# Loneliness, Social Support & Technology Use Among Older Persons in Singapore

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## Abstract

Singapore is a super-aged society with one in four citizens reaching 65 years and older by 2030. Studies on digital technology use in Singapore have found that about two thirds of older persons used technology though this varied across demographics (Visaria et al., 2023). Moreover, older persons in Singapore who owned fewer digital devices experienced greater social isolation (Tadai & Tan, 2023). The digital divide experienced by older persons worsened during the COVID-19 pandemic as they had poor access to digital solutions put in place to mitigate effects of lockdown measures such as on their mental health (Martins Van Jaarsveld, 2020). Currently, no known research has utilised a validated scale to examine the attitudes of older persons towards technology use in Singapore. This research provides preliminary descriptive results of a larger study that utilised the brief Senior Technology Acceptance scale (Chen & Lou, 2020), the De Jong Gierveld Loneliness Scale, and the Oslo Social Support Scale to examine older persons' acceptance of technology, loneliness as well as social support scores. Implications for practice and recommendations for future research are proposed to enhance the overall quality of life of older persons living in Singapore, taking into account limitations of this research.

*Keywords:* older person, technology use, loneliness, social support, quality of life

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## Introduction

Singapore is a super-aged society with an estimated one in four citizens being 65 years and older in 2030 (National Population and Talent Division et al., 2022). Although over 90% of the population own smartphones (Tadai & Tan, 2023), only two thirds of older persons in Singapore use technology, and this decreases to about a quarter of those aged 80 years and above (Visaria et al., 2023). The digital divide was also exacerbated by the COVID-19 pandemic where older persons most impacted by lockdown measures also had the poorest access to digital solutions (Martins Van Jaarsveld, 2020).

Although perceptions that older persons resist technology persist, research has found more positive than negative attitudes in terms of utilising technology and empahsised the importance of articulating the perceived benefits and usability for older persons to accept and adopt technology (Mitzner et al., 2010). It is also important to consider the perspective of older persons and how they might find using certain technologies more personally valuable rather than emphasizing how technologies may help execute tasks to benefit them (Nikou et al., 2020).

In the Singapore context, the National Steps Challenge (NSC) is a population level initiative that promotes physical activity and managed to involve and grow a significant following of older participants despite requiring them to both wear a fitness tracker and sync their activities with a mobile application (Chong, 2022; Choo, 2019; Health Promotion Board, n.d.). An evaluation of the NSC found elevated risks of physical inactivity among a significant proportion of older participants and illustrates how encouraging the adoption of such technologies could enhance their quality of life (Yao et al., 2022).

In addition to physical health, technology could also be harnessed to alleviate loneliness and improve the emotional health of older persons. According to a study published in 2021 conducted by the National University of Singapore, about 6% of older adults aged above 60 were socially disconnected, and this was in spite of about 86% of them living with others (Barrenetxea et al., 2021). Therefore, staying with others need not necessarily inoculate one from feeling disconnected. Social isolation, though different from loneliness, is associated with significant increases in the risk of dementia (e.g. Sundström et al., 2020), heart disease and stroke (e.g. Smith et al., 2021); while loneliness is strongly correlated with depression, anxiety and suicide (Salari et al., 2025; Shoib et al., 2023; Zhang et al., 2023). As social interactions increasingly shift from the physical to online spaces, such as with the pervasiveness of e-commerce and online transactions, the physical spaces where older persons used to interact most with people – “mum and pop” shops, markets, banks, post offices – are becoming less central to daily life, exacerbating feelings of alienation and isolation.

Currently, no known research has utilised a validated scale to examine technology use in Singapore and the reasons why older persons may or may not use technology, nor examined the interaction between the concepts of technology use, as well as the domains of loneliness and social support among older persons. This study is part of a broader study that sought to understand the factors that influence an older person’s willingness to adopt new technology can help society understand the unique circumstances and opportunities that may encourage them to use new technology and reap the potential benefits to their lives.

Hence, the objective of this study is to capture a snapshot of persons aged 60 years and older residing in Singapore based on their socio-demographics, technology use, loneliness and social

support, and answers the following research question: what are older persons' profile in terms of their sociodemographic, technology use, as well as loneliness and social support scores?

## Methodology

This research utilised an anonymous online quantitative survey administered via Qualtrics. The survey consisted of demographic questions, broad questions related to their use of technology (e.g. what technological devices they use and what do they use these for), as well as three validated scales.

First, this study utilised the brief 14-item Senior Technology Acceptance (STA) scale (see Chen & Lou, 2020) to examine the four dimensions of the brief STA scale (i.e. attitudinal beliefs, control beliefs, gerontechnology anxiety, and health conditions) in terms of older persons' acceptance of technology.

Second, the six-item De Jong Gierveld Loneliness Scale (DJGLS) was used to measure loneliness (see De Jong Gierveld & Van Tilburg, 2010; Gierveld & Tilburg, 2006), and third, the Oslo Social Support Scale (OSSS-3) was administered to ascertain level of perceived social support (see Kocalevent et al., 2018).

Upon approval from the SUSS IRB, the researchers recruited participants through their network of Social Service Agencies (SSA), Active Ageing Centres (AAC), and other organisations that serve or work with older persons, as well as via communication platforms such as WhatsApp. A total of 271 respondents completed the survey, and the data was analysed with SPSS version 29.0.1.0.(171).

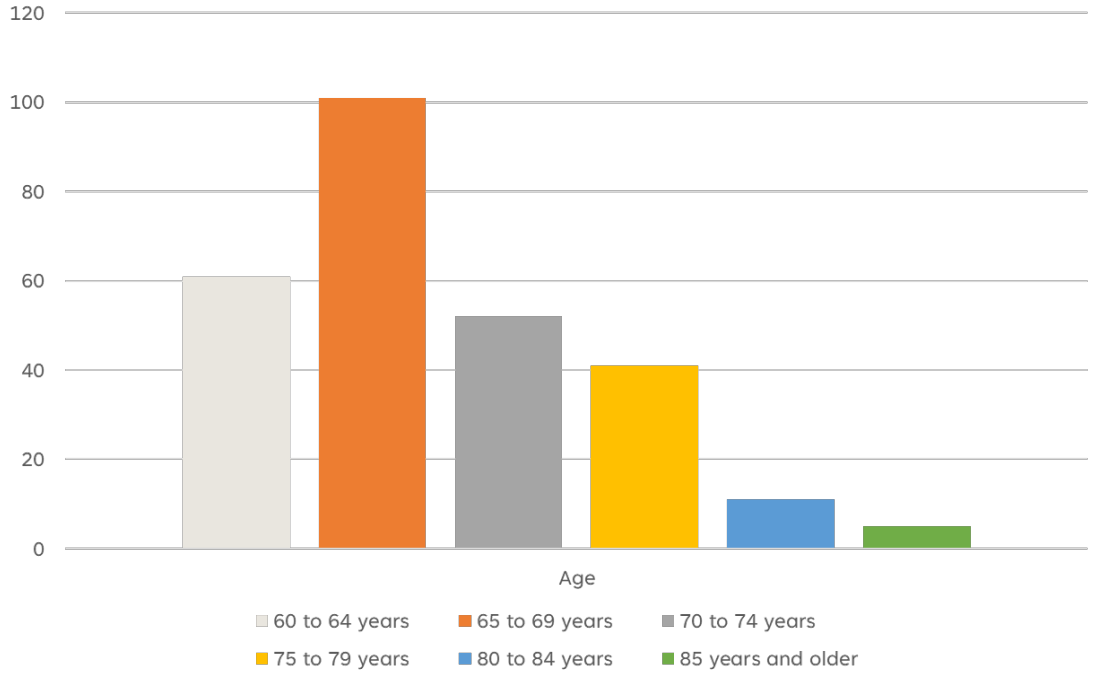
## Results

### Demographics

This section provides an overview of the demographics of the sample we obtained in this survey. Although 271 respondents completed most of the survey, not all questions may have been answered and the total tally for each demographic may vary.

The first demographic pertains to age (Figure 1). Almost 60% of the respondents were below 70 years of age (60–64: 22.5%, 65–69: 37.3%). While this is not surprising, it also means that the findings may not be representative of older groups, particularly those who are 80 and above as they formed just under 6% of the respondent pool (80–84: 4.1%, 85 and over: 1.8%).

**Figure 1**
*Respondents by Age*




In terms of gender, we have slightly more females than males, with the former constituting 57% of the sample, and the latter 43% (Figure 2). However, in terms of ethnicity, our sample was not representative of the older person population residing in Singapore (Figure 3). Over 90% of our respondents were Chinese, compared to about 75% of the Singapore population; Malays and Indians were also underrepresented in our survey as though they form 15% and 8% of the population respectively, they only accounted for about 2% and 4% of our sample (respectively).

One possible interpretation of this is that there may be a digital divide across different groups. However, it is more likely just to be an artefact of how our data was collected, which relied heavily on communication platforms such as WhatsApp. We also approached social service agencies, but there could have been a difference in how these services are utilised across groups, or more simply it could just be a lack of interest in participating in such surveys.

**Figure 2**
*Respondents by Gender*

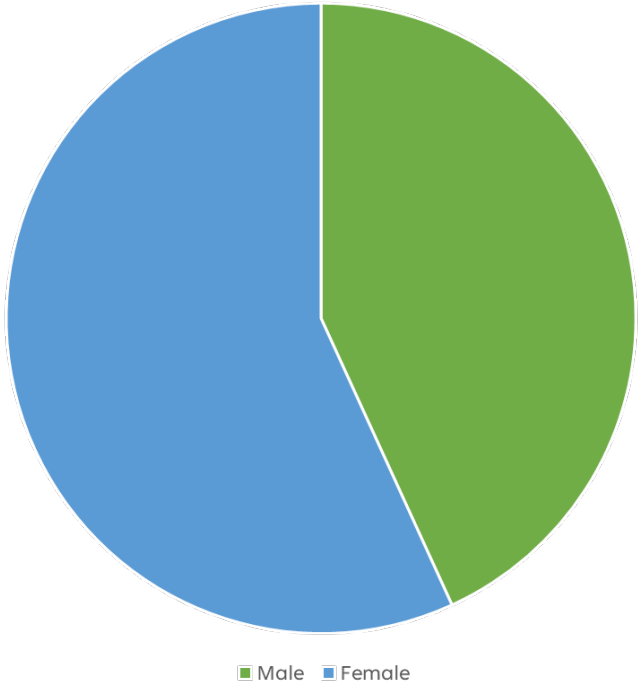
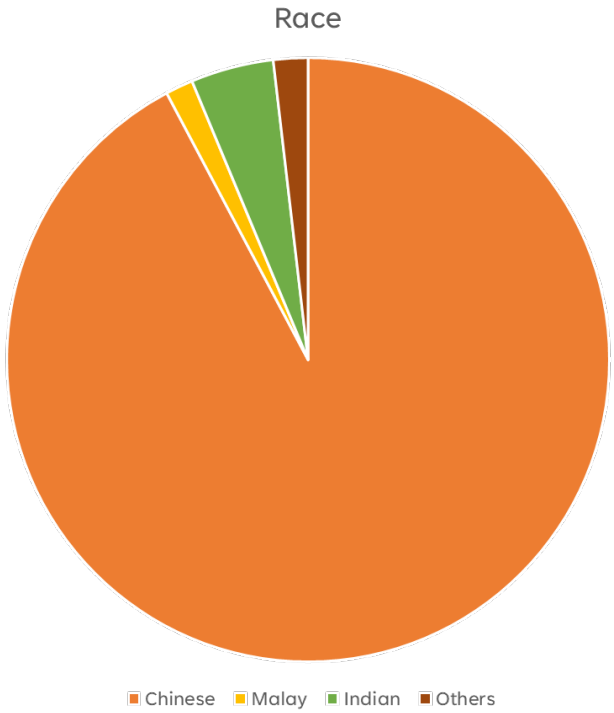


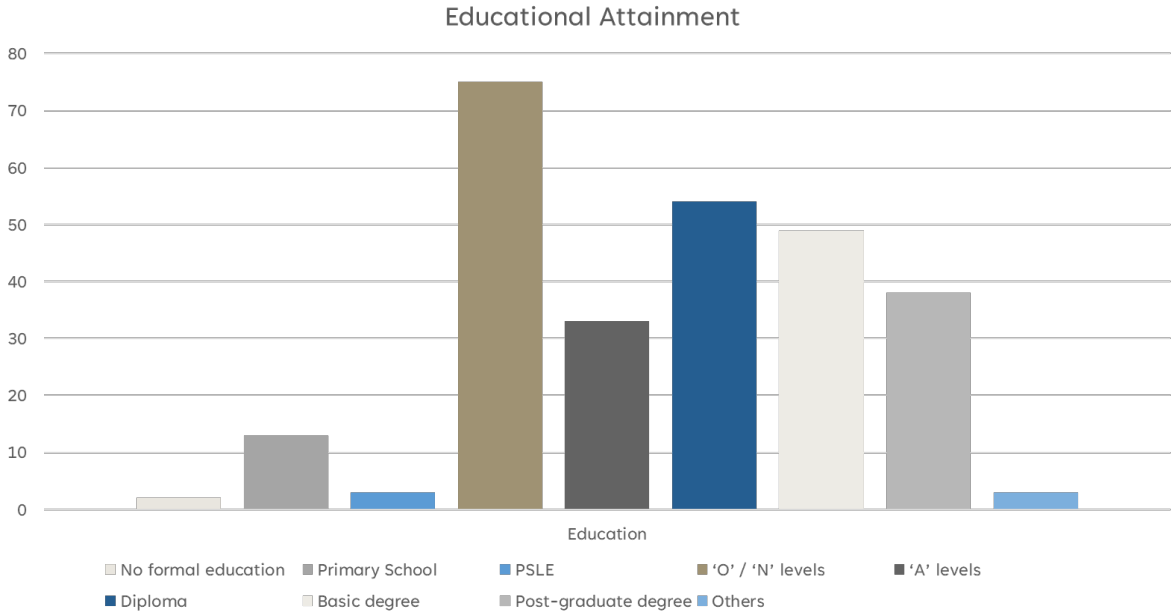

**Figure 3**
*Respondents by Ethnicity*




In terms of educational attained (Figure 4), there were a range of responses with those with PSLE and below forming about 7%, whereas GCE "O" or "N" levels formed the biggest group with about 28%. Surprisingly, those with at least a degree formed more than 30%, and similar

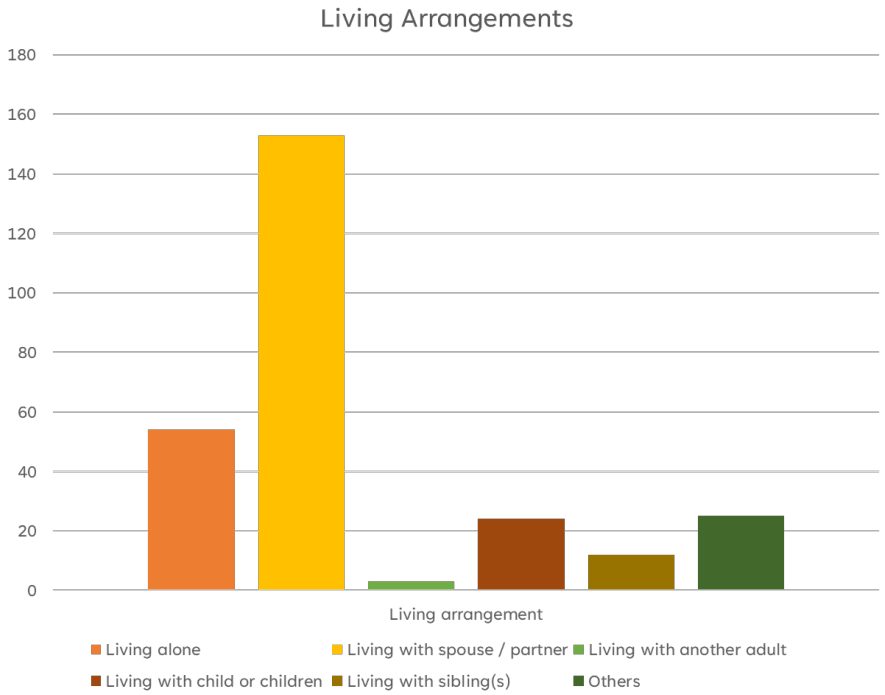
to ethnicity, appears to be a more specific segment of the population that are more highly educated who participated in this survey.

**Figure 4**
*Respondents by Educational Attainment*




Last, we present the living arrangements of our survey respondents – majority lived with their spouse or partner (56.5%), while a number also lived alone (19.9%) or lived with their children (8.9%). Interestingly, 14% indicated other arrangements such as living with their siblings (4.4%) as well as living with multiple groups (e.g. both children and spouse).

**Figure 5**
*Respondents by Living Arrangements*



## Technology Use

In terms of technological devices used (Figure 6), smartphones and non-smartphones were the most prevalent with 96% of respondents professing to using them. The second most prevent technological device was actually fitness trackers (55%); we postulate that this could be due to their participation in the National Steps Challenge in the Singapore context, which requires them to use a free fitness tracker as part of this initiative. Laptops and desktop computers are used by over half of respondents (53%), while usage of tablets/iPads, smart home devices (e.g. Smart TV), and smartwatches are less commonly used.

**Figure 6**

*Technological Devices Older Persons Use*

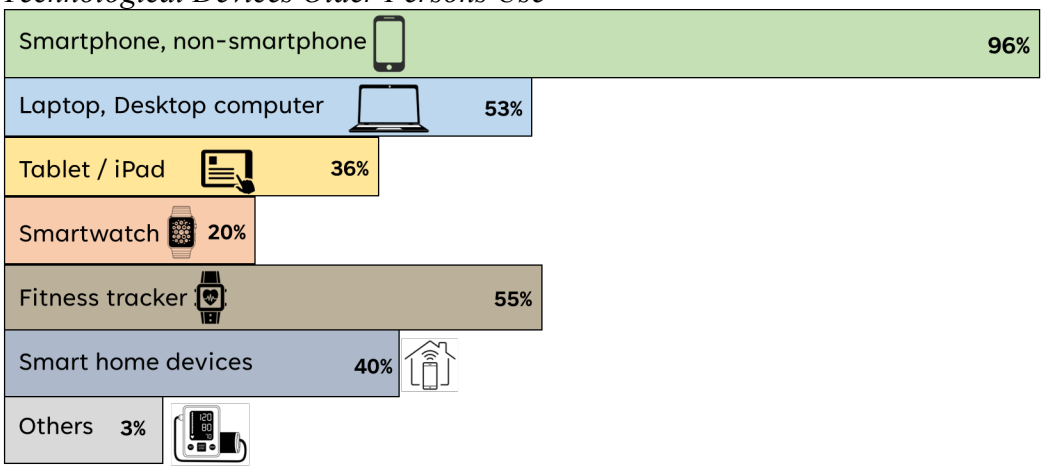
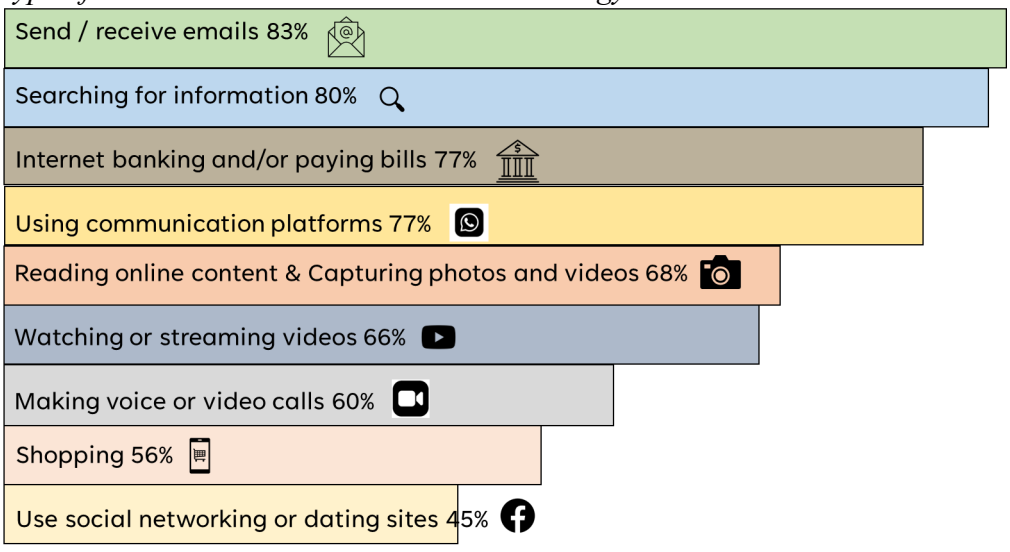



**Figure 7**

*Type of Activities Older Persons Use Technology For*




In terms of what our respondents use these technological devices for (Figure 7), the reasons were more varied. The top use of technology was for sending and receiving emails (83%), searching for information (80%), using communication platforms and internet banking and/or paying bills (both 77%). The high prevalence of the use of technology for financial transactions is interesting as the rates of usage in the population are generally lower compared to this study,

such as the prevalence of 57% found in a local study (Centre for Research on Successful Ageing, 2023), and could be due to the more educated profile of older persons in our study.

In terms of the Senior Technology Acceptance (STA) scale, respondents rated their response on a scale from 1 to 10, with a higher score is generally indicating more positive attitudes, except for gerontechnological anxiety where a higher score indicates higher anxiety about technology use.

14-item (see Chen & Lou, 2020) to examine the four dimensions of the brief STA scale (i.e. attitudinal beliefs, control beliefs, gerontechnology anxiety, and health conditions) in terms of older persons' acceptance of technology.

For "attitudinal beliefs", the older persons surveyed in our study generally had positive feelings towards the use of technology and perceived technology use to be a good idea (M = 8.11, SD = 1.71); this was the highest score among the four domains the STA scale measured. In terms of "health conditions" (age-related factors that impact technology adoption) and 'control beliefs' (how easy and comfortable they perceive the use of technology), older persons also had relatively positive scores, scoring a mean of 7.64 (SD = 1.41) and 7.65 (SD = 1.77), respectively. Finally, the mean "gerontechnological anxiety" score was moderate at around 5.11 (SD = 2.62), which though not high, was the lowest score among the four dimensions and indicates that some older persons still feel apprehensive, fearful or hesitant about using technology.

### Loneliness and Social Support

For the 6-item De Jong Gierveld Loneliness Scale, each item was rated on a four-point scale. First, in terms of social loneliness, our respondents generally reported not feeling like they lack social connections (M = 6.94, SD = 3.04). For emotional loneliness, the mean score was lower and meant that respondents did not think they lacked emotional intimacy with others (M = 4.05, SD = 1.67). The total loneliness mean score of about 11 (SD = 3.78) is also indicative that our respondents generally did not express feeling lonely. Except for social loneliness, lower scores are better meaning less lonely.

For the Oslo Social Support Scale, the mean social support score was 9.41 (SD = 2.49) which is fairly high. Approximately 32% of our respondents reported having poor social support, half of our respondents reported moderate support (50%), and about 18% of our sample reported strong social support.

## Conclusion

This quantitative study utilizing an online survey found that technology use among older persons in Singapore was generally high although this did vary somewhat depending on the type of technology as well as the type of activities they were used for. Moreover, we also found that older persons residing in Singapore had positive attitudes towards technology use, believed that technology was easy or within their capability to use, were healthy enough to use these technology, and had moderate levels of anxiety pertaining to technology use. In addition, the sample had low levels of loneliness and majority had moderate to high social support.

Together, these findings are consistent with more recent studies (e.g. Chen & Chan, 2014) and debunks the stereotype that older persons are resistant to the use of technology. However, one

key limitation of this study is that the sample obtained was unlikely to be representative of the broader older population, specifically in their ethnicity and educational attainment, and cannot be generalized to all older persons living in Singapore.

## Implications for Practice

The first implication of our study is that technology use among older persons can and should be harnessed to further improve their quality of life given the positive attitudes many older persons have towards technology. This can be done through different initiatives, similar to the National Steps Challenge, to improve their physical and emotional health, or increase their social capital.

The second implication is that the moderate levels of anxiety older persons have towards technology may still limit their use. This could be due to real or perceived barriers and understanding what these are could address the technology-induced anxiety and enhance the use of technology.

## Recommendations for Future Research

Following the second implication, a recommendation for future research to address this involves reaching out to a more representative sample to conduct a similar survey so as to ascertain their profile, patterns of technology use, as well as loneliness and social support scores.

Furthermore, conducting qualitative interviews to better understand older persons' anxieties about trying out new technology could help identify the real or perceived barriers that may hinder their use of technology, particularly those with the potential to improve their quality of life.

## Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that no AI or AI-assisted technologies have been used to generate, refine, or correct the content in the manuscript. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

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