

COVID-19 Women's Health, Occurrence of Neural Tube Defects and Severe acute Malnutrition in Children

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Abstract

India has been battling the COVID-19 pandemic like most other countries of the world. The first two waves, particularly the second wave produced devastating effects on many aspects of human health and welfare. In addition to these direct effects of COVID-19 disease itself, one had to face a number of indirect effects of COVID-19 on women, adolescent girls and children. Lockdowns, loss of jobs, decrease in salaries, migration, supply chain disruption, inadequacy and inaccessibility of foods, green vegetables, stoppage of midday meals due to school closures, inadequate distribution of iron folic acid tablets from anganwadis to children, adolescents and antenatal women will probably impact women and children's nutrition.

Keywords: Food; Green vegetables; Iron; Nutrition; Folic acid; Tablets; Neural tube defect

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Description

India has now begun to see the ill effects of pandemic on nutrition as collateral damage. We report two observations on occurrence of Neural tube defects and severe acute malnutrition in children during the years from 1st January to 31st December of 2020 and 2021. The study has been done in Maharashtra, India, where a team of doctors under the national health program of Rashtriya Bal Swasthya Karyakram (RBSK) examined children below 18 years for '4Ds' i.e. Defects at birth, Diseases in children, Deficiency conditions and Developmental delays including disabilities. The same districts and anganwadis were screened in 2020 and 2021. The year 2020 was a reflection of health and nutrition status of adolescent girls, who were married in the pre-COVID years and delivered babies in the year 2020 and children in pre-COVID time. The year 2021 reflected the health and nutrition status of women in the COVID year of 2020 that had to bear the brunt of the pandemic. It also reflected the status of nutrition in children in 2020 i.e. Pre-COVID times and 2021 reflecting nutritional insult in 2020.

A total number of 2121564 children were examined in 2020. Out of them 112(0.005%) were detected to have Neural Tube Defects (NTDs-meningocele, myelomeningocele, spina bifida), though anencephaly with resultant still births do not get reported in this data. In 2021, a total of 516655 babies were examined and

101(0.02%) had neural tube defects which are four times that of 2020 as per records from RBSK. The difference is statistically highly significant ($p < 0.001$). The number of babies born with NTDs were probably affected by COVID induced collateral nutrition insult i.e. folic acid deficiency in women during periconceptional period. Severe acute malnutrition was detected by measuring weight for height below -3SD on WHO growth charts. 7482 children had SAM (0.353%) in 2020 and 7148 (1.38%) children had SAM in 2021. The difference is statistically highly significant ($p < 0.001$).

Occurrence of SAM is a measure of nutritional status of children of the community. It also is indicative of acuteness of nutritional insult. Unimaginably, it stands to reason that inadequate nutrition in 2020 manifested in more children developing SAM and the number is four times more than previous year.

High incidence of NTDs is even more alarming. COVID-19 resulted in women consuming less folate rich green vegetables, and they could probably not receive iron folic acid tablets during lockdowns. This resulted in birth of more children with neural

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tube defects. Effect of COVID on pregnant women has been studied by some workers [1]. Association of folic acid and neural tube defect in earlier times has been extensively studied [1-4]. Published literatures also have indicated that viral illness during early pregnancy and several antiviral drugs are associated with an increased risk for neurodevelopmental congenital anomalies of new-born [5,6]. A study from KEM hospital Mumbai, has reported 26 cases of NTDs during this period [7].

NTDs are a surrogate marker of micronutrient deficiency in mothers during periconceptional period; highlighting the importance of adolescent pre pregnancy and antenatal health. Multiple micronutrient supplementations in pregnancy are studied by few workers [8-10].

Conclusion

This is probably the first report of micronutrient impact of COVID-19 in women in periconceptional period. Both these results depict nutritional impact of COVID-19 on women and children from Maharashtra, India. More studies may strengthen this observation. The COVID-19 patients in hospitals are more prone to get malnourished and lose muscle mass throughout their stay. Indoor hospitalised patients are given nutrient-dense, fortified, delicious foods or specialised nutrition supplements to assist them restore weight and muscle mass.

Conflict of Interest

We declare no conflict of interest

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