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NEAR EAST UNIVERSITY

INSTITUTE OF HEALTH SCIENCES

OUTCOME OF PAIN MANAGEMENT AMONG POSTOPERATIVE PATIENTS

SANDRA CHIROTA AKIRE

MASTERS IN NURSING (SURGICAL NURSING)

Supervisor:

Prof. Dr. Nurhan Bayraktar

NICOSIA 2020

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Declaration

Hereby I declare that this thesis study is my own study, I had no unethical behavior in all stages from planning of the thesis until writing thereof, I obtained all the information in this thesis in academic and ethical rules, I provided reference to all of the information and comments which could not be obtained by this thesis study and took these references into the reference list and had no behavior of breeching patent rights and copyright infringement during the study and writing of this thesis.

Sandra Chirota Akire

Acknowledgement

I thank God almighty for the completion of this thesis. Special thanks to my supervisor Prof. Dr. Nurhan Bayraktar who has been of great help throughout the course of this work. I thank my family and friends for their constant support.

Ameliyat Sonrası Hastalarda Ağrı Yönetiminin Sonuçları

Öğrencinin Adı: Sandra Chirota Akire
Danışmanı: Prof. Dr. Nurhan Bayraktar
Anabilim Dalı: Hemşirelik (Cerrahi Hastalıkları Hemşireliği)

ÖZET

Amaç: Ameliyat sonrası ağrı yönetimi hem hastane personeli hem de cerrahi hastalar için her zaman büyük bir zorluk olmuştur. Cerrahi olarak tedavi edilen hastalar arasında ağrı yönetimi sonucunun belirlenmesi, ağrı yönetimi stratejilerinin geliştirilmesine, daha iyi sonuç için sağlık hizmetlerinin geliştirilmesine, hasta memnuniyet oranında artışa yardımcı olabilir. Bu çalışmanın amacı ameliyat sonrası hastalarda ağrı yönetiminin sonuçlarını değerlendirmektir.

Gereç ve Yöntem: Bu tanımlayıcı, kesitsel çalışma Temmuz-Eylül 2019 tarihleri arasında Yakın Doğu Üniversitesi Hastanesi ve Dr Suat Günsel Hastanesi'nde ameliyat sonrası hastalar ile gerçekleştirilmiştir. Çalışmaya Yakın Doğu Hastanesi'nden toplam 60 hasta ve Dr Suat Günsel Hastanesi'nden 30 hasta katılmıştır. Verilerin toplanması için revize edilmiş Amerikan Ağrı Derneği Hasta Sonucu anketinin (APS-POQ-R-TR) Türkçe Versiyonu kullanılmıştır.

Bulgular: Çalışmanın sonucunda; APSPOQ'nun ağrı şiddeti alanında ağrı şiddeti genel ortalaması 5.5 (± 1.6) olarak belirlenmiştir. Ameliyat sonrası yaşanan başlıca duyguların anksiyete (5.7 ± 2.7) ve çaresizlik (4.7 ± 4.4) olduğu saptanmıştır. Ameliyat sonrası dönemde en çok görülen yan etkilerin bulantı (3.0 ± 2.9) ve uyuşukluk hissi (2.7 ± 2.6) olduğu belirlenmiştir. Ağrı yönetiminden duyulan memnuniyet açısından maddelerin genel ortalama değeri 7,0 (± 1,5) olarak saptanmıştır.

Sonuçlar: Çalışmanın sonuçlarına göre, ameliyat sonrası hastalarda ağrı yönetiminde hasta memnuniyetini artıracak stratejilerin geliştirilmesi önerilmiştir.

Anahtar kelimeler: Ağrı, Ağrı yönetimi, Perioperatif bakım, Hasta memnuniyeti

Outcomes of Pain Management among Postoperative Patients

Student's Name: Sandra Chirota Akire
Advisor: Prof. Dr. Nurhan Bayraktar
Department: Nursing (Surgical Nursing)

ABSTRACT

Objective: Post-operative pain management has always been a major challenge for both hospital staffs and surgical patients. Determination of the outcome of pain management among surgically treated patients may help in the development of pain management strategies, development of health services for better outcome, increase in patient satisfaction rate. The aim of this study is to assess the outcomes of pain management among postoperative patients.

Materials and Methods: This descriptive, cross sectional study was carried out on post-operative patients in Near East University Hospital and Dr Suat Gunsel Hospital between July-September 2019. Total 60 patients from Near East Hospital and 30 Patients from Dr Suat Gunsel Hospital participated in this study. The Turkish Version of the revised American Pain Society Patient Outcome questionnaire (APS-POQ-R-TR) was used for Data collection.

Results: Result of the study showed that; in pain severity domain of the APSPOQ mean for pain severity was 5.5 (±1.6). The major emotions experienced during post-surgery were anxiety (5.7±2.7) and helplessness (4.7±4.4). The most experienced side effects during post-surgery period were nausea, (3.0±2.9) and drowsiness (2.7±2.6). Regarding the satisfaction from pain management, overall mean value of the items was 7.0 (±1.5). The means for best satisfaction with the results of pain treatment in the hospital was 7.7 (±2.3).

Conclusions: Based on the results of the study, development of strategies to improve the patient satisfaction of pain management among postoperative patients was recommended.

Key words: Pain, Pain management, Perioperative care, Patient satisfaction

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Abbreviations

Acute Pain Service (APS)

Brain Stem Acoustic Evoked Responses (BSAERs)

Enhanced Recovery After Surgery (ERAS)

Hospital Consumer Assessment of Health Providers and Systems (HCAHPS)

International Association for the study of pain (I.A.S.P.)

Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

Minnesota Multiphasic Personality Inventory (MMPI)

Patient Controlled Analgesia (PCA)

Somatosensory Evoked Potentials (SSERs)

The McGill Pain Questionnaire (MPQ)

Visual Analog Scale (VAS)

1. INTRODUCTION AND AIM

1.1. Definition of the Problem

Understanding pain is one of the oldest challenges in the history of medicine (Raffaeli and Arnaudo, 2017). Pain, according to the International Association for the Study of Pain (IASP), is an unpleasant sensory and emotional experience associated with existing or potential tissue injury (Machado-Alba J. et al., 2013). In spite of the fact that pain researchers have put in a great amount of effort into understanding the impact of pain at an individual level, the effect on population up until now have not been largely considered (Johnson, 2019). Evidence has shown that pain is one of the major symptoms experienced by hospitalized patients and the world prevalence of moderately intense pain in hospitalized patients ranges between 26.0%, and 33.0%, while prevalence of severe pain range between 8.0% and 13.0% (Erazo-Muñoz and Colmenares-Mejía, 2018; Morrison et al., 2006; Machado-Alba et al., 2013).

The rapid increase of complex surgical procedures has made preoperative and postoperative pain management very essential (Shoar et al., 2012). Although, there have been lots of advances in the pain management field recently, not all patients get relieved of complete postoperative pain. As stated by Gan (2017), according to the US Institute of Medicine, 80% of surgical patients report pain postoperatively and 88% of these patients reported moderate and severe pain levels. A cross sectional study conducted among 252 postoperative patients in 2012 reported that the incidence of postoperative pain was 91.4% (Woldehaimanot et al., 2014).

Pain experience interferes with different aspects of a patient's life, negatively affecting their activities of daily living, mental and physical health, family and social relationships (Duenas et al 2016). According to Romero-Grimaldi et al., (2015), patients with chronic pain usually suffer from affective disorders and cognitive decline, which significantly impairs their

quality of life. In addition, many of these patients also experience stress unrelated to their illness, which can aggravate their symptoms (Geurts et al.,2018). Uncontrolled acute postoperative pain may lead to chronic persistent postsurgical pain. It also causes the development of tachycardia, hyperventilation, decrease in alveolar ventilation, transition to chronic pain, poor wound healing, and insomnia, which in turn may impact the operative outcome and increase hospitalization duration. Postoperative pain does not affect only the patients' operative outcome, wellbeing and satisfaction from medical care (Baratta et al., 2014). Postoperative pain is poorly treated is related with reduction in quality of life (Mahama and Ninnoni, 2019). Sinatra (2010) stated that a study carried out in a hospital for hip fracture among 411 inpatients demonstrated progressively extreme postoperative pain was related with more impaired patient functionality. Pain also has a great effect on hospital cost. A study carried out between 2013-2016 in Netherlands showed that the annual costs for society are €7,911.95 per chronic discongenic low back pain patient, 51% healthcare and 49% societal costs (Geurts et al.,2018). Another research performed in USA to compute the cost of medical care for patients with a primary diagnosis of pain in 2008 showed that the total incremental cost of health care due to pain ranged from $261 to $300 billion (Gaskin and Richard, 2011) and a retrospective study on 1609 surgical inpatients enrolled by the Acute Pain Service (APS) in 2009 showed total costs of APS management were 194521 € and the costs of staff were 102739 € (Garufi et al., 2011).

Proper pain management, most especially postoperative pain management is a major concern for health care practitioners and for patients undergoing surgery. With technological advancement and evidenced based practiced, it is now understood that the appropriate control of acute postoperative pain is essential and needed in all surgical procedures as it is one of the keystones to attain quick postoperative recovery (Machado-Alba et al., 2013; Gupta K et al.,

2010). Most surgical patients experience acute postoperative pain, but evidence states that less than half of them report adequate postoperative pain relief (Chou et al., 2016). Woldehaimanot et al. (2014) found that only 50% of the patients were adequately satisfied with their pain management (Woldehaimanot et al., 2014).

A lot of factors contribute for effective postoperative pain management and they include; structured acute management team with adequate information on the diagnostics and treatment of pain, patient education including encouragement to discuss their pain with the personnel and request strategies that will relief pain, regular staff training, use of balanced analgesia, regular pain assessment tools and adjustment of strategies to meet the needs of special patient groups (Gupta K et al., 2010; Málek and Ševčík, 2014, Sinatra, 2010).

Therapeutic interventions and approaches developed for post-operative pain management and control includes assessment with pain scales, multimodal approach for analgesic administration (Garimella and Cellini, 2013) and development of Acute Pain Service (APS) groups and Enhanced Recovery After Surgery (ERAS) programs (Horn & Kramer, 2019). Adequate pain management promotes earlier mobility and lessens the complications of ileus, urinary retention, and myocardial infarction. Proper education and adequate treatment of postoperative pain can also result in positive emotional outcomes for patients, such as a decrease in anxiety and depression, increase in coping skills, greater sense of individual control, increase in a sense of well-being and patient satisfaction (Glowacki, 2015).

Nurses have important roles in pain assessment and treatment. The goals of pain assessment are to determine severity of the pain, assist in choosing the dose for analgesic suitable for that particular level of pain, and document the effectiveness of pain treatment. Ideally, the patient is encouraged to actively participate in pain assessment, evaluation of pain regularly on a

standard scale, and reassessment of the pain when an unexpected increase occurs. (Yüceer, 2011). Nurses spend a significant amount of their time with patients and for this reason; they have a key role to play in the decision-making process regarding pain management. Nurses have to be well educated, well prepared and knowledgeable on pain assessment and management techniques and should not hold false beliefs about pain management, which can lead to inappropriate and inadequate pain management practices (Samarkandi, 2018).

The study of effective pain management is a national and global challenge. Less is known about outcome of pain management among surgically treated patients in North Cyprus. Determination of the outcome of pain management among surgically treated patients may help in the development of pain management strategies, development of health services for better outcome, increase in patient satisfaction rate.

1.2. Aim of the Study

The aim of this study is to assess the outcomes of pain management among postoperative patients. Study questions include the following;

- What is the pain severity score of patients?
- Does pain interfere with activities of the patients?
- Does pain affect the emotions/mood of the patients?
- Do the patients experience side effects?
- Are patients satisfied with the pain management methods?
- Are non-pharmacological methods used to relieve pain?
- Is there any significant difference between descriptive characteristics and outcomes of pain management among postoperative patients?

2. BACKGROUND

2.1. Definition of the pain

According to the International Association for the Study of Pain (I.A.S.P), pain is an unpleasant sensory and emotional experience associated with existing or potential tissue injury (Machado-Alba J. et al., 2013). Pain is the most widely recognized side effect of ailment, which goes with us since the beginning. It is a defensive instrument to which the body reacts to harmful stimuli (Świeboda et al., 2013). Pain is subjective in that every individual learns the utilization of the word through their very own encounters (Treede, 2018). In like manner, pain is associated with genuine or potential tissue harm. It is a sensation in a section or parts of the body (Van Wilgen and Keizer, 2012). Numerous individuals report pain without tissue harm or any possible pathophysiological cause, and there is normally no real way to recognize their experience from that because of tissue harm. In this way pain has a few significant measurements: a tactile measurement — where does it hurt and what amount does it hurt; a passionate measurement — how disagreeable is the experience; and a psychological measurement — how would we translate the pain dependent on our past experience, does it cause dread and tension, and how would we react to the risk presented by pain. Some random individual could report a pain experience that isn't effectively comprehended by the clinician they experience and to whom they turn for clarifications and help (Crofford, 2015; van Wilgen and Keizer, 2012). There are different forms of pain. A 2014 study on the global burden of chronic pain revealed that at least 10% of the world's population is affected by a chronic pain condition (Raffaeli & Arnaudo, 2017).

2.2. Postoperative Pain

Postoperative pain is a condition of tissue injury together with muscle spasm after surgery (Ceyhan & Güleç, 2010). Surgery and anesthesia are very crucial health care services benefits that decrease the danger of death and incapacity among millions worldwide every year, and the requirement for these administrations is relied upon to keep on expanding throughout the following decade. Surgery and anesthesia are critical health-care services that reduce the risk of death and disability among millions worldwide each year, and the need for these services is expected to continue to increase over the next decade Postoperative pain should be relieved as soon and as successful as possible to diminish suffering, to further the healing process and recovery and to avert complications. Nevertheless, clinical pain management after surgery is a long way from being effective in spite of significantly expanded scientific proof in this aspect (Pogatzki-Zahn, Segelcke & Schug, 2017). Over 80% of patients who go through surgeries experience intense postoperative pain and roughly 75% of those with postoperative pain report the seriousness as moderate, extreme, or outrageous (Chou et al., 2016). It is important to increase new bits of knowledge into the mechanism of postoperative pain in trial and clinical settings to create helpful choices with more prominent viability and less danger of unfriendly impacts than those accessible today. Comprehensive evidence dependent on results from clinical investigations enhances knowledge, but should be executed into clinical practice too (Pogatzki-Zahn, Segelcke & Schug, 2017).

2.3. Pathophysiology of Postoperative Pain

Surgical pain is an undesirable sensation associated with a surgical procedure. Postoperative pain is viewed as a type of acute pain because of surgical trauma with a fiery

response and inception of an afferent neuronal blast. It is a combination of different undesirable sensory, emotional and mental experience encouraged by the surgical trauma and related with autonomic, endocrine-metabolic, physiological and behavioral reactions (Guptal A., Kuar K., et al 2010). Symptoms vary depending upon the type of tissue injured and the extent of the injury.

Sensory pathways for pain caused by tissue damage transmit information from the damaged tissue to the central nervous system (nociception). Nociceptive pain is accompanied by inflammatory, visceral, and neuropathic pain mechanisms. Sensitization of peripheral and central neuronal structures amplifies and sustains postoperative pain. Various animal models have been developed to better understand the pathophysiology of postoperative pain. The incisional pain model developed by Brennan et al. and Pogatzki- Zahn et al. demonstrated that post incisional nociception produces cellular and molecular alterations that are distinct from other pain models (Brennan, 2011.; Pogatzki-Zahn, Segelcke & Schug, 2017.; Richebé, Capdevila & Rivat, 2018).

Acute pain is a major stressor activating neuroendocrine, immune, and inflammatory response (psycho-neuro-endocrino-immunological changes). Postoperative pain is an example of acute pain from both pathophysiological and therapeutic point of view (Málek & Ševčík, 2017). Surgical procedures causes local tissues to get damaged which prompts nociceptor initiation and sensitization. prostaglandins, interleukins, cytokines and neurotrophins (for example nerve development factor (NGF), glial-inferred neurotrophic factor (GDNF), neurotrophin (NT)- 3, NT-5, and mind inferred neurotrophic factor (BDNF) are released both locally and systematically during and after surgical procedures. These mediators, contribute to nociceptor sensitization therefore, people go through continuing pain at rest and increased responses to stimuli at the site of injury (Primary hyperalgesia) (International Association for the Study of Pain IASP 2017). After some days, decreased in pH tissue and oxygen tension, and increased

lactate concentration, is noticed at the site of incision. These responses can lead to peripheral sensitization (e.g., muscle C-fibers) and spontaneous pain behavior following an incision. Peripheral neutrophilic granulocytes (NGs) contribute to peripheral sensitization and pain after surgical incision. Endogenous CD14+ monocyte responses (e.g., via the TLR4 signaling pathway) are associated with differences in the time course of postsurgical pain.

Nerves may be injured during surgery and hence discharge spontaneously. Spontaneous action potentials in damaged nerves may account for qualitative features of neuropathic pain that may be present early in the postoperative period and can evolve into chronic neuropathic pain. Significant changes can be seen in various systems after surgical procedures:

Cardiovascular system: Sympathetic stimulation causes an increase in stroke volume, myocardial oxygen consumption, cardiac workload and tachycardia. This can lead to higher risk of ischemia and even myocardial infarction in susceptible individuals. Fear of pain can lead to physical immobility which is accompanied by venous stasis, subsequent platelet aggregation, possible venous thrombosis and venous thromboembolism (VTE).

Gastrointestinal and urinary changes: Nausea, vomiting, hypomotility of the intestines, ureters and bladders; which may lead to problems with urination, are typical changes associated with postoperative condition and pain.

Neuroendocrine and metabolic changes: Suprasegmental reflex responses increase sympathetic tone, stimulate the hypothalamus, increase the production of catecholamines and catabolic hormones (cortisone, adrenocorticotropic hormone - ACTH, antidiuretic hormone - ADH, growth hormone, glucagon, aldosterone, renin, angiotensin II) and reduce the secretion of anabolic hormones (insulin, testosterone). This leads to sodium and water retention, increase in blood glucose, free fatty acids, ketone bodies, and lactate. Metabolism and oxygen consumption

increase and metabolic substrates are mobilized from stores. If this process continues, catabolic state and negative nitrogen balance result (Simsek, Uzelli Simsek & Canturk, 2014).

Changes in respiratory functions: some Surgical procedures may reduce vital capacity (VC), functional residual capacity (FRC), tidal volume (VT), residual volume (RV), and forced expiratory volume in one second (FEV1). As a reflex response, abdominal muscle tone increases and diaphragm function is limited. This results in reduced lung compliance, muscle stiffness, inability to breathe deeply and expectorate. In more advanced cases, this is followed by hypoxemia, hypercapnia, retention of secretions, atelectasis, and pneumonia. An increased muscle tone contributes to increased oxygen consumption and lactate production. Dilated bowel due to postoperative ileus or an overly tight bandage may further restrict ventilation. The patient is afraid to breathe deeply and expectorate out of fear that it might provoke pain.

2.4. Post-Operative Pain Management

Insufficient assessment and management of post-operative pain can have profound effects on the patient, causing raised levels of anxiety, sleep disturbances, difficulties, restlessness, irritability, aggression, and perhaps most importantly, unnecessary levels of distress and suffering. The objective for postoperative pain management is to eliminate or reduce pain with the least side effects. The successful relief of pain is absolutely critical to anybody treating patients experiencing surgery. World Health Organization (WHO) and International Association for the Study of Pain (IASP) have perceived pain relief as a human right (Garimella & Cellini, 2013). Preoperative patient assessment and planning is fundamental to effective postoperative pain the management. Preoperative assessment recommendation incorporates a coordinated pain history, a coordinated physical examination and a pain control plan. Also, patient preparation ought to incorporate changes of preoperative medication to keep away from withdrawals impact,

treatment to lessen preoperative pain/nervousness, and preoperative initiation of treatment as a component of a multimodal pain the management plan. Variables such as depression, level of anxiety an age can have an effect on postoperative pain severity (Garimella & Cellini, 2013).

2.4.1. Assessment of post-operative pain

Assessment and reassessment of postoperative pain is essential to proper pain management. Failure to assess pain makes identification of the etiology, individual characteristics and evaluation of pain interventions impossible (Mackintosh, 2007). There are several measurement tools for assessment and evaluation of postoperative pain which includes; Optical analogue Scale- Numeric Rating and Visual Analog Scale (VAS), Table with facemask-continuum of smiling to crying faces, Somatosensory Evoked Potentials SSERs, Scale of words-Verbal Descriptor Scale, Questionnaire MPQ- The McGill Pain Questionnaire, Measurement of behavioral pain, Minnesota Multiphasic Personality Inventory- MMPI, Brain Stem Acoustic Evoked Responses- BSAERs, Measurement of behavioral pain, and pain diaries (Bakalis et al., 2018). Importance of post-operative pain assessment includes determination of adequate pain management, determination of requirement for changes in medication dosage and treatment plan and patients satisfaction rate (Chou et al., 2016).

2.4.2. Treatment of postoperative pain

Therapeutic interventions for pain management focus on the afferent pain pathway by different mechanisms (Horn & Kramer, 2019).

Management of postoperative pain is best when with multimodal approach (The Lancet, 2019). A study carried out on Veterans who were enrolled in an 8-week interdisciplinary pain management program at an interventional pain clinic for the purpose of evaluating the effectiveness of multi modal approach to treating lower back pain originating from by medical

and surgical cause showed that; pain scores reduced significantly after one year of completing the program. Also, the patients benefited from lower and sustained pain scores, reduction in emergency and urgent clinic visit and generally high satisfaction (Eskander et al., 2019). The Multimodal analgesia approach optimizes pain relieve by treating pain through numerous patterns along various sites of the nociceptive pathway and highly recommended for pain management after all types of surgeries (Manworren, 2015). Using a combination of different classes of analgesics provides more efficient pain relief and decreases opioid use and its related adverse effect (Beck, Margolin, Babin & Russo, 2015). Multimodal treatment of pain after surgery includes:

- **Systemic pharmacologic therapy**; Commonly used medications for pain control after surgery include acetaminophen, corticosteroids, ketamine, NSAIDs and opioids like morphione, hyrdromorphine, fentanyl, meperedine, and tramadol which can be administered through IV, intramuscular, oral, or transdermal routes (Lovich-Sapola, Smith & Brandt, 2015). Patient controlled anesthesia (PCA) is recommended as it provides better pain control, greater patient satisfaction, and fewer opioid side effects when compared with on-request opioids (Horn & Kramer, 2019; Lovich-Sapola, Smith & Brandt, 2015). A comparative randomized controlled trial conducted by (Na et al., 2011) on postoperative craniotomy patients in Korea showed that patients who received IV-PCA, had significantly lower Visual Analogue Scale pain rating (VASp) 4 hours and 24 hours postoperatively compared to those who were given analgesia as need. The PCA is usually used with morphine or hydromorphone. Basal infusion should be avoided in opioid-naive patients (Horn & Kramer, 2019; Lovich-Sapola, Smith & Brandt, 2015).
- **Local, intra-articular/topical techniques;** for site specific pain control

- **Regional anesthetic technique**
- **Neuraxial anesthetic techniques**
- **Nonpharmacologic therapies** like cognitive modalities, physical therapy, transcutaneous electrical nerve stimulation (TENS) (Horn & Kramer, 2019).

2.4. 3.Outcomes of proper postoperative pain management

The goal of pain management after surgery is to prevent and control pain. Appropriate pain relief leads to early mobility and decreases the complications of urinary retention, ileus, myocardial infarction. Proper pain management also reduces pulmonary complications, and an aggravated catabolic hormonal response to injury. Furthermore, adequate pain management leads to shortened hospital stays, lower readmission rates, earlier overall recovery, improved quality of life, increased productivity, and decreased costs for patients and the health care system and increased patient satisfaction (Glowacki, 2015). As a result, the management of postoperative pain is an increasingly monitored quality measure. The Hospital Consumer Assessment of Health Providers and Systems (HCAHPS) scores measures patient satisfaction with in-hospital pain management and may have implications in regards to reimbursements (Garimella & Cellini, 2013).

2.5. Poorly Controlled Post-Operative Pain

The control of postoperative pain is important in preventing chronic post-surgical pain which can be developed in 10% of surgically treated patients. Surgical pain left untreated might lead to decrease in alveolar ventilation and vital capacity and even pneumonic consolidation. This can cause tachycardia, hypertension, myocardial infarction, insomnia poor wound healing (Harsoor, 2011). According to (Gan, 2017), postoperative pain is not properly controlled in more than 80% of patients in the United States. This rate varies depending surgery,

analgesia/anesthesia type, and time elapsed after surgery. Pain poorly managed can cause a negative impact both physically and psychologically on patients and caregivers (Mahama & Ninnoni, 2019). Negative clinical and psychological changes may cause increase in morbidity and mortality as well as overall treatment cost together with, in decreasing the quality of postoperative life. Poorly managed postoperative pain can lead to complications and prolonged rehabilitation (Garimella & Cellini, 2013). It may be related with deep vein thrombosis (DVT), and pulmonary embolism, pneumonia, delayed wound healing and demoralization Uncontrolled acute pain is associated with the development of chronic pain with reduction in quality of life (Harsoor, 2011). The failure to provide good postoperative analgesia is multifactorial. Uncontrolled acute pain is associated with the development of chronic pain with reduction in quality of life. The failure to provide good postoperative analgesia is multifactorial. Insufficient education, fear of complications associated with analgesic drugs, poor pain assessment and inadequate staffing are among the causes. (Garimella & Cellini, 2013). Having realized the problems associated with poorly controlled pain, Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has recommended standards of pain management, most importantly with regard to assessment, monitoring and treatment (Harsoor, 2011).

2.6. Nurses' Roles in Post-Operative Pain Management

The International Association for the Study of Pain has provided guidelines for acute pain management in healthcare settings. These guidelines are shaped to reduce the incidence of poorly controlled pain in postoperative care (Chatchumni, Namvongprom, Eriksson & Mazaheri, 2018). Nurses have a major responsibility in pain management, as they directly interact with patients to assist in relieving pain and improve satisfaction levels (Chatchumni, Namvongprom, Eriksson & Mazaheri, 2018), but unfortunately, it has been widely recognized that nurse have limited

knowledge about post-operative management. A descriptive cross sectional study carried out in Bindura hospital Zimbabwe proved that 84% nurses were unaware of pain assessment tools, 76% nurses were having minimal knowledge regarding ideal time for pain assessment. Similarly, another descriptive cross sectional study in a tertiary hospital at Nepal revealed that nurses had minimal knowledge in using the pain scale. 63.5% nurses believed that most preferred way to measure pain intensity is patient himself. However, most of them i.e. 86.9% and 83.4% couldn't rate pain scale correctly (Zeb, Farhana, Jewewria, Marym & Nadra Bi Bi, 2019). Roles of nurses include; patient teaching, providing emotional support, maintain optimal nutrition, monitoring and managing complications (Hinkle, Cheever, Brunner & Suddarth, 2014). Nurses must;

- Recognize and treat pain promptly
- Involve patients and families in pain management plan.
- Improve treatment patterns.
- Reassess and adjust pain management plan as needed.
- Monitor processes and outcomes of pain management.

Nurses must use appropriate elements for assessment and should be able to Identify patients' belief, attitude, knowledge and previous experiences associated with pain. The nurse needs to be able to document assessment and the effect of interventions (Hughes, 2008).

3. MATERIAL AND METHODS

3.1. Study Design

This study was conducted with descriptive, cross-sectional design.

3.2. Study Setting

The study was conducted at the Near East University Hospital and Dr. Suat Gunsel University of Kyrenia Hospital, in North Cyprus.

The Near East University hospital is the largest and leading Hospital of Cyprus which is located in northern part of Nicosia, the capital of North Cyprus. The services of Hospital of Near East University 209 private, single patient rooms, 8 operating theatres, 30-bed Intensive Care Unit, 17-bed Neonatal Intensive Care Unit, an advanced laboratory where a wide array of medical and experimental tests can be carried out, 22 other labs specializing on certain medical tests. A total of 168 nurses and 136 doctors work in the Near East Hospital. The surgical pain strategy used in Near East University Hospital is the use of pharmaceutical medications administration as required. The Visual Analog scale (VAS) is used to measure pain intensity in the hospital.

Dr. Suat Gunsel University of Kyrenia which is located in Kyrenia, North Cyprus, is a huge complex comprising 15,000 square meter indoor area within two blocks, each comprising four storeys. The hospital comprises three fully equipped operation theatres of which was designed especially to carry out cardiac surgeries; four intensive care units with 17 beds especially designed and equipped for pediatric, cardiology and general intensive care purposes; one delivery unit, a blood bank, sterilization and dialysis units, an emergency service; biochemistry, microbiology and pathology labs; radiology, physiotherapy and rehabilitation clinics, cardiac centre, 20 policlinics, nutrition and dietetic and check-up centers. A total of 65 nurses and 45 doctors work in Dr Suat Gunsel Hospital. The surgical pain strategy used in Dr Suat Gunsel Hospital is the use of pharmaceutical medications administration as required. The Visual Analog scale (VAS) is used to measure pain intensity in the hospital.

3.3. Sample

The study was performed on the inpatients that received surgical treatment in the Near East University Hospital and Dr Suat Gunsel Hospital. The annual surgical patients in Near East University Hospital are approximately 600 and in Dr Suat Gunsel's Hospital are 300. With cross-sectional study design, the patients who were treated surgically in all surgical clinics of both hospitals from end of July to end of September 2019 were included in sample of the study. A 90 patients who agreed to participate in the study composed the final sample of the study however 29 patients left some questions unanswered.

Inclusion Criteria for the study included voluntary hospitalized patients above 18 years of age who underwent any form of surgery in Near East Hospital or Dr Suat Gunsel Hospital. Exclusion criteria include patients less than 18 years, who did not give their consent to participate in the study, in chronic pain, difficulty communicating, unconscious and with mental illness.

3.4. Study Tools

The Turkish Version of the revised American Pain Society Patient Outcome questionnaire (APS-POQ) that has been developed by an interdisciplinary task force of members of the American Pain Society, was used as data collection tool in this study. (American Pain Society, 2019) (Appendix 1). Validity and reliability study of the Turkish version tool (APS-POQ-R-TR) was carried out by Erden et al in 2018. In the validity study of the scale, language equivalence, structure, and content validity of the scale were evaluated. To identify the internal consistency of the scale's reliability, calculation of Cronbach's alpha coefficient and item analysis methods were used. Crombach's alpha value for total scale was 0.88 (Erden et al, 2018).

The questionnaire contains 7 sections (including added demographics section). The first section regarding demographics contained 6 questions. The second section regarding pain severity included 3 questions; scale rating from 0 (no pain) – 10 (worst possible pain) and 0% (never in severe pain) – 100% (always in severe pain). The third section consisted four questions regarding interference with function/activities; scale rating from 0(does not interferes) – 10 (completely interferes). The fourth section which is about affective experiences (emotional) contained 4 questions; scale rating from 0 (not at all) – 10 (extremely). The fifth section regarding side effects contained 4 questions; rating scale from 0 (none) – 10 (severe). The sixth section consisted of 4 questions; rating scales from less satisfied – extremely satisfied; yes or no questions, never, sometimes and often question, regarding perception of care (satisfaction) and the last section; yes or no options, never, sometimes and often options, contained 2 questions about non pharmacologic method.

3.5. Data Collection

Data were collected using a questionnaire between July and September 2019. The questionnaires were administered by researchers on patients while they are in their rooms after completion of the first 24 hours postoperatively with self-completion method. Completion of the questionnaire took almost 10 minutes.

3.6. Ethical Consideration

Ethical approval was obtained from Institutional Reviews Board (IRB) of Near East University Hospital (Appendix 2). In addition, the Hospitals' management permitted us to conduct this study (Appendix 3). All patients were given adequate information about the research, its aim and objective, consent was obtained verbally to ensure the willingness to participate in the study and voluntary participation, confidentiality, reliability and validity of data

collected. Permission was obtained to use the Turkish Version of the revised American Pain Society Patient Outcome questionnaire (APSPOQ).

3.7. Data Analysis

All data set was analyzed using SPSS version 23.0 software. The methods used to analyze the data include, percentages, frequencies, means and Pearson Chi-Square tests. For the mean click analyze then descriptive statistics to frequencies then statistics and click mean, standard deviation and other variables valid for the research. The chosen level of significance is $p < 0.05$.

4. RESULTS

Table 4.1. Descriptive characteristics of the patients (N=90)

Descriptive Characteristics	Mean	±SD
Age	36.14	12.5
	N	**%**
Gender		
Female	54	60.0
Male	36	40.0
Nationality		
TRNC	36	40.0
Turkey	32	36.0
Others	22	24.0
Education level (N=89)*		
High school	17	19.1
Bachelor degree	51	57.3
Master degree/PHD	21	23.6
Anesthesia type (N=71)*		
General	51	71.8
Spinal/ local	20	28.2
Surgery type (N=82)*		
Gastrointestinal	34	41.5
Plastic	26	31.6
Orthopaedic	10	12.3
Cardiovascular	9	11.0
Others	3	3.6

*** N reduced because of the unanswered questions**

*** Spinal and eye surgeries**

Mean age of the patients was 36.14 (±12.5) years and ranged from 19-73. Among the patients, 60.0% were female, 57.3% had a bachelor degree, 40.0% were TRNC citizens and 36.0% were Turkey citizens. A majority of the patients were given general anesthesia (71.8%) and most frequent surgical procedures were gastrointestinal surgery 34 (41.5%), followed by plastic surgery 26 (31.6%) (Table 4.1).

Table 4.2 Mean values of the patients' responses to APSPOQ (N=90)

Items	Mean	±SD

Pain severity	**5.5**	**1.6**
On this scale, please indicate the least pain you had in the first 24 hours	5.6	2.4
On this scale, please indicate the worst pain you had in the first 24 hours	6.2	2.4
How often were you in severe pain in the first 24 hours?	4.8	2.7
Interference with functions/activities	**5.6**	**1.7**
Doing activities in bed such as turning, sitting up, repositioning:	5.9	2.6
Doing activities out of bed such as walking, sitting in a chair, standing at the sink	6.1	2.8
Falling asleep	5.3	2.9
Staying asleep	5.2	3.0
Affective experiences (emotional)	**4.5**	**1.8**
Anxious	5.7	2.7
Depressed	3.8	3.0
Frightened	3.9	3.0
Helpless	4.7	4.4
Side effects	**2.6**	**1.9**
Nausea	3.0	2.9
Drowsiness	2.7	2.6
Itching	2.1	6.1
Dizziness	2.5	2.9
Pain relief	**7.0**	**1.5**
In the first 24 hours, how much pain relief have you received?	6.4	2.5
Were you allowed to participate in decisions about your pain treatment as much as you wanted to?	6.4	2.7
Circle the one number that best shows how satisfied you are with the results of your pain treatment while in the hospital?	7.7	2.3
If you received information about your pain treatment, how helpful the information was?	7.6	2.1

* 67 (74.4.%) of the patients received information about pain treatment options

Table 4.2 shows mean values of the patients' responses to APSPOQ. Regarding the pain severity, results showed that the overall mean for the least pain experienced, worst pain

experienced and frequency of severe pain within the first 24 hours of surgery was 5.5 (±1.6). The mean of the worst pain experienced in the first 24 hours of post-surgery was 6.2 (±2.4) on the 10 point numerical scale. It was also found that the mean of least pain in the first 24 hours was 6.2 (±2.4) and frequency of severe pain in the first 24 hours was 4.8 (±2.7).

Results concerning interference of the pain with functions/activities demonstrated that the overall mean for interference with activities such out of bed activities, in bed activities, falling asleep and staying asleep was 5.6±1.7. The most affected activities were the out of bed activities including walking, sitting in a chair, standing at the sink (6.1±2.8); and activities in bed such as turning, sitting up, repositioning (5.9±2.6) respectively.

Regarding the affective experiences, findings of the study showed that the overall mean for affective experience such as anxiety, depression, frightened and helplessness was 4.5±1.8. The major emotions experienced during post-surgery were anxiety (5.7±2.7) and helplessness (4.7±4.4).

Results showed that the overall mean for the side effect such as nausea, drowsiness, itching, and dizziness was 2.6 (±1.9). The most experienced side effects during post-surgery period were nausea, (3.0±2.9) and drowsiness (2.7±2.6).

Regarding the pain relief domain, overall mean value of the items was 7.0 (±1.5). The means for best satisfaction with the results of pain treatment in the hospital was 7.7 (±2.3); satisfaction of pain relief received in the first 24 hours was 6.4 (±2.5); participation in decisions about pain treatment was 6.4 (±2.7). Among the patients, 67 (74.4%) received information about pain treatment options with mean value of 7.6 (±2.1.) stating the information was helpful.

Table 4.3 Non-pharmacological pain relief methods of the patients (N=90)

Non-pharmacological pain relief	N	%

Usage of non-pharmacological method		
Yes	55	61.0
No	35	39.0
Used non-pharmacological methods		
Deep breathing	31	34.0
Distraction	29	32.0
Praying	27	30.0
Cold pack	15	17.0
Music	12	13.0
Meditation	10	11.0
Walking	7	8.0
Relaxation	6	7.0
Imagery	4	4.0
Heat	3	3.0
Massage	2	2.0
Frequency of nurse or doctor encouragement for non-pharmacological methods (N=89)*		
Sometimes	46	51.7
Never	28	31.5
Often	15	16.9

*** N reduced because of the unanswered question**

Table 4.3 shows the usage of non-pharmacological method. Result showed that 55 (61.0%) patients used non-pharmacological methods to relieve pain. The frequency of nurse or doctor encouragement for non-pharmacological methods included mostly sometimes (51.0%). The most frequent non-pharmacological methods used were deep breathing (34.0%), distraction (32.0%), and praying (30.0%).

Table 4.4 Comparison of the patients' APSPOQ domains items mean values and genders

APSPOQ domains	Gender		P value
	Male	Female	

	Mean	±SD	Mean	±SD	
Worst pain in the first 24 hours	5.7	2.6	6.5	2.1	0.208
Interference with function/activities (overall)	5.5	2.9	6.5	2.7	0.005
Affective experiences (emotional) (overall)	5.3	2.5	5.9	2.7	0.510
Side effects (overall)	3.0	2.9	3.0	2.9	0.233
Satisfaction with the pain treatment	8.1	1.5	7.4	2.7	0.078

Comparison of the APSPOQ items' mean values and genders of the patients demonstrated statistically significant difference in terms of interference with activities ($p< 0.05$); however differences regarding others variables were statistically insignificant ($p > 0.05$) (Table 4.4). Female patients had higher mean values (6.5±2.7) than the male patients (5.5±2.9) regarding interference with activities.

Table 4.5 Comparison of the patients' APSPOQ domains mean values and anesthesia type

APSPOQ domains	Anaesthesia type				P value
	General		Spinal/Local		
	Mean	±SD	Mean	±SD	
Worst pain in the first 24 hours	6.1	2.1	4.1	1.5	0.000
Interference with function/activities (overall)	6.0	2.3	5.6	1.9	0.013
Affective experiences (emotional) (overall)	5.4	2.3	4.6	1.5	0.000
Side effects (overall)	2.7	2.5	1.4	1.1	0.397
Satisfaction with the pain treatment	8.0	1.9	7.6	1.5	0.113

Table 4.5 shows the comparison of the APSPOQ items' mean values and anesthesia types of the patients. Results demonstrated statistical significant differences in terms of worst pain in the first 24 hours, interference with activities, affective experiences ($p < 0.05$); however differences

regarding others variables were statistically insignificant ($p > 0.05$). General anesthesia type has higher mean values regarding worst pain in the first 24 hours (6.1±2.1), interference with activities (6.0±2.3), and affective experiences (5.4±2.3) than spinal/local anesthesia type.

Table 4.6 Comparison of the patients' APSPOQ domain mean values and education

APSPOQ domains	Education						P value
	High school		Bachelor's degree		Master's degree/PHD		
	Mean	±SD	Mean	±SD	Mean	±SD	
Worst pain in the first 24 hours	7.1	2.5	6.2	2.1	5.3	1.7	0.180
Interference with function/activities (overall)	7.0	2.7	5.9	2.5	5.2	1.7	0.018
Affective experiences (emotional) (overall)	5.3	3.0	6.2	2.4	4.9	1.9	0.439
Side effects (overall)	3.5	3.1	3.2	3.1	1.7	1.4	0.722
Satisfaction with the pain treatment	7.8	2.2	7.5	2.3	6.8	1.8	0.023

Comparison of the APSPOQ items' mean values and education levels of the patients demonstrated statistically significant difference in terms of interference with activities and satisfaction with the pain treatment ($p < 0.05$); however difference regarding other variables were statistically insignificant ($p > 0.05$). High school patients had a higher mean value (7.0±2.7) and (7.8±2.2) than bachelor degree (5.9±2.5), (7.5±2.3) and masters/PHD (6.8±1.8) regarding interference with activities and satisfaction with the pain treatment respectively (Table 4.6).

Table 4.7 Comparison of the patients' APSPOQ domain mean values and age

APSPOQ domains	Age								P value
	≤25		26-40		41-60		61-80		
	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	
Worst pain in the first 24 hours	6.0	2.4	6.1	2.2	6.1	2.3	7.5	3.0	0.502
Interference with function/activities (overall)	5.4	2.9	6.4	2.5	5.7	2.9	7.0	3.9	0.302
Affective experiences (emotional) (overall)	4.4	7.2	4.9	3.3	3.5	2.8	7.6	3.9	0.005
Side effects (overall)	2.5	2.6	2.6	2.5	3.0	2.6	2.5	2.8	0.949
Satisfaction with the pain treatment	7.7	2.1	7.6	2.3	7.7	2.5	8.3	2.5	0.162

Regarding comparison of the APSPOQ items' mean values and age of the patients, findings showed statistically significant difference in terms of affective experiences ($p<0.05$); however differences regarding other variables were statistically insignificant ($p > 0.05$). The patients with 61-80 years old had higher mean values of affective experiences (7.6±3.9) than ≤25 years old (4.4±7.2), 26-40 years old (4.9±3.3) and 41-60 years old (3.5±2.8) patients (Table 4.7).

Table 4.8 Comparison of the patients' APSPOQ items mean values and usage of non-pharmacological methods

APSPOQ domains	Usage of non-pharmacological methods				P value
	Yes		No		
	Mean	±SD	Mean	±SD	
Worst pain in the first 24 hours	5.9	2.4	6.6	2.2	0.096
Interference with function/activities (overall)	6.0	2.7	6.1	2.9	0.000
Affective experiences (emotional) (overall)	5.9	2.7	5.3	2.5	0.058
Side effects (overall)	2.8	2.5	2.4	2.5	0.014
Satisfaction with the pain treatment	8.0	2.1	7.2	2.6	0.012

Comparison of the APSPOQ items' mean values and usage of non-pharmacological methods of the patients demonstrated statistical significance in terms of interference with

activities, side effects and satisfaction with the pain treatment ($p < 0.05$). Interference with activities domain had higher mean value among the patients who didn't use non-pharmacological methods (6.1±2.9) than the patients who used the methods. However, in side effects (2.8±2.5) and satisfaction with the pain treatment domains (8.0±2.1), there were higher mean values among the patients who used non-pharmacological methods, than the patients who didn't use these methods (Table 4.8)

Table 4.9 Comparison of the patients' usage of non-pharmacological methods and descriptive characteristics

Descriptive characteristics	**Usage of non-pharmacological methods**	
	Mean	**±SD**
Gender		
Male	1.6	0.4
Female	1.5	0.4
P value	0.377	
Education		
High school	1.5	0.5
Bachelors degree	1.5	0.4
Masters degree/PHD	1.5	0.7
P value	0.302	
Age		
0-25	1.4	0.5
26-40	1.6	0.4
41-60	1.7	0.4
60-80	1.5	0.5
P value	0.441	

Table 4.9 shows comparison of the descriptive characteristics (gender, education, age) and sage of non-pharmacological methods of the patients. The results demonstrated that, differences were not significant statistically ($p > 0.05$).

5. DISCUSSION

Effective pain management is an important challenge among the surgical patients. This descriptive study was implemented to assess the outcomes of pain management among postoperative patients. Research was conducted on surgically treated patients with different surgery type, age, nationality, gender and educational level. The study results demonstrated that majority of the patients were given general anesthesia 71.8% which shows most of the patients had surgical procedures that was not minor (Table 4.1).

Findings regarding pain severity domain of the APSPOQ showed that overall mean for pain severity was 5.5±1.6 (moderate) and the worst pain experienced by patients after 24 hours had mean of 6.2 ±2.4 (slightly more than moderate) on the 10-point numerical rating scale. These mean values are high compared to a study by Elsous et al (2018) on women after caesarean delivery (worst pain mean 4.1±2.0 and average mean for pain severity 5.0±1.5. A similar study performed by Phillips et al (2013) showed a mean worst pain after 24 hrs. as 7.6 ± 2.3 which is much higher than our result. Dissimilarity of the study results may be resulted from variety of the study groups.

The most affected activities experienced during post-surgery were the out of bed activities, and activities in bed. Notwithstanding the fact that Duenas et al. (2016) mentioned different studies highlighting the strong relationship between pain, and reduced physical activities such as walking, standing and activities of daily living, pain interference with activities seemed to be on the high side (Table 4.2), compared with other similar researches by Elsous et al (2018) and Eshete et al. (2019); 3.8±1.7 and 4.5±1.9 respectively.

Findings' regarding the affective experiences domain of the APSPOQ showed that overall mean for affective experience was 4.5±1.8 (moderate). The major emotions experienced during post-surgery were anxiety and helplessness. A similar study by Eshete et al. (2019) also

anxiety and restlessness as the most experienced emotions. Although we cannot entirely solve the problem of anxiety and other emotions experienced by patients after surgery, adequate pre-operative patients' and caregivers' education is highly recommended to reduce the feeling of these emotions (Duenas et al. 2016).

Findings regarding side effect domain of the APSPOQ showed that most experienced side effect was nausea and drowsiness respectively. Gordon et al. (2010) also reported drowsiness as most experienced side effect. In addition the pain, these symptoms may be resulted from medications and anesthesia (Sizemore & Grose, 2019).

Regarding the pain relief domain of the APSPOQ, findings showed overall mean satisfaction rate was seen as; satisfied 7.0 (±1.5), whereas Elsous et al. (2018) reported the mean value as 5.2 (±1.8). A study performed by Keskin, Sucu Dag & Gordon (2019) still in North Cyprus showed that 75.7% of patients stated they did not receive information about pain treatment options meanwhile in our present study, a majority of the patients received information about pain treatment options (Table 4.2) . Although the means for best satisfaction with the results of pain treatment in the hospital, satisfaction of pain relief received in the first 24 hours, participation in decisions about pain treatment and satisfying from the given information may be considered as high; Gordon et al. (2010) showed higher satisfaction rates. In this study, satisfaction of the patients regarding pain relief was higher than Elsous et al.'s study (2018), lower than Gordon et al.'s study (2010). These values are evidences that postoperative pain management is still not very effective and should be improved.

When usage of non-pharmacologic methods was examined, more than half (61.0%) of the patients stated that they used these methods, with deep breathing being the most used, followed by distraction. Usage of non-pharmacologic methods for pain relieve is recommended as

postoperative pain is best controlled when with multimodal approach (The Lancet, 2019). Ma et al, mentioned how studies revealed deep breathing as effective in enhancing affective experiences and stress (Ma et al., 2017). Distraction has been also proven to have analgesic effect (Komann et al. 2019).

Comparison of the APSPOQ items' mean values and genders of the patients showed statistically significant difference in terms of interference with activities, with female patients had higher mean values than the male patients. A previous research have proven for a fact that the females are at higher risk of experiencing more pain than men and thus, interfering with activities (Eslami et al., 2016). Also, behaviors resulted from cultural factors may be an inhibitive factor for expressing interference with activities among male patients.

When the APSPOQ items' mean values were compared with anesthesia type, there was statistical significance in terms of worst pain in the first 24 hours, interference with activities and affective experiences; with general anesthesia having the higher mean values than spinal/local anesthesia type in all. With the knowledge that general anesthesia is used for most/major surgeries ad with its side effects, this is an expected finding; Eshete et al., (2019) also had similar findings.

Regarding the Comparison of the APSPOQ items' mean values and education of the patients, we noticed statistically significant difference in terms of interference with activities and satisfaction rate with patients that only attended high school having a higher mean value of in pain interference and strangely in satisfaction rate than bachelor degree and masters/PHD. Educational status has been found to be a significant predictor of pain of which patients with low education will experience more pain and thus interference with functions (Lanitis et al., 2015).

On the other hand, because of low expectation due to poor knowledge, patients with low education status may tend to have high satisfaction rates.

Comparison of the APSPOQ items' mean values and age of the patients demonstrated statistically significant difference in terms of affective experiences with age. Age group of 61-80 years had higher mean values than younger age groups. With the advances in technology, anesthesia and surgery, many elderly patients now undergo surgery and insufficient pain management has been seen leading to emotional distress, anxiety, etc., with regarding to the aging process and comorbidities (Neagu et al., 2007).

Regarding comparison of the APSPOQ items' mean values and usage of non-pharmacological methods of the patients, results showed that there were higher mean values of satisfaction with the pain treatment among the patients who used non-pharmacological methods than the patients who didn't use these methods. Usage of the non-pharmacologic methods is recommended as a useful method within the context of multimodal pain management approach and holistic care (The Lancet, 2019).

In comparison of the descriptive characteristics (gender, education, age) and non-pharmacological methods, there was no statistically significant difference.

5.1 Conclusion

Result of this study showed that overall mean for pain severity and the worst pain experienced by patients after 24 hours was slightly higher than medium. The most affected activities experienced during post-surgery were the out of bed activities, and activities in bed and side effects were nausea and drowsiness. The major emotions experienced during post-surgery were anxiety and helplessness. Although satisfaction rate of the patients with postoperative pain

management was relatively high, strategies to improve the patient satisfaction of pain management among postoperative patients should be implemented.

6. RESULTS AND RECOMMENDATIONS

6.1 Results

In this descriptive and cross sectional study that was conducted with the aim of examination the outcome of pain management among postoperative patients;

- A total of 90 patients participated in this study. mean age of the patients was 36.14 (±12.5) years and ranged from 19-73. Among the patients, 60.0% were female, 57.3% had a bachelor degree, 40.0% were TRNC citizens and 36.0% were Turkey citizens. A majority of the patients were given general anesthesia (71.8%) and most frequent surgical procedures were gastrointestinal surgery 34 (41.5%), followed by plastic surgery 26 (31.6%) (Table 4.1).
- Regarding the pain severity, results showed that the overall mean for the least pain experienced, worst pain experienced and frequency of severe pain within the first 24 hours of surgery was 5.5 (±1.6). The mean of the worst pain experienced in the first 24 hours of post-surgery was 6.2 (±2.4) on the 10-point numerical scale. It was also found that the mean of least pain in the first 24 hours was 6.2 (±2.4) and frequency of severe pain in the first 24 hours was 4.8 (±2.7) (Table 4.2.)
- Results concerning interference of the pain with functions/activities demonstrated that the overall mean for interference with activities such out of bed activities, in bed activities, falling asleep and staying asleep was 5.6±1.7. The most affected activities were the out of bed activities including walking, sitting in a chair, standing at the sink (6.1±2.8); and

activities in bed such as turning, sitting up, repositioning (5.9±2.6) respectively (Table 4.2.)

- Regarding the affective experiences, findings of the study showed that the overall mean for affective experience such as anxiety, depression, frightened and helplessness was 4.5±1.8. The major emotions experienced during post-surgery were anxiety (5.7±2.7) and helplessness (4.7±4.4) (Table 4.2.)
- Results showed that the overall mean for the side effect such as nausea, drowsiness, itching, and dizziness was 2.6 (±1.9). The most experienced side effects during post-surgery period were nausea, (3.0±2.9) and drowsiness (2.7±2.6) (Table 4.2.)
- Regarding the pain relief domain, overall mean value of the items was 7.0 (±1.5). The means for best satisfaction with the results of pain treatment in the hospital was 7.7 (±2.3); satisfaction of pain relief received in the first 24 hours was 6.4 (±2.5); participation in decisions about pain treatment was 6.4 (±2.7). Among the patients, 67 (74.4%) received information about pain treatment options with mean value of 7.6 (±2.1.) stating the information was helpful (Table 4.2.)
- About the usage of non-pharmacological method, result showed that 55 (61.0%) patients used non-pharmacological methods to relieve pain. The frequency of nurse or doctor encouragement for non-pharmacological methods included mostly sometimes (51.0%). The most frequent non-pharmacological methods used were deep breathing (34.0%), distraction (32.0%), and praying (30.0%) (Table 4.3)
- Comparison of the APSPOQ items' mean values and genders of the patients demonstrated statistically significant difference in terms of interference with activities

($p< 0.05$). Female patients had higher mean values (6.5±2.7) than the male patients (5.5±2.9) regarding interference with activities (Table 4.4).

- Regarding the comparison of APSPOQ items' mean values and anesthesia types of the patients, results demonstrated statistically significant differences in terms of worst pain in the first 24 hours, interference with activities, affective experiences ($p < 0.05$). General anesthesia type has higher mean values regarding worst pain in the first 24 hours (6.1±2.1), interference with activities (6.0±2.3), and affective experiences (5.4±2.3) than spinal/local anesthesia type (Table 4.5)
- Comparison of the APSPOQ items' mean values and education levels of the patients demonstrated statistically significant difference in terms of interference with activities and satisfaction with the pain treatment ($p < 0.05$). High school patients had a higher mean value (7.0±2.7) and (7.8±2.2) than bachelor degree (5.9±2.5), (7.5±2.3) and masters/PHD (6.8±1.8) regarding interference with activities and satisfaction with the pain treatment respectively (Table 4.6).
- Regarding comparison of the APSPOQ items' mean values and age of the patients, findings showed statistically significant difference in terms of affective experiences ($p<0.05$). The patients with 61-80 years old had higher mean values of affective experiences (7.6±3.9) than ≤25 years old (4.4±7.2), 26-40 years old (4.9±3.3) and 41-60 years old (3.5±2.8) patients (Table 4.7).
- Comparison of the APSPOQ items' mean values and usage of non-pharmacological methods of the patients demonstrated statistical significance in terms of interference with activities, side effects and satisfaction with the pain treatment ($p < 0.05$). Interference with activities domain had higher mean value among the patients who didn't use non-

pharmacological methods (6.1±2.9) than the patients who used the methods. However, in side effects (2.8±2.5) and satisfaction with the pain treatment domains (8.0±2.1), there were higher mean values among the patients who used non-pharmacological methods, than the patients who didn't use these methods (Table 4.8)

In the current study that was implemented to assess the outcomes of pain management among postoperative patients, there were some limitations. Firstly, the results are limited to two university affiliated hospitals and con not be generalized. Second limitation is variety of the patient groups' surgical types made difficult interpretation of the results.

6.2 Recommendations

Based on the findings of the study, followings are recommended;

- Postoperative pain management should be improved by implementing strategies to reduce the intensity of postoperative pain.
- Patients should be involved in their pain treatment plan and should be educated on various pharmacological and non-pharmacologic methods for pain relief.
- Patients should be encouraged to express their feelings about emotions and pain. Strategies for dealing with emotions such as anxiety should be implemented.
- Activity limitations due to pain should be prevented by effective pain management before the activities.
- Patients should be evaluated after each pain treatment to determine the efficiency of the treatment plan and to deliver high-quality postoperative pain management.
- Further studies focusing on specific surgical types should be implemented.

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Appendix 1. The Turkish and English Versions of the revised American Pain Society Patient Outcome questionnaire (APS-POQ)

GÖZDEN GEÇİRİLMİŞ AMERİKAN AĞRI DERNEĞİ HASTA SONUÇLARI ANKETİ

Yazarlar

Sevilay Erden, Mevlüde Karadağ, Sevil Güler Demir, Semra Atasayar, Burcu Opak Yücel, Nevra Demir, Zuhal Erdoğan, Ali Ay

Orjinali "Revised American Pain Society Patient Outcome Questionnaire (APSPOQ)" olarak isimlendirilen bu anketin amacı, klinik sonuçlarla ağrı yönetimini değerlendirmek, aynı zamanda hasta memnuniyetini de ölçmektir (1,2,3). 1991 yılında Amerikan Ağrı Derneği tarafından oluşturulmuş, 2010 yılında hasta memnuniyetinin değerlendirmesine ilişkin maddeler eklenerek güncellenmiştir (2). Türkçe geçerlik ve güvenirliği Erden ve ark. tarafından 2016 yılında yapılan ve Cronbach's Alpha değeri 0.88 olarak hesaplanan anketin ismi "**Gözden**

Geçirilmiş Amerikan Ağrı Derneği Hasta Sonuçları Anketi" şeklinde düzenlenmiştir (2). Üç alt başlıktan oluşan ankette 1. Alt başlık: Ağrı şiddeti, ağrının fiziksel aktivite-uyku-bakımın algılanmasına etkisi; 2. Alt başlık: Ağrının duygular üzerine etkisi, 3. Alt başlık: Ağrı tedavisinin yan etkisidir. Ayrıca hastanın tedaviden memnuniyeti, tedavi hakkında bilgi alma ve tedaviye katılma durumu ile farmakolojik olmayan tedavi bilgileri de sorgulanmaktadır (1,2). Literatür bilgileri Gözden Geçirilmiş Amerikan Ağrı Derneği Hasta Sonuçları Anketi'nin hastanın ağrı insidansını, dinlenme sırasındaki ağrı şiddetini, günlük aktivitelerini (yürüme, yatak içi dönme, uykuya dalma vb.) engelleyen ağrı şiddetini, doktor ve hemşirelerin uyguladıkları analjezi protokolünü, analjezinin yan etkilerini (bulantı, uyuşukluk, kaşıntı vb), hastaların ağrı sırasındaki duygu durumunu (endişe, sinir, korku vb) ve hastaların analjezi tedavisinden memnuniyetini değerlendirdiğini belirtmiştir (4,5,6). Ağrı yoğunluğu, ağrıdan kurtulma ve şiddetli ağrı yüzdelerle (%0-%100 arasında), Gözden Geçirilmiş Amerikan Ağrı Derneği Hasta Sonuçları Anketi'nın geri kalan maddeleri ise sayısal skala (0-10) ile değerlendirilmektedir (1).

1. Alt başlık (alt boyut) : Ağrı şiddeti,ağrının fiziksel aktivite-uyku-bakımın algılanmasına etkisi; 1.-4. Sorular

2. Alt başlık: Ağrının duygular üzerine etkisi; 5. Soru

3. Alt başlık: Ağrı tedavisinin yan etkisi; 6.soru

Hasta memnuniyeti 7.- 10. Sorular

Non Farmakolojik yontemler; 11. Ve 12. Sorular.

Hasta bilgisi ve onay

Sevgili Beyefendi / Hanımefendi,
Hastaların ameliyat sonrası nasıl hissettiği hakkındaki anketimize katılırsanız minnettar oluruz. Anketin amacı bu bölümde ameliyat sonrası ağrı yönetimini geliştirmektir.

Katılımınız isteğe bağlıdır ve bu anketi doldurduğunuzda verdiğiniz bilgiler isimsiz yapılır. Bu, adınızı veya diğer bir kimlik formunu verdikten sonra anketten silinecek ve sahip olacağımız kayıtlara dahil edilmeyeceği anlamına gelir.

Bu anketteki cevaplarınız tıbbi veya hemşirelik ekibinizle paylaşılmayacaktır.

Araştırmamıza katılmayı tercih edip etmemenizin ekibinizin size aynı şekilde davranacağından emin olabilirsiniz.

Bu ankete katılmayı düşündüğünüz için çok teşekkürler

Participant

Signature:

Witness

Signature:

lütfen gelecek soruları cevaplayın

1. Cinsiyet: _____

2. Yaş: _____

3. Uyruk: _____

4. Eğitim seviyesi: _____

5. Anastezi türü: _____

6 Cerrahi tipi: _____

EK: GÖZDEN GEÇİRİLMİŞ AMERİKAN AĞRI DERNEĞİ HASTA SONUÇLARI ANKETİ

Aşağıdaki sorular hastanedeki veya ameliyat sonrası **ilk 24 saat boyunca** yaşadığınız ağrılarla ilgilidir.

1. Lütfen bu ölçek üzerinde ilk 24 saat içinde hissettiğiniz **en az** ağrı seviyesini işaretleyiniz.

0 1 2 3 4 5 6 7 8 9 10

Ağrı yok Dayanılmaz ağrı

2. Lütfen bu ölçek üzerinde, ilk 24 saatte yaşadığınız **en kötü** ağrıyı işaretleyiniz.

0 1 2 3 4 5 6 7 8 9 10

Hiç ağrı yok Olası en kötü ağrı

3. İlk 24 saatte ne sıklıkla şiddetli ağrı yaşadınız? Lütfen şiddetli ağrı yaşadığınız zaman için en iyi yüzde tahmininizi yuvarlak için alınız.

%0 %10 %20 %30 %40 %50 %60 %70 %80 %90 %100

Hiç şiddetli ağrı yaşamadım Sürekli şiddetli ağrı yaşadım

4. Ağrılarınızın aşağıda belirtilen aktivitelerden sizi ne kadar alıkoyduğunu en iyi tanımlayan sayıyı daire içine alın:

a.Yatakta dönmek, doğrulmak, pozisyon değiştirmek.

0 1 2 3 4 5 6 7 8 9 10

Hiç engellemez Tamamen engeller

b. Yatak dışında yürüme, sandalyede oturma, lavaboda ayakta durma gibi aktiviteleri yapmak.

0 1 2 3 4 5 6 7 8 9 10

Hiç engellemez Tamamen engeller

c. Uykuya dalmak

0 1 2 3 4 5 6 7 8 9 10

Hiç engellemez Tamamen engeller

d.Uykuyu devam ettirmek

0 1 2 3 4 5 6 7 8 9 10

Hiç engellemez Tamamen engeller

5. Ağrı ruh halimizi ve duygularımızı etkileyebilir. Bu ölçekte, ağrının ne derece hissetmenize sebep olduğunu en iyi ifade eden bir rakamı yuvarlak içine alınız:

a. Endişeli

0 1 2 3 4 5 6 7 8 9 10

Hiç Fazlasıyla

b. Depresif

0 1 2 3 4 5 6 7 8 9 10

Hiç Fazlasıyla

c. Korkmuş

0 1 2 3 4 5 6 7 8 9 10

Hiç Fazlasıyla

d. Çaresiz

0 1 2 3 4 5 6 7 8 9 10

Hiç Fazlasıyla

6. Aşağıdaki yan etkilerden her hangi birisini yaşadınız mı? Eğer cevabınız '**hayır'** ise, lütfen "0" ı işaretleyiniz. Eğer cevabınız '**evet**' ise, lütfen aşağıdaki yan etkilerin şiddetini en iyi gösteren rakamı daire içine alınız.

a. Bulantı

0 1 2 3 4 5 6 7 8 9 10

Hiç Şiddetli

b. Uyuşukluk
0 1 2 3 4 5 6 7 8 9 10
Hiç Şiddetli

c. Kaşıntı
0 1 2 3 4 5 6 7 8 9 10
Hiç Şiddetli

d. Baş dönmesi
0 1 2 3 4 5 6 7 8 9 10
Hiç Şiddetli

7. İlk 24 saat içinde, ağrınız ne kadar giderildi? Bütün ağrı tedavilerinizi (ilaçlı ve ilaçsız) göz önünde bulundurarak ağrınızın ne ölçüde giderildiğini en iyi gösteren yüzdeyi yuvarlak içine alınız:

%0 %10 %20 %30 %40 %50 %60 %70 %80 %90 %100
Hiç giderilmedi Tamamen giderildi

8. Ağrı tedaviniz konusunda alınan kararlara istediğiniz ölçüde dahil olmanıza izin verildi mi?
0 1 2 3 4 5 6 7 8 9 10
Hiç Tamamen

9. Hastanede olduğunuz süre boyunca ağrılarınıza yönelik uygulanan tedaviden ne derece memnun kaldığınızı en iyi gösteren sayıyı daire içine alın:
0 1 2 3 4 5 6 7 8 9 10
Hiç Tamamen

10. Ağrı tedavisi seçenekleriniz hakkında hiç bilgi aldınız mı? _____Hayır, _____Evet
a. Eğer cevabınız evetse, bu bilginin ne derece yararlı olduğunu en iyi ifade eden bir rakamı yuvarlak içine alınız:
0 1 2 3 4 5 6 7 8 9 10
Hiç yararlı değildi Son derece yararlıydı

11. Ağrınızı gidermek için ilaç harici yöntemler kullandınız mı? ____ Hayır,____ Evet
Eğer cevabınız evet ise, aşağıdaki uygun gelen tüm seçenekleri işaretleyiniz.

_____ buz torbası
_____ derin nefes alma
_____ dikkat dağıtma (TV izleme, kitap okuma, vs.)
_____ sıcak uygulama
_____ meditasyon
_____ müzik dinleme
_____ dua
_____ gevşeme

_____ hayal kurma _____ yürüme
_____ masaj
_____ diğer (lütfen belirtiniz)

12. Bir hemşire veya doktor ne sıklıkla sizi ilaçsız yöntemleri kullanmaya teşvik etti?
___Hiç ___Bazen ___Sıklıkla

Patient information and assent

Dear Sir \ Madam,

We would be grateful if you would participate in our survey on how patients feel after surgery. The aim of the survey is to improve management of pain after surgery in this department.

Your participation is voluntary and the information you provide will be made anonymous once you hand in this questionnaire. This means that your name or other form of identification will be deleted from the questionnaire after you hand it in and will not be included in any records we will have.

Your answers in this questionnaire will not be shared with your medical or nursing team.

We can assure you that your team will treat you in the same way whether or not you choose to participate in our survey.

Many thanks for considering to take part in this survey

Participant	**Witness**
Signature:	Signature:

Please answer the following questions

1. Gender: _____
2. Age: _____
3. Nationality: _____
4. Education level: _____
5. Anesthesia type: _____
6. Surgery type: _____

Revised American Pain Society Patient Outcome Questionnaire (APSPOQ)

P1. On this scale, please indicate the **least** pain you had in the first 24 hours:

0 1 2 3 4 5 6 7 8 9 10

no pain worst pain possible

P2. On this scale, please indicate the **worst** pain you had in the first 24 hours:

0 1 2 3 4 5 6 7 8 9 10

no pain worst pain possible

P3. How often were you in **severe** pain in the first 24 hours?

Please circle your best estimate of the percentage of time you experienced severe pain:

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

never in severe pain always in severe pain

P4. Circle the one number below that best describes how much pain **interfered or prevented you from**:

a. Doing **activities in bed** such as turning, sitting up, repositioning**:**

0 1 2 3 4 5 6 7 8 9 10

does not interfere completely interferes

b. Doing **activities out of bed** such as walking, sitting in a chair, standing at the sink:

0 1 2 3 4 5 6 7 8 9 10

does not interfere completely interferes

c. ***Falling*** **asleep**

0 1 2 3 4 5 6 7 8 9 10

does not interfere completely interferes

d. ***Staying*** **asleep**

0 1 2 3 4 5 6 7 8 9 10

does not interfere completely interferes

P5. Pain can affect our mood and emotions.

On this scale, please circle the **one** number that best shows how much the pain caused you to feel:

a. **Anxious**	0	1	2	3	4	5	6	7	8	9	10
	not at all										extremely
b. **Depressed**	0	1	2	3	4	5	6	7	8	9	10
	not at all										extremely
c. **Frightened**	0	1	2	3	4	5	6	7	8	9	10
	not at all										extremely
d. **Helpless**	0	1	2	3	4	5	6	7	8	9	10
	not at all										extremely

P6. Have you had any of the following side effects?

Please circle "0" if no; if yes, circle the **one** number that best shows the severity of each:

a. Nausea	0	1	2	3	4	5	6	7	8	9	10
	none										severe
b. Drowsiness	0	1	2	3	4	5	6	7	8	9	10
	none										severe

c. Itching	0	1	2	3	4	5	6	7	8	9	10
	none										severe
d. Dizziness	0	1	2	3	4	5	6	7	8	9	10
	none										severe

P7. In the first 24 hours, how much pain **relief** have you received?

Please circle the one percentage that best shows how much relief you have received from all of your pain treatments combined (medicine and non-medicine treatments):

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
no relief										complete relief

P8. Were you **allowed to participate in decisions** about your pain treatment as much as you wanted to?

0	1	2	3	4	5	6	7	8	9	10

P9. Circle the one number that best shows how **satisfied** you are with the results of your pain treatment while in the hospital:

0	1	2	3	4	5	6	7	8	9	10
extremely dissatisfied										extremely satisfied

P10. Did you receive any **information** about your pain treatment options? ___ No, ___ Yes.

a. If yes, please circle the number that best shows **how helpful** the information was:

0	1	2	3	4	5	6	7	8	9	10
not at all helpful										extremely helpful

P11. Did you use any **non-medicine methods** to relieve your pain? _____ No _____ Yes.

If yes, **check all** that apply:

_____ cold pack

_____ deep breathing

_____ distraction (such as watching TV, reading)

_____ heat

_____ imagery or visualization

_____ massage

_____ meditation

_____ listen to music

_____ prayer

_____ relaxation

_____ walking

other (please describe)

_____

P12. How often did a nurse or doctor **encourage you to use** non-medicine methods?

_____ never _____ sometimes _____ often

Appendix 2. Ethical approval, Institutional Reviews Board (IRB) of Near East University Hospital

EK: 943-2019

YAKIN DOĞU ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMALAR ETİK KURULU

ARAŞTIRMA PROJESİ DEĞERLENDİRME RAPORU

Toplantı Tarihi :25.07.2019
Toplantı No : 2019/71
Proje No : 873

Yakın Doğu Üniversitesi Hemşirelik Fakültesi öğretim üyelerinden Prof. Dr. Nurhan Bayraktar'ın sorumlu araştırmacısı olduğu, YDU/2019/71-873 proje numaralı ve **"Outcomes Of Pain Management Among Postoperative Patients"** 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) KATILMADI
4. Prof. Dr. Şahan Saygı (ÜYE)
5. Prof. Dr. Şanda Çalı (ÜYE)
6. Prof. Dr. Nedim Çakır (ÜYE)
7. Prof. Dr. Kaan Erler (ÜYE) KATILMADI
8. Prof. Dr. Ümran Dal Yılmaz (ÜYE) KATILMADI
9. Doç. Dr. Nilüfer Galip Çelik (ÜYE) KATILMADI
10. Doç.Dr. Emil Mammadov (ÜYE)
11. Doç. Dr. Mehtap Tınazlı (ÜYE)

Appendix 3. Hospitals' Management Permission

YAKIN DOĞU ÜNİVERSİTESİ
HEMŞİRELİK FAKÜLTESİ
NEAR EAST UNIVERSITY
FACULTY OF NURSING

10 Temmuz 2019

Sayı: HF-0757/2019

Yakın Doğu Üniversitesi Hastanesi Başhekimliği'ne,

Yakın Doğu Üniversitesi Sağlık Bilimleri Enstitüsü Hemşirelik Yüksek Lisans öğrencisi Sandra Chirota Akire'nin (Öğrenci No: 20183338) "Outcomes of Pain Management Among Postoperative Patients" konulu tezinin anket uygulamasını 15 Temmuz- 30 Eylül 2019 tarihleri arasında Yakın Doğu Üniversitesi Hastanesi cerrahi kliniklerinde gerçekleştirebilmesi için izinlerinizi arz ederim.

Saygılarımla

Prof. Dr. Nurhan Bayraktar
Hemşirelik Fakültesi Dekanı

10/07/2019

Ek 1: Sandra Chirota Akire'nin "Outcomes of Pain Management Among Postoperative Patients" konulu tezinin anketi

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YAKIN DOĞU ÜNİVERSİTESİ NEAR EAST UNIVERSITY

Ref: RY2-0892/2019
19/07/2019

Girne Üniversitesi Rektörlüğü'ne
GİRNE

Üniversitemiz Sağlık Bilimleri Enstitüsü öğrencilerinden Hemşirelik Yüksek Lisans öğrencisi Sandra Chirota Akire'nin, Hemşirelik Fakültesi Dekanı Prof. Dr. Nurhan Bayraktar'ın danışmanlığında yürüttüğü "Outcomes of Pain Management Among Postoperative Patients" konulu tezinin anket uygulamasını, 20 Temmuz – 30 Eylül 2019 tarihleri arasında Üniversiteniz Hastanesi'nde Cerrahi Kliniklerinde yatan hastalar ile gerçekleştirebilmesi hususunda bilgilerinizi ve gereğini saygılarımla arz ederim.

Prof. Dr. Tamer ŞANLIDAĞ
Rektör Vekili

Ek: Anket.

Uygundur

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CURRICULUM VITAE

Name	Sandra Chirota	Surname	Akire
Place of Birth Date	NIGERIA \16\03\1997	Tel	+905488336572
Nationality	NIGERIA		
E-mail	sandraakire@gmail.com		

Educational Level

	Name of the Institution	Graduation year
Masters	Near East University	Till Date
Undergraduate	Near East University	2018
High school	Vivilandmark High school	2013

Foreign Languages	**Reading comprehension**	**Speaking***	**Writing***
English	Very good	Very good	Very good
Turkish	good	good	good

Computer Knowledge

Program	**Use proficiency**
Ms Office	Very good
SPSS	good