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**POPULAR ARTICLE**

**Genome editing required or not for poor countries?**

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Genome editing's necessity depends on the application: it's seen as highly necessary and beneficial for treating diseases in existing individuals (somatic editing, like CAR-T cancer therapy) and improving crops, but it's currently considered ethically problematic and premature for heritable changes (germline editing) due to safety, long-term consequences, and societal concerns, with international calls for caution and regulation. Genome editing is considered necessary and highly beneficial for poor countries, particularly for enhancing food security, nutrition, and public health. International bodies like the World Health Organization (WHO) urge for equitable access to this technology, arguing that it is not ethically or scientifically justifiable to leave less-resourced countries behind.

**Where it's needed (Somatic and Agriculture)**

**Disease Treatment:** Editing somatic (non-reproductive) cells to treat severe genetic disorders, cancers (like CAR-T cells for leukemia/lymphoma), and infections (HIV).

**Food Security:** Developing pest-resistant, nutritious, climate-resilient crops more quickly and precisely than traditional breeding.

**Where it's highly debated/restricted (Germline)**

**Heritable changes:** Editing embryos, sperm, or egg cells, which passes changes to future generations.

**Concerns:** Unforeseen multi-generational effects, unintended DNA changes (off-target edits), potential for "designer babies" (enhancement), and deepening social inequalities.

**Current stance:** Most countries discourage or ban human germline editing for reproduction due to ethical and safety risks; the WHO deems it irresponsible at this time.

**The core debate:** Risk vs. Reward

**Potential reward:** Eliminating inherited diseases from a family line, offering hope for conditions with no cure.

**Potential risk:** Irreversible, unintended consequences for the human gene pool; exacerbating societal divisions if only accessible to the wealthy.

**In essence:** Genome editing is a powerful tool, vital for certain medical and agricultural advancements, but its application to human reproduction (germline) requires broad societal consensus, rigorous safety data, and careful ethical deliberation before it can be considered widely necessary or acceptable.