

Impact of entrepreneurial education policies on reducing bullying among university students with anatomical and physiological disabilities: review

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ABSTRACT

This study examines the impact of entrepreneurial education (EE) policies on reducing bullying (Tanamor) among university students with anatomical and physiological disabilities and special needs. Using a descriptive approach grounded in theoretical literature, the study identifies positive outcomes, such as enhanced self-confidence and peer respect among students with disabilities. It highlights the role of EE in creating inclusive environments that mitigate bullying. The review underscores the necessity for further research, including longitudinal studies to understand the long-term impact of these educational strategies. The findings advocate for integrating EE into university policies to support the well-being and academic success of students with disabilities.

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1. INTRODUCTION

Nowadays, bullying (Tanamor) has become one of the most dangerous phenomena worldwide. It may occur at home, workplaces, and educational institutions, such as schools and universities. Bullying can be defined as physical or psychological aggressive behavior aimed at harming another person to assert power over them. It takes many forms among humans, including the use of harmful terms, written or spoken, physical abuse, and various types of force to decrease self-confidence, defame, and offend the person. Given its impact on the development of children and adolescents, which can have catastrophic physical, psychological, and social implications, the high prevalence of school violence at all levels is a global concern and a major public health issue.

The Islamic religion promotes peace and morality, forbidding engagement in bullying in all its forms. The most severe instances of bullying are illustrated in the challenges that the prophets faced and their patience with their communities. The Qur'anic verses and the noble hadiths of the Prophet are very clear and evident in this regard [1]. Bullies are usually individuals or groups who, due to their own weaknesses, behave in ways that make them appear strong or seek attention. They may intimidate others out of jealousy. The absence of religious and moral awareness, as well as a lack of adherence to imposed religious rules, can lead bullies to ignore the feelings of others and imitate negative behavior. The bullying process involves two

groups: the bullied person (victims) and the bully (criminals, invaders, or aggressors). Although current research suggests the existence of two other major groups: bully-victims who are bullied but also bully others as well [2] and bystanders who are not directly involved in the bullying but play an essential role in its social dynamic/process by supporting or reducing aggressive behaviors [3], [4], they often supply the bully with social rewards such as laughing and shouting at the victim's embarrassment and humiliation [5], [6]. Although there have been intense efforts to eliminate the phenomenon of bullying, it has significantly increased recently, becoming one of the most prevalent behavioral problems. It is known to exist globally in educational locations (schools, colleges, universities), and its prevalence varies between countries, usually decreasing with age [7]. Studies have found that the prevalence of bullying among university students is like that of high school students, ranging from 20% to 25% [8], [9]. The negative consequences of bullying extend beyond the target, impacting the perpetrator, bystanders, institutions, and communities socially, psychologically, economically, and academically [10]. The high prevalence of this issue requires global attention and positions bullying as a significant public health concern.

Despite various anti-bullying initiatives, university students with anatomical disabilities, physiological disabilities, and special needs continue to face disproportionate rates of bullying, which significantly hinders their academic progress, social integration, and emotional well-being. Research indicates that students with disabilities experience bullying at much higher rates than their non-disabled peers [11]. This gap illustrates a concerning vulnerability, as these students often struggle with isolation, reduced self-confidence, and a heightened risk of academic underperformance due to bullying.

While many studies address the general impact of bullying, limited research explores tailored approaches that effectively mitigate bullying against students with disabilities within university environments. Given the role of entrepreneurial education (EE) in fostering qualities like resilience, self-confidence, and empathy, it presents a promising yet underutilized avenue for addressing the issue. Therefore, this study investigates the effectiveness of EE policies in reducing bullying among university students with disabilities and special needs. Specifically, it examines how these policies can create more supportive, inclusive learning environments, thereby empowering these students to thrive academically and socially while reducing their vulnerability to bullying.

Bullying remains a pervasive issue in educational institutions, significantly affecting university students with anatomical disabilities, physiological disabilities, and special needs. These students often face unique challenges and vulnerabilities that can exacerbate the negative impact of bullying on their academic performance, social integration, and overall well-being. Despite various anti-bullying initiatives, there is a critical need for more effective strategies that specifically address the needs of these marginalized groups.

At universities, bullying takes many forms, inflicting harm or distress on targeted youths, including physical, psychological, social, or educational harm [9]. This form of bullying may involve spreading nasty stories regarding race, disability, gender, religion, and sexual orientation. One of the most targeted bullying groups among university students is those who are academically weak and unable to achieve success [12].

Bullying presents a significant challenge in educational settings, particularly for university students with anatomical disabilities, physiological disabilities, and special needs, who are more vulnerable to various forms of bullying, including emotional, verbal, physical, and cyberbullying. Research highlights the heightened risk faced by certain student populations, such as those with special needs, anatomical disabilities, and overweight or obese students. Studies indicate that students with disabilities are significantly more likely to experience bullying compared to their non-disabled peers [11]. These individuals often grapple with social isolation, difficulty in forming connections, and may encounter challenges related to learning abilities and social skills. Consequently, they confront enduring obstacles in navigating their academic and social environments, underscoring the pressing need for comprehensive intervention strategies to address bullying and provide support to vulnerable student populations.

EE has gained momentum in nurturing creativity, resilience, and problem-solving skills in students [13]. By instilling an entrepreneurial mindset, students can cultivate self-confidence, assertiveness, and empathy, all of which play pivotal roles in preventing and addressing instances of bullying. This approach empowers students to take ownership of their actions and encourages them to make positive contributions to their communities. To effectively combat bullying among university students with specific needs, it is essential to implement comprehensive EE policies. These policies should be tailored to address the unique challenges faced by students with anatomical, physiological, and special needs. Emphasizing the creation of inclusive environments, promoting empathy and understanding, and providing students with the requisite skills to prevent and address bullying incidents are crucial components of such policies.

The impact of EE policies on reducing bullying among university students with anatomical disabilities, physiological disabilities, and special needs is a topic that has not been extensively researched. Therefore, this review conducts a descriptive study on how EE policies affect bullying among these special category university students, aiming to provide insight into addressing bullying and fostering a more inclusive learning environment. It also aims to illuminate the issue of bullying targeting these students,

explore its negative effects, and highlight crucial methods to combat it, ultimately contributing to the elimination of this harmful phenomenon. Additionally, it seeks to explore the potential of EE policies to reduce bullying among this population.

This study aims to assess the effectiveness of EE policies in reducing bullying among university students with various disabilities, including anatomical, physiological, and special needs. It explores how such education fosters a supportive and inclusive environment, boosting self-confidence and peer respect among these students. Additionally, the study seeks to identify existing research gaps in the context of bullying prevention through EE, offering recommendations for future studies. Ultimately, the findings aim to provide actionable guidance for policymakers and educators to integrate EE into anti-bullying strategies effectively. The study focuses on two key questions:

- i) How do EE policies affect the incidence of bullying among university students with disabilities and special needs?
- ii) What are the most effective strategies for integrating EE into university policies to better support students with disabilities?

2. METHOD

A descriptive study using a literature review systematically examines existing research to provide a comprehensive understanding of a specific topic, such as bullying among students with disabilities or the impact of EE on student behavior can be explored through this approach. The process begins by clearly defining the research question and conducting a thorough search of relevant academic databases using targeted keywords. Researchers then apply inclusion and exclusion criteria to select appropriate studies, extracting key data such as study design and findings. Qualitative analysis helps identify common themes, patterns, discrepancies, and trends across studies. This synthesis of findings provides a summary of existing knowledge, uncovers research gaps, and offers insights that inform educational practice and policy decisions.

The systematic review focuses on analyzing and synthesizing research on bullying among students with anatomical and physiological disabilities, as well as students with special needs, in higher education, along with educational policies that can prevent bullying of these groups. Publications were sourced primarily from English-language databases, such as Google Scholar, Scopus, and Web of Science, using keywords related to bullying in university and college contexts, especially those focused on anatomical and physiological disabilities and special needs. Additional relevant publications were identified through the reference lists of accessed articles. Research interest in bullying within higher education has significantly increased over the past two decades, prompting a selective approach to reviewing key works. The final analysis was based on 52 key references, with an emphasis on influential works, recent publications, and studies with substantial citations. This selectivity ensured the inclusion of focused insights into recent trends and key findings in bullying research.

3. RESULTS AND DISCUSSION

This study's descriptive analysis provides a nuanced understanding of the role EE policies could play in combating bullying among university students with anatomical and physiological disabilities and special needs. Previous research has broadly examined the prevalence of bullying in higher education, particularly among students with disabilities. However, few studies have explored targeted interventions, such as EE policies, to directly mitigate bullying in this context.

In synthesizing existing research, this study reveals both convergences and gaps compared to prior work. For instance, earlier studies have identified heightened rates of bullying among students with disabilities but often emphasize traditional anti-bullying programs that lack focus on empowerment and resilience-building as integral solutions. By contrast, this study highlights the unique potential of EE policies to foster self-confidence, resilience, and peer respect-qualities that may reduce vulnerability to bullying.

Furthermore, while some research has advocated for inclusive education frameworks to protect students with disabilities, these frameworks frequently overlook the strategic benefits of entrepreneurship education (EE). This study suggests that entrepreneurial competencies, such as problem-solving and assertiveness, can equip students with social and emotional tools to better navigate challenging social dynamics, offering a fresh perspective on anti-bullying approaches. By identifying key trends, correlations, and areas for policy improvement, this study underscores the value of an EE-based approach and advocates for a shift from conventional anti-bullying strategies to more comprehensive, skills-focused policies. This comparative analysis underscores the potential of EE policies as an innovative, inclusive intervention, aligning with some prior findings while offering new insights into the design of educational policies that address bullying more effectively for students with disabilities.

3.1. Anatomical disabilities and special needs students

A person with disabilities is an individual who has physical, mental, intellectual, or sensory impairments that restrict main life activities and interaction with the world around them. These disabilities could be momentary, such as fractures, autism spectrum disorders, which include many types such as dyslexia, dysgraphia, dyscalculia, dyspraxia, and developmental aphasia [14], hearing loss, low vision or blindness, chronic health disorders such as epilepsy, Crohn's disease, arthritis, cancer, diabetes, migraine headaches, or multiple sclerosis, and psychological or psychiatric disabilities such as mood, anxiety, and depressive disorders, or post-traumatic stress disorder (PTSD), Asperger's disorder, and other autism spectrum disorders, and traumatic brain injury [15]. Al-Bitar *et al.* [16] indicated that children with dental and facial appearance issues may suffer from bullying in their school.

In higher education, students with disabilities encounter various complexities throughout their academic journey. They may struggle with learning, language comprehension, understanding the curriculum, communication, and physical limitations [17]. Therefore, significant efforts are necessary across all levels-leadership, staff, students, and employees to cultivate an inclusive culture aimed at aiding students with disabilities in understanding how they can learn and achieve their goals. Research suggests that without adequate support during their first year of education, students with disabilities may confront significant challenges [18]. The way students with disabilities are often mistreated reflects broader societal attitudes towards them, stemming from fear or difficulty in understanding. Moreover, their marginalized status contributes to instances of bullying, exclusion from community activities, and perceptions of them as burdens rather than valuable members. Often, they face segregation or institutionalization, signaling the need for a paradigm shift in societal perceptions and attitudes towards disability.

3.2. Definition of bullying

The concept of bullying was first introduced in the 1960s by Olweus, who defined it as cases in which an individual is repeatedly exposed to harmful actions [19]. Olweus identified three main components of the bullying process: i) an intent to harm; ii) repeated dangerous behavior over time; and iii) imbalance in power relationships between the bully and the victim. He further added that victims are individuals who are weaker and unable to defend themselves [20], [21].

Scientists have identified bullying in different contexts depending on the age of the bullied person, the place of the bullying process, or the type. Kallman *et al.* [22] believe that bullying is undesirable behavior carried out by an individual or group against another individual. Smith [23] defined bullying as an action that occurs when a person is exposed to direct negative, inappropriate, or fundamentally unwanted behavior, which may include factors such as race, religion, sex, gender, and marital status.

Potard *et al.* [24] suggested that, although there is variation in the definitions of bullying across studies, there is general agreement that bullying is characterized by three behavioral features: an intention to consciously harm or hurt, repetitive acts over time, and a power imbalance between the bully and the bullied. In Arabic linguistics, the term 'bullying' is not used; instead, it is replaced by the word 'Tanamor,' which refers to power and aggressiveness against one or more persons to harm them [25]. Bullying is distinguished from violence in that it is usually continuous and occurs repeatedly between the victim and the bully. It is often directed towards the same person or a specific group.

3.3. Reasons for bullying

Many studies on bullying indicate that the causes of bullying are often rooted in the bully's need to control others and gain attention and interest. It may also be related to personal issues such as selfishness, self-love, narcissism, and the desire to increase self-confidence. Australian Health Direct [26] indicated that people may bully to improve their social status, self-respect, and cope with feelings of anger, irritation, or resistance to social norms. Bullying is a complex behavior influenced by a combination of individual, social, and environmental factors. While there is no single cause that explains why someone becomes a bully, here are some common reasons or contributing factors: The bully's desire to dominate and control the victim, bullies may engage in bullying to improve their self-esteem, and bullying may result from family dynamics and the home environment. Some bullies may succumb to peer pressure.

3.4. Side effects of bullying

Bullying has widespread negative effects, impacting victims, perpetrators, and bystanders [27]. It is correlated with a range of behavioral, emotional, and physical complications [28]. Both the bullied and the bully suffer negative consequences due to the bullying process, with the individual most affected typically being the victim. Research shows that students who are bullied often exhibit various signs of distress, including mood swings, depression, physical injuries (such as welts on different parts of the body), loss of appetite, sleep disturbances, social withdrawal (preferring isolation from friends and peers), aggression, and academic issues like avoiding homework and exams, dropping out of school or university, feigning illness to

justify absences, low self-confidence, neglect of personal appearance, and, in severe cases, suicidal ideation, substance abuse, and self-harm using sharp objects [8], [29]. Additionally, essential life skills, communication abilities, and problem-solving skills tend to deteriorate among victims [24]. Bullies, on the other hand, frequently display increased aggression, violence, and social rejection [30]. Blanchflower and Bryson [31] found that individuals bullied in childhood experience reduced subjective wellbeing from ages 16 to 62, an increased risk of mortality before age 55, and a lower likelihood of employment in adulthood. Importantly, these detrimental outcomes persist independently of other adverse childhood experiences, underscoring the unique, long-term impact of bullying on life prospects overall.

3.5. Types of bullying

Bullying has traditionally been categorized into physical, social, verbal, and property bullying. With technological advancements, cyberbullying has emerged, defined as repeated, intentional online harassment where victims are unable to defend themselves [32]. Some researchers classify bullying into two main types: direct physical and direct verbal. Direct physical bullying involves aggressive actions, such as physically harming others or damaging their property, while direct verbal bullying typically includes any form of verbal, racial, or sexual harassment [33]. Other researchers, however, categorize bullying into direct and indirect types. The direct type involves face-to-face interactions between bullies and victims, which may include physical altercations such as punching and kicking, or the use of verbal threats and humiliation. In contrast, the indirect type may involve communication technology, such as social media, or spreading rumors to harm the victim socially [24], [34].

Ahmed *et al.* [34] further differentiates bullying into six types based on the process involved: physical, social, verbal, psychological, cyberbullying, sexual, and social relations. Additionally, many studies classify bullying based on its location, such as occurrences in school, university, workplace, domestic settings, and even political environments. Verbal and physical bullying are typically direct methods involving face-to-face interactions between bullies and victims. In verbal bullying, bullies may directly confront victims to verbally abuse them, using tactics such as name-calling, threatening, teasing, harassment, shaming, or mocking. Meanwhile, in physical bullying, bullies physically attack victims through actions like pushing or kicking. Psychological bullying entails provocation and embarrassment of the victims, while social relation bullying involves bullies attempting to isolate victims from social contact. Sexual bullying encompasses harming victims through direct sexual touching or the use of explicit language.

Cyberbullying has become one of the most widespread forms of bullying in modern times, driven by technological advancements. Potard *et al.* [24] reported that the prevalence of cyberbullying was around 23% for victimization and 15% for aggression. It occurs through social media platforms using digital devices such as phones and computers. In cyberbullying, bullies may send hurtful or threatening text messages, emails, or instant messages to humiliate or threaten the victim [35], [36].

3.6. Bullying treatment

An effective anti-bullying policy involves clear definitions, rules, and consequences for bullying across schools, universities, homes, and community settings. Administrators can implement various policy types, including mission statements, codes of conduct, and student bills of rights. Parental involvement is crucial, with recommendations for active listening, open communication, and setting clear consequences at home. Teachers play a vital role by integrating anti-bullying strategies into their teaching, such as role-playing, internet research, and creative writing assignments, to raise awareness and foster a culture of respect and inclusion [37].

Supporting bullied students begins at home, with parents adopting a supportive stance. Teachers, students, and all members of society need to understand the dangers of bullying and recognize the behavior of bullied individuals to help them escape this situation [27], [38]. This includes enhancing the self-confidence of the bullied person and helping restore their psychological and emotional health. Encouraging bullied individuals to participate in social activities and become involved in society is important. Psychological treatment and consulting a mental health professional can also assist them in managing this issue. Additionally, raising children in a positive environment and avoiding the use of violence is essential [39].

When adults respond promptly and consistently to bullying behavior, they communicate that it is unacceptable. Research shows this approach can effectively reduce bullying behavior over time. Parents, school staff, and other adults in the community can help prevent bullying by discussing it openly, fostering a safe school environment, and developing a community-wide bullying prevention strategy [40]. If bullying is not challenged, it can contribute to a culture of tolerance for such behavior, leaving individuals feeling powerless to stop it. Bullied individuals are encouraged to speak with someone they trust, bring a trusted person when seeking help or confronting the bully, and seek assistance from an agency or support service for protection.

Bullying prevention involves a combination of laws, policies, and the active roles of various stakeholders. While there is no federal anti-bullying law, civil rights laws offer some protection, and state-level inclusive anti-bullying laws have proven effective in reducing bullying. Successful prevention programs typically adopt a whole-school approach, integrating universal strategies with targeted support for at-risk students, though research gaps remain, especially in cyberbullying and interventions for students with disabilities. Ineffective strategies, such as zero-tolerance policies and one-time events, may worsen bullying. Youth play a crucial role in prevention through peer influence and student-led initiatives like gay-straight alliances, while parents contribute by recognizing bullying signs, promoting positive family interactions, and engaging with school efforts. Educators can foster empathy, monitor high-risk areas, and build resilience among students, while outside organizations like youth workers implement prevention programs. Healthcare providers, including school nurses and counselors, play an essential role by screening for bullying and collaborating with schools to provide support to affected students [27].

This literature review highlights the essential role of adults-parents, teachers, and other influential figures-in preventing and responding to bullying. While past research often focused on the bully-victim dynamic and peer influence, less attention has been given to adult roles. Society's implicit acceptance of bullying as a natural part of social hierarchy perpetuates the problem, and studies reveal gaps in how students, parents, and teachers perceive bullying. Parents, as early models, sometimes respond unhelpfully, while teachers, central to school interventions, may overlook subtle bullying forms. Effective adult strategies include clear communication, consistent intervention, and fostering inclusive, supportive environments. Ultimately, proactive adult leadership is critical in establishing and maintaining anti-bullying initiatives.

3.7. The effectiveness of entrepreneurial education policies in preventing bullying ('Tanamor') among university students with anatomical, physiological, and special needs

EE is essential for university students as it enhances their entrepreneurial intentions, fosters business establishment, and nurtures innovative potential [41]. It serves as a strategic tool for economic development and poverty reduction by empowering education to meet diverse student needs. Reform efforts in EE have gained significant recognition for positively influencing entrepreneurial intentions. The field of EE has rapidly evolved, with recent studies confirming its active promotion of entrepreneurial intentions and enhancement of entrepreneurial competence. It serves as a key driver in improving entrepreneurial capabilities, exerting a significant impact on entrepreneurial competence [42]–[45].

Nurhayati *et al.* [46] emphasize the importance of comprehensive policies at macro, meso, and micro levels to effectively address bullying. These policies should be systematically implemented and complemented with innovative programs. Effective educational policies have the potential to significantly decrease both the frequency and severity of bullying incidents. It is crucial for all stakeholders at various levels to contribute creatively, adapting policy programs to suit the specific contexts of their schools. Additionally, student satisfaction in EE is influenced by factors such as the "entrepreneurship policy dividend," entrepreneurship learning, entrepreneurship competition, and entrepreneurship practice, which synergistically work together. Conversely, teacher satisfaction is primarily influenced by organizational leadership satisfaction, followed by mechanism guarantee satisfaction, and teaching management satisfaction [47].

Few studies have explored the impact of EE policies on reducing bullying, particularly concerning individuals with anatomical, physiological disabilities, and special needs. EE policies can address bullying among university students with special needs by providing empowerment and skills training. By equipping these students with entrepreneurial knowledge and skills, they can bolster their self-confidence and resilience, thereby reducing their vulnerability to bullying. Additionally, EE policies have the potential to foster a more inclusive university environment, promoting acceptance and support for students from diverse backgrounds. Policymakers and educators should recognize the significant potential of EE policies in tackling bullying among university students with special needs and prioritize their implementation accordingly. Students with disabilities and special needs are entitled to a free and appropriate public education, including necessary special education and related services. They require legal protections, as bullying may constitute harassment when it significantly impedes a student's ability to participate in or benefit from school services, activities, or opportunities due to their disability.

The National Bullying Prevention Center (PACER's) advocates for the use of Individual Education Programs (IEPs), 504 Plans, or personalized plans to effectively address bullying. These tools can customize prevention strategies based on a child's disability, social skills, and environment. Even without an IEP or 504 Plan, families can collaborate with supportive school adults to develop a tailored plan. Involving teachers, therapists, and staff in decision-making creates a safety net for all children, promoting a healthier educational environment. Whether students have an IEP or 504 Plan, they are entitled to a free appropriate public education (FAPE), safeguarded from bullying. Schools must promptly respond to harassment, engaging the student's IEP or 504 team to formulate effective strategies. Parents can work with school staff to address bullying effectively, with provided examples and tools for guidance. Therefore, IEPs and 504 Plans can serve

as preventive bullying programs not only in schools but also in universities, protecting students with anatomical, physiological, and special needs [48].

Anti-bullying policies can effectively reduce bullying if they are evidence-based, grounded in sound theory, and implemented with high fidelity [10], [49]. Policies play a crucial role in defining and communicating acceptable behaviors, although zero-tolerance policies, while common, have been criticized for being harsh and counterproductive [29]. Due to the negative consequences of bullying victimization, numerous prevention programs have been developed worldwide, often including monitoring and evaluating bullying behaviors, schoolyard supervision, relationship building, and active participation from pupils, parents, and teachers [50]. Programs in the US and China, including anti-bullying laws and parent-directed empathy training, have shown promising results in reducing bullying and its effects [31].

Agencies and organizations can combat bullying by involving self-advocates, family members, staff, and local sexual assault centers, establishing anti-bullying policies, deploying comprehensive prevention programs, providing training for all stakeholders, and investigating incidents to prevent future occurrences. Additionally, fostering positive self-esteem, ensuring safety, recognizing talents, assisting with emotional management, and supporting individuals in achieving their goals are essential. Legal protections exist for students with disabilities who experience harassment, as bullying is considered harassment if it significantly disrupts their participation in educational activities due to their disability [34], [51], [52].

4. CONCLUSION

This study distinguishes itself by bridging the gap between anti-bullying initiatives and EE policies, suggesting that EE can play an essential role in fostering an inclusive educational environment. Unlike traditional approaches to bullying prevention, which focus on punitive measures, the study advocates for proactive strategies that enhance students' self-empowerment and resilience. By emphasizing IEPs, 504 Plans, and customized approaches, the study also demonstrates how existing educational frameworks can be adapted to more effectively support students with disabilities.

In conclusion, this study highlights the transformative potential of EE policies in combating bullying, particularly for university students with anatomical and physiological disabilities and special needs. By moving beyond merely addressing bullying symptoms, EE policies equip students with essential skills and confidence, fostering a more inclusive and empowering educational environment. This approach encourages policymakers and educators to integrate EE into anti-bullying strategies, recognizing it is potential to create safer, more supportive universities.

While EE policies offer significant promise, it is essential to acknowledge that they may not completely resolve the issue of bullying. Complementary interventions are likely necessary to address the full scope of the challenge. Nonetheless, the findings provide a strong foundation for further research, including longitudinal studies, to assess the lasting impact of EE on bullying prevention and overall student well-being.

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C : **C**onceptualization

M : **M**ethodology

So : **S**oftware

Va : **V**alidation

Fo : **F**ormal analysis

I : **I**nvestigation

R : **R**esources

D : **D**ata Curation

O : **O**riginal Draft

E : **E**diting

Vi : **V**isualization

Su : **S**upervision

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CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

DATA AVAILABILITY

The raw data of this article will be made available by the corresponding author [ER], on request.




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