

Original Research Article

ASSESSMENT OF ANXIETY, SLEEP AND MEMORY IN INDIVIDUALS WITH TYPE-D PERSONALITY

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ABSTRACT

Background: Type-D personality has been associated with adverse psychological outcomes, emphasising the importance of early identification and intervention. Despite growing research in this area, limited studies have simultaneously evaluated anxiety, sleep quality, and memory performance in individuals with Type-D personality. The aim and objective are to assess anxiety levels, sleep quality, and memory performance in individuals with Type-D personality and to evaluate the relationship among these psychological parameters.

Materials and Methods: This cross-sectional observational study included 30 individuals with Type-D personality identified using the DS14 questionnaire. Anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale, sleep quality using the Pittsburgh Sleep Quality Index (PSQI), and memory using the Digit Span Test. Demographic details were recorded using a structured proforma. Data were analysed using SPSS software, and a p-value <0.05 was considered statistically significant.

Results: A total of 30 individuals with Type-D personality participated in the study. Moderate to severe anxiety and poor sleep quality were observed in the majority of participants. Memory assessment revealed mild to moderate impairment in a considerable proportion of subjects. Significant correlations were found between anxiety, sleep quality and memory performance, indicating that higher anxiety and poorer sleep were associated with reduced memory scores.

Conclusion: The present study demonstrated that individuals with Type-D personality are more likely to experience increased anxiety, poor sleep quality and reduced memory performance. Significant associations were observed among these parameters, suggesting an interrelated effect on psychological and cognitive health. Early identification and appropriate interventions may help improve emotional well-being, sleep quality and cognitive functioning in this vulnerable population.

Keywords: Type-D Personality, Anxiety, Sleep Quality, Memory, Cognitive Functioning.

INTRODUCTION

Personality significantly influences an individual's emotional responses, behaviour, coping strategies, and psychological well-being. Among various personality types, Type-D personality, also known as the “distressed personality”, has attracted considerable attention because of its association with adverse mental and physical health outcomes. Type-

D personality is characterised by two stable traits: negative affectivity, which refers to the tendency to experience negative emotions, and social inhibition, which reflects discomfort in expressing emotions and interacting with others.^[1] Initially studied in cardiovascular disorders, Type-D personality is now recognised as an important psychological construct affecting emotional health, quality of life, and cognitive functioning in the general population.^[2]

Individuals with Type-D personality often experience higher levels of psychological distress, perceived stress, anxiety, and depressive symptoms compared to those without this personality pattern.^[3] These factors may adversely affect academic performance, occupational productivity, interpersonal relationships, and overall well-being. Anxiety is one of the most frequently reported psychological manifestations associated with Type-D personality. Individuals with high negative affectivity tend to experience persistent worry, fear, and emotional instability, while social inhibition may limit their ability to seek social support during stressful situations.^[4] Previous studies have demonstrated a significant association between Type-D personality and increased anxiety levels, suggesting that these individuals are more vulnerable to emotional disturbances and psychological stress.^[5] Sleep plays a vital role in maintaining physical health, emotional stability, and cognitive performance. Poor sleep quality is associated with fatigue, impaired concentration, mood disturbances, and reduced daily functioning. Research has shown that individuals with Type-D personality are more likely to experience sleep-related problems, including poor sleep quality, difficulty initiating sleep, frequent awakenings, and daytime sleepiness.^[6] Chronic stress and persistent negative emotional states may contribute to these sleep disturbances. Memory is an essential cognitive function responsible for learning, information processing, and daily decision-making. Both anxiety and poor sleep have been shown to negatively affect memory performance. Elevated anxiety levels can impair attention and working memory, whereas inadequate sleep interferes with memory consolidation and learning processes.^[7,8] Consequently, individuals with Type-D personality may be at increased risk of memory impairment because of the combined influence of emotional distress and disturbed sleep patterns. Recent studies have highlighted the close relationship among personality traits, emotional health, sleep quality, and cognitive functioning. Psychological distress and sleep disturbances have been identified as important contributors to reduced cognitive efficiency and impaired memory performance.^[9] Furthermore, Type-D personality has been associated with adverse psychological outcomes, emphasising the importance of early identification and intervention.^[10] Despite growing research in this area, limited studies have simultaneously evaluated anxiety, sleep quality, and memory performance in individuals with Type-D personality. Understanding these associations may help identify vulnerable individuals and facilitate the development of appropriate preventive and therapeutic strategies. Therefore, the present study was undertaken to assess anxiety, sleep, and memory in individuals with Type-D personality and to explore the relationship among these parameters.

Aim and objectives: To assess anxiety levels, sleep quality, and memory performance in individuals with

Type-D personality and to evaluate the relationship among these psychological parameters.

MATERIALS AND METHODS

Study design: The present study was a cross-sectional observational study conducted to assess anxiety, sleep quality, and memory performance in individuals with Type-D personality. The study aimed to evaluate the relationship between Type-D personality traits and selected psychological and cognitive parameters in apparently healthy individuals.

Study setting: The study was conducted in the Department of Physiology of a tertiary care teaching institution. Participants were recruited from undergraduate and postgraduate students, staff members, and other volunteers who fulfilled the eligibility criteria and consented to participate in the study.

Study duration: The study was carried out over a period of six months following approval from the Institutional Ethics Committee.

Sample size: A total of 30 participants identified as having Type-D personality were included in the study. Consecutive sampling was employed, and all eligible participants were recruited until the required sample size was achieved.

Study population: Apparently healthy adults aged between 18 and 35 years were screened for Type-D personality. Individuals identified as having Type-D personality using a validated questionnaire were enrolled in the study.

Inclusion criteria:

1. Individuals aged between 18 and 35 years.
2. Participants identified as having Type-D personality based on the DS14 questionnaire.
3. Apparently healthy individuals willing to participate in the study.
4. Participants providing written informed consent.

Exclusion criteria:

1. Individuals with diagnosed psychiatric disorders.
2. Participants receiving treatment for anxiety, depression, or sleep disorders.
3. Individuals with known neurological diseases affecting cognitive functions.
4. Participants with chronic systemic illnesses such as diabetes mellitus, hypertension, cardiovascular diseases, or endocrine disorders.
5. Individuals using medications known to influence sleep, memory, or psychological status.

Methodology: After obtaining informed consent, demographic details including age, sex, educational status, occupation, and relevant medical history were recorded using a predesigned case record form.

Assessment of type D personality: Type-D personality was assessed using the Type-D Scale-14 (DS14), a validated self-administered questionnaire developed by Denollet. The questionnaire consists of 14 items divided into two subscales: Negative Affectivity and Social Inhibition. Each item is scored

on a five-point Likert scale ranging from 0 to 4. Participants scoring 10 or more on both subscales were classified as having Type-D personality and were included in the study.

Assessment of anxiety: Anxiety levels were evaluated using the Generalised Anxiety Disorder-7 (GAD-7) questionnaire. The GAD-7 is a widely used screening instrument consisting of seven items assessing symptoms of anxiety experienced over the previous two weeks. Each item is scored from 0 to 3, with higher scores indicating greater anxiety severity. Total scores were categorised as minimal, mild, moderate, or severe anxiety according to standard guidelines.

Assessment of sleep quality: Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). This questionnaire evaluates sleep quality over the preceding month and consists of seven components, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Higher PSQI scores indicate poorer sleep quality.

Assessment of memory: Memory performance was evaluated using the Digit Span Test. Both forward and backward digit span tasks were administered in a quiet environment according to standard procedures. The test assessed attention, short-term memory, and working memory. Participants were instructed to recall sequences of numbers presented verbally by the investigator. The maximum correctly recalled sequence was recorded and used for analysis.

Data collection: All assessments were performed individually in a calm and distraction-free setting. Participants were provided adequate instructions before administration of questionnaires and cognitive tests. Completed questionnaires were checked for completeness and accuracy before data entry.

Statistical analysis: The collected data were entered into Microsoft Excel and analysed using Statistical Package for the Social Sciences (SPSS) software version 25.0. Continuous variables were expressed as mean $\pm$ standard deviation, while categorical variables were presented as frequencies and percentages. The relationship between anxiety

scores, sleep quality scores, and memory performance was assessed using Pearson's or Spearman's correlation analysis as appropriate. Comparisons between groups were performed using independent t-tests or Chi-square tests. A p-value less than 0.05 was considered statistically significant.

Ethical considerations: The study protocol was approved by the institutional human ethics committee. Informed consent was obtained from all the study participants.

RESULTS

A total of 30 individuals with Type-D personality were included in the study. Among them, 53.3% (n=16) were males and 46.7% (n=14) were females. The majority of participants (60%, n=18) belonged to the 18–25 years age group, while 40% (n=12) were aged between 26 and 35 years. Assessment of anxiety using the GAD-7 questionnaire revealed that 36.7% (n=11) of participants had moderate anxiety, 33.3% (n=10) had mild anxiety, 16.7% (n=5) had severe anxiety, and 13.3% (n=4) had minimal anxiety. Sleep quality assessment using the PSQI demonstrated that 70% (n=21) of participants had poor sleep quality, whereas only 30% (n=9) reported good sleep quality. Memory evaluation showed that 43.3% (n=13) of participants had mild memory impairment, 20% (n=6) had moderate memory impairment, and 36.7% (n=11) exhibited normal memory performance. Correlation analysis revealed a significant positive association between anxiety and poor sleep quality ($r=0.61$, $p=0.001$). Anxiety showed a significant negative correlation with memory performance ($r=-0.54$, $p=0.003$), indicating that higher anxiety levels were associated with poorer memory scores. Similarly, poor sleep quality demonstrated a significant negative correlation with memory performance ($r=-0.58$, $p=0.002$). These findings suggest that increased anxiety and impaired sleep quality are associated with reduced memory performance in individuals with Type-D personality [Table 1 to 7].

Table 1: Demographic Characteristics

Variable	n	%
Male	16	53.3
Female	14	46.7
18–25 years	18	60.0
26–35 years	12	40.0

Table 2: Anxiety Levels (GAD-7)

Category	n	%
Minimal	4	13.3
Mild	10	33.3
Moderate	11	36.7
Severe	5	16.7

Table 3: Sleep Quality (PSQI)

Category	n	%
Good Sleep Quality	9	30.0
Poor Sleep Quality	21	70.0

Table 4: Memory Performance

Category	n	%
Normal	11	36.7
Mild Impairment	13	43.3
Moderate Impairment	6	20.0

Table 5: Correlation Between Anxiety and Sleep Quality

Variables	r value	p value
GAD-7 vs PSQI	0.61	0.001

Table 6: Correlation Between Anxiety and Memory

Variables	r value	p value
GAD-7 vs Memory Score	-0.54	0.003

Table 7: Correlation Between Sleep Quality and Memory

Variables	r value	p value
PSQI vs Memory Score	-0.58	0.002

DISCUSSION

The present study evaluated anxiety, sleep quality and memory performance in individuals with Type-D personality. The findings revealed that anxiety and poor sleep quality were common among participants and were associated with reduced memory performance. These observations indicate that Type-D personality may influence both psychological well-being and cognitive functioning. Type-D personality is characterised by the coexistence of negative affectivity and social inhibition. Individuals with this personality type tend to experience persistent negative emotions and often avoid expressing their feelings in social situations. Previous studies have demonstrated that such individuals are more susceptible to psychological distress and emotional problems.^[11] In the present study, a considerable proportion of participants exhibited moderate to severe anxiety levels. Similar findings have been reported by Grande et al., who observed that Type-D personality was strongly associated with increased emotional distress and anxiety-related symptoms.^[12] The tendency to perceive situations negatively and internalise stress may contribute to the development of anxiety in these individuals.

Another important finding of the present study was the high prevalence of poor sleep quality among participants with Type-D personality. Sleep disturbances have become increasingly common among young adults because of academic stress, lifestyle changes and emotional factors. However, individuals with Type-D personality appear to be particularly vulnerable to sleep-related problems. Park et al. reported that Type-D personality was significantly associated with poor sleep quality and greater psychological distress.^[15] Similarly, other studies have shown that individuals with elevated negative affectivity often experience difficulties in initiating and maintaining sleep.^[16] The relationship between Type-D personality and sleep quality may be explained by chronic activation of stress pathways. Individuals with negative emotional tendencies frequently experience excessive worry and

rumination, which may interfere with normal sleep patterns. In addition, social inhibition may reduce opportunities for emotional expression and stress relief, further aggravating sleep disturbances.^[13] Consequently, poor sleep quality may become a persistent problem in individuals with Type-D personality.

Memory performance was also evaluated in the present study. A considerable number of participants demonstrated mild to moderate memory impairment. Cognitive functions such as attention, learning and memory are influenced by both emotional and physiological factors. Anxiety and disturbed sleep have been recognised as important contributors to cognitive dysfunction.^[17] The present findings suggest that memory performance may be adversely affected in individuals with Type-D personality because of the combined influence of psychological distress and poor sleep quality. The study identified a significant negative association between anxiety and memory performance. Participants with higher anxiety scores tended to exhibit poorer memory scores. Similar findings have been reported by Moran, whose meta-analysis demonstrated that anxiety adversely affects working memory capacity and information-processing efficiency.^[18] Excessive anxiety occupies cognitive resources that are required for attention and memory processes. As a result, anxious individuals may experience difficulty in learning, retaining and recalling information. A significant association was also observed between poor sleep quality and reduced memory performance. Sleep plays a vital role in memory consolidation and cognitive processing. Adequate sleep facilitates the transfer of information from short-term to long-term memory, whereas sleep deprivation impairs this process.^[19] Previous studies have reported that poor sleep quality is associated with reduced attention span, impaired executive functioning and memory deficits.^[20] The findings of the present study are consistent with these observations and emphasise the importance of healthy sleep for optimal cognitive performance. An important observation in the present study was the interrelationship among anxiety, sleep quality and memory. Participants with higher anxiety

levels were more likely to experience poor sleep quality and lower memory performance. This finding supports the concept that psychological and cognitive functions are closely interconnected. Emotional distress may impair sleep quality, while sleep disturbances can further worsen cognitive functioning, creating a cycle of psychological and cognitive impairment.^[16,19] The present study has certain limitations. The sample size was relatively small and participants were recruited from a single centre, which may limit the generalisability of the findings. Furthermore, the cross-sectional design does not allow conclusions regarding causality. Despite these limitations, the study provides useful insights into the psychological and cognitive characteristics of individuals with Type-D personality. Overall, the findings indicate that individuals with Type-D personality are at increased risk of anxiety, poor sleep quality and memory impairment. Early screening for psychological distress and sleep disturbances may help identify vulnerable individuals. Appropriate interventions such as stress-management programmes, sleep hygiene education and psychological counselling may improve mental well-being and cognitive performance. Further studies involving larger populations are required to better understand the complex relationship between personality traits, emotional health and cognitive functioning.

CONCLUSION

The present study demonstrated that individuals with Type-D personality are more likely to experience increased anxiety, poor sleep quality and reduced memory performance. Significant associations were observed among these parameters, suggesting an interrelated effect on psychological and cognitive health. Early identification and appropriate interventions may help improve emotional well-being, sleep quality and cognitive functioning in this vulnerable population.

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