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Editorial

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A call to action; addressing climate change's impact on maternal and fetal health

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As the World wrestles with the far-reaching consequences of climate change, one of the most endangered populations is often overlooked: pregnant women/ gravida women and their newborns. The effects of climate variations on pregnant women and fetal health are a major issue that needs urgent attention and action. The climate crisis has become a universal issue. The World Health Organization (WHO) has projected a spike of 250,000 deaths between 2030 and 2050, due to the intersection of climate change and other factors.

The range of climate change encompasses environmental changes such as global warming, inundation, dry spells, a hazy environment, heat stress, and an increase in vector-borne diseases. All of this has a negative footprint on sexual and reproductive health. It affects the entire population, including pregnant women and their infants. Maternal and fetal health are affected by these climate changes. Global warming has been considered an important cause of maternal morbidity and child mortality, as well as involving all aspects of perinatal results/outcomes. The end result complications include preterm birth, decreased gestational age , early onset of labour, intrauterine demise, and a spike in abortions.

Women in middle- and low-income countries are disproportionately affected by the climate crisis. The majority of them are suffering from malnutrition, low BMI, having raised surface area to body weight, and the majority work daily in agricultural lands or daily household tasks, making them more susceptible. This group also includes the growing newborn, neonates/infants, handicapped, and immunosuppressed people [1].

Pregnancy is a sensitive period of embryogenesis that is extremely sensitive to environmental influences. These influences put normal prenatal development at risk and can have long-lasting negative effects on the health of the newborn and subsequent generations, a theory known as the Developmental Origins of Health and Disease [2]. Absolute indication shows that heat stress and heat strain are also interconnected with fatal pregnancy and neonatal results, including unexpected early birth, low birth weight baby, and Intrauterine demise [3,4].

The most common impact of climate-related changes is heat stress, which affects all aspects of fertility. The ovarian follicle pool, as determined by the preantral follicular count, is found to be decreased in heat stress/sunny weather. A 1°C rise in temperature was linked with a -1.6% (95% confidence interval [CI], -2.8, -0.4) lower preantral follicle count [5]. There are several other mechanisms by which heat stress affects pregnant women. As we know increased temperature leads to dehydration and a result inflammatory cascade activates and oxidative stress response in pregnant women which ultimately leads to epigenetic changes, oxidative stress in placental, as a result reduced nutrients to placenta, uteroplacental insufficiency and epigenetic changes altered genetic pattern as a result congenital abnormalities seen, and growth restriction, small for gestational age and placenta abruption cases report [6].

Temperatures ≥ 30°C for more than 10 days have been linked with increased risk of congenital heart problems in the developing fetus. Some Studies have shown an increased rate of spontaneous abortion, affecting reproductive women in the early second and third trimester, XY fetus, and in reproductive women of age 25-34 years [6]. This relationship with temperature was direct; with every 10°F rise in temperature, the risk for fetal demise elevated by 10.4%. Past studies have shown that heat stress causes increased uterine contractions [7], which ultimately lead to increased rates of abortion, preterm birth, and stillbirth. An important reason for Perinatal deaths Worldwide and mostly in low- and middle-income countries is Preterm birth/Still birth. In a case-crossover study from South Korea, researchers found that a 5°C elevation in temperature four weeks before delivery was associated with an increased risk of preterm

birth, with an odds ratio (OR) of 1.03. This was more spotlight in women with an increased reproductive age of more than 35 years [8].

Acute effects of extreme heat stress in the days preceding delivery also include a decrease in the duration of fetal age/ fertilization age [9]. Heat stress also affects male reproductive health. The direct effect of heat stress and heat strain on spermatogenesis is not well understood, but it is known that environmental exposure to a hot environment can have a detrimental impact on it. Some studies have shown that heat stress also affects newborn motor development, leading to delays, which is an alarming situation. Climate intersecting changes also increase the incidence of vector-borne diseases. These include increased cases of malaria, chikengunya, dengue, and Zika virus infections. These vector-borne diseases are interlinked with unfavorable maternal and neonatal outcomes, including intrauterine demise, preterm labour, stillbirth, congenital malaria, and neonatal anemia. Infection with the dengue virus is also interconnected with maternal complications, including preeclampsia, high blood pressure in pregnancy, fits, and a premature infant [10].

Environmental Air pollution and Global warming are interconnected major concerns. The combustion of fossil fuels for energy purposes, vehicle transportation, and industrial processes is the leading cause of both air pollution and global warming, including the release of greenhouse gases. This ultimately leads to the break of harmful toxic pollutants such as carbon dioxide (CO2), methane (CH4), particulate matter (PM), nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), and ozone (O3), which leads to the climate crisis, rapidly destroying the air quality index [11] #bib0004. Environmental air pollution may also be interlinked with premature rupture of membranes (PROM). Pregnant women exposure to PM2.5 during the 13-27 weeks of gestation is linked with an increased risk of preterm premature rupture of membranes with odds ratio of 1.15 Also maternal exposure to PM10, NO2, NO, carbon monoxide CO, and sulfur dioxide (SO2) throughout all trimesters, as well as short interval exposure to PM2.5, NO2, SO2, and ozone (O3), is also interconnected with PROM [12].

Psychological health is also exaggerated by the climate crisis. To mitigate the impact of climate-related changes on pregnant women and neonatal health, a multifaceted approach is necessary. That includes healthcare centers equipped to withstand extreme weather changes, such as heat stress, and provide adequate care to pregnant women. Conducting research to better understand the impact of climate change on pregnant women's health and fetal health. Educating pregnant women about the risk of climate change. There are recognized efforts on the international and national levels to lessen the effects of climate change. Universities should encourage focus on climate research and provide funding for such activities. Increased awareness among students at all stages can be helpful. Changes should also be made in the curriculum at all levels to increase awareness about climate-intersecting changes. From simple measures like increased tree planting, to modifying daily activities, implementing preventive measures to decrease sun exposure, and educating people about steps to prevent dehydration and heat stroke. All these factors play an important role in the lives of pregnant women and prevent them from harmful effects. Climate change is a critical issue that requires urgent attention. By working together to address this task, we can make sure that pregnant women and their fetuses receive the care and support they need to thrive in a changing environment.

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