Back

Human cognitive enhancement and reprogenetic technologies in Malaysia – A survey study of local Muslim undergraduate students' viewpoints

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Abstract

Introduction: Newly emerging human enhancement technologies such as brain chip implants, CRISPR-Cas9-based gene editing, and polygenic embryo screening (PES) alongside preimplantation genetic testing (PGT-P) are highly controversial in Islam. However, the prevailing sociocultural dynamics encourage their uptake. In the current era of declining fertility rates, increased parental investment in fewer children has resulted in a flourishing tuition industry, accompanied by heightened academic pressure on students and widespread parental anxiety. These emerging technologies can be employed for cognitive enhancement, thereby providing an expedient solution for parents and students navigating a highly competitive educational environment. Materials and methods: To inform and facilitate future policy decision-making, an online survey was conducted among 575 undergraduate Muslim students at the International Islamic University Malaysia (IIUM) to assess their perspectives and opinions regarding these newly emerging technologies. Results: The findings indicated a significant level of opposition among respondents to the uptake of human enhancement technologies, with 54.8% opposing polygenic embryo screening, 69.2% opposing gene editing, and 75.3% opposing brain chip implants, reflecting substantial concerns about altering natural human attributes. The results also indicate that numerous Muslim respondents believe that Allah created humans flawlessly and purposefully, asserting that humanity lacks the authority to alter or amend this creation. Discussion/Conclusion: A three-pronged governance approach for human enhancement technologies is thus proposed, which encompasses (i) bioethical safeguards, (ii) public engagement and education, and (iii) economic accessibility. It is suggested that the Malaysian government should actively consult relevant stakeholders and various segments of the public before enacting future legislation on these technologies.

Author keywords

brain microchip; brain-computer interface (BCI); fatwa; germline genome editing; Islam; PGT; reprogenetics; shariah

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