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Psychological well-being and its effect on suicidal behavior among medical students in Madinah

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ABSTRACT

Psychological well-being (PWB) and its relation to suicidal behaviour among medical students are growing concerns in Saudi Arabia. Medical students experience high psychological distress. And they are more prone to develop suicidal ideation. *Objectives*: This research aims to measure the PWB of medical students in Madinah and assess its impact on the development of suicidal behaviour. It also examines whether preclinical or clinical years are more likely to develop suicidal behaviour. It evaluates other factors contribution. The study was conducted using a cross-sectional method involving 308 medical students from Madinah in Saudi Arabia. Ryff's Scale measured PWB, while Questionnaire-Revised (SBQ-R) assessed suicidal behaviours. SPSS, ANOVA tests and descriptive statistics analysed the data. Results In a total of student responses and showed no correlation between PWB and suicidal behaviour. Female risk group percentage is higher than male in addition, same as high GPAs students. Clinical year students also had higher suicidal thoughts. *Conclusion*: Our findings show that suicidal behaviour was higher among females, clinical years and higher GPAs students. Therefore, we suggest offering mental health consultations to them.

Keywords: Psychological Well-Being, Medical Students, Suicidal Ideation, Mental Health, Saudi Arabia.

1. INTRODUCTION

Psychological well-being (PWB) and its relation to suicidal behaviour among medical students are growing public health concerns in Saudi Arabia (Aboalshamat et al., 2015). The PWB is about people having a life they can feel good about and function efficiently at the same time (Huppert, 2009). It is a significant issue because it's carriers an effect on the physical health.

The World Health Organization (WHO) characterised health as "a condition of full physical, emotional and social well-being, rather than simply the absence of disease or infirmity" (Huppert, 2009). Experiencing negative

emotions (failure, anger and grief) is a normal process in everyone's life, but how individuals can deal with stress throughout their entire life can significantly affect their mental well-being (Huppert, 2009). Mental issues prevention needs a sensible plan of action, it is important to identify sub-populations who have a higher risk to develop suicidal behaviour. Based on (Dyrbye et al., 2014) medical students are considered as a high-risk group for psychological distress comparing to their peers. Numerous personal and professional factors contribute to distress, which might include the significant amount of information that needs to be sustained, the competition between students, their concern for their grade point average (GPA,) and failure (Aboalshamat et al., 2015). In addition, students in medical fields are subjected to greater social demands and pressure. This issue should be taken seriously as it could potentially impact their mental, physical health and academic outcomes (Aboalshamat et al., 2015).

Make them more prone to morbidities (e.g., depression and anxiety) which are considered associated factors of suicidal ideation (Pospos et al., 2018). Medical students' wellbeing is of extreme importance, they are the doctor's future and the key to patient care and well-being of the society in decades to come. Many studies conducted from around the world have shown that the rates of their low psychological well-being become high. So, we must concern about their psychological well-being (Torales et al., 2019). In 2018, there were more than 48000 cases of suicides in US. Suicide is the second most common cause of death in adolescents (Fazel and Runeson, 2020).

Suicidal ideas or thoughts, it's a general term describing a range of wishes, contemplations and preoccupation with death and suicide, as suicidal definition (Santos et al., 2017). It's also defined as a complex phenomenon and indicates underlying mental health issues that are influenced by various factors (Pereira and Cardoso, 2015). 6.0% to 43.0% of medical students were found to have suicidal ideation the rates varies among studies the early discovery of the problem and the implementation of appropriate therapies to minimize its severity (Coentre and Góis, 2018). Unfortunately, these rates are increasing in the last years and many do not seek treatment (Horwitz et al., 2020). Suicide is a consequence of mental health issues, which is difficult to identified early because some barriers to seeking mental health care include stigma, confidentiality, potential negative impact on their future careers, cost and time constraints (Pospos et al., 2018).

Several factors are known to predispose to a greater susceptibility to develop suicidal behaviour, including individual factors such as stress, family history of mental health disorders, burnout, sleep disturbances, toxic interpersonal relationships and academic life (Desalegn et al., 2020). These factors have increased in the preclinical years when the coursework units are more the oretical. The literature supports this, with evidence that medical students in their early years were more distressed than students in their clinical years (Aboalshamat et al., 2015). Additionally, it has been documented that a high rate of suicidal ideation was found among females than in male students (Coentre and Góis, 2018).

Suicidal behaviour is an avoidable concern through its understanding from a multi-factorial perspective, its early detection and implementation of efficient intervention programs. Even though suicidal behaviour among medical students is a major concern, there is a lack in previous studies that documented consolidated magnitude in medical students in Madinah (Fazel and Runeson, 2020).

Accordingly, it becomes essential to identify the rates and risk factors that are closely associated with its prevalence. Therefore, the study is designed to:

Estimate PWB in medical students in Madinah

Evaluate the PWB and its probable association with suicidal behaviour among medical students.

Assess the possible factors that may be associated with medical students developing suicide.

To explore if suicidal behaviour is influenced by gender and academic performance.

2. METHODOLOGY

This cross-sectional study involves the medical students from Al-Madinah in Saudi Arabia conducted from May 2021. Two questionnaires were used to measure the PWB and the second to assess suicidal behaviour. The PWB was measured by Ryff's Scales, with six sub-scales over 18 items. Suicidal behaviour was calculated by the Suicide Behaviors Questionnaire-Revised {SBQ-R), which has four items in addition to the socio-demographic finding of the participants. Ethical approval for this research was taken from the Umm Al- Qura University (UQU). Data was collected in January and February 2022 using google form links sent by WhatsApp messages to the students. The participants were asked to answer the questionnaire. The questionnaire took about 5 to 10 minutes to be answered. All participants signed the consent form or agreed to the electronic consent agreement before answering the questionnaires.

Our population consisted of medical students in Al-Rayan colleges which were 547 medical students (367 female and 180 male), and at Taibah University were 800 medical students (400 male and 400 female). Therefore, the estimated sample size was 301

students. The sample size was calculated based on the confidence level of 95%, a significant margin of 5% and a population proportion of 50%, using sampled size calculated net. Statistical Package analyzed data for the social sciences version 26 software, and the p-value less than 0.05 is considered significant.

For continuous variables, a t-test used to estimate differences in means between the groups. A chi-square test was used to measure differences in proportions of the categories for categorical data. Descriptive statistics were used to describe the characteristics of a variable's mean, standard deviation, or frequency. Finally, ANOVA was used to observe the variance data into for an additional test. Ethical Consideration and Consent the biomedical Committee of Research Ethics at Umm Al-Qura University faculty of medicine approved this study the number is (HAPO-02-K-012-2022-05-1087). All participants are anonymous with complete confidentiality, prior to answering the questionnaire all of them agreed to electronic consent. The data will not be disclosed by other parties only for the usage of this research.

3. RESULTS

Demographic characteristics of respondents among medical students

A total of 308 medical students took part in the current study, with a 22% response rate. 87 (28.2%) of the participants were male, while 221 (71.8%) were female. 112 (36.4%) of enrolled medical students were in preclinical levels while 196 (63.6%) were in clinical years of their medical study.149 (48.4%) of enrolled students achieved a GPA above 4.50, 75 (24.4%) had a GPA ranged (3.25-4.25) and (4.26-4.50), while 9 (2.9%) had a GPA less than 3.25. About 164 (53.2%) of the participants were 22-24 years old, while 125 (40.6%) were 19-21 years old and 19 (6.2%) were aged above 24 years (Table 1).

Table 1 Demographic data of the participants (number and percentage) among medical students (n= 308).

Variable	No. (%) of participants) n=308)
Gender	
Male	87 (28.2%)
Female	221 (71.8%)
Academic year	
Preclinical	112 (36.4%)
Clinical	196 (63.6%)
GPA	
<3.25	9 (2.9%)
3.25-4.25	75 (24.4%)
4.26-4.50	75 (24.4%)
>4.50	149 (48.4%)
Age	
19-21	125 (40.6%)
22-24	164 (53.2%)
>24	19 (6.2%)

Scores of PWB and SBQ-R among medical students

PWB score mean was 86.72 with SD of 11.62, ranged from a minimum value of 44 to maximum of 115. The means and SD of PWB sub-scales personal growth (16.37 ± 3.09) environmental mastery (13.47±2.78) autonomy (14.31± 2.99) purpose in life (14.18 ± 3.52) positive relations with others (13.16 ± 3.45) self- acceptance (15.28 ± 3.27) respectively. The mean of the Suicide Behaviours Questionnaire-Revised (SBQ-R) was 5.1558 with (SD of 3.1398), ranged from a minimum score of 33 to a maximum score of 17 (Table 2).

Table 2 scores (Mean and SD, minimum and maximum) of Psychological Well Being (PWB) and Suicide Behaviors Questionnaire-Revised (SBQ-R) among medical students (n= 308).

	Minimum	Maximum	Mean and SD
Psychological wellbeing	44	115	86.7297, 11.61613
Autonomy scale	5	21	14.3127, 2.99849
Environmental mastery subscale	4	21	13.4731, 2.78774
Personal growth subscale	4	21	16.3769, 3.09256
Positive relations with others subscale	5	21	13.1654, 3.45176
Purpose in life	4	21	14.1846, 3.52659
Self-acceptance	5	21	15.2808, 3.27062
SBQ-R	3	17	5.1558, 3.13980

The prevalence of lifetime suicide ideation and/or attempts, among medical students

The lifetime prevalence of suicide ideation and/or attempts in medical students this study demonstrated that (35.7%) medical students experienced suicide ideation while 4.5% experienced suicide attempts.

Our results revealed that about 198 students (64.3%) of participants did not exhibit any suicidal behaviour and so can be referred to as a non-suicidal group. Whereas 31.2% of enrolled students suffered from suicide ideation, of whom 63 students (20.5%) experienced ideation just a brief to pass through, about 33 students had a suicide plan, whether they didn't try (7.5%) or really wanted to die (3.2%) (Table 3). Our results displayed 4.5% frequency rate of suicidal attempt of the students who enrolled in this study whether they attempted despite an absent desire to die (n= 6 students, 1.9%) or really hoped to die (8 students, 2.6%) (Table 3)

Table 3 The prevalence (number, percent) of the lifetime suicide ideation and/or attempts, among medical students (n= 308)

Questions	Frequency (%)
Never	198 (64.3%)
It was just a brief passing through	63 (20.5%)
I have had a plan at least once to kill myself but didn't try to do it	23 (7.5%)
I have had a plan to kill myself and really wanted to die	10 (3.2%)
I have attempted but didn't want to die	6 (1.9%)
I have attempted to kill myself and really hoped to die	8 (2.6%)
Total	308 (100%)

The suicidal ideation frequency assessment over the last 12 months among the students are 209 students (67.9%) who never thought about killing themselves, 45 students (14.6%) who thought rarely/once, 30 students (9.7%) who thought twice, 9 students (2.9%) who had thought 3-4 times and 15 students (4.9%) who often thought about suicide.

In the assessment of suicide attempt threat, students who reported NO are 240 students (77.9%), students who reported once despite their willingness to die or not are 53 students (17.2%) and students who reported more than once despite their willingness to die or not are 15 students (4.9%). In the frequency of self-reported future likelihood of suicide, 225 students (73.1%) reported never, students who reported no chance at all, rather unlikely, unlikely, likely, rather likely and very likely, 23(7.5%), 21(6.8%), 16(5.2%), 13(4.2%), 7(2.3%) and 3(1%) respectively.

Table 4 Frequency of suicidal ideation among the students

Academic year	Never	Rarely (once)	Sometimes (two times)	Often (3-4 times)	Very often (5 or more)	Total
2nd preclinical	39	8	8	1	4	60
3rd preclinical	36	8	5	2	1	52
4th clinical	56	11	8	0	4	79
5th clinical	25	5	0	2	3	35
6th clinical	53	13	9	4	3	82
Total	209	45	30	9	15	308

Factors linked with suicidal ideation and suicide attempts

We identified a significant relation between gender and suicidal ideation as displayed in Figure 1. Female students were at a higher risk of attempts and ideation either to be low or high. Approximately 56.17% (n = 173) of female students were reported to have low suicidal ideation compared to 15.58% (n = 70) of male students. Meanwhile, there were about 22.7% (n = 48) of female students who were reported to be at high suicidal ideation threat compared to 5.52% (n = 17) of male students.

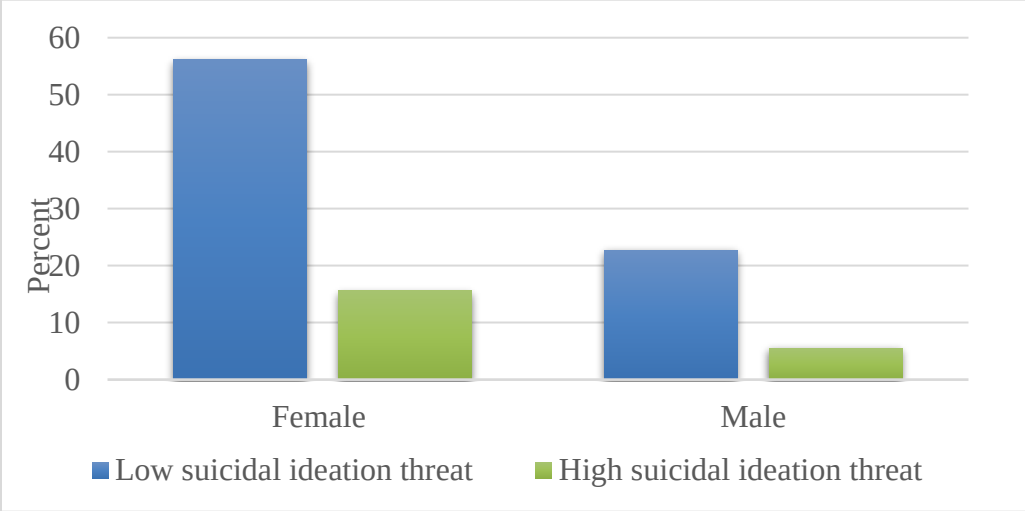

Figure 1 The percentage of medical students based on their gender and suicide risk.

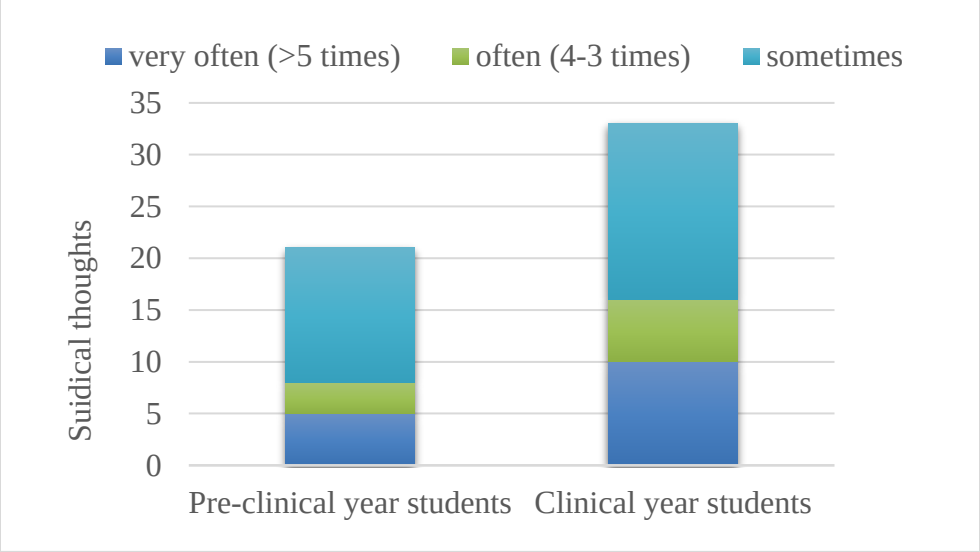

Figure 2 Relative suicidal thoughts among medical students according to their academic level (clinical vs. preclinical)

Additionally, a significant correlation was detected frequency of suicidal ideation on the last 12 months (how often have you thought about killing yourself in last year?) and the academic level of the medical study (preclinical versus clinical years). The percentage of preclinical students who often and very often had suicidal thoughts is 2.9% and clinical students who often and very often had suicidal thoughts is 4.87% (Figure 2).

The one-way ANOVA performed for the compare of students' GPA effect on their suicidal behaviour and revealed that there was a statistically significant difference between groups (F (3) = (2.868), P= .037). Participants with higher GPAs have higher suicidal ideation threats with a percentage of (44.615%) in students with a GPA >4.5, (16.9%) in students with a GPA between 4.26-4.5, (33.846%) in students with a GPA between 3.25-4.25, and (4.615%) in students with a GPA <3.25, shown in (Figure 3).

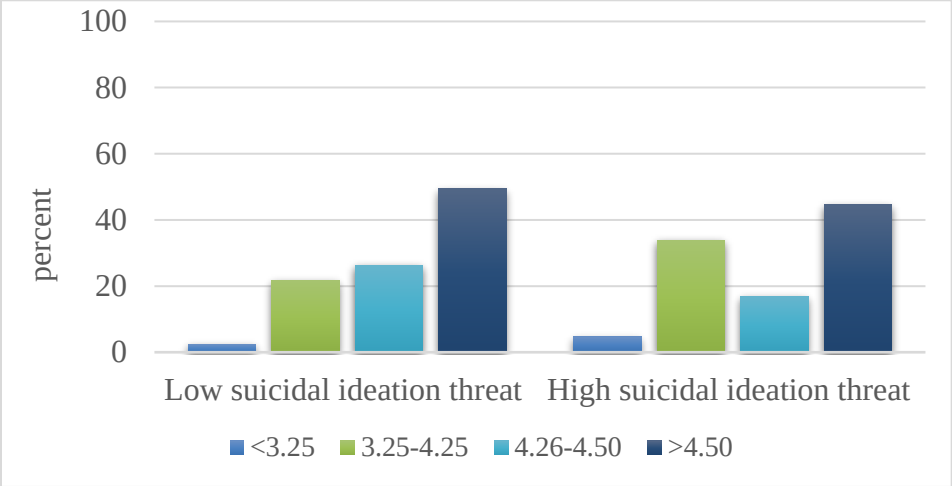

Figure 3 Percent of students' SBQR-categorization according to their GPA.

4. DISCUSSION

Medical students are at high risk of depression, anxiety and/or suicidal ideation (Van Niekerk et al., 2012; Aboalshamat et al., 2015; Adhikari et al., 2017). Theres is a previous study suggesting that the current educational process could have a negative effect on students' mental health (Dyrbye et al., 2006). Furthermore, these medical students will be responsible for providing health care to other individuals, so their own mental health has to be addressed. Early screening for their mental distress can aid in the early discovery of the problem (Hoying et al., 2020).

Our current cross-sectional based study was conducted in Madina, Saudi Arabia to identify the PWB and its possible effect on suicidal behaviour of 308 out of 1397 total medical students (with a 22% overall response rate) to assess individual who have an increased risk suicidal behaviour. Also, to analyze the possible associated demographic and academic factors that might be related to their mental distress. According to the results of our study there is a significant statistical difference in the purpose of life and self-acceptance sub-scales between at least two groups (F (3,256) = (2.964), P= 0.02) and (F (3,256) = (3.338), P= 0.033) respectively. To compare the effect of age on the purpose of life sub scale, one-way ANOVA was performed and it revealed that there was a statistically significant difference between groups (F (1) = 5.5, P=0.02). However, there is no statistical correlation between PWB and suicidal behaviour, r (257) = -.075, p= (.229).

This study reported suicidal attempts and ideation rates 31.2% and 4.5% in medical students, respectively (Table 3). In support of our study suicidal ideation was similar to that scored. Medical student in Turkey (27.3%) and in the USA (29.9%) (MacLean et al., 2016). In comparing to our results, our suicide ideation results are less than that detected in medical students India a (53.6%) (Goyal et al., 2012) and higher than in other studies conducted Taiwan (11.5%) (Fan et al., 2012). These various findings could be attributed to distinct sample size, study design, the cultural and socio-cultural variables (Amare et al., 2018; Desalegn et al., 2020). There are multiple risk factors, that contributes to the increased professional and personal distress such as academic workload and stress (Ahmed et al., 2009), abuse (Castaldelli-Maia et al., 2012), sleep deprivation (Sobowale et al., 2014). Additionally, this study showed the relation of gender difference and suicidal ideation with noticeable higher rates in female. Female students with low suicidal ideation are 173 (56.2%) students, compared to 70 (15.6%) male students and female students with high suicidal ideation are 48 (22.7%) compared to 17 (5.5%) male students with high suicidal.

In support to our findings, several studies showed higher rates of female medical students compared to male students (Ahmed et al., 2016; Osama et al., 2014; Goyal et al., 2012). In contrast to our results, documented higher rates of male students compared to

female medical students (Sun et al., 2017). These different findings 3 could be explained by effects in behavioural and emotional problems (psychosocial stresses and hormonal differences) (Kaess et al., 2011). In contrast, male youths are prone to externalising disorders (e.g., substance abuse and abnormal behaviour disorder) (Mergl et al., 2015; Miranda-Mendizabal et al., 2019). Furthermore, our results have also shown the relation of academic medical study (preclinical versus clinical) and prevalence of suicidal ideation. We can state that suicidal thoughts significantly increase the time they sent in their study. By assessing the frequency in the last 12 months, it is show in that the percentage of preclinical students who had suicidal thoughts is 2.9%, versus 4.87% in clinical students.

The results of our study are comparable with the observation of (Adhikari et al., 2017) who reported a higher rate of suicidal ideation students in clinical years than those in preclinical years. Other studies (Dyrbye et al., 2008; Moworseningase and Luisa Figueira, 2015) confirmed that medical students enrolled in their first year of medical studies experience suicide ideation (Carson et al., 2000) and their mental health become worsening as they progress through medical studies (Coentre and Góis, 2018). Medical students are usually hesitant to seek psychiatric counselling. This is significantly related to issues about confidentiality, time and the potential negative impacts on their careers (Coentre and Góis, 2018).

Regarding the impact of students' academic performance in term of GPA on the suicidal behaviour among medical students, the current study found a difference between groups. Medical students who have higher GPAs found to be associated with higher suicidal ideation with a percentage of (44.615%) in students with a GPA > 4.5, (16.9%) in students with a GPA between 4.26-4.5, (33.846%) in students with a GPA between 3.25-4.25 and (4.615%) in students with a GPA <3.25 (Figure 3). This could be caused by higher level of mental stress in students with high GPA.

5. CONCLUSION

This study demonstrates (35.7%) suicidal behaviour (31.2%) had suicidal ideation (4.5%) with suicidal attempts, Female sex, higher GPAs and higher academic level (clinical) were associated with suicidal attempts and ideation, therefore knowing suicidal behaviour associated factors can be a major lead in controlling this issue.

Future Perspectives and Recommendations

We suggest that colleges should offer counselling services for their students as well as provide routine psychological evaluation and psychological therapy to ensure the support of the well-being of medical students. Further consideration on the associated risk factors to establish effective and practical suicide prevention programs.

Limitations and Strength

This study was performed at Al-Rayan colleges and Taibah University in Madinah, which generalisation of its results to other settings. Moreover, if our study involved more medical students from Saudi Arabia colleges/universities, this would empower our results. As the response rate (22%) of the current work is typically less than the expected for cross-sectional study on medical surveys. Non-response by some medical students may reduce the numbers of suicidal ideation.

This study did not include the preparatory year students, so this is not representative for all medical students. Additionally, the medical students diagnosed with any psychiatric illness or even under treatment are excluded from this study the probability of enrolled medical students with undiagnosed psychiatric illness can't be excluded. Our study is of few studies in Saudi Arabia that address and discuss this issue specifically among medical students. And the Ryff's scale that we used to measure PWB is detailed scale that has 6 sub-scale covering different aspects of the individual psychology.

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Ethical Consideration and Consent

This study was approved by The Biomedical Committee of Research Ethics at the faculty of medicine at Umm Al-Qura University approved the study number (HAPO-02-K-012-2022-05-1087). All participants are anonyms with complete confidentiality, prior to answering the questionnaire all of them agreed to electronic consent.

Author Contributions

Rania Mufti and Fahad Al Shehri: Helped in analyzing our data and writing the results and discussion as well as supervising the writing and reviewing the final manuscript before submission.

Raghad Aljohani, Shuhrah Kaiwa and Daliyah AlQulaiti: Helped in writing the introduction, data collecting, results, discussion, conclusion and manuscript submission.

Ghaida Alharbi, Lujain Aldarsi and Shadha Jorob: Helped in writing the abstract, introduction, data collecting and discussion.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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