



SUICIDAL IDEATION AND ITS ASSOCIATION WITH THE TYPE-D PERSONALITY IN UNDERGRADUATE MEDICAL STUDENTS AT A PUBLIC SECTOR MEDICAL UNIVERSITY IN PAKISTAN

Dr. Ramsha Urooj Baig^{1*}, Dr. Ramlah Naz², Dr. Mehreen Fatima³, Dr. Arshad Khan⁴,
Dr. Zubair Ahmed Tirmizi⁵, Dr. Rafay Ahmed Siddiqui⁶, Usama Ameen Ahmed⁷

^{1*}MBBS, DMJ, Lecturer, Department of Forensic Medicine and Toxicology, Dow University of Health Sciences, Karachi, Pakistan.

²MBBS, DMJ, MPhil, Professor, Department of Forensic Medicine and Toxicology, Dow University of Health Sciences, Karachi, Pakistan.

³MBBS, DMJ, MPhil, Associate Professor, Department of Forensic Medicine and Toxicology, Dow University of Health Sciences, Karachi, Pakistan.

⁴MBBS, MHPE, Lecturer, Department of Forensic Medicine and Toxicology, Jinnah Sindh Medical University, Karachi, Pakistan.

⁵MBBS, DMJ, CHPE, Professor, Department of Forensic Medicine and Toxicology, Fazaia Ruth Pfau Medical College, Karachi, Pakistan.

⁶Assistant Professor, Department of Forensic Medicine and Toxicology, Baqai Medical College, Baqai Medical University, Karachi, Pakistan.

⁷MBBS Student, Dow International Medical College, Dow University of Health Sciences, Karachi, Pakistan.

***Corresponding author: Dr. Ramsha Urooj Baig,**

*MBBS, DMJ, Lecturer, Department of Forensic Medicine and Toxicology, Dow University of Health Sciences, Karachi, Pakistan. Email: ramsha.baig@duhs.edu.pk

ABSTRACT

Introduction: Worldwide, suicide is the second foremost cause of mortality among those aged 15 to 29, with medical students frequently reporting higher rates of suicidal ideation.

Objectives: This research sought to investigate the possible association between Type D (distressed) personality and suicidal ideation among medical students at the undergraduate level.

Methodology: We assessed suicidal ideation and Type D personality traits using the Beck Scale for Suicide Ideation and DS14 scales in MBBS students at a medical university in Karachi, Pakistan from April 2023 till October 2023.

Results: Out of 200 medical students surveyed, 9.5% (n = 19) reported experiencing suicidal ideation, with 3.5% (n = 7) exhibiting high suicide intent. The analysis revealed a significant association between social inhibition, a Type D personality trait, and suicidal ideation (p = 0.005). In contrast, negative affectivity, the other core trait of Type D personality, did not show a significant relationship with suicidal ideation (p > 0.05). Among participants with high suicide intent, a higher prevalence of social inhibition was observed; however, the small sample size limited further statistical analysis. These findings suggest that social inhibition may play a critical role in the relationship between Type D personality and suicidal ideation.

Conclusion: Our study identified a significant association between suicidal ideation and Type D personality in medical students. However, as this was a cross-sectional study, we cannot infer causation or the direction of this relationship. Further longitudinal research is needed to explore the temporal dynamics.

Keywords: suicide, medical students, Type-D personality, suicidal ideation, Type-D personality traits

INTRODUCTION

Globally, Suicide makes up 8.5% of all fatalities in young adults and teenagers, making it the primary reason of death in the age bracket of 15 to 29 years. The lifetime prevalence of suicide attempts in this age group ranges between 3.1% and 8.8%. (2) Among the young, medical students frequently report attempting suicide. Significant pressures are present for medical students as they train. These stressors include problems with studies, relationships, money, and accommodations that give way to mental health problems. As a result, the probability of suicide attempt or death among medical students is very high globally.(3)

Suicidal ideation is a comprehensive word that encompasses feelings of compulsion, preoccupation, planning, and thoughts regarding ideation about suicide. (4) Most often, suicidal ideation precedes suicide. A meta-analysis revealed that the general rate of suicidal ideation among pupils studying undergraduate medicine is 53.6% (n=142), with 2.3% having attempted suicide once, indicating a high prevalence that warrants assessment of responsible factors.(3)

Personality might be a key component in the assessment of suicidal risk in the young. (5) However, numerous research have revealed a possible relation between Type D (distressed) personality and a variety of mental health issues, such as suicide thoughts and ideations.(6, 7) (8) Personality traits, not clinical conditions, are what define type D personalities. People with Type-D personality have a propensity towards interpersonal sensitivity, fear of being negatively judged, and a reluctance to communicate with others due to their combination of strong social inhibition and high negative affectivity. The presence of Type D personality is indicated by a score of 10 or above on both subscales of a validated Type D assessment that evaluates negative affectivity in combination with social inhibition. (9) Psychological conditions such as depression, anxiety, and post-traumatic stress disorder, as well as suicidal ideation and actual suicide, are more common in these people.(10), including medical disorders such as cardiovascular disease and stroke. (11)

The association between specific personality traits and suicidal ideation in medical students has been infrequently examined.(6) Personality types have been recognized as a significant risk factor for suicide. (12) Therefore, our study sought to investigate the potential correlation between suicidal ideation and medical students exhibiting type D personality traits.(13)

METHODOLOGY

Study setting and design: Undergraduate MBBS students at Dow International Medical College in Karachi, Pakistan, were the subjects of this cross-sectional study.

Study Duration: The study was conducted between April 2023 to October 2023.

Sample size calculation: Random sampling was done. Sample size was calculated by taking reported incidence of 13.03% of participants having suicidal ideations in a study from China(14). Hence, sample size was calculated by using Open Epi version 3.01 taking 95% confidence level and 5% margin of error, the computed sample size came out to be 174. By taking 10% expected non-response rate, 192 people in all were planned to be targeted to participate in the research project.

Methods of assessment

Participants were evaluated based on the following:

1. The Type D Scale 14 (DS14): (15)

The Type D Scale 14 (DS14), which consists of 14 five-point Likert-scaled items (ranging from "false" to "true"), was employed to measure the negative affectivity (NA) and social inhibition (SI) aspects of type D personality (SI). These subscales have scores ranging from 0 to 28.

2. BSSI: Beck scale of suicidal ideation (1)

The BSSI is a self-rating scale comprising 19 items that assesses suicide intention and preparation. A lower score denotes less intense suicidal ideation. Each question is scored on a 3-point scale with a maximum score of 38. (Hazard ratio = 6.6) A BSSI 3 is a strong predictor for suicide mortality over a period of up to 20 years.

Statistical Analysis

SPSS version 22 was used to perform data analysis. Categorical data was expressed as percentages and frequencies while means and standard deviation were used to show descriptive statistics. Chi-square tests and 2*2 contingency tables were also used to evaluate relationships and correlations. At $P < 0.05$, statistical significance was established.

Inclusion criteria

1. Undergraduate medical students at Dow University of health sciences.
2. Individuals above 18 years of age.
3. Both genders were included.

Exclusion criteria

1. Individuals who do not consent for participation.
2. Students of the allied health sciences.

RESULTS

Out of total 198 participants, 107 (54%) were males and 91 (46%) were females. Majority of the students were between 18-25 years ($n=191$, 96.5%), and only 7 (3.5%) participants were above the age of 25 years. Around 170 (85.9%) participants were Pakistani whereas, 28 (14.1%) participants had nationality other than Pakistani including Canadian and American nationality. Most of the participants were studying in 3rd year of MBBS (41.9%) (Figure 1).

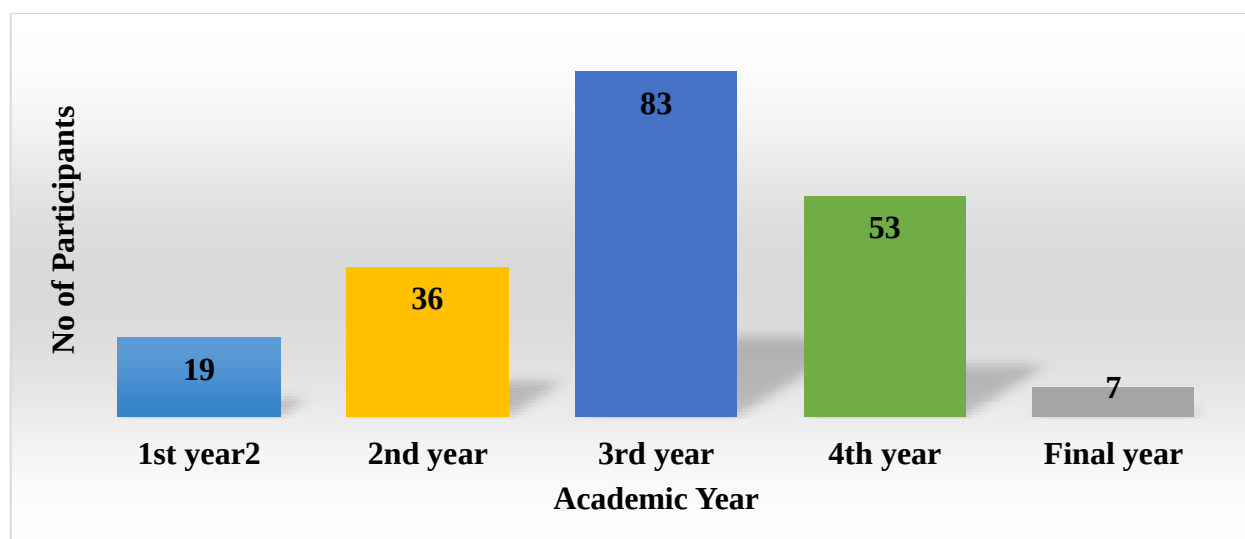


Fig. 1: Frequency of participants studying in the different academic years of the undergraduate MBBS program (n=198).

The mean BSSI score of the current study participants was found to be 7.95 ± 6.953 with the minimum score of 0 and maximum score of 36 among the participants (Table 1).

Table 1: BSSI score among the participants (n=198)

BSSI Variables		N	%
Wish to Live	moderate to strong	176	88.9
	weak	15	7.6
	none	7	3.5
Wish to die.	none	121	61.1
	weak	55	27.8
	moderate to strong	22	11.1
Reasons for living/dying.	for living outweigh for dying	138	69.7
	about equal	42	21.2
	for dying outweigh for living	18	9.1
Desire to make active suicide attempt.	none	145	73.2
	weak	38	19.2
	moderate to strong	15	7.6
Passive suicidal desire.	would take precautions to save life	134	67.7
	would leave life/death to chance	38	19.2
	would avoid steps necessary to maintain life	26	13.1
Time dimension: Duration of suicide ideation/wish.	brief fleeting periods	177	89.4
	longer periods	7	3.5
	continuous or almost continuous	14	7.1
Time dimension: Frequency of suicide wish.	rare, occasional	176	88.9
	intermittent	11	5.6
	persistent or continuous	11	5.6
Attitude toward ideation/wish.	rejecting	114	57.6
	indifferent	67	33.8
	accepting	17	8.6
Control over suicidal action/acting-out wish	has sense of control	165	83.3
	unsure of control	25	12.6
	has no sense of control	8	4.0
Deterrents to active attempt (e.g., family, religion, irreversibility).	would not attempt because of a deterrent	148	74.7
	some concerns of deterrents	14	7.1
	minimal or no concern of deterrents	36	18.2
Reason for contemplated attempt.	to manipulate the environment, get attention, revenge	33	16.7
	combination of 0 and 2	22	11.1
	escape solve problems	143	72.2
Method: Specificity/planning of contemplated attempt.	not considered	141	71.2
	considered	37	18.7
	well formulated	20	10.1
Method: Availability/opportunity for contemplated attempt.	no opportunity	119	60.1
	opportunity not readily available	26	13.1
	methods and opportunity available	53	26.8
Sense of "capability" to carry out attempt.	no courage	134	67.7
	unsure of courage	43	21.7
	sure of courage	21	10.6
Expectancy/anticipation of actual attempt.	no	155	78.3
	not sure	29	14.6
	yes	14	7.1
Actual preparation for contemplated attempt.	none	184	92.9
	partial	7	3.5
	complete	7	3.5
Suicide note	none	180	90.9
	not completed	14	7.1

	completed	4	2.0
Final acts in anticipation of death (e.g., insurance, will)	none	173	87.4
	made some arrangements	11	5.6
	completed arrangements	14	7.1
Deception/concealment of contemplated suicide.	revealed ideas	72	36.4
	held back on revealing	78	39.4
	attempted to lie	48	24.2

Suicide ideation was found in almost 9.5% participants (n=19). Of which, 3.5% had high suicide intent (Figure 2).

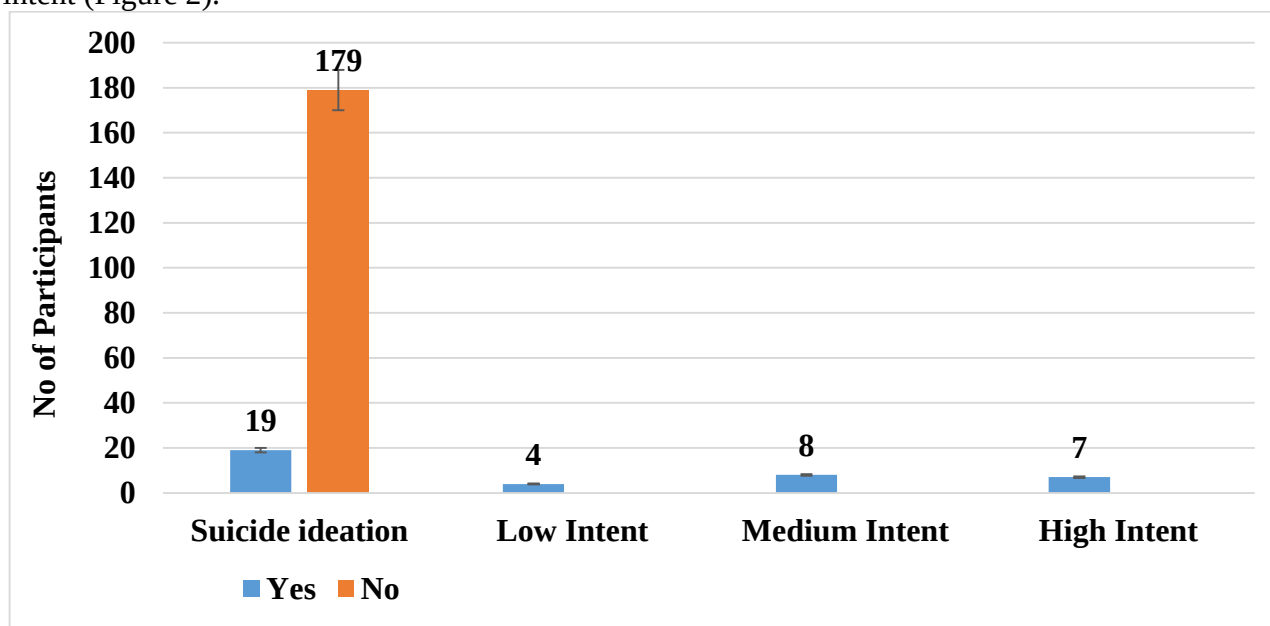


Fig. 2: Suicide ideation among the participants (n=198)

Further, when gender differences were analyzed it was found that both males and females had same tendency for suicide ideation (Table 2).

Table 2: Gender distribution of suicide ideation among the participants (n=198)

Gender	Suicide Ideation		P-value
	No	Yes	
Male	62	45	0.185
Female	46	45	

However, when intent of suicide was assessed among the gender, it was found that males had significantly high suicidal intent as compared to females (Table 3).

Table 3: Assessment of the intent of suicide among the participants (n=198)

Gender	Intent of Suicide				P-value
	No Intent	Low Intent	Medium Intent	High Intent	
Male	96	0	4	7	0.013
Female	83	4	4	0	

The mean DS14 score of the current study participants was found as mean negative affectivity to be 13.34 ± 6.112 , while mean social inhibition to be 15.04 ± 4.605 (Table 4).

Table 4: DS14 score among the participants (n=198)

DS14 Variables	False		Rather False		Neutral		Rather True		True	
	N	%	N	%	N	%	N	%	N	%
I make contact easily when I meet people	18	9.1	29	14.6	42	21.2	40	20.2	69	34.8
I often make a fuss about unimportant things	60	30.3	38	19.2	49	24.7	22	11.1	29	14.6
I often talk to strangers	36	18.2	52	26.3	37	18.7	44	22.2	29	14.6
I often feel unhappy	35	17.7	36	18.2	53	26.8	40	20.2	34	17.2
I am often irritated	35	17.7	39	19.7	43	21.7	44	22.2	37	18.7
I often feel inhibited in social interactions	42	21.2	35	17.7	62	31.3	21	10.6	38	19.2
I take a gloomy view of things	43	21.7	49	24.7	51	25.8	31	15.7	24	12.1
I find it hard to start a conversation	35	17.7	35	17.7	31	15.7	52	26.3	45	22.7
I am often in a bad mood	58	29.3	42	21.2	55	27.8	28	14.1	15	7.6
I am a closed kind of person	22	11.1	47	23.7	39	19.7	31	15.7	59	29.8
I would rather keep other people at a distance	40	20.2	27	13.6	48	24.2	54	27.3	29	14.6
I often find myself worrying about something	13	6.6	18	9.1	33	16.7	63	31.8	71	35.9
I am often down in the dumps	44	22.2	46	23.2	65	32.8	21	10.6	22	11.1
When socializing, I don't find the right things to talk about	27	13.6	43	21.7	37	18.7	49	24.7	42	21.2

Both negative affectivity and social inhibition were found very high among the participants as per the categorization (Figure 3).

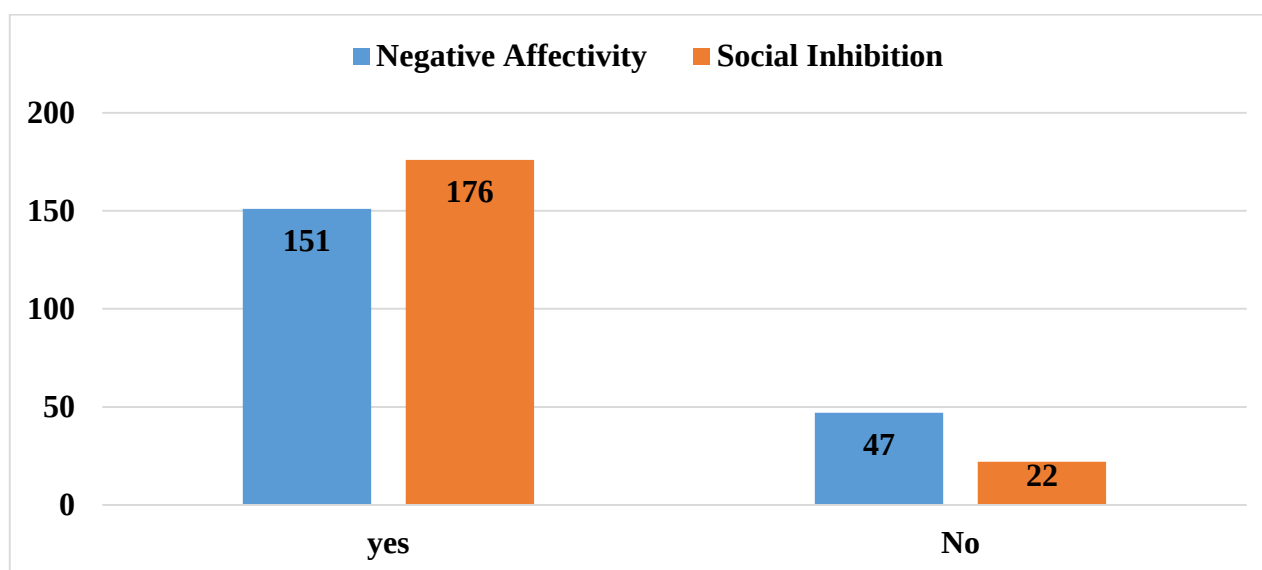


Fig. 3: Type D personality among the participants (n=198)

Further, when gender differences were analyzed it was found that females had more tendency of getting negative affectivity as compared to males, while social inhibition affect both males and females equally (Table 5).

Table 5: Gender distribution of Type D personality among the participants (n=198)

Variables of Type D personality		Male	Female	P-value
Negative Affectivity	Yes	73	78	0.003
	No	34	13	
Social Inhibition	Yes	88	88	0.001
	No	19	3	

When the association between type D personality and development of suicidal ideation was assessed, it was found that negative affectivity does not significantly develop suicidal ideation, however, social inhibition do have significant impact in the development of suicidal ideation among the participants (P-value =0.005) (Table 6).

Table 6: Association of Type D personality with suicidal ideation (n=198)

Variables of Type D personality		Suicidal Ideation		P-value
		Yes	No	
Negative Affectivity	Yes	72	18	0.168
	No	79	29	
Social Inhibition	Yes	86	4	0.005
	No	90	18	

Further, it was found that those with type D personality had statistically significantly high intent for suicide (Table 7).

Table 7: Association of intent of suicide with type D Personality

Variables of Type D personality		Suicidal Ideation				P-value
		No Intent	Low Intent	Medium Intent	High Intent	
Negative Affectivity	Yes	140	4	0	7	0.000
	No	39	0	8	0	
Social Inhibition	Yes	161	4	4	7	0.003
	No	18	0	4	0	

DISCUSSION

A major risk factor to suicidal attempts and even suicide is suicidal ideation.(8) While there have been several established risk factors for suicidal ideation such as smoking, mental stress, female gender, history of coronary artery disease, there has been a strong association with certain personality traits such as type –D personality.(9) To emphasize, review of published research data suggests that there is a clear correlation between possessing a Type D personality and having suicidal ideation.(16) Our study aimed to identify the presence of a possible relationship between type D personality traits and suicidal ideation in undergraduate medical students, at a medical university in Pakistan.

In our research, the Beck Scale of Suicidal Ideation (BSI) (17) was employed to assess suicidal ideation prevalence within our sample. Assessment showed that a minority of MBBS students, specifically 9.5% (n=19), acknowledged experiencing thoughts of suicide. Notably, this percentage is significantly lower compared to a parallel investigation conducted among medical students at an Iranian university, where 16.07% (n=36) of participants admitted to harboring suicidal ideation. The disparity in rates between our study and the Iranian university study offers intriguing insights into

potential cultural, social, or institutional factors influencing the prevalence of suicidal ideation among different populations.(11) One potential factor might be the availability of supportive resources at our institution, such as mentorship programs that prioritize student well-being. Universal programs specifically designed for medical-student's mental health well-being prove to be effective to some extent in reducing suicidal ideation, anxiety and depression among them. (18) It's also important to consider other potential contributing factors, such as the socio-economic background of our student population, which could influence their mental and physical well-being. Systematic review of various studies suggest a strong association of suicidal intent and attempts with low socio-economic backgrounds. Thus, while the development of suicidal intent is a multi-faceted process, a low socio-economic background can be a potential factor too. (18) However, within the group of medical students who reported experiencing suicidal ideation, it was observed that only a minority exhibited a high level of intent, with a larger portion demonstrating either low or medium levels of intent. This finding can again be related to the plausible factors stated above. When examining gender disparities in suicidal intent, our results revealed an equal distribution of reported suicidal ideation among both genders, with no female participants reporting a high intention of suicide. This finding contradicts prevalent literature, which often suggests that women are more likely than men to have suicide thoughts. This unexpected trend warrants further investigation into the underlying factors influencing the manifestation of suicidal intent across gender in our setting.(9, 19)

The respondents were analyzed for the presence of type-D personality using the DS14 Scale, with two specific components of type D personality, which included negative affectivity and social inhibition, being tested. (17) The analysis yielded an intriguing insight whereby a marginally larger proportion of females (n=78) exhibited negative affectivity compared to males (n=73), while both genders demonstrated an equitable presence of social inhibition traits (n=88). This observation suggests a mutual manifestation of Type D personality traits among males and females, albeit with females demonstrating a more pronounced inclination towards negative affectivity. Contrary to the findings of a Malaysian study, which suggested a higher prevalence of type D personality traits in males, our results present a distinctive trend.(14) This disparity highlights the importance of taking into account genetic factors that could affect the manifestation of type –D personality traits amongst diverse demographic individuals(20)

In terms of association between Type D Personality and Suicidal Ideation, the study investigated the potential link between Type D personality and the development of suicidal ideation. Type D personality has not only been identified as a potential risk factor of developing suicidal ideation but is also related to increased risks of developing cardiovascular problems. Research suggests that personality traits has a strong association with suicidal ideation and wish to live. (21) While research shows a strong association of type –D personality with the development of suicidal ideation, with almost every 1 in 3 individual having major depressive disorder developing suicidal ideation (7) The research identified potential connections between Type D personality traits (social inhibition and negative affectivity) and suicidal ideation in the participants. (22) Suicidal ideation was significantly associated with social inhibition, but not negative affectivity. The trait of social inhibition has several implications in a person's personality that may have led to the strong association of developing suicidal ideation as they have a tendency to internalize their problems. Also, they tend to develop a low sense of belonging that contradicts with the in-born instinct of socializing of human beings. (23) Consequently, participants with high levels of social inhibition were more likely to experience suicidal ideation.

Our study uncovered an important finding: social inhibition, a trait associated with suicidal ideation, had equal distribution in males and females. This finding diverges from established literature, which commonly reports a higher prevalence of suicidal ideation and suicide attempts among females compared to males. This highlights the role of interpersonal factors and emotional regulation in influencing suicidal ideation.(24)

These research results have important implications for mental health interventions among undergraduate students. Identifying individuals with high social inhibition could be a key step in early intervention and support. Addressing issues related to social interactions, communication, and emotional expression might help reduce the risk of suicidal ideation.

Limitations

To the best of our knowledge, the research findings are new, and following a thorough evaluation of literature, it can be claimed that this is the first study to associate specific Type D personality traits to suicidal ideation. It is imperative to recognize specific constraints associated with the research. However, as this was a cross-sectional study, we cannot infer causation or the direction of this relationship. Further longitudinal research is needed to explore the temporal dynamics and underlying mechanisms. Since, a particular subset of undergraduate students participated in the research, it's possible that the results won't apply to other demographics.

CONCLUSION

Type-D personality traits, including social inhibition and negative affectivity, have a significant correlation with the development of suicidal ideation. Future research should further explore the mechanisms through which social inhibition contributes to suicidal ideation and consider strategies for mitigating its impact.

Disclosure Statement

The authors report there are no competing interests to declare.

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Ethical approval:

Ethical approval was obtained from the IRB department of Dow University of health sciences bearing IRB # IRB-2918/DUHS/Approval/2023/126, dated: 16th March, 2023

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