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Month of birth in relation to suicide

Salib & Cortina-Borja[1] find that persons born during the spring–summer season of April, May and June were significantly more likely to die by suicide than those born during other months: they find a peak for May and a trough for October.

However, they misreport our earlier results in this field when they state in the introduction that 'Chotai *et al*[2] reported that people born in winter in Sweden were significantly more likely than those with other birth seasons to have used hanging as a suicide method'. They further misreport earlier findings of ours when they state in the discussion that: '. . . winter variations in serotonin reported by Chotai & Åsberg[3] are inconsistent with the findings of this study, essentially the opposite of the Swedish findings'.

Our earlier findings are in fact similar to and consistent with the results of Salib & Cortina-Borja. In Chotai *et al*[2] we clearly show that those who preferred hanging rather than poisoning or petrol gases were significantly more likely to be born during February–April. In Chotai & Åsberg[3] we demonstrate that those born during February–April had significantly lower levels of 5-hydroindoleacetic acid (5-HIAA).

We have also published cosine analyses of our data,[4] in which we found that the minimum of the month-of-birth curve for 5-HIAA was obtained for the birth month April (*t*-min 3.4, Table 1, where the interval 3–4 depicts April) and the maximum was obtained for October (*t*-max 9.4). We also reported that the maximum of the month-of-birth curve for preferring hanging was for March–April and the minimum was for September–October.

Low serotonin turnover has been implicated as a risk factor for suicidal behaviour, particularly with violent or lethal methods of suicide, as discussed by Salib & Cortina-Borja.[1] Thus, our findings are in line with those of Salib & Cortina-Borja regarding suicidality, since we obtained a peak for the birth month April comparable to their peak for May, and found a trough for 5-HIAA for the birth month April.

In another epidemiological study,[5] we report that season of birth association with suicide methods is found in those without a history of psychiatric contacts, but not in those with such a history. We have argued that season of birth associations for suicide methods are likely to be mediated to a large extent by a suicidality trait independently of specific major psychiatric disorders, with serotonin as the likely underlying neurotransmitter.

In our studies, the season of birth variation was found for hanging as the suicide method, but not for other methods often denoted as violent, for example firearms or drowning. Hanging is a more universal method of suicide, and gender differences in the proportion of hanging are much lower than for other methods. In this light, it would be of interest to analyse the data of Salib & Cortina-Borja, specifically with regard to whether there is a month of birth variation in suicide by hanging.

1 Salib E, Cortina-Borja M. Effect of month of birth on the risk of suicide. *Br J Psychiatry* 2006; **188**: 416–22.

2 Chotai J, Salander Renberg E, Jacobsson L. Season of birth associated with the age and method of suicide. *Arch Suicide Res* 1999; **5**: 245–54.

3 Chotai J, Åsberg M. Variations in CSF monoamine metabolites according to the season of birth. *Neuropsychobiology* 1999; **39**: 57–62.

4 Chotai J, Adolfsson R. Converging evidence suggests that monoamine neurotransmitter turnover in human adults is associated with their season of birth. *Eur Arch Psychiatry Clin Neurosci* 2002; **252**: 130–4.

5 Chotai J, Salander Renberg E. Season of birth variations in suicide methods in relation to any history of psychiatric contacts support an independent suicidality trait. *J Affect Disord* 2002; **69**: 69–81.

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Salib & Cortina-Borja[1] describe a disproportional excess of people who kill themselves when born in early winter and between late spring and midsummer, and a disproportional deficit when born in late autumn. This month of birth effect can be interpreted in the context of another unexplained characteristic, namely the increasing south–north gradient (i.e. the geographical latitude effect, as shown in different countries).

Optimal maturation of the oocyte in animals and humans has been proposed to occur during the prime time of the seasonally-bound ovulatory seasons and to lead to optimal development of the zygote leading to less morbidity during pregnancy, birth and adulthood. In contrast, non-optimal maturation would occur during the inherent transitional stages leading to errant early neural migration and/or developmental differentiation.[2] This seasonally-bound month of birth effect is recognised in the presented data, particularly in females (violent and non-violent methods) and males (non-violent methods), and in anencephalia, schizophrenia and related diseases such as eating disorders.[3] This concept also explains the shorter life expectancy for people born during the first part of the year *v.* the longer expectancy during the second part, and its mirror image on the southern hemispere.[4]

Seasonality of the ovulatory pattern as cause of month of birth effect on suicide can easily be connected with the geographical latitude effect. In fact, the consistent relation between timing of mating seasons in different animals and humans causes stronger transitional stages the further distanced from the equator and, thus, higher frequency of non-optimal maturation of the oocytes. This biological phenomenon explains the mentioned geographical latitude effect on suicidality, schizophrenia and congenital anomalies of the nervous system, diverging between both hemispheres. The highly biased tertiary gender ratio in both suicidality and schizophrenia, and other high-risk factors such as teenage motherhood, multiparity and intrauterine growth retardation,[5] are quite compatible with this concept. This month of birth factor, therefore, does not need to be interpreted in terms of the 'foetal origins' hypothesis, nor the 'maternal–foetal origins' hypothesis, as suggested by the authors, but rather of the 'oocyte origins' hypothesis.

1 Salib E, Cortina-Borja M. Effect of month of birth on the risk of suicide. *Br J Psychiatry* 2006; **188**: 416–22.

2 Jongbloet PH. The effects of preovulatory overripeness of human eggs on development. In *Aging Gametes. Their Biology and Pathology* (ed RJ Blandau): 300–29. Karger, 1975.

3 Jongbloet PH, Groenewoud HMM, Roeleveld N. Seasonally-bound ovopathy versus 'temperature at conception' as cause for anorexia nervosa. *Int J Eat Disord* 2005; **38**: 236–43.

4 Doblhammer G, Vaupel JW. Lifespan depends on month of birth. *Proc Natl Acad Sci USA* 2001; **98**: 2934–9.

5 Mittendorfer-Rutz E, Rasmussen F, Wasserman D. Restricted fetal growth and adverse maternal psycholosocial and socioeconomic conditions as risk factors for suicidal behaviour of offspring: a cohort study. *Lancet* 2004; **364**: 1335–40.