

39th ECNP Congress, Munich: press release

Study questions benefit of folic acid (vitamin B9) supplementation in reducing suicides

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Type of work: not peer-reviewed/observational study/people

Munich, Germany: Recent research has suggested that folic acid (vitamin B9) supplementation may reduce the risk of suicide attempts. However, a nationwide Swedish study, presented at European College of Neuropsychopharmacology (ECNP) annual congress, indicates doubts over the benefits to supplementation, as folic acid appears to affect different sexes and age groups differently.

Folic acid, also known as vitamin B9, plays an important role the synthesis of neurotransmitters in the central nervous system. Folic acid status has been linked to depression, inflammation and suicidal behaviour. In 2022, a large US study published in *JAMA Psychiatry* reported that periods covered by folic acid prescriptions were associated with a 44% reduction in suicide attempts and episodes of intentional self-harm, leading to wide interest in prescribing folic acid to vulnerable groups.

The new Swedish study examined whether folic acid dispensing was associated with suicidality in young adults according to their age and sex. Researchers analysed openly available nationwide data from all 21 Swedish regions over a 16-year period, from 2006 to 2021, including 3,463 suicide-related deaths among people aged 20–29 years. Of these deaths, 2,693 were classified as suicide and 770 as deaths from events of undetermined intent.

Among men, the results did not point in a single direction. Annual folic acid dispensing rates in men aged 20–24 were associated with a higher concentration of suicide-related deaths than in the younger age group. However folic acid dispensing among men aged 25–29 was associated with a decrease in suicide-related deaths. No statistically significant associations were found among women.

“Our results should not be interpreted as evidence that folic acid increases suicide risk,” said Professor Jussi Jokinen of Karolinska Institutet and Umeå University, who led the study. *“What they do suggest is caution. Observational associations between prescriptions and suicidal behaviour can be difficult to interpret, because people who receive a treatment may differ in important ways from people who do not.”*

The authors say the findings are particularly relevant because folic acid is inexpensive, widely available and biologically plausible as a suicide-reduction intervention. However, they emphasise that the Swedish study – like the 2022 JAMA paper - was observational, and so the findings need to be put in context and treated with care. The present study compared regional patterns rather than following individual people who did or did not take folic acid. As a result, it cannot determine whether folic acid itself affected any individual’s risk.

One possible explanation is “confounding by indication”: folic acid is prescribed for a variety of reasons, and some of the medical, psychiatric or behavioural circumstances that lead to supplementation may themselves be linked to suicide risk. In that case, a folic acid prescription may sometimes be an indicator of underlying health circumstances rather than the cause of the observed outcome. These limitations mean the findings should be seen as a signal for further investigation, not as evidence for either a beneficial or harmful causal effect of folic acid supplementation.

Professor Jokinen added: *“Earlier work raised the important possibility that folic acid might be associated with reduced suicidal behaviour. Our study does not directly contradict that work, because the populations, outcomes and study designs are different: it shows that the picture is not straightforward. Before folic acid can be discussed as a suicide-prevention strategy, we need individual-level longitudinal studies that can account for why it was prescribed and for patients’ clinical characteristics. It means the jury is still out”.*

Professor Jokinen continued, *“These findings should not prompt changes in the clinical use of folic acid. In particular, they should not be interpreted as evidence that folic acid increases suicide risk. Rather, they suggest that clinicians and researchers should be cautious about interpreting associations between folic acid prescriptions and suicidal outcomes as evidence of a direct protective effect. Our key next step is individual-level longitudinal research linking folic acid prescriptions to treatment indications, psychiatric and medical diagnoses, other medications, substance use and, ideally, biological folate measures. Such studies would help determine whether the observed associations reflect an effect of folic acid itself or characteristics of the patients for whom it is prescribed.”*

Commenting, Dr Xenia Gonda (Semmelweis University, Budapest) said:

“These findings of Prof Jokinen's excellent study underline that suicidal behaviour is not a single, biologically uniform phenomenon. Understanding its diverse neurobiological pathways - and how these may differ by sex and age - is essential if we are to identify new, more precisely targeted opportunities for prevention also at the population level. This is particularly important for potential interventions such as folic acid, which is inexpensive, widely available, easy to use and free from the high thresholds and stigma often associated with accessing psychiatric care.

At the same time, accessibility and biological plausibility do not establish efficacy. The authors are therefore right to emphasise that these observational findings cannot demonstrate either a causal role for folic acid in the development of suicidal behaviour or a protective effect of supplementation. The observed sex- and age-related differences are especially valuable, as they highlight the need to move beyond one-size-fits-all models in both suicide research and psychiatric prevention.”

Dr Gonda was not involved in this work; it is an independent comment.

The study, “Association between folic acid prescription and suicide deaths among young adults in Sweden”, will be presented by J. Jokinen, A. Mert and A. Desai Boström at the ECNP Congress in Munich. The authors are preparing a manuscript for submission to a peer-reviewed journal, so it is not yet peer-reviewed.

Notes for Editors

This work is presented at the 39th ECNP (European College of Neuropsychopharmacology) Congress, taking place in Munich and online 10th-13th October 2026, see <https://www.ecnp.eu/congress2026/>. The ECNP Congress is Europe’s leading platform for the science and treatment of brain disorders.

<https://www.ecnp.eu/congress2026/>

Conference abstract:

Association between folic acid prescription and suicide deaths among young adults in Sweden

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Folic acid plays a central role in one-carbon metabolism and methylation processes required for the synthesis of monoamine neurotransmitters in the central nervous system. Folate may exert anti-inflammatory and neuroprotective effects through mechanisms involving homocysteine metabolism and modulation of neuroinflammatory pathways [1]. Given the growing evidence of linking systemic inflammation to suicidal behavior, alterations in folate status may therefore be relevant to biological pathways underlying both depression and suicide risk [2]. Importantly, low serum folate levels have been independently associated with both prior suicide attempts and current suicidal ideation severity in patients with depression [3]. However, evidence regarding folic acid supplementation as an adjunctive treatment in depressive disorders remains mixed. Nevertheless, some observational evidence suggests potentially beneficial associations. In a cross-sectional analysis of over 24,000 adults, individuals in the highest quartile of folic acid intake demonstrated a 38% lower odds of suicidal ideation, though Mendelian randomization analysis did not support a causal relationship [4]. Furthermore, Gibbons et al. previously demonstrated negative associations between folic acid prescription fills and suicide attempts and intentional self-harm among privately insured US adults, suggesting that folic acid may represent an inexpensive and widely available suicide prevention strategy [5]. However, that study examined intermediate outcomes such as suicidal ideation or attempts rather than suicide mortality, and population-level evidence examining the association between folic acid use and completed suicide remains limited.

OBJECTIVE: This study examined nationwide associations between folic acid fills and suicide death rates in 20-24-year-olds across the 21 Swedish regions during 2006-2021.

METHODS: Nationwide registers in Sweden were used to compare year-wise excess suicide mortality (ESM) and dispensations for folic acid (ATC-code: B03BB01) in 20-24- and 25-29-year-olds. ESM was defined as the regional yearly proportion of suicide-related deaths in 20-24-year-olds compared to the total of such deaths for the 20-29-year-olds. Associations between regional year-wise ESM and folic acid dispensation rates were analyzed by sex-stratified generalized linear mixed effect models (GLMM), modeled on the beta-binomial distribution. Folic acid dispensation rates in both age groups were designated as fixed effects variables, and year and region constituted random effects.

RESULTS: Population-adjusted median regional prescription rates of folic acid for 20-24-year-olds during 2006-2021 varied over the national median by factor 0.55-1.73 and 0.47-2.00 in females and males, respectively. Regional yearly folic acid prescription rates in 20-24-year-old males were positively associated with male ESM ($\beta=0.376$, $p=0.0104$), whereas prescription rates in 25-29-year-old males were independently and inversely associated with male ESM ($\beta=-0.456$, $p=0.0017$). These associations remained significant after accounting for the interaction term between folic acid dispensation rates in the two age groups. No association

was demonstrated in females ($p>0.1$).

CONCLUSION: Regional folic acid dispensation rates were positively associated with ESM in males aged 20-24, while an inverse association was observed in those aged 25-29. These findings did not replicate previously reported suicide-protective effects of folic acid, potentially suggesting confounding by indication.