RESEARCH ARTICLE

Evaluating the Relationship between Emotional Quotient (EQ) and Clinical Practice of Anesthesiology Residents with Type D and Non-D Personality

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Background: The aim of this research was to determine and compare emotional quotient and clinical performance in type D and Non-D personality anesthesiology residents.
Methods: This was a causative–comparative research consenting anesthesiology residents (n=48). All the participants completed Bar-on emotional quotient 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 were analysed with single and multivarient analysis of variance.
Results: Regarding the results of present study, the difference between emotional quotient and clinical performance scores between type D and non-D anesthesiology residents was statistically meaningful. Only in social responsibility subscale, there was no statistically difference between two groups.
Conclusion: Research results demonstrated that emotional quotient and clinical performance was lower in type D personality anesthesiology residents comparing to non-D.
Keywords: emotional quotient; anesthesiology resident; clinical performance

Anesthesiology as a medical speciality was introduced in early 20th century. Since then many scientific and technical aspects have been evolved. Yet, one thing remained unchanged. Anesthesiology is a stressful field in medical era, especially for its newcomers [1]. Anesthesiology field encompasses unique and stressful condition for its residents [2-3] which could lead to depression and anxiety disorders in practitioners [4-9]. Practitioners personality affect on their stress couping styles [10]. Up to now different personality types have been described. Recently a new personality type called “type D personality” or “distressed personality” was described by Denollet in 1995 [11-12]. It composes two components: negative affects and social avoidance (Figure 1).
Negative affects refer to ones with excess desire to experience negative emotions such as anger, enmity, depression, anxiety and conflicts. Social avoidance refers to ones avoiding expressing negative affects in social relationships because of the fear of being excommunicated by the others [13]. Studies demonstrated that there is a strong negative association between type D personality and physical and mental health status which can lead to psychosomatic disorders [14]. Type D personality persons experience high level of stress and they supress these emotions instead of controlling them [15]. So, they suffer more frequently from psychological and neurotic disorders [16-17] consisting depression and anxiety disorders [18-20] and complain of annoying and useless thoughts [21-22]. Recent studies demonstrated that there is a correlation between psychological type and emotional quotient (EQ) scores and different personality types have different EQ scores [23-28]. Emotional quotient (EQ) is a kind of emotional processing (Figure 2). It consists of proper evaluating of ones and others emotions for suitable and compatible emotional expression [29] which could enhances quality of life. This concept was first presented by Mayer & Salovey in 1990 [30] and rapidly popularized by Goleman until 1995. Operating room stressful situations and necessity of effective and permanent presence of anesthesiology residents for timely and proper actions to save the patients lives, impels us to pay a proper attention to stress coping potentiality and psychosomatic health of practitioners. In this study we hypothesise that non-D personality anesthesiology resident have higher capability of emotional controls and ultimately higher level of EQs and clinical performance.

Figure 1- Type D personality

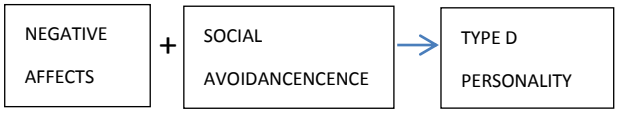

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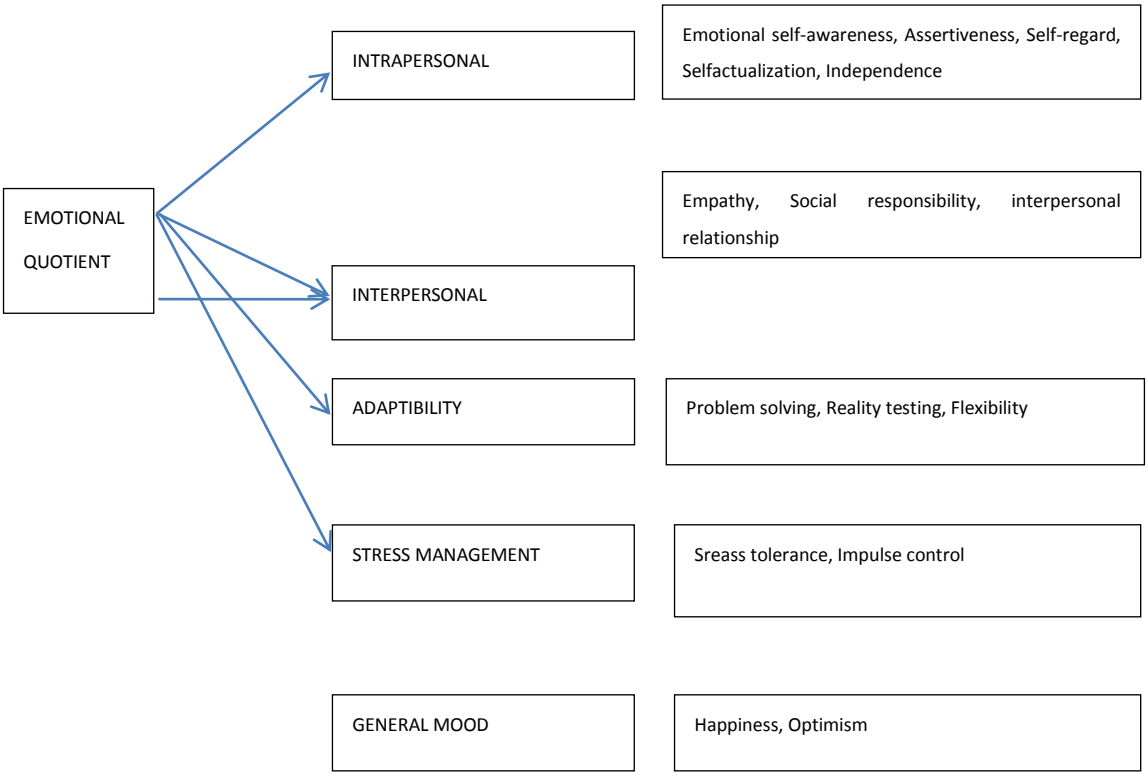
Figure 2- Emotional quotient composite scales and subscales



Methods

Following acquisition of Tehran University of medical sciences anesthesiology department approval, all anesthesiology residents (n=80) were requested to participate in this study. 48 residents accepted to participate and completed Bar-on emotional quotient 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 multivarient analysis of variance and post hoc bonferroni test with SPSS 17.

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. Ninety questions version of Bar-on emotional quotient inventory were used for emotional intelligence assessment in this study. The EQi comprises of five composite scales, fifteen subscales, four validity scales, and also renders a total EQ score. The five composite scales are: intrapersonal, interpersonal, adaptability, stress management and general mood.

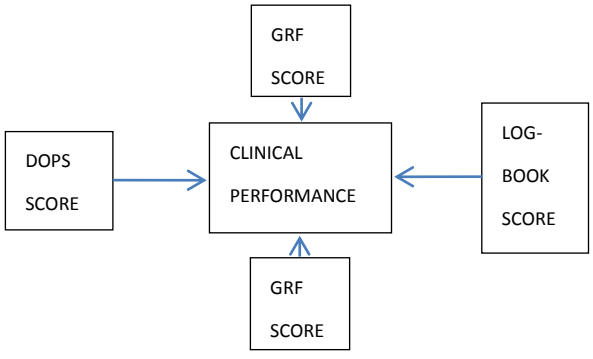
Each of these composite scales is divided into two to five subscales which are listed below:

- Intrapersonal (Self-regard, Emotional Self-Awareness, Assertiveness, Independence, Self-Actualisation)
- Interpersonal (Empathy, Social Responsibility)
- Adaptability (Reality Testing, Flexibility, Problem Solving)
- Stress Management (Stress Tolerance, Impulse Control); and
- General Mood (Optimism, Happiness)

Each question comprises of five-point response likert scales and total EQ number equals adding fifteen subscales scores. It varies from 90 to 450 and higher numbers indicate higher EQs. 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 and 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 by 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 3).

Figure 3- Clinical performance components



Results

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 and38(79%) were married. The most frequent range of age was 31-35(42%) and the least was 41-45(6%). In order to evaluate the difference of EQ and its subscales between type D and non-D participants ANOVA was used (Table 1-2).

Regarding table 2 results, the calculated F lower than 0.01 was meaningful for all EQ subscales except social responsibility. Comparing the mean score of two groups (type D and non-D) depicts that 14 out of 15 subscales score was higher in type non-D anesthesiology residents (the exception was social responsibility subscale). Adjusting the mean index with bonferroni 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 which its 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 clinical performance, OSCE, GRF and DOPS scores is higher in non-D personality than D. Adjustment the clinical performance score in Bonferroni test; approved the mentioned difference in clinical performance between D and non-D personality participants.

Table 1- ANOVA test results for the effect of EQ and its scales on type D and non-D participants

Test	Amount	F	df	sig
Wilks lambda	0.320	4.126	15	0.0001

Table2- ANOVA results for each of EQ scales

variable	Emotional self-awareness*	Assertiveness*	Self-regard*	Self-actualization*	Independence*	Empathy*	Social responsibility	Interpersonal relationship*	Problem solving*	Reality Testing*	Flexibility*	Stress tolerance*	Impulse control*	Happiness*	Optimism*	Total EQ*
Type D	20.7±2.51	16.41±2.64	20.52±1.94	20.7±2.93	20.64±3.04	23.47±2.74	24.64±2.69	21.35±1.93	20.64±3.29	19.94±2.92	17±3.16	15.47±3.26	18.35±5.55	19.29±4.22	19±3.44	298.23±25.89
Non D	24.06±3.37	21.48±4.24	25.41±2.42	25.32±2.45	24.35±2.55	25.48±2.77	26.25±2.96	25.48±2.82	24.06±2.68	22.9±3.34	22.22±3.97	22.77±3.34	22.03±4.32	24.54±2.59	25.35±2.58	362.16±29.42

*: p<0.05

Table3- 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	Type D	92.33	9.47	631.247	1	631.247	10.529**
Performance	Non-D	100.16	6.63				

* p<0.05 **p<0.01

Discussion

This study demonstrated that there is a meaningful difference from the point of EQ score and clinical performance between type D and non-D participants. Not only total EQ score but also 14 out of 15 subscale scores were significantly higher in non-D anesthesiology residents. The mentioned 14 subscales are: self-regard, emotional self-awareness, assertiveness, independence, self-actualisation, empathy, social responsibility, reality testing, flexibility, problem solving, stress tolerance, impulse control, optimism and happiness.

The only exception was social responsibility subscale where the mean score difference was not significant between two groups. Regarding the definition of type D personality by Denollet [20] one of its characteristics is negative

affections which causes the person experiences more gloom, anxiety and irritability even in normal situation. People with High negative affection and social avoidance scores usually express dissatisfaction in variety of situations because of lack of proper social communication skills and they describe the surrounding events pessimistically [37-38]. Emotional intelligence is the consequent of two major proficiencies: 1) self-awareness and self-management 2) social skills consist of social-awareness and relationship management. The more capability in these two major factors, the higher the person's emotional intelligence [39]. Studies have confirmed the role of emotional intelligence in proper emotional adjustment and protection against routine stressful events and psychosomatic disorders [40].

High EQ persons are resistant against different stress recourses because of capability in emotional self-awareness, control and managing them and ultimately empathy and social skills. Additionally another aspect of EQ is problem solving ability which could effectively end the tensions [41-43]. So regarding the present study results, it is obvious that type D personality persons comparing non-D, have a serious problem in problem solving and tension management [36].

There is important hint about low empathy subscale score in type D personality participants, which is compatible with other relevant studies and confirm that high EQ persons tend to have a better relationship with their patients according to higher capability of interpersonal relationship and adaptability to comply their patients' needs [44]. Goldberg states that tender behaviors and empathy of caregivers to the patients is one of the most important indexes of practitioners' emotional intelligence and has a unique role in quality of medical services [45]. Studies demonstrate that high EQ persons can make a better and goal directed decision even in emotional situations [46] and they less often suffer from psychosomatic disorders and have a higher level of health and quality of life [47].

So there is a crosslink between lower EQ levels and type D personality, from the point of lack of sufficient capability in problem solving, stress coping and social communications [48]. Social avoidance, pessimism and lack of interest to join the social groups lead to reduction in emotional self-awareness, motivation, empathy and social skills. This disability in perception, understanding and evaluating self and others motivations, hardens emotional and sensational controls. As Denollet, Sys & Brutsaert [18], pointed that people with high scores of social avoidance find their environment more black and they avoid the situations with a probability of social challenge and disapproval. The more the person avoids the social relationship the less the persons receive social supports and this can potentiate negative affections [49].

Social supports play an important role in stress coping and can modulate stress-disorder relationship and supress its negative effects. So, it is obvious that clinical performance of type D personality residents in stressful situation differs from Non-D ones. Too many patients, lack of environmental supports [50], night calls, difficult anesthesia cases, lack of sufficient skills, long working hours, chronic fatigue, medical complaints, fear, economical instability [51] and lack of sufficient interpersonal relationship are major stressor components in anesthesia practice. There was also a significant difference between type D and Non-D anesthesiology resident clinical performance. Comparing the mean scores depicts that Clinical performance composed of OSCE, DOPS and GRF scores was higher in non-D personality participants.

This was compatible with Oginska-Bulik a finding [52] which was conducted to evaluate the effect of personality type on perceived environmental stress and psychological health. Results demonstrated that type D personality persons feel more environment stress and suffer more psychological disorders. They revealed that psychological health status from the point of somatic complaints and mood disorders is more prevalent in type D comparing to Non-D. Based on reports hospital staffs are exposed to different stressors such as continuous functional assessment, frequent death exposure, lack of sufficient communication time, long working hours, insufficient vacation and physical activities [53]. These stressors affect on clinical performance especially in type D persons. In another study, Pedersen and colleagues declared that type D personality correlates with more frequent mood disorders such as depression and anxiety [54]. These findings justify the lower clinical performance composed of DOPS, GRF and OSCE in type D anesthesiology residents. In an attempt to describe the results it should be postulated that type D personality has a regulatory role between environmental tensions, task performance and psychological health status [55].

Polman, Borkoles & Nicholls [56] demonstrated that type D personality persons use passive and adverse coping strategies which relates to high levels of perceived stress. It can be deduced that these tensions, fears and anxiety status leads to excess cortisol levels which is an important risk factor for psychosomatic disorders, exhaustion and performance decline.

So, practical hints of this study in clinical fields is to identify anesthesia residents personality type and emotional quotient (EQ) levels for planning proper educative methods to improve the acquired components of EQ and enhance interpersonal, interpersonal, stress management, adaptability and general mood control indexes in order to teach them how to cope with stressful situations and improve the practical skills in such circumstances.

Our limitations in this study were our resident's primary reluctancy to participate in the study because of embarrassment about the psychological tests results. We also considered that our residents are psychologically healthy persons and do not suffer from a serious psychological disorder. However, we did not consider the role of other possible confounding factors such as sex, religious beliefs familial economic situation and geographic and cultural differences which could be lighted in further researches. In conclusion, research results demonstrated that emotional quotient and clinical performance was lower in type D personality anesthesiology residents comparing to non-D.

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