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NEAR EAST UNIVERSITY

INSTITUTE OF HEALTH SCINCES

THE RELATIONSHIP BETWEEN MENTAL WORKLOAD AND FATIGUE IN EMERGENCY DEPARTMENT NURSES

Khalamala Ibrahim Salih Barzani

In Partial Fulfillment of the Requirement for the Degree of Master of Nursing (Emergency Nursing)

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Advisor:

Professor Ümran Dal Yılmaz

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APROVAL

The Directorate of Graduate School of Health Sciences, this study has been accepted by the thesis committee in nursing program as a master of emergency nursing thesis.

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Approval:

According to the relevant article of the Near East University Post graduated Study Education and Examination Regulation, this thesis has been approved by the above Mentioned Members of the thesis committee and the Decision of the board of Directors of the Institute.

Professor K. Hüsnü Can BAŞER

Director of Graduate Institute of Health Sciences

DECLARATION

I hereby declare that the work in this thesis about **"The Relationship Between Mental Workload and Fatigue in Emergency Department Nurses"** this study of my own research efforts undertaken under the supervision of **Prof. Ümran Dal Yılmaz**.

My great thanks to **Professor Ümran Dal Yılmaz,** my advisors for her knowledge and experience to help and support me during my research.

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ABSTRACT

Introduction: Fatigue is one of the foremost vital issues in work environments which causes reduce the quality of work, increases errors and accidents. Individuals working in occupations with a high workload might have to struggle with decreased performance, memory loss, damage to the thought process, irritability, and decreased learning due to weakness and improper scheduling.

Objectives: The aim of the study is determination of the Relationship Between Mental Workload and Fatigue in Emergency Department Nurses. Workload is one of the most variables affecting fatigue.

Methods: In this cross-sectional descriptive-analytic study, the relationship between mental workload and fatigue in nurses who are working in Ble, Mergasor and Ashti General Hospital in the Emergency Department was investigated**.** Total 65 voluntary nurses were composed the sample of the study. Data collection tools consisted of three demographic characteristics, fatigue (CIS20R) and mental workload (NASA-TLX) questionnaires. Data were gathered utilizing a questionnaire in July 2018, after the ethical approval. Descriptive statistics, correlation coefficient and ANOVA tests were used in analysis of the data.

Results: Despite the lack of a statistically significant relationship between mental workload and fatigue, varying degrees of mental workload and fatigue among emergency department nurses were obtained.

Conclusions: Based on this study, reviewing the structure of the emergency department and focus on safeguarding the health of human resources are of great importance in order to provide the basic psychological needs related to the staff work as much as possible. In addition, the need to examine the psychological dimensions of employees at the beginning of their application in emergency departments should be considered.

Keywords: Mental Workload, Fatigue, Nurses, Emergency Department

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List of Abbreviations

Items of Abbreviations	Context
(NASA-TLX)	National Aeronautics and Space Administration - Task Load index
CIS20R	Checklist Individual Strength
BSN	Bachelor of Science in Nursing
ENT	Ear Nose & Throat
ED	Emergency Department

1. INTRODUCTION

1.1. Problem Definition

Fatigue is one of the most important issues in work environments. Fatigue is a very complex concept that includes psychological and physiological factors (Zhao, Zheng, Zhao, & Liu, 2010). As a result, instead of being considered as a one-dimensional phenomenon, it is regarded as a very complex phenomenon with many components. Central nervous system and muscles are the main targets most immediately affected by fatigue (Choi & Song, 2003).

Fatigue can be, and is, defined quite differently; it can be defined as an increasing difficulty in mental and physical activity due to inadequate sleep (Drinkwater, Lane, & Cannon, 2009). According to another definition, fatiue implies continuous complaints throughout the day due to insomnia (Riedel & Lichstein, 2000). Fatigue is a condition that lowers body's resistance and decreases interest in daily activities and work (Phillips, 2015; van der Schaaf et al., 2018).

Fatigue has two aspects: physical and psychological. Fatigue is accompanied by a reduction in the ability and motivation for doing work. In spite of the fact that fatigue may have diverse causes, it affects function and motivation quite similarly and reduces mental and physical performance. When an individual is tired, his normal behavior might change by performing a small error (Amundsen & Sagberg, 2003). On the other hand, fatigue interacts with physical, mental and emotional performance, causing significant decrease of energy and weakness (Choi & Song, 2003; Coetzee & Klopper, 2010). In general, fatigue causes blurred feelings, reduced physical activity, disrupts the balance of the nervous system and reduces work efficiency. Fatigue can also be effective in developing or exacerbating various disorders, including mental illness, cardiovascular disease, slowness of mind, weakness, memory loss, muscle aches, forget fulness and imbalance (Choi & Song, 2003; Habibi, Parvari, Khodarahmi, Dehghan, & Hosseini, 2011).

Workload is one of the main factors affecting fatigue; workload can be defined as a charge to the operator to achieve a certain level of performance or the amount of overall work that must be done by a person or group of people at a given time interval. Workload and long working hours are the main factors in fatigue. The general concept of workload emerged of human variables and is basically related to the mental abilities of

the individual (Arellano, Mejía, Pérez, Alcaraz, & Brunette, 2012; Gore, 2018; Habibi et al., 2011).

Individuals working in occupations with a high workload might have to struggle with decreased performance, memory loss, damage to the thought process, irritability, and decreased learning due to weakness and improper scheduling (DiDomenico & Nussbaum, 2011; Graham, 2015). Given the critical nature of profession and the necessity of the safety of the patients, the relationship between work-related fatigue and error is very important in individuals who work in the hospitals. Meanwhile, nurses are subject to extreme mental workload because they are always making important decisions which are in direct relationship with the life of people (Hart & Staveland, 1988; Powell, Savin, & Savva, 2012; Weissman et al., 2007).

Nursing is believed to be at the forefront of stressful hospital and medical careers (Nantsupawat, Nantsupawat, Kunaviktikul, Turale, & Poghosyan, 2016). The Canadian Association of Nurses in a 2010 study found that nurses experience significant levels of fatigue (Association, 2010). The results of Kim et al. (2014) study, which was conducted to determine the relationship between the nurses' and patients' perception of adverse events and workloads of nurses in South Korea, showed a significant relationship between nurse and patient perceptions of adverse events and nurses' workload. Nursing, especially in emergency department, is by nature a stressful profession, because it is highly complex, active, and dynamic (Kim et al., 2013). Emergency departments are difficult places to work for the following reasons: demanding working conditions, significant volumes of work and psychological stress, lack of resources, and inadequate support (Hunsaker, Chen, Maughan, & Heaston, 2015; Tao, Ellenbecker, Wang, & Li, 2015). Nurses working in these environments should, despite the time constraints and stresses of the environment, focus on the survival of the patients, as well as factors such as frequent contact with the patients, the patients' condition, the number of patients with the nurse, the presence of stressors, possible conflicts nursing managers, the lack of facilities for diagnosis and treatment, all of which might lead to more confusion (Allah et al., 2011; Dall'Ora, Griffiths, Ball, Simon, & Aiken, 2015; Roth & Moore, 2009). All of these factors have adverse effect on the nature of nursing job by complicating decision making, creativity, and problem-solving ability, all of which are fundamental aspects of patient care in the health care system (Starc, 2018). Therefore, given the criticality of the tasks of nurses in the emergency department and the need for high accuracy and

vigilance during the care of patients with special conditions and failure to conduct a study on the fatigue and longevity of nurses in the emergency department, the present researchers decided to conduct a study aimed at determining the relationship between mental workload and fatigue in emergency department nurses.

1.2. Aim of the Study

The aim of the study is determination of the relationship between mental workload and fatigue in emergency department nurses.

Study questions include followings:

- What is the rate of fatigue and its dimensions among emergency department nurses?
- What is the rate of mental workload and its dimensions among emergency department nurses?
- What is the relationship between mental workload and fatigue dimensions in emergency department nurses?
- What is the deffrences between mental workload and demographic characteristics of emergency department nurses?
- -What is the deffrences between fatigue and demographic characteristics of emergency department nurses?

2. GENERAL INFORMATIONS

2.1. Fatigue

Fatigue is defined as a normal and transient reaction to stress as well as emotional and physical tensions in which a person feels sadness and his/her efficiency decreases. Fatigue (asthenia and lethargy) is a mental tiredness which is distinct from myasthenia and has a gradual onset. Unlike asthenia, it could be reduced through periods of rest. It can have physical or psychological causes. Physical fatigue is defined as a temporary and transient inability of muscles to maintain optimal physical performance and it can be worse with intense physical activity (Abd-Elfattah, Abdelazeim, & Elshennawy, 2015; Hornsby, Naylor, & Bess, 2016). Mental fatigue is defined as a loss maximal cognitive performance which results from prolonged periods of cognitive activity and can cause drowsiness, lethargy, tiredness, or the lack of concentration (Marcora, Staiano, & Manning, 2009).

Medically, fatigue is a symptom, instead of a sign, since it is a subjective phenomenon which is expressed by affected individual, rather than being an objective evidence that can be detected by someone other than affected individual (Berrios, 1990; Nasiri, Rahimian, Jahanshahi, Fotoukian, & Motamed Omran Chaboki, 2016).

2.1.1. Fatigue classification

Physical fatigue:

Physical or muscle fatigue is a transitory muscle failure to work excellently. The onset of muscle fatigue is gradual during physical activity and it depends on the level of physical fitness and is often caused by other factors such as sleep deprivation and poor general health of the body (Abd-Elfattah et al., 2015; Wan, Qin, Wang, Sun, & Liu, 2017). Physical fatigue can heal by rest. Physical fatigue is caused by the lack of energy in muscles through reducing the efficacy of muscle neuromuscular connections or reducing the stimulation and pressure derived from CNS (Gandevia, 2001). Central part of fatigue is stimulated through the increasing the serotonin levels in CNS (J. M. Davis, Alderson, & Welsh, 2000). During motor activity, the serotonin is released in synapses of the motor neurons which cause muscle contraction (Perrier & Delgado-Lezama, 2005). As the level of motor activity goes up, the sum of released serotonin increases and overflow occurs. Serotonin binds to extra-synaptic receptors located in the axon of the primary portion of

the motor neurons, which triggers the onset of nerve impulses and inhibition of muscle contraction (Cotel, Exley, Cragg, & Perrier, 2013; Qi et al., 2019).

Mental fatigue:

Mental fatigue is characterized as a transitory failure to preserve subjective act. The onset of mental fatigue is gradual in any cognitive activity and it depends on the cognitive ability of individuals and as well as the other factors, for example, lack of sleep and lack of general health (Marcora et al., 2009). It has been shown that mental fatigue can cause a decrease in physical functions, drowsiness, lethargy and the lack of concentration as well. The lack of concentration occurs when the level of self-orientation would be depleted. It is also defined as lower or higher levels of consciousness. Anyway, it can be dangerous to perform tasks which require complete orientation and consciousness such as driving or important health-related tasks(Marcora et al., 2009; Mizuno et al., 2011).

2.1.2. Fatigue etiology

Fatigue is a natural reaction to physical activity or stress, although it can be a sign of a physical impairment. Psychological stress, excessive stimulation, sleep deprivation or an illness, all can be causes of fatigue (Greenberg, 2002).

2.1.3. Fatigue in nurses of emergency ward

Emergency ward nurses work in a complex environment with numerous and sometimes contradictory missions (Chen et al., 2018; Schriver, Talmadge, Chuong, & Hedges, 2003). The intensity of nursing care in this area has been increased to reduce the length of patient stay in hospital and consequently reduce costs (Lyneham, Cloughessy, & Martin, 2008; Rossetti, Gaidzinski, & Fugulin, 2013). These factors increase nurses' workload and predispose them to negative health implications. When emergency ward nurses are under heavy workload, especially mental workload, they would not be able to work properly or if they adapt themselves to such conditions, it would have a negative effect on their personality (Lyneham et al., 2008; Mazzotta, 2015). These conditions can lead to excessive fatigue and burnout in these nurses because they are not able to resolve a conflict between the heavy workload and the provision of standard care (Lyneham et al., 2008).

2.2. Workload

It is defined as the volume of activities to be performed over a particular time period (Hendy, Liao, & Milgram, 1997). There are two types of workload: physical and mental:

2.2.1. Physical workload

It is the pressure that the worker has to overcome which its parameters are independent of his physical and mental characteristics.

2.2.2. Mental workload

The mental workload is generally made up of two components:

1. Tension or stress (derived from job responsibilities)
2. Strain or pressure (the effects of stress and tension derived from job responsibilities on the individual)

Excessive strain and stress cause a mismatch between the job responsibilities and person's capabilities. High mental workload can affect the selective attention which results in limitation or individual incompetence. Low mental workload can also be as harmful as high one for decent performance. In actual fact, the current view expresses that an optimal level of mental workload related to the best performance, is required (Trinkoff, Lipscomb, Geiger-Brown, Storr, & Brady, 2003).

2.2.3. Nursing Workload

Nursing workload can be divided into four levels:

1. Workload at the unit level
2. Workload at the job level
3. Workload at the patient level
4. Workload at the situation level

2.2.3.1. Workload at unit or ward level

The workload at the unit level is measured according to the nurse-patient ratio. The nurse-patient ratio can be used to compare units and patients' feedback on nursing staff (Carayon & Gurses, 2008). Conducted studies have given strong evidence that a high level of nursing workload at the unit level has a negative effect on patients' feedback (Mohammadi,

Mazloumi, Kazemi, & Zeraati, 2016; Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002; Nishizaki et al., 2010). These studies recommend that improving the patient care depends on increasing the number of nurses in the unit, or reducing the number of patients assigned to each nurse. However, implementing the aforementioned recommendations may not be possible due to the high costs and the lack of nursing staff.

2.2.3.2. Workload at the job level

considering to this classification, the workload at the job level depends on the type of nursing and its specialty (Carayon & Gurses, 2008). Miranda et al, measured the job-level workload to assess the effect of workload on depression and the nurses' performance in the ICU (Miranda, Ryan, Schaufeli, & Fidler, 2012). Previous studies have been conducted on the relation between workload at the job level and various nursing feedback such as stress (Hernata, Anggraini, & Setiawan, 2017; Madadzadeh, Barati, & AhmadiAsour, 2018) and job dissatisfaction (Gouzou, Karanikola, Lemonidou, Papathanassoglou, & Giannakopoulou, 2015). The measurement of job-level workload is appropriate to examine the levels of nursing workload with various specialties or job titles (Oates & Oates, 1996). Anyway, workload is a complicated, multifaceted conception and there are different causes in the clinical setting that may affect the nursing workload more than job title (Carayon, Gurses, Hundt, Ayoub, & Alvarado, 2005).

2.2.3.3. Workload at the patient level

The present categorization assumes that the major factor in determination of the nurses' workload is the patient's clinical condition (Carayon & Gurses, 2008). A number of the patient-level workload measurements have been developed based on patient-related therapeutic variables. However, recently developed studies have demonstrated that other factors such as useless and ineffective communications, may significantly affect nursing staff more than the patient's clinical conditions (Carayon & Gurses, 2008; Lachance, Douville, Dallaire, Padilha, & Gallani, 2015).

2.2.3.4. Workload at the situation level

In order to correct the defects in the three levels of measurement described above and complete them as well, another method of nursing workload categorization and measurement is conducted based on the workload examination in human-factors engineering and it is called the situation-level workload (Carayon & Gurses, 2008). In

addition to the number of patients assigned to a nurse and the patient's clinical status, the situation-level workload can describe the workload experienced by a nurse through the design of health care micro-systems. In a relevant study, it was found that the various characteristics of the ICU micro-system affect the situation-level workload such as inappropriate physical work environment, large family requests and ineffective communications among members of the multi-specialty team (Gurses & Carayon, 2007). The effect of performance obstacles on nurses' workload would not be considered if only the unit-level and the patient-level were used to measure the nurses' workload (Carayon & Gurses, 2008).

The situation-level workload is a multifaceted conception and states that different kind of performance inhibitors and facilitators (such as a noisy and distracting setting versus a quiet environment) affect the workload (Carayon & Gurses, 2008; Carayon et al., 2005).

2.2.4. Workload and patients' safety

The high level of nursing workload seems to be associated with the quality of patient care (Ridley, 2007) and it may lead to a decrease in patients' level of satisfaction (Mohammadi et al., 2016; Ridley, 2007). Relevant studies have indicated that the increase in nurses' workload results in following factors and ultimately affects patients' safety.

There is no doubt that when a nurse allocates an amount of time to a variety of tasks, it will affect the nurses' workload. High nursing workload causes nurses not to have enough time to do duties which directly influence the patient's safety (Carayon & Gurses, 2008). This high workload can affect health care decisions on performing various procedures and ultimately can cause a poor communication between the patient and the nurse (S. Davis, Kristjanson, & Blight, 2003).

Many studies have shown the relation between high nursing workload and job dissatisfaction (MacPhee, Dahinten, & Havaei, 2017; McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011). Job dissatisfaction in nurses may lead to depression, absenteeism, staff turnover, and poor job performance and potentially imperil the quality of patient care and affect the organization's efficiency (MacPhee et al., 2017; Zhou et al., 2015). Studies have shown a positive association between job satisfaction and job performance (Platis, Reklitis, & Zimeras, 2015), as well as patient's satisfaction and patient care quality (Salem, Baddar, & AL-Mugatti, 2016).

High nursing workload can lead to anxiety and depression (Greenglass, Burke, & Moore, 2003). It is possible that the experienced stress and depression cause nurses fail to work properly and because of physical weakness, their cognitive responses may decrease and this poor performance may affect the quality of patient care as well as the patients' safety (Carayon & Gurses, 2008).

Unintentional error of described procedures (written rules, policies, guidelines, or methods) which are essential for the safe performance (Reason, Manstead, Stradling, Baxter, & Campbell, 1990). Alper et al. (2006) conducted a study on 120 nurses in three pediatric hospitals to evaluate self-reported errors in medical procedures. 8 to 30 percent of nurses reported the errors in routine situations, and 32 to 53 percent of them reported the errors in emergency situations. The most frequent medical errors had occurred in medical documentation and patient identification. The medical errors usually occur when nurses are under excessive pressure or high workload due to emergency situations. Under heavy workload, nurses may not be able to have enough time to comply with rules and guidelines for providing the safe care, especially for those rules and guidelines which require more time such as hand-washing (Carayon & Gurses, 2008). The increase in nurses' workload (MacPhee et al., 2017) and the low number of them (Gran-Moravec & Hughes, 2005) are the two main reasons which cause them not to be able to spend more time with patients as their occupational tasks necessitate (Jolma, 1990). Patients often expect more direct nursing care and it would resulting in both patients' (Aalto, Karhe, KOIVISTO, & VÄlimÄki, 2009) and nurses' dissatisfaction (Vahey, Aiken, Sloane, Clarke, & Vargas, 2004).

3. METHODOLOGY

3.1. Study Design

The research design was descriptive and correlation study.

3.2. Study Setting

The study was performed nurses who are working in Ble, Mergasor and Ashti General Hospital in the Emergency Department in Iraq.

Ble General Hospital located Kurdistan Region Government – Iraq Erbil Governorate, Mergasor district, Barzan Sub district, Ble village. opened at 1- January 2016 that composed of the surgical, medical, gynaecologic, orthopaedic, ophthalmic, dermatologic, ENT, radiologic, laboratory, and Emergency department. Daily patient rates above 250 patients, number of all medical staff working in general department it is a 175 but number of nurses working in Emergency department it is a 25 nurses in deferent level like BSN, diploma, and Secondary high school nurses, working by two shift Morning and Evening each shift for 12 hours working.

Ashti Hospital located Kurdistan Region Government – Iraq Erbil Governorate, Soran district, opened at 20- March 2013 that composed of the surgical, medical, gynaecologic, orthopaedic, ophthalmic, dermatologic, ENT, radiologic, laboratory, and Emergency department. Daily patient rates above 350 patients, number of all medical staff working in general department it is a 315 but number of nurses working in Emergency department it is a 20 nurses in deferent level like BSN, diploma, and Secondary high school nurses, working one week per month for 24 hours.

Mergasor General Hospital located Kurdistan Region Government – Iraq Erbil Governorate, Mergasor district. opened at 1- November 1999 that composed of the surgical, medical, gynaecologic, orthopaedic, ophthalmic, dermatologic, ENT, radiologic, laboratory, and Emergency department. Daily patient rates above 150 patients, number of all medical staff working in general department it is a 97 but number of nurses working in Emergency department it is a 20 nurses in deferent level like BSN, diploma, and secondary high school nurses, working by two shift morning and evening each shift for 12 hours working.

3.3. Sample Selection

All the nurses working in the emergency department were selected as samples through the census sampling method. Total 65 voluntary nurses have composed the sample of the study, because all nurses like to participate in the study.

3.4. Study Tools

The present study used three questionnaires of demographic characteristics, fatigue, and mental workload to collect required data.

3.4.1. A demographic questionnaire describes factors, including the name of the workplace, gender, and level of education.

3.4.2. CIS20R (Checklist Individual Strength questionnaire) questionnaire The Checklist Individual Strength (CIS) is a fatigue questionnaire developed by the Dutch research team of Vercoulen et al. in 1994. was used to assess fatigue. The questionnaire consists of 20 questions containing 4 factors of mental fatigue, concentration, motivation and physical activity. The "mental fatigue" factor includes 8 questions of 1, 4, 6, 9, 12, 14, 16, and 20; "concentration" factors include 5 questions of 3, 8, 11, 13 and 19; "motivation factor" includes 4 questions of 2, 5, 15 and 18; finally, the "physical activity" factor includes 3 questions of 7, 10, and 17. Each of these factors is assessed through a 6-point scale; the higher the total is, the higher the overall fatigue gets (Makowiec-Dabrowska and Koszada-Wlodarczyk, 2006).

3.4.3. NASA-TLX (National Aeronautics and Space Administration - Task Load index) workload index NASA-TLX is developed by Sandra G. Hart in 1988. was used to assess mental workload; this scale is one of the most well-known tools for assessing the mental workload from an individual perspective. NASA-TLX uses a visual scale of 0 to 100 divided into 10 units. 6 subscales of mental need, physical needs, time requirements, performance, effort and frustration are evaluated. Each subscale is defined in the questionnaire and the subjects are asked to study the definitions before answering the questions. The minimum score of each subscale is zero and the maximum score is 100, which the respondent determines, based on the score attributed to each individual subscale. The mean of subscales is reported as the amount of work load, which is a number between 0 and 100. Average scores below 50 are acceptable and scores above 50 are considered unacceptable (Hart and Staveland, 1988).

3.5. Data Collection

Data were collected by using questionnaires in nurses who are working in Ble, Mergasor and Ashti General Hospital in the Emergency Department.While the nurses on their duty with face to face by researcher in nurse's staff room in emergency department and self-completion method. Completion the questionnaire took about 30 minutes.

3.6. Ethical Aspect

Ethical approval was obtained from the Near East University Scientific Researches and Ethics Committee (22.11.2018/678) and General Directorate of Health-Erbil in addition, the researcher also introduced himself to the subjects, explained the research purposes, and obtained their written consent while assuring them that the obtained information would be treated as strictly confidential.

3.7. Data Analysis

The collected data were analyzed using SPSS 21.0 limited version of the Statistical Package for the Social Sciences (IBM Corp.; Armonk, NY, USA). Descriptive statistics, calculation of central inclination indexes, mean and indexes of dispersion, absolute frequency and percentage, correlation coefficient, and ANOVA tests were used in the data analysis. Also, if some of the result was significant the measurement of significance is $p < 0.05$.

4. FINDINGS

In this chapter, the findings of the study conducted to determine the relationship between mental workload and fatigue in emergency department nurses were given.

Table 4.1. Descriptive characteristics of the nurses (N=65)

Variables		Frequency (Number)	Percent %
Age (Mean: 28.95)	≤25	6	9.2
	26-30	44	67.7
	≥31	15	23.1
Years of working in emergency Department(Mean: 3.51)	1-3	33	50.8
	4-6	26	40
	7-9	6	9.2
Gender	Male	34	52.3
	Female	31	47.7
Level of Education	Preparatory of Nursing	15	23.1
	Diploma	42	64.6
	Bachelor	8	12.3
Hospital Workplace	Ble General Hospital	25	38.4
	Ashti General Hospital	20	30.8
	Mergasur General Hospital	20	30.8

Descriptive characteristics of the nurses are shown in Table 4.1. The mean ages of the participants were 28.95 years. The most frequent age group was 26-30 years (67.7%). In terms of years of working in emergency Department, 50.8% of the participants had 1-3 years of working experience. In terms of gender distribution, 52.3% of the participants were male. The majority of the nurses had a diploma degree (64.6%).

Table 4.2. Mean scores of mental workload and Its dimensions among emergency department nurses (N=65)

Mental workload and its dimensions	Mean ± SD (min)
Mental Demand	60 ± 13.11
Physical Demand	58.84 ± 12.83
Temporal Demand	45 ± 16.65
Performance	62.69 ± 14.73
Effort	53.53 ± 14.29
Frustration	51.53 ± 18.15
Mental workload Total Score	55.26 ± 6.98

Table 4.2 shows descriptive statistics of the mental workload and its dimensions among Emergency Department Nurses. Performance score (62.69±14.73) and temporal demand score (45±16.65) obtained the highest and lowest rates. Total mental workload was estimated 55.26±6.98.

Table 4.3. Mean scores of mental workload and Its dimensions among emergency department nurses in the different hospitals (N=65)

Mental workload and its dimensions	Ble General Hospital Mean ± SD (min)	Ashti General Hospital Mean ± SD (min)	Mergasor General Hospital Mean ± SD (min)	p
Mental Demand	56 ± 13.07	56.25 ± 11.10	68.75 ± 11.10	0.001
Physical Demand	61 ± 14.57	55 ± 10.25	60 ± 12.56	0.268
Temporal Demand	44 ± 14.93	51.25 ± 15.12	40 ± 18.84	0.094
Performance	63 ± 16.32	57.5 ± 14.28	67.5 ± 11.75	0.098
Effort	53 ± 15	56.25 ± 13.75	51.5 ± 14.24	0.567
Frustration	50 ± 17.67	50 ± 21.45	55 ±15.38	0.599
Total Score	54.5 ± 8.23	54.37 ± 5.81	57.12 ± 6.30	0.366

In mean scores of mental workload and its dimensions, regarding hospital workplace, ANOVA test showed a significant statistical difference in the mean scores of Mental Demand dimension.

Table 4.4. Mean scores of CIS and Its dimensions among emergency department nurses (N=65)

CIS and its dimensions	Mean ± SD (min)
CIS-Subjective feeling of fatigue	23.41 ± 12.27
CIS-Reduction of Concentration	15.41 ± 5.24
CIS-Reduction of Motivation	7.04 ± 4.38
CIS-Reduction of Physical activity	7.89 ± 5.39
CIS Total Score	53.79 ± 18.42

Table 4.4 shows descriptive statistics of the fatigue and its dimensions among Emergency Department Nurses. Subjective feeling of fatigue score (23.41±12.27) and Reduction of Motivation score (7.04±4.38) obtained the highest and lowest rates. Total fatigue was estimated 53.79±18.42.

Table 4.5. Mean scores of CIS and Its dimensions among emergency department nurses in the different hospitals (N=65)

	Ble General Hospital Mean ± SD (min)	Ashti General Hospital Mean ± SD (min)	Mergasor General Hospital Mean ± SD (min)	p
CIS-Subjective feeling of fatigue	20.96 ± 11.83	28.10 ± 12.19	2.80 ± 12.17	0.118
CIS-Reduction of Concentration	13.60 ± 6.40	16.70 ± 4.95	16.40 ± 3.84	0.084
CIS-Reduction of Motivation	7.84 ± 4.86	6.70 ± 4.95	6.40 ± 3.01	0.510
CIS-Reduction of Physical activity	8.04 ± 6.16	6.90 ± 4.47	8.70 ± 5.32	0.572
CIS Total Score	50.44 ± 19.83	58.40 ± 18.09	53.30 ± 16.79	0.357

We see that in Table 4.5; In mean scores of fatigue and its dimensions, regarding hospital workplace, showed a no significant difference in any of the variables.

Table 4.6. The relationship between mental workload and fatigue dimensions in emergency department nurses (N=65)

	Subjective feeling of fatigue		Reduction of Concentration		Reduction of Motivation		Reduction of Physical activity		CIS Total Score	
Mental workload	**p**	**r**	**p**	**r**	**p**	**r**	**p**	**r**	**p**	**r**
	0.82	-0.87	0.317	0.12	0.58	0.06	0.62	-0.05	0.82	-0.02
Spearman correlation coefficient										

We see that in Table 4.6; Based on the Spearman correlation coefficient, there was no significant relationship between mental workload and fatigue dimensions in emergency department nurses.

Table 4.7. The relationship between mental workload and demographic characteristics of emergency department nurses (N=65)

	Pearson's chi-squared test				**Eta test**		
	Age		**Years of working in emergency Department**		**Gender**	**Level of Education**	**Hospital**
Mental workload	**r**	**p**	**r**	**p**	**r**	**r**	**r**
	-0.13	0.26	0.02	0.83	0.03	0.16	0.17

Based on the above table 4.7, Eta's statistical index showed a very weak correlation between the variables of gender, level of education and hospital workplace, with mean scores of mental workload among Emergency Department Nurses. Also, based on Pearson correlation test, there was no statistically significant correlation between age and years of working in emergency Department with mean scores of mental workloads.

Table 4.8. The relationship between fatigue and demographic characteristics of emergency department nurses (N=65)

	Pearson's *chi-squared test*				Eta test		
	Age		Years of working in emergency Department		Gender	Level of Education	Hospital
Mental workload	**r**	**p**	**r**	**p**	**r**	**r**	**r**
	0.07	0.57	0.11	0.37	0.10	0.07	0.08

Based on the above table, showed a very weak correlation between the variables of gender, level of education and hospital workplace, with mean scores of fatigue among Emergency Department Nurses. Also, based on Pearson correlation test, there was no statistically significant correlation between age and years of working in emergency Department with mean scores of Fatigues.

5. DISCUSSION

The focus of this study was determination of the relationship between mental workload and fatigue in emergency department nurses. The study was conducted on 65 nurses with vary gender, level of education and hospital workplace. Regarding gender, the study revealed that 52.3% of the participants were male. The majority of the nurses had a diploma degree (64.6%) (Table 4.1). In relation to the dominance of male sex in the samples of this study, it can be stated that the reason may be related to the nature of the emergency department and the need for more male staff in these units.

In relation to the first question of research (What is the rate of fatigue and its dimensions among emergency department nurses?), the results of this study showed that total fatigue was estimated 53.79±18.42. Also in the present study, subjective feeling of fatigue score (23.41±12.27) was the highest rates. (Table 3.1)

According to the CSI questionnaire, the overall fatigue scores is in the range of 20-120. According to this study, it is concluded that the mean of overall fatigue scores is in the medium range. These results are consistent with the results of Motamedzade et al. Study. In their study, the total mean of fatigue score was 58.40 ± 11.90. Among fatigue dimensions, mental fatigue had the highest mean in comparison with other dimensions (Motamedzade et al., 2017). However, in Teixeira et al. Study, 42% of the participants had a severe fatigue (Teixeira, Ribeiro, Fonseca, & Carvalho, 2013). And in the study of Guntupalli et al., 20.8% had a severe fatigue as well (Guntupalli, Wachtel, Mallampalli, & Surani, 2014).

Conducted studies have mentioned many reasons for fatigue in nurses, including severe illness, patients' death, high workload, role ambiguity, frequent exposure to stressful situations and occupational stress, organizational position such as authority, social support, autonomy and workload (Hooper, Craig, Janvrin, Wetsel, & Reimels, 2010; Hunsaker et al., 2015; Motamedzade et al., 2017; Myhren, Ekeberg, & Stokland, 2013).

Several studies have indicated that factors, including shift work and long-term work, are effective in nurses' subjective feeling of fatigue (Caruso, 2014; Kagamiyama & Yano, 2018). Results of Kagamiyama and et al study revealed rotating shift work one of the important factors in a high degree of subjective fatigue among nurses, Because after a

night-shift, have a disrupted sleep rhythm can cause the subjective feeling of fatigue of nurses (Kagamiyama & Yano, 2018).

Effects of long working hours is an important issue for the researchers involved in the ergonomics studies from past few decades (Bae, 2013; Caruso, 2014). Nursing shortages lead to increased workload. Bae's findings showed that 15 percent of nurses in american hospitals work more than 40 hours a week (Bae, 2013). Studies have shown that there is a relationship between long hours of work and cumulative fatigue (Bannai & Tamakoshi, 2014; Park, Kim, Chung, & Hisanaga, 2001). long hours of work had increased the exposure to psychological and physical demands and may induce fatigue and stress in affected workers (Salve, 2017). The results of the study showed that the average percentage of feeling of subjective fatigue “before going to work” increased with the increase in length of weekly working hours (Park et al., 2001). Therefore, improving each of these factors can help reduce pressure and mental fatigue of nurses. Park and colleagues showed that the average percentage of mental fatigue score "before going to work" increases with an increase in weekly working hours and significant changes One of the factors affecting the behavior and performance of individuals in the workplace, and thus affecting their efficiency, is the mental workload. The mental workload is the amount of effort that the mind makes while discharging duty. Activities that require concentration and control measures and speed of action usually increase the mental and physical load significantly in those who do them (Hoonakker et al., 2011).

If people were able to do all the works that are described as their job description quickly, correctly, safely and with just little effort and through using existing resources, the concept of workload would not be of considerable importance, although something else happens in reality because of systemic problems, inadequate education etc. Nowadays, the intense competition for scarce resources in the health system poses a quantitative and qualitative measurement of the nurses' workload as a need (Cain, 2007; Hart & Staveland, 1988). In hospital Emergency department, the staff especially nurses bear the burden of high workload due to the fact that it is frontline department in hospital and faces with the cases that often has severe and acute medical conditions. . High workload and urgent patient care have a significant effect on the nurses' proficiency

In relation to the second question of research (What is the rate of mental workload and its dimensions among emergency department nurses?), the results of the present study showed

that the performance score (62.69±14.73) and mental demand score (60±13.11) were higher rates than others dimensions. Total mental workload was estimated 55.26±6.98. (Table 4.2)

High performance pressure in comparison with the other dimensions of workload in the current study indicates that the emergency department nurses are not satisfied with their performance in carrying out the assigned tasks along the line with the determined purpose for them. The results of previous studies have shown that solutions such as the appropriate association between nursing managers and nursing staff could be effective in nurses' performance and their efficiency (Rouhi, Hosseini, Rahmani Anaraki, Mollaie, & Nasiri, 2013; van den Oetelaar, van Stel, van Rhenen, Stellato, & Grolman, 2016). In the present study, the high mental stress also indicates the severity, complexity, and the need to have a great accuracy in performing the assigned tasks in the emergency department. In Levin et al. Study, it was found that the doctors' and nurses' highest workload in the emergency department was related to mental or psychological stress (Levin et al., 2006).

In relation to the third question of research (What is the relationship between mental workload and fatigue dimensions in emergency department nurses?), the results of the present study showed no significant relationship between mental workload and fatigue dimensions in emergency department nurses. (Table 4.6)

In the present study, there is no correlation between the level of fatigue and its dimensions with mental workload in nurses through using the Spearman's rank correlation coefficient which was not consistent with the results of VanBogaert et al. (Van Bogaert, Clarke, Willems, & Mondelaers, 2013) and Green glass et al. studies (Greenglass, Burke, & Fiksenbaum, 2001). In these studies, it has been determined that workload as a major component of the health service plays a decisive role in undesirable implications such as emotional exhaustion, depersonalization, and burnout.

Fan and Smith, in their study declared that workload is one of several predictors of fatigue (Fan & Smith, 2017). Based on finding of a study, mental workload is associated with all the dimensions of fatigue including mental and physical ones (Hassanzadeh-Rangi, Khosravi, Sarami, & Jafari, 2017). So it can be said that, high and low workloads were associated with fatigue.

In the present study, the lack of significant correlation between the level of fatigue and mental workload among emergency department nurses, may be due to the difference in measurement instruments, especially the fatigue measurement instrument.

In this study, specific fatigue tool was used for data gathering that is different from the other study tool. So this matter could partly explain the differences in the results of two studies.

Although it should be mentioned that in Barbosa et al. study, a significant correlation was not found between these two variables among doctors (Barbosa, Leão, Tavares, & Santos, 2012). Moreover, in Bakhshi et al. study, there was no significant association between mental workload and fatigue among nurses (Bakhshi, Mazloumi, & Hoseini).

In relation to the fourth and fifth questions of the research (What is the relationship between mental workload and fatigue with demographic characteristics of emergency department nurse), the results of the present study showed that very weak correlation between the variables of gender, level of education and hospital workplace, with mean scores of mental workload and fatigue among Emergency Department Nurses. (Table 4.7, Table 4.8)

In the current study, there was also no statistically significant relation between the nurses of the emergency department of different medical education centers in the level of fatigue and its dimensions and the point which requires to be considered was that there was a statistically significant relation between the dimension of mental demand in assessing the mental workload of different hospitals' nurses. The highest rate was related to Mergasor hospital with a mean score of 75.78 ± 11.11 which was significantly higher than the other two hospitals. (Table 4.3)

The reason for this results could be traced back to differences in department management policies, high numbers of patients, lack of personnel and their level of tolerance and resilience. In total mean and other dimensions of mental workload, there was no statistically significant relation between the nurses of department 3 of the considered hospital.

6. CONCLUSION

In the present study, despite the lack of a statistically significant relation between the mental workload and fatigue, different degrees of mental workload and fatigue were found among the nurses of the emergency department. Based on the existing studies, these issues can challenge the nurses' satisfaction and their performance and consequently affect the implication of nursing process or in other word the provision of safe care for patients negatively. Therefore, it can be mentioned that in reviewing the structure of the emergency department and focus on safeguarding the health of human resources are of great importance in order to provide the basic psychological needs related to the staff work as much as possible. In addition, the need to examine the psychological dimensions of employees at the beginning of their application in emergency departments should be considered.

7. RESULTS AND RECOMMENDATIONS

7.1. Results

The main findings of the study that was performed with the aim of determination of the relationship between mental workload and fatigue in emergency department nurses were listed as followings:

In terms of gender distribution, 52.3% of the participants were male. The majority of the nurses had a diploma degree (64.6%) (Table 4.1).

Total mental workload among Emergency Department Nurses was estimated 55.26±6.98. Performance score (62.69±14.73) and temporal demand score (45±16.65) obtained the highest and lowest rates (Table 4.2).

Regarding to hospital workplace, showed a significant statistical difference in the mean scores of Mental Demand dimension among Emergency Department Nurses. Table (4.3).

Total fatigue workload among Emergency Department Nurses was estimated 53.79±18.42. Subjective feeling of fatigue score (23.41±12.27) and Reduction of Motivation score (7.04±4.38) obtained the highest and lowest rates (Table 4.4).

Regarding to hospital workplace, showed no significant statistical difference in the mean scores of fatigue and its dimensions among Emergency Department Nurses Table (4.5).

There was no statistically significant relationship between mental workload and fatigue dimensions in emergency department nurses ($p > 0.05$), (Table 4.6).

Eta's statistical index showed a very weak correlation between the variables of gender, level of education and hospital workplace, with mean scores of mental workload and fatigue among Emergency Department Nurses (Table 4.7, Table 4.8).

7.2. Recommendations

Based on the results of the study following recommendations were made;

1. It is suggested that more studies be conducted with a larger sample size in order to generalize the data to the whole society.
2. It is suggested that future studies investigate the practical experiences of nurses in the emergency department about the factors affecting the level of mental workload or fatigue.
3. Implement comprehensive, systematic and continuous educating programs to increase the level of tolerance and resilience of emergency department nurses.
4. It is recommended to increase the number of nurses in emergency department.

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APPENDEX

Appendix 1. CIS20R Checklist Individual Strengths University Hospital Nijimegen Department of Medical Psychology (Kurdish Version)

Form (A) No.

Gender: Male ☐ Female ☐

Level of Educations: 1○ 2○ 3○ 4○ 5○

فۆرمی هەڵسەنگاندنی پەیوەندی نێوان فشاری مێشک و شەکەتی لە پەرستارانی بەشی فریاکەتن دا

The Relationship between Mental Workload and Fatigue in Emergency Department Nurses

ئەم فۆرمە ٢٠ بیست پرسیار لە خۆ دەگرێت کە ئامانج لێیان گەیشتنە بەو هەستەی کە بۆت درۆست بووە لە ماوەی دوو هەفتەی ڕابردوودا بو نموونە

من هەست بە ئاسوودەیی دەکەم

ئەگەر هەست دەکەی ئەم پرسیارە درۆست نیە بە هیچ شێوەیەک، ئەوا هێمای X لە ((چوارگوشەی)) لای چەپ دابنێ بەم شێوەی خوارەوە

	بەڵێ، ئەمە ڕاستە	نەخێر، ئەمە ڕاست نیە
من هەست بە ئاسوودەیی دەکەم	☐	X

ئەگەر پێت وابێ پرسیارەکە ((**بەڵێ**)) نیە، بەڵام ئەوە ڕاستە، هەروەها نەخێریش نیە، هێمایی X لە ناو چوارگوشەکەدا دابنێ بە گوێرەی ئەو هەستەی کەهەتە، بۆ نمونە ئەگەر هەست بە ئاسوودەیی دەکەی، بەڵام یەکجار زۆر نا ئەوا هێمایی X لە و چوارگوشەدا دابنێ کە نزیکە لە بەڵێ ئەوە درۆستە،یان وەڵامەکەت نەزیکە لە نەخێر ئەوا هێمایی X لە و چوارگوشەدا دابنێ کە نزیکە لە نەخێر بەم شێوەی خوارەوە

	بەڵێ، ئەمە ڕاستە	نەخێر، ئەمە ڕاست نیە
من هەست بە ئاسوودەیی دەکەم	X	☐

.....

هیچ پرسارێک بە بێ وەڵام مەهێڵەرەوە، وە تەنها یەک هێمای X بو هەر پرسارێک دابنێ لە چوار گوشەکەدا

	بەڵێ، ئەمە ڕاستە	نەخێر، ئەمە ڕاست نیە
1. من ماندووم	☐	☐
2. هەست دەکەم زۆر چالاکم	☐	☐
3. بیرکردنەوە هەوڵی دەوێ	☐	☐
4. هەست دەکەم لە ڕووی جەستەییەوە تەواو ماندوو و شکەتم	☐	☐

1

5. ئارەزووی هەموو کارێکی باشم هەیە

6. هەست دەکەم ساغ و تەندرۆستم

7. ڕۆژانە کاری زۆر ئەنجام دەدەم

8. دەتوانم بە وردی و بە باشی ئەو کارەی دەمەوێت ئەنجامی بدەم

9. هەست بە بێ تاقەتی دەکەم

10. ڕۆژانە کاری زۆر ئەنجام نادەم

11. دەتوانم بە باشی بیر بکەمەوە

12. هەست بە ماندووی ناکەم

13. ناتوانم بە باشی تێڕامان ((ترکیز)) بکەمەوە

14. لەڕووی جەستەییەوە هەست دەکەم من باش نیم

15. من پلانی زۆرم هەیە

16. زۆر زوو ماندوو دەبم

17. بەرهەمی کەمم هەیە

18. ئارەزووی هیچ کارێکم نیە

19. خەیاڵم زوو دەڕوات

20. لە ڕووی جەستەییەوە هەست دەکەم شێوەیەکی ڕێک و پێکم هەیە

Appendix 2. CIS20R Checklist Individual Strengths University Hospital Nijimegen Department of Medical Psychology (English Version)

********** CIS20R *********

Checklist Individual Strength

University Hospital Nijmegen

Department of Medical Psychology

Instruction:

On the next page you find 20 statements. With these statements we wish to get an impression of how you have felt during the past two weeks. For example:

I feel relaxed

If you feel that this statement is not true at all, place a cross in the right box; like this:

I feel relaxed	**yes**, that is true	X	**no**, that is not true

If you feel that this statement is not true at all, place a cross in the right box; like this:

I feel relaxed	**yes**, that is true		X **no**, that is not true

If you feel that this statement in not “yes, that is true”, but also not “no, that is not true”, place a cross in the box that is most in accordance with how you have felt.

For example, if you feel relaxed, but not very relaxed, place a cross in one of the boxes close to “yes, that is true": like this:

I feel relaxed	**yes**, that is true	X	**no**, that is not true

Do not skip any statement and place only one cross for each statement.

1. I feel tired	yes, that is true	no, that is not true
2. I feel very active	yes, that is true	no, that is not true
3. Thinking requires effort	yes, that is true	no, that is not true

4. Physically I feel exhausted	yes, that is true	no, that is not true
5. I feel like doing all kinds of nice things	yes, that is true	no, that is not true
6. I feel fit	yes, that is true	no, that is not true
7. I do quite a lot within a day	yes, that is true	no, that is not true
8. When I am doing something, I can concentrate quite well	yes, that is true	no, that is not true
9. I feel weak	yes, that is true	no, that is not true
10. I don't do much during the day	yes, that is true	no, that is not true
11. I can concentrate well	yes, that is true	no, that is not true
12. I feel rested	yes, that is true	no, that is not true
13. I have trouble concentrating	yes, that is true	no, that is not true
14. Physically I feel I am in a bad condition	yes, that is true	no, that is not true
15. I am full of plans	yes, that is true	no, that is not true
16. I get tired very quickly	yes, that is true	no, that is not true
17. I have a low output	yes, that is true	no, that is not true
18. I feel no desire to do anything	yes, that is true	no, that is not true
19. My thoughts easily wander	yes, that is true	no, that

								is not true
20. Physically I feel in a good shape	yes, that is true							no, that is not true

SCORING CIS20R

For the items:**2, 5, 6, 7, 8, 11, 12, 15, 20** is the scoring as follows:

	yes, that is true	1	2	3	4	5	6	7 **no**, that is not true

For the items: **1, 3, 4, 9, 10, 13, 14, 16, 17, 18, 19**is the scoring as follows:

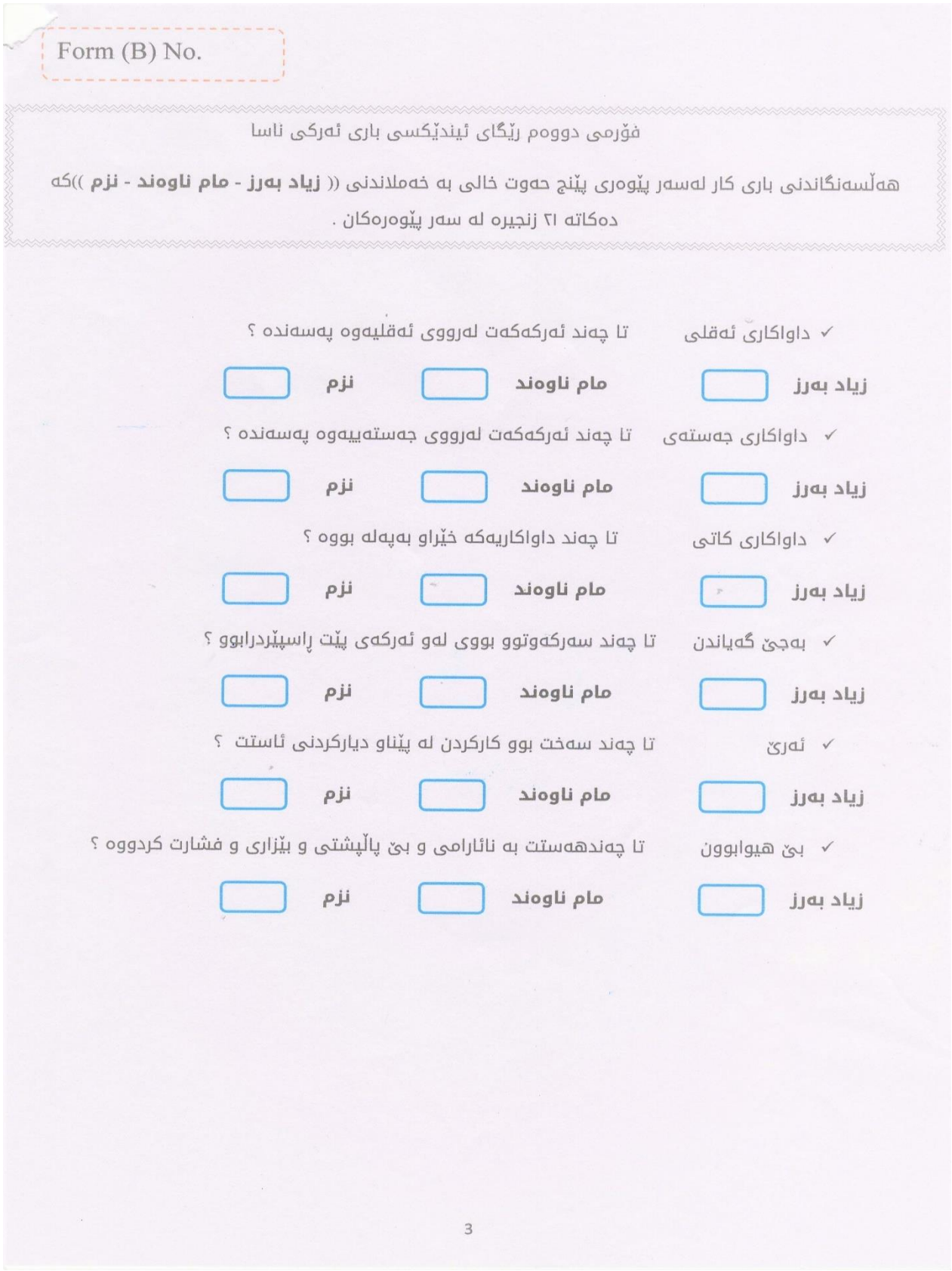
	yes, that is true	7	6	5	4	3	2	1 **no**, that is not true

Subsequently **the four subscales** are calculated by summing the respective items

subscale 1: Subjective feeling of fatigue	items 1, 4, 6, 9, 12, 14, 16, 20
subscale 2: Concentration	items 3, 8, 11, 13, 19
subscale 3: Motivation	items 2, 5, 15, 18
subscale 4: Physical activity	items 7, 10, 17

\

Appendix 3. NASA-TLX (National Aeronautics and Space Administration - Task Load index) (Kurdish Version)



Form (B) No.

فۆرمی دووەم ڕێگای ئیندێکسی باری ئەرکی ناسا

هەڵسەنگاندنی باری کار لەسەر پێوەری پێنج حەوت خالی بە خەملاندنی ((**زیاد بەرز - مام ناوەند - نزم**))کە دەکاتە ٢١ زنجیرە لە سەر پێوەرەکان .

✓ داواکاری ئەقلی — تا چەند ئەرکەکەت لەرووی ئەقلیەوە پەسەندە ؟

زیاد بەرز ☐ **مام ناوەند** ☐ **نزم** ☐

✓ داواکاری جەستەی — تا چەند ئەرکەکەت لەرووی جەستەییەوە پەسەندە ؟

زیاد بەرز ☐ **مام ناوەند** ☐ **نزم** ☐

✓ داواکاری کاتی — تا چەند داواکاریەکە خێراو بەپەلە بووە ؟

زیاد بەرز ☐ **مام ناوەند** ☐ **نزم** ☐

✓ بەجێ گەیاندن — تا چەند سەرکەوتوو بووی لەو ئەرکەی پێت ڕاسپێردرابوو ؟

زیاد بەرز ☐ **مام ناوەند** ☐ **نزم** ☐

✓ ئەرێ — تا چەند سەخت بوو کارکردن لە پێناو دیارکردنی ئاستت ؟

زیاد بەرز ☐ **مام ناوەند** ☐ **نزم** ☐

✓ بێ هیوابوون — تا چەندەستت بە نائارامی و بێ پاڵپشتی و بێزاری و فشارت کردووە ؟

زیاد بەرز ☐ **مام ناوەند** ☐ **نزم** ☐

3

Appendix 4. NASA-TLX (National Aeronautics and Space Administration - Task Load index) (English Version)

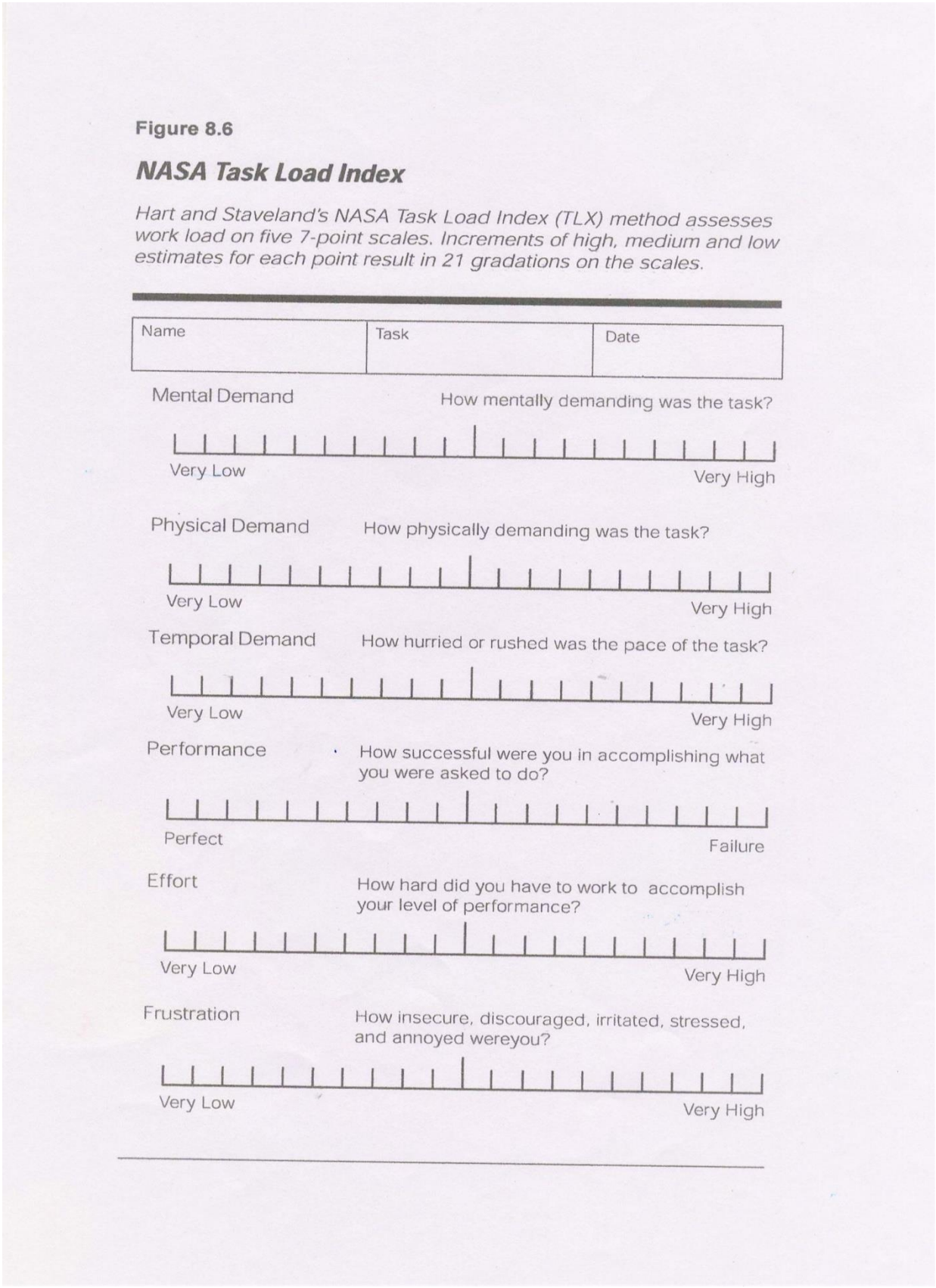


Figure 8.6

NASA Task Load Index

Hart and Staveland's NASA Task Load Index (TLX) method assesses work load on five 7-point scales. Increments of high, medium and low estimates for each point result in 21 gradations on the scales.

Name	Task	Date

Mental Demand — How mentally demanding was the task?

Very Low — Very High

Physical Demand — How physically demanding was the task?

Very Low — Very High

Temporal Demand — How hurried or rushed was the pace of the task?

Very Low — Very High

Performance — How successful were you in accomplishing what you were asked to do?

Perfect — Failure

Effort — How hard did you have to work to accomplish your level of performance?

Very Low — Very High

Frustration — How insecure, discouraged, irritated, stressed, and annoyed wereyou?

Very Low — Very High

Appendix 5. Ethical Approval Near East Institutional Reviews Board (IRB

Ek.750-2018

YAKIN DOĞU ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMALAR DEĞERLENDİRME ETİK KURULU

ARAŞTIRMA PROJESİ DEĞERLENDİRME RAPORU

Toplantı Tarihi :22.11.2018
Toplantı No : 2018/63
Proje No : 678

Yakın Doğu Üniversitesi Hemşirelik Fakültesi öğretim üyelerinden Doç. Dr. Ümran Dal Yılmaz'ın sorumlu araştırmacısı olduğu, YDU/2018/63-678 proje numaralı ve **"The Relationship Between Mental Workload and Fatigue in Emergency Department Nurses"** başlıklı proje önerisi kurulumuzca değerlendirilmiş olup, etik olarak uygun bulunmuştur.

1. Prof. Dr. Rüştü Onur (BAŞKAN)
2. Prof. Dr. Nerin Bahçeciler Önder (ÜYE)
3. Prof. Dr. Tamer Yılmaz (ÜYE)
4. Prof. Dr. Şahan Saygı (ÜYE)
5. Prof. Dr. Şanda Çalı (ÜYE)
6. Prof. Dr. Nedim Çakır (ÜYE) KATILMADI
7. Prof. Dr. Kaan Erler (ÜYE) KATILMADI
8. Doç. Dr. Ümran Dal Yılmaz (ÜYE)
9. Doç. Dr. Nilüfer Galip Çelik (ÜYE)
10. Doç.Dr. Emil Mammadov (ÜYE)

Appendix 6. Allowed Letter from NEU to General directorate of Health - Erbil

YAKIN DOĞU ÜNİVERSİTESİ
HEMŞİRELİK FAKÜLTESİ

NEAR EAST UNIVERSITY
FACULTY OF NURSING

Ref No: HF-1259/2018

12. November. 2018

General Directorate of Health – Erbil

Dear Director;

Your citizen Khalamala Ibrahim Salih is master degree student in Near East Universty Faculty of Nursing. He wanted to study about "The Relationship Between Mental Workload and Fatigue in Emergency Department Nurses". We accepted his proposal.

He wanted to study of your three different hospitals. If you let him to study he will make a research with nurses of Ble, Mergasur and Ashti General Hospitals in the Emergency Department.

I respectfully give the necessary permissions to Khalamala Ibrahim Salih.

Best wishes and sincerely yours.

YAKIN DOĞU ÜNİVERSİTESİ HEMŞİRELİK FAKÜLTESİ

Assoc. Prof. Ümran Dal Yılmaz
Vice Dean, Near East Universty Faculty of Nursing

LEFKOŞA, MERSIN 10 TURKEY, KKTC · Tel: +90 392 680 20 00 / 3439 · Faks: +90 392 680 20 40 · www.neu.edu.tr · info@neu.edu.tr

Appendix 7. Permission Letter from General directorate of Health - Erbil to NEU

Kurdistan Region Government/ Iraq
Ministry of Health
General Directorate of Health – Erbil
Directorate of Planning
Scientific Research Partition

حکومەتی هەرێمی کوردستان / عێراق
وەزارەتی تەندروستی
بەڕێوەبەرایەتی گشتی تەندروستی هەولێر
بەشی پلان
هۆبەی توێژینەوەی زانستی

No: 267 Date: 22/ Nov. / 2018

((پێشمەرگە سومبولی نەتەوەیی وپارێزەری کوردستانە))

To whom it may concern

Permission letter

This letter is issued in support of **Khalamala Ibrahim Salih** who is a master student from Near East University who has been granted permission to collect data and information in Ble, Mergasur, and Ashti General hospitals for his research project about Relationship Between Mental Workload and Fatigue in Emergency Department Nurses.

With our regards.

Directorate of Health - Erbil
Director General Bureau

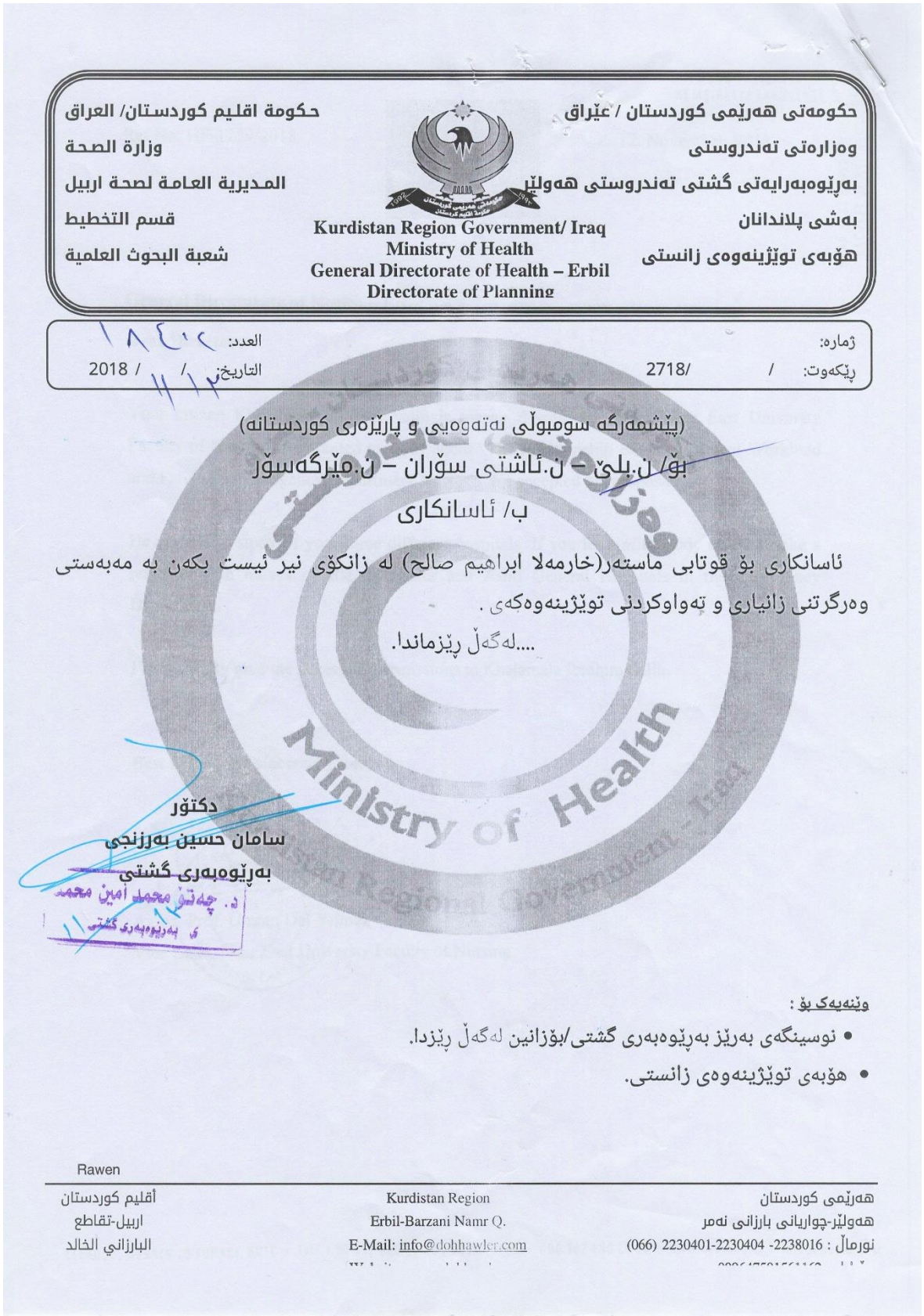
Dr. Saman H. Barzangy
Director General
DOH - Erbil

Dr. Saman H. Barzangy
Director General
DOH - Erbil

Copy to:
- ✓ General Directors Office \ for your information with respect.
- ✓ Scientific Research Partition.

Kurdistan Region – Iraq Erbil – Barzani Namr Q.
E-Mail: info@dohhawler.com Website: www.dohhawler.org Mobil No. 00964 750 156 1162

Appendix 8. Allowed Letter from General directorate of Health - Erbil to Ble, Mergasur and Ashti General Hospital



حكومة اقليم كوردستان/ العراق
وزارة الصحة
المديرية العامة لصحة اربيل
قسم التخطيط
شعبة البحوث العلمية

Kurdistan Region Government/ Iraq
Ministry of Health
General Directorate of Health – Erbil
Directorate of Planning

حکومەتی هەرێمی کوردستان / عێراق
وەزارەتی تەندروستی
بەڕێوەبەرایەتی گشتی تەندروستی هەولێر
بەشی پلاندانان
هۆبەی توێژینەوەی زانستی

العدد: ١٨٤٠٢
التاريخ: ١١/١٢ / 2018

ژمارە: 2718/
ڕێکەوت: /

(پێشمەرگە سومبوڵی نەتەوەیی و پارێزەری کوردستانە)

بۆ/ ن.بلێ – ن.ئاشتی سۆران – ن.مێرگەسۆر

ب/ ئاسانکاری

ئاسانکاری بۆ قوتابی ماستەر(خارمەلا ابراهیم صالح) لە زانکۆی نیر ئیست بکەن بە مەبەستی وەرگرتنی زانیاری و تەواوکردنی توێژینەوەکەی .

....لەگەڵ ڕێزماندا.

دکتۆر
سامان حسین بەرزنجی
بەڕێوەبەری گشتی

د. چەتۆ محمد أمين محمد
ی بەڕێوەبەری گشتی

وێنەیەک بۆ :

- نوسینگەی بەڕێز بەڕێوەبەری گشتی/بۆزانین لەگەڵ ڕێزدا.
- هۆبەی توێژینەوەی زانستی.

Rawen

أقليم كوردستان
اربيل-تقاطع
البارزاني الخالد

Kurdistan Region
Erbil-Barzani Namr Q.
E-Mail: info@dohhawler.com

هەرێمی کوردستان
هەولێر-چواریانی بارزانی نەمر
نورمال : 2238016 -2230401-2230404 (066)

Appendix 9. Informed Consent Form Participant Nurses

Informed Consent Form

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature …… Date ..... /……../ ……..

Investigator's signature ……... Date ……/……./…….