

# HEALTH RELATED QUALITY OF LIFE AND RELATED FACTORS AMONG BANK CALL CENTER EMPLOYEES

Kamer Gür<sup>1</sup>, Rukiye Pinar<sup>2</sup>, Saime Erol<sup>1</sup>

<sup>1</sup> Marmara University Faculty of Health Sciences, Department of Nursing, Istanbul

<sup>2</sup> Selahaddin Eyyubi University, Faculty of Health Sciences, Department of Nursing, Diyarbakir

## ABSTRACT

**Objective:** The purpose of this study was to investigate health related quality of life (HRQOL) and related factors among bank call center employees.

**Material and Method:** The sample consisted of 201 employees. We evaluated HRQOL by using SF-36. The Pearson's correlation coefficients, independent groups t-test and one-way ANOVA test were used for data analyses.

**Results:** Overall, 47.8% of the subjects stated that their workplace was mostly stressful. Almost all (95.5%) workers reported that their workplaces were noisy; 56.2% of them described themselves as "mildly noise annoyed", and 43.8% as "severely annoyed". Perceived job stress, noise annoyance and job dissatisfaction were associated with poor HRQOL.

Musculoskeletal discomfort, headache, concentration difficulty, nervousness and fatigue were the most prevalent complaints. All health problems were associated with poor HRQOL.

**Conclusion:** In conclusion, clarification of effecting factors on HRQOL of bank call center workers will drive the call center sector for the implementation of interventions towards preventing deleterious effects on health and HRQOL of their workers and towards creating a happy and healthy work environment.

**Keywords:** Call center, health complaints, health-related quality of life, job satisfaction, perceived job stress, perceived noise annoyance, quality of life. *Nobel Med 2016; 12(1): 79-86*

## BANKA ÇAĞRI MERKEZİ ÇALIŞANLARINDA SAĞLIKLA İLİŞKİLİ YAŞAM KALİTESİ VE İLİŞKİLİ FAKTÖRLER

### ÖZET

**Amaç:** Bu çalışmanın amacı banka çağrı merkezinde çalışanların sağlıkla ilişkili yaşam kaliteleri (SİYK) ve ilişkili faktörleri incelemektir.

**Materyal ve Metot:** Çalışmanın örneklemini bir bankanın çağrı merkezinde çalışan 201 kişi oluşturmuştur. SİYK SF-36 ile değerlendirilmiş; verilerin analizinde Pearson's korelasyon katsayısı, bağımsız gruplar için t- testi ve tek yönlü ANOVA testi kullanılmıştır.

**Bulgular:** Olguların %47,8'i işyerinin çoğu zaman stresli, hemen tamamı (%95,5) gürültülü olduğunu ifade etmiş; %56,2'si gürültüden hafif, %43,8'i ise

ciddi derecede rahatsız olduklarını belirtmişlerdir. Algılanan iş stresi, gürültü rahatsızlığı ve iş memnuniyetsizliği daha kötü SİYK kalitesi ile ilişkili bulunmuştur. Olguların en belirgin sağlık şikayetleri kas iskelet rahatsızlıkları, baş ağrısı, konsantrasyon güçlüğü, sinirlilik ve yorgunluk idi; sağlık sorunlarının tümü daha kötü SİYK kalitesi ile ilişkili idi.

**Sonuç:** Banka çağrı merkezi çalışanlarının SİYK'sini etkileyen faktörlerin ortaya konması, sağlığı ve SİYK'sini bozan faktörlerin önlenmesine yönelik girişimlerin uygulanması mutlu ve sağlıklı çalışma ortamı yaratılmasında çağrı merkezi sektörü için yol gösterici olacaktır.

**Anahtar kelimeler:** Çağrı merkezi, sağlık şikayetleri, sağlıkla ilişkili yaşam kalitesi, iş doyumu, algılanan iş stresi, algılanan gürültü rahatsızlığı, yaşam kalitesi. *Nobel Med 2016; 12(1): 79-86*

## INTRODUCTION

According to the World Health Organization (WHO) “health is not only the absence of disease and infirmity, but also the presence of physical, mental and social well-being” (1948).<sup>1</sup> Since this definition of health was introduced in 1948, quality of life (QOL) issues, more specifically health related quality of life (HRQOL) issues have gained importance as an outcome indicator. HRQOL, which is a multidimensional concept, encompasses physical, psychological and social domains of health, and these domains of health are influenced by a person’s experiences, beliefs and expectation.<sup>2</sup>

Working and work environment have directly or indirectly significant influence on a worker’s HRQOL and physical and mental health.<sup>3-17</sup>

Historically, the first call center started to work in 1908 in the USA, when the telephone was used to sell advertisements in the telephone book. Since then, the call center market has grown very fast. However, almost 90 years later, in 1999, the first study on health problems caused or aggravated by work among call center workers was initiated by a research team from the United Kingdom.<sup>17</sup> Moreover, earlier studies indicated that physical health problems such as musculoskeletal problems, sight and hearing problems and stomachache, psycho-social health problems such as irritation/strain, psychosomatic complaints, psychological distress, anxiety, sleep disturbances, anger, lower work motivation, and job dissatisfaction are common in this group.<sup>10-17</sup>

The various health-related risks including long working hours, poor ergonomic working conditions, prolonged exposure to sounds and noise, and call handling processes have been described among call center employees.<sup>11,14</sup> In addition, standardized uniform and repetitious activities regarding concerns on achieving economies of scale and customers’ satisfaction in a call center weakens employee autonomy and leads to loss of control which is an important indicator of work related stress.<sup>13</sup> It has been clearly proven that stress can make deteriorations in body systems and render individuals more susceptible to health challenges.<sup>11,13-15,17</sup>

Previous studies reported that workplace stress was also significantly associated with poorer HRQOL scores; there was a negative correlation between work-related noise annoyance and HRQOL; and higher levels of job dissatisfaction was predictive for decreased HRQOL and impaired health.<sup>3-5,7,8,18</sup>

The call center industry in Turkey has been established only over the last 10 years. The sector, employee number of which was under 25,000 in 2005, has reached to

an attentive industry position in the ten years with an employee number over 80,000 and economic size reaching 1.4 billion USD by the end of the 2013. Almost 50% of the call center industry is located in Istanbul, which is the largest city in Turkey with an estimated population of 14.2 million. Enlarging the target every year, the call center industry has also made progress by comprising investments in Anatolia beyond Istanbul and ultimately reached a remarkable market position in the international platform. It is estimated that there will be a minimum of 4000 additional employment positions in the short term in Anatolia. Despite this rapid progression in the call center industry in Turkey, there had been no study on health and HRQOL in this vulnerable group.<sup>19</sup>

The purpose of this study was to investigate HRQOL and related factors on HRQOL among bank call center employees.

## MATERIAL AND METHOD

### Study Design and Participants

This descriptive study was conducted at a call center of a bank. The call center employs 350 operators. Sample inclusion criteria were having minimum six months experience at their current job and willingness to take place in the study. We excluded 149 operators, because 93 of them had less than six months experience at their current job, 5 were on sick leave or maternity leave, 51 refused to participate in the study because of their busy schedule, time limitations, fatigue, and such factors. Thus 201 employees were included in the study.

### Measures

The questionnaire obtained data on demographic and job related variables including age, sex, education, length of employment in the call center, HRQOL, workplace stress, occupation noise exposure and noise annoyance, job satisfaction, and health problems.

The HRQOL was evaluated by two summary scores including the physical component score (PCS) and the mental component score (MCS) in the SF-36. The scores of the components change between 0 (worst health status or HRQOL) to 100 (best health status or HRQOL).<sup>20</sup> The SF-36 was adapted into Turkish by Pinar; normative values for PCS and MCS of the Turkish population were also calculated by Demiral et al. (2006) as 46.6 for PCS and 47.3 for MCS, respectively.<sup>2,21</sup>

The workplace stress was assessed by participants’ self-report because occupational stress research based on self-reports have a good capacity to predict poor HRQOL, as

shown in some studies.<sup>6-7,22</sup> To evaluate workplace stress, we asked subjects the following question: “Thinking generally about your workplace, would you say that your workplace is currently: “mostly stressful”, “sometimes stressful”, or “never stressful”.

Perceived occupational noise and noise annoyance were measured using self-reported responses to the question “Is your workplace noisy?” with responses being recorded on a two-point scale, comprising 1=Yes, 2=No and the question “Does noise disturb you?” with responses being recorded on a three-point scale, comprising 1=none annoyed, 2=mildly annoyed, and 3=severely annoyed. In accordance with the findings of literature,<sup>8, 23</sup> we expected HRQOL will be affected negatively by noise annoyance.

To examine job satisfaction we used the Minnesota Satisfaction Questionnaire (MSQ). The maximum score that can be obtained from the scale is 100, whereas the minimum score is 20. Higher scores in the scale indicate higher job satisfaction levels.<sup>23</sup> The MSQ was adapted into Turkish by Baycan (1985).<sup>24</sup>

About health related problems with the current job, subjects were asked whether in the last 12 months they had at least weekly experienced health problems including musculoskeletal pain, headache, fatigue, tinnitus, throat ache, hoarseness, chest tightness, stomachache, itchy skin, nervousness, anger, low-morale, sleeplessness, concentration difficulty, listening difficulty, understanding difficulty, and poor work performance. Subjects were asked to choose yes or no answer options for each health problem. Evaluating health problems by using a self-reported method has been used in earlier studies.<sup>11,13,15</sup>

Data was collected between March and May in 2012 by an occupational health nurse of the bank. The questionnaires were completed during the participants’ lunch break. The completion of questionnaires for each participant took about 15-20 minutes.

### Statistical Analysis

Descriptive statistics including means, ranges, SDs for continuous variables and percentages for categorical variables were used to summarize the participants’ demographics and work-related characteristics. The correlation between two continuous variables was analyzed with Pearson’s correlation coefficients. Independent groups t-test was used for two-group comparisons of continuous variables. The mean values of three groups were compared by using the One-way ANOVA test. SPSS 18.0 for Windows (SPSS, Chicago, IL, USA) was used for all analyses. Statistical significance was taken at the 5% level.

**Table 1:** Gender, perceived workplace stress, noise annoyance, job satisfaction and HRQOL

	PCS Mean ± SD	p	MCS Mean ± SD	p
<b>Gender</b> Male (n=46) Female (n=155)	68.10±13.36 56.79±15.77	<0.01	63.56±14.40 55.40±17.50	<0.001
<b>Perceived workplace stress</b> Mostly (n=96) Sometimes (n=71) Never (n=34)	53.7±15.96 63.95±12.8 65.73±16.74	<0.001	49.69±16.6 61.84±14.68 69.12±13.50	<0.001
<b>Noise annoyance</b> A little (n=113) Very much (n=88)	64.57±14.74 52.71±15.00	<0.001	62.49±15.6 50.55±16.88	<0.001
<b>Job satisfaction</b>	r=0.458	<0.001	r=0.452	<0.001

PCS: Physical component score SD: standard deviation, HRQOL: health related quality of life.

### Ethical Issues

Before the study, approval by the Corporate Communications Department of the Bank and an informed written consent from all participants was obtained. The study protocol was approved by the Institutional Ethics Committee.

## RESULTS

### Characteristics of the Study Sample

We used convenience sampling to recruit 201 study participants with a mean age of 27 years (range 20-46 years). The majority of them were female (77.1%), 56.2% of them had received education at university degree level, and 43.8% had received education at high school level. Mean length of employment was 3.4 years with a range between 1 to 10 years; most workers (85.6 %) were employed at the call center for less than five years, and 14.4% were employed for six years and above.

### Quality of Life and Related Factors

The score for the PCS varied from 21 to 92, with a mean of 59.4. The score for the MCS was between 15 and 88, with a mean of.<sup>57,27</sup>

Table 1 presents associations between socio-demographic variables, perceived workplace stress, noise annoyance, job satisfaction and HRQOL. As seen in the Table 1, female participants had significantly lower PCS and MCS mean scores than male participants.

Only 16.9 percent of the participants stated their workplace was not stressful, almost half of the subjects stated that their workplace was mostly stressful and 35.3% sometimes stressful. Both PCS and MCS mean scores were differed significantly by perceived

Table 2: Results on self-reported health problems and HRQOL					
Health Problems	n (%)	PCS Mean±SD	p	MCS Mean±SD	p
<b>Musculoskeletal pain</b>					
Yes	166 (82.6)	49.80±13.49	<0.001	58.24±17.53	n.s.
No	35 (17.4)	61.40±15.73		52.66±14.83	
<b>Headache</b>					
Yes	153 (76.1)	56.85±15.96	<0.001	54.71±17.48	<0.001
No	48 (23.9)	67.45±13.09		65.42±13.41	
<b>Fatigue</b>					
Yes	109 (54.2)	56.65±16.60	<0.01	52.86±16.82	<0.001
No	92 (45.8)	62.62±14.57		62.48±16.21	
<b>Tinnitus</b>					
Yes	82 (40.8)	55.51±17.64	<0.05	51.95±17.42	<0.001
No	119 (59.2)	62.05±14.13		60.93±16.11	
<b>Throat ache</b>					
Yes	79 (39.3)	53.10±15.46	<0.01	53.19±16.97	<0.01
No	122 (60.7)	63.45±14.96		59.90±16.88	
<b>Hoarseness</b>					
Yes	69 (34.3)	55.82±14.37	<0.05	54.09±16.69	<0.05
No	132 (65.7)	61.24±16.46		58.92±17.27	
<b>Chest tightness</b>					
Yes	41 (20.4)	52.18±14.76	<0.001	52.48±14.84	<0.05
No	160 (79.6)	61.23±15.75		58.49±17.57	
<b>Stomachache</b>					
Yes	26 (12.9)	51.40±12.64	<0.01	48.59±12.88	<0.01
No	175 (87.1)	60.57±16.07		58.56±17.40	
<b>Itchy skin</b>					
Yes	24 (11.9)	41.40±11.99	<0.001	42.62±16.78	<0.001
No	177 (88.1)	61.82±14.84		59.25±16.30	
<b>Nervousness</b>					
Yes	123 (61.2)	54.15±15.09	<0.001	51.80±16.67	<0.001
No	78 (38.8)	67.63±13.67		65.89±14.29	
<b>Anger</b>					
Yes	85 (42.3)	53.84±15.82	<0.001	49.85±17.37	<0.001
No	116 (57.7)	63.44±14.83		62.70±14.94	
<b>Low-morale</b>					
Yes	73 (36.3)	50.63±16.51	<0.001	47.76±17.58	<0.001
No	128 (63.7)	64.37±13.30		62.69±14.44	
<b>Disturbed sleep</b>					
Yes	36 (17.9)	48.33±15.69	<0.001	49.31±15.36	<0.01
No	165 (82.1)	61.79±15.00		59.00±17.12	
<b>Concentration difficulty</b>					
Yes	132 (65.7)	55.71±15.67	<0.01	52.01±16.39	<0.001
No	69 (34.3)	66.41±14.09		67.31±13.99	
<b>Listening difficulty</b>					
Yes	102 (50.7)	55.98±15.69	<0.01	52.94±16.42	<0.001
No	99 (49.3)	62.89±15.52		61.73±16.90	
<b>Understanding difficulty</b>					
Yes	89 (44.3)	54.42±15.81	<0.01	52.52±16.84	<0.001
No	112 (55.7)	63.33±14.99		61.03±16.59	
<b>Low work productivity</b>					
Yes	68 (33.8)	53.08±16.30	<0.001	49.11±18.84	<0.001
No	133 (66.2)	62.60±14.82		61.44±14.69	

SD: Standard deviation, N.S.: not significant, HRQOL: health related quality of life.

workplace stress. HRQOL scores were the highest among participants who never perceived workplace stress, while HRQOL scores were the lowest among participants who perceived workplace stress mostly.

When employees were asked whether the workplace was noisy or not; 95.5% of them stated that their workplace was noisy (not presented in the table). Regarding perceived noise annoyance, none of the participants described themselves as “none annoyed”, 56.2% of them described themselves as “mildly annoyed”, and 43.8% reported “severely annoyed” due to noise in their work place. The “severely annoyed” group had significantly poorer physical and mental HRQOL scores than in the “mildly annoyed” group.

The correlation coefficients between overall job satisfaction and PCS of SF-36 and MCS of SF-36 were 0.46 and 0.45, respectively.

Table 2 shows the percentage of the self-reported health problems and relationships between health problems and HRQOL. As seen in the Table 2, the most commonly reported health problems were musculoskeletal discomfort (82.6%), headache (76.1%), concentration difficulty (65.7%), nervousness (61.2%) and fatigue (54.2%). We observed that all health problems, except musculoskeletal discomfort, were significantly associated with lower levels of both PCS and MCS, while musculoskeletal discomfort was only associated with PCS.

## DISCUSSION

To our knowledge, this is the first study that evaluated HRQOL among call center employees, which is an understudied group in Turkey.

### HRQOL Scores

Although we found that the average scores for main components of the SF-36 were quite low, they were still higher than PCS and MCS mean scores for the general Turkish population aged between 18 and 46. Demiral et al. found the mean score for PCS as 52.7 and mean score for MCS as 49.9.<sup>21</sup>

In our study, the PCS and MCS mean scores changed significantly according to gender, perceived job stress, noise annoyance, job satisfaction, and self-reported health problems.

In this study females had worse HRQOL scores than males. Similar to the result of our study, Demiral et al. also found an association between poor HRQOL and female gender.<sup>21</sup>

## Perceived Job Stress and HRQOL

The various stressors including long working hours, poor ergonomic working conditions, prolonged exposure to sounds and noise, and the call handling processes have been described among call center employees. It is stated that the call handling process under pressure of limited time is the most common stressor.<sup>11,14</sup> In addition, work in call centers is characterized by a standardized uniform and repetitious activities regarding concerns on achieving economies of scale and customers' satisfaction. This type of work weakens employee autonomy and leads to loss of control. It is clear that loss of control is an important indicator of work related stress.<sup>13</sup>

It is scientifically proven that stress can cause deteriorations in body systems and render individuals more susceptible to health challenges.<sup>11,13-15,17</sup>

In the current study, we found that 83.1% of participants perceive their workplace mostly or sometimes as stressful. Workplace stress was significantly associated with poorer HRQOL scores. Although there is no study on call center employees and the number of studies in other sectors investigating the relationship between workplace stress and HRQOL is limited, almost all studies on this subject show that there is a direct link between these two conditions in agreement with the results of the present work.<sup>3-7</sup>

## Noise Annoyance and HRQOL

Although both the absolute level of sound and noise annoyance are important factors that can affect health and HRQOL, most studies indicate that health and HRQOL would be more affected by subjective noise annoyance than by objective noise level. As such, International Commission on the Biological Effects of Noise recommends using noise annoyance scales.<sup>26</sup> In the current study, we assessed noise annoyance via a self-report questionnaire.

Almost all participants (95.5%) stated that their work place was noisy; all of them were annoyed because of workplace noise, and noise annoyance was an important factor to decrease HRQOL.

The negative effects of noise on health and HRQOL have been shown in earlier studies as well. A nationwide study including 10,020 participants from Korea indicated that occupational noise annoyance significantly relates to mental health issues such as depression and suicidal ideation.<sup>27</sup> In a comprehensive meta-analysis study, 43 epidemiological studies were investigated. It was found that increased risk for hypertension was associated

with sustained noise exposure.<sup>28</sup> In a study from Iran, more than half of the conductors reported that noise affected their work performance and 63.5% reported that noise caused concentration loss.<sup>9</sup>

Dratva et al. (2010) reported a negative relationship between noise annoyance and HRQOL.<sup>8</sup> Other studies showed marked associations between noise and reduced HRQOL as well.<sup>23</sup>

With reference to the studies discussed above, it is clear that there is an adverse relationship between noise annoyance and health and between noise annoyance and HRQOL. Our results, showing perceived job stress and noise annoyance being both predictive for decreased HRQOL, contribute to the collective results findings from previous studies.

## Job Satisfaction and HRQOL

There is growing evidence that negative employment conditions including occupational stress, strain and job dissatisfaction directly pose a threat to employees' health, well-being and HRQOL. As we expected, the overall job satisfaction and two main component scores of SF-36 were moderately correlated, which indicated an adverse effect of job dissatisfaction on health or HRQOL.

According to Judge and Watanabe, job satisfaction and life satisfaction influence each other and job satisfaction tends to correlate in the range of 0.50 to 0.60 with life satisfaction.<sup>3</sup>

In a meta-analysis study, including more than 250,000 employees, it was showed that there was a causal relationship between job satisfaction and employee health.<sup>4</sup> Another study reporting subjects who were satisfied with their working conditions demonstrated significantly higher well-being.<sup>18</sup> There are similar results in earlier studies indicating a positive association between job satisfaction and HRQOL.<sup>3</sup>

## Self-Reported Health Problems and HRQOL

The call center work is characterized by longer working times and daily routine tasks in front of computers without opportunities for variation in work tasks. The call center workers have to use computers interactively during telephone calls under time pressure while facing direct performance monitoring. As a result, limited mobilization, and prolonged constrained static sitting postures and repetitive movements of upper extremities besides stress caused by time pressure, performance monitoring and consumer satisfaction issues all contribute to developing health problems, especially musculoskeletal problems.<sup>10,12-13,15,17</sup>

In the current study, musculoskeletal problems were the most frequently reported health problems, as we expected. This result is in conformance with the findings of earlier studies from India, Taiwan, Sweden, and the USA demonstrating that musculoskeletal problems were widely reported health issues among call center workers.<sup>10,12,13,15,17</sup> For example, Bhuyar et al. reported that 58.6% of call center workers had backache, 28% had musculoskeletal pain on other parts of their body.<sup>13</sup> Identical to Bhuyar et al. study, Subbarayalu showed 58% of call centre workers had experienced work-related musculoskeletal problems in the preceding 12 months.<sup>13,17</sup> Lin et al. demonstrated that the percentage of musculoskeletal discomfort among inbound and outbound bank call center workers were 88% and 85%, respectively.<sup>15</sup> In another study from Sweden, 86%, of the women and 68% of the men reported musculoskeletal symptoms.<sup>12</sup> In a study from the USA, 68% of the participants reported musculoskeletal discomfort during the past year.<sup>10</sup> Our results contribute to the collective findings from these previous studies.

In our study, musculoskeletal discomfort was significantly associated with impaired physical dimension of HRQOL rather than mental dimension of HRQOL indicating that this problem would have more contribution on poor physical HRQOL.

Call center workers are also prone to experience ear and throat problems. Acoustic shock is caused by sudden and unexpected noise, typically on phone calls. The workers who are exposed to acoustic shocks may experience pain in the ears, tinnitus (ringing in ear), vestibular disturbance, and increased sensitivity to noise. In the present study, 40.8% of workers reported tinnitus. Similar to our results, in a study by Lin et al., 59% of inbound call center reported tinnitus, in a study by Subbarayalu 29% and 31.5% of workers experienced acoustic shock and pain in ears, respectively.<sup>15,17</sup>

In the present study, a significant proportion of the participants reported throat ache (39.3%), hoarseness (34.3%), and chest tightness (20.4%). Previous studies displayed slightly higher prevalence than our results. For example, Lin. et al. found that 85% of inbound call center workers had hoarse or sore throat.<sup>15</sup> In another study, common throat related problems at the end of the working day were sore throat (71.2%), voice loss (63.5%) and breathlessness (61%).<sup>17</sup> Bhuyar et al. showed that more than 75% of the call center workers had throat problems which affect workers' voice such as irritating cough, inability to modulate voice, and hoarseness.<sup>13</sup> We conclude from the study results given above that ear and throat-related problems are both

common among call center workers. Those problems have negative effects on HRQOL.

In working life, social situations are required to control one's real emotions in interactions with supervisors, colleagues or customers. Call center workers communicate voice-to-voice with customers. Most of time they have to control their voice tone, to hide real feelings, be patient, and act as required by the organization while they are dealing with difficult customers presenting anger, frustration or disrespect.<sup>29</sup> In other words, in order to influence customers' emotions in a goal-oriented manner, call center workers have to display friendliness and empathy rather than their real emotions like anger in a negative situation. Therefore, call center workers do emotional work as well. Emotional work implies a stressor-emotional dissonance-that occurs when one has to display emotions which are appropriate for customer/s, but differ from her/his real emotions.<sup>30</sup>

Emotional dissonance is correlated with poor well-being parameters including emotional exhaustion, irritation and psychosomatic complaints and job dissatisfaction.<sup>11,14,16,30</sup> Wegge et al. showed that emotional dissonance was significantly related with lower work motivation, anger and customer aggression.<sup>16</sup> Grebner et al. reported that emotional dissonance explains variance in irritated reactions and psychosomatic complaints beyond other working conditions and predicts uniquely indicators of well-being.<sup>11</sup> Sustained irritated reactions such as irritation/strain, nervousness, anger, low morale and psychosomatic complaints such as headaches, stomachaches, itchy skin, and chronic fatigue might be considered a psychological long-term stress response.<sup>31</sup>

In our study, in line with expectations, a significant proportion of workers reported headache (76.1%), nervousness (61.2%), fatigue (54.2%), anger (42.4%), and low moral level (36.3%). Stomach aches and itchy skin were reported 12.9% and 11.9% in participants. Bhuyar et al. indicated headache might also be due to eye strain which is part of computer vision syndrome.<sup>13</sup> In many studies, health complaints have been measured as an indicator for well-being.<sup>11,31</sup> In consistence with earlier studies, in the current study workers with headache, nervousness, fatigue, anger, low morale level, stomach aches and itchy skin demonstrated significantly lower HRQOL scores.

Besides emotional work mentioned above, intensive and stressful, and repetitive work in call centers weakening employee autonomy and loss of control results in impaired sleep.<sup>32-33</sup> In our study, 17.9% of the workers reported impaired sleep. The impaired sleep group had

significantly poor HRQOL scores than the unimpaired group. Previous studies supporting the findings of this study showed that impaired or inadequate sleep was associated with health related morbidity and decreased HRQOL.<sup>17,32-34</sup>

Finally, in our study, an important number of participants reported concentration difficulty (65%), listening difficulty (50.7%), understanding difficulty (44.3%), and lower work productivity (33.8%). Those problems were related to poor HRQOL. These results are parallel to our expectations because of the requirements of call center works including time pressure, noise, emotional dissonance and routine repetitive job.

The main strength of this study is that, to our knowledge, this is the first study that evaluated HRQOL among call center employees. This study has also two limitations. First, because our data is cross-sectional, causal associations cannot be made. Second, the generalizability of our results may be limited because the study was based on one bank call center; hence, the results are not representative for Turkey as such.

## CONCLUSION

In conclusion, this study showed that most of the bank call center workers stated that their workplace was stressful and noisy. They have a considerable number of health problems. In this study we have seen that perceived job stress, noise annoyance, job

dissatisfaction, and presence of health problems are significantly related with lower levels of HRQOL scores.

Our results reinforce the importance of including HRQOL measurements as one more dimension in the study of the relationships between work and health. In addition, the results identify that work related factors including job stress, noise annoyance and job dissatisfaction may influence both a mental component and physical component of HRQOL. Therefore, this association should be investigated in other occupational groups to stress in their work environment, especially in longitudinal prospective studies.

Furthermore, the results of this study also allow us to conclude that risk assessments in the workplace should be performed at a routine basis. Finally, our findings should also drive the call center sector in Turkey to review their current workplace strategies towards preventing deleterious effects on health and HRQOL of their workers and towards creating a happy and healthy work environment.

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\* The authors declare that there are no conflicts of interest.

<b>C</b>	<b>CORRESPONDING AUTHOR:</b> Rukiye Pinar İnönü Mah, Celasun Cad, Gözpinar Apt, No: 26/11, Bati Atasehir, İstanbul, Türkiye rukiypinar@gmail.com
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