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ACCESSIBILITY AND IMPACT OF THE ABUSE OF OPIOIDS AND MARIJUANA ON STUDENTS' ACADEMIC PERFORMANCE AND WELLBEING

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ABSTRACT

The abuse of opioids and marijuana among university students is a growing public health concern with far-reaching consequences. Yet, there is a dearth of research on the subject in Ghana. This study examined the accessibility, motivations, and impact of opioids and marijuana abuse on the academic performance and wellbeing of KNUST students. Drug Abuse Screening Test (DAST-10) and Ryff Psychological Wellbeing Scale (RPWS-18) were used to obtain data from a sample of students using a cross-sectional survey and convenient sampling method to investigate students' perceptions on ease of accessibility, motivations of use and associated correlates. Our findings showed that opioids and marijuana were readily accessible on campus and students had varied reasons for engaging in the use and abuse of these substances. A significant number of students used opioids for pain relief and peer pressure was a significant motive in the abuse of both opioids and marijuana. Students who abused opioids were also likely to abuse marijuana. Opioids misuse was significantly associated with poorer psychological wellbeing and academic performance. However, better academic performance was associated with two domains of wellbeing - mastery and sense of purpose. Implication of findings suggest a multifaceted approach to address opioids and marijuana abuse among students that include psycho-educational training campaigns focusing on self-efficacy to boost resilience and curb peer pressure influence in addition to initiation of context-specific measures to stem illicit drug sales on campus.

Keywords: Marijuana, opioids, university students, academic performance, wellbeing.

INTRODUCTION

Substance abuse, particularly among the youth, continues to be a global public health concern. Several theoretical and conceptual frameworks exist that help to explain abuse behaviour and inform on causes, progression, and intervention approaches. Misuse of substances like opioids and marijuana can be influenced by biological, psychological, social and environmental factors (Parlier-Ahmad and Martin, 2022). While there is no single theoretical or conceptual framework that is all encompassing and sufficiently explains etiology, the social-ecological conceptualization is suited for the investigation of misuse of opioids and marijuana in this study because of its multifaceted and bidirectional interactions. This theoretical framework posits that multiple factors influence substance misuse and operate at the intra and interpersonal levels as well as community and societal levels (Partelow, 2018). Individual or intrapersonal level factors include chronic pain management, history of substance use, mental health conditions (e.g. depression, poor self-esteem), and demographic risks (e.g. age and gender). Interpersonal level factors include peer pressure and peer influences, lack of social support or isolation.

Local environment and accessibility to these substances (e.g. availability of illicit substances, and laws or lack of prescription drug monitoring) reflect community and societal level influences. In this study, we examined ease of accessibility of substances (opioids and marijuana), and misuse by students and the relationship to their academic performance and general wellbeing. The age bracket of many university students (18-25) falls within the demographically high-risk group for the substance misuse (Parlier-Ahmad and Martin, 2022). Accessibility and abuse of substances among university students is a serious problem globally. In Ghana, students' mental health and wellbeing continues to be an important area of concern as student numbers on university campuses are exponentially increasing. Large student numbers can compound existing behavioural problems and increase risks in many areas of students' life. Related to students' mental health and wellbeing is the accessibility and misuse of opioids and marijuana as these are associated with negative effects on successful degree attainment (Amialchuk *et al*., 2024; Suerken *et al*., 2016), academic performance (Arria *et al*., 2015; Suerken *et al*., 2016), mental health and general wellbeing (Baiden *et al*., 2023; Namada and Karimi, 2021; Nkyi, 2014; McCabe *et al*., 2014a; Olowo, 2020). Marijuana is among the most commonly abused psychoactive substance among students and associated with negative effects such as dependence and poor academic and mental health consequences (Amialchuk *et al*., 2024; Baiden *et al*., 2023; (Shegute and Wasihun, 2021); Arria, *et al*., 2015).

Approximately 2.4% (141 million individuals) use the substance (Merikangas *et al*., 2010), with highest prevalence among young people between the ages of 18-25 years old (Rodriguez and Khenti, 2019). University students experiment with marijuana, for varied environmental and emotional reasons such as curiosity, peer pressure, approval or acceptance (Amadu *et al*., 2024; Fuseini *et al*., 2019), and a need to appear 'cool' or 'mature' (Namada and Karimi, 2021; Odejide, 2014); often combining it with other risky behaviours such as binge drinking (Yi *et al*., 2017; Peltzer and Pengpid, 2016). Abuse of opioids, such as tramadol, is also very common especially among males (Kyei-Gyamfi *et al*., 2024; Amadu *et al*., 2024; Elliason, 2018; Alhassan, 2022; Fagbe, 2019). Opioids, like morphine and codeine or tramadol, often used for the treatment of severe pain (Manglik *et al*, 2012), are mostly prescribed drugs.

Yet, they can be accessible to students through peers, friends, and illicit sources (Hudgins *et*

al., 2019; McCabe *et al*., 2017) and abused for various reasons including relief of emotional or physical pain, boost self-confidence (Foster *et al*., 2023), manage stress, and for recreational or drug experimentation purposes, or in response to peer pressure (Amadu *et al*., 2024; Peprah *et al*., 2020; Fuseini *et al*., 2019). The easy accessibility of these substances, their uses and misuse, is a growing global concern in the light of its negative impact on students' general wellbeing and successful completion of studies (Amialchuk *et al*., 2024; Barrett and Twycross, 2020; McCabe *et al*., 2019; Appiah *et al*., 2018; Subramaniam *et al*., 2019; Andor-Arthur *et al*., 2015). Opioids and marijuana abuse have been associated with impaired cognitive and emotional functioning such as decreased concentration, memory problems, sedation or drowsiness, irritability, social withdrawal, insomnia, and reduced decision-making abilities (Foster *et al*., 2023). Indicators of poor mental health conditions such as depression, anxiety, and suicidal behaviours have also been observed with opioids and marijuana misuse.

Young persons who abused marijuana and misused prescription opioids evidenced higher risk of attempting suicide in the Lappin (2023) and Baiden *et al*. (2023) studies. Opioid abuse has also been associated with significant safety and health risks including respiratory depression in cases of overdose (Yamanaka and Sadikot, 2013), addiction to other substances like alcohol (Jones and McAinch, 2015), and potential long-term health consequences. Abuse of tramadol, for example, has unpleasant side effects that range from vomiting, loss of appetite and emotional aloofness, to seizures (Fuseini *et al*., 2019). While much evidence exists worldwide to suggest that abuse of marijuana and opioids, such as tramadol, have negative consequences on the academic performance, mental health, and psychological wellbeing of young adults like university students (Amiachulk *et al*., 2024; Foster *et al*., 2023; Boden and Day, 2023; Shegute and Wasihun, 2021; Namada and Karimi, 2021; Yurasek *et al*., 2020; Fuseini *et al*., 2019), there is a dearth of research on the subject in Ghana. Specifically, there are not many studies that have examined the prevalence and impact of substance abuse on the mental health and wellbeing of university students. The few existing studies have examined prevalence and motivation or facilitators to the drug menace among the youth in Ghana (for example, Kyei-Gyamfi *et al*., 2024; Amadu *et al*., 2024) but have not conjointly examined accessibility, motivation, and the associated impact of opioids and marijuana abuse on academic performance and wellbeing among university students.

Therefore, this study aimed to bridge the gap by simultaneously examining these using sampled students of the Kwame Nkrumah University of Science and Technology (KNUST). We believe that insights gleaned from this research will guide context-specific response interventions to combat the menace of substance abuse among students.

Study objectives

Objectives of this study were to examine: 1) students' perceptions on ease of accessibility of opioids and marijuana; 2) motivation for use; and 3) relation of abuse to academic performance and wellbeing.

MATERIALS AND METHODS (METHODOLOGY)

Methodology and Study Design

A cross-sectional design was deemed efficient and appropriate for this study to provide a clear picture and transactional view of the current status on the abuse of opioids and marijuana among students on the Kwame Nkrumah University of Science and Technology (KNUST) campus. Cross-sectional

design is useful for assessing prevalence and in an exploratory correlational research, such as the current study, it helps to identify associations or patterns that might warrant further investigation without needing to track changes over extended period of time. Furthermore, it is efficient, scalable, and able to provide insightful descriptive data that inform the generation of hypothesis for future research. For a cross-sectional study with a large population, and a 95% confidence level, the sample size was estimated using this formula: $n = Z^2 . p. (1-p)/E^2$; where Z = z-score for the confidence level (1.96 for 95%), p = expected proportion (0.5), and E = margin of error (0.05). The calculation showed that an approximately 384 participants would be desirable. However, a total sample size of 235 obtained for this study, at a 95% confidence level (and p of ±0.5%), is deemed sufficient and acceptable (Cochran (1977). Convenient sampling method was used to solicit the participation of KNUST students who were willing to participate in the study through various means of contact.

Setting

The Kwame Nkrumah University of Science and Technology (KNUST) is one of the four public universities in Ghana with a student population of approximately eighty thousand and offers varied undergraduate, graduate, and postgraduate programs in many disciplines. Operating on a collegiate system, the university is organized into six colleges namely; College of Agriculture and Natural Resources (CANR), College of Art and Built Environment (CABE), College of Humanities and Social Sciences (COHSS), College of Engineering (COE), College of Health (COHS), College of Science (COS). Though not in equal numbers, there were students from each of the colleges who participated in the study.

Participants and Procedures

Students of the KNUST were conveniently sampled to participate in the study using student platforms, halls of residences, and classroom settings. Participants were predominantly undergraduate students pursuing varied academic programs and affiliated with the various colleges of the university. Before administration of the questionnaire, adequate information on the aim and procedure of study were explained to participants; and after addressing any concerns or questions, students who were willing to participate in the study voluntarily consented by signing a consent form. Questionnaire was digitized into a google format for ease of administration and completion by students. Participants' responses were devoid of any identifying information to ensure anonymity and confidentiality.

Measures

In addition to questions on students' demographic characteristics such as age, gender, program of study, college affiliation, and Cumulative Weighted Average (CWA), pre-existing instruments for assessing substance abuse and wellbeing with known psychometric properties of reliability and validity, and cross-cultural use suitability, (Johnson, *et al*., 2024; Shirinbayan *et al*., 2020; Sakuraya *et al*., 2020; Peters *et al*., 2015; Evren *et al*., 2013; Kafka and Kozma, 2002) were used. The Drug Abuse Screening Test (DAST-10) was slightly adapted for use in this study.

For example, the item "does your spouse or parents ever complain about your involvement with drugs"? was modified to "does your roommate or friends ever complain about your involvement with drugs"? Likewise, the question "have you neglected your family because of your use of drugs" was changed to "have you neglected your studies because of your use of drugs"? Respondents receive 1 point for every "yes" answer with an exception

for the item that assesses ability to cease usage ("are you always able to stop using drugs when you want to?") for which a "no" receives 1 point. The degree of problems related to drug abuse is reflected in total scores. A zero total score indicates no problem with drug abuse. Total scores between 1-2 is low, 3-5 is moderate, 6-8 is substantial and 9-10 indicate severe level of problems associated with drug abuse. Psychological wellbeing was assessed with the short version of the Ryff Psychological Well-being Scale (RPWS). The RPWS is a measure of psychological wellbeing which consists of six core dimensions of self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. It consists of 18 items on which respondents rate themselves on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Subscale scores sum respondents' answer to the subscale's items. Higher scores reflect higher levels of psychological wellbeing.

Data analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 27. Descriptive statistical analysis was employed to describe participants' demographic characteristics and to analyze variables of interest. Frequencies were used to delineate ease of accessibility, motivation, and severity of problems associated with opioids and marijuana abuse. Additionally, non-parametric and bivariate correlational analysis and multiple regression were employed to examine the relationship between the abuse of substances and academic performance and wellbeing.

Ethical consideration

Ethical approval for the study was sought and obtained from the Committee on Human Research Publication and Ethics (CHRPE) of the KNUST (CHRPE/AP/839/23). Anonymity and confidentiality of participant's information were ensured and participation was voluntary without any form of coercion or reward.

RESULTS AND DISCUSSION

A total of 235 students participated in the study. These were mostly undergraduate and Ghanaian students. There were more male (153, 65.1%) participants relative to females (82, 34.9%) with majority of them being within the age range of 21-24 years old (Mean = 21.37; SD = 2.60). Though not of equal numbers, there were students from all six colleges with those from the college of engineering and college of health science predominating. Approximately 68% (161) of the participants provided information about their current CWA. Those who could not provide the information were mostly undergraduate students of colleges where information on CWA had not been released as at the time of the study. Reported CWAs ranged from 48 to 82 (Mean = 65.98; SD = 7.56). Most participants were single and not in a relationship (185, 78.7%). In terms of place of residence, students living on campus (105, 44.3%) and those living off campus (130, 55.3%) were almost equal in number. Demographic characteristics of students are presented in Table I.

Table I: Demographic Characteristics of Participants

Characteristics		Number of respondents	Percentage
Gender	Male	153	65.1%
	Female	82	34.9%
Age	17 – 20	92	39.1%
	21 – 24	126	53.6%
	25 and above	17	7.2%
Relationship status	Not in a relationship	185	78.7%
	In a relationship	49	20.9%
	Married	1	0.4%
College	College of Agric and Natural resources	8	3.4%
	College of arts and built environment	17	7.2%
	College of humanities and social sciences	28	11.9%
	College of engineering	89	37.9%
	College of science	36	15.3%
	College of health science	57	24.3%
Year of study	Year 1	76	32.3%
	Year 2	24	10.2%
	Year 3	90	38.3%
	Year 4	43	18.3%
	Year 5	2	0.9%
Place of residence	On campus	105	44.7%
	Off campus	130	55.3%
International student?	Yes	12	5.1%
	No	223	94.9%

Table II: Perception of Ease of Accessibility of Marijuana and Opioids

	Marijuana	Opioids
Easy	21.3% (50)	16.2% (38)
Very Easy	29.8% (70)	33.6% (79)
Difficult	3.8% (9)	5.5% (13)
Not sure	45.1% (106)	44.7% (105)

Table III: Motivation for Use of Substances

	Marijuana	Opioids
Reasons for Use		
Pain Relief *		57.0% (134)
Recreation/Relaxation	3.4% (8)	6.0% (14)
Curiosity/Experimentation	4.3% (10)	3.8% (9)
Peer Pressure	17.9% (42)	19.1% (45)
Manage Stress	4.3% (10)	2.6% (6)
Multiple Reasons	69.4% (163)	67.7% (159)

*pain relief was an option only for opioids

Table IV: Degree of Problems Associated with Drug Abuse

Score Range	Degree of Problems	Marijuana	Opioids
0	No problem reported	48.9% (115)	51.5% (121)
1-2	Low level	35.3% (83)	34.9% (82)
3-5	Moderate level	6.8% (16)	3.5% (8)
6-8	Substantial level	6.8% (16)	6.8% (11)
9-10	Severe level	2.1% (5)	3.4% (8)

Accessibility, Motivation, and Severity of Problems Related to Abuse

In the assessment of students' perception of the ease of accessibility (opioids and marijuana), as shown on Table II, their reports showed that both marijuana and opioids are easy or very easy to obtain; suggesting that these substances were readily available on campus. Although some could not ascertain the ease of accessibility, only very few students indicated that the substances could be obtained with difficulty.

Participants also indicated possible sources through which both opioids and marijuana could be obtained. A good number of students reported that both marijuana (45.1%, 116) and opioids (28.9%, 68) could be obtained through illicit purchases from dealers or shared by friends. For both types of substances many (50.6%, 119) disclosed multiple sources (e.g. from peers, illicit purchases, online purchase, and medical prescription) through which they obtained them. Only a few (5.1%, 12) students were uncertain about means of accessing opioids and marijuana on campus. It was interesting to observe that in this study, a few students (9, 3.9%) admitted being illicit dealers of substances (marijuana and opioids) themselves. In examining students' motivation for engaging in substance use and abuse, we found that majority of them provided multiple reasons that included peer pressure, stress or pain relief, curiosity and for recreational purposes. Besides combined reasons, peer pressure was the single most motivating factor in both marijuana and opioids abuse and students who abused opioids, such as tramadol, primarily did so to relief pain. Table III presents detailed findings on motivations.

We further examined the severity of problems associated with drug abuse among students (Table IV) by examining range of total scores. Though many students reported no problems with drug abuse, a good number of them showed low and moderate levels of problems associated with drug abuse. A few others showed a worrisome substantial and severe levels of problems related to drug abuse; and reported negative experiences included inability to concentrate, memory loss, confusion, agitation, and restlessness.

Academic Performance and Wellbeing

The relationship of abuse of opioids and marijuana with academic performance was examined with a non-parametric correlational analysis. Significant negative correlations were found between CWA and abuse of opioids and marijuana indicating that increase in substance abuse was associated with decrease in CWA ($r = -.34$, $p<0.01$; $r = -.31$, $p<0.01$ for opioids and marijuana respectively); a finding suggesting that the academic performance of students who abused these substances was negatively impacted (also see Table V). A parametric bivariate correlation was performed to examine the relationship of psychological wellbeing and substance abuse (opioids and marijuana). Results revealed a significant negative association between opioids abuse and wellbeing ($r = -.14$, $p<0.05$). Correlation between marijuana abuse and wellbeing, though negative, was not significant ($r = -.11$, $p>0.05$).

Both findings suggest that greater substance abuse (particularly opioids, given significance) is associated with poorer psychological wellbeing. Furthermore, students who abused opioids were also more likely to abuse marijuana as evidenced by a significant positive correlation ($r = .89$, $p<0.01$). In a bid to explore what aspects of psychological wellbeing influenced academic performance of students, we examined the relationship of Cumulative Weighted Average (CWA) with the specific domains of wellbeing (i.e. autonomy, mastery, personal growth, good relationships, sense of purpose and self-acceptance). Results showed positive significant findings in two domains – mastery and a sense of purpose ($r = .17$, $p<0.05$; $r = .16$, $p<0.05$ respectively); suggesting that these aspects of psychological wellbeing, a sense of mastery or self-efficacy and goal directedness are linked with academic success.

Table V: Multiple Regression of Students' CWA and Impact

	Unstandardized Coefficients		Standardized Coefficients		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
Are you a dealer of a substance (e.g. marijuana, opioids such as tramadol, codeine, morphine, fentanyl)?	-.253	.514	-.033	-.493	.623
Have you used drugs other than those required for medical reasons? (e.g. marijuana, opioid such as tramadol, codeine, morphine, fentanyl)	1.025	.313	.276	3.276	.001
Have you neglected your studies because of your use of opioids (e.g. tramadol, codeine, morphine, fentanyl)?	-.456	.483	-.096	-.944	.346
Have you personally experienced any negative effects on academic performance after abusing opioids (e.g., tramadol, codeine, morphine, fentanyl) or marijuana?	1.060	.471	.220	2.252	.025

Dependent Variable: What is your current CWA

DISCUSSION

This study examined students' perception of ease of accessibility of opioids and marijuana, motivation for use, and impact on academic performance and psychological well-being. Results showed that both type of substances are readily accessible on the KNUST campus and can be obtained from varied sources including peers, illicit purchases from dealers, and prescription from health professionals.

The perception of a good number of students that opioids and marijuana are easily accessible on the campus is consistent with research that indicate that university campuses are conducive environments for drug availability (McCabe *et al*., 2007) and

reinforced by peer networks and campus social norms (DeJong *et al*., 2009). Very few students perceived that access to substances on campus is difficult.

While this number (3.8%, 9 and 5.5%, 13 for marijuana and opioids respectively) might seem insignificant, it may reflect a perception of measures undertaken by university leadership to restrict drug availability on campus or students own stance to refrain from engaging in substance-related activities. Access to drugs on campus is intertwined with sociocultural and environmental factors of proximity to peers and formation of new social networks that shape perceptions and substance related behaviours (Arria *et al*., 2011). The finding that a significant number of participants were uncertain about the accessibility of opioids and marijuana on campus is also notable.

While the uncertainty may be attributable to naivety or lack of direct exposure and experience with substances by participants, many of whom were first year undergraduate students, it may also indicate the clandestine nature of drug availability information and consistent with a study which highlighted the challenges of accurately assessing drug accessibility due to the secret nature of drug transactions (Palamar *et al*., 2015). A significant motivation for engaging in the use and abuse of these substances was peer pressure; a finding corroborated by previous studies (Amadu *et al*., 2024; Namada and Karimi, 2021; Fuseini, *et al*., 2019). Fagbe (2019) found that peer groups and friends are the main sources of information on where to obtain substances. Peers influence in the use and misuse of opioids and marijuana underscores the importance of psycho-educational initiatives that boost students' emotional maturity and capability for own decisions and choices and consequently reduce negative peer pressure impact. Confidence and self-efficacy enhancing interventions are critical in the light of findings that suggest a synergistic and motivating interplay of peer pressure and poor self-confidence (Foster *et al*., 2023) in the start and continuation of substance abuse. Students indication that medical prescriptions is a source of obtaining opioids merits attention and underlines the dual role of healthcare providers in both therapeutic prescription and potential enabling of misuse. A significant number of participants indicated pain relief as motivation for use of opioids. While the medical professionals play an important role in opioid prescription for pain management, this can inadvertently contribute to the opioid epidemic (Dowell *et al*., 2016). It is noteworthy that legitimate medical use and misuse both fall within this category and warrant further investigation to delineate enabling factors.

Our findings also revealed that abuse of opioids and marijuana had negative associations with academic performance and psychological wellbeing; suggestive of deleterious effects. A disturbing finding of this study was the significant positive correlation between abuse of opioids and marijuana indicating that abuse of opioids was associated with abuse of marijuana; and suggest that substance abuse behaviour once initiated is likely to escalate to multiple abuse. Poor emotional and psychological functioning among users of illicit substances is well established (Foster *et al*., 2023).

Our findings, endorsing this, showed that greater substance abuse (particularly opioids) was associated with poorer psychological wellbeing among students. Students who abused substances reported negative symptoms like loss of memory and poor concentration, agitation, insomnia, irritability and restlessness consistent with previous studies reporting substance induced emotional (Baiden *et al*., 2023; Yurasek *et al*., 2020; Fuseini *et al*., 2019) and memory impairments (Herman and Duka ,2019). Substance abuse

would distract from academic pursuits and increase engagement of negative behaviours like skipping lectures with resultant reduction in academic performance and grade point average (Arria, *et al*., 2015).

Students who engaged in frequent use of marijuana, especially in the first years of university, have shown greater risk of lower academic performance than non-users in a previous study (Suerken, *et al*., 2016); and marijuana abuse significantly reduced the likelihood of completing and attaining academic degree (Amialchuk *et al*., 2024). A good percentage of students (approximately 50%) obtained substance abuse total scores within the range that necessitates some intervention.

According to the DAST-10 recommended actions, persons evidencing low and moderate levels of problems need monitoring and further investigation while those within the substantial and severe levels require intensive assessment and assistance. This is a cause for concern. Our study findings underscore the urgent need for early and targeted interventions, such as awareness creation campaigns (of negative impact of drugs), psychoeducational programs for confidence building and self-efficacy, counselling services, student mentoring, monitoring of social gatherings that generate peer pressure, as well as stringent measures to curb the menace of substance abuse on university campuses. This is imperious given the detrimental impact of substance abuse on academic performance and wellbeing of students; and buttressed by our finding that mastery and sense of purpose (domains of wellbeing) are positively and significantly associated with academic performance. A robust self-confidence or efficacy, coupled with goal directedness, would advance students' academic success.

CONCLUSION

Substance abuse among young people is a growing menace of public health concern. This study investigated university students' perception of accessibility of opioids and marijuana, their reasons for use, and the impact it has on their academic performance and psychological wellbeing.

Our findings show that abuse of opioids and marijuana, which are readily accessible on campus through various means, has detrimental effects on academic performance and wellbeing of students. The small sample size of this study is a limitation which cautions generalization of results. This notwithstanding, the findings are insightful and emphasize the need for novel interventions to curb the frightening problem of substance abuse among university students

CONFLICT OF INTEREST

None.

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Statements and Funding Declarations

Study was self-funded

Statement on Human Subjects Participation

The study was conducted with human subjects according to the Helsinki Declaration, with full respect for the principles of informed consent and assent, the autonomy of participants, including their right to withdraw at any time. An ethical clearance was obtained from the CHRPE of the KNUST.

Data Availability Statement:
The datasets generated and analysed during the current study can be made available on request of the corresponding author.

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