TURKISH REPUBLIC OF NORTH CYPRUS
NEAR EAST UNIVERSITY
HEALTH SCIENCES INSTITUTE

EFFECTIVENESS OF HEALTH EDUCATION GIVEN TO PREVENT BACK PAIN IN WOMEN: PRE- AND POST-TEST STUDY

OLUBUNMI E. BABALOLA

Master Thesis
PUBLIC HEALTH NURSING DEPARTMENT

SUPERVISOR
PROF. DR. HATICE BEBIŞ

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CONFIRMATION

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OLUBUNMI ELIZABETH BABALOLA

To the Directorate of Health Sciences Institute;

This thesis study was accepted by the jury on 25.12.2020 as a Master's Thesis in the Nursing Program of the Near East University Institute of Health Sciences.

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STATEMENT (DECLARATION)

I hereby make a declaration that this study was carried out by me. There was no exhibition of unethical behaviour through all stages involved. Academic and ethical rules were observed in the process of obtaining the necessary information. I provided reference to all information obtained by this study and there was no breach of copyright during the study and writing of the thesis.

25/12/2020

Olubunmi E. Babalola

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ABSTRACT

Objective: This study was conducted among women in Turkey. Some demographic information, Oswestry Disability Index and Back Pain Functional Scales were used and the mean score from the comparison of the demographic characteristics and pain level were used in determining the effects of low back pain on women between the ages of 18 and 65.

Materials and methods Convenient sample selection method was used. In this selected method, the global Covid-19 quarantine application has been effective in Turkey. Therefore, data collection and health education include some health risks was virtual. The total population of adult women (N = 200). The sample size was not calculated because it was aimed to reach the whole population.

Data collection: Socio-demographic data – Low Back Pain Information Questionnaire (Questions 1 to 21), a Turkish version of Oswestry Disability Index scale (10-item questions) and Back Pain Functional Scale (12-item questions) were used for data collection. The whole process lasted 20 minutes.

Statistical analysis: The relationship between the socio-demographic characteristics, Visual Analog Scale, Oswestry Disability Index and Back Pain Functional Scale were analysed using Paired Sample Test to determine the pain severity level of the women with the low back pains participants before and after the training exercise. The results were analysed at a 95% level of confidence interval which is $p \leq 0.05$ significant level using Statistical Package for Social Science (SPSS) 26.

Results and Discussion: Statistical mean differences were detected between the scales was (4.18) ODI and (6.09) BPFS. For socio-demographic characteristics, pain was found highest in women between the ages of 41-50 and obese/overweight individuals. Although, there was no significant difference recorded in the marital status category. Moreover, at $p<0.05$, Paired Sample T-test was 0.000 ODI and 0.000BPFS after the training exercise. This shows that exercise training is inversely correlated with pain severity.

Conclusion and Recommendation: Training has a significant influence on pain intensity and it could be concluded that there is a relationship between the training exercise and ODI/BPFS. Obese having the highest level of pain. Therefore, awareness of exercise training treatment programs should be promoted among women who are prone to LBP risk. Further research on the prevalence and scope of study extension is highly recommended.

Keywords: *Low back pain, women, exercise, physical activity, health education, Oswestry disability index, low back pain functional scale, ergonomics.*

BABALOLA O. E, Kadınlarda Sırt Ağrısının Önlenmesine Verilen Sağlık Eğitiminin Etkinliği: Ön ve Son Test Çalışması, Yakın Doğu Üniversitesi, Sağlık Bilimleri Enstitüsü, Hemşirelik Bölümü, Yüksek Lisans Tezi, Lefkoşa 2020

ÖZET

Amaç: Bu çalışma Türkiye'deki kadınlar arasında yapılmıştır. Bel ağrısının 18-65 yaş arası kadınlara etkisinin belirlenmesinde bazı demografik bilgiler, Oswestry Engellilik İndeksi ve Sırt Ağrısı Fonksiyonel Ölçekleri kullanılmış ve demografik özellikler ile ağrı düzeyinin karşılaştırılmasından elde edilen ortalama puan kullanılmıştır.

Gereç ve yöntem: Uygun numune seçim yöntemi kullanıldı. Seçilen bu yöntemde küresel Covid-19 karantina uygulaması Türkiye'de etkili olmuştur. Bu nedenle veri toplama ve sağlık eğitimi sanal olarak bazı sağlık risklerini içermektedir. Yetişkin kadınların toplam nüfusu (N = 200). Nüfusun tamamına ulaşmak amaçlandığı için örneklem büyüklüğü hesaplanmamıştır.

Veri toplama: Veri toplama için sosyo-demografik veriler - Bel Ağrısı Bilgi Anketi (Sorular 1 - 21), Oswestry Engellilik İndeksi ölçeğinin Türkçe versiyonu (10 soruluk sorular) ve Sırt Ağrısı Fonksiyonel Ölçeği (12 soruluk sorular) kullanılmıştır. Tüm süreç 20 dakika sürdü.

İstatistiksel Analiz: Bel ağrısı katılımcılarının eğitim egzersizi öncesi ve sonrası ağrı şiddeti düzeyini belirlemek için sosyodemografik özellikler, Görsel Analog Ölçeği, Oswestry Engellilik İndeksi ve Sırt Ağrısı Fonksiyonel Ölçeği arasındaki ilişki Paired Sample Test ile analiz edilmiştir. Sonuçlar, Sosyal Bilimler için İstatistiksel Paket (SPSS) 26 kullanılarak $p < 0.05$ anlamlı düzeyde olan% 95 güven aralığında analiz edildi.

Bulgular ve Tartışma: Ölçekler arasında istatistiksel ortalama farklılıklar (4.18) ODI ve (6.09) BPFS olarak tespit edildi. Sosyo-demografik özellikler açısından ağrı en yüksek 41-50 yaş arası kadınlarda ve obez / fazla kilolu bireylerde bulunmuştur. Medeni durum kategorisinde kayda değer bir farklılık kaydedilmemiştir. Ayrıca, $p < 0.05$'te, Paired Sample T-test, eğitim egzersizinden sonra 0.000 ODI ve 0.000BPFS idi. Bu, egzersiz eğitiminin ağrı şiddeti ile ters orantılı olduğunu gösterir.

Sonuç ve Tavsiye: Eğitimin ağrı yoğunluğu üzerinde önemli bir etkisi vardır ve egzersiz egzersizi ile ODI / BPFS arasında bir ilişki olduğu sonucuna varılabilir. En yüksek düzeyde ağrıya sahip obez. Bu nedenle, bel ağrısı riskine yatkın kadınlar arasında egzersiz eğitimi tedavi programları konusunda farkındalık teşvik edilmelidir. Çalışma uzatma yaygınlığı ve kapsamı hakkında daha fazla araştırma yapılması şiddetle tavsiye edilir.

Anahtar Kelimeler: *Bel ağrısı, kadınlar, egzersiz, fiziksel aktivite, sağlık eğitimi, Oswestry engellilik indeksi, bel ağrısı fonksiyonel ölçeği, ergonomi.*

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ABBREVIATIONS AND ACRONYMS

ODI-Q: Oswestry Disability Index-Questionnaire

BPFS: Back Pain Functional Scale

VAS: Visual Analog Scale

NEU: Near East University

LBP: Low Back Pain

N: Total Population

n: Number of Participants

TRNC: Turkish Republic of North Cyprus

NIH: National Institutes of Health

cLBP: Chronic Low Back Pain

WHO: World Health Organization

CNS: Central Nervous System

MRI: Magnetic Resonance Imaging

CT scan: Computerized Tomography scan

GBD: Global Burden of Disease

NSAIDs: Non-Steroidal Anti-Inflammatory Drugs

BMI: Body Mass Index

SD: Standard Deviation

d: Difference

p: P-value

DEFINITION OF TERMS

Low back pain: It refers to pains experienced in the posterior area amid beneath costal margin and over the gluteal (buttocks) curve which can extend towards the legs (Altinel, Kose & Altinel, 2007; Back School; Nabiyev, Ayhan & Acaroglu, 2015).

Exercise: This is defined as any activity of the body that maintains physical condition and general health and wellness (Kylasov A, Gavrov S.. 2011).

Health education: It comprises of deliberate plans of opportunities for learning which involves some variety of communication intended to help in the improvement of health literacy, knowledge and development of beneficial life skills to individuals and community health (World Health Organization, 1998).

Ergonomics: This is defined as the scientific application of psychological and physical principles to increase well-being and productivity within an environment. It is frequently called “human factors” (Merriam-webster.com, 2020).

Physical Activity: It is any physical movement produced by muscles of the skeletal system that results in the expenditure of energy (Caspersen, C. J., Powell, K. E., & Christenson, G. M.. 1985), this activity includes walking, house chores and activities related to work (National Institute for Health and Clinical Excellence (NICE), 2013).

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CHAPTER ONE

1. INTRODUCTION

Low back pain (LBP) is mostly defined as discomfort and pain, located below the rib and above the buttock, with or without added leg pain. Many etiologies and definitions are associated with Low Back Pain (LBP) experienced by several groups in a population (Airaksinen O, Brox JI, Cedraschi C et al. 2006; Woolf AD, Pfleger B. 2003). Low back pain is prevailing in the general population as a social and economical global problem (Bos, Krol, van der Star & Groothoff, 2007).

Work-related low back pain is at its peak in nurse among all healthcare personnel (Karahan, Kav, Abbasoglu & Dogan, 2009). Prevalence is described as something common. It is classified as some individuals in a defined population experiencing LBP at a time the survey was done (point prevalence), a number of individuals who have LBP in the course of the specified time (period prevalence) and the number of individuals who have LBP in their lifetime (lifetime prevalence). Psychosocial factors such as tobacco use, poor job satisfaction, intense physical work and resolved back pain issues are shown to be related to LBP. As there is an increase in expectancy, a third of present-day women live their lives in. Chronic pain is highly predominant in women than men and increases with age. In the perimenopausal (45-55 years) phase, more than three-quarter of women experience several symptoms (pain inclusive) (Whelan et al., 2005). Female healthcare personnel are at highest risk in developing LBP (Ghoussoub et al., 2016; Yan et al., 2017), which can be ascribed to occupational risk factors such as prolonged standing, lifting heavy loads and periodic movements (Nourollahi, Afshari & Dianat, 2018; Pheasant & Stubbs, 1992; Smedley et al., 1995). A couple of studies established relationship between LBP and stress, job dissatisfaction which will have a negative effect on the healthcare system by a decline in the productivity of healthcare workers (Bener et al., 2013; Smedley et al., 1997). In pregnant women, LBP and lumbopelvic pain may be caused by hormonal, mechanical and other reasons related to body changes (Katonis et al., 2011) such as early-pregnancy hormone (ligament laxity) (Morino et al., 2017; Vermani, Mittal & Weeks, 2010), or weight gain (Morino et al., 2017).

Overall, there is a higher prevalence of LBP in women than men. Painful conditions and chronic pain in the musculoskeletal system affect women in larger numbers than men

(Leveille SG, Zhang Y, McMullen W, Kelly-Hayes M, Felson DT.. 2005). The rise in the sensitivity of pain among women partly explains outstanding reports of pain experienced by women compared to men. Pain sensitivity associated with menstrual cycle fluctuation may further help in the explanation of gender differences when reporting pain in young adults (Riley JL III, Robinson ME, Wise EA, Price DD.. 1999). Responses to pregnancy and childbirth, child-nurturing stress and weight gain in the abdomen are responsible for LBP (Bailey A. 2009). Studies based on population have shown that the widespread of pain peaks in seventh and eighth decades, increasing with age. It was recently shown that genetics is associated with the development of LBP (Manek NJ, MacGregor AJ. 2005; Hestbaek L, Iachine IA, Leboeuf-Yde C, Kyvik KO, Manniche C. 2004; Pinheiro MB, Ferreira ML, Refshauge K, ColodroConde L, Carrillo E, Hopper JL, Ordoñana JR, Ferreira PH.. 2015). Lumbar disc degeneration and its related changes such as narrowing of disc space are associated with LBP (Raastad J, Reiman M, Coeytaux R, Ledbetter L, Goode AP.. 2015). Lumbar disc degeneration is a musculoskeletal system condition that increases with age and can advance to a herniated disc, stenosis of spinal canal together with arthrosis of joint facet, spondylolisthesis degeneration (Wang YX, Griffith JF, Leung JC, Yuan J. 2014; Wang YX, Griffith JF, Zeng XJ, Deng M, Kwok AW, Leung JC, Ahuja AT, Kwok T, Leung PC. 2013; Wáng YX.. 2015).

The National Institutes of Health (NIH) Task Force on Research Standards for Chronic Low Back Pain (cLBP) recommendation on cLBP definition as persisted back pain problem for at least three months with experienced pain at least half the days in the last 6 months (Deyo R, Dworkin SF, Amtmann D et al. 2014). It is increasingly evident that cLBP may evolve farther from symptomatic to a complex state including consistent changes of anatomy and function in the Central Nervous System (CNS) along with structural alterations in the back (e.g. atrophy). Nevertheless, causes of pain may be clear in pathoanatomic of some patients with cLBP, there are unclear association between pain and distinct pathology of the spine in many (Chou R, Deyo RA, Jarvik JG. 2012). In primary care, LBP is seen as the fourth most common diagnosis following upper respiratory infection, hypertension and coughing respectively and roughly one in every five women are sufferers of chronic LBP (Hoy D, Bain C, Williams G, et al. 2012). Furthermore, the excruciation of affected individuals denotes a significant burden on the social economy. This underscores the significance of knowledge about components that would aid the prevention and management of chronic LBP. It is confirmed that the

frequency of LBP in Finland, USA and among workers in the USA as of 2010 were 75%, 80% and 25.7% respectively (Eti Aslan, 2014; Yang et al., 2016). Universally, the prevalence of LBP is momentarily 12%, 23% monthly, annually 38% and approximately 40% for adults' life course. The lasting prevalence of urban and rural areas in Turkey is 50% and 80% respectively (Nabiyev et al., 2015). Low back pain lowers the quality of life. In addition to this, the prevalence of LBP symbolizes a serious economical burden. According to a 2013 research carried out in Poland, the absence from work for men and women were 15% and 10% respectively. There is a need for uninterrupted monitoring of LBP with occupational groups inclusive. Distinct correlations in the research result were indicated between physical activity and back pain. However, it is clear that physically active individuals frequently experience less low back pain (LBP) than those whose lifestyle is passive. According to the findings of World Health Organization (WHO), nearly 10% men and 18% of women above the age of 60 are affected by osteoarthritis; 0.3-1% of the general population is affected by rheumatoid arthritis which has a higher prevalence among women in developed countries. Low back pain is the most frequent condition of the musculoskeletal; about 4-33% of the population is affected at any given point in one's life (Woolf AD, Pfleger B.. 2003).

Globally, low back pain is the current leading cause of disability (Global Burden of Disease Study 2013 Collaborators; Buchbinder R, Blyth FM, March LM et al. 2013). Several epidemiology publications on low back pain with history, demographics, prevalence and variability of countries are available (Strine TW, Hootman JM.. 2007; Deyo RA, Mirza SK, Martin BI.. 2002; Freburger JK, Holmes GM, Agans RP et al.. 2009). The range of lifetime prevalence of studies from Turkey shows 44% and 79% (Gilgil E, Kacar C, Bütün B, Tuncer T, Urhan S, Yildirim C et al. 2005; Dundar PE, Özyurt BC, Ozmen D.. 2006; Altinel L, Kose K, Ergan V, Isik C, Aksoy Y, Ozdemir A et al. 2008). The risk factors investigated for LBP in a Turkish community were age (a significant risk factor), occupational activities, obesity, lifestyle, smoking, gender and genetic makeup (Ercalık C, Tuncer T.. 2011). Psychosocial factors, menstruation and pregnancy (Manchikanti L, Singh V, Datta S, Cohen SP, Hirsch JA.. 2009) may be reasons for higher reports of LBP in women (Hoy D, Bain C, Williams G, March L, Brooks P, Blyth F, Woolf A, Vos T, Buchbinder R.. 2012). Occupation also plays an important role in developing LBP. Back pains are more frequently experienced among workers lifting heavy objects, rural area workers and individuals expected to remain seated for a long time

(Matsui H, Maeda A, Tsuji H, Naruse Y.. 1997; Macfarlane GJ, Thomas E, Papageorgiou AC, Croft PR, Jayson MI, Silman AJ.. 1997; Osborne A, Blake C, Fullen BM, Meredith D, Phelan J, McNamara J, Cunningham C.. 2012). Back pain is believed to be caused by limited physical activity, improper ergonomic positions in the place of work, unhealthy lifestyle excessive body-mass. According to epidemiological criteria, back pain should be treated as a syndrome containing an aggregate of symptoms with a predominate sensation of pain. Back pain affects all population irrespective of different occupations which are estimated to affect about half the population of adult (Myśliwiec A, Saulicz E, Kuszewski M, Kokosz M, Wolny T.. 2011). Presently, there is a little evidence made known about the effects of leisure-time activity and LBP association. It is unknown whether excessive body-mass and occupational exposures have effects on physical activity and lumbar pain. The compensation of leisure-time physical activity may have some effects on excessive body-mass to an extent (Shiri R, Solovieva S, Husgafvel-Pursiainen K, Telama R, Yang X, Viikari J, et al. 2013). However, leisure-time physical activity of the obese may be reduced. Leisure-time physical activity of individuals with active jobs would more likely decrease while that of sedentary occupation individuals are most likely to increase (Nooijen CF, Del Pozo-Cruz B, Nyberg G, Sanders T, Galanti MR, Forsell Y.. 2018). Even though there is no accurate clinical identification of low back pain in tissues, numerous innervated structures are revealed when pain is stimulated. In certain cases, analgesics relieve pain. Numerous imaging [Computerized Tomography scan (CT scan), Magnetic Resonance Imaging (MRI) and radiography] results shown in individuals with low back pain are common compared to the group without such pain. However, some abnormality in MRI is frequent in individuals with low back pain than those without in individuals below the age of 50 years. Conversely, there is insufficient evidence showing whether MRI results can be used for the prediction of low back pain in the future. Notably, there is no existing evidence which shows that imaging improves outcomes of patient and guiding principles advocates constantly against regular use of imaging for individuals with low back pain. The cause of back pain is unknown (McCarthy, C.J.; Roberts, C.; Gittins, M.; Oldham, J.A.. 2012) but diagnostic tests such as blood tests, X-ray and MRI scan are done (Bupa. Back Pain. 2014)**.** Having an understanding of back pain is crucial to alleviate it from every affected individual and not repeat itself during therapy (McGill, S. 2014). Therapy prescription can be hard when back pain is unknown, general exercise is mostly advised.

Public Health interventions goal is to revolutionize the beliefs and behaviours of the public on low back pain. Mass-media campaigns which focus more on behaviours with limits to belief, and that integrates a new way of disseminating information such as social networks, customized digital communications and personal marketing could be put into consideration. Such campaigns may be inexpensive compared to traditional media, gives room to directly access the public and deliver greater messages. Public health strategies are most likely relevant for low-income and middle-income countries with more resources and focus on prevention and public health campaign in infectious diseases. For example, in rural Tibet, low back pain was reported by 34% of the people, the strategy used consisted of training on prevention of back pain and grouping management with a stand in support of water containers (Hoy D, Geere JA, Davatchi F, Meggitt B, Barrero LH. 2014). There was an ease in the burden of water collection with the possibility to reduce prevalence and disability associated with back pain. In South Africa, information related to back health has been incorporated into Western Cape on Wellness project, promoting healthy wellbeing of the community, work and school settings by reducing the burden of non-communicable diseases. Nevertheless, no substantial published data for effective interventions of public health for low back pain in low-income or middle-income countries (South African Western Cape Government. 2017). This study aims to evaluate the effects of health education in low back pain prevention among women using semi-interventional design. The severity of pain would be determined by the visual analogue scale, whereas disability to be determined by Oswestry pain scale index and difficulties in performing daily life activities would be determined by back pain functional scale.

1.1. Aim of the Study

This study aims to determine the relationship between socio-demographic variables and low back pain and to evaluate the effectiveness of the education given to women suffering from low back pain.

1.2. The Study Hypothesis

According to the training given to women suffering from low back pain before the training, after the training; there is no difference in the mean score to

- Oswestry Disability Index Scale scores
- Back Pain Functional Scale scores

1.3. The Study Questions

- What are the socio-demographic effects on low back pain?
- What is the prevalence of low back pain among participants in this study?

CHAPTER TWO

2. GENERAL INFORMATION

2.1. Functional Health

Functional health is a general conception of an indication of optimal levels of spiritual functions, psychosocial and physiological maintenance of holistic care in individual, families and communities (Gordon, 1994). It is crucial to be knowledgeable about psychological trauma experience when dealing with the health problems of women. A higher rate of morbidity and mortality occurs as a result of the effects of psychological trauma on overall health status (Mersky, Topitzes & Reynolds, 2013). Sufficient social support and adequate empathy can be used as a treatment approach to psychological trauma (Laaser, Putney, Bundick, Delmonico & Griffin, 2017).

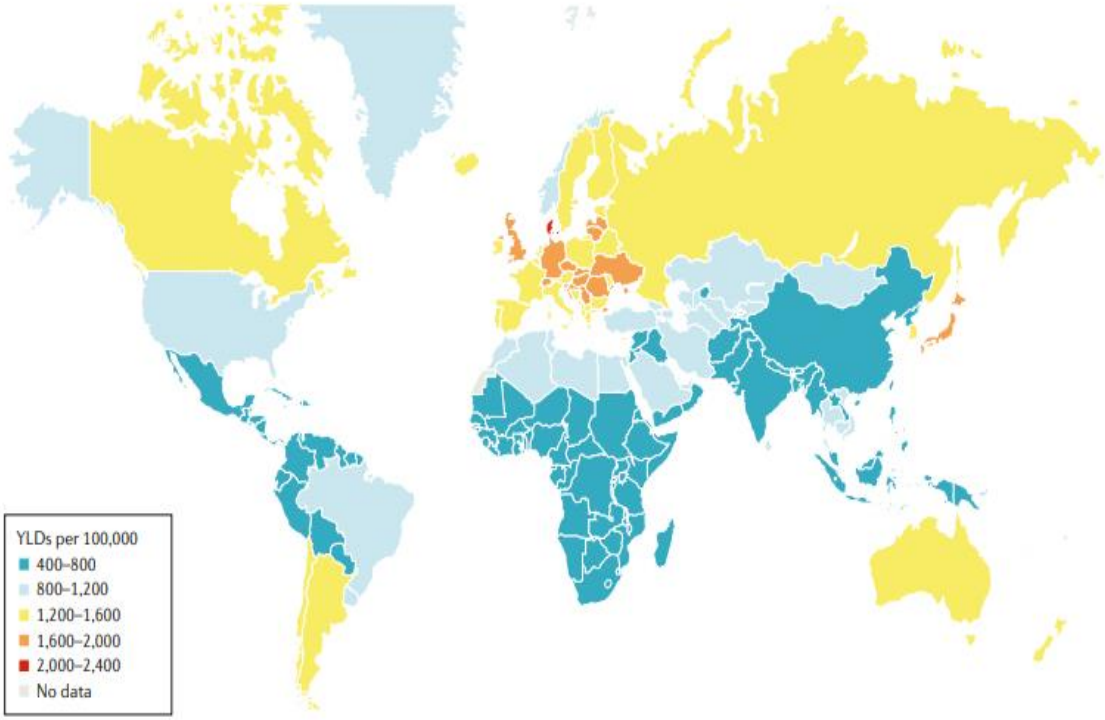
2.2. Back Pain Meaning

Pain (subjective emotion) is a distasteful feeling of the mind but identifiable unpleasant emotional state felt in the mind but restricted to a part of the body. Pain is a designed resistance for the protection of the injured part from further deterioration (Malcom IVJ.. 1987). Low back pain is a symptom, not a disease, and can result from several different knowns or unknown abnormalities or diseases. It is described by pain site characteristically amid the margins of lower ribs and buttocks (Dionne CE, Dunn KM, Croft PR, et al. 2008). It is frequently accompanied by pain in the legs and some low back pain is linked with neurological symptoms in the lower limbs. The source of some specific pain cannot be known, which can be called non-specific low back pain. Severe causes of constant low back pain (vertebral fracture) involving identification and precise administration targeting the cause, which accounts for a very little percentage of cases. Pain co-exist in other parts of the body and more health issues (mental and physical) is reported by people experiencing low back pain when compared with those not having low back pain. Presently, low back pain is primarily treated by analgesics. Alternatively, treatments included are rehabilitation, physical therapy and manipulation of the spine. When all strategies fail, the last option is disc surgery but the results are unsatisfactory (Phillips FM, Slosar PJ, Youssef JA, Andersson G.. 2013).

2.2.1. Low Back Pain Epidemiology

A low back is a significant burden to patients and the general public. LBP was the primary cause of years lived with disability assessed in 188 countries according to the 2016 Global Burden of Disease Study (Global Burden of Disease Study 2013 Collaborators). The tendency to experience a periodic LBP within a year after treatment of episodes of acute LBP is estimated to be about 25% (Stanton, T. R. et al. 2008). In some studies, LBP prevalence is at its peak in high-income countries (32.9%), 25.4% and 16.7% in middle and low-income countries respectively (Hoy, D. et al. 2012). In a systematic study, an estimate for the mean of chronic LBP in Latin America was 31.3% (Garcia, J. B. et al. 2014). The evaluations of low back pain epidemiology in Asia are sparse but suggestions were made that low back pain is a health problem among individuals of productive age groups associated with functional constraints in activities of daily life (Yiengprugsawan, V. et al. 2017; Jackson, T., Chen, H., Iezzi, T., Yee, M. & Chen, F. 2014). Overall, prevalence rates of LBP may have been influenced by several studies approach in terms of duration differences, definitions and onset of pain.

Figure 2.1. Global Burden of Disease Study Data, 2016



2.3. Types of Back Pain

Low back pain can be classified into several ways without a compromise that a method is best. The types of low back pain are broadly into three by cause: mechanical (broken vertebra, degenerative discs and herniated discs), non-mechanical (infections and tumours) and referred pain from internal organs (kidney infections, gallbladder disease) (Manusov EG.. 2012).

Signs and symptoms may be used in the classification of low back pain. Non-specific is the most common classification of low back pain when diffuse pain remains unchanged in response to specific movements and confined to the lower back without searing past the buttocks. Pain radiation below the knee located on one side (disc herniation) or both sides (spinal stenosis) and changes rigorousness in reaction to certain positions is radicular which makes up 7% of cases. Urgent attention may be required for fundamental problems when pain is accompanied by fever, muscle weakness or trauma. The duration of low back pain may also be used in classification such as acute, sub-chronic or chronic. Generally, acute pain lasts for six weeks, sub-chronic last for six to twelve weeks and chronic is more than twelve weeks. Diagnosis and management of low back pain may vary depending on the duration of symptoms.

2.3.1. Acute Back Pain

Sudden onset of severe mechanical LBP triggers patients to seek medical attention. Acute LBP has an excellent prognosis. More than 90% of a third of patients who seek medical attention recover within 2 months or less (Coste J, Delecoeuillerie G, Cohen deLara A, et al. 1994). Active lifestyle and continuity of daily activities within the confinement of pain permitted are advised for individuals with acute LBP. This results in a speedy recovery than bed rest (Malmivaara A, Hakkinen U, Aro T, et al. 1995). In general, short-acting opioids are recommended. The effects of muscle relaxants are moderate for short-term symptomatic relief but have a high prevalence of adverse effects such as dizziness (Chou R. 2010). There is no clarity as to whether these medications relax muscles or if effects are associated with sedation or other non-specific effects. Abdominal muscles are strengthened by flexion exercises and paraspinal muscles are strengthened by extension exercises. Several exercise programs developed all appear to be equally effective. Patient education (booklets) is highly recommended (Chou R, Qaseem A, Snow V, et al. 2007). Heat pads or a blanket is an equitable self-care

alternative relief of acute LBP. Injection therapy is frequently used in sub-acute and chronic low back pain.

2.3.2. Chronic Back Pain

Acute escalation may be experienced by patients with chronic LBP which may result in poor treatment outcomes. Chronic LBP is principally responsible for the high costs related to LBP. First-line medication option for most patients is Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) or acetaminophen. Tramadol or opioids are options prudently used when patients experience severe disabling pain. However, depression is frequent in patients with chronic LBP and appropriate treatment is required. Patient education and physical therapy tailored to individuals are crucial aspects of chronic LBP management. Medium-firm mattress or a back-conforming mattress may be better than a firm-mattress for most patients with LBP (Kovacs FM, Abraira V, Pena A, et al. 2003; Bergholdt K, Fabricius RN, Bendix T. 2008). Chronic LBP is multifaceted which involves psychological, environmental and biologic factors. The clinician should consider a thorough cognitive-behavioural therapy rehabilitation for persistent non-radicular LBP (Chou R, Loeser JD, Owens DK, et al. 2009). Surgical treatment is not required for most patients with LBP.

2.4. Factors affecting the Frequency of Low Back Pain

Over the years, low back pain is a widespread disease with a social, economic and medical burden. Low back pain is experienced by more than 70% of the population for a minimum of a week in the lifetime and 15-40% yearly. The frequency and morbidity of LBP are related to the modification of lifestyle such as active physical activity, hobby preferences changes, restriction of important physical activities since a young age. However, pain may be exhibited at any point when the spine is overloaded and aching activation of the spine, nervous structures irritation within the vertebral canal could be caused by back pain. Most frequent back pain syndrome is caused by long-lasting overload with a characteristic presentation.

2.4.1. Mechanisms of Low Back Pain

The underlying cause of low back pain is unknown is most cases, as well as individuals who visit healthcare for acute, intermittent or chronic disorders. The identification of the causes of LBP in these individuals has an ambiguous goal. Nevertheless, numerous factors that influence the etiology of back pain comprising of systemic and local factors such as genetic predisposition, emotional state, inflammatory and immunological responses, and social systems (Battie, M. C. et al. 2014; Battie, M. C. et al. 2009). The major determining factor for LBP is the response of an individual to musculoskeletal insult.

2.4.2. Risk Factors for Low Back Pain

Risk factors which may increase low back pain include:

Age: Low back pain usually has its first attack between the ages of 30 and 50 and pain advances with age. At the same time, bone loss can lead to fractures, decrease in tone and muscle elasticity. The intervertebral disc loses its flexibility and fluid with age, thereby causing a decrease in vertebrae cushion.

Weight gain: Obesity, being overweight or a sudden weight gain can be a stressor on the back leading to LBP.

Mental health: The perception of the severity of pain may be altered by the influence of depression and anxiety. The effect of stress on the body is multifaceted, thereby causing muscle tension.

Fitness level: Physically unfit individuals are more prone to back pain because the spine may not get proper support from abdominal muscles and weaken the back. People who do rigorous exercises at weekends as a result of all-week inactivity are more likely to suffer painful back injuries that individuals who practice moderate physical activity on daily basis. Research indicates that the integrity of intervertebral discs maintenance can be helped by low-impact aerobic exercise.

Smoking: Intervertebral discs degenerate faster due to the restriction of oxygen and blood flow to the discs.

Psychological factors: Stress, psychological well-being, mood and depression can affect the chances of experiencing back pain.

Backpack overload in children: Muscle fatigue can be caused by pressure exerted on the back by overloaded backpack with schoolbooks and supplies.

Genetics: Ankylosing spondylitis (a category of arthritis that involves spinal joints fusion resulting in some immobility of the spine) possesses a genetic component causing back pain.

Job-related factors: Jobs that entail pulling, heavy lifting or pushing; especially when vibrating or twisting of the spine is involved can generate to back pain and injury. Poor posture or prolonged sitting without inadequate back support while working at the desk can also result in pain (NINDS.NIH, 2020).

2.4.3. Assessment of Low Back Pain

A thorough pain assessment is fundamental in the course of acute low back pain evaluation and can help in diagnosis and management guidance when important information is provided. ACI.HEALTH, 2017 suggested some certain examination. Some certain examinations done in the assessment of a patient with acute low back pain are as follows:

- **Severity**

Severity of pain score

0 = No pain

1-3 = Mild pain

4-6 = Moderate pain

≥ 7 = Severe pain

- **Radiation**

Radiation of back pain to legs or buttocks denotes that there is an impact of the nerve root as a result of the herniated disc. Occasionally, non-dermatomal referral patterns in association with back pain may not be nerve root intrinsically linked to pain.

- **Duration**

Several spinal disorders are interdependent of pain duration of more than 4 weeks or extremely worsens after an improvement with a time-frame (with suitable treatment and no new aggravating factors).

- **Ankylosing spondylitis**

A precise type of low back pain is presented with this autoimmune condition. Therefore, the following symptoms should be early detected in patients when Ankylosing spondylitis is suspected before deterioration.

a. Younger age

b. Back stiffness in the mornings

c. Interrupted night sleep due to back pain

d. Intermittent pain in the buttocks

- **Analgesia history**

Are there any medications taken by the patients?

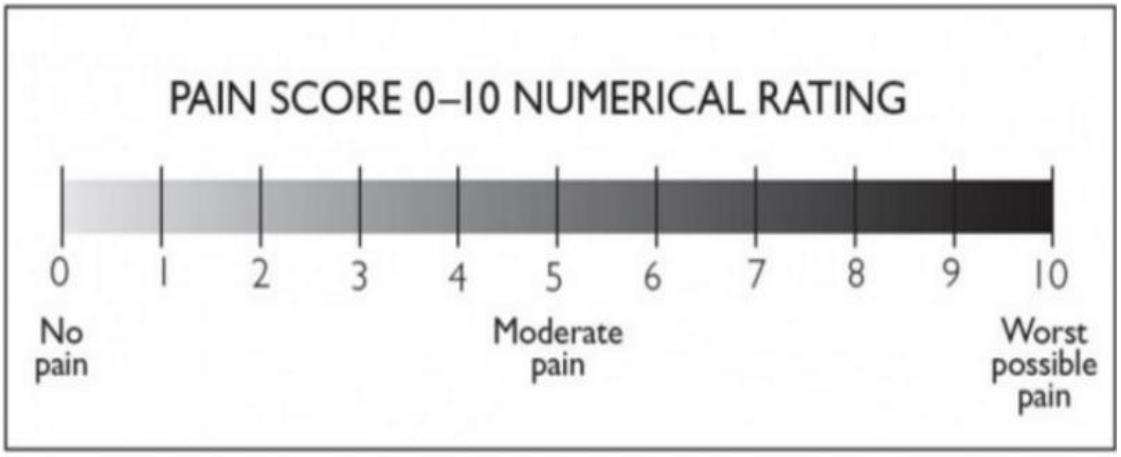
No - why not?

Yes – what drug, dosage, when, how often and effects?

- **Aggravating factors**

Neurogenic claudication is the emergence of leg pain while standing or exercising which gets relieved while lying down or sitting without peripheral vascular disease. It is an indication of stenosis of the lumbar spine.

Figure 2.2. Emergency Care Pain Management Manual by National Institute of Clinical Studies (2011)



Benefits of Physical Activity

According to WHO, physical activity is defined as "physical movement caused by skeletal muscles that require the expenditure of energy including travelling, playing, house chores routines and working". The positive effects of a physically active lifestyle supersede the likelihood of causing harm. The recommended activity levels can be achieved when an individual is more active all through the day. Hence, in maintaining a sufficient level of physical activity there is an improvement in weight control, cardio-respiratory and muscular fitness, functional health, reduction in the risk for diabetes and stroke. The global mortality

rate is on the increase due to insufficient physical activity and the risk of death in individuals who are insufficiently active compared to sufficiently active is 20-30%.

2.4.4. Low Back Pain Diagnosis

A thorough physical examination and medical history check can be used in the identification of conditions causing pain. Imaging tests may be used to eliminate certain causes of pain including tumour even though they are not necessary in most cases. Neurologic tests may be useful in the determination of causes of pain and convenient treatment. Chronic low back pain causes may be burdensome after a complete examination. These tests include:

- **Blood tests:** Used in assessing infection, cancer, arthritis or signs of inflammation.
- **Bone scans:** Monitors bone disorder, infection or fracture.
- **Discography:** A contrast dye is injected into a spinal disc thought to be the reason for low back pain. The dye aids in the presentation of damaged areas on CT scans captured after the injection.
- **Diagnoostic imaging tests:** This permit specialist to examine the body without performing exploratory surgery such as X-ray imaging, Computerized Tomography (CT) and Magnetic Resonance Imaging (MRI).
- **Myelograms:** It strengthens the diagnostic imaging of CT scans and X-ray. An injection of contrast dye is performed in the spinal canal, enabling nerve constriction and spinal cord generated by fractures or herniated discs viewed on CT scans or an X-ray.

2.4.5. Low Back Pain Treatment

Acute back pain: This is often treated with medications to alleviate pain such as analgesics (e.g. acetaminophen), NSAIDs (e.g. ibuprofen), muscle relaxants and topical pain relief (e.g. patches, creams); heat or ice to reduce inflammation and gentle stretching recommended by health personnel. Though, bed rest, surgery and exercise are not ideal for acute back pain (NINDS.NIH, 2020).

Chronic back pain: It involves three stages of treatments depending on the cause of the pain. These treatments include:

1. **Early treatments:** Two approaches used in this stage are medications and self-management.

a. **Medications**
    - Antidepresants (e.g. serotin) commonly recommended by a physician for chronic low back pain
    - Analgesics and NSAIDs
    - Anticonvulsants: It may be effective in the treatment of sciatica
    - Opiods drugs: It is majorly prescribed by a physician with close monitoring to avoid side effects such as aggravate depression.

b. **Self-management**
    - Suitable exercises recommended by the physician
    - Hot or cold packs
    - Returning to regular activities

2. **Alternative techniques**
    - Physical therapy
    - Acupuncture
    - Spinal mobilization and manipulation
    - Traction
    - Trancutaneous electrical nerve stimulation (TENS)

3. **Advanced care option**

This is categorized into three namely: surgery, implanted nerve stimulator and rehabilitation programs

a. **Surgery** (may be considered when other therapy fails. Surgeries are selected for appropriate conditions; however, the outcome of surgery is not always successful). The options include:
    - Discectomy and microdiscectomy (removal of herniated disc through an incision process)
    - Spinal laminectomy (removal of bone walls causing pain)
    - Foraminotomy (enlargement of bony hole where a nerve root leaves the spinal canal)
    - Spinal fusion (strengthen of the spine to prevent movements that are painful to the degenerative discs)
    - Artificial disc replacement (removal of disc and replacement with a synthetic disc that aids restoration of height and movement between the vertebrae.

b. Implanted nerve stimulators

- Peripheral nerve stimulation
- Spinal cord stimulation
- Dorsal root ganglion stimulation

c. Rehabilitation programs: The rehabilitation teams from several specialities prepare programs to aid individuals who live with chronic pain by reducing pain and dependence on opioids medicines. Programs commonly last 14-21 days and can be benefitted by all (in-patients and out-patients) (NINDS.NIH, 2020).

2.4.6. Burden and Impact of Low Back Pain

The impact of the prevalence of low back pain among women is complex in the sense that it has an overall disability, work disability, social identity and inequality, and cost indicated.

2.4.6.1. Overall Disability

Disease burden for 315 causes in about 195 territories and countries carried out from 1990 to 2015 by the Global Burden of Disease (GBD) in 2015 provides a broad evaluation of sharp and persistent diseases and burden and disability of universal patterns (Global Burden of Disease 2015 DALYs and HALE Collaborators, Lancet 2016). Low back pain is the number one reason for disability worldwide in addition to 14 of the 21 GBD regions of the world (Global Burden of Disease, Injury Incidence, Prevalence Collaborators, and Lancet 2016). In a study which involved 151 million participants, less than 28% of prevalent cases were in the categories of severe and most severe (Global Burden of Disease 2015 DALYs and HALE Collaborators, Lancet 2015). Consequently, many individuals with LBP have a low level of disability, but the stabilizing outcome of individuals with an elevated disability in a considerable minority results into an overpriced societal burden. In high-income countries, job satisfaction, socioeconomic status and potential for monetary reward are related to neutralizing back pain. In general, a rise in the global burden of LBP is near as a result of an increase in population and ageing in both low-income, middle-income and high-income countries irrespective of increased prevalence (Hoy D, Bain C, Williams G, et al. 2012; Hoy D, March L, Brooks P, Woolf A, Blyth F, Vos T, Buchbinder R. 2010).

Table 2.1. Overview of selected predictors and their association with dichotomous outcomes of low back pain disability

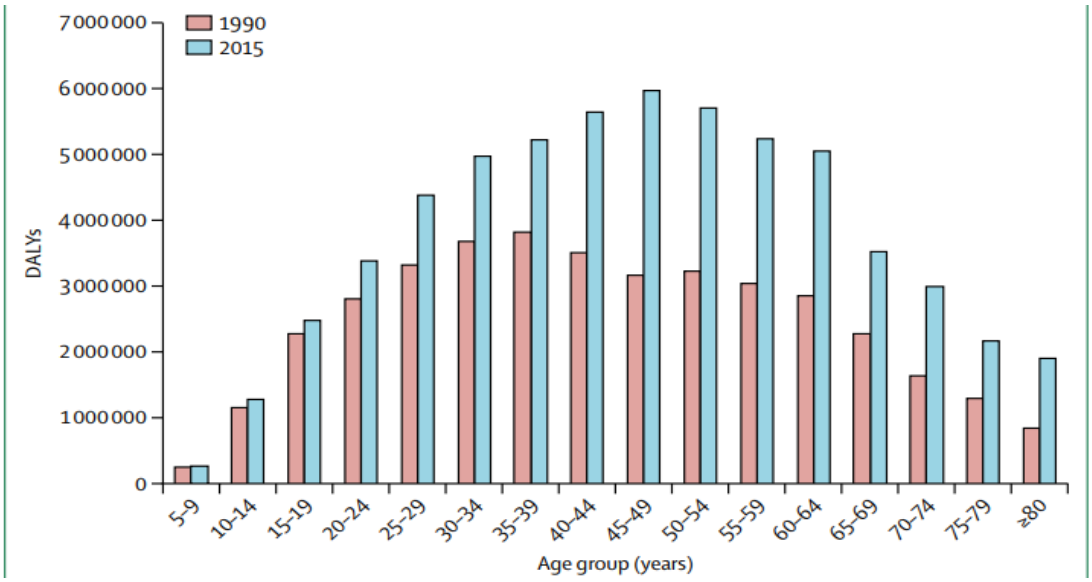
	Outcomes (predictor scale: association with low back pain disability)	Source of evidence
Symptom-related factors		
Previous episodes	Chronic disabling pain* at 3–6 months; more *vs* less episodes: median LR 1·0 (range 0·9–1·2); chronic disabling pain* at 12 months; more *vs* less episodes: median LR 1·1 (range 0·95–1·2)	Systematic review including nine longitudinal studies[63]
Back pain intensity	Chronic disabling pain* at 3–6 months; high intensity pain *vs* non-high: median LR 1·7 (range 1·1–3·7); chronic disabling pain* at 12 months; high intensity pain *vs* non-high: median LR 1·3 (range 1·2–2·0)	Systematic review including eight longitudinal studies[63]
Presence of leg pain	Chronic disabling pain* at 3–6 months; leg pain or radiculopathy *vs* no leg pain: median LR 1·4 (range 1·1–1·7); chronic disabling pain* at 12 months; leg pain or radiculopathy *vs* no leg pain: median LR 1·4 (range 1·2–2·4)	Systematic review including ten longitudinal studies[63]
Lifestyle factors		
Body mass	Chronic disabling pain* at 3–6 months; BMI >25 or >27 *vs* lower BMI: median LR 0·91 (range 0·72–1·2); chronic disabling pain* at 12 months; BMI >25 or >27 *vs* lower BMI: median LR 0·84 (range 0·73–0·97)	Systematic review including three longitudinal studies[63]
Smoking	Chronic disabling pain* at 3–6 months; current smoker *vs* not: median LR 1·2 (range 1·0–1·6)	Systematic review including three longitudinal studies[63]
Physical activity	Disability 1–5 years; significant association in one of five studies (no effect size reported)	Systematic review including five longitudinal studies[64]
Psychological factors		
Depression	Mixed outcomes; significant associations with poor outcome in eight of 13 cohorts; OR (range) 1·04–2·47	Systematic review including 13 longitudinal studies[65]
Catastrophising	Disability at 3–12 months; significant association in nine of 13 studies; high catastrophising: OR 1·56 (95% CI 1·05–2·33); 0–6 scale: 7·63 (3·70–15·74); 0–52 scale: 1·05 (1·02–1·08); contribution to explained variance: 0–23%	Systematic review including 13 longitudinal studies[66]
Fear avoidance beliefs	Pain or activity limitation at 3–12 months; no pooled estimates; no systematic association between fear avoidance and outcome; poor work-related outcome at 3–12 months; elevated fear avoidance: OR (range) 1·05 (95% CI 1·02–1·09) to 4·64 (1·57–13·71; from four studies done by disability insurance companies); chronic disabling pain* at 3–6 months; high *vs* no fear avoidance: median LR 2·2 (range 1·5–4·9); chronic disabling pain* at 12 months; median LR 2·5 (range 2·2–2·8)	Systematic review including 21 longitudinal studies[67] Systematic review including four longitudinal studies[63]
Social factors		
Physical work loads	Chronic disabling pain* at 3–6 months; higher *vs* lower physical work demands: median LR 1·2 (range 1·1–1·6); chronic disabling pain* at 12 months; higher *vs* lower physical work demands: median LR 1·4 (range 1·2–1·7)	Systematic review including four longitudinal studies[63]
Education	Chronic disabling pain* at 3–6 months; no college education or not college graduate *vs* more education: median LR 1·0 (range 0·97–1·3); chronic disabling pain* at 12 months; no college education or not college graduate *vs* more education: median LR 1·1 (range 1·1–1·2)	Systematic review including ten longitudinal studies[63]
Compensation	Chronic disabling pain* at 3–6 months; compensated work injury or sick leave *vs* not compensated work injury or sick leave: median LR 1·3 (range 0·97–2·7); chronic disabling pain* at 12 months; compensated work injury or sick leave *vs* not compensated work injury or sick leave: median LR 1·4 (range 1·2–1·8)	Systematic review including seven longitudinal studies[63]
Work satisfaction	Chronic disabling pain* at 3–6 months; less *vs* more work satisfaction: median LR 1·1 (range 0·64–1·8); chronic disabling pain* at 12 months; less *vs* more work satisfaction: median LR 1·5 (range 1·3–1·8)	Systematic review including five longitudinal studies[63]

The information provided in the table provides a broad overview and was not based on a systematic review of the literature. LR=positive likelihood ratio. BMI=body-mass index. OR=odds ratio. HR=hazard ratio.
*Pain persistent beyond 3 months and at least moderately affecting ability to work or function.

2.4.6.2. Work Disability

Low back pain is universally at its peak in the working population which mainly concerns low-income and middle-income countries where informal employment is frequent and job potentials for modification of jobs are more or less absent. Additionally, professional musculoskeletal health policies are frequently deficient or inadequately monitored. A study was carried out in rural Nigeria involving 500 farmers; the result showed that farming workload was reduced by over half of them due to low back pain. Consequently, disability-related with low back pain may add to the poverty cycle in poorer regions of the universe. In Europe, LBP is the major reason for early retirement and medically licensed sick leave. Nevertheless, disabilities related to work due to LBP vary significantly among countries in Europe. For example, temporary sickness absence rates in individuals with back pain were comparable (5.1% and 6.4% respectively) but lasting sickness absence rate was dissimilar (22% and 15% respectively) in Norway and Sweden in 2000.

Figure 2.3 Global burden of low back pain, in disability-adjusted life-years (DALYs), by age group, for 1990 and 2015



2.4.6.3. Social Identity and Inequality

The consequence of LBP on social identity and inequality is universally considerable. A 42-qualitative study from high-income countries was reviewed by Froud and colleagues, it was discovered that many individuals living with LBP face difficulties with obligations and social expectations and accomplishing them may pose a threat on the reliability of their pain with disabilities claim being endangered (Froud R, Patterson S, Eldridge S, et al. 2014). Low back pain contributes greatly to inequality worldwide. Inequality and poverty may increase as work involvement is affected by low-income and middle-income countries (Lucchini RG, London L.. 2014). Also, official return-to-work systems are frequently not in position and workers may retrench causing more damages to livelihoods of family and community.

2.4.6.4. Cost of Low Back Pain

No significant study on costs is related to LBP from low-income and middle-income countries were recognized. Healthcare and work absenteeism is generally reported to be cost-related to LBP. The impact of the economy associated with LBP is similar to other widespread conditions such as mental health, cancer and cardiovascular disease. Healthcare practices and changes in disability legislation may eventually serve as a better explanation for some observed variation in the cost for LBP. For instance, between 1991 and 2007, costs related with LBP were significantly reduced in Netherlands after a

legislation change which led to a reduction in disability pensions and applied evidence-based criteria for medical practices. In the UK in 2006, musculoskeletal problems with back pain were the most common complaints during general practitioner consultations while LBP is the sixth most common complaint seen in South Africa primary healthcare. Additionally, conservative medicine, complementary and alternative approaches are common with individuals who are experiencing low back pain. For instance, complementary or alternative healthcare therapy was used by 44% of the USA population in 1997 mainly because of low back pain.

2.5. Low Back Pain among Women

Reports constantly show that a higher fraction of females experience low back pain more than males. It appears that low back pain is a major problem during pregnancy and after delivery. In a study recently conducted in the Spanish National Health Service, 71.3% and 46.2% were recorded as the prevalence of low back pain and leg pain respectively. Related and unrelated previous pregnancy and postpartum pain, anxiety, and history of low back pain are major factors related to higher chances of reporting low back pain. On the contrary, depression, elevated body mass index, insufficient periods of sleep per day and low back pain are factors related to higher chances of reporting leg pain. According to a Cochrane review 2007, low back pain was experienced by two-thirds of pregnant women (Pennick VE, Young G.. 2007). Smoking habits, mother's weight, a history of low back pain before, during or after a previous pregnancy and mother's age are factors commonly assessed for systematic reviews. Notwithstanding, gender differences have no significance in some studies, some studies realized that low back pain is reported more by men than women (Wu WH, Meijer OG, Uegaki K et al. 2004; Bastiaanssen JM, de Bie RA, Bastiaenen CH, Essed GG, van den Brandt PA.. 2005). A higher proportion of men experience occupational low back pain and other types of disorders. As life expectancy heightens, modern women live one-third of their life in menopause (Poomalar GK, Bupathy A. 2013). Whelan et al stated that "in the perimenopausal period (45-55 years), 80% of women experience a variety of symptoms (pain inclusive) (Whelan TJ, Goss PE, Ingle JN, et al. 2005). The transition from premenopausal to postmenopausal period is a result of slowing down of female hormones production. This is inevitably part of ageing which is gradual and increases over time. Several symptoms related to perimenopausal period are physical symptoms (chronic tiredness, spine and joint pain), psychological symptoms (sleep disorders, mood swings and anxiety). Spine pain (lumbar region) is a

stern health problem in today's world. At some point in life, low back pain affects 36.4% to 58% of the population of European countries and the United States respectively (Palmer K, Walsh K, Bendall H, et al. 2000; Van Tulder MW, Koes BW, Bouter LM. 1995). The term "lifestyle disease" was coined by some researchers as a result of the challenges (medical and socio-economic) posed by LBP. Low back pain is the major reason for workplace absenteeism and the second reason for primary health care visit. The negative psychological effects of spine pain destabilize activities of daily living of an affected person.

2.5.1. Causes of Low Back Pain In Women

Low back pain is an illness that may be caused by several underlying problems of different gravity (Borczuk, Pierre.. 2013). There is no clear cause for a majority of LBP (Casazza BA.. 2012) but commonly believed to be a result of skeletal issues (e.g. strains or sprains) (Low Back Pain Fact Sheet 2013). Some factors such as stress, weight gain during pregnancy, poor posture and smoking may also contribute to LBP (Low Back Pain Fact Sheet 2013). Discs degeneration, spine infection, osteoarthritis, osteoporosis are physical causes that may trigger low back pain (Fast Facts about Back Pain.. 2013). Ovarian cysts and ovarian cancer are medical conditions of the female reproductive system which may cause acute low back pain in women (Low back pain – acute.. 2013). Low back pain is reported by virtually half of all pregnant women in pregnancy periods as a result in posture change and centre of gravity which causes strains on muscles and ligaments (Majchrzycki M, Mrozikiewicz PM, Kocur P, Bartkowiak-Wieczorek J, Hoffmann M, Stryła W, et al.. 2010). LBP can also trigger urinary tract infection (Lane, DR; Takhar, SS.. 2011). Female healthcare personnel are at higher risk to experience LBP (Ghoussoub et al., 2016; Yan et al., 2017), which is attributable to occupational risk factors (heavy physical workload, prolonged standing, cyclic movements, transfer of patients and unhealthy bodily postures) (Nourollahi, Afshari & Dianat, 2018; Pheasant & Stubbs, 1992; Smedley et al., 1995). Yearly, 211 million women globally get pregnant (Van Lerberghe, 2005), of which half of them experience low back pain (Katonis et al., 2011), which is commonly reported musculoskeletal

problem during pregnancy (Ritchie, 2003). Additionally, it is often a complaint during postpartum until 11 years after pregnancy, causing a decline in many women's quality of life (Elden et al., 2016; Morino et al., 2017; Norén et al., 2002). In pregnancy period, low back pain and lumbopelvic pain may occur as a result of hormonal, mechanical, or other

factors responsible for body changes (Katonis et al., 2011) like ligament laxity (caused by early pregnancy-related hormone) (Morino et al., 2017; Vermani, Mittal & Weeks, 2010), or additional weight and a shift in the centre of gravity (latte pregnancy) (Morino et al., 2017). It is significant to note that there is an increase in LBP prevalence during pregnancy (Casagrande et al., 2015).

2.6. Prevention of Low Back Pain

Primary prevention of low back pain is centred on precautions taken to shun the occurrence of pain and secondary prevention is provided to individuals with past episodes of pain. A step taken in pain prevention and degenerative processes is the maintenance of good posture (Vieira A, Souza JL. 2002). Postural correction and educational procedures enhance the spine functions in the treatment of chronic LBP (Donzelli S, Di Domenica E, Cova AM, Galletti R, Giunta N. 2006). One benefit of health education is the circulation of new information; thereby creating awareness and increasing positive behaviours. Hence, a primary prevention approach related to health education should be utilized in LBP conditions. In this regard, a Swedish physiotherapist, Mariane Zachrisson-Forssell created an informative and prevention program (The Back School Arise) in 1969 which aimed in prevention and reduction of low back pain (Knoplich J. 2003). In 1972, Back School made an appearance at Servidor Público Estadual de São Paulo Hospital in Brazil; theoretical aspect by Jose Knoplich, published in book and video transmission as an all-round pain prevention guide for industry workers (Knoplich J. 2003). After the 80s, Back School brought about expansion with an elaboration of protocols involving a multidisciplinary approach, which enabled numerous health personnel to act on the same problem (Chung TM. 1999). The objective of Back School is to create more awareness on self-care which comprise a key acknowledgement on the execution of daily activities in a suitable way, implement relaxing exercises and strengthening of the muscles (Santos CBS, Moreira D. 2009).

Exercises emerge as practical measures in the prevention of low back pain (Steffens D, Maher CG, Pereira LS, Stevens ML, Oliveira VC, Chapple M, et al. 2016). Exercises also help to prevent recurrences in individuals whose pain has exceeded six weeks (Casazza BA. 2012; Steffens D, Maher CG, Pereira LS, Stevens ML, Oliveira VC, Chapple M, et al. 2016). The benefit of medium-firm mattresses outweighs firm mattresses for chronic pain (Chou R, Qaseem A, Snow V, Casey D, Cross JT, Shekelle P, Owens DK, et al. 2007). There is no sufficient evidence that back belts are of no more beneficial in the

prevention of low back pain than proper lifting techniques instructions (Steffens D, Maher CG, Pereira LS, Stevens ML, Oliveira VC, Chapple M, et al. 2016; Guild DG. 2012). Sleep posture and mattress firmness haven't been included. The most relaxing surface to sleep may be ideal (Hegmann, Kurt T.; Travis, Russell; Andersson, Gunnar B.J.; Belcourt, Roger M.; Carragee, Eugene J.; Donelson, Ronald; Eskay-Auerbach, Marjorie; Galper, Jill; Goertz, Michael; Haldeman, Scott; Hooper, Paul D. 2020). A shoe insole does not affect preventing low back pain (Steffens D, Maher CG, Pereira LS, Stevens ML, Oliveira VC, Chapple M, et al. 2016; Sahar T, Cohen MJ, Uval-Ne'eman V, Kandel L, Odebiyi DO, Lev I, et al. 2009). Prevention is categorized into three namely: primary, secondary and tertiary.

Public health programs should aim for the provision of a forum to decrease the impact low back pain on daily living (Buchbinder R, van Tulder M, O¨ berg B, Costa LM, Woolf A, Schoene M, Croft P, Lancet Low Back Pain Series Working Group. 2018). In cLBP, the guidelines on how to prevent and treat low back pain are usually prepared by high-income countries. It remains unknown whether these guidelines are suitable for low-income and middle-income countries (Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, Ferreira PH, Fritz JM, Koes BW, Peul W, Turner JA, Maher CG, Lancet Low Back Pain Series Working Group. 2018). The urgency of public health programs varies in high-income in comparison to low-income and middle-income countries (Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, Ferreira PH, Fritz JM, Koes BW, Peul W, Turner JA, Maher CG, Lancet Low Back Pain Series Working Group. 2018). Health education regarding mechanisms, prognosis, causes, history, beneficial impacts of exercise and physical activity should be delivered on regular basis by health-care professionals (Buchbinder R, van Tulder M, O¨ berg B, Costa LM, Woolf A, Schoene M, Croft P, Lancet Low Back Pain Series Working Group. 2018). Combination of education and/or exercise is proven to be effective in the prevention of low back pain (Steffens D, Maher CG, Pereira LS, et al. 2016). Exercise can be centralized as secondary prevention with intensive programs. In a meta-analysis and systematic review conducted in 2014, four pediatric tests in pediatric LBP were found (Michaleff ZA, Kamper SJ, Maher CG, Evans R, Broderick C, Henschke N. 2014). Moderate-quality indicated ineffectiveness of exercise in children (Michaleff ZA, Kamper SJ, Maher CG, Evans R, Broderick C, Henschke N. 2014). Furniture designed to ergonomically prevent LBP presented low-quality evidence (Michaleff ZA, Kamper SJ, Maher CG, Evans R, Broderick C, Henschke N. 2014). A meta-analysis was recently performed on low back

pain prevention using exercise. The risk for low back pain independently decreases by exercise (33%); the risk reduction was 27% when exercised was combined with health education (Shiri R, Coggon D, Falah-Hassani K. 2018). Conclusively, exercise decreased the risk, intensity and associated disability of LBP (Shiri R, Coggon D, Falah-Hassani K. 2018). A combination of aerobic exercises or stretching implemented twice or thrice per week may be approved as a preventive measure of low back pain in the overall population (Shiri R, Coggon D, Falah-Hassani K. 2018).

2.7. Management of Low Back Pain

There is an improvement in acute or sub-chronic low back pain over time irrespective of the treatment. Improvement is often evident within the first month. Avoiding pain-triggering activities and remaining active are highly recommended. Low back pain management depends on the cause prompted by any of the three categories: mechanical, non-mechanical or referred pain. The goals for acute pain-causing mild to moderate problems are to minimize pain and reinstate normal function. Reassurance (a coping skill) speeds recovery. Comprehensive treatment programs may help with the management of sub-chronic or chronic low back pain. Non-medication treatments such as massage, spinal manipulation or superficial heat are recommended as initial management. There is no recommendation of systemic steroids and acetaminophen as both medications are not efficient in the improvement of acute or sub-acute low back pain outcomes. There is valid evidence that patient education may positively effect on low back pain, with 150 minutes of an educational meeting having more effect than regular care offered to help people return to work. The effects were more beneficial for individuals with acute than chronic back pain (Engers A, Jellema P, Wensing M, van der Windt DA, Grol R, van Tulder MW. 2008)

CHAPTER THREE

3. MATERIALS AND SAMPLING METHOD

3.1. The Study Design

The study was carried out by the use of interventional study design; pre-test and post-test with the distribution of brochures and health education lecture to participants between January and August 2020.

3.2. The Study Site and Characteristics

The women who participated in the study were internship students in Turkey which consisted of adult women (sister, aunt or mother) living together at home. Convenient sample selection method was used. In this selected method, the global covid-19 quarantine application has been effective in Turkey. Therefore, data collection and health education were carried out via email during the period.

3.3. Participants and Sampling

In this study, a convenience sampling (also known as availability sampling) technique was used. This is a specific non-probability sampling method that relies on data collected from members of the population that are conveniently available for research participation. The study population were adult women (N=200). The sample size was not calculated because it was aimed to reach the whole population.

3.3.1. Inclusion Criteria

- 18 years and above/under 65 years
- Agreed to participate
- Turkish speaking
- Experienced pain

3.3.2. Exclusion Criteria

- Those that have problems with communication
- Those that have a literacy problem

3.4. DATA COLLECTION

3.4.1. The Study Instrument

The materials used in this study comprises of 5 sections, namely: socio-demographic information (age, gender, years of experience etc), visual analog form, 12-item back pain functional scale questionnaire, 10-item Oswestry disability index questionnaire extracted from (Spine, 2000) and back pain health education intervention.

3.4.2. Visual Analog Scale

The Visual analog scale (VAS) is a scale initially used by Hayes and Patterson in 1921. The basis for scores is measured on self-reported symptoms recorded with a sole handwritten mark sited at a point alongside a 10-cm line which is a representation of range between the two ends of the scale. On the left end of the scale (0 cm) has "no pain" and "worst pain" on the right end (10 cm).

3.4.3. Turkish version The Scale of Oswestry Disability Index

The back pain levels of women were measured with a survey tool. The scale consists of 10-item structured items. Six statements follow each of the topic categories describing various potential cases in the patient's life as regards the topic. The statements were checked by the patient to know the one which corresponds with their situation. A scale of 0-5 is used for scoring having 0 as least disability and 5 as a most severe disability. The index which ranges from 0-100 is obtained by summing up the questions answered and multiplied by two. Zero is considered no disability and 100 as a possible maximum disability. The instrument of the study addresses the aim of the evaluation of knowledge, attitudes of women.

3.4.4. Back Pain Functional Scale

Back Pain Functional Scale (BPFS) is a measure used to assess the functional activity of people affected with back pain. This scale consists of 12 items viz.:

- Usual work, housework, or school activities
- Usual hobbies, recreational, or sporting activities
- Performance of heavy activities around your home
- Bending or stooping
- Putting on your shoes or socks

- Lifting a box of groceries from the floor
- Sleeping
- Standing for 1 hour
- Walking 1 mile
- Going up or down 2 flights of stairs (about 20 steps)
- Sitting for 1 hour
- Driving for 1 hour

A scale of 0-5 is used for scoring having 0 as least disability and 5 as a most severe disability. Total score equals the sum of points from 12 items having 0 as minimum score and 60 as maximum.

3.5. Study Application

This study was carried out within the scope of home-visiting practices of public health nursing students. Due to covid-19 epidemic, the theoretical aspect of this study was done via google meet and the study was conducted in two stages:

a. Health education training was given to students

Students received 2 hours of theoretical training on low back pain on the meaning and applications related to low back pain according to risk factors protection levels. 1 hour of theoretical health education, face-to-face training technique, material preparation and training. The content of prepared material includes an educational brochure which contained a definition, frequency causes, risk factors, contraction, early diagnosis and treatment, and management of low back pain. Meanwhile, the brochure was later converted into a slide.

b. Application made by students

The study population was N = 200 senior nursing faculty students. However, data were obtained from n = 121 individuals from family members who had low back pain problems, met the study criteria and agreed to participate in the study. All participants suffering from low back pain were the students and their very close relatives who participated in the study at their own homes because of quarantine. The questionnaire was queried by students using face-to-face data collection method and individual face-to-face low back training for about 45 minutes. The questionnaire was applied again after 15 days. The benefits of this method of data collection are less financial costs, bias-free and respondents had time to give thoughtful answers.

3.6. Method of Data Analysis

The data used in the analysis and the test of the hypothesis were got from the responses from the participants via google mails after the virtual theoretical training and face-to-face techniques due to the Covid-19 full quarantine lockdown in Turkey at the period of study. The distribution of the socio-demographic characteristics of the research data was analyzed using a frequency counts and descriptive statistics while the relationship between the socio-demographic characteristics, Oswestry Disability Index and Back Pain Functional Scale were analysed using Paired Sample Test and Kruskal Wallis test to determine the extent of the pain severity before and after the training exercise given to the women with the low back pains participants. The results were analysed at a 95% level of confidence which is p-value 0.05 significant level on Statistical Package for Social Science (SPSS) 26.

3.7. Limitations of the Study

The major limitation of this study is confined in geographical as this research is restricted to women who consented to take part in this research. Likewise, the time frame for the period between the pre-test and the post-test is statistically short. This implies that the results in this study cannot be used as a benchmark to determine the effectiveness of health education given to prevent low back pain in women on the exterior of geographical space.

3.8. Research Ethics

Ethical permission was approved by the Ethics Committee of Near East University (YDU/2020/79-1086), institutional permission was granted by Near East University Health Sciences Institutes. Also, the participants completed the informed consent forms after an oral and written explanation of the study aim.

CHAPTER FOUR

4. FINDINGS

Table 4.1. Socio-demographic characteristics of the participants (n = 121)

Characteristics		n	%
Age	<30	25	20.70
	31-40	20	16.50
	41-50	46	38.00
	>50	30	24.80
BMI	Normal	39	32.20
	Overweight	52	43.00
	Obese	30	24.80
Marital Status	Single	21	17.40
	Married	92	76.00
	Divorced	8	6.60
Family Type	Nuclear	92	76.00
	Large	29	24.00
Family Economic Situation	Insufficient without help	23	19.00
	Enough	93	76.90
	Very good	2	4.10
Jobs' money in 6 months	No	78	64.50
	Employed	33	27.20
	Self-employed	10	8.20
General Health Status	Very good	4	3.30
	Good	37	30.60
	Medium	51	42.10
	Not bad	25	20.70
	Bad	4	3.30
Smoking Status	No	94	77.70
	<10 pieces	13	10.70
	>11 pieces	3	2.50
	>1 pack	11	9.10
Hours of sleep on average per day	<6 hrs	22	18.20
	>6 hrs	99	80.90
Regular sport/exercise	No	76	62.80
	<3 times/week	36	29.70
	>3 times/week	9	7.40

Table 4.1 represents the distribution of some social demographic data of all respondents. Participants age shows that majority were between 41-50 years 38% (n = 46) and 20.7% (n = 25) below 30 years. The BMI reveals that the overweight participant has the highest percentage with 43% (n = 52) and 24.8% (n = 30) were obese. On marital

status, majority of the respondents were married with 76% (n = 92) and 6.6% (n = 8) divorced. From the family type groupings, the nuclear group had the highest frequency of 76% (n = 92) while the large group has the lowest frequency of 29% (n = 24.00). In terms of family economic situation, 76.9% (n = 93) had enough, 19% (n= 23) were insufficient without help and 4.1% (n = 2) were very good. For jobs that bring money in 6 months, more than half 64.5% (n = 78) indicated no while 8.2% (n = 10) of the respondents indicated self employed. In general health status, almost half of the group 42.1% (n = 51) had a medium health status, 33.9% (n =41) good and very good while 24% (n = 29) were bad. The smoking status, majority of the respondents were non-smokers 77.7% (n = 94). Hours of sleep on average per day, most of the respondents sleep more than 6 hours 80.9% (n = 99) and 18.2% (n = 22) sleep less than 6 hours. In terms of regular sport/exercise, majority of respondents never exercise 62.8% (n = 76) and very few exercise more than 3 times a week 7.4% (n = 9).

Table 4.2. Characteristics of Participants' Back Pain (n = 121)

Characteristics		n	%
Doctor's diagnosis	No	50	41.30
	Disc shift	14	11.60
	Herniated disc	35	28.90
	Others	22	18.00
Medicine/treatment	No	71	58.70
	Pain relief/cream/Arveles	31	25.60
	Surgical/needle treatment	7	5.80
	Physical therapy/exercise/tape	12	9.90
Work environment on psychology	Stressful	57	47.10
	Comfortable	64	52.90
ition/posture while at work	Sitting	22	18.20
	Standing	54	44.60
	Lifting/handling object	6	5.00
	Others(no work/house chores)	39	32.20
Housework/responsibilities cause LBP	No	53	43.80
	Yes	68	56.20
Hours of sitting and standing on average per day	<8hrs	76	62.80
	>8hrs	45	37.20
Breaks while at work/home	No	13	10.70
	Yes	108	89.40
Suitable materials at home/work	Yes	65	53.70
	No	29	24.00
	Others	27	22.30
Work can cause LBP in daily/business life	No	5	4.00
	Heavy lifting	54	44.60
	Others	62	51.30
Low back pain and bed	Yes	58	47.90
	No	63	52.10
Recent pain	Yes	110	90.90
	No	11	9.10
Onset of pain	<6 months	47	38.80
	>6 months	74	61.10
Best expression of pain	Flammable	14	11.60
	Ache/Pressure	60	49.60
	Deep/Blunt	47	38.90
When pain is most severe	Morning	41	33.90
	Night	80	66.20
Frequency of pain character	Few days a week	50	41.30
	Everyday	71	58.70
	Continuous	57	47.10
	Occasionally	64	52.90
Doctor's visit for pain	Yes	92	76.00
	No	29	24.00
Factors that increase LBP	Overweight/age	5	4.10
	Movements	110	90.18
	Others (inactivity/smoking)	6	4.30
Factors that reduce LBP	Resting/lying down/sitting	60	49.60
	Massage/relaxant/corset	37	30.50
	Attention to posture/execrcise	24	20.70
Back pain relief activities	Massage/ointment/hot shower	65	53.70
	Resting/ergonomic bed	48	39.70
	Exercise/swimming/attention	8	6.60

Table 4.2 shows the distribution of low back pain patterns in participants. In terms of Doctor's diagnosis, almost half of the group 41.3% (n = 50) had no diagnosis and others with 18% (n = 22).

In medicine/treatment category, majority 58.7% (n = 71) received no treatment/medication while a few 5.8% (n = 7) underwent surgical/needle treatment. Based on the effect of work environment on psychology, 52.9% (n = 64) of the respondents were comfortable while 47.1% (n = 57) specified stressful. In terms of posture while at work, most of the respondents 44.6% (n = 54) stands. Engaging in housework/responsibilities causing low back pain, 56.2% (n = 68) specified yes and 43.8% (n = 53) indicated no. Regarding the hours that respondents sit or stand on average per day 62.8% (n = 76) shows less than 8hours while 37.2% (n = 45) indicated more than 8hours.

Taking breaks while at work/home, nearly all respondents observe breaks 89.4% (n = 108). In the suitable materials at home/work, majority of the respondents said yes with 53.7% (n = 65). Just half of the respondents 51.3% (n= 62 indicated other factors causing LBP in daily/business life. Low back pain in bed, 47.9% (n = 58) responded yes and 52.1% (n = 63) no. In respect to recent pain, majority indicated yes 90.9% (n = 110). A higher number of respondents 61.1% (n = 74) experienced onset of pain more than 6 months ago. Best expression of pain, about half of respondents indicated ache/pressure 49.6% (n = 60). Similarly, majority experienced severe pain at nights 66.2% (n = 80. Frequency of pain was highest everyday 58.7% (n = 71). A larger number visited doctor for pain 76% (n = 92). In the category of factors that increase LBP, 90.18% (n = 110) movements was highest. Resting/ lying down and sitting are factors that majorly reduced LBP 49.6% (n = 60). In terms of back pain relief activities, majority indicated massage/ointments and hot shower 53.7% (n = 65).

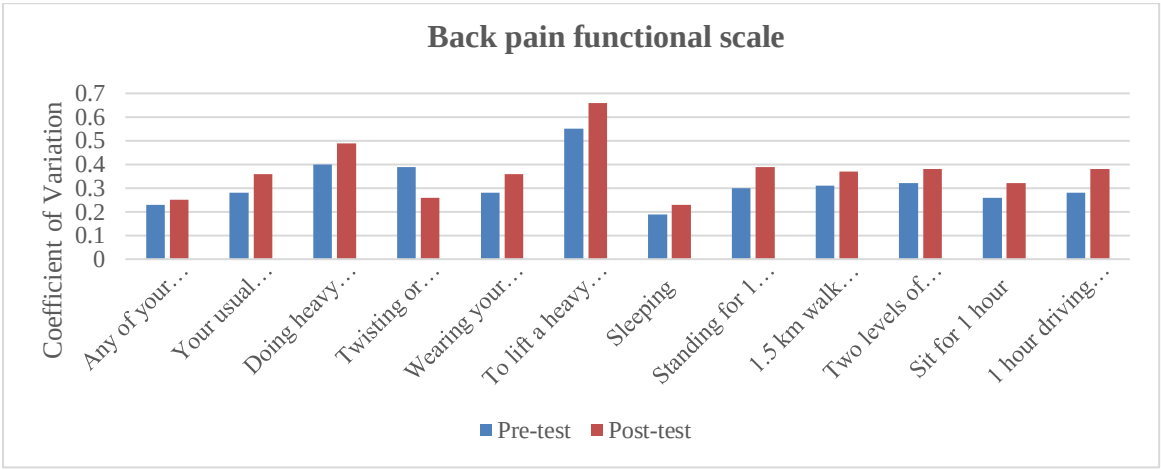


Figure 4.1. Back Pain Functional Scale

Table 4.3. Oswestry Disability Index Scale pre-test and post-test (n = 121)

Characteristics	**Pre-test**	**Post-test**	**t**	**p**
	Mean±SD	**Mean±SD**		
Pain intensity	3.40±1.28	2.62±1.37	6.081	0.001
Personal precautions	2.38±1.10	2.07±1.06	3.935	0.001
Lifting	2.91±1.36	2.88±1.46	0.197	0.844
Walking	2.67±1.40	2.21±1.20	4.614	0.001
Sitting	2.66±1.02	2.31±1.04	3.731	0.001
Standing	2.93±1.22	2.42±1.08	4.651	0.001
Sleeping	2.28±1.07	1.93±0.89	4.113	0.001
Social life	2.12±1.25	1.81±1.11	3.746	0.001
Travel	2.63±0.96	2.29±1.00	4.426	0.001
Degree of pain	3.45±1.05	2.71±1.21	6.853	0.001
TOTAL SCORE	27.43±11.71	23.25±11.42	42.347	0.844

Table 4.3 shows the distribution of Oswestry Disability Index Scale scores before and after "health education" related to prevention of low back pain. Pain intensity score pre-test and post-test was 3.40±1.28 and 2.62±1.37 respectively; ($t = 6.081$, $p = 0.000$). Personal precaution pre-test score was 2.38±1.10 and 2.07±1.06 post-test; ($t = 3.935$, $p = 0.000$). Lifting pre-test and post-test scores were 2.91±1.36 and 2.88±1.46 respectively; ($t = 0.197$. $p = 0.844$). Walking scores were 2.67±1.40 and 2.21±1.20; ($t = 4.614$, $p = 0.000$). Sitting scores were 2.66±1.02 and 2.31±1.04; ($t = 3.731$, $p = 0.000$). Standing 2.93±1.22 and 2.42±1.08; ($t = 4.651$, $p = 0.000$). Sleeping 2.28±1.07 and 1.93±0.89; ($t = 4.113$, $p = 0.000$). Social life 2.12±1.25 and 1.81±1.11; ($t = 3.746$, $p = 0.000$). Travel 2.63 ±0.96 and 2.29±1.00; ($t = 4.426$, $p = 0.000$). Degree of pain 3.45±1.05 and 2.71±1.21; ($t = 6.853$, $p = 0.000$). While the total Oswestry Disability Index scale scores pre-test (27.43±11.71) and post-test (23.25±11.42); ($t = 42.347$, $p = 0.844$), there was a decrease in all sub-scale scores after health education. The highest mean score difference was seen in pain intensity (0.78) sub-scale, lowest mean score difference in lifting sub-scale (0.03) and (4.18) as total mean score difference. Statistical significance was found in all sub-scale mean scores except lifting ($p > 0.05$).

Table 4.4. Back Pain Functional Scale pre-test and post-test (n = 121)

Characteristics	Pre-test	Post-test	t	p
	Mean±SD	Mean±SD		
Usual work, housework or school activities	3.60±0.83	3.23±0.81	4.825	0.001
Your usual hobbies, entertainment or sports events	3.74±1.03	3.17±1.14	6.179	0.001
Doing heavy work in the home	2.89±1.16	2.40±1.17	5.318	0.001
Twisting or bending	3.10±1.20	2.45±1.16	7.521	0.001
Wearing your shoes or socks (stockings)	3.85±1.08	3.41±1.24	5.181	0.001
To lift a heavy box from the ground	2.49±1.36	1.80±1.18	6.984	0.001
Sleeping	4.35±0.82	4.05±0.93	4.437	0.001
Standing for 1 hour	3.62±1.09	3.01±1.16	6.445	0.001
1.5 km walk (about 10-15 minutes' walk)	3.81±1.18	3.40±1.26	4.759	0.001
Two levels of stairs climbing up or down (about 20 steps)	3.49±1.12	3.02±1.16	5.913	0.001
Sit for 1 hour	4.08±1.07	3.61±1.15	5.730	0.001
1-hour driving or traveling.	3.83±1.06	3.21±1.22	6.437	0.001
TOTAL SCORE	**42.85±13.00**	**36.76±13.58**	**69.729**	0.001

Table 4.4 indicates a Paired-Sample T-test to compare the back pain functional scale before and after the training exercise period to know the significant level of the low back pains conditions. The data were analyzed at a 95% level of confidence which implies 0.05 level of significance. Work activities score pre-test and post-test was 3.60±0.83 and 3.23±0.81 respectively; (t = 4.825, p 0.001). Events pre-test score was 3.74±1.03 and 3.17±1.14 post-test; (t = 6.179, p = 0.001). Heavy work pre-test and post-test scores were 2.89±1.16 and 2.40±1.17 respectively; (t = 5.318, p = 0.001). Twisting or bending scores were 3.10±1.20 and 2.45±1.16; (t = 7.521, p = 0.001). Wearing shoes scores were 3.85±1.08 and 3.41±1.24; (t = 5.181, p = 0.001).

Lifting heavy box from the ground 2.49±1.36 and 1.80±1.18; (t = 6.984, p = 0.001). Sleeping 4.35±0.82 and 4.05±0.93; (t = 4.437, p =0.001). Standing for 1 hour 3.62±1.09

and 3.01±1.16; (t = 6.445, p = 0.001). 1.5km walk 3.81±1.18 and 3.40±1.26; (t = 4.759, p = 0.001). Two levels of stairs climbing 3.49±1.12 and 3.02±1.16; (t = 5.913, p = 0.001). Sit for 1 hour 4.08±1.07 and 3.61±1.15; (t = 5.730, p = 0.001). 1 hour driving or travelling 3.83 ±1.06 and 3.21±1.22; (t = 6.437, p = 0.001). While the total Back Pain Functional Scale scores pre-test (42.85±13.00) and post-test (36.76±13.58); (t = 69.729, p 0.001), there was a decrease in all sub-scale scores after health education. The highest mean score difference was seen in lifting heavy box from ground (0.69) sub-scale, lowest mean score difference in sleeping sub-scale (0.30) and (6.09) as total mean score difference. Convincingly, the table depicts a reduction in all the back pain functional scale items. However, it can be deduced from the mean differences that the training has a statistical significant impact on the women suffering from low back pains.

Table 4.5. Distribution of participants severity of pain at rest and work (n = 121)

Characteristics	**Pre-test**	**Post-test**	**d**	**t**	**p**
	Mean±SD	**Mean±SD**			
Severity of pain at rest	2.06±1.17	1.41±1.01	0.65	7.416	0.001
Severity of pain at work	3.42±1.05	2.64±1.16	0.78	7.164	0.001

Table 4.5 represents the distribution of participant's severity of pain at rest and work mean scores. Severity of pain at rest, pre-test 2.06±1.17 and post-test 1.41±1.01; (t = 7.416, p = 0.001). Severity of pain at work, pre-test 3.42±1.05 and post-test 2.64±1.16; (t = 7.164, p = 0.001). It implies that pain is less at rest. After the health education intervention, the mean score for severity of pain level at rest and work decreased with mean differences of 0.65 and 0.78 respectively.

Table 4.6. Back Pain Functional Scale total score (n = 121)

Characteristics	Pre-test	Post-test	d	t	P
	Mean±SD	Mean±SD			
Back Pain Functional Scale total score	42.85±13.00	36.76±13.58	6.09	69.729	0.001

Table 4.6 shows the distribution of Back Pain Functional Scale total score before and after health education in the prevention of low back pain. Pre-test mean score 42.85±13.00 and post-test 36.76±13.58; (t = 69.729, p = 0.000). At the end of the intervention period, there was a difference in the severity of back pain functional scale pain level by a score of 6.09 point.

Table 4.7. Comparison of severity of pain at rest, severity of pain at work and Oswestry Disability Index scale (n = 121)

Characteristics	Oswestry Disability Index pre-test			Oswestry Disability Index post-test		
	Mean±SD	Mean±SD	t /p	Mean±SD	Mean±SD	p /t
Severity of pain at rest	2.06±1.17	27.43±11.71	**-40.393 0.001**	1.41±1.01	23.25±11.42	0.001 -33.568
Severity of pain at work	3.42±1.05		**0.001 -38.392**	2.64±1.16		0.001 -2.324

Table 4.7 shows the comparison of severity of pain at rest, work and Oswestry Disability Index scale. Before health education, the mean score for severity of pain at rest was 2.06±1.17, 27.43±11.71; (t = -40.393, p = 0.000), severity of pain at work 3.42±1.05, 27.43±11.71; (t = -38.392, p = 0.000). After health education, the mean score for severity of pain at rest 1.41±1.01, 23.25±11.42; (t = -33.568, p = 0.000), severity of pain at work 2.64±1.16, 23.25±11.42; (t = -32.324, p = 0.000). There was a decrease in severity of pain at the end of intervention period. This depicts a statistical significance with $p<0.05$.

Table 4.8. Comparison of severity of pain at rest, severity of pain at work and Back Pain Functional Scale (n = 121)

Characteristics	Back Pain Functional Scale pre-test				Back Pain Functional Scale post-test	
	Mean±SD	Mean±SD	t	p	Mean±SD	t
Severity of pain at rest	2.06±1.17	42.85±13.00	-48.164 0.001	1.41±1.01	36.76±13.58	-43.314 0.001
Severity of pain at work	3.42±1.05		-46.179 0.001	2.64±1.16		-41.530 0.001

Table 4.8 shows the comparison of severity of pain at rest, work and Back Pain Functional Scale. Before health education, the mean score for severity of pain at rest was 2.06±1.17, 42.85±13.00; (t = -48.164, p = 0.000), severity of pain at work 3.42±1.05, 42.85±13.00; (t = -46.179, p = 0.000). After health education, the mean score for severity of pain at rest 1.41±1.01, 36.76±13.58; (t = -43.314, p = 0.000), severity of pain at work 2.64±1.16, 2.64±1.16; (t = -41.530, p = 0.000). There was a decrease in severity of pain at the end of intervention period. This depicts a statistical significance with $p<0.05$.

Table 4.9. Comparison of Oswestry Disability Index scale score and Back Pain Functional Scale score (n = 121)

Characteristics	Oswestry Disability Index total score pre-test			Oswestry Disability Index total score post-test		
	Mean±SD	Mean±SD	t/p	Mean±SD	Mean±SD	t/p
Back Pain Functional Scale total score	42.85±13.00	27.43±11.71	-2.093 0.001	36.76±13.58	23.25±11.42	-10.636 0.001

Table 4.9 shows the comparison of Oswestry Disability Index scale and Back Pain Functional Scale scores. In pre-test period, the mean score were 42.85±13.00 and 27.43±11.71; (t = -12.093, p = 0.001), post-test period, mean scores were 36.76±13.58 and 23.25±11.42; (t = -10.636, p = 0.001). There was a decrease in the pain levels of both scales after health education. This depicts a statistical difference of $p<0.05$.

CHAPTER FIVE

5. DISCUSSION

5.1. Findings from the Socio-Demographic Distributions of the Respondents

Low back pain is defined as uneasiness and pain, found below the rib and above the buttock, with or without causing leg pain. It is experienced in the posterior area beneath the costal margin and over the buttocks curve and which can extend to the legs (Nabiyev, Ayhan & Acaroglu, 2015). Low back pain is common in the general population as a global social and economical problem (Bos, Krol, van der Star & Groothoff, 2007). It is most frequent among women than men and increases with age. Low back pain does affect 45-55 years age range and mostly prevalent among female health personnel which can be accredited to prolonged standing at work (Whelan et al., 2005). The fluctuation of the menstrual cycle in young adult, pregnancy, childbirth and nurturing stress and abdominal weight gain can be responsible for low back pain in women (Bailey A. 2009). Also, age and obesity can be a significant factor in low back pain (Ercalik, C. and Tincer, T. 2011). The sign of overweight/obesity includes a high Body Mass Index (BMI). Musculoskeletal pain is linked with obesity, although with limited information about the factors responsible for this (Mendonca, C. R., & Noll, M., 2020). Obesity is a complex body disorder which is defined as an extreme build-up of fat in the body adipose tissue. It has been accepted as an obstacle to pain management concerning back and neck pain (Okufuji & Hare, 2015). According to the National Health Service (NHS), Body Mass Index is a measure of body fat for adult and children regarding their weight with height. Since overweight/obesity is a risk factor of pain and concurrently reduce the quality of life. Hence, a higher BMI is obesity and a prominent independent risk factor for future back pain and life (Kocyigit, B. F. & Okyay, R. O. 2018). There is a need to determine more factors responsible or related to low back pain among Turkish women because until now, there are very few studies about it. Hence, this study was designed to assess the relationship between the socio-demographic and the low back pain among Turkish women.

This study reveals majority of the participants were between the ages 41-50, overweight, married and had no job that generates income in 6 months. Hence, having an understanding of back pain is important to its mitigation through exercise, because therapy can proof hard when the cause is unknown (McGill, S. 2011). More so, exercise

with a healthy lifestyle can control the BMI so that the individual will be living a healthy life. Therefore, low back pain treatment should include exercise and weight loss programs (Nabiyev, Ayhan & Acaroglu, 2015). According to this study, it was revealed that 62.80% of participants never exercised, 29.70% less than 3 times a week and 7.40% more than 3 times a week. This simply means lack of exercise contributed more to LBP.

Evidence from a research in the United States has it that LBP is linked with a significant decrease in functioning and quality of life, societal costs, healthcare resource-use and a surge in work-related impairment (Sadosky AB, Taylor-Stokes G, Lobosco S, Pike J, Ross E., 2013; McDonald M, DiBonaventura Md, Ullman S., 2011). This study shows that the general health status of participants moderate 42.10%, 33.90% good/very good, and 24% bad.

Most literature was not concerned about the impact of family type, economic status and hours of sleep on average. The participants family type revealed that majority of the respondents had a nuclear family, enough family economic status and sleeps for more than 6 hours on average per day.

Previous reports have it that prevalence of LBP is greater in smokers than non-smokers and former smokers. However, there is a varying in prevalence data of countries (Shiri R, Karppinen J, Leino-Arjas P, Solovieva S, Viikari-Juntura E., 2010), a marginal increase in risk for LBP in smokers (Deyo RA, Bass JE., 1989) and a greater risk of LBP among adult smokers in the US (Strine TW, Hootman JM., 2007). Participants smoking status reveals that 77.70% were non-smokers 77.70%.

5.2. Findings from Characteristics of Participants' Back Pain

Diagnosing LBP is crucial, however strenuous for primary care physician. Back pain diagnosis is often related to musculoskeletal system. Pain may occur as a result of spinal nerve roots irritation, abdominal muscle weakness and imbalanced facet joints. The clinical symptoms of LBP comprises of lumber pain, restricting the movements and identifying stiffness of the lumbar spine (Hoppenfeld. S., 1987). This study reveals that majority of participants 41.3% had no medical diagnosis.

Before prescribing pharmacological treatment, it is recommended for general practitioners to evaluate patient, assess pain, impairment of the body system and analyze risks/benefits of every therapy (Lee TJ., 2010). Several drugs are involved in the treatment of chronic LBP. Pain killers, muscle relaxants, antidepressants and non-steroid anti-

inflammatory drugs (NSAIDs) are commonly prescribed for chronic low back pain (Miller SM., 2012). In this study, most of the participants 58.7% suffering low back pain didn't undergo any medical treatment.

For several years, identifying the association of emergence of work organizational characteristics and psychosocial risk factors with low back pain including job insecurity (Lau B, Knardahl S., 2008; Vie TL, Glaso L, Einarsen S., 2012), hostile work environment (Sabbath EL, Hurtado DA, Okechukwu CA, et al., 2014), occupational-family conflict (Haemmig O, Knecht M, Laeubli T, Bauer GF., 2011), prolonged work hours and obligatory extended work hours (Trinkoff AM, Le R, Geiger-Brown J, Lipscomb J, Lang G., 2006; Dong XW., 2005; Dembe AE, Erickson JB, Delbos RG, Banks SM., 2005). According to two studies carried out on the US working population, an association between a set of psychosocial variables (e.g., obligatory additional hours of work and job satisfaction) and LBP was identified (Waters TR, Dick RB, Davis-Barkley J, Krieg EF., 2007; Waters TR, Dick RB, Krieg EF., 2011). This study shows that majority of the participants 52.9% were comfortable with the impact of work environment on their psychology.

An improper body posture poses a strain on the spine thereby causing a weakening on lower back tissues. Consequently, discs, back joints and muscles get overworked and experience a severe pain (Meziat Filho N, Coutinho ES, Azevedo e Silva G., 2014; Cramer H, Mehling WE, Saha FJ, Dobos G, Lauche R., 2018; Wong KC, Lee RY, Yeung SS., 2009). Furthermore, a sudden injury developed from inappropriate lifting of heavy objects can result to sudden dysfunction and pain in the back. It was disclosed by majority of participants 44.6% stands more while at work and 62.8% sits and stands on average of less than 8 hours per day.

A musculoskeletal disorder (MSDs) is defined as disabilities of the body structures such as nerves, ligaments and blood circulation system. House-chores are physically strenuous which involves working in improper positions (such as cleaning titles, lifting mattresses) and vigorous movements (Liladrie S., 2010; Lasrado OE, Møllerløkken OJ, Moen BE, Van den Bergh G., 2017). This makes it evident that many types of injury can be attributed to house-chores tasks (Liladrie S., 2010; Lasrado OE, Møllerløkken OJ, Moen BE, Van den Bergh G., 2017; Parmar S, Dalal P., 2017). In this study, a higher number of

participants 56.2% affirmed house-chores causing low back pain and 51.3% of participants indicated that work can cause LBP in daily/business life.

Occupational LBP is in connection with vulnerability to ergonomic strain at work, psychosocial and environmental factors (Delleman N, Dul J., 2007). A variety of factors responsible for LBP were reported in several studies which are; imbalanced posture, job dissatisfaction (Zahid H, Khalid F, Ahmed U, Ahmed A, Gillani SA, Hanif MK., 2017), monotonous movement (European Agency for Safety and Health at Work., 2018), heavy lifting (Gawde NC., 2018) and bed-making (Parmar S, Dalal P., 2017). This study reveals that 90.18% movements as a factor contributes to a surge in low back pain, 89.4% takes break while at work, 53.7% mentioned having suitable materials at home/work and 52.1% revealed that bed doesn't cause LBP.

Low back pain associated referred pain may differ in terms of quality and severity; it may be dull, nomadic or achy. LBP is the major leading reason for restriction of activities in patients below the age of 45. It is also the second major reason for regular visit to doctors and third reason for surgery (Wildstein MS, Carragee EJ., 2008). Low back pain is mostly experienced by women, increases with age and decreases between 60-65 years (Hoy D, Brooks P, Blyth F, et al., 2010). The chronic level and duration of low back pain is slightly debatable. Nevertheless, research has it that pain and functional greatly improve mostly within 4 weeks (Pengel LH, Herbert RD, Maher GC, et al., 2003) and many individuals gets better in 2 months (Isaac Z, Katz J, Borenstein DG., 2010). These individuals are however prone to a brief fallback in the future. Although, the rest of the patients who experience chronic low back pain are responsible for monetary expenses associated with low back pain. This study reveals that more than half 76% of participants visited doctor for pain, about three-quarter 90.9% recently experienced pain, 61.1% recorded onset of pain as more than 6 months ago, 52.9% occasionally feel pain in terms of frequency. No literature reports on best expression of pain and time of the day when pain is severe. However, most participants 49.6% indicated pain expression as ache/pressure and 66.2% experience severe pain at night.

Patients with non-specific chronic low back pain are advised to remain physically active (Bekkering, G.E.; Hendriks, H.J.; Koes, B.W.; Oostendorp, R.A.; Ostelo, R.W.; Thomassen, J.M.; van Tulder, M.W., 2003; National Health Service (NHS)., 2014). Various forms of exercise have been found to treat chronic LBP inclusive of low-to-

moderate strength of aerobic exercise (Chan, C.W.; Mok, N.W.; Yeung, E.W., 2011; Shnayderman, I.; Katz-Leurer, M., 2013) and flexible programmes (25-27). Physical activity helps patients with chronic LBP to complete daily tasks (Smeets, R.; Severens, J.L.; Beelen, S.; Vlaeyen, J.W.; Knottnerus, J.A., 2009). Nevertheless, effectiveness of several exercises reduces low back pain (Smith, D.; Bissell, G.; Bruce-Low, S.; Wakefield, C., 2011). Additionally, inadequate or excessive physical activity may be related to low back pain (Wai, E.K.; Rodriguez, S.; Dagenais, S.; Hall, H., 2008). This study shows that massage/ointment/hot shower were the major relief activities of participants' back pain 53.7%; 49.6% indicated resting/lying down/sitting as factors that reduces LBP.

5.3. Findings from the distribution of participants' Low Back Pain according to Oswestry Disability Index scale

The Oswestry Disability Index (ODI) got its derivation from Oswestry LBP Questionnaire used by researchers and clinicians for the quantification of low back pain disability (Fairbank JC, Pynsent PB., 2000). This study reveals a decline in all sub-scale scores (pain intensity, personal precaution, lifting, walking, sitting, standing, sleeping, social life, travel, degree of pain) after health education with a mean score difference of 4.18. It implies that health education was highly effective as all sub-scale mean scores were statisfically significant except lifting ($p>0.05$).

5.4. Findings from the distribution of participants' Low Back Pain according to Back Pain Functional scale.

The Back Pain Functional Scale (BPFS) established by Stratford et al. (2000) is subjectively used in the measurement of the physical function of patients after LBP with an overall score of 60. Furthermore, the score can be calculated on Likert scale (0 to 5). Additionally, the highest score derived indicates maximum level of patients' physical disabilities. An 'adjusted score' with a range from 0 (0%) – inability to carry out any activity to 60 (100%) – no difficulty (Stratford, P. W. and Binkley, J. M., 2000).

The original scale (BPFS) was compared with this study; the minimum score in this study was 1 and maximum of 60. Hence, it implies that the instrument used is proven valid and reliable. Paired sample t-test was used in comparison of scale questions (pretest and posttest). Convincingly, the result depicts a reduction in all the back pain functional scale items after exercise.

5.5. Findings from distribution of participants' severity of pain at rest and work

Specific activities or positions may trigger pain such as climbing stairs, lying on the area affected or switching position from standing to sitting (Raj MA, Varacallo M., 2019). From this study, the mean difference of severity of pain at rest and work were 0.65 and 0.78 respectively before and after intervention period. This simply means pain is less severe while at rest.

5.6. Findings from Back Pain Functional Scale total score

The Back Pain Functional Scale (BPFS) established by Stratford et al. (2000) is subjectively used in the measurement of the physical function of patients. According to Stratford et al. (2000), 22.2% is the minimal detectable change with 6.5% as measure of standard error at a confidence interval of 95%. This scale can be clinically used after LBP in the measurement of functional outcome of patients (Stratford, P. W. and Binkley, J. M. 2000). From this study, a decline in all sub-scale pain levels after health education except twisting and bending. However, there was a mean difference of 6.09. This implies that back pain functional scale is outstandingly reliable in measuring low back pain.

5.7. Findings from comparison of severity of pain at rest, severity of pain at work and Oswestry Disability Index scale

Low back pain intensity assessment is usually carried out by a visual analog scale (VAS) or a disability scoring system like Oswestry Disability Index (ODI). Nevertheless, evaluation of low back pain characteristics is not fully established by rating systems. Previous research proposed LBP variation in different conditions (P. O'Sullivan, 2005; W. Dankaerts, P. B. O'Sullivan, L. M. Straker, A. F. Burnett, and J. S. Skouen, 2006). For example, an individual may experience pain in motion but not in standing while some after prolonged standing but not in motion. This study shows that severity of pain was higher while at work. This implies that exercise practice and health education given to participants were highly beneficial ($p<0.05$).

5.8. Findings from comparison of severity of pain at rest, severity of pain at work and Back Pain Functional Scale

Low back pain has a substantial impact on social, psychological and physical health of individuals (J. Hartvigsen et al., 2018; J. Fairbank, J. Couper, J. Davies, and J. O'brien, 1980). Several studies have shown the relationship diability and psychology of pain on individuals with LBP. Pain behaviour assessment may help in the predictions of LBP

severity by healthcare personnel (G. Desai, S. Chaturvedi, and L. Krishnaswamy, 2014; S. Yadav, G. Desai, and S. K. Chaturvedi, 2017) and in the initiation of conversation between patient and medical practitioner as regards effects of beliefs, feelings, physical parameters and thoughts on observed attitudes. This study shows that severity of pain was highest while at work with a mean difference (1.23). This findings clearly support the idea that low back pain is experienced more while at work but less at rest.

5.9. Findings from comparison of Oswestry Disability Index scale score and Back Pain Functional Scale score

The BPFS is a suitable and reliable tool in assessing patients with low back pain. It has internal consistency, re-test reliability and susceptible in change (Straford, P. W. & Binkley, J. M., 2000). Although despite ODI limitation of insufficiency in indicating disability level, it is a valid, reliable and most frequently used scale for LBP (Yakut, E. et. al., 2004). A previous study showed that BPFS is more successful in detecting LBP patients with less than 2 weeks duration clinical changes. Hence, to compensate for the existing scales deficiencies, Stratford developed a reliable and valid 12 questions that are easy to personally administer within 5 minutes interval and 30 minutes score for patients with LBP (Straford, & Binkley, 2000).

From this study, there is a statistical mean difference of 4.18 and 6.09 for ODI and BPFS respectively before and after the training exercise $p = 0.000$ which is less than the critical value $p<0.05$ (Table 5). This suggests a relationship between the ODI and BPFS which is an agreement with the literature of Koç, M. et. al. (2018) and Maras, G. et. al. (2019) that found out in their investigations that BPFS has a significant correlation with ODI functional measures.

Conclusively, it could, however, be inferred with the training put in place, there is a likelihood of large statistical mean difference if the period is wide.

CHAPTER SIX

6. CONCLUSION AND RECOMMENDATION

Here the study is concluded and recommendation is suggested for future further study.

6.1. Conclusion

This study has considered the importance of exercise through education to pain lessening in women although it can be deduced from the findings of this study that there are a lot of factors responsible for back pain in women. These factors include prolonged standing, weight gain during pregnancy, stress, poor posture, smoking, occupational risk factors (such as being a female healthcare personnel), disc degeneration, spine infection, osteoporosis, ovarian cyst and cancer and lots more. But in all, if women can cultivate continuous or regular exercise habit into their lifestyle regardless of having pains or not, the level of pains suffering will be minimized if not eradicated. For the older women, it could be deduced that the significant reduction in pains intensity could be attributable to their judicious implementation of the training exercise and while the young women are still actively engaged. In other words, active involvement in regular physical activities keeps the body fit. Therefore, engaging people in exercise could be of great help.

Also, the data collection method has proven to be financially effective, bias-free and respondents had time to give thoughtful answers which are of great benefits to the researcher. Even though a longer period of exercise between the training and pain assessment would be beneficial to this kind of a study for robust outcomes, but the training exercise could be seen to have a significant impact on the pain severity (Table 4.5). It can then be concluded that there is an inverse correlation between the training and the severity of the pain.

6.2. Recommendation

This study has been limited in scope to the Near East University Public Health students and their relatives. However, among other workers in other schools or organizations could have different observations for the effectiveness of health education given to prevent back pain in women: pre-test and post-test study. Hence, this should cut across different geographical zones. More so, this study has a great limitation of no sufficient recent resources in terms of outcomes. The available kinds of literature did not show major statistical result that can be compared with this study. In other words, there were no previous studies that show much in-depth in terms of statistical analysis. In the same way, widen time frame between the pre-test and post-test to a period of three months, persuasion on the individual exercise participation should be expatiated and this calls for a need for further study to be conducted.

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APPENDICES

APPENDIX A: Kadın Kimlik Formu

Aşağıdaki sorular, bel ağrısının değerlendirilmesi için hazırlanmıştır. Yanıtların doğru olması bel/sırt ağrısının yönetimi ve önlenmesi için önemli bilgiler sağlayacaktır. Cevaplarınız gizli tutulacak.

I. KİŞİSEL ÖZELLİKLER (Formu 1)
Adınız soyadınız.
1. Doğum tarihiniz (yıl):
2. Boyunuz:
3. Kilonuz:
4. Medeni durum: □ Bekar □ Evli □ Boşanmış
5. Aile tipinizi işaretleyiniz: □ Çekirdek aile □ Geniş aile □ Diğer…….
6. Ailenizin aylık gelirine göre şu anki ekonomik durumunuzu nasıl tanımlarsınız? □ Yetersiz ama yardımsız geçinebiliyoruz □ Yeterli □ Gelir durumumuz çok iyi □ Diğer……
7. Şu anki genel sağlık durumunuzu hangi ifade ile tanımlarsınız? □ Çok iyi □ İyi □ Orta □ Fena değil □ Kötü
8. Sigara kullanma durumunuzu belirtiniz: □ Sigara kullanmıyorum □ Kullanıyorum (ne kadar?…… Paket/gün……)
9. Kas iskelet sisteminizle ilgili doktorunuzun koyduğu tanı/teşhis (bel fıtığı-disk kayması) varmı? □ Evet (açıklayınız) □ Hayır
10. Bunun için herhangi bir ilaç/tedavi kullanıyor musunuz? □ Evet (açıklayınız) □ Hayır
11. Herhangi bir dalda düzenli spor/egzersiz yaparmısınız? □ Hayır

□ Evet, açıklayınız

12. Şon altı ayda para getiren bir işte calısıyor musunuz?
□ Hayır (**16. soruya geçin**)
□ Evet, açıklayınız (göreviniz nedir ? yıldır.

13. Mevcut iş ortamınızın psikololojiniz üzerindeki etkisini nasıl tanımlarsınız?
□ Stresli,yogun ve yorucu
□ Stresli ama sevdiğim bir iş etkilemiyor
□ Rahat
□ Diğer:

14. İste çoğunlukla nasıl çalışıyorsunuz?
□ Oturarak
□ Ayakta
□ Ağır kaldırarak
□ Malzeme tasıma
□ Diğer:

15. Ev işleri/sorumluluklarınızın bel ağrınıza neden olacağını düşünüyormusunuz
□ Evet
□ Hayır

16. Günde ortalama kaç saat oturuyorsunuz?
Günde ortalama kaç saat ayakta kalıyorsunuz?

17. Evde yada işte çalışırken dinlenme molaları verir misiniz?
□ Evet kaç kere …….. ne kadar sure ……
□ Hayır

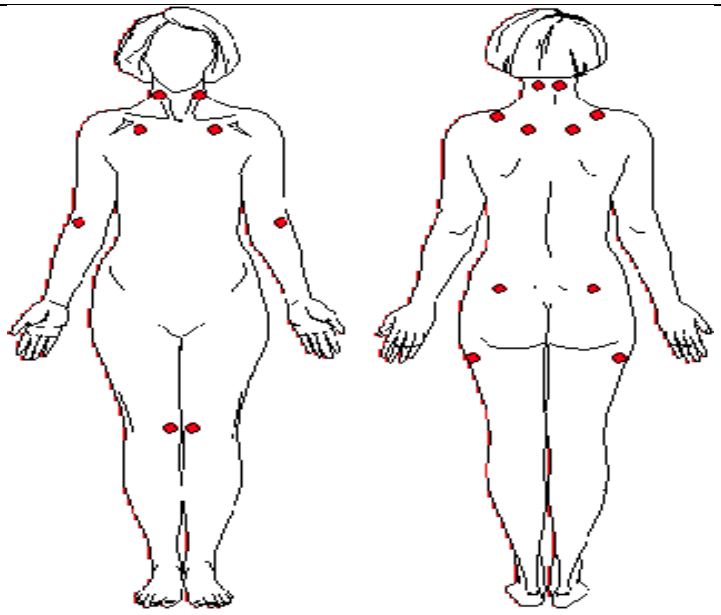
18. Evde/iş yerinde kullandığınız malzemeler (masa, bilgisayar, sandalye vb.) beden yapınıza uygun/ergonomik mi?
□ Evet
□ Hayır (Açıklayınız Birden fazla işaretleyebilirsiniz)
Örneğin bilgisayar baş-göz hizamda değil (aşağıda/yukarıda), sandalyem belimi ağrıtıyor)
Açıklayın…… …….

19. Günlük ve iş yaşamınızda belinizin/ sırtınızın ağrısımasına neden olabilecek işlerden hangilerini yapıyor sunuz? (birden çok işaretlenebilir)
□ Hayır hiçbirini yapmıyorum
□ Ağır eşya kaldırma, taşıma,
□ Bağ - bahçe tarla işleri
□ Ev temizliği, pencere, yer slime vs.
□ Engelli, hasta, yatalak, yaşlı bakımı
□ Masa başında uzun süre oturmak/ büro, bankada çalışmak
□ Ayakta uzun süre kalmayı gerektiren iş yapma (tezgahtarlık, garsonluk vs)
□ Diğer: ……..

20. Günde ortalama kaç saat uyuyorsunuz?

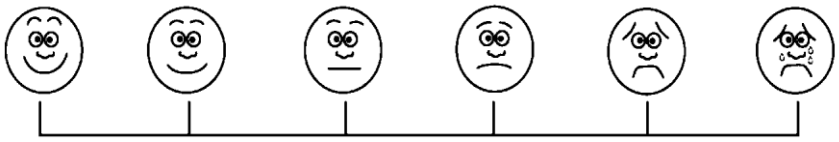
21. Yatagınızın bel ağrınıza neden olabileceğini düsünüyor musunuz?
□ Evet
□ Hayır

II. BEL AĞRISI DEĞERLENDİRME FORMU (Formu 2)
22. Son zamanlarda ağrınız oldu mu? □ Evet □ Hayır
23. Ağrınız ne kadar süre önce başladı süresi:
24. Ağrınızı hangisi <u>en iyi ifade eder</u>? □ Yanıcı □ Batıcı □ Künt □ Sızı □ Baskı □ Diğer
25. Lütfen ağrınızın en şiddetli olduğu zamanı belirtiniz. □ Sabahları □ Gün Ortası □ Gün Sonu □ Geceleri
26. Lütfen ağrınızın sıklığını belirtin. : □ haftada bir kac gün □ her gün □ günde bir kac kere □ bütün gün olur
27. Ağrının karekteri: □ Devamlı □ Sık Sık □ Ara sıra □ Nadiren
28. Ağrı için hiç doktora gittiniz mi? □ Evet □ Hayır
29. Bel ağrınızı artıran etkenler nelerdir?
30. Bel ağrınızı azaltan etkenler nelerdir? **……** **……** **……** **……**
31. Bel ağrınızı rahatlatmak/dindirmek için ne yaparsınız? **……** **……** **……** **……**
32. Ağrınızı nerede hissettiğinizi aşağıdaki şekil üzerinde işaterleyiniz birden fazla ve farklı yer



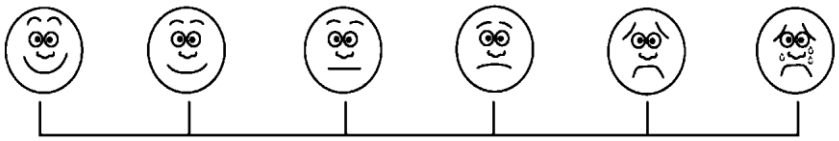
işaretleyebilirsiniz.

33. Dinlenme sırasındaki ağrınızın şiddetini aşağıdaki doğru üzerinde işaretleyiniz.



AĞRIM YOK **AĞRIM ÇOK ŞİDDETLİ**

34. Herhangibir iş yaptığınız sırada ağrınızın şiddetini aşağıdaki doğru üzerinde işaretleyiniz.



AĞRIM YOK **AĞRIM ÇOK ŞİDDETLİ**

III. OSWESTRY BEL AĞRISI SORGULAMA FORMU (Formu 3)

Aşağıdaki ifadelerden bel ağrınızla ilgili olarak şu an ki durumunuzu en iyi tanımlayan ifadeyi "x" ile işaretleyiniz.

Ağrı şiddeti

- ☐ Ağrım çok hafiftir, gelir gider.
- ☐ Ağrım hafiftir, genellikle değişmez.
- ☐ Ağrım orta şiddetlidir, gelir gider.
- ☐ Ağrım orta şiddetlidir, genellikle değişmez.
- ☐ Ağrım şiddetlidir, gelir gider.
- ☐ Ağrım şiddetlidir, değişmez.

Kişisel önlemler

 Yıkanma ve giyinme şeklinde değişiklik yapmadım, çünkü ağrım yok.
 Yıkanma ve giyinme şeklinde değişiklik yapmadım, ancak biraz ağrıya neden oluyor.
 Yıkanma ve giyinme şeklinde değişiklik yapmadım, ancak ciddi ağrıya neden oluyor.
 Yıkanma ve giyinme şeklinde değişiklik yaptım, çünkü çok ağrıya neden oluyor.
 Ağrı nedeniyle yıkanma ve giyinmemin bir kısmını yardımla yapıyorum.
 Yıkanma ve giyinmemi kesinlikle tek başıma yapamıyorum.

Kaldırma

 Ağır yükleri kaldırabilirim.
 Ağır yükleri kaldırabilirim, fakat ağrıya neden oluyor.
 Ağrım yerden ağır cisimleri kaldırmamı engelliyor.
 Ağrım yerden ağır cisimleri kaldırmamı engelliyor, fakat cisim masa üzerindeyse kaldırabilirim.
 Masa üzerinden hafif veya orta ağırlıktaki cisimleri kaldırabilirim.
 Sadece çok hafif yükleri kaldırabilirim.

Yürüme

 Yürürken ağrım yok.
 Yürüme ile biraz ağrım var, fakat mesafe ile artmıyor.
 Ağrım artmadan ancak 2 km. yürüyebiliyorum.
 Ağrım artmadan ancak 1 km. yürüyebiliyorum.
 Ağrım artmadan ancak 500 m. yürüyebiliyorum
 Ağrım çok arttığı için yürüyemiyorum.

Oturma

 Herhangi bir sandalyede, istediğim kadar uzun oturabilirim.
 Sadece uygun bir sandalyede istediğim kadar uzun oturabilirim.
 Ağrım 1 saatten fazla oturmamı engelliyor.
 Ağrım 30 dakikadan fazla oturmamı engelliyor.
 Ağrım 10 dakikadan fazla oturmamı engelliyor.
 Ağrımı arttırdığı için oturmaktan kaçınıyorum.

Ayakta Durma

 İstediğim kadar ayakta durabilirim.
 Ayakta durmakla biraz ağrım var, ama zamanla artmıyor.
 Ağrım 1 saatten fazla ayakta durmamı engelliyor.
 Ağrım 30 dakikadan fazla ayakta durmamı engelliyor.
 Ağrım 10 dakikadan fazla ayakta durmamı engelliyor.
 Ağrımı arttırdığı için ayakta durmaktan kaçınıyorum.

Uyuma

 Yatakta ağrım yok.
 Yatakta ağrım var fakat iyi uyuyorum.
 Ağrım yüzünden normal gece uykumun % 75' ini uyuyabiliyorum.
 Ağrım yüzünden normal gece uykumun yarısını uyuyabiliyorum.
 Ağrım yüzünden normal gece uykumun % 25' ini uyuyabiliyorum.
 Ağrım yüzünden uyuyamıyorum.

Sosyal Hayat

□ Sosyal yaşamım normaldir.
□ Sosyal yaşamım normaldir, fakat ağrımı arttırıyor.
□ Eş dostla gittiğim eğlenceleri kısıtlamak zorunda kalıyorum.
□ Ağrım ev dışı sosyal hayatımı kısıtlıyor.
□ Ağrım ev içi sosyal hayatımı kısıtlıyor.
□ Ağrım yüzünden tüm sosyal yaşantım kısıtlanıyor.

Seyahat (dolmuş, taksi, traktör v.s. ile giderken)

□ Seyahatte ağrım yok.
□ Seyahatte hafif ağrım var, fakat seyahat şekillerinin hiç biri ağrımı etkilemiyor.
□ Seyahatte artan ağrım var, fakat beni seyahat için başka bir şekil aramaya mecbur etmiyor.
□ Seyahatte artan ağrım var ve beni seyahat için başka şekil aramaya mecbur ediyor.
□ Ağrım yüzünden ancak yatarak seyahat edebiliyorum.
□ Ağrım seyahat etmemi engelliyor.

Ağrının Değişiklik Derecesi

□ Ağrım hızla iyileşiyor.
□ Ağrım artma göstermekle beraber iyiye gidiyor.
□ Ağrım yavaş iyileşiyor.
□ Ağrım değişmiyor. (Kötüleşmiyor, iyileşmiyor)
□ Ağrım yavaş kötüleşiyor.
□ Ağrım hızla kötüleşiyor.

BEL AĞRISI FONKSİYON SKALASI (Form 4)

Aşağıda listelenmiş sorularla var olan bel probleminizden dolayı dikkat ettiğiniz bütün etkinliklerde herhangi bir zorluk yaşayıp yaşamadığınızı öğrenmekle ilgileniyoruz. Lütfen her bir etkinlik için cevap veriniz. Bugün aşağıdaki etkinliklerin tamamında bel probleminizden dolayı herhangi bir zorluğunuz oldu mu ya da olur mu?

	Etkinliği yapmak mümkün değil	**Aşırı zor**	**Epey zor**	**Orta zorlukta**	**Biraz zor**	**Zor değil**
1. Her zamanki iş, ev işi veya okul etkinliklerinizin herhangi biri	0	1	2	3	4	5
2. Her zamanki hobileriniz, eğlence veya spor etkinlikleriniz	0	1	2	3	4	5
3. Ev içinde ağır işler yapmak	0	1	2	3	4	5
4. Bükülmek veya eğilmek	0	1	2	3	4	5
5. Ayakkabınızı veya çorabınızı giymek (kilotlu çorap)	0	1	2	3	4	5
6. Yerden ağır bir koli kutusu kaldırmak	0	1	2	3	4	5
7. Uyumak	0	1	2	3	4	5
8. 1 saat ayakta durmak	0	1	2	3	4	5
9. 1,5 km yürümek (yaklaşık 10- 15 dakikalık yürüyüş)	0	1	2	3	4	5
10. İki kat merdiven çıkmak veya inmek (yaklaşık 20 basamak)	0	1	2	3	4	5
11. 1 saat oturmak	0	1	2	3	4	5
12. 1 saat araba sürmek ya da seyahat etmek.	0	1	2	3	4	5
ARA TOPLAM						

TOPLAM SONUÇ: /60

APPENDIX B: Curriculum Vitae

PERSONAL INFORMATION

Name:	Olubunmi E. Babalola
Address : Yakin Doğu Universitesi Hemşirelik Fakültesi, Lefkoşa, KKTC Email: betthieb@gmail.com	

EDUCATION

Years	Degree	University	Field Of Study
2014 – 2018	Bachelor	Near East University, Faculty of Nursing	Nursing
2019 – 2021	Masters	Near East University, Faculty of Nursing	Public Health Nursing

APPENDIX C: Ethics Committee Permission

YAKIN DOĞU ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMALAR ETİK KURULU

ARAŞTIRMA PROJESİ DEĞERLENDİRME RAPORU

Toplantı Tarihi : 28.05.2020

Toplantı No : 2020/79

Proje No :1086

Yakın Doğu Üniversitesi Hemşirelik Fakültesi öğretim üyelerinden Doç. Dr. Hatice Bebiş'in sorumlu araştırmacısı olduğu, YDU/2020/79-1086 proje numaralı ve **"Effectiveness of health education given to prevent low back and back pain in women: Pre-test and post-test study"** başlıklı proje önerisi kurulumuzca online toplantıda değerlendirilmiş olup, etik olarak uygun bulunmuştur.

Prof. Dr. Rüştü Onur

Yakın Doğu Üniversitesi

Bilimsel Araştırmalar Etik Kurulu Başkanı

APPENDIX D: Institution Permission

20.05.2020

YAKIN DOĞU ÜNİVERSİTESİ

ETİK KURUL BAŞKANLIĞINA

Doç Dr.Hatice Bebiş'in sorumlu araştırmacı olduğu fakültemiz Halk Sağlığı Hemşireliği AD'dalında Yüksek Lisan eğitimine devam eden tez öğrencisi 20185929 Olubunmi E. Babalola'nın "**Effectiveness of health education given to prevent low back and back pain in women: Pre-test and post-test study**" isimli çalışmasının okulumuz öğrencileri ile yapılması uygundur.

Saygılarımla.

Prof. Dr. Hatice BEBİŞ

YDÜ Hem. Fak. Dekan Yrd

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