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THE EFFECTS OF REST QUALITY, ANXIETY AND EXHAUSTION ON FLIGHT ATTENDANTS FLYING INTERNATIONALLY

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Abstract

This study is a descriptive correlation survey to identify the rest quality, exhaustion, and anxiety of international flight attendants of large airlines, and to identify factors influencing agitation. As a result of the study, the demographic variables that had a significant effect on job-related anxiety such as gender, rank, flight-time per month, health supplements, and sleep-inducing drugs were considered. Agitation and rest quality showed a negative relationship ($r=-.49$, $p<.001$), while exhaustion showed a positive relationship ($r=.53$, $p<.001$). As a result of the regression analysis, the variables that had a significant effect on agitation were exhaustion, the use of sleep-inducing drugs, gender, and rest quality, which were at 46.7%. Through the results of this study, it was confirmed that rest quality and exhaustion are important causes of agitation for the cabin crew.

Keywords: Flight Attendant, Anxiety, Rest Quality, Exhaustion, Cabin Crew.

JEL Codes: I12.

DİNLENME KALİTESİ, STRES VE YORGUNLUĞUN ULUSLARARASI UÇAN KABİN EKİBİ ÜZERİNDE ETKİLERİ

Özet

Bu çalışma, büyük havayollarının uluslararası uçuş görevlilerinin dinlenme kalitesi, bitkinliği, yorgunluğu ve ajitasyonu etkileyen faktörleri belirlemek için tanımlayıcı bir korelasyon araştırmasıdır. Çalışma sonucunda cinsiyet, iş seviyesi, aylık uçuş süresi, sağlık takviyeleri ve uykuyu tetikleyen ilaçlar gibi iş stresi üzerinde anlamlı etkiye sahip olan demografik değişkenler ele alınmıştır. Ajitasyon ve dinlenme kalitesi negatif bir ilişki göstermiştir ($r = -.49$, $p <.001$) ancak yorgunluk pozitif bir ilişki göstermiştir ($r = .53$, $p <.001$). Regresyon analizi sonucunda ajitasyon üzerinde anlamlı etkiye sahip değişkenler; 46.7% ile yorgunluk, uykuya neden olan ilaç kullanımı, cinsiyet ve dinlenme kalitesi olmuştur. Bu çalışmanın sonuçlarıyla, dinlenme kalitesinin ve yorgunluğun kabin ekibi için önemli ajitasyon nedenleri olduğu doğrulanmıştır.

Anahtar Kelimeler: Uçuş Görevlisi, Kaygı, Dinlenme Kalitesi, Yorgunluk, Kabin Ekibi.

JEL Kodları: I12.

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1. INTRODUCTION

1.1. The Need for Research

Over the past 10 years, due to the increase in domestic and international travel demand, the rising global economy, and the airlines' globalization strategy, the airlines' passenger transport performance has been steadily increasing (Nwaogbe, 2017). In particular, the air transport market is competitive due to the new low-cost airlines that have emerged over the past few years. To gain an edge, the airlines' services are being strengthened.

Among them, cabin crew play a crucial role in maintaining the continuity of operations. A cabin attendant is a member of an airline who provides a variety of services while directly confronting the passengers and plays a pivotal role in the aviation service so that the image of the airline's cabin crew symbolizes the airline. Also, a flight attendant is the most important figure representing an airline via direct contact with customers (AlBattat et al., 2014). The safety of these cabin attendants is basically the safety and rights of passengers. It is very important for the cabin crew to maintain their best health during business hours. Especially, in the case of international flight attendants, a wide range of services such as cabin cleaning, provision of in-flight meals, sales of duty-free goods, and basic medical conditions and provisions should be provided to passengers during a long flight. Shift workers have the highest complaints of sleep disorders and exhaustion. They also face relatively high rates of work-family conflict due to work pressures resulting in high rates of turnover (Wagner, 2010).

One of the factors influencing the quality of the cognitive domain when performing work is circadian rhythm (Allada and Chung, 2010). The circadian rhythm is a concept that encompasses the biological rhythm of the human body, which appears in a period of about 24 hours (Naganuma, 2017) and refers to the sleep-wake cycle. In circadian rhythms, human brain activity is best during daytime and sleep is best during nighttime (Haaramo, 2014). However, due to irregular flight hours and schedules, this behavior changes in the case of international flight attendants (Allada and Chung, 2010). This can cause disturbances in the circadian rhythm and consequently affect the rest quality.

Sleep is a basic human need, and is intrinsically linked to circadian behavior, a means of restoring vitality, which significantly affects human health (Shang, 2011). Sleep patterns that do not follow the circadian rhythm due to the work environment are known to have a negative impact on health, and flight attendants frequently do not get the necessary rest that they desire (Keller et al.,2019). This is because the number of sleep disturbances during daytime sleep due to light and noise increase, resulting in increased sleepiness during daytime (Haaramo, 2014), insomnia (Spiegelhalder, 2014), increased exhaustion (Haaramo, 2014), and other problems related to sleep. Irregular sleep and the resulting exhaustion can cause decreased attention, anxiety, and confusion in the short term (Sofi, 2014).

In the long term, it has been known to cause various physical and mental problems such as cardiovascular problems, cancer, infertility, and depression (Schernhammer, 2006) and increase the risk of various accidents. Accumulated exhaustion can increase job-related anxiety (Holcomb, 2009), and high-level stress is an important factor that induces the impulse to leave the job.

However, looking at previous studies on exhaustion and sleep of shift workers, researchers studied 2-3 day/night shift nurses (Kim and Gu, 2013; Lee and Shin, 2014), female shift workers in production (Oh, 2014), and police officers (Park and Choi, 2010). Most of them, showed similar symptoms. In addition, prior studies on the job-related anxiety of cabin crew members also showed that job-related anxiety of cabin crew members was related to job

satisfaction, organizational commitment, and turnover intention. Most of the studies confirming the effect on career satisfaction, etc. have been conducted. Therefore, this study aims to check the relationship between rest quality, exhaustion, and job-related anxiety for international cabin crew members of large airlines working on an irregular schedule with an irregular circadian rhythm.

1.2. Research Purpose

This study attempts to understand the relationship between rest quality, exhaustion, and job-related anxiety for international flight attendants working at large airlines, and to identify factors affecting job-related anxiety. The specific goals are as follows:

1). Identify the general characteristics, job-related characteristics, and health-related characteristics of the subject.

2). Determine the subject's rest quality, exhaustion, and job-related anxiety.

3). Identify the difference in job-related anxiety level according to the general characteristics; job-related characteristics, and health-related characteristics of the subject.

4). Identify the relationship between the subject's rest quality, exhaustion, and job-related anxiety.

5). Identify the factors that affect the subject's job-related anxiety.

2. RESEARCH METHOD

2.1. Study Design

This study is a descriptive correlation survey to understand the correlations between rest quality, exhaustion, and job-related anxiety of cabin crew members on international flights of large airlines, and to identify factors that influence job-related anxiety.

2.2. Research Subject

The subjects of this study were international flight attendants working for large airlines, and those who understood and accepted the purpose of this study. The number of study subjects is based on the Power Analysis formula of Cohen (Cohen, 1988), with significance level (α) = .05, value of the regression analysis effect size = 0.2, power ($1-\beta$) = .95, and 4 predictors. The minimum number of people required was calculated as 95, who were selected based on rest quality, exhaustion, gender, and whether taking sleep-inducing drugs or not. Data were collected from a total of 102 people, and 101 of them were valid, except one questionnaire with incomplete responses.

2.3. Research Tools

2.3.1. Characteristics of the Subject

The general characteristics of the subjects of the study consisted of four items: gender, age, marital status, and religion, and the job-related characteristics were composed of four items: position, main task, flight time per month, and the number of overnight flights. The health-related characteristics consisted of two items: the use of sleep-inducing drugs and the use of health supplements.

2.3.2. Rest Quality

In this study, the tool developed by Snyder-Halpern and Verran (Snyder-Halpern and Verran, 1987) was used by Oh, Song and Kim (Oh,1998). This tool is composed of a 4-point Likert scale with a total of 15 questions and has 4 points. The higher is the score, the better is

the rest quality. In the study of Oh, Song and Kim (Oh, 1998), Cronbach's α=.75 and in this study Cronbach's α=.89.

2.3.3. Exhaustion

The exhaustion scale developed by Chalder, Berelowitz, Pawlikowska and Watts (Chalder, 1993) was translated by Park (Park, 2009) as a tool for exhaustion. This tool is composed of a 4-point Likert scale of 11 questions in total. The higher is the score, the greater is the exhaustion. In Park's (Park, 2009) study, Cronbach's α=.84, and in this study Cronbach's α=.94.

2.3.4. Job-related Anxiety

As for job-related anxiety, Lee and Park (Lee and Park, 2006) used modified and supplemented tools based on the job-related anxiety of Parker and Decotiis (Parker and Decotiis, 1983) and the depression of Quinn and Shepard (Quinn and Shepard, 1974). This tool is composed of a 5-point Likert scale, and the range of scores is from 15 to 75, where the higher is the score, the higher is the job-related anxiety. Cronbach's α=.85 in Lee and Park (Lee and Park, 2006), and Cronbach's α=.89 in this study.

2.4. Data Collection Method

Data collection was conducted from August 1, 2020 to August 30, 2020. The researcher conveniently sampled by sending and collecting questionnaires through SNS (social network service) to subjects currently working on international flights of a large airline.

In the questionnaire, the contents explaining the purpose and procedure of the study were specified, and the guarantee of anonymity of the data and the protection of human rights were explained. In addition, it was emphasized that after participating in the study, it could be withdrawn at any time without any drawbacks. The time required for the response was around 10 minutes, and the questionnaire answers were prevented from being duplicated by allowing one person to answer one question at a time.

2.5. Data Analysis Method

The data analysis was performed using the SPSS Version 18.0 program, and the detailed method is as follows:

First, descriptive statistics were used for the subject's characteristics and major variables.

Second, the difference in job-related anxiety according to the subject's general characteristics; job-related characteristics, and health-related characteristics, was analyzed by t-test and ANOVA.

Third, the relationship between rest quality, exhaustion, and job-related anxiety was analyzed by Pearson's correlation.

Fourth, to find out the factors affecting the subject's job-related anxiety level, were analyzed by stepwise multiple regression analysis.

3. RESEARCH RESULTS

3.1. General Characteristics of the Subject

Of the 101 subjects, women accounted for the majority with 73.2% (74 subjects), and the ages between 30-39 were the largest with 48.4% (49 subjects) (Table 1). Non-religious subjects were at 40.5% (41 subjects), and unmarried persons accounted for more than half with

76.3% (77 subjects), and 43.7% (44 subjects) were in marital status. General crew members were the most at 30.6% (31 subjects), and in major duties, the top class GLY was the most at 28.7% (29 subjects).

Flight time per month was the most, with 62.4% (63 people) having 90-100 hours, and the number of overnight work per month was more than half, where 60.4% (61 people) answered 5-9 times. Regarding sleeping pills, 73.2% (74 people) answered that they did not take it, and 58.4% (59 people) answered that they took health supplements.

Table 1. Demographic chracteristics (N=101)

Variables	**Categories**	**N(%)**
Gender	Male	15(14.8)
	Female	74(73.2)
Age(year)	20-29	19(18.7)
	30-39	49(48.4)
	40-49	23(22.9)
Religion	None	41(40.5)
	Has	40(39.5)
Marital status	Single	77(76.3)
	Married	44(43.7)
Position	Cabin attendant	31(30.6)
	Assistant purser	29(28.6)
	Purser	11(10.9)
	Senior purser	6(5.9)
	Chief purser	3(3.0)
Duty	EY class AISLE	11(10.9)
	EY class GLY	11(10.9)
	Top class GLY	29(28.7)
	Top class JNR	18(17.8)
	Deputy Manager	5(5.0)
	Team Manager	24(24.7)
Monthly flight time (time)	70-79	6(6.0)
	80-89	34(33.7)
	90-100	63(62.4)
Monthly night duty (number)	1-4	17(16.8)
	5-9	61(60.4)
	10-14	16(15.8)
	15-19	4(4.0)
Health Supplements	Takes	59(58.4)
	Does not take	39(38.6)
Sleeping pills	Takes	15(14.8)
	Does not take	74(73.2)

3.2. Subject's Rest Quality, Exhaustion and Job-related Anxiety

The rest quality perceived by the subject was composed of 1 to 4 points, and the average score was 2.08 points (SD=0.53), which was found to be moderate (Table 2). Among the sub-factors of rest quality, the rest result was at 1.99 points (SD = 0.85) on average, and the cause of sleep inhibition was the highest with 2.53 points (SD = 0.59). Exhaustion ranged from the lowest 1 point to the highest 4 points, and the average number of points was 3.20 points (SD=0.58), indicating a high degree. Job-related anxiety ranged from the lowest 1 point to the highest 5 points, with an average of 3.33 points (SD = 0.63), showing a moderate level.

Table 2. Descriptive statistics of the measured variables (N=101)

Variables	Mean±SD	Range
Rest quality	2.08±0.53	1.33-3.67
Pattern of rest	2.02±0.82	1.13-3.78
Appraisal of rest	2.25±0.43	2.20-3.50
Rest result	1.99±0.85	1.10-4.00
Reason of rest disturbance	2.53±0.59	1.10-4.00
Exhaustion	3.20±0.58	1.62-4.00
Job-related anxiety	3.33±0.63	1.27-4.80

3.3. Job-related Anxiety According to the Characteristics of the Subject

Table 3 shows the results of the job-related anxiety analysis according to the demographics and job-related characteristics of the subjects.

Job-related anxiety differed according to gender, rank, average flight time per month, health supplements, and sleep-inducing drugs. Women had higher job-related anxiety than men ($t=-4.14$, $p<.001$), and the job-related anxiety of the flight attendant and the assistant purser, with relatively low rank, was higher than that of the purser, the senior purser, and the chief purser ($F=3.47$, $p=.011$). The longer the flight time was per month, the higher the job-related anxiety was ($F=3.50$, $p=.028$), and when taking health supplements ($t=3.46$, $p<.001$) and taking sleep inducing drugs ($t=4.27$, $p<.001$), the job-related anxiety was high.

3.4. Correlation Between Subject's Rest Quality, Exhaustion and Job-related Anxiety

Table 4 shows the results of analyzing the correlations between the subject's rest quality, exhaustion, and job-related anxiety. Job-related anxiety was found to have a negative correlation with rest quality ($r=.-47$, $p<.001$) and a positive correlation with exhaustion ($r=.51$, $p<.001$).

Table 3. Job-related anxiety by general characteristics (N=101)

Variable	Categories	M(SD)	Job-related anxiety t/F	p
Gender	Male	2.57(0.44)	-4.14	<.001
	Female	3.31.(0.47)		
Age (year)	20-29	3.27(0.67)	2.16	.121
	30-39	3.55(0.81)		
	40-49	2.77(0.36)		
Religion	None	3.42(0.73)	0.28	.776
	Have	3.39(0.74)		
Marital status	Single	3.47(0.75)	1.36	.176
	Married	3.29(0.59)		
Position	Cabin attendant	3.35(0.86)	3.47	.011
	Assistant purser	3.60(0.58)		
	Purser	3.40(0.51)		
	Senior purser	2.97(0.57)		
	Chief purser	2.36(0.11)		
Duty	EY class AISLE	3.33(0.78)	1.07	.380
	EY class GLY	3.24(0.91)		
	Top class GLY	3.60(0.65)		
	Top class JNR	3.40(0.88)		
	Deputy Manager	3.03(0.57)		
	Team Manager	3.34(0.59)		
Monthly flight time (time)	70-79	2.84(0.92)	3.50	.028
	80-89	3.25(0.76)		
	90-100	3.52(0.66)		
Monthly Night duty (number)	1-4	3.26(0.77)	1.42	.242
	5-9	3.41(0.67)		
	10-16	3.46(0.59)		
	15-19	3.95(0.83)		
Health Supplements	Takes	3.58(0.63)	3.46	<.001
	Does not take	3.14(0.78)		
Sleeping Pills	Takes	3.98(0.69)	4.27	<.001
	Does not take	3.30(0.68)		

3.5. Factors Influencing Job-related Anxiety

Independent of gender, rank, average flight time per month, health supplements, and sleep-inducing drugs, which showed significant differences with job-related anxiety; scores among rest quality, exhaustion, and general characteristics correlated with the subjects' job-related anxiety. Table 5 shows the results of multiple regression analysis as a variable. The tolerance limit between the independent variables was 0.1 or more, and the Variance Inflation Factors (VIF) was 10 or less, thus eliminating the problem of multi-collinearity. In addition, the result of calculating the Durbin-Watson value to verify the independence of the residuals was 1.63, which was close to 2, indicating that there was no autocorrelation.

As a result of the analysis, the F value of the model was statistically significant as 34.49 ($p<.001$), and the value of R^2 was .467, indicating that the explanatory power of the variables selected in this study for job-related anxiety was 46.7%. Looking at each of the variables, the factors that influence job-related anxiety are exhaustion ($\beta=46$, $p<.001$), taking sleep inducing drugs ($\beta=-.43$, $p=.001$), gender ($\beta=48$, $p<.001$), and rest quality ($\beta=-.23$, $p=.048$).

Table 4. Correlations between rest quality, exhaustion and job-related anxiety (N=101)

Variable	Quality of rest r (p)	Exhaustion r (p)	Job-related anxiety r (p)
Rest Quality of Sleep	1		
Exhaustion	.78(<.001)	1	
Job-related anxiety	-.47(<.001)	.51(<.001)	1

Table 5. Factors influencing job-related anxiety (N=101)

Variable	B	SE	β	t	*p*	F (*p*)
Constant	2.49	.495				34.49
Exhaustion	.465	.112	.425	4.57	<.001	(<.001)
Sleeping pills	-.435	.134	-.257	-3.53	.001	
Gender	.480	.124	.271	4.39	<.001	
Rest Quality	-.238	.124	-.174	-.194	.058	
Adj. $R^{2=}$.467						

This study is a descriptive correlation survey to understand the rest quality, exhaustion, and anxiety of the international flight attendants of large airlines. The factors that affect the rest quality of the subjects participating in this study was 2.08 points. The score was 2.73 points in Park's study (Park, 2015) using the same tool for nurses in general hospitals, and 3.00 points in Nam's (Nam, 2008) study of inpatient elderly people. In other words, in the case of international flight attendants, the quality of subjective sleep deteriorates more than nurses who are known to easily experience sleep disturbances due to 24-hour shifts and elderly patients who frequently complain of sleep disturbances during hospitalization due to aging and changes in the environment. Looking at the sub-factors, the "rest results", which interfered with daily life due to the decrease in rest quality, were the most deteriorated. This could have catastrophic results for everyone on board and cabin crew who require a high level of concentration during flights due to the decrease in rest quality. It means that it can be a predisposition to cause health problems. Therefore, it is necessary to check the rest quality of international flight attendants through comparative and repetitive studies with various shift occupations, and to devise coping strategies to improve them.

Exhaustion scored 3.20, which was targeted for elderly patients at home, and 2.38 points for adults in Park (Park, 2009). This is considerably higher than the 1.55 score of Byun and Park (Byun and Park, 2001).

It was found that the exhaustion of actual flight attendants was higher than that of general white-collar adults and elderly patients at home. Job-related anxiety was at 3.31 points. The results were found by Lee and Park (Lee and Park, 2006) using the same tool. In the study, international flight attendant job-related anxiety was at 3.17 points and domestic flight attendant was at 2.76 points.

Considering that the subject of this study are international flight attendants, their job-related anxiety is higher than that of domestic flight attendants.

In addition, job-related anxiety was found to be high in women, with a low rank, when the flight time per month was more than 90 hours, and when taking health supplements and sleep-inducing drugs. The results that female cabin crew members have higher job-related anxiety than men are like those of previous studies (Ballard, 2002; Ballard 2006). Ballard, Lagorio, Angelis, Santaquilani, and Caldora et al. (Ballard, 2002) argued that female flight attendants have a higher suicide rate than male flight attendants. It is thought to be like that

because women are more vulnerable to problems. In addition, the job-related anxiety of female cabin attendants can instill negative perceptions by affecting the perceived health status (Ballard, 2006). Married female cabin crew members are more likely to experience exhaustion and sleep disturbances because they also work at home, compared to men, and job-related anxiety may increase due to the workload both at home and at work. Moreover, considering that most of the cabin attendants are women, female cabin attendants having high job-related anxiety can be seen as a very important issue. However, since studies on physical and psychological health problems targeting only female cabin crew members are scarce, further studies on this need are to be continued in the future.

In addition, when the flight time is long, the job-related anxiety is significantly higher when taking sleep inducing drugs and health supplements. It can be inferred that they affect the job-related anxiety.

As a result of analyzing the correlation between rest quality, exhaustion, and job-related anxiety in this study, it can be inferred that job-related anxiety has a positive correlation with rest quality and exhaustion ($r=.78$, $p<.001$). In addition, because of performing a stepwise multiple regression analysis to determine the factors influencing job-related anxiety, exhaustion was ($\beta=.51$, $p<.001$) with the greatest effect, the presence or absence of sleep-inducing drugs was ($\beta=-.25$, $p=.001$), gender was ($\beta=.27$, $p<.001$), and rest quality was ($\beta=-.17$, $p=.048$). The result can be inferred as, the international cabin crew spends a lot of time standing while working, to do the job.

It can be said that this is because they work long flight hours to provide a variety of services tailored to their inclination. In addition, another reason for high exhaustion of international flight attendants may be the result of irregular sleep and lack of sufficient rest due to frequent jet lag. In fact, in Brown's (Brown, 1984) study of cabin attendants, jet lag, long working hours, frequent transfers, and long-distance flights were the main causes of exhaustion. Exhaustion, which is generally easily overlooked, is a risk factor that can lead to mental and behavioral changes and perceived decline in health as well as a decrease in productivity. Therefore, various intervention studies are expected to reduce exhaustion of cabin crew.

As this study is a descriptive correlation survey, most of the subjects were randomly selected from international flight attendants of a large airline, so there are limitations in generalizing the results of this study to other groups. However, not only the range of job titles, duties, and ages of the study subjects was varied, but also international flight cabin crew members who would fly long distances were targeted, thus minimizing the limitations that may arise in applying the results of the study.

5. CONCLUSION AND SUGGESTIONS

This study is a descriptive correlation research study that attempts to more comprehensively identify the factors that affect job-related anxiety of international flight attendants. Exhaustion, whether taking sleep inducing drugs or not, gender, and rest quality have significant effect on job-related anxiety. Considering that exhaustion has the greatest impact on the job-related anxiety of international flight attendants, it is important to pay attention to the exhaustion of international flight attendants, and it is important to lower their exhaustion level through the development of practical exhaustion management and intervention programs. Also, job-related anxiety needs to be dealt with extreme caution as most aviation incidents and accidents occur due to lack of sleep and fatigue. Aviation mainly relies on three aspects; physical ability, technical knowledge and being able to remain calm during stress. Human factors contribute to many of the incidents and accidents; therefore, it is vital to allow flight attendants to get plenty of rest which their bodies desire. Especially for those who are

flying internationally and face time-differences daily. This affects human performance and creates the inability to think and act normally. This process is called jetlag, where the time in the origin of embarkment is much different than the time of the destination. In the study, rest quality, job related anxiety, and exhaustion were studied among 315 cabin crew who were traveling internationally.

With this study, it was confirmed that taking sleep inducing drugs and the quality of rest, increased job-related anxiety, so it is important to provide interventions to improve the rest quality. In addition, since female flight attendants have higher job-related anxiety than male flight attendants, various intervention strategies and support at the corporate level as well as individual, will be needed. As a result of the study, it was confirmed that sleep inducing drugs which were taken to fit the time zone that the flight attendant was in, affected performance and human behavior. Flight attendants sacrifice a healthy lifestyle, including recovery sleep time, which overall affects performance and job-related anxiety (Keller et al., 2019). Suggestions based on the results of this study are as follows:

1. It is necessary to re-arrange exhaustion recovery time to reduce job-related anxiety.
2. There is a need for a study to confirm exhaustion and rest quality targeting female cabin attendants.

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