

# How Do the Coping Styles of Anesthesiologists Differ from Other Physicians' According to Teamwork Levels?

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## ABSTRACT

**Objective:** Anesthesiologists are constant members of teamwork, especially in operating room and ICU. However, the relationship between teamwork (TW) and psychological state of anesthesiologist has not been adequately studied in the literature. This study aimed to compare the anesthesiologists with other medical branches in terms of coping strategies and perceived social support, considering the levels of teamwork reliance.

**Methods:** We conducted two online surveys. In the preliminary survey, we tested our prediction about the TW levels of anesthesiologists and other branches on medical faculty graduates (n=266). In the main survey with a new sample, we examined the relationship between social support and coping styles against stress in anesthesiology (high TW group, n=107) and dermatology (low TW group, n=91) residents.

**Results:** Preliminary survey showed that anesthesiology had high TW levels (Mean=4.03), as expected. Dermatology who had low TW levels (Mean=2.53) were selected for the comparison group of the main survey. The main survey indicated that dermatologists (Mdn=16) use the submissive coping approach more than anesthesiologists (Mdn=15; p=.007). There was no significant difference in perceived social support levels of the two groups.

**Conclusion:** We found a relationship between passive coping strategies that aim to protect from negative emotions caused by stressful events rather than solving the problem and low teamwork level. We think that teamwork may contribute to problem-solving processes by helping anesthesiologists to actively cope with stress.

## INTRODUCTION

Teamwork in healthcare, which is defined as a dynamic process that requires coordination and articulation of all tasks and activities performed for caring for patients among groups of health professionals, is essential for the normal functioning of a health system and sharing the workload among health professionals.<sup>[1,2]</sup> The literature shows that the practice of teamwork can enhance physicians' work engagement, clinical performance, and job satisfaction.<sup>[3]</sup> These outcomes are also strongly linked to the psychological well-being of physicians, which, in turn, can impact the overall quality of care.<sup>[3,4]</sup> Considering the highly demanding, high-risk, and stressful characteristics of healthcare practices, teamwork can protect physicians' psychological health and well-being. However, these protective outcomes are most likely to be achieved when collaboration is effective.<sup>[3,5]</sup>

It is widely accepted that teamwork in healthcare is challenging.<sup>[6]</sup> Therefore, working in a team requires adopting skills that facilitate dealing with stressful situations that can increase distraction, cognitive load, negative emotions, and social impairment.<sup>[7]</sup> Researchers emphasize that adaptive stress coping strategies, which aim to actively change the problem that causes the stressful situation, can facilitate effective teamwork in healthcare through improving communication.<sup>[8,9]</sup> On the other hand, a high-demand work environment may lead to maladaptive coping, which aims to protect an individual from negative emotions caused by stressful events rather than solving the problem. This type of coping includes the use of emotion-focused/avoidance-based strategies, such as experiencing and expressing negative emotions, adopting unhealthy habits, and submissive withdrawal, and is strongly linked to anxiety and depression.<sup>[10]</sup>

Anesthesiologists are constant members of teamwork, especially in operating rooms and intensive care units (ICUs). It is well known that both the physical and emotional burden in these units can make anesthesiologists susceptible to excessive stress and burnout.<sup>[11,12]</sup> However, anesthesiologists are not among the health professionals reporting the highest level of stress.<sup>[12]</sup>

For instance, in a study conducted with health professionals working together in the operating room, it was found that anesthesiologists and anesthesiology residents experienced moderate levels of stress, which were relatively lower compared with other medical professionals' stress levels.<sup>[6]</sup> Another study objectively measured the acute stress levels of anesthesiologists by recording their heart rates during different stages of the anesthetic process and salivary cortisol concentration.<sup>[13]</sup> In line with Hull et al.'s<sup>[6]</sup> study, the authors detected a small but statistically insignificant change in heart rates at all three stages of the perioperative period, which were preoperative, intraoperative, and postoperative. However, the extent of the decrease in cortisol levels tended to change with years in practice, suggesting that experienced physicians are more likely to deal with stress successfully.

The researchers interpreted the differences in stress levels between anesthesiologists and members of other physicians by focusing on individual differences in stress reactivity. However, these findings may also indicate that anesthesiologists seem to manage to deal with stress effectively despite the stressful and high-demanding working conditions in operating rooms and ICUs. Therefore, whether this difference is related to the implementation of stress management strategies distinct from those employed by other team members remains unclear. Considering the teamwork dynamics unique to operating rooms and ICUs, anesthesiologists may adopt more adaptive approaches to effectively deal with stress than professionals from other physicians.<sup>[11]</sup> To the best of our knowledge, however, there is a lack of research investigating the differences in coping skills of anesthesiologists and medical physicians from other specialties that are not heavily teamwork-dependent.

Besides stress coping styles, perceived social support is also one of the significant determinants of the psychological well-being of healthcare professionals. Social support in medical settings can reduce work-related stress and positively affect the health status of health workers.<sup>[14,15]</sup> This suggests social support as both an essential component and an outcome of successful teamwork in healthcare. Therefore, this study aimed to compare anesthesiologists with other medical physicians in terms of stress-coping strategies and perceived social support, considering the levels of teamwork reliance.

## MATERIALS AND METHODS

### Instruments

**Demographic Information Sheet (DIS):** DIS was used to obtain participants' sociodemographic information, includ-

ing age, gender, and year of residency.

**The Teamwork Assessment Form (TAF):** This form was developed ad hoc to measure the perceived level of required teamwork for medical, surgical, and basic science divisions and subdivisions (n=43) on a 5-point Likert scale ranging from 1 to 5. Higher scores show a higher level of teamwork dependence for each division. The definition of teamwork given to the participants was as follows: "Teamwork refers to the members of a team working together, anticipating and meeting each other's needs, reassuring each other, and communicating effectively."<sup>[16]</sup> The Cronbach's alpha reliability for the Teamwork Assessment Form (TAF) in our study was 0.96.

**The Brief Coping Style Inventory (BCSI):** The BCSI originates from the Ways of Coping Questionnaire developed by Folkman and Lazarus and was adapted by Sahin and Durak for the Turkish population.<sup>[10,17]</sup> The scale measures the use of different stress coping strategies through 30 items and five subscales, which are helpless (8 items), optimistic (5 items), self-confident (7 items), submissive (6 items) styles, and seeking social support (4 items). Each item is rated on a 4-point Likert scale ranging from 0 to 3, and higher scores obtained from subscales show higher use of the relevant coping style. The scale's Cronbach's alpha reliability was found to be 0.89 in this study.

**The Multidimensional Scale of Perceived Social Support (MSPSS):** The scale was developed by Zimet et al.<sup>[18]</sup> to measure the level of perceived social support. The Turkish adaptation of MSPSS was performed by Eker, Arkar, and Yaldiz.<sup>[19]</sup> The 12 items are rated on a 7-point Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree), and form three subscales: significant other, family, and friends. Also, a total scale score is calculated, and higher scores show higher levels of perceived social support. The Cronbach's alpha reliability of the scale was found to be 0.88 in the present study.

### Study Design and Participants

The present research was a two-phase study consisting of a preliminary survey and the main study, which adopted a cross-sectional design. The data were collected between November and December 2019. In the preliminary survey study, the participants were asked to score the level of teamwork required in each medical division. After determining the highest- and lowest-scoring divisions, medical doctors were selected from those departments to conduct a comparison of the divisions that required the most and least teamwork.

The medical doctors working at different hospitals in Türkiye participated in both studies. The data were anonymously collected online using the Qualtrics Online Survey Tool (<https://www.qualtrics.com>). The questionnaire was distributed to the participants through social media, WhatsApp groups, and communication listservs. After the purpose of the study was explained, informed consent was obtained from each participant.

This study was conducted in accordance with the Declaration of Helsinki. Ethical board approval was obtained from Başkent University, Social Science and Humanities Scientific Research and Publication Ethics Committee (IRB Number: 62310886-604.01.01/17475). This study is open to public access in accordance with Open Science principles. The pre-registration link for the study is <https://osf.io/r7qev/>

### Statistical Analyses

The data management and analysis were performed using the IBM SPSS version 22 statistical analysis software. Descriptive statistics are expressed as mean  $\pm$  standard deviation. The between-group analyses were performed using the independent samples t-test for continuous variables and the Chi-square test for categorical variables. Shapiro-

**Table 1.** Teamwork scores of medical branches (Min=1, Max=5)

	Median	Mean	SD
Emergency Medicine	5	4.20	1.103
Anesthesiology and Reanimation	4	4.03	1.031
General Surgery	4	4.00	1.028
Cardiovascular and Thoracic Surgery	4	3.99	1.097
Neurosurgery	4	3.95	1.047
Orthopedics and Traumatology	4	3.89	.999
Chest Surgery	4	3.75	1.085
Pediatric Surgery	4	3.73	1.149
Cardiology	4	3.66	1.002
Obstetrics and Gynecology	4	3.62	1.151
Plastic Reconstructive and Aesthetic Surgery	4	3.58	1.154
Urology	4	3.55	1.024
Internal Medicine	4	3.54	1.102
Otorhinolaryngology	3	3.50	1.061
Pediatrics	4	3.48	1.147
Neurology	3	3.25	1.042
Infectious Diseases and Clinical Microbiology	3	3.22	1.129
Chest Diseases	3	3.19	1.033
Ophthalmology	3	3.12	1.096
Radiation Oncology	3	3.11	1.186
Radiology	3	3.10	1.246
Psychiatry	3	2.95	1.135
Medical Pathology	3	2.95	1.244
Physical Medicine and Rehabilitation	3	2.88	1.193
Child and Adolescent Psychiatry	3	2.82	1.154
Nuclear Medicine	3	2.76	1.199
Forensic Medicine	3	2.73	1.201
Public Health	2	2.62	1.268
Medical Genetics	2	2.59	1.173
Family Medicine	2	2.55	1.265
Dermatology	2	2.53	1.103
Sports Medicine	2	2.51	1.173
Medical Microbiology	2	2.48	1.127
Medical Biochemistry	2	2.29	1.093
Medical Education and Informatics	2	2.26	1.168
Medical Pharmacology	2	2.23	1.031
Biostatistics	2	2.20	1.123
Histology and Embryology	2	2.11	1.060
Medical Biology	2	2.11	1.041
Anatomy	2	2.08	1.058
Physiology	2	2.06	1.053
Biophysics	2	1.98	1.035
Medical History and Ethics	2	1.94	1.090

Wilk statistics were used to determine whether the data of continuous variables showed normal distribution. To compare the two groups, the independent samples t-test was used on mean scores having a normal distribution. The Mann-Whitney U test was performed for non-normally distributed variables. The correlations between the teamwork level and demographic variables were assessed using Spearman's rank-order correlation analysis. p-values less than 0.05 were considered statistically significant.

## RESULTS

The research aimed to compare the perceived social support levels and stress coping styles of the medical doctors working in the departments requiring high and low teamwork.

To achieve this aim, a preliminary survey was conducted to determine the physicians requiring the highest and lowest levels of teamwork and confirm if the anesthesiology and reanimation branch was regarded as highly dependent on teamwork. In total, 266 medical physicians from various hospitals in Türkiye participated in the study. Fifty-nine percent of the participants were women (156 female), and the mean age was 35.3 (SD=8.4) (range: 23-64) years. According to the preliminary survey results, the anesthesiology division had one of the highest teamwork requirement scores following emergency medicine, as expected. Dermatology and sports medicine were the physicians with the lowest teamwork scores after basic science divisions (see Table 1). We decided to include dermatology as the comparison group because the number of physicians in the field of dermatology is higher than in sports medicine in Türkiye.

After evaluating the preliminary study results, the main study data were collected from 198 resident physicians

based in the anesthesiology and reanimation (n=107) and dermatology (n=91) departments. Seventy-six (71%) anesthesiology residents were female, and the mean age was 29.3 (SD=2.91) (range, 24-42) years. Seventy-one (66%) anesthesiology residents had 3 or more years of residency. Seventy-nine participants (75%) of dermatology residents were female, and the mean age was 29.2 (SD=3.59) (range, 24-45) years. Fifty-nine (65%) dermatology residents had 3 or more years of residency. The demographic characteristics of the participants are given in Table 2. The normality of distribution was violated for all mean scores assessed using Shapiro-Wilk's test ( $p<.001$ ). Therefore, non-parametric analyses were performed.

**Correlations Between Variables:** Preliminary analyses showed the relationship to be non-linear with all variables as assessed using Shapiro-Wilk's test ( $p>.05$ ). A Spearman's rank-order correlation was performed to evaluate the relationships between BCSI subscale scores and MSPSS total and subscale scores.

All results were in the expected direction (see Table 3). Age and the seeking social support subscale of MSPSS were not significantly correlated with any variable. All subscale scores and total scores of MSPSS were positively intercorrelated ( $p<.001$ ).

**Between-Group Comparisons:** The sex and division-based between-group comparisons were performed using Mann-Whitney U tests to determine whether the Perceived Social Support Scale and Brief Coping Style Inventory scores and sub-scores were differentiated.

According to the results, distributions of family subscale scores of MSPSS were found significantly different between men (Mdn=24) and women (Mdn=25,  $U=3120$ ,  $p=.041$ ), using an exact sampling distribution for Mann-Whitney U test.<sup>[20]</sup> The two groups were not differentiated in terms of other MSPSS subscales. In terms of BCSI subscales, the

**Table 2.** Demographic variables, perceived social support scores, and types of coping styles of the participants

Demographic Variables	Anesthesiology (n=107)	Dermatology (n=91)	p
Age (year)	29 (24-42)	28 (24-45)	.386
Gender (Female/Male)	76/31	69/22	.520
Years of Residency (<2 years/ $\geq$ 2 years)	36/71	32/59	.881
Multidimensional Scale of Perceived Social Support (MSPSS)			
Family	24 (10-28)	25 (14-28)	.780
Friend	24 (5-28)	24 (10-28)	.648
Significant Other	23 (4-28)	24 (4-28)	.919
Total	69 (28-84)	70 (34-84)	.817
Brief Coping Style Inventory (BCSI)			
Self-confident	27 (13-35)	27 (14-35)	.152
Helpless	23 (9-38)	24 (13-37)	.673
Submissive	15 (9-25)	16 (9-23)	.007**
Optimistic	18 (7-25)	18 (5-23)	.199
Social Support Seeking	13 (9-20)	13(9-18)	.262

Non-parametric variables analyzed using the Mann-Whitney U test and presented as median (minimum-maximum). \*\* $p<.01$ .

**Table 3.** Spearman's rank-order correlations among variables

Variable	n	1	2	3	4	5	6	7	8	9	10
1. Age	198	-									
2. MSPSS	198	-0.02	-								
3. MSPSS-F	198	0.02	0.69	-							
4. MSPSS-FR	198	-0.08	0.72	0.46	-						
5. MSPSS-SO	198	-0.01	0.89	0.45	0.46	-					
6. BCSI-SC	198	0.07	0.20**	0.21**	0.20**	0.15*	-				
7. BCSI-H	198	-0.07	-0.12	-0.15*	-0.18*	-0.02	-0.56	-			
8. BCSI-S	198	-0.02	-0.05	-0.05	-0.06	-0.05	-0.32	0.41	-		
9. BCSI-O	198	0.03	0.15*	0.14*	0.19**	0.09	0.66	-0.58	-0.14*	-	
10. BCSI-SSS	197	0.13	-0.01	-0.00	-0.12	0.00	-0.04	0.14	-0.01	-0.03	-

Significant correlations in bold are at  $p < .001$ , \*\* $p < .01$ , \* $p < .05$ . Rho: Spearman's rho value. MSPSS: Multidimensional scale of perceived social support total score; MSPSS-F: Multidimensional scale of perceived social support from family; MSPSS-FR: Multidimensional scale of perceived social support from Friends; MSPSS-SO: Multidimensional scale of perceived social support from significant others; BCSI-SC: Brief Coping Style Inventory Self-confident; BCSI-H: Brief Coping Style Inventory Helpless; BCSI-S: Brief Coping Style Inventory Submissive; BCSI-O: Brief Coping Style Inventory Optimistic; BCSI-SSS: Brief Coping Style Inventory Seeking Social Support.

distributions of scores were not significantly different between male and female participants.

The division-based Mann-Whitney U tests for MSPSS total scores and subscale scores showed that distributions of MSPSS scores were not significantly different between dermatologists and anesthesiologists. The two groups were only differentiated regarding the submissive coping scores of BCSI. Anesthesiologists had significantly lower submissive coping scores (Mdn=15) than dermatologists (Mdn=16;  $U=3786$ ,  $p=.007$ ; see Table 2).

## DISCUSSION

There is a growing body of literature on teamwork and its implications in healthcare. Most of these studies are on decision-making mechanisms, patient safety, and cost improvement in healthcare.<sup>[21]</sup> However, the relationship between teamwork and the psychological well-being of healthcare professionals has not been studied much. Previous studies showed that social support and coping styles were the two main buffer systems of depression and anxiety of individuals.<sup>[11,12]</sup> In our study, we aimed to discuss the association of different teamwork levels with stress coping styles and perceived social support.

To achieve this purpose, we investigated whether anesthesiologists used different stress-coping strategies and had different levels of perceived social support than those of other medical branch physicians who depended on teamwork less.

The preliminary survey confirmed that anesthesiologists were perceived as one of the highest teamwork-dependent physicians following emergency medicine compared with other physicians, as we predicted. To be able to compare the physicians based on their teamwork reliance, we included physicians from the dermatology department in the study because there was a similar number of physi-

cians compared to anesthesiologists. Therefore, the main research was conducted with the residents of these two departments. In terms of gender-based comparisons, female physicians reported higher social support from their families than male physicians. This finding is in line with the literature showing that women are more likely to perceive themselves as supported by their families compared with men.<sup>[22]</sup>

The results of this study revealed that anesthesiologists were less likely to use a submissive approach to deal with stressful situations compared with dermatology residents. It is well-documented that higher stress levels impair cognitive processes, such as memory, attention, and decision-making, leading to serious adverse consequences, especially in healthcare.<sup>[23,24]</sup> Considering the anesthesiologists' ethical and legal responsibilities, developing autonomy as an acquired characteristic is essential for healthy decision-making processes.<sup>[25]</sup> Therefore, adopting a submissive coping approach may prevent them from fulfilling their professional responsibilities. This finding also supports Demir and Ataman's the study showing that emergency medicine physicians mostly use active/problem-oriented approaches in coping with stress during COVID-19<sup>[26]</sup> Consistent with this finding, emergency medicine physicians were one of the highest teamwork-dependent groups, as were anesthesiologists in our preliminary study. Therefore, the use of active coping strategies by anesthesiology residents was an expected finding.

In terms of other coping strategies, these two groups were not differentiated. A possible explanation for this result may be related to the limited ways of coping addressed in this study. Stress management generally involves a combination of behavioral, cognitive, and emotional coping strategies, and there are both interpersonal and intrapersonal differences in the use of this combination.<sup>[10,17]</sup> Therefore, this study could have benefited from a more detailed examination of coping strategies.

However, we found a relationship between passive coping strategies and teamwork level as we expected. Passive coping strategies (i.e., helpless and submissive) are higher in dermatology residents, a low teamwork group, than in anesthesiology residents, a high teamwork group. One remarkable finding was that the use of passive coping strategies increased as the level of teamwork decreased. Avoiding actively confronting problems to indirectly reduce emotional tension or engaging in other behaviors are passive coping strategies.<sup>[27]</sup> People who use active coping strategies can have positive self-views and take a proactive, optimistic, and confident approach to managing stressful situations.<sup>[28]</sup> Anesthesiologists working in high-stress environments, such as operating rooms and ICUs, may be actively coping with stress more than dermatologists. It is consistent with the literature that dermatologists working in less stressful environments than anesthesiologists use passive coping strategies more.<sup>[29]</sup>

On the other hand, anesthesiologists and dermatologists did not report different levels of social support. The literature suggests that the link between stress response and social support depends on the sources of that support.<sup>[30]</sup> In this study, social support from family, friends, and significant others was addressed, and these sources may be linked to different outcomes compared with the support from supervisors, employees, and coworkers in healthcare.

### Limitations

This study has some limitations. First, because the present study adopted a cross-sectional design, establishing causal relationships was not possible. Therefore, the findings only have correlational implications. Second, this study did not evaluate the stress levels of participants, which might have allowed testing mediational models on the role of different coping strategies in managing stress. Furthermore, objectively measured teamwork levels would have been beneficial to reach a more accurate classification to perform division-based comparisons. In this context, it is a matter of debate whether lower teamwork or lower stress levels led to passive coping strategies in dermatologists.

### Conclusion and Future Implications

Adaptive stress coping strategies and high levels of perceived social support are central to psychological resilience and well-being in health settings. Therefore, health professionals should be actively supported in terms of improving coping skills and strengthening social ties. To be able to determine the specific areas that need to be supported most, similar studies should be performed in healthcare settings. Further research testing the mediational models to examine the possible direct and indirect pathways is also needed.

Anesthesiology and reanimation physicians work in a high-intensity and high-risk work environment and strongly depend on well-coordinated collaboration and good communication. Therefore, more research on the mutual relationships between mental health and teamwork functioning needs to be undertaken to develop interventions to

improve anesthesiologists' psychological health and maintain successful teamwork.

### Ethics Committee Approval

This study approved by the Baskent University Ethics Committee (Date: 15.04.2019, Decision No: 14739).

### Informed Consent

Retrospective study.

### Peer-review

Externally peer-reviewed.

### Authorship Contributions

Concept: M.T.; Design: M.T., P.O.P.; Supervision: P.O.P.; Fundings: M.T.; Materials: M.T.; Data: M.T., P.O.P.; Analysis: P.O.P.; Literature search: M.T.; Writing: M.T., P.O.P.; Critical revision: P.O.P.

### Conflict of Interest

None declared.

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## Takım Çalışması Düzeylerine Göre Anestezistlerin Başa Çıkma Tarzları Diğer Hekimlerden Nasıl Farklılaşıyor?

**Amaç:** Anestezi uzmanları, özellikle ameliyathane ve yoğun bakım ünitelerinde ekip çalışmasının daimi üyeleridir. Ancak ekip çalışmasına dayalı olma düzeyi ve anestezistlerin psikolojik durumu arasındaki ilişki literatürde yeterince çalışılmamıştır. Bu çalışmanın amacı ekip çalışmasına dayalı olma düzeylerini göz önünde bulundurarak, anestezi uzmanlarını baş etme stratejileri ve algılanan sosyal destek açısından diğer tıp branşları ile karşılaştırmaktır.

**Gereç ve Yöntem:** Çalışmanın amacı doğrultusunda iki çevrimiçi anket uygulaması gerçekleştirilmiştir. Ön çalışmada anestezistlerin ve diğer branşların EÇ düzeylerine ilişkin öngörüler tıp fakültesi mezunları (n=266) üzerinde test edilmiştir. Yeni bir örnekleme yapılan temel çalışmada ise anesteziyoloji (yüksek EÇ grubu, n=107) ve dermatoloji (düşük EÇ grubu, n=91) asistanlarında sosyal destek ve stresle başa çıkma tarzları arasındaki ilişkiyi incelenmiştir.

**Bulgular:** Ön çalışmada, beklendiği gibi, anesteziyolojinin yüksek EÇ düzeyine (Ort.=4.03) sahip olduğunu bulunmuştur. Düşük EÇ düzeyine (Ort.=2.53) sahip olan dermatoloji, ana çalışmanın karşılaştırma grubu olarak belirlenmiştir. Ana çalışma sonucunda dermatologların (Mdn=16) anestezistlere (Mdn=15; p=.007) kıyasla pasif başa çıkma stratejilerinden olan boyun eğici başa çıkma yaklaşımını daha fazla kullandığı bulunmuştur. İki grubun algılanan sosyal destek düzeyleri arasında anlamlı bir fark bulunmamıştır.

**Sonuç:** Araştırma sonucunda sorunu çözmek yerine stresli olayların neden olduğu olumsuz duygulardan korunmayı amaçlayan pasif başa çıkma stratejileri ile düşük ekip çalışması düzeyi arasında bir ilişki bulunmuştur. Ekip çalışmasının anestezistlerin stresle aktif olarak başa çıkmalarına yardımcı olarak problem çözme süreçlerine katkıda bulunabileceği düşünülmektedir.

**Anahtar Sözcükler:** Anesteziyoloji; başa çıkma tarzları; takım çalışması; sosyal destek; iş sağlığı psikolojisi.