.0342	Reference
Quadratic	18790.83	18860.02	0.0384	0.0343	0.238
Piecewise linear	18791.50	18860.69	0.0382	0.0341	0.395

Note: Three candidate models were compared for educational sedentary time: (1) linear, (2) quadratic, and (3) piecewise linear with a knot at the observed inflection point (2.17 hours/day). The piecewise model did not significantly outperform the linear model ($F = 0.723$, $P = 0.395$), and the quadratic term was not significant ($P = 0.238$). Model fit indices (AIC, BIC, R², Adj_R²) were similar across models, indicating that the linear model provided the most parsimonious fit. AIC: Akaike information criterion; BIC: Bayesian information criterion; Adj_R²: adjusted R².

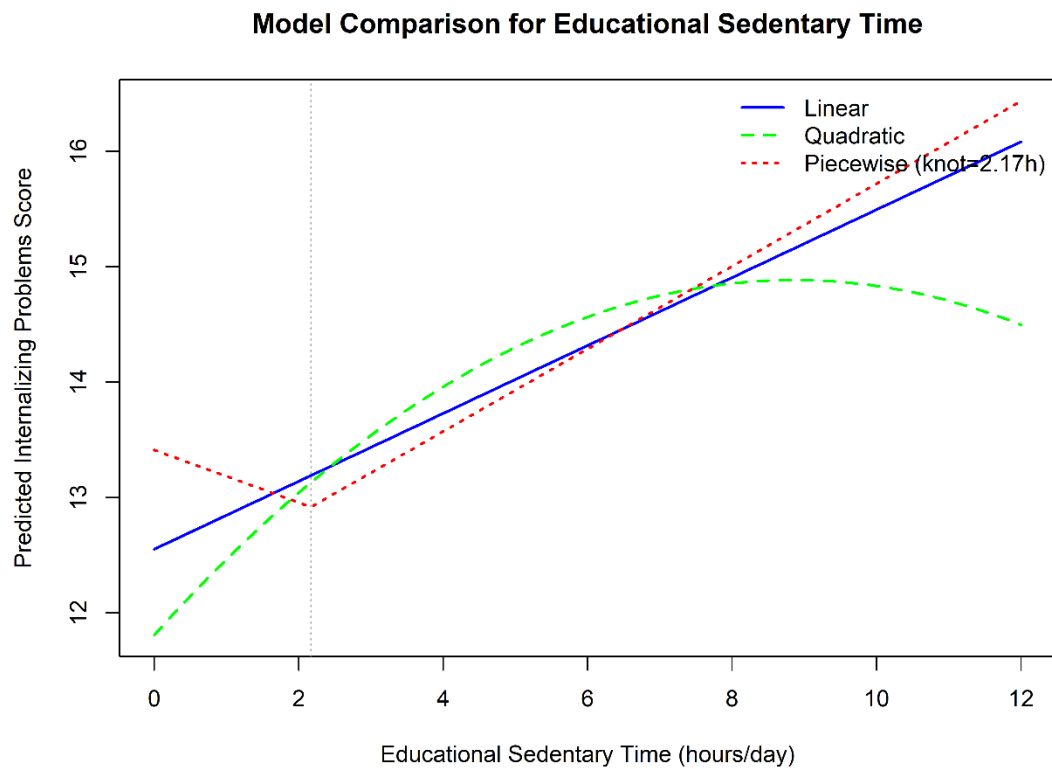


Figure S1 Comparison of linear, quadratic, and piecewise linear models for educational sedentary time. Comparison of linear (blue solid line), quadratic (green dashed line), and piecewise linear (red dotted line, knot at 2.17 hours/day) models for educational sedentary time. The piecewise model did not significantly outperform the linear model ($F = 0.723$, $P = 0.395$), and the quadratic term was not significant ($P = 0.238$). The shaded area represents the 95% confidence band for the piecewise model. The y-axis represents the predicted internalizing problems score.