

Family conflict and lower morning cortisol in adolescents and adults: modulation of puberty

Short title: Family conflict and morning cortisol

Jihui Zhang^{1,2}, Siu-Ping Lam¹, Alice PS Kong³, Ronald CW Ma³, Shirley Xin Li⁴, Joey WY Chan¹, Mandy WM Yu¹, Junying Zhou¹, Michael HM Chan⁵, Chung-Shun Ho⁵, Albert M Li⁶, Xiangdong Tang⁷, Yun-Kwok Wing^{1,2*}

¹Department of Psychiatry, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, China;

²Shenzhen Research Institute, The Chinese University of Hong Kong;

³Department of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, China;

⁴Department of Psychology, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, China

⁵Department of Chemical Pathology, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, China;

⁶Department of Paediatrics, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, China;

⁷Sleep Medicine Center, Mental Health Center, West China Hospital, Sichuan University, Chengdu, China.

Supplementary table 1: Associations of diurnal cortisol levels with family conflict in adults

	Coefficient	Standard error	Z value	P value
Awakening salivary Cortisol 0 min	-1.28	.78	-1.65	0.10
Awakening salivary Cortisol 30 min	-2.70	.97	-2.79	0.005*
Awakening salivary Cortisol 60 min	-1.58	.67	-2.35	0.019*
Awakening salivary Cortisol 90 min	-1.00	.56	-1.78	0.075
Salivary Cortisol at noon	.06	.46	0.14	0.89
Salivary Cortisol at 4 pm	-.29	.56	-0.52	0.61
Salivary Cortisol at 10 pm	-.52	.29	-1.80	0.07
AUC _g 30 min (nmol/l)	-1.89	.64	-2.94	0.003*
AUC _g 60 min (nmol/l)	-3.90	1.32	-2.96	0.003*
AUC _g 90 min (nmol/l)	-5.24	1.81	-2.89	0.004*
AUC _i 30 min (nmol/l)	-.40	.51	-0.79	0.43
AUC _i 60 min (nmol/l)	-.93	1.39	-0.67	0.50
AUC _i 90 min (nmol/l)	-.86	2.07	-0.42	0.68

Adjustment for age, sex, chronic medication use, chronic medical condition, insomnia, current anxiety disorders, current depressive disorders, season, and wakeup time; weighting for insomnia prevalence in general adults population (10%); * p < 0.05

Supplementary table 2: Associations of diurnal cortisol levels with family conflict in adolescents at late/post pubertal status

	Coefficient	Standard error	Z value	P value
Awakening salivary Cortisol 0 min	-2.00	1.12	-1.77	0.08
Awakening salivary Cortisol 30 min	-4.29	1.49	-2.88	0.004*
Awakening salivary Cortisol 60 min	-1.83	1.15	-1.59	0.11
Awakening salivary Cortisol 90 min	-.65	.88	-0.74	0.46
Salivary Cortisol at noon	-1.33	.52	-2.55	0.011*
Salivary Cortisol at 4 pm	-.37	.53	-0.69	0.49
Salivary Cortisol at 10 pm	-.37	.37	-1.00	0.32
AUC _g 30 min (nmol/l)	-2.30	1.15	-2.00	0.046*
AUC _g 60 min (nmol/l)	-4.11	2.10	-1.95	0.051
AUC _g 90 min (nmol/l)	-5.56	2.67	-2.08	0.037*
AUC _i 30 min (nmol/l)	-.52	.52	-0.99	0.32
AUC _i 60 min (nmol/l)	-.73	1.49	-0.49	0.62
AUC _i 90 min (nmol/l)	.35	2.39	0.15	0.88

Adjustment for age, sex, chronic medication use, chronic medical condition, insomnia, current anxiety disorders, current depressive disorders, season, and wakeup time; Weighting for insomnia prevalence in general adolescent population (6%); * $p < 0.05$

Supplementary table 3: Associations of diurnal cortisol levels with family conflict in adolescents at pre/early pubertal status

	Coefficient	Standard error	Z value	P value
Awakening salivary Cortisol 0 min	-.38	1.36	-0.28	0.78
Awakening salivary Cortisol 30 min	1.36	2.24	0.61	0.54
Awakening salivary Cortisol 60 min	1.31	1.44	0.91	0.36
Awakening salivary Cortisol 90 min	1.50	1.04	1.45	0.15
Salivary Cortisol at noon	.84	1.08	0.79	0.43
Salivary Cortisol at 4 pm	1.30	.98	1.32	0.18
Salivary Cortisol at 10 pm	-.03	.24	-0.12	0.91
AUC _g 30 min (nmol/l)	.09	.24	0.38	0.70
AUC _g 60 min (nmol/l)	.39	.49	0.81	0.42
AUC _g 90 min (nmol/l)	.74	.62	1.19	0.23
AUC _i 30 min (nmol/l)	.10	.14	0.70	0.48
AUC _i 60 min (nmol/l)	.40	.41	0.98	0.33
AUC _i 90 min (nmol/l)	.75	.63	1.19	0.24

Adjustment for age, sex, chronic medication use, chronic medical condition, insomnia, current anxiety disorders, current depressive disorders, season, and wakeup time; Weighting for insomnia prevalence in general adolescent population (6%); * $p < 0.05$