

Evaluating the Relationship between Stress Coping Styles and Clinical Practice of Anesthesiology Residents with Type D and non-D Personality

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Background: Anesthesiology residents are susceptible to different mood and anxiety disorders. The aim of this research was to determine and compare stress coping styles and clinical performances in anesthesiology residents with type D and Non-D personality.

Methods: This is a causative – comparative research. Anesthesiology residents at academic department of anesthesiology in Tehran university of medical science(TUMS) consisting of Shariati, Emam Khomeini and Sina Hospitals completed the CISS (coping inventory for stressful situations, ANDLER & PARKER, 1990) and DS-14 (Type D personality) questionnaires.

Clinical performance of participants was evaluated by faculty with GRF (Global Rating Format), DOPS (Direct Observation of Procedural Skills) and OSCE (Objectively Structured Clinical Examination) scores. For evaluating research hypothesis, data was analyzed with Pierson correlation coefficient and single and multivariate analysis of variance.

Results: Research results demonstrated that type D personality anesthesiology residents use emotional and avoidance- social diversion coping style more than non-D ones. Interestingly, task-oriented coping style was not statistically different in two groups.

Clinical performance composed of OSCE, DOPS and GRF scores was also higher in non-D personality participants.

Conclusion: Based on our results in this research, type D personality affect negatively on clinical performance and coping styles in anesthesiology residents.

So it is rational to identify type D personality residents to educate them how to deal with negative affects and social avoidance in order to promote their clinical performance.

Keywords: stress; coping styles; anesthesiology resident; clinical performance

Anesthesiology residents like any other stressful practitioners are susceptible to different mood and anxiety disorders [1-8]. Personality could affect on persons stress coping styles [9]. Up till now different personality types (like A and B) and their effect on people healthy status have been described [10]. Recently a new personality type called “D personality” has been introduced. D personality derives from “distressed personality” which was first described by Denollet in 1995 [11] and consists of two components: Negative Affects and Social avoidance (Figure 1).

Negative Affects refers to one’s excess desire to experience negative emotions such as anger, enmity, depression, anxiety and conflicts.

Social Avoidance refers to one’s avoidance of expressing negative affects in social relationships because of the fear of being excommunicated by the others [12]. Studies demonstrated that there is a strong negative association between type D personality and physical and mental health status [13-14]. Type D personality persons experience high level of stress and instead of controlling it, they suppress these emotions [15]. Some studies in cardio-vascular patients demonstrated type D personality as an independent predictor of negative outcomes such as myocardial infarction and mortality [16-17]. They also showed that it is one of the prognostic predictors in coronary and heart failure patients [15-20].

Type D personality persons experience more psychological disorders such as anxiety and depression than Non-D personality persons [21-26].

On the other hand, different people show different responses to stressful stimuli and these variety in responses are affected by different factors such as age, sex, personality type, emotional intelligence, stress coping styles, culture and traditions, beliefs and even geographic regions [27-28].

Most researchers define coping as an endeavor to reduce stress. It consists of task-oriented, emotion- oriented and avoidance coping style. Task-oriented coping style refers to problem solving techniques in order to reduce or omit

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unpleasant stress induced consequences [28-30]. In emotion-oriented coping style people respond to stressful stimuli emotionally with crying or screaming [31]. Finally, in people with avoidance coping style avoid encountering with the stressful problems [32]. It is divided into two subgroups of social-diversion and distraction avoidance coping styles [33] (Figure 2).

Based on studies, type D personality persons desire to implement passive and incompatible avoidance coping style due to high level of stress perception and exhaustion [34].

Working as an anesthesiology resident in stressful situation of operating room to save the patients lives, while preserving the physical and mental health status, deserves a special attention to stress sensitive persons (like type D personality) and their clinical performance under stressful conditions.

In the present study, it was theorized that type D personality could lead to implementation of inappropriate stress coping style and reduce the clinical performance of persons (Figure 3).

Figure 1- Type D personality

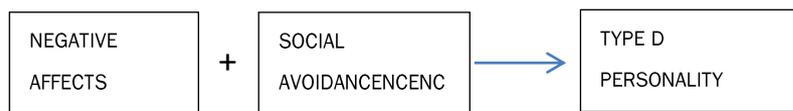


Figure 2- stress coping styles

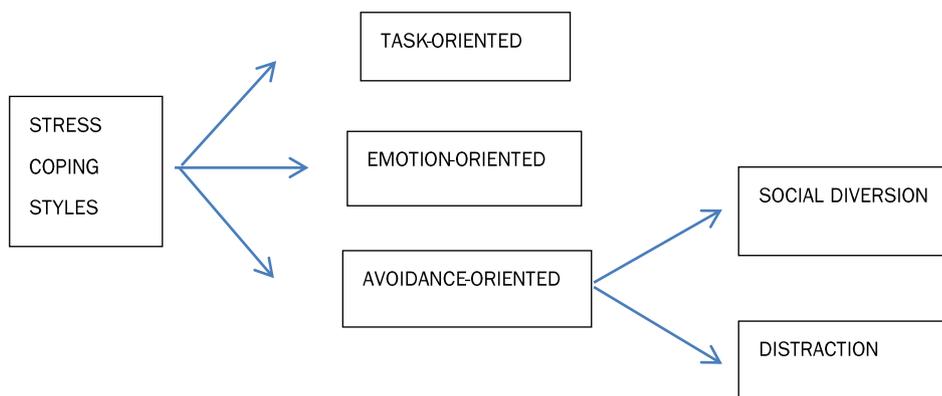
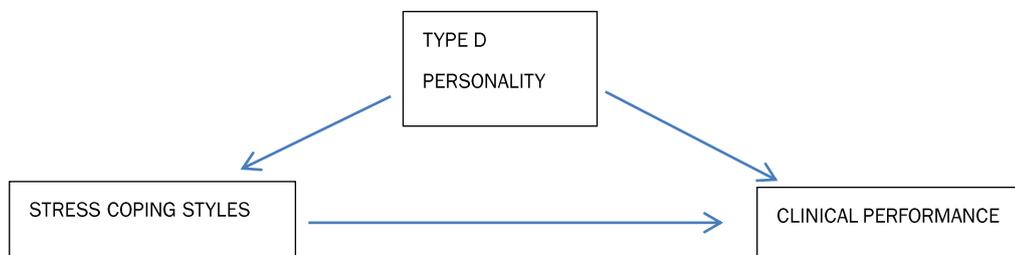


Figure 3- clinical performance modifiers.



Methods

Following TUMS anesthesiology group approval, all residents (n=80) in Shariati, Emam Khomeini and Sina Hospitals were requested to participate in this study.48 residents accepted to participate and completed CISS (coping inventory for stressful situations, ANDLER &PARKER,1990) and DS-14 (Type D personality) questionnaires. Clinical performance of participants was evaluated with GRF (Global Rating Format), DOPS (Direct Observation of Procedural Skills) and OSCE (Objectively Structured Clinical Examination) scores.

For evaluating research hypothesis, data were analysed with Pierson correlation coefficient and single and multivariate analyses of variance.

Participant’s age varied from 25 to 45 Y/O with mean of 33y/o.

31-35 Y/O was the most and 41-45 Y/O was the least frequent range of age.80% of participants were married and the remainders were single.

2.1. Type D Personality Questionnaire

Type D personality can be identified with DS-14 short questionnaire. This questionnaire is composed of two 7-item components which evaluates negative affects and social avoidance.

2.2. Coping inventory for stressful situation – short form (CISS)

This questionnaire was introduced by Andler & parker in 1990 (32) and has two versions of 48 and 21 questions. It evaluates three main fields of task-oriented, emotion-

oriented and avoidance coping behavior. In this study, we used short form of CISS composed of 21 questions.

2.3. Clinical performance

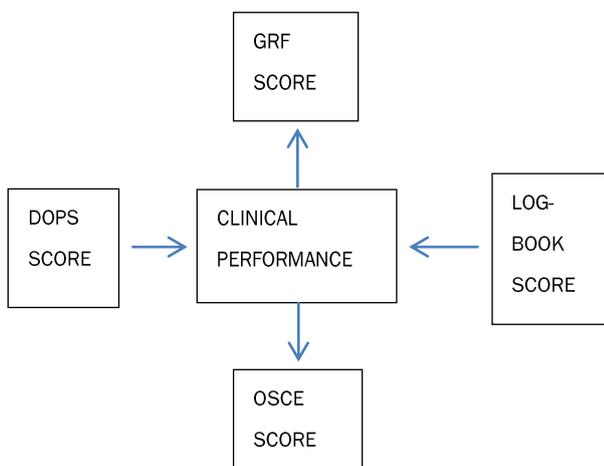
Clinical performance of participants was evaluated with GRF (Global Rating Format), DOPS (Direct Observation of Procedural Skills) and OSCE (Objectively Structured Clinical Examination) scores.

GRF (Global Rating Format) is a 20-question, likert scale questionnaire where in every question has 6 scores. It is completed by faculty member for every resident monthly and evaluates different aspects of clinical competency and communication skills.

DOPS (Direct Observation of Procedural Skills) evaluates every necessary step of performing a clinical procedure. It is completed with a faculty member while the resident is performing a requested procedure.

OSCE (Objectively Structured Clinical Examination) is a kind of popular clinical examination composed of different stations. Every station evaluates a distinct field of clinical competency (Figure 4).

Figure 4- clinical performance components.



Results

Of the 80 anesthesia residents, 48 (60%) chose to participate. All 48 residents completed DS-14 and CISS and received GRF, log book, DOPS and OSCE scores. Of note, 17 (35%) of participants were type D personality and 31 (65%) were type non-D personality. 24 (50%) participants were male and 24 (50%) participants were female. 10 (21%) were single and 38 (79%) were married. The most frequent range of age was 31-35 (42%) and the least was 41-45 (6%).

MANOVA test (Wilks lambda) was used to evaluate the association between personality type (D or non-D) and stress coping style (Table 1).

An association was observed between coping style and personality type ($p < 0.01$) (Table 1). In order to identify the stress coping styles in type D and non-D personality participants ANOVA test was used (Table 2).

The calculated F for emotion-oriented and avoidance of social coping style depicts that there is a significant difference between type D and non-D personality participants from this point of view (Table 2). Comparing the means in these two groups reveals that, emotion-oriented and avoidance of coping style are significantly more in type D personality participants. Adjusting the mean index with Benferoni test confirmed the results.

In order to identify the difference in clinical performance between type D and non-D participants, Wilks lambda test for MANOVA was used and results below 0.05 was statistically significant ($F = 2.712$; Wilks lambda = 0.756; $p = 0.033$).

Regarding (Table 3) results, the calculated F for OSCE, GRF and DOPS is statistically significant. Comparing the mean scores indicates that clinical performance, OSCE, GRF and DOPS scores are higher in non-D personality than D. Adjustment of the clinical performance score in Benferoni test; approved the mentioned difference in clinical performance between D and non-D personality participants.

Table 1- Association between stress coping style and personality type (D and non-D)

Test	Amount	F	df	sig
Wilks lambda	0.677	5.136	4	0.0001

Table 2- ANOVA results for each stress coping style.

Dependent variables	groups	mean	Standard deviation	Sum of squares	df	Mean squares	F
Task-oriented	Type D	23.7	5.13	49.944	1	49.944	2.514
	Non-D	25.83	3.16				
Emotion-oriented	Type D	24.23	4.49	359.166	1	359.166	18.798**
	Non-D	18.51	4.05				
Avoidant-distracted	Type D	11.64	3.37	38.355	1	38.355	1.649
	Non-D	12.51	4.30				
Avoidant-social diversion	Type D	10.29	3.089	14.21	1	14.21	4.875*
	Non-D	8.35	2.54				

* $p < 0.05$

** $p < 0.01$

Table 3- ANOVA results for clinical performance and each of its indexes.

Dependent variables	groups	mean	Standard deviation	Sum of squares	df	Squares mean	F
OSCE	Type D	19.94	3.52	98.438	1	98.438	7.341**
	Non-D	22.93	3.73				
GRF	Type D	34.52	5.71	66.926	1	52.19	4.299*
	Non-D	36.70	1.77				
DOPS	Type D	19.76	2.53	77.372	1	61.374	5.154*
	Non-D	22.12	4.52				
LOG BOOK	Type D	18.11	1.83	0.999	1	0.999	1.48
	Non-D	18.41	2.93				
Clinical Performance	Type D	92.33	9.47	631.247	1	631.247	10.529**
	Non-D	100.16	6.63				

* p<0.05

**p<0.01

Discussion

This study demonstrated that type D personality anesthesiology residents use emotional and avoidance-social diversion coping style more than non-D ones. Interestingly, task-oriented coping style was not statistically different in two groups.

Clinical performance composed of OSCE, DOPS and GRF scores was also higher in non-D personality participants.

This was fairly compatible with Polman, Borkoles and Nicholls study results [35-36]. In another study Park and Adler [37] demonstrated that there is a strong relationship between Emotion-oriented stress coping style and perceived level of stress in students.

Better expression, emotion-oriented students perceive more stress compared to the others. They also demonstrated that there is a strong meaningful relationship between passive coping styles and behavioral and mood disorders.

Connor-Smith and Flachsbart [38] demonstrated that people with high scores of negative affections and social avoidance have less effort confronting the tasks. Type D personality characteristics with negative affections such as anger, depression, anxiety and negative affections [39-42].

Regarding the definition of type D personality by Denollet [25] one of its characteristics is negative affections which causes the person experience more gloom, anxiety and irritability even in normal situation. People with high negative affection scores usually express dissatisfaction in variety of situations and they describe the surrounding events pessimistically.

So it is obvious that potentiated negative affections in type D personality anesthesia residents leads them to use emotion- oriented rather than task-oriented coping style, confronting stressful situations. This tension could endanger their patients and also afflict them to working exhaustion [42-43].

Denollet, Sys and Brutsaert [23] emphasize that people with high score of social avoidance, fear of probable loss of social testimonial and endorsement in their interactions could also potentiate their negative affections. Lack of Social support is one of the most important factors for feeling of tension [38]. Other important factors for anesthesia residents include: patient abundance, night calls,

difficult cases, lack of sufficient knowledge and skill, long shifts and exhaustion, medical claims, unstable economic situation and lack of communication skills.

Clinical performance between type D and non-D anesthesia residents is not the same. Comparing the mean scores of clinical performance consist of OSCE, GRF and DOPS scores between two groups indicates that non-D anesthesia residents have better clinical performance. Which was conducted to evaluate the roll of personality type on tension feeling in working environment and psychological health. Results revealed that type D personality persons perceive their working environment more stressful and they frequently suffer from psychological disorders including depression, anxiety and psychosomatic disorders.

In another study, Pedersen and colleagues [20] demonstrated that type D personality has a significant correlation with depression and anxiety disorders.

These results could justify the lower levels of clinical performance in type D personality anesthesia residents.

Because type D personality has a strong correlation with psychological and cardiovascular disorders and ultimately quality of life, it is obvious that type non-D personality anesthesia residents have higher clinical performance scores than type D personality. In other words, type D personality is a modulating factor between perceived stress, clinical performance and psychological health [44].

Polman, Borkoles and Nicholls demonstrated that type D personality persons use discordant and passive coping styles which correlates with high level of perceived stress [35]. This correlates with an increased level of releasing cortisol which is the predisposing factor for job exhaustion, decreased performance and psychosomatic disorders.

Totally our results revealed that type D personality anesthesia residents with negative affection and social avoidance characteristics, have lower clinical performance scores comparing type non-D. So this personality characteristic is a risk factor for anesthesia residents confronting stressful situations and endangers their psychologic health. As type D personality amplifies perceived stress, putting more psychic tension on person and affects not only on quality of life but also on quality and quantity of clinical performance.

So practical hints of this study in clinical fields is to

identify anesthesia residents personality type and planning proper educative methods in order to teach them how to use compatible stress coping styles in stressful situations.

Our limitations in this study was our residents primary reluctance to participate in the study because of embarrassment about the psychologic tests results. We also considered that our residents are psychologically healthy persons and do not suffer from a serious psychologic disorder. However we did not considered the role of other possible confounding factors such as sex, religious beliefs, familial economic situation and geographic and cultural differences which could be highlighted in further researchs

Conclusion

Based on our results in this research, type D personality affects negatively on clinical performance and coping styles in anesthesiology residents.

So it is rational to identify type D personality residents to educate them to deal with negative affects and practice social avoidance in order to promote their clinical performance.

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