

ELSA salivary cortisol

Saliva was collected from ELSA participants in wave 2 (2004-5). Funding has only permitted a subset of samples to be analysed to date. These samples were assayed for cortisol concentration using a time resolved immunoassay with fluorescence detection at the Technical University Dresden.

Data are available for 597 - 645 participants, depending on the particular measure. Samples were excluded if values were outside the normal range; this was generally because of haemolysis of the sample.

Participants were requested to take saliva samples immediately on waking, 30 minutes later, at 7:00 pm, and at bedtime.

Variable names (n in parentheses)

Cort1	cortisol on waking (632)
Cort2	cortisol on waking + 30 min (636)
Cort3	cortisol at 19:00h (645)
Cort4	cortisol at bedtime (638)
	Values are in nmol/l
Cortcar	Cortisol awakening response, the rise between waking and 30 minutes later (Stephoe and Serwinski, 2016). Values were excluded of individuals who reported an interval between samples of >45 minutes. (n = 597). Values in nmol/l.
Cortauc1	Cortisol output over the day computed using the area under the curve (AUC) method (Pruessner et al, 2003). This takes account of the interval between samples, and is an accepted measure of total output. (n = 610). Values in nmol/l.
Cortauc2	Cortisol output over the day computed using AUC but excluding sample 2. Some experts prefer this measure since it is not affected by the acute rise after waking (Adam and Kumari, 2009). Values in nmol/l. (n = 619).
Cortslope1	The slope of cortisol decline over the day computed as nmol/l/hr. This was computed as a simple difference between cort1 and cort4, divided by the number of hours between the two samples. A flatter slope is often associated with poorer health outcomes. (n = 621).
Time_1	Time of sample 1 in hh:mm
Time_2	Time of sample 2 in hh:mm
Time_3	Time of sample 3 in hh:mm
Time_4	Time of sample 4 in hh:mm
Timec1	Time of sample 1 in minutes after midnight
Timec2	Time of sample 2 in minutes after midnight
Timec3	Time of sample 3 in minutes after midnight
Timec4	Time of sample 4 in minutes after midnight

Participants were instructed to collect sample 3 at 19:00h, the actual sample times show a range. The average time for sample 3 was 19:03h, but reported sampling times ranged from 15:20h until 22:00h.

Mean cortisol and sampling time

Cortisol wake	24.77 ± 11.1
Cortisol wake + 30	32.43 ± 14.6
Cortisol 19:00h	5.41 ± 5.4
Cortisol bedtime	4.23 ± 3.9
Cortisol awakening response	7.68 ± 13.9
Cortisol AUC 1	14820.7 ± 6020.2
Cortisol AUC 2	11800 ± 4918.7
Cortisol slope	1.31 ± 0.71
Time of waking sample	7:11 ± 0:55 hr
Time of wake + 30 sample	7.41 ± 0:55 hr
Time of 19:00h sample	19:03 ± 0:22 hr
Time of bedtime sample	22:55 ± 0:54 hr

Adam EK, Kumari M. (2009). Assessing salivary cortisol in large-scale, epidemiological research. *Psychoneuroendocrinology*, 34: 1423-36.

Pruessner JC, Kirschbaum C, Meinlschmidt G, Hellhammer D. Two formulas for computation of the area under the curve represent measures of total hormone concentration versus time-dependent change. *Psychoneuroendocrinology*. 2003;28:916-931.

Steptoe A, Serwinski B. (2016). Cortisol awakening response. *Stress: Concepts, Cognition, Emotion, and Behavior*, Ed. Fink, G. London: Academic Press, pp 277-283.