

**The Islamic University of Gaza**

**Dean of higher studies**

**Faculty of Education**

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# **Prevalence and risk factors of low back pain among physical therapy professionals in Gaza Strip**

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# بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى:

{ وَقُلْ اَعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ }

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## Abstract

**Background and Purpose:** The purpose of this study was to determine the prevalence of low back pain (LBP) among physical therapy professionals and to study the risk factors related to it. Also to determine the severity of LBP and to know the physical therapy suggestions and recommendations to reduce the occurrence of LBP.

**Study design and methodology:** The study used a cross-sectional design. It included 130 physiotherapy professionals, 69 males and 61 females working in different places in GS. The researcher used non-probability convenience sampling. The data collected using a structured self-administered questionnaire in the period from 17 February to 20 March 2008. The study covered different health institutions in GS including governmental, Non-Governmental, UNRWA clinics and primary health centers. Collected data was entered and analyzed using SPSS (for significance testing, Chi-Square statistical test was used).

**Results:** Almost Fifty seven percent of interviewees reported having LBP at the time of conducting the study and 56.2% suffered from LBP within 3 months prior to filling the questionnaire. In addition, 56.9% suffered from LBP more than 6 months but only 4.6% reported that they used to suffer from LBP before working in physiotherapy field. Additionally, 30.8 % of the study sample had a sick leave due to LBP. The age groups between 26-39 years old were the highest group of LBP suffers with no significant differences between both sexes, level of education, place of work and prevalence of LBP. Surprisingly, 52.7% of those who suffered LBP had more than 7 years of experience, 33.8% had 4-6 years of experience and 13.5% had 1-3 years of experience. The majority of LBP complainers (36.2%) described their pain as throbbing in nature, and 15.4% described LBP as dull pain and as electric among 12.3% however, 11.5% of LBP suffers noted their pain as burning and the remaining 9.2% of the sample described it as numbness in nature. For the degree of LBP severity the majority of Interviewees (60%) labeled their pain as mild or minimal pain, however 20.8% graded their pain as moderate pain and 6.9% said that, they are having severe LBP. Interestingly, about 80% of the study sample improved with treatments of LBP. Furthermore, the results indicated that uncomfortable position among 52.3% of participants, big number of patients (46.1%), prolonged standing (43.1%), bending and twisting (29.2%) were viewed as risk factors for LBP. The results showed that certain occupational factors like lifting, pushing, twisting, sitting, standing or walking long distances also pose risk factors for LBP. The suggested recommendations and advices given by physiotherapy professionals included mainly changing working position frequently and controlling patient's number during daily work (98.5%). Followed by wearing comfortable shoes and avoiding heavy lifting (97.7%) can reduce the occurrence of LBP. also 96.9% reported that adjusting the heights of beds and stools and using patient lifters, practicing daily sports can also reduce the occurrence of LBP, 96% agreed that LBP will probably influence their occupation, 94.6% reported that, taking more rests in between sessions will reduce the occurrence of LBP, 93.8% thought that assistance from others if needed will reduce LBP. The same percentage of interviewees said that sticking to proper praying movements will decrease LBP. Finally, 89.2% recommend that increasing the numbers of physical therapy professional can also minimize the chance of having LBP.

**Conclusion:** The study concluded that most of the physiotherapy professionals had LBP prior and at the time of conducting study, and there were no significant differences between both sexes, level of education, place of work and prevalence of LBP. It also showed that the years in work, the higher the chance of LBP development. Uncomfortable position, big patient numbers, prolonged standing, bending, and twisting were viewed as risk factors for LBP. The findings indicated that there is a clear need for the following modifications inside the working place: proper beds with specific highs; stools and lifters; wearing comfortable shoes during work; practicing daily sport; avoiding heavy lifting and fair distribution of patient load during work. The study also reported that proper movements during prayers may decrease LBP.

## ملخص الدراسة

**منهجية الدراسة:** استخدم الباحث دراسة مقطعية وصفية، تمت في عدد من المستشفيات والمراكز والعيادات التابعة لوزارة الصحة الفلسطينية والأهلية والتابعة لوكالة الغوث، في قطاع غزة.

**أهداف الدراسة:** تهدف الدراسة لتحديد مدى انتشار ألم الظهر والعوامل المسببة له، وتقديم المقترحات والتوصيات للعاملين في مجال العلاج الطبيعي، التي من خلالها يمكن الحد أو تخفيف آلام الظهر عندهم.

**الإجراءات:** استخدم الباحث استبانته لجمع المعلومات بنفسه من جميع العاملين في مجال العلاج الطبيعي، في أماكن وأوقات العمل خلال الفترة ما بين تاريخ ١٧ فبراير حتى تاريخ ٢٠ مارس ٢٠٠٨، حيث كانت نسبة الاستجابة للمشاركة في الدراسة هي ٩٤,٢%. وقد شملت عينة الدراسة جميع العاملين في مجال العلاج الطبيعي الذين يعملون في المستشفيات والمراكز والعيادات الحكومية والأهلية والتابعة لوكالة الغوث وكان عددهم ١٣٠ مشاركاً، ٦٩ من الرجال و ٦١ من النساء. واستخدام الباحث البرنامج الإحصائي SPSS في تحليل البيانات.

**النتائج:** أظهرت الدراسة أن معدل الإصابة بألم أسفل الظهر بين العاملين في مجال العلاج الطبيعي هي ٥٦,٩% في وقت تطبيق الدراسة، وكان ٥٦,٢% قد عانوا من ألم الظهر خلال الثلاثة شهور السابقة من تطبيق الدراسة، وكان ٥٦,٩% ممن شملتهم الدراسة يعانون من ألم الظهر منذ أكثر من ٦ أشهر. وبينت الدراسة أن ٤,٦% كانوا يعانون من ألم الظهر قبل عملهم في مجال العلاج الطبيعي. وكانت أعمار ممن يعانون من ألم الظهر هي ما بين سن الـ ٢٦-٣٩، أي أن هناك دلالة واضحة علي علاقة العمر المرتبط بسنوات العمل حيث أن ٥٢,٧% ممن لديهم خبرة فوق ٧ سنوات يعانون من ألم الظهر و ٣٣,٨% لديهم خبرة بين ٤-٦ سنوات و ١٣,٥% لديهم خبرة ١-٣ سنوات. وبينت الدراسة أيضاً أن مكان العمل ليس له علاقة بظهور ألم الظهر حيث أن ٥٤,١% من الذين يعملون في المؤسسات الحكومية يعانون من ألم الظهر، وأظهرت الدراسة أيضاً أن ٣١,١% ممن يعملون في المؤسسات الأهلية يعانون من ألم الظهر و ١٤,٩% فقط ممن يعملون بوكالة الغوث يعانون من ألم الظهر. وبينت الدراسة أيضاً أن ٦,٩% يعانون من ألم شديد، ٢٠,٨% يعانون من ألم فوق المتوسط، ٣٦,٢% يعانون من ألم متوسط و ٢٠,٨% يعانون من ألم بسيط و يوصف الألم عند ٩,٢% بالخدلان، ١١,٥% بالحرقان ١٢,٣% بالساعات الكهربائية، ٣٦,٢% يوصف الألم عندهم بالنبض و ١٥,٤% يعانون من ألم غير واضح في الظهر. وأظهرت الدراسة أن ٣٠,٨% من العينة حصلوا على إجازات مرضية بسبب ألم الظهر وكان ٨٠,٢% من عينة الدراسة استجابوا للعلاج وخاصة العلاج الطبيعي. ارتبطت ظاهرة ألم أسفل الظهر بمجموعة من العوامل والأسباب و كان أهمها العمل بوضعية غير مريحة (٥٢,٣%)، وعلاج عدد كبير من المرضى في اليوم وكانوا يشكلون ٤٦,١% من العينة وكان لظاهرة الوقوف لفترة طويلة علاقة واضحة لظهور ألم الظهر (٤٣,١%) وحركات الظهر من ثني والتفاف إلى جميع الجهات سبباً مباشراً لظهور ألم الظهر (٢٩,٢%) وبينت الدراسة أن العوامل المتعلقة بالعمل من حمل للمرضى والدفع والتلوي والوقوف والجلوس والمشي لمسافات طويلة أثناء العمل عاملاً خطيراً لظهور ألم الظهر.

- وقد نوهت الدراسة أن بالإمكان التقليل من حدوث آلام الظهر من خلال المقترحات والتوصيات التالية:
- عدم البقاء على نفس الوضعية خلال عمل الجلسة، والتحكم بعدد المرضى في اليوم (٩٨,٥%).
  - لبس الأحذية المناسبة والمريحة واستخدام كراسي وأسرة ورافعات خاصة بالمرضى وممارسة الرياضة يوميا (٩٦,٩%).
  - تجنب حمل المرضى ذو الوزن الثقيل (٩٧,٧%) وأخذ فترات من الراحة خلال ساعات العمل (٩٤,٦%).
  - طلب المساعدة من الآخرين خلال العمل وتأدية حركات الصلاة (٩٣,٨%).
  - زيادة عدد العاملين في أقسام العلاج الطبيعي (٨٩,٢%) وأخيرا نوهت الدراسة أن ٩٦% من عينة الدراسة مع الرأي الذي يقول أن آلام الظهر ممكن أن تؤثر على سير عمل المعالجين.

وقد خلصت الدراسة إلى أن أكثر من نصف المشاركين في الدراسة يعانون من ألم الظهر في وقت تطبيق الدراسة ونفس النسبة كانت تعاني من ألم الظهر قبل تطبيق الدراسة بثلاثة أشهر ونفس النسبة تعاني من ألم الظهر قبل ٦ أشهر من تطبيق الدراسة وأنه لا يوجد علاقة واضحة بين كلا الجنسين والمستوى التعليمي ومكان العمل من جهة وانتشار ألم الظهر من جهة أخرى، ولكن يوجد علاقة مباشرة بين عدد سنوات الخبرة وظهور ألم الظهر أي أن (كلما ازدادت سنوات العمل ازدادت نسبة ألم الظهر).

وأعتبر العمل بوضعية غير مريحة وزيادة عدد المرضى والوقوف لفترات طويلة وحركات ثني الظهر من أهم العوامل والأسباب لظهور ألم الظهر، مما يتطلب تعديلات ضرورية في مكان العمل، من أسرة مناسبة الارتفاع وكراسي خاصة بالمعالجين ورافعات خاصة بالمرضى ولبس حذاء مناسب أثناء العمل وممارسة الرياضة بشكل يومي وتجنب حمل المرضى ذو الأوزان الثقيلة لما له الأثر الكبير من الحد من ظهور ألم الظهر.

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

## Dedication

**I would like to dedicate this work with my deep love to:**

*My mother,*

*My wife,*

*My children*

*My colleagues and to the real friends*

**For their ever constant endless love and support.**

The researcher

*F adel M. Masoud*

## **In the name of Allah, the Beneficent, the Merciful**

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## List of Abbreviations

Abbreviations	The interpretation
APTA	American Physical Therapy Association
ANS	Autonomic Nervous System
ADL	Activities of daily living
BMI	Body Mass Index
CNS	Central Nervous System
CSP	Chartered Society of Physiotherapy
CSF	Cerebro-Spinal Fluid
CT	Computerized Tomography
DF	Degree of Freedom
EMG	Electromyogram
ENT	Ear-Nose and Trachea
FM	Fibromyalgia
GNP	Gross National product
GS	Gaza Strip
GDP	Gross Domestic Production
MSP	Medical Services for police
HMSO	Her majesty's stationery office
ICU	Intensive Care Unit
LBP	Low Back Pain
MOH	Ministry of Health.
MRI	Magnetic Resonance Imaging
NGOs	Non Governmental Organizations
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
NAs	Nursing aids
PNA	Palestinian National Authority
PT	Physiotherapy.
PTs	Physical Therapist
PHC	Primary health care
PTA	Physiotherapist Assistant
PNS	Peripheral Nervous System
PM&R	Physical Medicine and Rehabilitation
PET	Physical Education Teachers
QNs	Qualified nurses
SLR	Straight-leg-Raising
SNHs	Special Nursing Homes
SPSS	Statistical Package for Social Sciences
UNRWA	United Nations Relief and Works Agency
UK	United Kingdom
USA	United States of America
WB	West bank
WMSDs	Work-related musculoskeletal disorders

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# Chapter One

## Introduction

# Chapter one

## 1.1. Introduction

Low back pain (LBP) is pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, with or without leg pain; It may be acute or chronic; persisting for 12 weeks or more (Bigos et al, 1994).

LBP afflicts large sectors of the population and is the number one cause of lost time in industry, hospitals and schools. Most episodes of pain are self limited in nature, although it is common to find recurrences, in industrialized countries, up to 80% of the population will experience LBP at some stage in their life. During any one year, up to half of adult population (15%-49%) will have LBP (Palmer et al, 2000).

Virtually speaking, everyone will experience LBP at some time in their life. The number of people with LBP increases with advancing age, starting in school going children and peaking in adults of 35 to 55 years of age. LBP is just as common in adolescents as in adults (Burton et al, 2006).

Fortunately, LBP is typically a benign, self-limiting problem. Swezey (1998) reported that 90% of LBP patients recover over 3 to 4 weeks period and many recover in only a few days. For those reasons it seems unnecessary to make a specific diagnosis. Although the course of LBP for most patients is benign, it is important not to miss the few dangerous underlying conditions that present with LBP among its symptoms. These important diagnoses are usually distinguished by signs and symptoms, therefore other tests are needed for some patient.

LBP is common among physiotherapists in Gaza strip, about 93% of the physiotherapists who are working in UNRWA complained of low back pain (Abu-Rayya, 1999). Also LBP is common in the United States of America (USA) about 80% of the population will experience LBP during adulthood, and 1% of the affected patients will also experience sciatica, the annual incidence of LBP is 15-20%. Males are affected as females and the pain is usually self-limiting, with 50% of affected patients recovering by 2 weeks and 90 % recovering by 6 weeks, also only 1% of the population in USA is chronically disabled by back symptoms and in an interesting study, it concluded that, if a patient stays off work for more than 2 years because of problems of the lower back, he or she will unlikely to return to work at all (Skinner, 1996).

LBP is one of humanity's most frequent complaints, in the USA acute LBP is the fifth most common reason for all physician visits. About nine out of ten adults experience LBP at some point in their life and five out of ten working adults have LBP every year (Patel, 2007).

The risk factors, pathology and radiologic appearance are poorly correlated. Pain is nonspecific in about 85% of people (Anderson, 1997).



An interesting study was done by, Michel et al (2008), reported that direct patient contact that includes lifting and transferring patients may be an important risk factor for LBP among health professionals working in a Kuwait hospital.

Also, risk factors for the development of LBP include heavy physical work, frequent bending, twisting, lifting and prolonged static postures. Psychosocial risk factors include anxiety, depression and mental stress at work (Bongers et al. 1993).

The socioeconomic impact of back problems are enormous. LBP is the most common reason for visiting the Orthopedic surgeon. Costs are estimated to range from 20-50 \$ billion annually, with 10% of the patients accounting for 85-90% of the costs. The National Health Service spends per year more than £1 billion on LBP related costs (Maniadakis, 2000). Other European countries report similar high costs, LBP related costs in the Netherlands in 1991 were more than 4 billion Euro. For Sweden in 1995 this was more than 2 billion Euro (Van, 2006).

Surprising, Investigator have shown that patients with chronic LBP tend to be dissatisfied with their vocation, viewing it as boring and repetitious, they also have an increased divorce rate, more problems with headaches and gastrointestinal ulcers and a higher rate of alcoholism than the average population (Skinner, 1996).

Finally, most patients are visiting orthopedic clinics and orthopedic surgeon to solve LBP problems, but the patients often referred by orthopedic doctors for physical therapy treatment, to reduced pain, to strength weak muscles around back, to improve function and correct walking and these patients then return to his work and jobs (Thomson, 1991).

## **1.2. Significance of the study:**

From the researcher's experience in the work of physiotherapy field for thirteen years, he noticed that, most physical therapists and other team members at El-Wafa medical rehabilitation hospital and several physiotherapy departments in Gaza strip (GS) were frequently referred to the out-patient physiotherapy clinics by their doctors for treatment of LBP.

Surprising, a study had done outside GS, which reported that an increased family problems and fear about future due to LBP, and according to that study, most of the physiotherapists and physiotherapists assistants thought to modify their working field if possible. In addition to that work, the researcher made a study to determine the risk factors of LBP, to reassure the physiotherapists and physiotherapists assistants that LBP could be prevented. And an earlier study which was done in GS related to LBP among health professionals at UNRWA health department, also the physiotherapists included in this study were small sample size and the real results supported the occurrence of LBP, which reported that about 93% of physiotherapists suffered from LBP.

However, according to the researcher knowledge, there were no more other studies related to this field, the researcher made his study in GS to assert this problem. This study considered to be the first study to cover LBP among all physical therapy professionals practicing in GS.

## **1.3. Objectives of the study:**

### **General Objectives of the study:**

- To determine the prevalence and the risk factors the LBP among physical among physical therapy professionals in GS.

### **Specific objectives:**

- To know the prevalence of LBP among physical therapy professionals in GS.
- To determine the risk factors related to the LBP among physical therapy professionals in GS.
- To describe the type of pain at lower back that physical therapy professionals complains.
- To determine the severity of LBP among physical therapy professionals in GS.
- To reach the physical therapy professionals suggestions and recommendation to reduce the occurrence of LBP.

#### **1.4. Operational definitions of terms:**

- Physical therapy professionals: Physiotherapists and physiotherapist assistants whom they are working in this field.
- Low back pain: The pain extend from below both scapulas and to both legs at any time of their life.
- Working environmental: The Governmental, Nongovernmental and UNRWA, physical therapy departments in GS.
- Experience: At least one year working experience in physical therapy.
- Others: Physical therapy professionals were excluded if they would work in another field beside physiotherapy.

#### **1.5. Context of the study:**

This study was conducted in GS in Palestine; therefore, the researcher presents some background information about the geographical context, Palestine population, Palestinian economy, health situation and health care services that influences by them, in addition some of information about place of the study that represented in all governmental and nongovernmental hospitals and clinics in GS.

#### **1.6. Demography and population:**

##### **Palestine History:**

Palestine was known in ancient history as the land of Canaan, when Abraham migrated to the land of Canaan it was a well-developed country. The philistines (residents of ancient Palestine) entered the land of Canaan from Crete about 1250 before century (B.C.) and settled in the coastal areas. They were the people who gave Palestine its name, and the land of Canaan since roman times has been known as Palestine. About 1100 (B.C.) Israelite tribes entered the land of Canaan at Jericho. The Palestinians of today, who call themselves Palestinians Arabs, are Muslims and Christians. They are the descendants of all the races and nations which have lived in and conquered Palestine from the times of the Canaanites to the British mandate of Palestine in 1918. Under the ottoman Turks in 1914, Palestine's population composed of 634,000 Muslim and Christian Arabs and 55,000 Jews who had emigrated from Europe, mainly from Russia. Immediately after the publication of the Belfour declaration in 1918, disturbances took place between Jews and Arabs in Palestine. In 1967, Israel launched a war against Egypt, Jordan and Syria and occupied the West bank (WB), Gaza the Golan Heights and Sinai Peninsula. The entire area of Palestine is about 27,000 (sq.km), including Tabariya, El-Hoola lakes and half of the area of Dead Sea. Now, Palestinian territories are comprised of two areas separated geographically, the WB and GS. The total area is 6,020 (sq.km.), with a total population of in 3,762,005 individuals living in these areas in 2005. (See annex1)

## **Gaza strip:**

GS is a narrow piece of land lying on the coast of the Mediterranean Sea. Its position on the crossroads from Africa to Asia made it a target for occupiers and conquerors over the centuries. The last of these was Israel who occupied the GS from Egyptians in 1967. GS is very crowded place with area 365 sq.km and constitutes only 6.1% of total area of Palestinian land. In year of 2005, the total population in GS was 1,389,789 mainly concentrated in the cities, small village, and eight refugee camps that contain two thirds of the population of GS (See annex 2).

In GS, the population density is 3.808 inhabitants/km<sup>2</sup> that comprises the following main five governorates.

1. North of Gaza constituted 17% of the total area of GS and 1.0% of total area of Palestinian territory area with area 61 sq. km. The total number of population living in north Gaza was 265,932 individuals in 2005.
2. Gaza city constituted 20.3% of the total areas of GS and 1.2% of total area of Palestinian territory area with area 74 sq. Km. The total number of population living in Gaza City was 487,904 individuals in 2005.
3. Mid-Zone constituted about 15% of the total area of GS and 1.0% of total area of Palestinian territory area with area 58 sq. Km the total number of population living in Mid-Zone was 201,112 individuals in 2005.
4. Khan-Younis constituted about 30.5% of the total area of GS and 1.8% of total area of Palestinian territory area with area 108 sq. Km. The total number of population in Khan-Younis was 269,601 individuals in 2005.
5. Rafah constituted about 16.2% the total area of GS and 1.1% of total area of Palestinian territory area with area 64 sq. Km The total number of population in Rafah was 165,240 individuals in 2005.

## **Demography of Palestine:**

The total population living in Palestine territories was estimated at 3.6 million at the end of year 2004. About 2.3 million live in the West Bank (63.2%) and 1.3 million in Gaza Strip (38.8%) (MOH, 2005).

The majority of GS population is refugees (75%) and 40% of them live in the camps. In GS the population density in the refugees' camps is one of the highest in the world (UNRWA, 2006).

In the population pyramid the age group 15-60 years (the working age) represents about 49.6%, the annual growth rate of GS was 2.8%, and life expectancy at birth was 70.7 years for males and 73.8 years for females (MOH, 2004).

## **1.7. Socioeconomic status:**

The Palestinian economy refers to the economy of the Palestinian territory; including GS, WB and East Jerusalem. Current political events have severely damaged the Palestinian economy due to halting the international aid.

MOH (2004) reported that, the GS is considered one of the lowest incomes in the Middle East area. The majority of the income comes from salary of the employees and security persons, while the agriculture products share by reasonable portion in the economy. The economy nowadays mainly depends on international donors that are suspended. International aids were funding some projects and paid the salaries. The economic situation is usually especially after Al-Aqsa Intifada because of frequent closure and restriction of trade. The deteriorating economic situation, limited income and lack of work opportunities lead to low standard of living and inadequate health facilities. Despite poverty the Palestinians are eager to learn, adult literacy ratio among those aged 15 years and more is 91% (MOH, 2004) which is considered among the high percentage literacy rates of Arab countries.

## **1.8. Political background**

Palestine was occupied and controlled since a long time, Ottoman Empire (1517-1917), followed by British mandates since 1917 until the 1948. The illegal creation of the state of Israel, after the Arabic-Israeli war at 1948, all Palestine become under the Israeli control except WB includes Jerusalem which controlled by Jordan government and GS which controlled by Egyptian government, thousands of Palestinian scattered in many Arabic countries as a refugees. After the war of year 1967, Israel army occupied the rest of whole Palestinian territory WB and GS and continued to rule them, until 1993 when peace accord (Oslo) was signed between Palestinian liberation organization's (PLO) and Israelis after the first intifada which started in December 1987.

GS become under the control of Palestinian national authority (PNA), now GS one peace from the northern borders up to Egyptians borders on the south, still it is very difficult to Palestinian people from GS to move to WB, and inside it because of Israeli military procedures on the military points. Due to the current situation (Al-Aqsa intifada) which started in September 2000, the Palestinian are exposed to various kinds of Israeli aggression and collective punishment as dividing Palestinian regions and separate and isolate cities and villages and limiting movements and transportation between Palestinian cities. In addition to murdering and destruction of homes, land and agriculture. All of these political, economical, social, health situations affect the ability of the Palestinian citizens to deal or communicate with each other's correctly. The physiotherapists themselves were a very strong witness on all Israelis terrorism; they are the members of health professional who deal with the intifada victims in a daily basis on the field.

## **1.9. Palestinian health care system:**

### **1.9.1. Primary health care ( PHC)**

PHC centers: PHC is a major component of Palestinian health care system; this system has provided health care to all Palestinian people especially for children and other venerable groups. PHC centers in Palestine provide primary and secondary health care services as well as tertiary services. In the last five years and after the uprising of second intifada (Al Aqsa), PHC centers in Palestine have been developed in a dynamic way to face the instability of Palestinian situation were Israeli occupied forces tends to divide Palestinian localities into isolated geographical areas. PHC centers try to offer accessible and affordable health services for all Palestinians regardless the geographical locations. According to MOH policy, PHC centers classified from level 1 to level 2. They offer different health services according to clinic level, these services include maternal and child health, care of chronic diseases, daily care, family planning, dental, mental services and other services according to center level.

### **1.9.2. Primary health care services in Palestine:**

The MOH are working with other health sectors in providing the primary health services mainly with UNRWA, and NGOs sector. At the end of 2005, there are 654 PHC centers in Palestine; these centers are cared for about 3.7 million people (129 centers in GS and 525 centers in WB). Classification of PHC according to providers shows that, the MOH is considered the main provider with 63.6% from the total PHC centers, followed by the NGOs with 28.3%, then UNRWA with 8.1%. It is worth to mention that, Private sector plays an important role in providing PHC services to Palestinian people but, there is limited information about these centers. The average ratio of persons per center was 5.752 (10.774 in GS and 4.519 in WB). The Number of PHC centers per 10.000 persons was 1.7 in 2005 while it was 1.9 in 2000 (Ministry of Health, 2006).

### **Classification of PHC according to Provider in GS**

#### **1. MOH:**

Distribution of MOH-PHC shows that, there are 416 centers owned and supervised by the MOH with 63.6% from the total centers, these centers distribute as 56 centers in GS and 360 centers in the WB. The total number of PHC centers in GS is 56 in comparison with 43 centers in 2000, with an increase of 30.2%. The highest ratio of population per center was recorded in Rafah with 41.310 persons per centre and the lowest ratio in Mid-Zone with 12.570. The number of MOH-PHC centers per 10.000 persons was 0.40. PHC system in GS is well established and functioning despite the high population density and the overcrowdings of population. Classification of PHC according to center level illustrated that 30 centers are classified as level II, 19 centers as level III and, 7 of as level IV. In general, there are 6 centers working 2 shifts and 38 centers working only one shift. One of which has a delivery unit in Gaza City. The PHC centers provide special health care services in different aspects, 42 centers provide immunization and antenatal care and family planning services, in addition to 107 specialized clinics and 30 dental and oral clinics. About 35 centers have laboratories and 13 centers have x-ray units.

## **2. NON-MOH PHC Centers:**

The total number of NON MOH-PHC centers in the GS is 81 centers, distributed as 55 centers owned and supervised by NGOs (67.9%). Eighteen centers owned and supervised by UNRWA (22.2%) and 8 centers own and supervised by Medical Services for police (MSP) and general security (9.9%). The number of NON MOH-PHC centers per 10.000 persons was 0.58 in 2005 while it was 0.61 in 2004.

### **1. UNRWA Services:**

UNRWA is the second main health provider for primary health care services to population at different districts. UNRWA health program focuses on comprehensive preventive and primary health care. Services are covering medical care, family health, disease control and prevention, and health education. These services are provided directly and at no cost to Palestinian refugees through the agency's network of 53 primary health care facilities which are located both inside and outside refugee camps (18 in GS and 35 in the WB). Furthermore, all refugees in GS and WB have the right of accessibility to the governmental health care services. In GS: in 2005, 2,761,256 visits were reported to general UNRWA clinics and about 131,021 visits to specialized clinics. The total number of UNRWA staff health services is 560 members of the following categories doctors, nurses, physiotherapists, pharmacists, dentists, laboratory technicians, cleaners, drivers and clerks. UNRWA physiotherapy services are distributed in all Gaza strip, clinics are localized at (Jabalia, Gaza, Nuseirat, Buriej, Khan-Yunois and Rafah) (Annual report of the department of health 2005).

### **2. Medical Services for police (MSP) Services:**

In Palestine, MSP provides preventive and curative services to Palestinian people through a network of PHC centers, medical points and medical units, by the end of 2005, there are 13 PHC centers (5 in the WB and 8 in GS, also there are 18 medical units (11 in the WB and 7 in GS) and 21 medical point (16 in GS and 5 in the WB) they provide medical services for policemen general security persons and their families in addition to the general population.

#### **1.9.3. Secondary and tertiary healthcare services:**

The MOH is responsible for a significant portion of the secondary and tertiary healthcare delivery system (60-70% of general and specialized hospital beds) and more than this proportion in hospital services (about 70% of hospital services). In 2005, there are 43 general hospitals with 3,726 beds, 10 specialized hospitals with a total bed capacity of 812 beds, 19 maternity hospitals at a total bed capacity of 322 beds and four rehabilitation centers with a total bed capacity of 165 beds (51 in GS, 99 in WB, and 5 in Jerusalem), and all of the rehabilitation hospitals are owned and operated by the NGOs. Rehabilitation hospitals provided services for 2,132 inpatients through 49,800 hospitalization days. The average bed occupancy rate at the four rehabilitation NGOs hospitals in Palestine was 86.9%. The average length of stay was 23.4 days.

## **1.10. Physiotherapy:**

**History:** Physicians like Hippocrates and Hector are believed to have been the first practitioners of a primitive physical therapy, advocating massage and hydrotherapy to treat patients in 460 B.C. The earliest documented origins of actual physical therapy as a professional group, however, date back to 1894 when four nurses in England formed the Chartered Society of Physiotherapy. Other countries soon followed and started formal training programs, such as the School of Physiotherapy at the University of Otago in New Zealand in 1913, and the United States' 1914 Reed College in Portland, Oregon, which graduated reconstruction aides. Research catalyzed the physical therapy movement. In 1924, the Georgia Warm Springs Foundation promoted the field by touting physical therapy as a treatment for Polio. Treatment through the 1940's primarily consisted of exercise, massage, and traction. Manipulative procedures to the spine and extremity joints began to be practiced, especially in the British Commonwealth countries, in the early 1950's. Later that decade, physical therapists (PTs) started to move beyond hospital based practice, to outpatient orthopedic clinics, public schools, college/universities, geriatric settings (skilled nursing facilities), rehabilitation centers, hospitals, and medical centers. (Wharton, 1991).

### **Physical therapist (PT):**

PTs are health care professionals who evaluate and treat individuals of all ages, from newborns to the very oldest, which have medical problems or other health-related conditions that limit their abilities to move and perform functional activities in their daily lives. PTs examine each individual and develop a plan using treatment techniques to promote the ability to move, reduce pain, restore function, and prevent disability. In addition, PTs work with individuals to prevent the loss of mobility before it occurs by developing fitness- and wellness-oriented programs for healthier and more active lifestyles. PTs provide care for people in a variety of settings, including hospitals, private practices, outpatient clinics, home health agencies, schools, sports and fitness facilities, work settings, and nursing homes. State licensure is required in each state in which a physical therapist practices (APTA Background Sheet, 2008)

The typical work activities include (Prospects.ac, 2007):

- Supervising physiotherapy assistants.
- Writing patient case notes and reports.
- Collecting patient statistics.
- Educating and advising patients and their careers about how to prevent and/or improve conditions.
- Keeping up to date with new techniques and technologies available for treating patients.
- Liaising with other healthcare personnel to supply and receive relevant information about the background and progress of patients, as well as to refer patients who require other specific medical attention.



**Physiotherapist Assistant (PTA).** (Rabinovich, 2008)

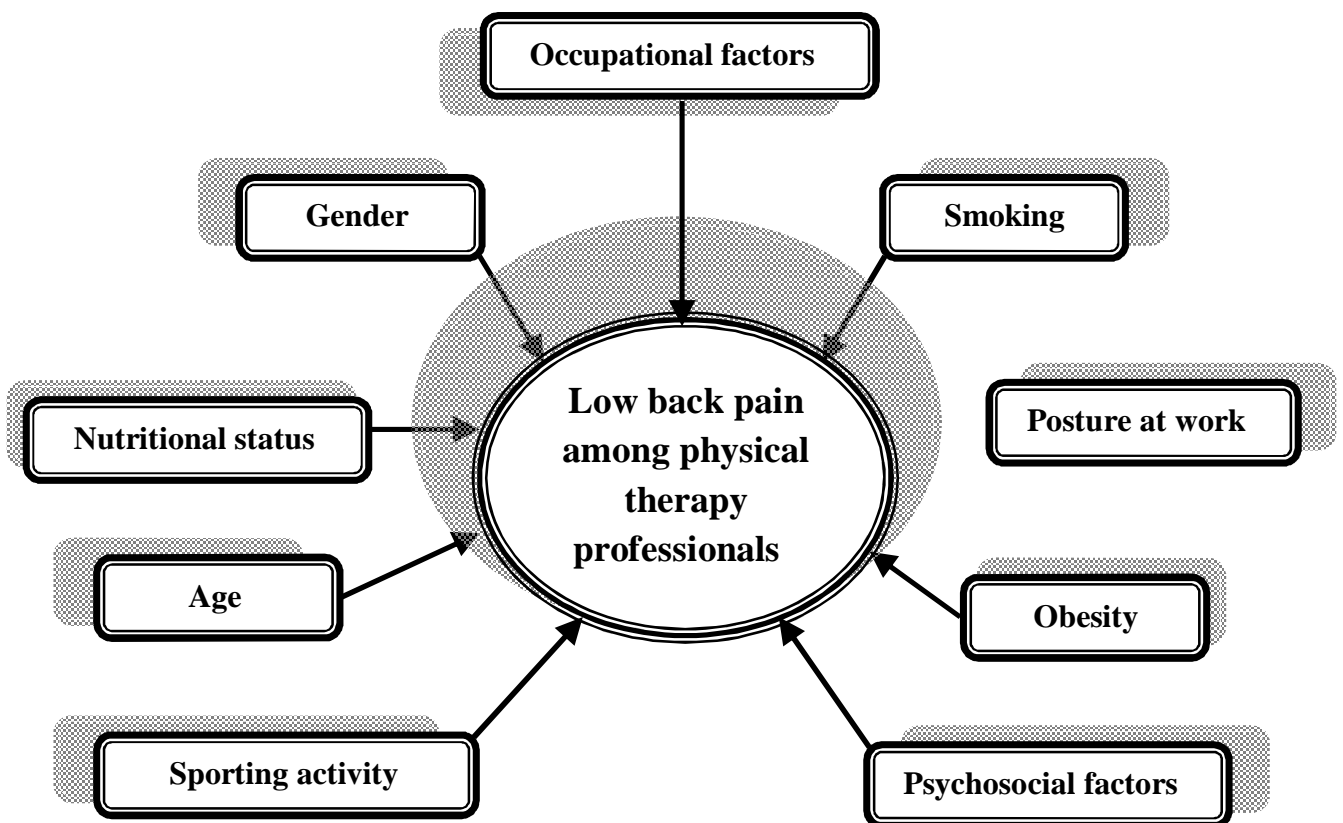
PTA is a health care worker who helps to teach clients to effectively cope with their limitations in movement, daily functioning and activity. A PTA works under the supervision of licensed PTs and the A PTA's duties may include:

- Ÿ Providing clinical care for assigned patients.
- Ÿ Providing patient/family education and support to address physical, emotional and self-care needs as assigned.
- Ÿ Providing timely and smart information to relevant team members about the patient's performance and participating in program planning.
- Ÿ Implementing the components of the treatment plan as directed by the physiotherapist
- Ÿ Assisting with walking, transfers and safe mobility, etc.
- Ÿ Assisting the patient with his/her individual cognitive, perceptual, physical programs and assisting in or conducting group activities / exercise programs.
- Ÿ Monitoring and reporting changes in health status to the supervisor.
- Ÿ Ordering prescribed assistive or adaptive equipment.
- Ÿ Maintaining equipment inventories.

# Chapter Two

## Theoretical background

## Conceptual framework



## Chapter two

### The Theoretical Background

#### 2.1. Introduction:

LBP is very common worldwide, according to a survey published in 2000, almost half the adult population of the United Kingdom (UK) (49%) reported LBP lasting for at least 24 hours at some time in a year (Palmer, 2000).

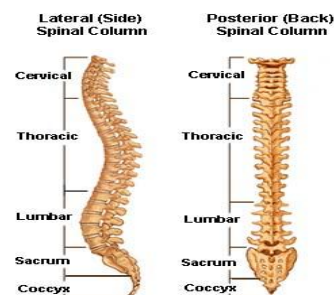
It is estimated that four out of every five adults (80%) will experience LBP at some stage in their life (Maniadakis, 2000).

Fifteen percent to twenty percent incidence in the population, majority of acute and chronic LBP are benign and lifetime prevalence 80%; most last less than 6 weeks and each year 3% to 4% of the population is temporarily disabled, and 1% of the working-age population is totally disabled from low back problem. Natural history of the benign self limited LBP, 90% recover spontaneously in 4-6 weeks, tendency to recur and factors promoting transition to chronic pain not clear (Swenson, 1999).

#### 2.2. Anatomy of the back:

The vertebrae are stacked on top of each other group into four regions:

7 Cervical, 12 Thoracic, 5 Lumbar, 5 (fused) Sacrum and 3 Coccyx (Rodts, 2007).

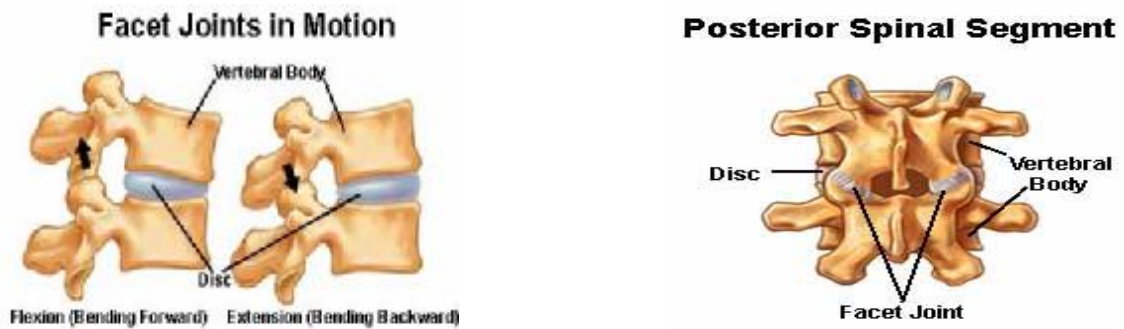


The lumbar vertebrae graduate in size from L1 through L5. The pedicles are longer and wider than those in the thoracic spine. The spinous processes are horizontal and more squared in shape. The intervertebral foramen (neural passageways) is relatively large but nerve root compression is more common than in the thoracic spine (Bellenir, 2008)

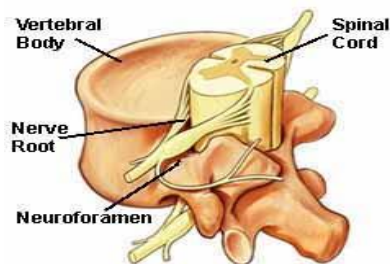
The intervertebral discs make up one fourth of the spinal column's length. The Intervertebral discs are fibro cartilaginous cushions serving as the spine's shock absorbing system, which protect the vertebrae. The discs allow some vertebral motion: extension and flexion. The Intervertebral discs are composed of an annulus fibrosus and a nucleus Pulposus. Both the annulus fibrosus and nucleus Pulposus are composed of water, collagen, and proteoglycans (SpineUniverse, 2008)



The joints in the spine are commonly called Facet Joints. Each vertebra has two sets of facet joints. One pair faces upward and one downward, these joints allow flexion, extension and twisting motion (Bridwell, 2007)



The ligaments in the spine provide stability to a joint during rest and movement. Excessive movements such as hyper-extension or hyper-flexion may be restricted by ligaments. The more important ligaments in the spine are the Ligamentum Flavum, Anterior Longitudinal Ligament and the Posterior Longitudinal Ligament. And the Lumbar muscles included: Psoas Major, Quadratus Lumborum, Intertransversarii Lateralis, Interspinales, Intertransversarii Mediales, Multifidus and Longissimus Lumborum (D'O Rrazio, 1999).



The spinal nerves included:

Motor: Anterior roots and ventral roots  
Sensory: Posterior roots and dorsal roots

The Cerebrospinal fluid is a clear fluid found in the brain chambers (Ventricles), spinal canal, and spinal cord.

Meninges: Meninges are membranes that cover and protect the brain and spinal cord. There are three primary types: Dura mater, Arachnoids mater, and Pia mater.

Dermatomes: A dermatome is an area of skin supplied by fibers from a single spinal nerve root (Bridwell, 2007)

### 2.3. Purpose and functions of the vertebrae:

The functions of the vertebral include: (Spine institute, 2008)

- Protection: Spinal cord and nerve roots.
- Base for Attachment: Ligaments, tendons and muscles.
- Structural Support: Head, shoulders and chest also connects upper and lower body and balance and weight distribution.
- Flexibility and Mobility: Flexion, Extension, Side bending, Rotation and combination of above.
- Other: Bones produce red blood cells and mineral storage.

## **2.4. Kinesiology of the lumbar spine:**

In normal posture, the line of gravity passes from C1 to C7 vertebral bodies to T10 and the lumbosacral junction and passes through the common axis of the hip joint or slightly behind it. It passes in front of the sacroiliac articulation and knee joint and then in front of the ankle joint. An increase in lumbar lordosis causes an increase, in pelvic inclination, which can produce a protrusion of the abdominal wall. If pelvic inclination is reduced through flattening of the lumbar curve, the line of gravity is shifted forward.

Any shift from standard alignment of the spine requires increased muscular activity to maintain posture as close to the line of gravity as possible. Posture is maintained through backward and forward swaying of the line of gravity. Normally, this sway has only a limited range. Therefore, in comparison with other postural changes, normal posture requires the least amount of Para spinal muscular recruitment (Steindler, 1965).

### **Abnormal stress on a normal low back:**

An excessive weight-bearing stress on a person who must stand or sit flexed for long periods of time may pose an abnormal stress on a normal back. Unfortunately, such a situation occurs frequently in today's society professionally, recreationally, and in many activities of daily living. This stressful situation can be considered a cause of static LBP. Prolonged standing in a forward flexed posture imposes excessive loading on the posterior spinal tissues as well as on the intervertebral disks. If only the weight of the arms or if a weight is held in the arms ahead of the body, the weight stress is increased. the posture of leaning forward ahead of the center of gravity, in either standing or sitting positions, greatly increases the intra-diskal pressure (Cailliet, 1988)

Mackenzie (1980) claims that this flexed posture has an adverse effect on the posterior ligamentous, muscular, and fascial tissue. He actually postulates that this prolonged flexed posture adversely affects the disk nucleus by causing the nucleus to migrate posteriorly. Prolonged flexed postures can initiate a sustained isometric muscular tonus of the erector spinae muscles. This sustained isometric muscular contraction causes a vascular compression with resultant ischemia and an accumulation of muscle metabolites. These metabolites are nociceptive tissue irritants that further intensify the muscle contraction. Pain results that prolongs the sustained isometric muscular contraction. When the muscles become "overwhelmed" they fatigue and no longer maintain their antigravity function. The ligaments now bear the brunt of the posture and become another site of nociception. Emotional anxiety places a similar stress on the tissue of the low back by causing the erector spine muscles to assume a sustained isometric contraction. The term tension myositis syndrome (TMS) has been applied to this emotionally induced LBP by sarno (1984) and others. TMS indicates the production of LBP predominantly caused by sustained muscle contraction of the low back extensor muscles from deep-seated anxiety. This condition undoubtedly occurs frequently and must be accepted as a diagnosis and never as an accusation.

Kraus (1905) also has been a strong advocate of tension as causing LBP and dysfunction. TMS is an example of an abnormal stress on a normal spine, which affects the static LBP but may affect the kinetic spine, resulting in pain and impairment. In movement such as bending forward or the process of lifting, the erector spine muscles must elongate eccentrically in a slow and gradual manner. Muscles that are tense, albeit from an emotional cause, fail to relax adequately, or if they do relax, do so in an erratic

manner. Tissue irritation and inflammation result. A weight bearing lifted, which normally can be considered acceptable to a normal back, if lifted repeatedly to an excessive degree can result in fatigue. Fatigue, per se, can cause undesirable muscular reaction with accumulation of metabolites or can lead to failure to perform the needed function. Strain and sprain result (Cailliet, 1988).

## **2.5. Definitions of LBP are:**

LBP is pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, with or without leg pain; It may be acute or chronic; persisting for 12 weeks or more (Bigos et al, 1994).

It may refer to pain in the lumbosacral area of the spine encompassing the distance from the 1<sup>st</sup> lumbar vertebra to the 1<sup>st</sup> sacral vertebra. The most frequent site of LBP is in the 4<sup>th</sup> and 5<sup>th</sup> lumbar segment (Richard, 2007)

## **2.6. Classification of LBP:**

LBP can be classified based on the cause of pain into:

1. Nonspecific low back pain: In most cases it is very difficult to identify a single cause for LBP. About 85% of the LBP sufferers no clear pathology can be identified.
2. Mechanical type of LBP: result from inflammation caused by irritation or injury to the disk, the facet joints, the ligaments, or the muscles of the back. A common cause of mechanical pain is disk degeneration. A typical muscle strain, or lumbar strain, can also be the cause of mechanical type's symptoms.
  - 98% of LBP, sitting produces the highest load on the spine, typically worsens the pain.
  - Lumbar spinal stenosis: spinal stenosis is caused by a narrowed spinal canal.
  - Sacroiliac joint: Pain is worsened by extensive use of the leg, such as walking.
  - Spondylolysis/Spondylolisthesis:
3. Compressive or neurogenic type pain: A common cause of compressive pain is a herniated disk. The nerve that leave the lower lumbar spine joint to form the sciatic nerve. This nerve provides sensation and controls the muscles of the lower leg. Pressure or irritation on the nerve roots of the lumbar spine that come together to form the sciatic nerve can interferes with the normal function of the sciatic nerve. One of the earliest signs of pressure on a nerve root is numbness in the area supplied by the nerve (Sendra, 1996).

**LBP can be classified based on acuteness of pain:** (Asher, 2007)

1. Acute LBP is: Activity intolerance due to lower back or back and leg symptoms lasting less than 3 months. Most people gain relief within 4 to 6 weeks of home treatment. Best managed by good assessment, explanation (and reassurance), advice about staying active and expecting recovery, with simple analgesics and/or manipulation and advice against bed rest for more than 2 days

2. Recurrent LBP is: Episodes of acute low back problems lasting less than 3 months but which recur after an interval free of low back symptoms sufficient to restrict activity or function fairly common, a repeat episode of acute symptoms. Most people have at least one episode of recurrent LBP. Keeping the abdominal, back, and leg muscles strong helps protect the back from recurring injury and probably best treated in a similar way to acute LBP episodes
3. Chronic LBP is: It is defined as pain that persists longer than 12 weeks and is often attributed to degenerative or traumatic conditions of the spine, a major cause of disability that can leave a person miserable and unemployable. Chronic LBP is very difficult to treat, almost certainly easier to prevent than treat, often associated with psychosocial risk factors and a combination of exercises, pain medication, and developing skills for managing and coping with chronic pain is the recommended treatment for chronic LBP (Wheeler, 2007)

## 2.7. Causes of LBP:



In most cases it is very difficult to identify a single cause for LBP. About 85% of the LBP sufferers no clear pathology can be identified. LBP in a primary care setting, causes other than a benign self limited LBP, 4% compression fracture, 3% from spondylolisthesis, 0.7% from malignancy, 0.3% from ankylosing spondylitis and 0.1% from vertebral osteomyelitis (Nachemson et al, 2000).

### The following factors could contribute to LBP:

- The patient having had back pain in the past, smoking and obesity (Burton et al, 2006).
- Physical factors such as heavy physical work, frequent bending, twisting, lifting, pulling and pushing, repetitive work, static postures and vibrations (Anderson, 1997).
- **The causes of LBP included:** (Richard, 2007)

#### 1. Rheumatologic:

- Seronegative spondyloarthropathies, Ankylosing spondylitis, Psoriatic arthritis and Reactive spondyloarthropathies, Reiter's syndrome, Rheumatoid arthritis.
- Nonarticular rheumatic disorders and Myofascial pain and Fibromyalgia syndrome.

#### 2. Neoplastic Disease:

- Cartilage tumor, primary tumors of the spin and metastatic spinal disease.

#### 3. Infections: Acute or chronic

- Osteomyelitis or Discitis.

#### 4. Endocrine/Metabolic:

- Osteoporosis or Paget's disease.



### **5. Referred pain:**

- Pelvic disorders, Pelvic inflammatory disease, Prostatitis, Cystitis, Posterior duodenal ulcers and Renal (Swenson, 1999).

### **8. Psychological factors:**

Psychosocial factors such as stress, anxiety, depression, job satisfaction and mental stress (Burton et al, 2006).

### **9. Functional defects:**

Scoliosis, work or posture attitude (Jensen et al, 1994),

## **2.8. Pathophysiology of LBP:**

Acute mechanical back disorders of the lumbar spine result from overuse of normal musculoskeletal structures or from injury or deformity of an anatomical structure.

1. Acute low back strain is usually related to a specific traumatic episode (e.g., heavy weight lifting), or continuous mechanical stress on the ligamentous or muscular support of the LS. This type of pain also may be related to the posture of a patient with accentuated lumbar lordosis caused by weak abdominal musculature, tightened hamstring muscles, or the use of high heeled shoes.
2. A herniated disk is often preceded by years of intermittent episodes of localized LBP corresponding to repeated damage to the annular fibers of the disk. Approximately 98% of disk herniation occur at the L5-S1 (Involving the first sacral nerve) or the L4-5 (Involving the fifth lumbar nerve) levels. Herniations at the L2-3 and L3-4 levels are relatively uncommon. Only about 35% of patients with disk herniation actually develop true sciatica caused by mechanical pressure and inflammation of nerve roots.
3. Osteoarthritis of the LS primarily affects the articulator processes of the facet joint. Degenerative changes can result in a decrease in the size of the spinal canal, causing claudicating like symptoms of the lower extremities through mechanical pressure on neural structures (spinal stenosis) (Warren, 1997).

## **2.9. Risk factors for developing LBP:**

Risk Factors Symptoms, pathology, and radiologic appearances are poorly correlated. Pain is nonspecific in about 85% of people (Anderson, 1997).

Ankylosing spondylitis and spinal infections are less common (Deyo et al, 1992). Risk factors for the development of LBP include heavy physical work, frequent bending, twisting, lifting, and prolonged static postures. Psychosocial risk factors include anxiety, depression, and mental stress at work (Bongers et al. 1993).

Epidemiological studies also point to certain risk factors that influence the incidence or prevalence of LBP (Pope, 1989) These can be divided into two major groups:

## **1. Modifiable risk factors:**

### **A. Occupational factors:**

Hard labor and heavy exertions have been claimed as the cause of pain by more than 60% of patients with LBP (Boden, 1990, Pope 1989 and Riihimaki1989).

Lifting, pulling and pushing, twisting, slipping, sitting for an extended period, and exposure to prolonged vibration, in isolation or in various combinations, have been attributed to development of LBP. Persons who view their occupations as boring, repetitious, or dissatisfying might also report a higher rate of LBP (Anderson, 1983 & Vallfors, 1985).

### **B. Postural factors:**

The effect of scoliosis on spine pain and other postural changes such as kyphosis, increased or decreased lumbar lordosis and discrepancy in the length of the lower limbs in the production of LBP is controversial. Although these factors might contribute to LBP in some patients, no generally accepted hard evidence exists of a true association.

### **C. Spine mobility:**

Most subjects with LBP have at least some limitation of range of motion of the lumbar spine. One study done by Biering (1982) found that, more pronounced reduction of flexibility of the lumbar spine in subjects who went on to experience recurrence of LBP during the year after the examination.

### **D. Muscle strength:**

Several studies done by Addison (1980), Alston (1966), Bergquist (1977) and Berkson (1977) have shown decreased strength of abdominal and spinal muscles in patients with LBP. Studies Schultus (1982) have shown comparatively weaker extensors, whereas others Biering (1982) and Pope (1989) have shown comparatively weaker flexors.

### **E. Physical fitness:**

A study conducted in Los Angeles, firefighters found that physical fitness and conditioning had a preventive effect on LBP injuries. Another study done by Bergquist (1977) found, no difference in the rate of recovery from acute LBP with improved physical fitness. One study also done by Petrie(1993) found no correlation between cardiovascular physical fitness and back strength in a group of healthy, normal women aged 29 to 40 years.

### **F. Smoking:**

Person who smoke seems to have an increased likelihood of developing LBP. Smoking is also known to increases the incidence of osteoporosis (Deyo, 1989) & (Heliovara, 1989).

### **G. Psychosocial factors:**

Depression, anxiety, hypochondriasis, hysteria, alcoholism, divorce, chronic headaches and other factors have been reported with higher frequency in patients with chronic LBP. Whether these are the cause or the result of the LBP is unclear.

## **2. Non modifiable risk factors:**

### **A. Age:**

The likelihood of developing LBP gradually increases up until approximately 55 years of age (Battie, 1990 & Biering, 1982).

### **B. Gender:**

Men and women have similar risks of LBP up until age 60 years. Thereafter, women are at greater risk, probably because of the development of osteoporosis.

### **C. Anthropometric factors:**

There are no strong correlations between height, weight, or body build and LBP. However, there is a higher risk of LBP in very obese persons (Ikata, 1965) and possibly in tall persons (Biering 1982, Kelsey 1975, Lawrence 1966 & Tauber 1970).

### **D. Others:**

- Having a family history of LBP.
- Having had a previous back injury.
- Being pregnant. A woman's back is significantly stressed by carrying a baby.
- Having had compression fractures of the spine.
- Having had previous back surgery.
- Having spine problems since birth (congenital spine problems).

## **2.10. The costs of LBP:**

The National Health Service spends per year more than £10 billion on LBP related costs, this includes:

- This brings the health care costs for LBP to a total of £1.6 billion per year. (Maniadakis, 2000)
- In addition there are other (indirect) costs. The Health and Safety Executive estimates that musculoskeletal disorders, which includes LBP costs UK employers between £590 million and £624 million per year ( Her majesty's stationery office (HMSO), 1997)
- The total cost of LBP corresponds to between 1% and 2% of Gross National Product (GNP). (Norlund & Waddell, 2000).
- In USA the costs are estimated to range from \$20 billion to \$50 billion annually (Skinner, 1996).
- Other European countries report similar high costs (Van, 2006).

## **2.11. Prognosis:**

Acute LBP is usually self-limiting (90% of people recover within 6 weeks), although 2 to 7% develop chronic pain. One study found that recurrent pain accounted for 75% to 85% of absenteeism from work (Frymoyer, 1988).

## **2.12. Signs and Symptoms:**

Pain can be constant or intermittent. Intensity can vary from a dull ache to searing agony. The onset may be sudden, with or without apparent reason, or gradual.

Most LBP resolves in a few days or weeks with or without treatment. However, some people have chronic pain that lasts months or years.

3. Severe pain: lasting more than a few days without improvement may require medical attention.
4. Localized pain: Is often described as aching, tight, stiff, sore, burning, throbbing, or pulling.
5. Pinched nerves: Produce numbness or tingling, warm or cold sensations, and burning or stabbing pain that begins in the back and radiates down the leg (e.g., sciatica).
6. Compressed nerves: Cause numbness and weakness in the muscle associated with the nerve. The muscle may atrophy if the compression is not relieved. (Eric et al, 2007)
7. Pain caused by mechanical disorders typically improves with recumbence and worsens with activity (Davide, 1993).

## **2.13. Evaluation and diagnosis of LBP:**

### **2.13.1. Clinical Evaluation:**

#### **1. History:**

- A good history must be taken like mode of onset of LBP (abrupt or insidious). Provoking, aggravating, and relieving factors, history of lumbar surgery, types of treatments implemented, medications used and the effects of these medications on the symptoms.
- Red Flags: Features of Cauda Equina syndrome (especially urinary retention, bilateral neurological symptoms and signs, saddle anesthesia).
- Yellow Flags: Any factors that might limit an early return to usual activities, including work, clinical assessment of yellow flags may identify the risk of long-term disability, distress and work loss due to: Attitudes and beliefs about back pain, emotions, behaviors, family, compensation issues, work, diagnostic and treatment issues, should be investigated appropriately and referred if investigations are abnormal.
- No Red Flags, normal investigations and persistent symptoms should be referred to a specialist or specialist team if available.
- Significant trauma, Weight loss, History of cancer, Fever or intravenous drug use.

## 2. Examination:

- **Inspection:** back deformities, Para-spinal spasm, birthmarks, unusual hair growth, listing to one side, corkscrew deformity, decrease or increase in lordosis, presence of scoliosis, muscular atrophy, or asymmetries.
- **Palpation and Percussion:** Determine whether there are tender or trigger points, local tenderness or pain on percussion, spasm, or tightness of the Para-spinal muscles.
- **Range of Motion:** Range of motion should be determined. Values for normal range of motion of the lumbar spine are as follows: flexion, 40 degrees; extension, 15 degrees; lateral bending, 30 degrees; lateral rotation, 40 degrees to each side, the ROM measured by Tape measure method (Helliwell, 1992) and Inclinometers: for measuring spinal motions (Mayer et al, 1984).
- Various electronic and computerized gadgets are available for measurement of spinal range of motion, and measure muscle strength (Asmussen and Heeb, 1959),
- **Neurological Examination:** This is a very important part of the evaluation of patients with LBP (Department of Neurology, 1991).
- **Gait, Station, and Coordination:** Look for antalgic gait, foot drop, and functional or hysterical features, toe-walking, heel-walking.
- **Muscle Stretch Reflexes:** An increase, decrease, or absence of muscle stretch reflexes should be recorded..
- **Muscle Bulk:** Comparison of the circumference of the lower limbs, determined with a tape measure, at different levels (such as mid-calf level) is sometimes useful.
- **Muscle Strength:** To determine the muscle weakness is genuine or whether it is a giving-way as the result of pain, functional factors, or poor effort.
- **Sensory Examination:** Outline areas of sensory loss, the nature of the sensory tests should be carefully explained to the patient. Determine whether the reported sensory changes are consistent and reproducible and whether they follow anatomical dermatome patterns (although they may be noted in only part of a dermatome).
- **Straight Leg-Raising Test (Lasegue test):** The patient is instructed to inform the examiner when the pain occurs and also to report the location of the pain. This is often a reliable sign of root irritation.
- **The fabere test:** Is done to look for any associated hip disease. It is also known as Patrick's test.

### 2.13.2. Diagnosis of LBP:

Diagnosing the underlying cause of LBP can be difficult. A medical history is taken and a complete physical examination, which may include a neurological examination.

#### 1. Laboratory Tests

**2. X-rays:** Show the alignment of the cervical, thoracic and lumbar spine; and may reveal degenerative joint disease, fracture, or tumor.

**3. Computerized tomography (CT scan):** It is used to show abnormalities in bones and soft tissue. CT scan can be used for patients who are unable to tolerate MRI.

**4. Magnetic resonance imaging (MRI scan):** Provides clear images of disc deterioration, pathologies of the spinal cord, spinal stenosis, herniated discs, spinal tumors and abnormalities in nerves and ligaments.

**5. Myelography:** To examine the spinal canal and cord. Contrast dye is injected into the cerebrospinal fluid to outline the spinal cord and nerve roots, thus allowing abnormal disc conditions or bone spurs to be visualized with x-ray or CT scan.

**6. Electromyogram (EMG):** To test for abnormal electrical signals, which may indicate that a nerve root is pinched or irritated at the spine.

**7. Spinal tap:** Drawing a sample of cerebrospinal fluid and analyzing it for elevated pressure, infection, bleeding or tumor.

**8. Bone scan:** Locates problems (e.g., fracture, osteoporosis) in the vertebrae. (Eric & Stanley, 2007)

### 2.14. Recovery from LBP:

- 90% of the people with acute LBP will recover within 6 weeks.
- Up to 7% of the persons with acute LBP will develop chronic LBP. These chronic patients have considerable discomfort and account for approximately 80% of the social and health care costs (Nachemson et al, 2000).
- Nearly 40% of back pain sufferers consulted a general practitioner (GP) for help; 10% visited a practitioner of complementary medicine (osteopaths, chiropractors and acupuncturists) (Government Statistical Service, 1999).
- When experiencing LBP it is very important to stay active. Bed rest will only make the pain worse.
- Physical exercise can be a very effective method to reduce the pain and discomfort that long-term pain sufferer's experience (Airaksinen et al. 2006).

## **2.15. Treatment and Prevention of LBP:**

### **2.15.1. Treatment:**

Most cases of LBP are treated conservatively. If pain persists or worsens, or if other symptoms develop, a more aggressive approach is taken.

#### **1. Home remedies:**

Applying ice immediately during the 48 hours after straining a muscle can reduce pain. After spasms and acute pain subside, heat can be applied to loosen tight muscles. (e.g. a hot bath or whirlpool or a heat wrap that stays warm for 4 to 6 hours). Cold therapy (e.g. ice or cold pack application) may be effective at relieving LBP in some cases (Rootberg, 2007).

#### **2. Bed rest:**

Two or three days of followed by a gradual return to normal activity is sometimes recommended.

#### **3. Medication:**

Acetaminophen and ibuprofen are most commonly recommended for pain relief. Anti-inflammatory drugs (e.g., Celebrex), non-narcotic pain relievers (e.g., Tramadol), muscle relaxants (e.g., Flexeril), and narcotic pain relievers may be prescribed. An oral steroid (e.g., prednisone)

Chronic LBP caused by nerve root damage is sometimes treated with tricyclic antidepressants, such as amitriptyline (Elavil) and nortriptyline (Pamelor), for numbness, burning, aching, throbbing, or stabbing pains that shoot down the limbs. Anticonvulsant drugs, such as Gabapentin (Neurontin), may alleviate pain caused by nerve degeneration and persistent leg pain after surgery.

#### **4. Injections:**

Steroid injections can significantly decrease inflammation and pain.

#### **5. Physical Therapy:**

The goals of physical therapy in LBP are to decrease pain, increase function, restore normal movement, and prevent recurrences, it can be in the following forms:

##### **a. Massage therapy:**

May help to increase circulation to the affected area. There are several techniques and devices used in massage therapy.

Acupressure or pressure point massage may be more beneficial than classic massage (Hurwitz et al, 2003).

##### **b. Electrotherapy:**

To stimulate muscular contraction, increase muscle strength, and increase the flow of neurochemicals to the area.

**c. Ultrasound:**

Creating deep gentle heat that increases blood flow, relieves pain and inflammation, and reduces muscle spasms.

**d. Exercise:**

Exercises can be an effective approach. Generally, some form of consistent stretching and exercise is believed to be an essential component of most back treatment programs. However, one study found that exercise is also effective for chronic back pain, but not for acute pain (Van et al, 2004). Another study found that back-mobilizing exercises in acute settings are less effective than continuation of ordinary activities as tolerated (Burton et al, 1995).

Exercise can correct current back problems, help prevent new ones, and relieve back pain, particularly after an injury. Proper exercise strengthens back muscles that support the spine and strengthens the abdomen, arms, and legs, reducing strain on the back. Exercise also strengthens bones and reduces the risk of falls and injuries. Physical therapy and exercise, including stretching and strengthening with specific focus on the muscles which support the spine, often learned with the help of a health professional, such as a physical therapist. It is essential to speak with a doctor or physical therapist before starting an exercise regimen to ensure that it is appropriate.

**e. Body Awareness Therapy:**

An educational system centered on movement, aiming to expand and refine the use of the self through awareness. It is intended for those who wish to improve their movement repertoire (dancers, musicians, artists), as well as those wishing to reduce pain or limitations in movement and many who want to improve their general well-being and personal development (Dionne, 2005).

**f. Manipulation:**

Where there is stiffness of a lumbar segment, mobilization should be used to regain local mobility. This is an essential adjunct to mobilizing exercise that will work the mobile segments and not move the stiff segments. There may be a time, therefore, when it is appropriate to give mobilizations and to instruct the patient not to exercise between treatment sessions. Soft-tissue techniques of kneading and skin rolling are often indicated to release tight paravertebral muscle, supraspinous ligaments and fascia. If nerve root tethering is suspected, passive straight leg rising is appropriate. If the problem is long-standing, hold-relax techniques may be added to straight leg rising to lengthen tight paravertebral muscles. Rotation mobilizations may be used for a patient whose clinical findings point to a small protrusion. The theory is that the oscillatory nature of the technique reduces the bulge and the nuclear material becomes central again (Thomson et al, 1991) (Council on Chiropractic Education, 2007).

Traditionally, it is based on the premise that a vertebral subluxation or spinal joint dysfunction can interfere with the nervous system and result in many different conditions of diminished health (National Center for Complementary & Alternative Medicine, 2007).



**g. Traction:**

The force exerted by traction tends to separate vertebrae; therefore, nerve root pressure can be relieved. Also, in exerting a longitudinal stretch on the annulus fibrosus plus anterior and posterior longitudinal ligaments, there is a centripetal force tending to move the nucleus centrally. Given for half an hour daily for 3-4 days, traction is very useful. The force applied should reduce the pain about 50% (no more, otherwise the pain comes back more severely when the traction is taken off). A respectable working theory is that blood and lymph flow are increased by reduction in nerve root compression, bringing nutrition and removing inflammatory waste products. Therefore, the leg pain is diminished at first and cleared by three or four treatments. The patient must get off the traction bed with the lumbar spine in lordosis and thereafter maintain it. It may be wise to put strapping or a corset on to remind the patient of this, otherwise the weight of the upper trunk will compress the disc and the protrusion will gradually recur (Thomson, 1991)

**h. Acupuncture:**

Inserts hair-thin needles under the skin, which remain in place for 15 to 30 minutes. The needles cause little or no pain. Pain relief may result from the release of endorphins, the body's intrinsic painkillers. Generally, several sessions are needed. (Iea, 2000)

**i. Education and attitude adjustment:**

To focus on psychological or emotional causes, respondent cognitive therapy and progressive relaxation therapy can reduce chronic pain. It is the applied science of equipment design intended to maximize productivity by reducing operator fatigue and discomfort. Factors that may contribute to their back pain, such as improper lifting technique, poor posture, or poor support from their bed or office chair, etc. Although this recommendation has not been tested, this intervention is parts which do help (Carragee et al, 2005).

**6. Surgery:**

Surgery may be indicated for progressive or severe neurological dysfunction such as muscle weakness, spinal cord compression, or bowel, bladder or sexual dysfunction and for cases of pain that is not easily relieved under surgery we have.

**A. Discectomy:**

Is the removal of herniated disc material that is compressing nerves.

**B. Laminectomy:**

Removal of the lamina relieves compression on the spinal cord. Spinal instability is corrected by using a bone graft to fuse adjacent vertebrae.

**C. Implanted pumps:**

Deliver a constant rate of pain-relieving medication to the spinal area. Surgically implanted spinal cord stimulators modulate the pain response, so the patient experiences less pain.

### **2.15.2. Prevention of recurrence of LBP:** (Thomson et al, 1991)

The predisposing factors in the patient's lifestyle should be identified. If prolonged sitting is necessary, then a 'lumbar roll' should be used to maintain the lordosis. Also, every 20-30 minutes, the lumbar spine should be extended. For example, standing (hand on back above pelvis) – bend back; or prone lying – push up on hands keeping pelvis and legs steady. Every day, the spine should be moved through full range in every direction. Two other important exercises are:

1. Sitting on floor-stretch trunk forwards to touch toes with fingers.
2. Star lying-carry right leg up and over so that right foot touches left hand, repeat with left leg.

These exercises keep the nerve root and Dura mobile:

- Lifting techniques must be corrected and common sense applied to make sure the patient knows how much lifting to attempt and when to seek help.
- General fitness is important; bicycle and swimming are suitable activities.
- Excess weight causes excessive stress especially on the discs of L5-S1 and L4-5; therefore diet control is important.
- Protection with a broad belt during demanding physical activities is helpful.
- The back must be kept warm wearing a vest in winter or a woolen band covering T12-S2 is sensible in outdoor activities in cold weather.

There are things you can do to prevent LBP from happening or from becoming too serious. Here are important ways to prevent LBP (See annex14)

# Chapter Three

## Literature review

## **Chapter three**

### **Literature review**

#### **3.1. Introduction:**

This chapter reviews the literature about the prevalence and risk factors of LBP among physical therapy professionals.

#### **3.2. Epidemiology of LBP:**

In the industrialized world, LBP is second only to headache as a cause of pain. It is the leading cause of expenditure for workers compensation. Although it is often a self-limiting symptom, it costs at least \$16 billion a year (Grazier et al. 1984, Snook, 1982). And disables 5.4 million Americans (Feller 1981, Frymoyer, 1988). At some time in their life, (60% to 80%) of the population will have LBP (Cailliet, 1988). According to estimates of the united state (U.S.) Census Bureau, 1.8 million Americans were unable to work at some time during 1984 to 1985 because of LBP.

One study reported that 2% of all U.S. workers have a compensable back injury each year. Fifty percent to eighty percent of adults will have LBP at some time in their lives (Biering, 1983).

Almost 10 million women - over 41% of women have LBP each year, 80% of the women, their LBP started more than a year ago. All age groups are affected - a third of 16-24 year olds reported LBP in the last year, and nearly half among those aged 45-64 years. More women than men in the youngest and oldest age groups have LBP. Women's LBP tends to last longer than men's pain. Men are much more likely to have a short, sharp attack. Women are more likely than men to have restricted activity due to LBP (Office for National Statistics, 1998). Another study was done by Taylor in (1985) suggested that 25 million Americans lost 1 or more days of work annually because of LBP. About 2% of workers each year submit claims for disability due to LBP.

LBP is a symptom that can be caused by various disease entities and can be affected by various psychosocial factors. Furthermore, in the absence of specific anatomical and pathological finding, the pain is not objectively verifiable. Thus, applying the science of epidemiology to the subject of LBP is difficult. The available survey studies have to be analyzed with attention to several factors, including the presence or absence of specific anatomical change or pathological process, whether the pain is severe or trivial, whether the report of pain is through questionnaires or through direct evaluation of the patient, whether the patient is referring to LBP or to spine pain in general, and the accuracy of the patient's report (a pre-employment health survey typically does not reveal the same prevalence of LBP as does an anonymous survey). Taylor & Curran (1985) reported in questionnaire was conducted through telephone interviews of 1254 Americans, revealed that 56% of the adult population had some LBP in the year preceding the survey, and 3% of them had LBP for more than one month. The U.S. population in 1985 was approximately 180 million, and one can conclude from this study that approximately 100 million people had some LBP and 6 million had LBP for more than 1 month during that year (losser, 1991).

In a study conducted in Finland by Heliovaara (1998) showed that, about 75% of both men and women reported having had at least one episode of LBP, 45% recalled at least six episodes of LBP, and 18% reported having LBP in the previous month.

Previous studies were done by Biering (1982), Frymoyer (1985), Pope (1989), Spangfort (1972), and Svensson (1983) suggested that a lifetime rate of LBP of about 60% to 90% and an annual rate of about 5%.

The overall incidence of LBP is equal in men and women, but women report more LBP after age 60 years. This difference is likely to be due to the development of osteoporosis in women (Biering, 1982).

Only 1% of patients with acute LBP have lumbar radiculopathy. This rate is probably even lower for those with chronic LBP. Lumbar radiculopathy often occurs in patients during the fourth and fifth decades of life. The average age of patients who undergo lumbar laminectomy and discectomy is 42 years. (Frymoyer 1988 & Spangfort, 1972).

Prevalence More than 70% of people in developed countries will experience LBP at some time in their lives. Each year, 15 to 45 percent of adults suffer LBP, and one in 20 people present to a hospital with a new episode. LBP is most common between 35 and 55 years of age (Andersson, 1997)

### **3.3. The local and global studies about the prevalence and risk factors of LBP:**

LBP is most common among physical therapy professionals in GS, related to a study done by Abu Rayya (1999), which showed that 71% of interviewees reported having had LBP at some time in their lives, 32.7% period prevalence, 37.1% point prevalence at the time of applying the questionnaire. The occurrence rate of LBP among health professionals in UNRWA was high but in the general population range prevalence of LBP affects 60-80% of adults at some time during their lives, the highest rate was 93% among PTs/PTA, Dentists/Tech. 80%, Laboratory Tech. 75%, Nurses 71.2%, Midwives 71%, Pharmacists/A. 68.6%, Doctors 60.6%, and health education was 60%.

Michel et al (2008) who reported in his study aims, that investigate the prevalence and factors associated with LBP among health professionals working in a Kuwait hospital. A self-administered survey was conducted with health professionals in an urban orthopedic hospital. The response rate was 60% (n = 344). And the results showed that Lifetime prevalence of LBP in that sample was 70.9%, and point prevalence of LBP was 21.5%. And the results suggested that direct patient contact that includes lifting and transferring patients may be an important risk factor for LBP.

Another study was conducted in Kuwait to determine the point prevalence and to study the characteristics of work-related and non-work-related LBP among PTs in Kuwait and its effect on their regular activities. Self-administered questionnaires were distributed to 143 individuals and the results showed that one hundred, which represented 70% of the 143 physical therapists, completed the questionnaire. The lifetime prevalence of work-related LBP was 70% (31.6% in males and 68.4% in females) and the point prevalence rate was 57% (31.6% in males and 68.4% in females). All the 100 therapists

were college graduates who worked full-time and 82% were employed in general hospitals and rehabilitation centers. The most common areas of specialty were orthopedics (32%) and neurology (23%). Fifty percent reported that LBP affected their regular activities, 28.6% reported limitation due to pain and 11.4% changed their work settings because of LBP. The main site of pain was at low back and buttocks. Pain intensity was scored similarly among male and female (Shehab, 2003).

LBP is one of humanity's most frequent complaints in the US; acute LBP is the fifth most common reason for all physician visits. About nine out of ten adults experience BP at some point in their life, and five out of ten working adults have BP every year (Patel, 2007).

The objective of this study was to explore the prevalence of occupational low back pain and assess work-related risk factors in Intensive Care Unit (ICU) nurses. The subject was 477 ICU nurses working in other wards (control group) of the same comprehensive hospital were investigated using OLBP Investigation Questionnaire for nurses including working postures and related work activities. The results was, the prevalence of OLBP 87%, frequency of OLBP (48%=1 per month) and OLBP related work-absence (7%) of the ICU nurses were significantly higher than the control group (64%, 32% and 2%, respectively). The frequency of harmful postures occurred during working tasks of observing drainage, lifting and transferring patients in bed, injection, suctioning and adjusting drip were 99%, 90%, 75%, 75% and 6%, respectively. Suctioning, injection, observing drainage, lifting and transferring patients in bed were 100:155:199:301:418. That mean the Prevalence of OLBP in ICU nurses is high. High frequency of bending and twisting, transferring patients in bed are the main causes of OLBP in ICU nurses (Sun, 2007).

The study was done by Bos et al (2007) using a cross-sectional survey design and that aimed to study the prevalence rates of musculoskeletal complaints of neck-shoulder and low back and to determine the relation between physical and psychosocial work-related risk factors and the complaints mentioned in non-specialized nurses, operation room nurses, Intensive Care (IC) nurses and X-ray technologists . It included 3,169 employees affiliated to eight university hospitals in the Netherlands. The parameters under study were having or having had (severe) low back or neck-shoulder complaints during the past year. In all groups prevalence rates of musculoskeletal complaints were high: low back 76%, neck-shoulder 60%. Operation room nurses perceived more neck-shoulder complaints (12 months prevalence) than non-specialized nurses and IC nurses perceived less severe low back complaints than non-specialized nurses. Four physical risk factors and one psychosocial factor were associated with low back complaints in all groups. The prevalence rate of neck-shoulder complaints in operation room nurses is higher than in non-specialized nurses and IC nurses, the latter groups having high prevalence rates already. The exposure to risk factors is perceived differently by each of the professional groups.

In the study conducted by Feng (2007) aimed to assess the prevalence and risk factors for different measures of LBP among nursing aids (NAs) in Taiwan. A self-administered questionnaire was conducted among 244 female (NAs) from 31 nursing homes in central Taiwan. The result was for this pain lasting for at least one day, seeking of medical care, intense pain, sick leave, and chronic pain were 66.0%, 43.9%,

38.1%, 10.7%, and 8.6%, respectively. While multiple logistic regression analyses indicated that the risk factors varied with different measures of LBP, at least one high risk patient-handling task and one psychosocial factor were observed to be associated each LBP related measure. Three risk factors, including manual transfer of patients between bed/wheelchair and bath cart, perceived physical exertion, and psychological demands, were consistently associated with different measures of LBP and age associated with an increased risk of pain.

The study conducted among professional cooks to determine the prevalence of LBP and to examine the effects of daily life conditions, job-related factors, and psychological factors on this disorder. The data was collected using a mailed self-administered questionnaire. Showing that of 5835 from 7100 cooks (82%) replied to the questionnaire, including 1010 men and 4825 women. The mean ages were 41.4 years for men and 47.5 for women. The prevalence of LBP during a 1-month period was 72.2% among men and 74.7% among women, with no significant differences between groups. By logistic regression analyses, factors significantly associated with the prevalence of LBP in 1 month were female gender, followed by current smoking, and past smoking. As for job-related factors, the number of cooked lunches per person, breaks in the morning session, kitchen environment, and height of cooking equipment were associated with the presence of LBP. As for psychological factors, job satisfaction, stress at work, financial constraints, health-related stress and worried about the future were similarly associated with LBP (Nagasu, 2007).

By Liang (2007) this study was conducted among foundry workers that aim to clarify the prevalence and risk factors of work-related musculoskeletal disorders (WMSDs). A detailed questionnaire describing work history, ergonomic conditions at work, and signs and symptoms of the musculoskeletal system was applied to the investigation among 617 foundry workers. The study population consisted of 80% males and 20% females with a mean age (SD) of 34.4(9.5) years and a median working duration of foundry of 3 years (ranged from <1 year to 30 years). Most of the subjects had their junior middle school career with a mean (SD) of 6.8 (2.7) schooling years. The prevalence of LBP ranked the top regardless of job titles and its risk factors inducing LBP seem to be smoking, lifting, and vibrating tool usage. The prevalence of work related LBP and back tenderness are both ranked at the highest for the molders, followed by cleaners.

Vindigni examined the association between LBP and modifiable risk factors in a large rural Indigenous community as a basis for informing a musculoskeletal health promotion program. A community Advisory Group (CAG) comprising Elders, Aboriginal Health Workers, academics, nurses, a general practitioner and chiropractors assisted in the development of measures to assess self-reported muscular-skeletal conditions including LBP risk factors. The survey included a community-based survey administered by Aboriginal Health Workers followed by a clinical assessment conducted by chiropractors. Age and gender characteristics of this Indigenous sample were comparable to those reported in previous Australian Bureau of Statistics (ABS) studies of the broader Indigenous population. A history of traumatic events was highly prevalent in the community, as were occupational risk factors. 34% of participants reported a previous history of LBP. Sporting injuries were associated with multiple musculo-skeletal conditions, including LBP. Those reporting high levels of

pain were often overweight were associated with self-reported low back strain (Vindigni, 2007)

Babar et al (2006) showed that in new study in back and neck pain is an established occupational disease for many professions. No previous studies have shown the association of back and neck pain with ear-nose and trachea (ENT) surgery. The objective was to determine the prevalence of neck and BP in ENT consultants in the United Kingdom and which sub-specialties' were most at risk. A national survey from 325 ENT consultants in the UK revealed that 72% had either back pain or neck pain or even both. Of those with pain 53% attributed their symptoms directly to ENT surgery. Highest figures were received from otologists, related to microscope work and prolonged sitting. The importance of these findings has demonstrated the lack of awareness and adequate training to prevent long-term disability in ENT surgeons.

Clermont et al (2006) summarized the scientific evidence on the trends of LBP prevalence with age. The population-based studies reporting the prevalence of LBP, including people aged 65 years and over, were systematically retrieved from several bibliographic databases. These were read and assessed by two reviewers, and papers retained ('good quality studies') were aggregated according to specific criteria. The results showed a large heterogeneity as to their methods and prevalence figures. No specific patterns were detected by neither country nor outcome measure. However, most studies that considered severe forms of LBP found an increase of prevalence with increasing age.

A cross-sectional study was done by Dündar (2006) which was studying the prevalence of LBP and to evaluate the effects of household jobs on LBP in women living in a rural setting in Manisa. Studying population was consisted of 302 women and cluster sampling is performed according to percentage of health center district populations. Participation ratio of this study was 89.1%. Life time and point prevalence of LBP were determined 79.2% and 34.9% of the study group. LBP risk was higher in wrong posture during ironing, heavy load lifting, overweight/obesity and disability. For preventive health measures it is necessary to apply ergonomic working conditions and to give appropriate postural habits to women.

Niemelainen et al (2006) used descriptive epidemiologic study to examine the 1-year prevalence, severity, and frequency of mid-back pain in a general population sample of men, with comparisons to neck and LBP. A total of 600 finish men 35 to 70 years of age were drawn from a population-based twin sample and interviewed with standardized pain questions. The result was 1-year prevalence of mid-BP was 17.0%, for neck and 66.8% for LBP. The frequency of pain over the previous year among those with mid- and LBP was less than for neck pain. The mean severity of the worst pain episode was highest for LBP followed by mid-back and neck pain, which were similar. Associated disability tended to be less frequent from mid-back pain.



A study reported that, a higher prevalence of musculoskeletal pain in women than in men. (i.e., 1-y period prevalence, point prevalence, prevalence of chronic pain, and prevalence of persistent chronic pain); and different anatomic pain sites. Cohort study and Monitoring Project on Risk Factors for Chronic Diseases-study) were used. The study population consisted of persons aged 25 to 64 years living in the Netherlands. Data on self-reported pain complaints were assessed by written questionnaires. The study results was, prevalence rates of musculoskeletal pain were higher for women than for men in the Dutch general population aged 25 to 64 years on the basis of 2 population-based surveys. For musculoskeletal pain in any location, 39% of men and 45% of women reported chronic complaints. Highest female predominance was found for the hip and wrist/hand, whereas lowest and not statistically significant sex differences were found for the lower back and knee. All duration parameters of musculoskeletal pain showed a female predominance of musculoskeletal pain (1-y period prevalence, point prevalence, prevalence of chronic pain, and prevalence of persistent chronic pain). In those with persistent chronic pain, women tended to report higher severity scores (Wijnhoven, 2006)

An additional study had done by Beria (2005) evaluated the prevalence of LBP among hospital staff, analyzing the medical and professional consequences as well as investigating into the factors associated to this health problem. He was conducted in an inquiry among 350 employees at Fattouma Bourguiba teaching hospital. The employees had answered the questionnaire. The researcher found the cumulative life-prevalence was 57.7% of the cases. The annual prevalence was 51.1% of the cases. Chronic LBP prevalence was 12.8% of the cases. Medical care was required in 61.9% of the cases. Radiological explorations were performed in 45% of the cases. Sick leave was observed in 26.1% of the cases and an occupational change was necessary in two cases. Factors associated to LBP were age, female gender, high BMI, the fact of being married or divorced, smoking, past medical LBP history, extra professional activity, migraine, years' service as well as heavy weight lifting. Exercising is rather a protecting factor against LBP.

Khan & Siddiqui (2005) were studied the prevalence of LBP in computer users and how different age groups behave under prolong sitting posture on axial loading against time among students of computer institutes and the data from hospital base practice in the city of Karachi. A cross sectional study design used by initial screening questionnaire followed by further clinical examination and evaluation. The main outcome measures, variation in the pattern of LBP in response to duration of work, age and gender against time was noted. The results were of LBP in computer users was more common in the younger age group (16-18 years) with a second surge (23-30 yrs) specially at the beginning of their carrier with a prevalence rate of 6.7%, mean age 30.29 and a frequency of male to female 223:95, novice to professional 182:136, single to married 192:127, about 44% of users developed LBP in 4 hours and 35% in 3 hours about 50% of them found to have lax back muscles.

The objective of this study was to determine whether obesity is associated with LBP. In addition this paper aimed providing a step-by-step guide for chiropractors and osteopaths on how to ask and answer a clinical question using the literature. A literature review using the Medline search engine using the keywords "obesity", "low back pain", "body mass index" "BMI" and "osteoarthritis" from years 1990 to 2004 was utilized.

The method employed is similar to that utilized by evidence-based practice advocates. The results show that available data at this time is controversial with no clear-cut evidence connecting LBP with obesity (Timothy & Leon, 2005)

Normadiah (2005) used a cross sectional study of 330 doctors of Hospital Kuala Lumpur, self-administered questionnaires used to determine the prevalence of LBP among the doctors. The researcher was found that a large of the subjects had complained of LBP. About 74.6% were currently affected or had been affected in the past by LBP. The doctors who initially without LBP before working about 59.2% of them developed LBP during working life, and those who already had the LBP prior working, 87.3% of them continued having LBP during working life. Females noted a significantly suffering from LBP. Indian had higher risk, but Chinese had lower risk of in development of LBP compared to the Malay ethnic group. It was found that married respondents were slightly higher risk when it compared to single respondents. The prevalence of LBP among respondents who smoked was higher than those who did not smoke. Factors such as gender, weight and height were found to have statistically significant association with LBP. However, they were observed not to be predictive of LBP. There were no significant associations found between other socio-demographic factors, other risk factors and LBP. And bad posture over a long period while working being the causal related factor with the highest prevalence of LBP.

Conducted study was done by the Folletti (2005), showed that the characteristics of LBP to (512) subjects. In the previous year the prevalence of LBP was (58.8%), it was more common in subjects under (45) years of age. LBP lasted >1 week in (29%) of females and in 23% of males. LBP caused change of duties or time off work in (11%) of females and in (8%) of males.

Jinky's study the prevalence and risk factors for LBP among workers in manufacturing industries in the Philippines. The researcher used a cross-sectional study using a stratified random sampling technique. Thirty-one industries were selected sampled from each industry. There were 495 workers surveyed for the symptoms questionnaire and 544 for the anthropometric measurements. The results showed that 5.1% experienced discomfort, 2% had trunk rigidity and 1.4% had both limitations of trunk motion and activities of daily living. Logistic regression showed that LBP was significantly associated with leaning, bending, and carrying for 2-8 hours and with standing for 2-8 hours. It also was found to affect work performance and more likely to occur 14 times as often after work as during the initial work sessions. Anthropometric measurements of the workers showed that the mean height is 159.96 cm, mean chest height is 115.70 cm, waist height is 96.95 cm, and knee height is 47.37 cm. Anthropometric data between sexes was also presented. This anthropometry can be used for the design of working equipment of Filipino workers (Jinky, 2004)

Another study which was done to determine the prevalence and risk factors for LBP among office workers in Ibadan, Nigeria. The researcher used a cross-sectional study design and 840 Questionnaires were distributed among office workers in the civil service in Ibadan, Nigeria. The response rate was 66%. The result which was found the prevalence of LBP was 38% and the point prevalence was 20%. LBP was significantly associated with senior staff grade and smokers. Severity of LBP was associated with

sitting for >3 h. Only 16 respondents (5%) reported sick leave due to LBP in the previous year (Omokhodion et al, 2004)

McBride showed in another study that 54% experienced LBP in the previous 12 months, with a modal frequency of three or more times a year. For the 448 individuals with a current occupation, there was no difference in the distribution of LBP between those with professional, clerical, and technical jobs and those with production or trades jobs, fifty-six individuals had to have time off work (the majority for less than 7 days), and 13 individuals could not look after themselves because of pain ( McBride, 2004).

In 2004, Stergioulas and others were studied the factors related to occupational LBP occurring in male physical education teachers (PET). The questionnaires used to collect information. The prevalence of LBP during the survey was 63%. The correlation of personal factors and LBP showed that the prevalence of LBP was significantly higher in those PET who answered yes to the item "no personal training" than in the PET who did not. Moreover, many occupational factors are related to LBP. These were the items "lifting gym instruments" and "helping students into flexing posture". From the working conditions it was confirmed that the PET who "spent more than 35 hours per week in teaching physical education" were correlated with LBP (Stergioulas et al, 2004).

This study was done to know the prevalence of LBP in a group of hospital nursing personnel in 180 subjects (89% women). A questionnaire on LBP was collected. The prevalence of LBP episodes during the last 12 months was 63.9%. No difference was observed according to the working area (medicine, surgery, emergency). The proportion of subjects with LBP tended to increase according to the previous duration of work, but not with age. The prevalence of LBP was significantly lower in nursing personnel working according the team nursing model that is less repetitive and involves less work load, compared to the functional nursing model (Martinelli et al, 2004).

A cross-sectional study was done among public sector nurses in Auckland, information obtained via self-administered questionnaire. A response was received for 83% of the nurses. The lifetime prevalence of BP related to nursing was 62%, with an annual prevalence of 37% and a point prevalence of 37%. The annual and point prevalence were highest in Pacific Island nurses. The annual prevalence was highest in nurses from orthopedic (54%), geriatric (48%) and medical (44%) wards, and the point prevalence was highest in nurses from geriatric (19%) and medical (14%) wards. Current BP related to nursing was reported by 12%. Raised relative risks, adjusted for the other predictor variables, were found for LBP in Pacific Island nurses compared to Caucasian nurses, non-registered nurses compared with registered nurses and persons with a body mass index (BMI) greater than 30 kg/m (Steenland, 2003)

Rugelj showed that 15% of the active physiotherapists in the Republic of Slovenia that the overall incidence among the sample population of physiotherapists is 73.7% and the most prominent factor appear to be the age of the respondents. The only triggering factor for LBP within the physiotherapy profession appears to be handling of dependent patients (Rugelj, 2003).

Maetzel (2002) found that, the cost of LBP illness was high and was comparable to other disorders such as headache, heart disease, depression or diabetes, but actual cost estimates varied depending on the costing methodology employed. A small percentage of patients with chronic LBP accounts for a large fraction of the costs. Excessive and inappropriate use of diagnostic or therapeutic services can be documented but varied by region and provider type. Management according to evidence-based guidelines was not necessarily economically attractive. Interventions for acute or chronic LBP failed to show economic benefits, but demonstrated modest clinical benefits, which suggested a weak relationship between clinical and economic outcomes.

In 2001, the Lee study the various factors associated with LBP in an industrial setting. A cross sectional study was carried out among 1,562 employees of a large utilities corporation in Ontario. A self-administered questionnaire used. Abdominal muscle strength was measured using a modified sphygmomanometer. Statistical analysis was carried out with Student's t test, chi-square test, and logistic regression analysis. He showed that 1,302 male employees the lifetime and point prevalence of LBP were 60% and 11% respectively. LBP was significantly more prevalent among married employees, with more physically demanding jobs, regular lifting, poor general health, and past major illness. Abdominal muscle weakness was associated with current LBP. The mean time lost from work due to LBP over 5 years was 17 days. Sedentary workers developing LBP were more likely to require hospital admission (Lee, 2001).

Omokhodion (2000) used a cross-sectional study in a rural hospital in southwestern Nigeria that determine the prevalence of LBP among it's staff. The questionnaire administered to staff. Seventy four out of a total of 80 workers participated in the study. The prevalence of LBP among staff was 46%; the highest prevalence of back pain (69%) was recorded among nursing staff, followed by secretaries/administrative staff (55%) and cleaners/aides (47%). Heavily physical work (45%), poor posture (20%) and prolonged standing or sitting (20%) were the most frequent activities reported to be associated with LBP among these workers. Health education on posture and correct lifting techniques can be introduced to reduce the burden of LBP among these workers.

Cromie (2000) study the relationship between prevalence and work-related muscular skeletal disorders among physical therapists. Younger therapists reported a higher prevalence of musculoskeletal disorders in most body areas. Using of mobilization and manipulation techniques was related to increased prevalence of thumb symptoms. Risk factors pertaining to workload were related to a higher prevalence of neck and upper-limb symptoms and postural risk factors were related to a higher prevalence of spinal symptoms.

Latza et al (2000) showed in his study that he was identified work related risk factors of future LBP in a cohort of construction workers free of LBP at the start of follow up. The Hamburg construction worker study comprises 571 male construction workers who have undergone two comprehensive interview and physical examination surveys. A cohort of 285 subjects without LBP at baseline was identified. After following up for 3 years, the 1 year prevalence of self reported LBP was determined in

the 230 men followed up (80.7%). Prevalence ratios (PR) with 95% of LBP at follow up according to self reported work tasks of construction workers measured at baseline were estimated from Cox's regression models which were adjusted for age, and anthropometric measures. At follow up 71 out of 230 workers (30.9%) reported LBP during the preceding 12 months. Four work tasks (scaffolding, erecting roof structures, sawing wood, and laying large sandstones) with an increased risk of 1 year prevalence of LBP at follow up were further evaluated. After further adjustment for occupation the relative risk was increased for workers who had reported  $\geq 2$  hour/shifts laying large sandstones. Work load of bricklayers was additionally estimated by an index on stone load high exposure: (PR=4.0), and an index for laying huge bricks/blocks (yes/no: PR= (1.7).

Similar study was carried out in a rural hospital in south-western Nigeria by Omokhodion (2000) that determined the prevalence of LBP among it's staff. The highest prevalence of BP (69%) was recorded among nursing staff, followed by secretaries/administrative staff (55%) and cleaners/aides (47%), heavy physical work (45%), poor posture (20%) and prolonged standing or sitting (20%) were the most frequent activities reported to be associated with LBP among these workers.

As well, Patricia (1999) told that, prevalence of LBP had been reported in the literature for different populations. Methodological differences among studies and lack of methodological rigor have made it difficult to draw conclusions from these studies. A systematic review was done for adult community prevalence studies of LBP published from 1981 to 1998. The technique of capture-recapture was performed to estimate the completeness of the search strategy used. Established guidelines and a methodological scoring system were used to critically appraise the studies. Thirteen studies were deemed methodologically acceptable. Differences in the duration of LBP used in the studies appeared to affect the prevalence rates reported and explain much of the variation seen. It was estimated that the point prevalence rate in North America is 5.6%. Further studies using superior methods are needed, however, before this estimate can be used with confidence to make health care policies and decisions relating to physical therapy.

Holder showed that 32% of the Physiotherapists and 35% of the Physiotherapists Assistants reported sustaining a musculoskeletal injury. The highest prevalence of injury was to the low back 62% Physiotherapists of injured and 56% Physiotherapists Assistants of injured. The Physiotherapists (PTs) reported the upper back, wrist and hand as having the second highest prevalence 23%. The Physiotherapists Assistants (PTA) reported the upper back as having the second highest prevalence (28%). The PTs and PTAs reported making changes in their work habits of improved body mechanics, increased use of other personnel, and frequent change of work position. The majority of PTs and PTAs reported they did not limit patient contact time or area of practice after sustaining an injury (Holder, 1999).

An epidemiological study that was determine the prevalence rate of LBP among health care workers exposed to manual handling tasks and physical work load was performed. A representative sample (N. 1053) of nursing staff working at the San Matteo Hospital in Pavia was studied, using the questionnaire. The purpose of the study was to evaluate the prevalence rate of LBP and related risk factors. 86.4% of the subjects suffered from LBP at some stage in their life and 71.0% complained of LBP in the 3 months prior answering questionnaire. Multivariate logistic regression analysis revealed a significant correlation between LBP, female gender and specific nursing activities. A significant correlation was found between smoking (> 20 cigarettes per day) and the presence of LBP, due to intervertebral disk pathology. A statistically significant difference ( $p < 0.0001$ ) was found in the average degree of disability between healthy nurses (1.3%), those with LBP taking analgesic drugs 5.9% and nurses suffering from LBP without taking drugs 3.8%. (Marena et al, 1997)

A study done by Mierzejewski (1997), reported that 49.2% complained of BP due to work. The occurrence rate of work-related LBP among physical therapists in Edmonton was higher than that of the general population reported in Canada (27%), Great Britain (27%), and the United States (26-29%). The initial onset of work-related LBP frequently occurred within the first 5 years of practice as a physical therapist, and before the age of 30. Hospitals and private practices were the most prevalent work settings in which injury occurred. Patient handling, bending, stooping, lifting, carrying, pushing, and pulling was the commonly described activities causing precipitation of injury. The severity of back discomfort had been sufficient to require (13.7%) of therapists to stop their work despite LBP, (35.3%) of the pain sufferers continued to work. Over half (55.4%) of the respondents with current work-related LBP demonstrated little or no disability.

The researcher study the back pain prevalence and physical working conditions of community nurses and the purpose was to compare the position of nurses working in institutional care with the specific situation of nurses working in the private homes of their patients. The results showed that the BP prevalence was relatively high as compared to other occupations and also when compared to other health care sectors. The home care organization is influenced not only by sick leave due to BP, but also its efficiency is hampered by nurses with back pain who continue to work. It appeared that the total sick leave incidence due to musculoskeletal disorders other than BP exceeds that due to back pain alone. The physical exposure level not only consisted of frequent and heavy lifting and transferring of patients but also a substantial static workload was present. The onset of BP seems to result from a gradual build up of overload reaching its maximum (Knibbe et al, 1996).

A survey instrument was constructed by mail to physical therapists included 1,160 individuals who attended to University of Iowa in between 1943 and 1993, the response rate was 80% from physical therapists in (46) states, the result showed that the highest prevalence of Work-related and muscular disorder among physical therapists were in the following anatomical areas low back (45%), wrist/hand (29.6%), upper back (28.7%), and neck (24.7%), the job factor rated most likely to contribute to job-related musculoskeletal disorders was "lifting or transferring dependent patients." The prevalence of WMD in physical therapists also was affected by work setting, practice specialty, age of patient, and gender of therapists (Bork, 1996).

The study which was conducted in Japan by Fujimura (1995) established the relationship between LBP among nursing aides (NAs) in Special Nursing Homes (SNHs) for the Elderly and the degree of dependency in the activities of daily living (ADL) of the patients under their care. In order to investigate the work-related factors of LBP. A questionnaire was sent to the NAs, requesting information on the NAs' LBP condition. Another questionnaire was sent to the 32 SNHs, concerning the status of patients in the respective SNHs. Of the 463 NAs questionnaires which were returned, 443 female NAs responses were analyzed. The prevalence of LBP among the NAs was high (the one month prevalence was 77.0%), and of the afflicted NAs, 98 (24.5%) were visiting a health care provider. The NAs with LBP experienced difficulty in completing their care-giving tasks, and complained about their working conditions and working environment more often than the NAs without LBP.

A cross sectional survey conducted for 2405 nurses employed by a group of teaching hospitals. The response rate was 69% among 1616 women. The aim was to investigate the risk factors for LBP in hospital nurses, with particular emphasis on the role of specific nursing activities. A self administered questionnaires conducted to collect information about occupational activities, non-occupational risk factors for back symptoms, and history of LBP. The result showed, lifetime prevalence of LBP was 60% and the one year period prevalence 45%. 10% had been absent from work because of BP for a cumulative period exceeding four weeks. Rates in men were generally similar to those in women. In women BP during the previous 12 months was weakly associated with height, and was significantly more common in those who reported frequent non-musculoskeletal symptoms such as headache and low mood. After adjustment for height and non-musculoskeletal symptoms, significant associations were found with frequency of manually moving patients around on the bed, manually transferring patients between bed and chair, and manually lifting patients from the floor. In contrast, no clear increase in risk was found in relation to transfer of patients with canvas and poles, manually lifting patients in and out of the bath, or lifting patients with mechanical aids (Smedley, 1995).

Another study also conducted in China which had done by Chiou (1994) showed that 98.3 % in nursing personnel in (5000) bed medical center in Republic of China.

The risk factors for LBP were age, stature, and body weight, duration of work, work habits, and sitting posture. The lifetime prevalence of LBP was 77.9 %. The primary cause of LBP was lifting heavily objects. Muscle strain was the most common diagnosis. For LBP treatment, the nurses' first choices were physical therapy and rehabilitation.

In this study, a questionnaire-based retrospective survey was conducted in a sample of (101) health professionals with history of LBP including physicians, nurses and physiotherapist. The prevalence of LBP in the population studied was (30.7%) at the time of survey, the cumulative incidence being (70.6%). The incidence of painful episodes was highest between the ages of (40 and 50). The mean age at onset of the first and last attack of pain was (30.5 and 42.7) years, respectively. The average frequency of attack was 9 occurrences over the past 5 years with a mean duration of 9 days/attack. The mean age at highest frequency was (38.6) years. In (26.7%) of the interviewers LBP occurred at work, in (57.4%) elsewhere. The most common causes of pain were inadvertent movement at work (70.3%), heavy lifting (60.4%) or heavy physical work

(43.5%), while in 35.6% of subjects no clear cause could be identified, Lumbo-sciatica was reported in (33.6%) of the sample (Jelcic, 1993).

The severity and duration of attacks of LBP recorded on a physician-administered questionnaire in 208 workers in a pharmaceutical factory, LBP was reported by 138 (66.3%) of the workers. Although over (75%) of jobs in the packing department, laboratories and offices required prolonged sitting, LBP was most prevalent among workers in the packing department, where the chairs were found to be ergonomically unfit. We concluded that among these pharmaceutical company employees, prolonged sitting and work in the packing or production departments were independently associated with LBP prospective studies are warranted to substantiate our findings (Rotgoltz, 1992).

An interesting study reported that 29% of work-related LBP the initial onset most frequently occurred between the ages of 21 and 30 years and within the first four years of experience as a physical therapist, 83 % of the therapists first incurred work-related LBP during treatment of patients, primarily in acute care and rehabilitation facilities. Lifting with sudden maximal effort and bending and twisting were frequently mechanisms of injury (Molumphy, 1985).

Lavsky (1985) showed in an interview survey among 3,097 rural persons 65 years and older. The prevalence and functional correlates of specifically defined LBP were studied. LBP was reported by 23.6% of the women and 18.4% of the men in the year prior to the survey, with prevalence rates declining with age. 40% of those with LBP noted its presence at the time of the interview. Over half had used analgesics. Use of medical and chiropractic services for this symptom was nearly 75%; 25% had at least one hospitalization directly related to LBP and over 5% had low back surgery. Limitation of walking, sitting, bending over, and performing household chores was reported by 15 to 40%, and 21% attributed sleep disturbance to the LBP. Nearly 75% of subjects with LBP reported first onset of the problem prior to age 65, which has important implications for pathogenesis and prevention.

The study which had done by Videman and others, the questionnaires were sent to qualified nurses (QNs) and nursing aides (NAs) to study the prevalence of LBP and sciatica in relation to age, work-load, free time activities, menstruation, pregnancies and number of children. LBP and sciatica severe enough to make them unfit for daily tasks were significantly more common in NAs. Back injury and disability pension due to sciatic symptoms were also more common in NAs. Occupationally, NAs had twice the amount of lifting, bending, and rotation, while QNs reported more sitting and standing at work. Under the age of 30, the heaviness of the work was related to LBP in both NAs and QNs (Videman et al, 1984)



## Summary

Throughout this chapter, several low back pain relevant statistics were presented. Some of those statistics are from American, Australia, and others from Gaza and Arab world, Kuwait in particular.

The study indicated prevalence of low back pain among physiotherapy professionals. All previous studies indicated widespread of low back pain among physicians, labor as well as most population. Furthermore, the prevalence percentage may climb to 60 – 85%.

Work type was identified as a contributing factor towards prevalence of low back pain. However, other factors included sex, age, and marital statues were included.

Landslide majority of researchers used cross-sectional design approach for its compatibility to their studies while every researcher used structural self administration questionnaire for the purpose of data collection through interview and email.

# Chapter Four

## Methodology

## **Chapter four**

### **Methodology**

#### **4.1. Introduction:**

This chapter addresses issue related to methodologies used to answer the research questions. The chapter commences with study design, study population, study setting, period of the study, sample size, sampling method and method of the study. It presents construction of the questionnaire, piloting, ethical consideration and procedures, (data collection and data analysis). Furthermore it illustrates the validity and reliability of the study instrument and eligibility criteria of the study.

#### **4.2. Study design:**

A Cross-Sectional study design used in this research.

This type of design would be useful for describing the study construct. It's fit and enables the researcher to meet the study objectives. It's suitable in term of time, people, money, resources and it is relatively practical and managed.

#### **4.3. Study population:**

The target population consisted of all physical therapy professionals who were working in physiotherapy fields either in Government, UNRWA, and Non-Governmental Organizations (NGOs) sectors. The total number of physical therapy professionals who have been working in the physiotherapy fields, were about 130 physiotherapy professionals. (70) Female( 53.8%) and 60 male (46.1%) of the sample.

#### **4.4. Study Setting:**

This study was carried out at different health institutions in GS including governmental hospitals, PHC, UNRWA health centers, and NGOs hospitals (El-Wafa Medical Rehabilitation Hospital physiotherapy department's (Inpatient and Outpatient), Ahli Arab Hospital(Gaza), Gaza center for physiotherapy, Palestine Avenir for Childhood Foundation and El-Sal lama society.

#### **4.5. Study timeline:**

The data was collected in the period from 17<sup>th</sup> February to 20<sup>th</sup> March 2008.

#### **4.6. Sample size:**

The sample was 130 subjects selected conveniently from the total population of 158 physical therapy professionals who were working in this field, Governmental 69, Nongovernmental organizations 42 and UNRWA, 19 physiotherapy professionals. 20 participants were excluded from the study and 8 subjects not legible for this study.

#### **4.7. Sampling procedures:**

The researcher used non-probability, convenience sampling, e.g. all physical therapy professionals who were working in governmental and nongovernmental hospitals and clinics were recruited to the study). Even though, convenience sampling is considered the weakest form of sampling, but it is the most commonly used in rehabilitation field and bias can be minimized if the subjects under investigation are fairly homogenous within the population (Polit, 2004).

#### **4.8. Response Rate:**

The number of respondents was 130 subjects out the total number of sample size which was 138 physical therapy professionals [After excluding the pilot study (20)].

The overall response rate was 94.2%.

#### **4.9. Questionnaire:**

A structural self-administered questionnaire was administered to 138 physical therapy professionals who were working in governmental and nongovernmental organizations. The data was collected by the researcher himself to avoid bias as it was easy, cheaper and more practical. Finally, the time of filling the questionnaire took approximately from 10-15 minutes.

#### **4.10. Questionnaire design:**

- The questionnaire was designed in Arabic language. (A structural Self-Administered Questionnaire).
- The questionnaire was revised by both experienced people in Arabic language and expert in back pain. (See annexes' 3 &4)
- The researcher tried to avoid unnecessary personal data, leading, complex or duplicated questions.
- In each questionnaire, an explanatory letter was attached to facilitate questionnaire filling.
- Questionnaire was developed with closed-ended questions (yes or no), multiple-choice questions and 5-point likert scale (1= Strongly agree, 2= Agree, 3= Uncertain, 4= Disagree and 5=Strongly disagree) (See annex 6)
- The questionnaire consisted of five parts, The first Portion personal and work data, the second portion prevalence of LBP, the third portion severity of pain, the fourth Portion causes, risk factors and medication of LBP and the fifth Portion physical therapy professionals suggestions and recommendation to reduce LBP.  
(See annex 7 & 8)

- All questions relating to general demographics such as age, sex, height and weight, were followed by questions related to activities, data about pain and the causes of pain, preventive information and others.
- Explanation was given just to avoid mistakes in wording of the questions to the subjects during data collection, so that the subjects would clearly understand the questions

#### **4.11. Pilot study:**

A pilot study was conducted before the start of data collection (pre-test of instrument); a pilot study was conducted to test recruitment response rate, clarity, length and suitability of questionnaire. The study was carried out on (20) participants (10 Males and 10 Females), physical therapy professionals who working in governmental and nongovernmental hospitals and clinics. The pilot study was completed its results directed by the researcher to modify, cancel and rephrase some items and questions.

The piloted subjects were excluded from the main sample.

#### **4.12. Data collection:**

The data was collected by the researcher; all questionnaires were arranged, organized and numbered serially. Each questionnaire consisted of consent form in the first and tells the participants to participate in the study with time allotted extended between 10-15 minutes.

The researcher collects 130 questionnaires and checked for completeness before data entry of the computer.

#### **4.13. Data entry and analysis:**

The researcher entered the data of 130 questionnaires using the SPSS version 12 with cooperation of statistician and data analysis which illustrated in the following steps:

- Over viewing the filled questionnaires.
- Coding of questionnaires.
- Designing data entry model.
- Defining variables.
- Coding variables.
- Data cleaning.
- Frequency table for the study variables.
- Testing validity and reliability.
- Cross tabulation of results.
- Conducting advanced statistical tests like chi square.
- Correlation coefficient.

#### **4.14. Psychometric testing of the Questionnaire:**

**Validity:** Validity of an instrument means that the degree to which an instrument measures what it supposes to measured (Polit, 2004).

##### **Face and content validity:**

Face and content validity of a questionnaire is necessarily based on judgment that means the degree to which the item in an instrument adequately represents the universe of content. The questionnaire was submitted to expert's panel with experience and knowledge of the topic that make suggestions and judgment about the adequacy of the instrument.

Face and content validity done prior data collection, to judge clarity, simplicity and completeness of the instrument. About 9 questionnaires were sent to various experts and researchers (See annex 4) including the study objectives, research questions, explanatory litter and the questionnaire. Because the questionnaire was designed in Arabic language, the questionnaire was revised by experienced people in Arabic language and the researcher modified the instrument by adding and removing some items and statements.

##### **Reliability:**

Reliability of instrument reflects the degree of consistency of an instrument during measurement the attribute. A reliable measure is one that maximizes the true score component and minimize the error component (Polit, 2004)

In the researcher study, the statistical test used for Cronbach's alpha coefficient and this test measure the reliability of the instrument between each domain and the whole of the instrument.

Researcher estimated the reliability of the instrument of this study by using the equation of Cronbach's alpha (No. of items = 44); where the value of alpha = (0.744), which means that this instrument has high reliability.

The normal range of Cronbach's alpha value between (0.00- and +1.0) And the interclass correlation coefficient was 0.000 (strongly significant).

#### **4.15. Statistical analysis:**

- Statistical Package for Social Sciences (SPSS version 12) was used for data entry and analysis.
- A data entry model was used to complete data entry then, data analysis was carried out.
- Chi-Square statistical test for significance was used. The results were accepted as statistically significant when the P. Value will be less than (0.05).

#### **4.16. Ethical considerations:**

- A written covering letter and informed consent form were obtained from each participants. (See annex 5)
- Approval from governmental and nongovernmental hospitals and clinics to apply this study.
- Approval from MOH. (See annex 10)
- Approval from UNRWA health. (See annex 11)
- Approval from El-Wafa rehabilitation hospital. (See annex 12)
- Approval from Gaza physiotherapy center. (See annex 13)
- Confidentiality was strictly maintained.

#### **4.17. Eligibility Criteria:**

##### **Inclusion Criteria:**

Physical therapy professionals were included in the study who met the following criteria:

- Working in governmental and nongovernmental hospitals and private clinics (Males and Females) in GS.
- Age from 22-55 years old.
- At least 1 year experience in this current job.

##### **Exclusion criteria:**

Physical therapy professionals were excluded if they are:

- Working in Military and police Medical Services. (N.B. not working currently)
- Working in another field different from P.T.
- Pregnant physiotherapists and assistants.
- Any individuals who have a history of trauma, surgery or deformity in the back.
- Newly employed physical therapist or physical therapist assistants.

#### **4.18. Limitation of the study:**

The study reported here has some limitation:

- 1.** The study is cross-sectional; it evaluates the situation at a particular time while the life prevalence of LBP risk changes by time and circumstances.
- 2.** A second limitation of this study is the trust on self-reported data. With all self-reported data, there is a possibility that individuals with symptoms tend to misjudge their exposure or exaggerated their symptoms.
- 3.** The study was limited by time available; the data was collected in limited time during one month (The period from 17<sup>th</sup> February to 20 March 2008).
- 4.** Very bad political, security and socioeconomic conditions that lead to absence lots of physical therapy professionals during this study.
- 5.** The lack of transportation in GS in that period.
- 6.** Lack of printed paper to copy the questionnaires in shop books and permanent power shut down during the period of writing thesis.



# Chapter Five

## The Results

## **Chapter Five**

### **Results**

#### **5.1. Introduction:**

This chapter illustrates the results of statistical analysis of the data, including descriptive analysis that presents the demographic characteristics, socio-demographic characteristics, distribution of the study sample according to physical variables, prevalence of LBP, severity of the pain, causes and risk factors of LBP, types of treatments of LBP, and the physical therapy suggestions and recommendation to reduce LBP. In addition, it shows the relationships and differences between study variables and overall socio-demographic characteristic by using the suitable statistical methods to answer the study questions. Lastly, the researcher interprets the result in the light of previous literature.

#### **5.2. Descriptive analysis:**

##### **I. Socio-demographic results:**

The total number of Physiotherapy Professionals selected for the current study was 130 of the all Physiotherapy association in GS as shown in the table (5.1). There were twenty three of the study samples with age from 20 – 25 years (17.7 %). Forty two were from 26 – 30 years (32.3%), 40 of them were from 31–39 years (30.8%) and 25 were above 40 years (19.2%).

As shown in the following table; There were 69 of the study sample were males (53.1 %) and 61 were females (46.9%). In addition; most of the study sample were married 103 (79.2%), and 90 of the study sample were had university degree (69.2%). Also 69 of the study sample working in governmental association (53.1%) and 42 are working in NGOs (32.3%), and 19 were working in UNRWA associations (14.6%). There were 26 of the study sample had 1–3 years of experience (20.0%), 36 were had 4–6 years of experience (27.7%), and 68 were had 7 years of experience and above (52.3%).

Thirty-two of the study sample were treating 1-5 patients per day (24.6%), 47 were treated 6-8 patients per day (36.2%) and 51 were treated above 9 patients per day (39.2%).

**Table (5.1): Distribution of the study sample according to socio-demographic variables**

Variables	Number (No.)	Percentage (%)	
Age (Years)	20-25	23	17.7
	26-30	42	32.3
	31-39	40	30.8
	Above 40	25	19.2
	Total	130	100.0
Sex	Male	69	53.1
	Female	61	46.9
	Total	130	100.0
Marital status	Single	27	20.8
	Married	103	79.2
	Total	130	100.0
Level of education	Diploma	35	26.9
	University	90	69.2
	Post graduate	5	3.8
	Total	130	100.0
Place of work	Governmental	69	53.1
	NGOs	42	32.3
	UNRWA	19	14.6
	Total	130	100.0
Years of experience	1- 3	26	20.0
	4- 6	36	27.7
	Above 7	68	52.3
	Total	130	100.0
No. of patients treatment per day	1-5 Patients	32	24.6
	6-8 Patients	47	36.2
	9 and above	51	39.2
	Total	130	100.0

## II. Distribution of the study sample according to physical variables:

The mean of high of the study sample were 169.01cm with standard deviation 8.287. As shown in the following table, there were 45 of the study sample had high 165cm and less than (34.6%), 67 were 166 – 175cm (51.5%), and 18 were 176 cm and above (13.8%). The mean of weight of the study sample were 75.31kg with standard deviation 12.324. There were 34 of the study sample were had weight 60kg and less than (26.2%), 39 were 66 –75 kg (30.0%), 32 were 76 –84 kg (24.6%) and 25 were 85kg and above (19.2%).

The mean of body mass index (BMI) of the study sample were 26.29 kg with standard deviation 3.257. There were 50 of the study sample were had BMI less than 25 (38.5%), 51 were 25 – 29.9 BMI (39.2%), and 29 were more than 30 BMI (22.3%).

**Table (5.2): Distribution of the study sample according to physical variables.**

Variables		Number (No.)	Percentage (%)
Body mass index (BMI)	less than 25	50	38.5
	25 – 29.9	51	39.2
	more than 30	29	22.3
	Total	130	100.0

**5.3. Prevalence of LBP:**

As shown in the following table; there were 74 of the study sample of physiotherapy professionals were complaining of LBP now (56.9%). Seventy-three of the study samples of physiotherapy professionals were complaining of LBP within the last 3 months (56.2%). Also 74 of the study sample of physiotherapy professionals were complaining or were complain of LBP more than 6 months (56.9%). Forty subjects of the study sample of physiotherapy professionals were has got a sick leave due to LBP (30.8%), but only 6 of the study sample reported that their pain existed before working in physiotherapy field (4.6%).

**Table (5.3): Distribution of the prevalence of LBP (N= 130).**

Items	Number (No.)	Percentage (%)
Complaining of low back pain now	74	56.9
Complaining of low back pain within the last 3 months	73	56.2
Complaining or were complain of low back pain more than 6 months ago.	74	56.9
I have got a sick leave due to low back pain	40	30.8
Pain existed before working in physiotherapy field	6	4.6

In addition, there were 18 of physiotherapy professionals complaining LBP and radiating to right leg (24.3%), 19 of them, radiating to left leg (25.7%), while the most of them 37 were complained of central back pain (50.0%).The LBP started gradual onset among 61 of the study sample (82.4%) and only 13 of the study sample were pain started suddenly onset (17.6%), as shown in the following table.

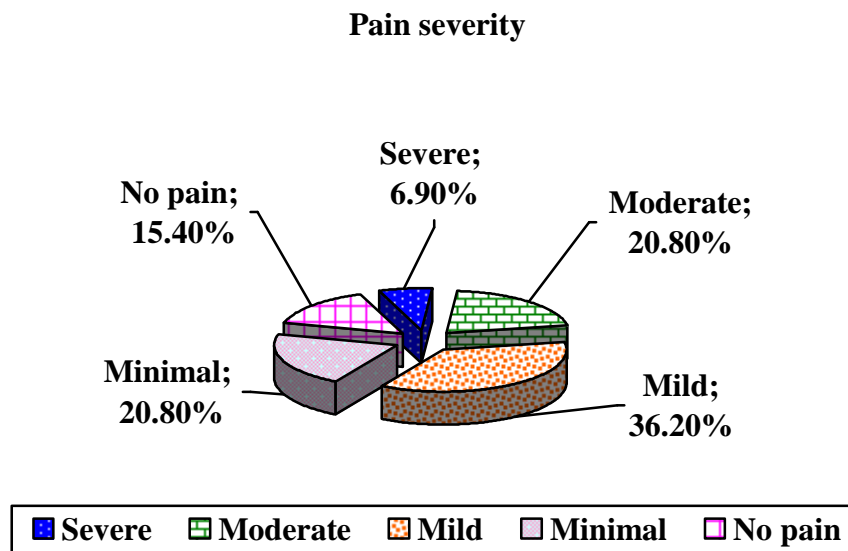
**Table (5.4): Distribution of the area of pain and starting of pain:**

Variables		Number (No.)	Percentage (%)
Pain radiating to: (area of pain)	Right leg	18	24.3
	Left leg	19	25.7
	Central back	37	50.0
	Total	74	100.0
The pain started	Gradual onset	61	82.4
	Sudden onset	13	17.6
	Total	74	100.0

#### 5.4. Severity of the pain:

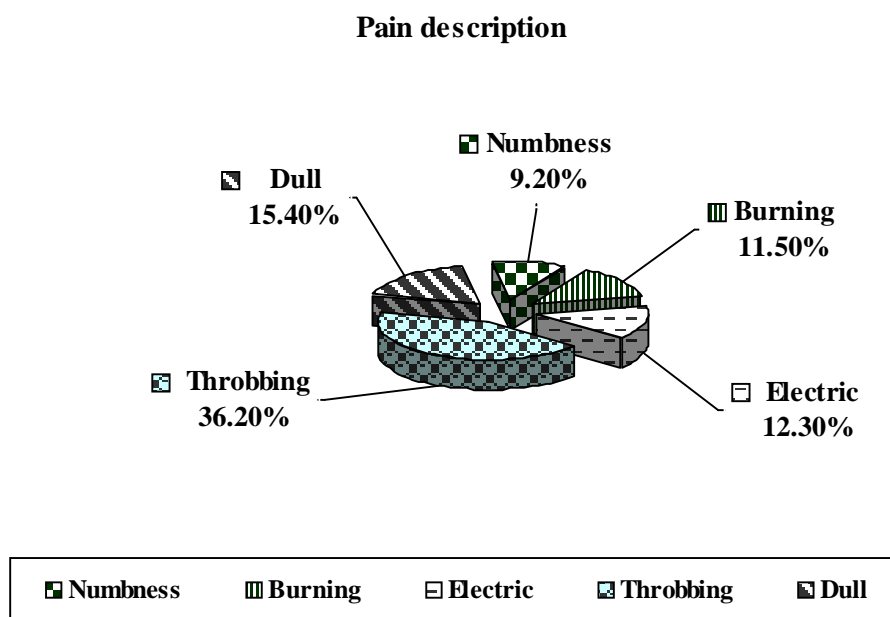
The following diagram showed that 6.9% of the study sample complained of severe low back pain, 20.8% were complain of moderate pain, 36.2% were complained of mild pain and 20.8% of them were feel minimal pain.

**Figure (5.1): Distribution of the Severity of the pain:**



The pain described as numbness among 9.2% of physiotherapy professionals, burning pain among 11.5%, electric pain among 12.3%, throbbing pain among 36.2% and 15.4% of them complained of dull pain. This data shows in this diagram.

**Figure (5.2): Distribution of the pain description:**



### 5.5. Causes and risk factors of LBP:

As shown in the following table; there were 6 only of the study sample of physiotherapy professionals were sustained to back trauma during physiotherapy work (4.9%)

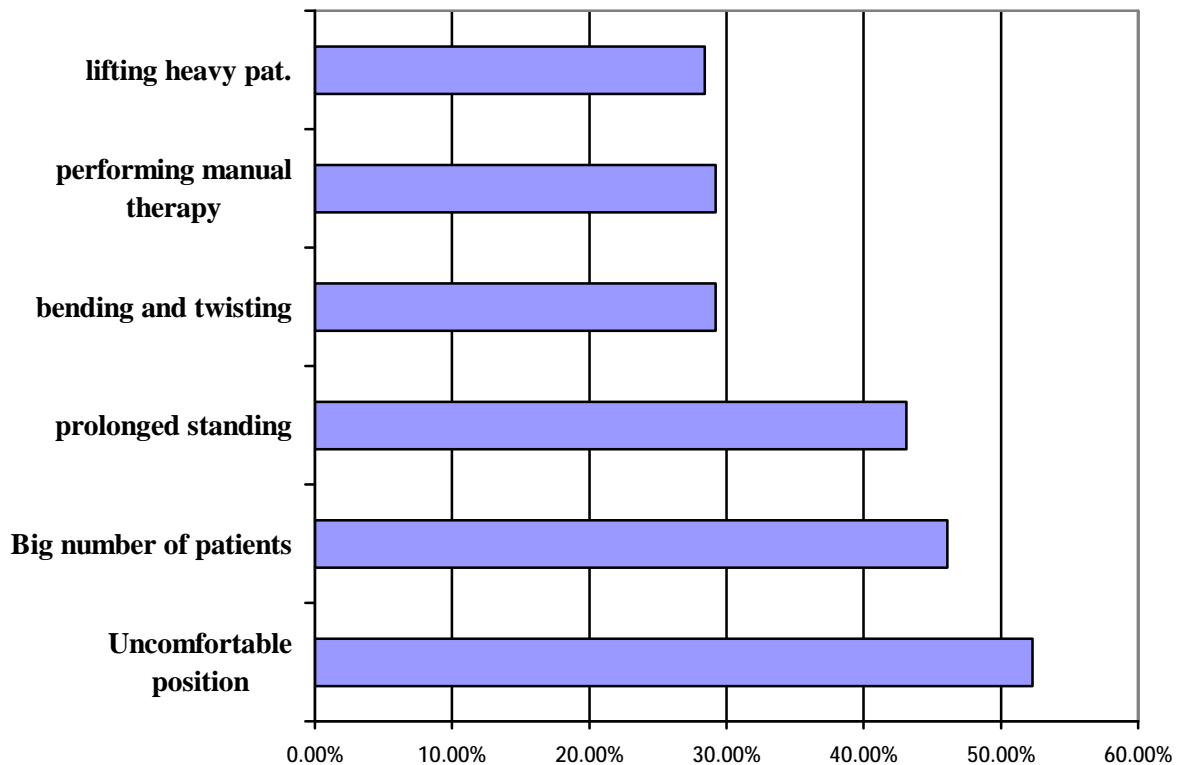
**Table (5.5): Distribution of the cause and risk factors of LBP (N= 130)**

Items	Number (No.)	Percentage (%)
Sustained to back trauma during physiotherapy work	6	4.9

#### The causes (Risk factor) of LBP were:

Uncomfortable position was the most common cause of LBP (52.3%), followed by the big number of patients treated is the cause of low back pain 46.1%, in addition 43.1% of the study sample reported: Prolonged standing is the cause of low back pain, but (29.2%) reported that bending, twisting, performing manual therapy techniques and lifting heavy patients were equally is the cause of low back pain and 28 of the study sample reported that longtime hours weekly is the cause of low back pain (21.5%) as shown in the diagram (5.3)

**Figure (5.3): Distribution of the causes (Risk factor) of LBP (N=130)**



**5.6. Seek medical help for LBP:**

Forty- nine of the study sample of physiotherapy professionals were seek medical help (42.2%).

**Table (5.6): Distribution of the Seek medical help for LBP (N=130)**

Items	Number (No.)	Percentage (%)
Seek medical help	49	42.2

**5.7. Types of treatments of LBP:**

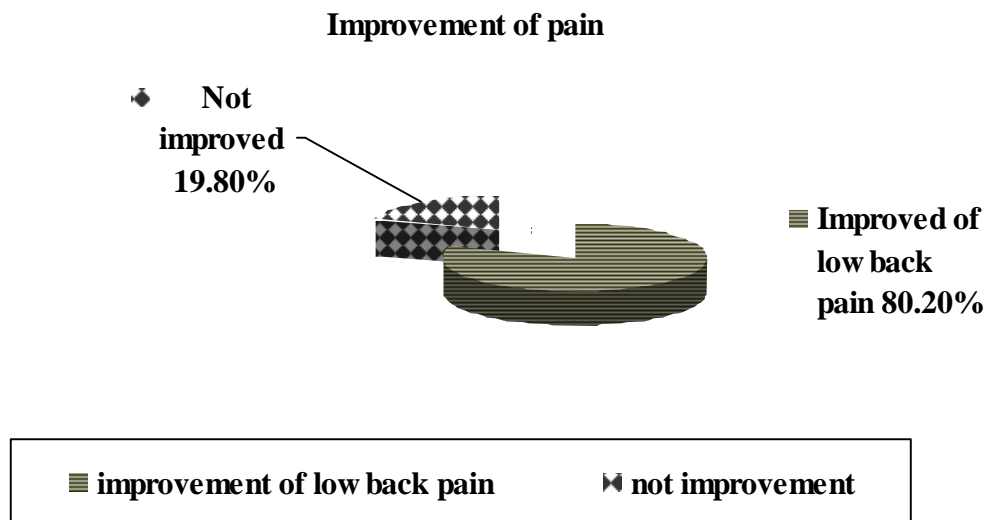
More than half of the study sample 53.8% were reported that physiotherapy is the type of treatment of LBP, 50.0%, reported the rest and 38.4% reported medical treatment was the types of treatments, as shown in the following table;

**Table (5.7): Distribution of the types of treatments of LBP (N=130).**

Variable	N	%
Physiotherapy	70	53.8
Rest	65	50.0
Medical	50	38.4
Lumber support	12	9.2
Surgical	3	2.3

**5.8. Improvement of LBP:** Most of the study individuals were improved with treatments of LBP (80.2%) as shown in diagram (5.4).

**Figure (5.4): Distribution of the improvement of LBP (N=130)**



### 5.9. The most important risk factors in LBP:

Most of the study sample 122 were reported that occupational factors like lifting, pushing, twisting, and sitting or standing or walking long time is the most important risk factors in LBP among physical therapy professionals (93.8%) followed by 73 of the study sample reported, wearing high shoes during work increase the risk of low back pain (56.1%), 72 of the study sample reported that increase weight (Obesity) will increase the risk of low back pain (55.4%), 56 of the study sample reported that postural factors (kyphosis, lordosis and discrepancy in the length of the lower limbs also increase the risk of low back pain (43.1%), 45 of the physiotherapy professionals reported that Lack of sport (34.6%) will increase the risk of low back pain and 27 of all subjects reported that Psychosocial factors (depression, anxiety, hysteria, divorce, chronic headache (20.7%) will increase the risk of low back pain, as shown in the table (5.8) below.

**Table (5.8): Distribution of the most important risk factors in LBP among physical therapy professionals (N=130).**

Variables	N	%
Occupational factors like lifting, pushing, twisting, and sitting, standing and walking long distance	122	93.8
Wearing high shoes during work	73	56.1
Increase weight (Obesity)	72	55.4
Postural factors (kyphosis, lordosis and discrepancy in the length of the lower limbs	56	43.1
Lack of sport	45	34.6
Psychosocial factors (depression, anxiety, hysteria, divorce, chronic headache)	27	20.7
Heavy Smoking	23	17.7
Lack of spinal mobility	14	10.7
Improper nutrition	13	10.0
Personal-related factors (age and gender)	10	7.6

### 5.10. Physical therapy professionals' suggestions and recommendations to reduce LBP.

As shown in the following table; Most of the study sample (128) suggested (agree and strongly agree) that control of patient number during daily work will reduce of LBP and change working position frequently also will decrease of occurrence of LBP (98.5%). Followed by, wearing comfortable shoes during work; and avoid heavy lifting (97.7%) will reduce the occurrence of LBP, 126 of the study sample (96.9%). reported that control of beds, stools high and use of patient lifters, practice sports daily (96.2%) will reduce the occurrence of low back pain, 96% agreed that low back pain will probably influence their occupation, 123 reported that, take more rest breaks or pauses during the workday (94.6%) will reduce or control the occurrence of low back pain, 122 of the study sample (93.8%), reported help from other person if needed; and praying movements decrease LBP, 116 were recommend (agree and strongly agree) that Increase physical therapy professional numbers (89.2%) also decrease LBP, 112 reported change work schedule (overtime and irregular shifts) which represented 86.2%,



106 of the study sample reported; need advices and education to prevent low back pain, which represented 81.5%, 102 of the study sample reported wearing comfortable clothes during work (78.5%), 98 of the study sample (75.4%) were recommend to reduce work hours, 95 of the study sample (73.1%) were recommend to stop working when hurt or when symptoms occur and in the end of the list of recommendations there were 72 of the study sample (55.4%), recommend to avoiding manual techniques.

**Table (5.9): Distribution of the physical therapy professionals suggestions and recommendations to reduce LBP (N=130).**

Variables	Strongly Agree		Agree		Total agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%	N	%
Control of patient number during daily work	55	42.3	73	56.2	128	98.5	1	0.8	-	-
Change Working Position Frequently	49	37.7	79	60.8	128	98.5	1	0.8	-	-
Wearing comfortable shoes during work	71	54.6	56	43.1	127	97.7	2	1.5	-	-
Avoid heavy lifting	69	53.1	58	44.6	127	97.7	3	2.3	-	-
Uses comfortable beds highs, stools and lifters	83	63.8	43	33.1	126	96.9	-	-	-	-
Practicing sport daily	65	50.0	60	46.2	125	96.2	2	1.5	1	0.8
LBP will probably influence your occupation	64	49.2	61	46.9	125	96.1	4	3.1	-	-
Take More Rest Breaks or Pauses during the Workday	40	30.8	83	63.8	123	94.6	4	3.1	-	-
Help from Other Person if needed	52	40.0	70	53.8	122	93.8	4	3.1	1	0.8
Praying movements decrease LBP	81	62.3	41	31.5	122	93.8	3	2.3	-	-
Increase the numbers of physical therapy professional	58	44.6	58	44.6	116	89.2	8	6.2	-	-
Change Work Schedule (Overtime. Irregular Shifts)	36	27.7	76	58.5	112	86.2	7	5.4	1	0.8
Need advices and education to prevent low back pain	57	43.8	49	37.7	106	81.5	16	12.3	4	3.1
Wearing comfortable clothes during work	49	37.7	53	40.8	102	78.5	16	12.3	1	0.8
Reduce work hours	39	30.0	59	45.4	98	75.4	25	19.2	2	1.5
Stop working when hurt or when symptoms occur	20	15.4	75	57.7	95	73.1	26	20.0	2	1.5
Avoiding manual techniques	21	16.2	51	39.2	72	55.4	44	33.8	3	2.3

## 5.11. Prevalence of Low Back Pain and socio demographic variables:

### 5.11.1 LBP and age:

As shown in following table; 28 of study sample (37.8%) who complained of LBP aged between 26–30 years old, and another 28 of study sample (37.8%) aged between 31–39 years and 9.5% were aged 40 years and above 40 years old are 11 which represented 14.9%. That means the group of age between (26-39) were clearly higher than those who aged 20–25 years. There were a significant differences between prevalence of LBP and age among physiotherapy professionals ( $\chi^2 = 12.70$ , DF= 2; P. value = 0.005).

**Table (5.10): Distribution of LBP according to age**

Variables	Yes		No		$X^2$ DF = 3
	N	%	N	%	
20 - 25	7	9.5	16	28.6	** 12.70
26 - 30	28	37.8	14	25.0	
31- 39	28	37.8	12	21.4	
40 and Above	11	14.9	14	25.0	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### 5.11.2. LBP and sex

As shown in following table; there were 74 of the study sample (56.9%) complained of LBP. They have equally numbers of male and female (50.0 %.) There were no significant differences between prevalence of LBP and sex among physiotherapy professionals ( $\chi^2 = 0.653$ , DF= 2; P = 0.419).

**Table (5.11): Distribution of LBP according to sex**

Variables	Yes		No		$X^2$ DF = 1
	N	%	N.	%	
<b>Males</b>	37	50.0	32	57.1	0.653
<b>Females</b>	37	50.0	24	42.9	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### 5.11.3. LBP and marital status:

Eighty five point one percent who complained of Low Back Pain were married, significantly higher than 11 were singles (14.9%).

There were a statistically significant differences between prevalence of LBP and marital status among physiotherapy professionals ( $\chi^2= 3.63$ , DF= 2; P = 0.046).

**Table (5.12): Distribution of LBP according to marital status**

Variables	Yes		No		$\chi^2$ DF = 1
	N	%	N	%	
Single	11	14.9	16	28.6	* 3.63
Married	63	85.1	40	71.4	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### 5.11.4. LBP and level of education:

The higher percentage of physiotherapy professionals who complain of LBP (70.3%) were university education, followed by diploma educated 25.7% and the minority number of physiotherapy professionals Post graduate 4.1% As shown in following table.

There were no significant differences between prevalence of LBP and Level of education among physiotherapy professionals ( $\chi^2= 0.145$ , DF= 2; P = 0.930).

**Table (5.13): Distribution of LBP according to level of education**

Variables	Yes		No		$\chi^2$ DF = 2
	N	%	N	%	
Diploma	19	25.7	16	28.6	0.145
University	52	70.3	38	67.9	
Post graduate	3	4.1	2	3.6	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### 5.11.5. LBP and place of work:

The higher percentage of physiotherapy professionals who complain of LBP (54.1%), were working in governmental association, followed by NGOs 31.1%, and the minority number of physiotherapy professionals were working in UNRWA 14.9%. As shown in table (5.14)

There were no significant differences between prevalence of LBP and Place of work among physiotherapy professionals ( $\chi^2= 0.118$ , DF= 2; P = 0.943).

**Table (5.14): Distribution of LBP according to place of work**

Variables	Yes		No		X <sup>2</sup> DF = 2
	N	%	N	%	
<b>Government</b>	40	54.1	29	51.8	0.118
<b>NGOs</b>	23	31.1	19	33.9	
<b>UNRWA</b>	11	14.9	8	14.3	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### 5.11.6. LBP and years of experience:

There were 39 of the study sample, who complained of LBP were had 7 years of experience and above (52.7%), 25 the physiotherapy professionals were had 4-6 years of experience (33.8%) and 10 of them were had 1- 3 years of experience (13.5%). There were a statistical significant differences between prevalence of LBP and Years of experience among physiotherapy professionals ( $\chi^2= 5.94$ , DF= 2; P = 0.049). Look at the following table.

**Table (5.15): Distribution of LBP according to years of experience.**

Variables	Yes		No		X <sup>2</sup> DF = 2
	N	%	N	%	
1 - 3	10	13.5	16	28.6	* 5.94
4 - 6	25	33.8	11	19.6	
7 and above	39	52.7	29	51.8	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### 5.11.7. LBP and treatment patient number per day:

There were 45.9%, of the subjects were treating 9 patients and above daily, 24 were treating 6- 8 patients daily (32.4%), and 21.6% of them were treating 1- 5 patients daily. There were no statistical significant differences between prevalence of LBP and treatment patient number per day among physiotherapy professionals ( $\chi^2= 3.26$ , DF= 2; P = 0.196). As shown in the table below:

**Table (5.16): Distribution of LBP according to treatment patient number per day**

Variables	Yes		No		$\chi^2$ DF = 2
	N	%	N	%	
<b>1- 5 Pat</b>	16	21.6	16	28.6	3.26
<b>6- 8 Pat</b>	24	32.4	23	41.1	
<b>9 Pat. and above</b>	34	45.9	17	30.4	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

## 5.12. Prevalence of LBP and physical variables:

### 5.12.1. LBP and height:

Forty eight point six percent of the individuals were had high 166-175 cm, followed by 37.8% were had high 150-165 cm and the minority of them (13.5%) were had high 176 cm and above. As shown in table (5.17).

There were no statistical significant differences between prevalence of LBP and High among physiotherapy professionals ( $\chi^2 = 0.807$ , DF= 2; P = 0.668).

**Table (5.17): Distribution of LBP according to high**

Variables	Yes		No		$\chi^2$ DF = 2
	N	%	N	%	
<b>150- 165 cm</b>	28	37.8	17	30.4	0.807
<b>166- 175 cm</b>	36	48.6	31	55.4	
<b>176 cm and above</b>	10	13.5	8	14.3	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### 5.12.2. LBP and body weight:

Thirty three point eight percent of the individuals were had weight 66 - 75 kg, followed by 28.4% were had weight 76 - 84 kg, 20.3%, were had weight 50 - 60 kg, and the minority of them were had weight 85 kg and above 17.6%.

There were no statistical significant differences between prevalence of LBP and Weight among physiotherapy professionals ( $\chi^2 = 4.33$ , DF= 3; P = 0.228). See in the following table:

**Table (5.18): Distribution of LBP according to Weight of the study sample**

Variables	Yes		No		X <sup>2</sup> DF = 3
	N	%	N	%	
50- 60 kg	15	20.3	19	33.9	0.228
66- 75 kg	25	33.8	14	25.0	
76- 84 kg	21	28.4	11	19.6	
85 kg and above	13	17.6	12	21.4	
<b>Total</b>	<b>74</b>	<b>100.0</b>	<b>56</b>	<b>100.0</b>	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

#### 6. LBP and body mass index (BMI)

Body mass index (BMI) is a new term to most people. However, it is the measurement of choice for many physicians and researchers studying obesity. BMI uses a mathematical formula that takes into accounts both a person's height and weight. BMI equals a person's weight in kilograms divided by height in meters squared. (BMI=kg/m<sup>2</sup>).

**Table (5.19): Distribution of the BMI grading**

BMI	GRADES
18.5 or less	Underweight
18.5 - 24.9	Normal
25.0 - 29.9	Overweight
30.0 - 34.9	Obese
35.0 - 39.9	Obese
40 or greater	Extremely Obese

As shown in following table; there were 32.4% of the study sample of who complained of LBP were had BMI less than 25, 41.9% of the study sample of them were had BMI 25- 29.9 and 25.7% of the study sample were BMI more than 30.

There were no significant differences between prevalence of LBP and Body mass index among physiotherapy professionals ( $\chi^2 = 2.81$ , DF= 2; P = 0.246).

**Table (5.20): Distribution of LBP in relation to BMI**

Variables	Yes (having LBP)		No. (No LBP)		X <sup>2</sup> DF = 2
	No.	%	No.	%	
less than 25	24	32.4	26	46.4	2.81
25 – 29.9	31	41.9	20	35.7	
More than 30	19	25.7	10	17.9	
<b>Total</b>	74	100.0	56	100.0	

\*p< 0.05

\*\*p< 0.01

\*\*\*p< 0.001

### Summary

The intent of this chapter has been to illustrate the results of statistical analysis of the data, including descriptive analysis that presents the demographic characteristics, socio-demographic characteristics, distribution of the study sample according to physical variables, prevalence of LBP, severity of the pain, causes and risk factors of LBP, types of treatments of LBP, and the physical therapy suggestions and recommendation to reduce LBP.

The study sample counted 130 participants, 69 of which are males and 61 females. Age ranged between 20 – 55.

Seventy nine point two percent of which are married with a university degree. 53% of them has +7 years experience work for government institutes. The SPSS was used to analyze data. During the course of the study, it's suggested prevalence percentage was 56.9% suffering from low back pain. Severity of pain was mild for 36% of study sample while pain was described as throbbing pain.

Uncomfortable position was identified as the first risk factor followed by big number of patients treated per day. The percentage of people who seek medical help is 42% out of people who suffer from low back pain where improvement percentage among those reached 80%.

Physiotherapy professionals are advised to change beds, chairs, and lifters and use more comfortable ones.

It's suggested too to increase number of human expertise in those departments to alleviate the low back pain.

# Chapter Six

## Discussion



## **Chapter six**

### **Discussion**

#### **6.1. Introduction:**

This chapter discusses the relevant inferential statistical results to explore and identify the relationship between different study variables and to discuss the findings of the study in comparison with related literature and its implications that might help physiotherapy professionals in order to know the prevalence and risk factors of LBP.

#### **6.2. Prevalence of LBP:**

In this study, the researcher found that more than 50% of the study sample had LBP at the time of completing the questionnaire and similar percentage were suffering from LBP since three months and more than six months (56.9%).

The results agreed with the earlier studies (Michel et al 2008 and Shehab 2003) which found that prevalence of LBP ranged from 50% to 75%. Also agreed with the study done by Normadiah (2005) which showed that 74.6% complained of LBP, Rugelj (2003) reported in his research that 73.7% of the study sample complained of LBP. This could be due to the fact that, all these studies were conducted among doctors and other professionals in different locations, similar to the research participants in this study.

The high prevalence could be related to the work environments like direct patient-load, with careless handling and lifting or transferring, also may be related to an increase in daily work hours (full-time work) especially in general hospitals or rehabilitation centers in GS or others.

The prevalence of LBP as reported in the literature varies considerably from one author to another and according to previous studies that showed higher prevalence than the result in this study.

In the researcher study, the LBP prevalence was lower than reported in earlier studies done by, Sun (2007) found that 87% of his research group complained of LBP; Fujimura (1995) which found that 77% of his study sample had LBP and Chiou (1994) reported that 77.9 % of the study sample had LBP. Also the study results disagreed with the finding of earlier studies (Feng 2007; Dündar 2006; Latza et al 2000; Frymoyer 1985;

Pop 1985 and Biering 1982) reported that 70-90% of the study samples were having LBP. This could be due to the fact that most of the studies were conducted among nurse especially working in ICU that requiring harmful posture or related to their habits that occurred during exerting strenuous working conditions including treatment tasks, like observing, drainage, lifting and transferring patients in bed, giving injection and suctioning. And the high prevalence of LBP in interested studies may be related to

wrong posture during ironing, heavy load lifting or overweight among women that lived in a rural setting.

This study results demonstrated the highest prevalence of LBP from the studies which were conducted by Omokhodion et al (2004) that found 38% of the population suffered from LBP, Steenland (2003) reported that prevalence of LBP was 37% (point of prevalence), Abu Rayya (1999) reported 37.1% among UNRWA health filed (point of prevalence) of his study had LBP and a study done by Patricia (1999) that reported 5.6% of the study sample suffered from LBP. This could be due to conducting these studies among different participants groups, e.g. many studies were done among office worker or public sector nurses. This type of jobs don't need much effort like bending, twisting, lifting or bad habits during work among intensive care unit nurses, that lead to increase chance to develop LBP or may be due to the type of tasks done in a similar way physiotherapy tasks and sessions need more effort during the work like carrying, transferring patients during the time of exercise, all of these may increase the chance for occurrence of LBP.

The study results showed that 50% of the study sample complained of central LBP, followed by pain radiating to left leg (25.7%) and right leg (24.3%), Additionally most of the LBP onset started gradually among the physical therapy professionals (82.4%).

These results agreed with earlier study which was done by Eric and Stanley (2007) reported that pain increased in lower back. This could be due to the types and work environments like poor standing that requires long hours of standing without a break (e.g. hairdresser) or sitting in a chair (e.g., keyboard operator) that does not support the back well that put the person at risk for lower back injury or frequent carrying heavy patients without using lifter and poor postural handling of patients, that increase the load on his/her back during performing that tasks, leading to LBP.

In the present study, the researcher found that about 56.9% of the study sample had chronic LBP; the researcher classified that pain because 56.9% pain persisted more than 6 months and according to Wheeler (2007) who defined chronic LBP as a pain that persists longer than 12 weeks. In the present study, the prevalence of chronic LBP was higher in percentage (56.9%); this could be explained by the heavy work in physiotherapy departments, that require long hours of standing, walking long distances, sitting long time when dealing with bedridden patients and related to increase an injured persons due to Israeli continuous aggression and bad political and security situations in Gaza strip for the last several years which let them continually suffering from LBP.

This study results showed that, the age's groups between 26-39 years are more prone to LBP among participants.

These results agreed with earlier study done by Patel (2007) and Mierzejewski (1997) which reported that LBP occurred before the age of 30 years old.

The study results agreed also with the finding of the earlier studies which were done by, Burton et al (2006), Andersson (1997), Jelcic (1993) and Videman et al (1984) which reported that, the age groups who suffered from LBP ranged between 25-45 years. Another study done by Folletti (2005) found that 58.8% of these who suffered from LBP were the ages under 45 years old.

The study results disagreed with the finding of the earlier studies which were done by the office for national statistic (1998) found that, the ages between 45-64 is the most dominant for LBP, Niemelainen et al. (2006) reported in his research that the ages between 35 to 70 years had LBP. Another study which was done by and the study which was done by Clermont et al (2006) that reported people aged 65 years and over had LBP. This could be due to the fact that the researcher study was done among younger age working as physical therapist, other studies may have been conducted among elderly from the population, almost most of the studies were done among general population (population aged 25 to 64) men or women. Additionally these high prevalence among older age because most of the population in foreign country are older age and female. Additionally, LBP could be more prevalent among older ages because increased inadvertent movement at work, like in carrying heavy objects or related to heavily physical work.

Many studies reported that younger ages had LBP. This presented in the earlier studies which were done by Molumphy (1985) that reported the ages group between (16-30) more than others complained of LBP and Khan & Siddiqui (2005) found that the age groups between 16-18 years old more prone to LBP. This could be due to most of these studies were conducted among nursing aides (young age) or among new students in university or schools.

The study results show, both female and male complain equally (50%) from LBP with no statistical significant differences between prevalence of LBP and sex.

This study results agreed with the finding of the earlier studies which was done by, (Nagasu 2007; Folletti 2005; Skinner 1996; Biering 1982; Knibbe et al 1996 and Smedley, 1995) that reported that both sexes were equal in having LBP. Our present study disagree with the finding from another study which was done by Shehab (2003) that reported about 74.2% from females were suffering from LBP.

The study results disagreed with earlier studies which were done by, Wijnhoven (2006), The office for national statistic (1998), Marena et al (1997) and Lavsky (1985) that reported, more women than men had LBP. This could be due to the type of working environments (full-time) or related to the study sample which was conducted among professional cooks (the number of women in this type of work was more than men).

In addition, both sexes complained equally from LBP in relation to another study, because most of the studies were conducted in places like hospitals, clinics where

employees of both sexes have to deal with the same diagnosis as well as the same load and efforts, finally, there were no difference in their work between male and female in most jobs.

The results in this study showed that most of the study sample complained of mild back pain which represented (36.2%) of the sample, equal percentage of the study sample complained of moderate or minimal pain (20.8% each) and less number suffered from severe LBP which represented (6.9%).

This study results disagreed with earlier studies which were done by, Niemelainen et al (2006) that found 17% of the study samples complained of mild LBP, also the study results disagreed with earlier studies which were done by Bos et al (2007) and Wijnhoven (2006) that reported more than 76% of their study samples were having a severe LBP. This could be because the researcher applied his research among physical therapy professionals and most of them had good knowledge about back care, that lead to decrease number of severity of complained. In addition there were some studies applied among non-specialized nurses, operation room nurses, Intensive Care nurses and X-ray technologists. Most of them performing their tasks without back care and done heavily work daily and the severity of pain occur due to the work environment. On another hand, Niemelainen et al, in their study, reported that 17% of the study sample had mild LBP. This could be due to the fact their study was conducted among general population (may be living in social high class) with good back care system which is not existing or in other country may be there is less back care that leading to more severe LBP.

Most of the study sample complained of throbbing pain which represented 36.2% of the sample followed by dull pain which represented 15.4%, electric pain among 12.3% of participants, burning pain among 11.5% of the study sample, also 9.2% of the physiotherapy professionals suffered from numb (insensitive) pain.

The results of this study were not significant in relation to researcher's opinion, this could be due to the fact that pain scale was not used because the subjects were free to put the pain scores as they wish, furthermore the data should be taken at face value. And according to the literature review and the researcher experiences, there were no previous studies described the pain scale among physical therapy professionals.

The study results showed that 52.7% of the study sample had LBP after 7 years of work experience, 33.8% had LBP between 4-6 years of work as physical therapy and 13.5% of the subject had LBP between the 1- 3 years of experience. There were statistical significant differences between prevalence of LBP and years of experience.

The study results agreed with earlier studies which were done by, Mierzejewski (1997) and Molumphy (1985) that reported the LBP occurs within the first 5 years of practice as a physical therapist work. This could be due to the studies were conducted

among physical therapists and may be related to the kind of work (heavily work) with inappropriate handling during P.T work or related to years of experiences or may be related to bad or less knowledge about back care among physical therapy professionals in GS, that needs Offering special training programs on proper handling of patients, instruments, teaching proper and safe lifting methods to prevent LBP and offering health education to promote correct back care programs to avoid back injury.

Nearly 42.2% of the study sample of physiotherapy professionals sought medical help.

These results agreed with earlier studies which were done by Feng (2007) that reported 43.9% of the study sample seek medical help or sick leave. And disagreed with the finding of other studies which was done by Bejia (2004) reported that 26.1% of the study sample seek medical help. This could be due to the fact of the facilities available in our hospitals to seek medical or to give sick leave (it's free and easy). But in other country the absentees from their job lead to decrease money gained (in daily or part time jobs). Or this could be due to the fact, the foreign countries are more important in their health than Arab or Palestinian countries.

### **6.3. The risk factors for LBP:**

The multifactor causality for LBP complaints involved physical as well as psychological factors in work environment. The finding in this study seems to correspond to the number of risk factors for LBP, most individuals in this study reported some occupational risk factors for LBP, such as uncomfortable position, carrying patients, pushing, twisting, and sitting or standing or walking long distance (93.8%), followed by wearing high shoes during work (56.1%) and Obesity (55.4%). The personal-related factors were the less risk factor for LBP in this study (7.6%).

The study results agreed with earlier studies (Michel et al 2008; Feng 2007; Liang 2007; Beria 2005 and Chiou 1994) which reported that lifting heavy objects were the most common cause of LBP.

Also, Sun (2007), Rugelj (2003), Bork (1996), Jelcic(1993) reported in their studies, Lifting and transferring patients were the most common risk factor for LBP, Stergioulas et al (2004), Lee (2001), Mierzejewski (1997), Smedley (1995), Knibbe et al, (1996) and Videman et al (1984) reported that regular lifting and poor general health were the most common risk factors for LBP development but Babar et al (2006) and Rotgoltz (1992) reported that prolonged sitting lead to LBP.

In addition, this study results agreed with earlier studies which were done by Dündar (2006), Cromie (2000) and Holder (1999) who reported that wrong posture over a long period while working being the underlying factor with the highest prevalence of

LBP. But Omokhodion (2000) reported in his study, that heavy physical work, poor posture and prolonged standing or sitting were the most activities associated with LBP among these workers. Also the study results agreed with earlier studies done by, Jinky (2004) that reported leaning, bending, and carrying for 2-8 hours and with standing for 2-8 hours were the common risk factors for LBP. And the study results also agreed with earlier study done by, Cromie (2000) which reported that mobilization and manipulation techniques were the risk factors for LBP and this study results disagreed with the study which was done by Nagasu (2007) that reported, smoking, psychological factors, job satisfaction, stress at work and worries about the future were the risk factors for LBP. But Normadiyah (2005) reported that, smoking was highest risk factors for LBP development more than gender, weight and height of risk factor of LBP, Furthermore, Omokhodion et al (2004) found that LBP was significantly associated with smoking.

Finally, Timothy & Leon (2005) said that available data at this time was controversial with no clear-cut evidence connecting LBP with obesity. As a final point, Vindigni (2007) reported that overweight and sport injuries were associated with LBP. This could be due to the fact that most of previous studies were conducted among physiotherapist or qualified nurses and nursing aids and prolonged standing walking, transferring and lifting were required at work but psychological factors, job satisfaction, stress at work and worries about the future were the risk factors for LBP in previous study because most of the people also have many family problems, work problems and interior conflict and they were not satisfied of their jobs, they demand from them more efforts without rest that leads them suffering from illnesses, especially back pain. But most of physiotherapy professionals have a desire for working hardly in order to manifest obedience to Allah and serve their people the best.

In the researcher study, smoking was not found to be a risk factor for LBP development. On the other studies, smoking was considered as risk factor for LBP, it could be due to sample used in most previous studies which covered populations of worker with high numbers of smoking persons in other country (foreign country) which is less in our country, especially among physiotherapy professionals.

#### **6.4. Physical therapy professionals' suggestions and recommendations to reduce LBP:**

According to study results; most of the physiotherapy professionals suggested that using comfortable beds with appropriate heights, stools and lifters, ability to perform regular prayers and wearing comfortable shoes during work, could help in reducing the occurrence of LBP. Finally, their advices included avoiding heavy lifting and practicing sport daily.

The study results agreed with earlier study which was done by Omokhodion (2000) who reported that health education on propped posture and correct lifting techniques can be introduced to reduce the burden of LBP among workers.

# Chapter Seven

## Conclusion and Recommendations

## Chapter Seven

### Conclusion and Recommendations

#### 7.1. Conclusion:

The objectives of this study were to know the prevalence and the risk factors of LBP among physical therapy professionals in GS, to determine the severity of pain, describe the type of it and to reach to suggested recommendations and advices to reduce the occurrence of the LBP.

A cross-sectional study was undertaken to all physical therapy professionals who are working in governmental and non-governmental hospitals and clinics in GS.

(N=138) were included in this study. The response rate was 94.2%.

This study concluded the following:

- There is a high prevalence of LBP (>50%) among physical therapy professionals at the time of applying the questionnaire and since 3 months and 6 months before applying the questionnaire.
- The highest percentage of physical therapy professionals who complained of LBP were the age groups between 26-39 years old.
- Eighty five percent of the study samples who are complained of LBP were married.
- Most of the study sample (50%) complained of central LBP, followed by pain radiating left leg (25.7%) and less to right leg (24.3%).
- Most of the LBP started gradually onset with mild and throbbing pain among study sample.
- Most of the study sample sought medical help.
- There were statistically significant correlation between prevalence of LBP and years of experience.
- Almost 50% of these samples who complained of LBP treated more than nine patients daily.
- There were also no statistical significance correlation between prevalence of LBP and gender, level of education, place of work, treatment patient number per day and body mass index in this study.

The prevalence of LBP may be associated with the following risk factors:

- Occupational factors like lifting, pushing, twisting, sitting, standing, walking long distance, which represented (93.8%), the uncomfortable position was the most



common cause for LBP (52.3%), Equally bending, twisting and performing manual therapy techniques were (29.2%), Lifting heavy patients (28.4%) and work hours weekly (21.5%).

- Increasing weight and putting on high shoes during work (55%) were the most common risk factors for LBP.
- Increasing number of patients treated by physical therapy professionals per day (46.1%).
- Personal -related factors (age and gender) were less risk factor for LBP (7.6%).

The results of treatments and improvement of LBP summarized as the following:

- Most of the study sample who suffered from LBP improved (80.8%); by physiotherapy treatment among about 53.8% and with rest (50.0%), only 38.4% of the LBP improved medically.

Finally, the participants suggested to reduce LBP by:

- Control of patient number during daily work and change working position frequently (98.5%)
- Wearing comfortable shoes during work; and avoid heavy lifting (97.7%)
- Using a comfortable and suitable beds, stools and lifter and also practicing sports daily (96.2%)
- Take more rest breaks or pauses during the workday (94.6%)
- Take help from other person if needed; and praying movements will reduce LBP (93.8%)
- Increasing physical therapy professional numbers (89.2%)
- Change work schedule (overtime and irregular shifts (86.2%)
- Giving more advice for the physiotherapy professionals (81.5%)
- Wearing comfortable clothes during work (78.5%)
- Reducing the working hours (75.4%) and finally avoiding manual techniques (55.4%)

## **7.2. Recommendations:**

1. Providing physiotherapy departments with comfortable and suitable beds, stools, clothes, shoes and lifters, to avoid occurrence or recurrence of LBP amongst physiotherapy professionals.
2. Encouraging both public and physiotherapy professionals to practice sports that resemble praying movements on daily basis in order to prevent or at least mitigate LBP.
3. Increasing number of physiotherapy staff for seeking help and control of patient number during daily work that leads to decrease work burden on shoulders of staff and take more rest breaks.
4. Improving public awareness to help avoiding LBP.
5. Offering special training programs targeting physiotherapy professionals on proper handling of patients, instruments, teaching proper and safe lifting methods to prevent LBP.
6. Offering Health education for health professionals to promote correct back care programs and avoid back injury. It is important to incorporate back care programs into physiotherapy treatment of LBP.
7. Requesting decision makers in Palestine to raise the payment for occupational risk among physiotherapy professionals due to increases the prevalence of low back pain.
8. Disseminating more information about the level of risks associated with specific health professional activities and about the influence of individual risk.

## **Recommendation for further studies:**

1. Conducting more researches into LBP epidemiology, etiology and prevention among physiotherapists Gaza strip and west bank.
2. Conducting more researches on the danger of carrying school bags among children in Gaza strip and west bank..
3. Conducting prospective researches to study the risk factors of low back pain among health professionals in Gaza strip.

References  
&  
Bibliography

## References

Abu Rayya F. (1999), **Prevalence of Low Back Pain among health professionals at health department , UNRWA , Gaza Field**, .Al-Quads University.

Anderson G. (1997), **The epidemiology of spinal disorders**, *The adult spine*, Principles and practice. Philadelphia: Liipincott-Raven,.

Anderson G., Swenson H. & Oden A. (1983), **The intensity of work recovery in low back pain**,. *Spine*; 8:880.

Addison R. & Schultz A. (1980), **Trunk lengths' in patients seeking hospitalization for chronic low-back disorders**,. *Spine*; 5:5,39.

Alston W., Carlson K. & Fdd D. (1966), **A quantitative study of muscle factors in the chronic low back syndrome**. *J Am Geriatric Soc*; 14:1041.

Australian Bureau of Statistics (ABS) 2001 National Health Survey, Australia's Health 2004, **Australian Institute of Health and Welfare (AIHW)**

Asmussen E. & Heebjill K. (1959), **Posture, mobility and strength of the back in boys 7 to 16 years old**,. *Acta Orthop Scand*; 28:174.

Airaksinen O. & Brox J. (2006), **European guidelines for the management of chronic non-specific low back pain**,. *Eur Spine J*;15(suppl2):S192-S300.

American physical therapy association (APTA) *Background Sheet 2008*

(ABS 2001 National Health Survey, Australia's Health 2004, AIHW)

(Annual report of the department of health 1997).

American Chiropractic Association. A history of chiropractic care. Retrieved on 2008-02-14.

Asher A., (2007), About.com", **Health's Disease and Condition content is reviewed by our Medical Review Board** (<http://backandneck.about.com/od/c/g/chronicpain.htm> [Accessed 10-4-2008])

American physical therapy association (APTA) Background Sheet, 2008)  
[http://www.apta.org/AM/Template.cfm?Section=Physical\\_Therapy&TEMPLATE=/CM/HTMLDisplay.cfm&CONTENTID=33205](http://www.apta.org/AM/Template.cfm?Section=Physical_Therapy&TEMPLATE=/CM/HTMLDisplay.cfm&CONTENTID=33205). [Accessed 10-4-2008])

Andersson G. (1997), **The epidemiology of spinal disorders**. In: Frymoyer JW, ed. *The adult spine: principles and practice*. 2d ed. New York: Raven Press,:93-141.

Burton A. & Balague F. (2006), **European guidelines for prevention in low back pain**,. *Eur Spine J*:15(suppl 2):S136- S168

Bridwell K. ("<http://www.spineuniverse.com/displayarticle.php/article1280.html>  
[Accessed 3-5-2008]: (Last Updated: 12/10/2007)

Bridwell K., ("<http://www.spineuniverse.com/displayarticle.php/article1293.htm>"  
[Accessed 4-5-2008]): (Last Updated: 08/07/2007)

Burton A. & Balague F. (2006), **European guidelines for prevention in low back pain.**, *Eur Spine J*:15 (suppl 2):S136- S168

Brunner F. & Sunddar G. (1996), **The Lippincott medical surgical nursing**, pp 1880-1884.

Battie M., Bigos S. & Fisher L. (1990), **Anthropometric and clinical measures as predictors of back pain complaints in industry.**, A prospective study. *J Spinal Disord*; 3:195.

Biering F. (1982), **Low back trouble in a general population of 30-, 40-, 50-, and 60-year-old men and women**, Study design, representativeness and basic results. *Dan Med Bull*; 29:289.

Bergquist M., & Larsson U. (1977), **Acute low back pain in industry: A controlled prospective study with special reference to therapy and confounding factors.**, *Acta Orthop Scand Supp*; 170:1.

Berkson N., Schultz A. & Nachemson A. (1977), **Voluntary strengths of male adults with acute low back syndromes.**, *Clin Orthop*; 129:84.

Burton A., Tillotson K., Main C, & Hollis S. (1995), **Psychosocial predictors of outcome in acute and sub chronic low back trouble.**, *Spine* 20 (6): 722-8. PMID 7604349.

Biology and therapy of fibromyalgia. Genetic aspects of fibromyalgia syndrome McBride CR (03 Jul 2000). Fibromyalgia. Clinical Vignette. UCLA Department of Medicine.

Boissonnault W. & Janos S. (1991), **Screening for Medical Disease: Physical Therapy Assessment and Treatment Principles.** In WG Boissonnault led), **Examination in Physical Therapy Practice.**, *Screening for Medical Disease*. New York: Churchill Livingstone,;1.

Biering F. (1983), **A prospective study of low back pain in a general population: Occurrence, recurrence and a etiology.**, *Scand J Rehabil Med*; 15:71.

Biering F. (1984), **Physical measurements as risk indicators for low back**, .pp 210

Bejia I., Younes M., Jamila H., Khalfallah T., Ben Salem K., Touzi M., Akrouit M. & Bergaoui N. (2005 ), **Prevalence and factors associated to low back pain among hospital staff.**, *Joint Bone Spine*. May;72(3):254-9.

Babar H., Dohns G. & Knight J. (2006), **Back and neck pain is an established occupational disease for many professions**, *Department of Otolaryngology, St George's Hospital, London, UK.*

Bork B., Cook T., Rosecrance J., Engelhardt K., Thomason M., Wauford I. & Worley R. (1996), **Work-related musculoskeletal disorders among physical therapists**, *Phys Ther.j* ;76(8):827-35.

Bejia I., Younes M., Jamila H., Khalfallah T., Ben Salem K., Touzi M., Akrouf M. & Bergaoui N. (2004), **Prevalence and factors associated to low back pain among hospital staff**, *j.j b spin.* 06.001 doi:10.1016.

Bos E., Krol B., vander L. & Groothoff J. (2007), **Risk factors and musculoskeletal complaints in non-specialized nurses, IC nurses, operation room nurses, and X-ray technologists**, *Int Arch Occup Environ Health.* ;80(3):198-206.

Bigos S, Bowyer O & Braen G. (1994), **Acute low back problems in adults**, *Clinical Practice Guideline* no.14. AHCPR Publication No. 95-0642.

Bellenir, K. (2008), **[Http://www.back.com/anatomy-lumbar.html](http://www.back.com/anatomy-lumbar.html)** (Accessed 2-8-2008)

Bongers P., de Winter C. & Kompier M. (1993), **Psychosocial factors at work and musculoskeletal disease**, *Scand J Work Environ Health*;19:297-312.

Cailliet R. (1988), **Low Back Syndrome**, 4th edj. Philadelphia: FA Davis;275.

Council on Chiropractic Education (2007), **Standards for Doctor of Chiropractic programs and requirements for institutional status**, Retrieved on 2008-02-14. Chiropractic Care and Back Pain. WebMD. WebMD LLC (2008-02-24). Retrieved on 2008-02-25.

Can Chiropractors and Evidence-Based Manual Therapists Work Together? An Opinion From a Veteran Chiropractor" (2006). *The Journal of Manual & Manipulative Therapy* 14 (2): E15.

Carragee E., Alamin T., Miller J. & Carragee J. (2005), **"Disco graphic, MRI and psychosocial determinants of low back pain disability and remission: a prospective study in subjects with benign persistent back pain**, *spine*

Cailliet R. (1988), **Low back pain syndrome**, Ed.4 F.A. Philadelphia Davis company. p 89-99.

Cromie J., Robertson V. & Best M. (2000), **Work-related musculoskeletal disorders in physical therapists: prevalence, severity, risks, and responses**, *Phys Ther. jour.* Apr;80(4):336-51.

Chiou W., Wong M. & Lee Y. (1994), **Epidemiology of low back pain in Chinese nurses**, *Int J Nurs Stud.* Aug;31(4):361-8

Coggan C., Norton R. & Roberts I. (1994), **Prevalence of back pain among nurses**, *New Zealand Medical Journal*, 107 306-308.

Coggon D., Rose G. & Barker D. (1993), **Epidemiology for the uninitiated**,. *London British medical journal publishing group*.

Clermont E., Kate M. and Peter R. (2006), **Does back pain prevalence really decrease with increasing age? A systematic review**,. *Age and Ageing* 35(3):229-234; doi:10.1093/ageing/afj055

Deyo R. (1993), **Back pain revisited. Newer thinking on diagnosis and therapy**, *Consultant* 33:88-100,

De Vet H., Heymans M., Dunn K., Pope D., Van A., Macfarlane G., Bouter L. & Croft P.( 2002), **Episodes of low back pain: A proposal for uniform definitions to be used in research**,. *Spine* 27: 2409-2416.

Deyo R., Rainsville J., & Kent O. (1992), **What can the history and physical examination tell us about low back pain?**, *JAMA* 268:760-765.

David C. (1993), **low back pain, ambulatory medicine the primary care of families**, *Appleton and lange Norwalk connection*.

Deyo R. & Bass J. (1989), **Lifestyle and low-back pain: The influence of smoking and obesity**,. *Spine*; 14:501.

(Department of Neurology, 1991).

Dionne C. (2005), **Psychological distress confirmed as predictor of long-term back-related functional limitations in primary care settings**,. *Journal of clinical epidemiology* 58 (7): 714-8. doi:10.1016/j.jclinepi.2004.12.005. PMID 15939223

Description of Physical Therapy - What is Physical Therapy?]. World Confederation for Physical Therapy (WCPT). Retrieved on 27 January, 2008.

Ellen berg M., Ross M. & Honet J. (1993), **Prospective evaluation of the course of disc herniations in patients with proven radiculopathy**. *Arch Phys Med Rehabil*; 74:3.

Discovering Physical Therapy. **What is physical therapy**. American Physical Therapy Association. Retrieved on 27 January, 2008

Dündar B., Ozyurt B. & Ozmen D. (2006), **The prevalence of low back pain and its relationship with household jobs and other factors in a group of women in a rural area in Manias, Agri**,;18 (4):51-6 17457714.

D'orazio B. (1999), **low back pain handbook**. (1<sup>st</sup> ed), British library cataloguing-publication data, p77

Deyo R., Rainville J. & Kent D. (1992), **What can the history and physical examination tell us about low back pain?**, *JAMA*;268:760-5.

Eric M and Stanley J. (<http://www.womenshealthchannel.com/backpain/index.shtml> [Accessed 4-5-2008]: Last Reviewed: 14 Apr 2008)

Falconer M., McGeorge M. & Begg A. (1948), **Observations on cause and mechanism of symptom-production in sciatica and low-back pain.**, *J Neural Neurosurg Psychiatry*; 11:13.

Feller B. (1981), **Prevalence of Selected Impairment**, United States, 1977-Hyaltsville, MD, DHHS publication (PHS) 81-1562. Wash. ington, DC, US, *Department of Health and Human Services, Public Health Service, Office of Health Research and Technology, National Center for Health Statistics*,.

Friberg O. (1987), **Lumbar Instability: A dynamic approach by traction-compression radiography**, *Spine*;12:119.

Frymoyer J. (1988), **Back pain and sciatica.**, *N Engl J Med*; 318:291.

Fujimura T., Yasuda N.& Ohara H. (1995), **Work-related factors of low back pain among nursing aides in nursing homes for the elderly**, *Sangyo Eiseigaku Zasshi*. ;37(2):89-98.

Folletti I., Belardinelli V., Giovannini G., Cresta B., Fabrizi G., Tacconi C., Stopponi R., Ferrari L. & Siracusa A. (2005), **Prevalence and determinants of low back pain in hospital workers**, *G Ital Med Lav Ergon*. Jul-Sep;27(3):359-61

Frymoyer J. (1988), **Back pain and sciatica.**, *N Engl J Med*; 318:29

Feng C., Chen M. & Mao I. (2007), **Prevalence of and risk factors for different measures of low back pain among female nursing aides in Taiwanese nursing homes**, *BMC Musculoskeletal Disord*, 25;8:52.

Frymoyer J., Rosen J. & Clements J. (1985), **Psychological factors in low-back-pain disability.**, *Clin Orthop*; 195:178.

Frymoyer J. (1988), **Back pain and sciatica.**, *N Engl J Med*;318:291-300.

Guide UNRWA (1995)

Grazier K., Holbrook T. & Kelsey J. (1984), **The Frequency of Occurrence, ImpaCt, and Cost of Selected Musculoskeletal Conditions in the United States.**, *Chicago, Americqll Academy of Orthopaedic Surgeo*

Heliovaara M., Sievers K. & Maatela J. (1989), **Descriptive epidemiology and public health aspects of low back pain.**, *Ann Med*; 21:327.

Helliwell P., Moll J. & Wright V. (1992), **Measurement of spinal movement and function. In Jayson MIV (ed): The Lumbar Spine and Back Pain**, ed 4.New York, Churchill Livingstone, , pp 173-205.



Heliovaara M. (1998), **Risk factors for low back pain and sciatica.**, *Ann Med*; 21:257. ([Http://www.wrongdiagnosis.com/b/back\\_pain/prevalence.htm](http://www.wrongdiagnosis.com/b/back_pain/prevalence.htm) [Accessed 1/2/2008]).

Holder N., Clark H., DiBlasio J., Hughes C., Schrempf J., Harding L. & Sheppard K. (1999 ), **Cause, prevalence, and response to occupational musculoskeletal injuries reported by physical therapists and physical therapist assistants**, *Phys Ther. jour* Jul;79(7):642-52.

Holm K. & Liewellyn J. (1986), **Nursing research for nursing practice**, W.B. Saunders company: Philadelphia

[Http://www.prospects.ac.uk/cms/ShowPage/Home\\_page/Explore\\_types\\_of\\_jobs/Types\\_of\\_Job/p!eipaL?state=showocc&idno=118&pageno=1](http://www.prospects.ac.uk/cms/ShowPage/Home_page/Explore_types_of_jobs/Types_of_Job/p!eipaL?state=showocc&idno=118&pageno=1) [Accessed 8-5-2008]).

[Http://www.emedicine.com/neuro/topic516.htm](http://www.emedicine.com/neuro/topic516.htm) [Accessed 10/5/2008]) Article Last Updated: Jul 9, 2007

[Http://www.thephysiotherapysite.co.uk/back/back\\_overview.html](http://www.thephysiotherapysite.co.uk/back/back_overview.html) [Accessed 10/5/2008])

([Http://www.solveyourproblem.com/back-pain-relief/back\\_pain\\_prevention\\_standing\\_sitting\\_sleeping\\_exercise.shtml](http://www.solveyourproblem.com/back-pain-relief/back_pain_prevention_standing_sitting_sleeping_exercise.shtml) [Accessed 10/4/2008])

Ikata T. (1965), **Statistical and dynamic studies of lesions due to overloading on the spine.**, *Shikoku Acta Med*; 40:262.

Julia S., Peter E., Cyrus C. & David C. (1997), **Prospective cohort study of predictors of incident low back pain in nurses**, *British medical journal*, 314 (7089):1225-1229.

Jensen M., Brant M., & Obuchowski N, et al (1994), **Magnetic resonance imaging of the lumbar spine in people without back pain.**, *N Engl J Med* 331:69-73,

Jinky L. & Lue P. ( 2004), **Prevalence of and risk factors for low back pain among workers in manufacturing industries in the Philippines**, *Journal of Occupational and Environmental Hygiene*, 143 161-182.

Jelcic A., Culjak M., Horvacic B., Duricic D. & Kalin B. (1993), **Low back pain in health personnel.**, *Reumatizam.Jour.*;40(2):13-20.

Kelsey J. (1975), **An epidemiological study of the relationship between occupations and acute herniated lumbar Intervertebral discs.**, *Int J Epidemiol*; 4:197.

Khan M. & Siddiqui M. (2005), **Prevalence of low back pain in computer users.**, *Pak J Med Sci*, 21(2):159-63.

Knibbe J. & Friele R. (1996), **Prevalence of back pain and characteristics of the physical workload of community nurses.**, ;39(2):186-98.

Katherine M. (1994), **Diagnosis, treatment and prognosis in patients with low back pain**, *American family physician*, 49 (1): 171-182.

Lawrence J., Molyneux M. & Dingwall I. (1966), **Rheumatism in foundry workers**,. *Br J Indust Med*; 23:42.

Loebl W. (1967), **Measurement of spinal posture and range of spinal movement**,. *Ann Phys Med*; 9:103.

Love J. & Walsh M. (1938), **Protruded Intervertebral disks: Report of 100 cases in which operation was performed**,. *JAMA*; 111:396.

Loeser J. & Volinn E. (1991), **Epidemiology of low back pain**,. *Neurosurg Clin North Am*; 2:713.

Liang L. & Youxin L. (2007), **Prevalence and risk factors of work-related musculoskeletal disorders among foundry workers**,. *Department of Occupational Health*, FUDAN University School of Public Health, 138 Yixueyuan Rd., Shanghai, China.

Lavsky M., Wallace R., Kohout F., Lemke J., Morris M. & Smith I. (1985), **Prevalence and functional correlates of low back pain in the elderly**, *J Am Geriatr Soc*.;33(1):23-8.

Lee P., Helewa A., Goldsmith C., Smythe H. & Stitt L. ( 2001), **Pprevalence and risk factors in an industrial setting**, *J Rheumatol*.;28(2):346-51 University of Toronto, Ontario, Canada.

Maniadakis A. & Gray A. (2000), **The economic burden of back pain in the UK**,. *Pain J*;84:95-103.

Ministry of Health (2006), **Health Status In Palestine**,. *Annual Report 2005* Gaza: Palestinian Health Information Center.

Mayer T., Tencer A. & Kristoferson S. (1984), "Use of noninvasive techniques for quantification of spinal range-of-motion in normal subjects and chronic low-back dysfunction patients",. *Spine*; 9:588.

Masaryk T., Ross J. & Modic M. (1988), **High-resolution MR imaging of sequestered lumbar intervertebral disks**,. *AJR*; 150:1155.

Michel L., Sudha R., Christopher S., Yvonne G. & Hamdan, E. (2008), **Prevalence and Risk Factors Associated With Low Back Pain Among Health Care Providers in a Kuwait Hospital**, *Spine journal*, 33(5):539-545.

Marena C., Gervino D., Pistorio A., Azzaretti S., Chiesa P., Lodola L. & Marraccini P. (1997), **Epidemiologic study on the prevalence of low back pain in health personnel exposed to manual handling tasks**, *G Ital Med Lav Ergon*;19(3):89-95.

Mierzejewski M. & Kumar S. (1997 ), **Prevalence of low back pain among physical therapists in Edmonton, Canada**,. *Aug*;19(8):309-17

Molumphy M., Unger B., Jensen G. & Lopopolo R. (1985), **Incidence of work-related low back pain in physical therapists.** *Phys Ther. jour* Apr;65(4):482-6.

McBride D., Begg D., Herbison P. & Buckingham K. (2005), **Low back pain in young New Zealanders**, *N Z Med J.* May 20;118(1215):U1482.

Maetzel A. & Linda L. (2002), **The economic burden of low back pain.** *Best Practice & Research Clinical Rheumatology*, Volume 16, Issue 1, January Pages 23-30.

Mark R., (2007), **5 Quick Tips to Help Prevent Back Pain.**  
<http://www.spineuniverse.com/displayarticle.php/article2820.html> [Accessed 4-5-2008]).

Martinelli S., Artioli G., Vinceti M., Bergomi M., Bussolanti N., Camellini R., Celotti P., Capelli P., Roccato L. & Gobba F. (2004), **Low back pain risk in nurses and its prevention.** *Prof Inferm.* ;57(4):238-42.

Nachemson A., Waddell G. & Norlund A. (2000), **Epidemiology of neck and low back pain.** In: Nachemson AL & Jonsson E (eds). **Neck and back pain: The scientific evidence of causes, diagnosis and treatment.** Philadelphia: Lippencott Williams & Wilkins,.

National Guideline Clearinghouse (2004), **Adult low back pain.** Available online: [http://www.guideline.gov/summary/summary.aspx?doc\\_id=5883&nbr=3869&string=low+AND+back+AND+pain](http://www.guideline.gov/summary/summary.aspx?doc_id=5883&nbr=3869&string=low+AND+back+AND+pain)

Nagasu A. ( 2007), The **prevalence of self-reported low back pain among professional cooks**, *BMC Public Health*, 7:171doi:10.1186/1471-2458-7-171.

National Center for Complementary and Alternative Medicine (2007). **An introduction to chiropractic.** Retrieved on 2008-02-14.

Norlund A. & Waddell G. Cost of back pain in some OECD countries. In: Nachemson AL, Jonsson E (eds). (2000), **Neck and back pain: The scientific evidence of causes, diagnosis and treatment.** Philadelphia: Lippencott, Williams & Wilkins,.

Normadiah J. (2005), **Prevalence of low back pain among the doctors.** *NCD Malaysia* volume 4, No.2.

Omokhodion F., Umar U., & Ogunnowo B. (2000), **Prevalence of low back pain among staff in a rural hospital in Nigeria.** *Occup Med (Lond).* 50(2):107-10.

Omokhodion F. & Sanya A. (2004), **Risk factors for low back pain among office workers in Ibadan, Southwest Nigeria.** *Occup Med (Lond).*;54(2):135-6.

Palmer K. & Walsh K. (2000), **Back pain in Britain: comparison of two prevalence surveys at an interval of 10 years.** *BMJ* 320:1577-1578.

Pope M. (1989), **Risk indicators in low back pain.** *Ann Med;* 21:387.

Vallfors B. (1985), **Acute, subacute and chronic low back pain: Clinical symptoms, absenteeism and working environment.**, *Scand J Rehabil Med Suppl*; 11:1.

Panjabi M., Hult J. & Crisco N. (1992), **Biomechanical studies in cadaveric spines.** *The Lumbar Spine and Back Pain*, ed 4. New York, Churchill Livingstone, , pp 133-155.

Pope M. (1989), **Risk indicators in low back pain.**, *Ann Med*; 21:387.

Polit D. (2004), **Nursing research: principles and methods.**, Seventh Edition, *Lippincott, New York, USA*.

Patricia L., Loney F., & Paul W. (1999), **The Prevalence of Low Back Pain in Adults: A Methodological Review of the Literature**, *PHYS THER* Vol. 79, No. 4, pp. 384-396.

Patel A. & Ogle A. (2007), **Diagnosis and Management of Acute Low Back Pain.**, *American Academy of Family Physicians*

Rabinovich D. ( "<http://www.onip.ca/article/63>" [Accessed 5-5-2008])

Rodts M. (2007), "<http://www.spineuniverse.com/displayarticle.php/article1296.html> " [Accessed 4-5-2008]: Last Updated 03/17/2008),

(Richard G. (2007), **Low Back Pain**,

<http://www.spineuniverse.com/displayarticle.php/article1433.html> [Accessed 4-5-2008]: Last Updated: 11/09/2007)

Rootberg R. (2007), **Voice and Gender and other contemporary issues in professional voice and speech training.** *Voice and Speech Review, Voice and Speech Trainers Association, Inc, Cincinnati, OH*: 164-170. Retrieved on 2007-09-01.

Rugelj D. (2003 ), **Low back pain and other work-related musculoskeletal problems among physiotherapists.**, *Appl Ergon.* Nov;34(6):635-9.

Rotgoltz J., Derazne E., From P., Grushecky E. & Ribak J. (1992), **Prevalence of low back pain in employees of a pharmaceutical company.**, *Isr J Med Sci.* Aug-Sep;28(8-9):615-8.

Swezey R. ( 1998), **Physical Medicine and Rehabilitation**, *Eur Spine J* 9(2) :309.

Skinner H. (1996), **Current Diagnosis and Treatment in Orthopedics**, 1<sup>st</sup> ed. Mass publishing co., Pp183.

Swenson R. (1999), **Lower Back Pain. Differential diagnosis. A reasonable clinical approach.**, *Neurologic clin.* Vol 17. No 1. Feb. (<http://neuroland.com/spine/lbp.htm> (accessed 14/4/2008)

Steindler A. (1965), **Kinesiology of the Human Body Under Normal and Pathological Conditions"**,. *Springfield, IL, Charles C Thomas.*,.

Sendra M. (1996), **Patients with idiopathic low back pain. Physical fitness as a treatment strategy. Pain management**,. *Mosby yearbook*, inc.

Schultz A, Andersson G. & brtengren R. (1982), **Loads on the lumbar spine: Validation of a biomechanical analysis by measurements of intradiscal pressures and myoelectric signals**,. *J Bone Joint Surg Am*; 64:713.

Schober P. (1937), **Ledenwirbelsaule and Kreuzschmerzen**,. *Munchen Med Wochnschr*; 84:336.

Simeone F. (1985), **Lumbar disk disease**,. In *Wilkins RH, Rengachary SS (eds): Neurosurgery*, vol 3. New York, McGraw-Hill, , pp 2250-2259.

Schultz A., Andersson G. & brtengren R. (1982), **Loads on the lumbar spine: Validation of a biomechanical analysis by measurements of intradiscal pressures and myoelectric signals**, *J Bone Joint Surg Am*; 64:713.

Spangfort E. (1972), **The lumbar disc herniation: A computer-aided analysis of 2,504 operations**,. *Acta Orthop Scand Suppl*; 142:1.

Spine institute, (2008) <http://www.coloradospineinstitute.com/subject.php?pn=anatomy-vertebralcolumn13> (Accessed 5-6-2008)

Svensson H. & Andersson G. (1983), **Low-back pain in 40- to 47year-old men: Work history and work environment factors**,. *Spine*; 8:272.

Shehab D., AL-Jarallah k. & Moussa M. (2003), **Prevalence of low back pain among physical therapists in Kuwait**,. *International journal of the Kuwait university ,health science center* , Oct-Dec;12(4):224-30.

Sun J., He Z. & Wang Sh. (2007), **Prevalence and risk factors of occupational low back pain in ICU nurses**, ;25 (8):453-5.

Snook S. (1982), **Low back pain in industry**,. *American Academy of Orthopaedic Surgeons: Symposium on Idiopathic Low Back Pain*. St Louis, Mosby-Year Book, , pp 23-38.

Stergioulas A., Filippou D., Triga A., Grigoriadis E. & Shipkov C. (2004), **Low back pain in physical education teachers**, *Folia Med (Plovdiv)*.;46(3):51-5.

Sami H., Erkki V., Markky H. & Pekka P. (1998), **Trends of back pain in Eastern Finland, 1972-1992, in relation, to socioeconomic status and behavioral risk factors**, *American journal of epidemiology*, 148 (7):671-683.

**SpineUniverse.com (2008)** <http://www.spineuniverse.com/article/back-pain-anatomy-3901.html> (accessed 5-7-2008)

Thomson A., Skinner A. & Piercy J. (1991), **Tidy's Physiotherapy**, 12<sup>th</sup> ed. Great Briton by Thomson litho ltd east kilbride, Scotland. P156.

Thomson A., Skinner A. & Piercy J. (1991), **Tidy's Physiotherapy**, 12<sup>th</sup> ed. Great Briton by Thomson litho ltd east kilbride, Scotland. P154.

Tauber J. (1970), **An unorthodox look at backaches**,. *J Occup Med*; 12:128.

Tanagho E. & McAninch J. (1984), **Smith's General Urology**, (12th ed). *Norwalk, CT: Appleton & Lange*, 220-295.

Taylor H. & Curran N. (1985), **The Nuprin Pain Report**,. *New York, Louis Harris & Associates*,.

The Journal of Manual & Manipulative Therapy (2006).

Timothy A. & Leon G. (2005), **Is obesity a risk factor for low back pain? An example of using the evidence to answer a clinical question**, *Chiropractic & Osteopathy*, 13:2 doi:10.1186/1746-1340-13-2

The Prevalence of Back Pain in Great Britain (1998), **Office for National Statistics**. Social Survey Division, Office for National Statistics

UNRWA Annual Report (2006)

Van M. (2006), **Chapter 1: Introduction**,. *Eur Spine J*;15(suppl 2):S134-S135.

Van M. & Koes B. (2004), **Low back pain (acute)**, *Clinical Evidence*, 12 1643–1658.

Van M. & Becker A. (2006), **European guidelines for the management of acute non-specific low back pain in primary care**,. *Eur Spine J*;15(suppl 2):S169-S191.

Van der, Bouter L & Terpstra L. (1991), **Effectiviteit van tractie bij lage rugklachten. De resultaten van een pilotstudie**,. *Ned T Fysiotherapie*;101:37-43.

Van H., Braakman R. & Bezemer P. (1989), **Chemoneucleolysis versus discectomy: A randomized multicenter trial**,. *J Neurosurg*; 70:869.

Videman T., Nurminen T., Tola S., Kuorinka I., Vanharanta H. & Troup J. (1984), **Low-back pain in nurses and some loading factors of work**, *Spine Journal*.;9(4):400-4

Vindigni D., Bruce F., Jennifer R. Parkinson J. & Blunden S. (2007), **Low back pain risk factors in a large rural Australian Aboriginal community**.

Wharton M. (1991), **Health Care Systems**,. *Slippery Rock University*; I

William M., Kathleen R., Kathie H. & Robert B (2007),

(<http://www.webmd.com/hwpopup/lumbosacral-region-of-the-spine-lower-back>. [Accessed 4-5-2008]: Last Updated February 15, 2006)

Warren M., Feder G. & Lewis M. (1997), **Systematic reviews of bed rest and advice to stay active for acute low back pain.**, *journal of family practice*, 45(4) 331-336.

Warren M., Feder G. & Lewis M. (1997), **Systematic reviews of bed rest and advice to stay active for acute low back pain.**, *journal of family practice*, 45(4) 331-336.

Wolfe, F., Smythe H. & Yunus M. (February 1990), **The American College of Rheumatology 1990 Criteria for the Classification of Fibromyalgia. Report of the Multicenter Criteria Committee.**, *Arthritis and Rheumatism* 33 (2): 160–172. PMID 2306288.

Wilbourn A. (1982), **The value and limitations of electro myographic examination in the diagnosis of lumbosacral radiculopathy.**, *In Hardy RW Jr (ed). Lumbar Disc Disease*, New York, Raven Press, , pp 65-109.

Wiltse L. (1979), **Common problems of the lumbar spine: Spondylolisthesis and its treatment.**, *J Cont Educ Orthop*; 7:13.

Wheeler A. (2007), **Pathophysiology of Chronic Back Pain.**, *Emedicine*,

Wijnhoven, H., Henrika C., Picavet, H .& Susan J (2006), **Prevalence of Musculoskeletal Disorders Is Systematically Higher in Women Than in Men.**, *Clinical Journal of Pain*. 22(8):717-724.

## Bibliography

- Amundsen T., Weber H. & Lilleas F. (1995), **Lumbar spinal stenosis: clinical and radiologic features.**,. *spine*; 20:1178.
- Borenstein D. (1995), **Prevalence and treatment outcome of primary and secondary fibromyalgia in patients with spinal pain.**,. *Spine*;20:796.
- Caldron P. (1991), **Screening for Rheumatic Disease. In WG Boissonnault led), Examination in Physical Therapy Practice: Screening for Medical Disease.**,. *New York: Churchill Livingstone*,;237.
- Fahrni W. (1975), **Conservative treatment of lumbar disc degeneration: Our primary responsibility.**,. *Orthop Clin North Am*; 6:93.
- Healy J. & Ghelman B. (1986), **Osteoid osteoma and Osteoblastoma: ten most common bone and joint tumors.**,. *Clin Orthop*; 204:76.
- ( Her majesty's stationery office (HMSO), 1997)
- Koopmeiners M. & Boissonnault W. (1993), **Medical Diagnostics for the Physical Therapist.**,. *Presented at the Institute of Graduate Physical Therapy course j*; 15-17
- Lauerman W. & Caine J. (1996), **Isthmic Spondylolisthesis in the adult.**,. *J Am Acad Orthop Surg*; 12:201.
- Lander P. & Hadjipavlou A. (1991), **Intradiscal invasion of Paget's disease of the spine.**,. *Spine*;16:46.
- Magora A. & Schwartz A. (1980), **Relation between the low back pain syndrome and x-ray finding: Lysis and Olisthesis.**,. *Scand J Rehabil Med*;12:47.
- Moul J. (1993), **Prostatitis: sorting out the different causes.**,. *Postgrad Med* ;94:191.
- Michel T. & Downing J. (1991), **Screening for Cardiovascular System Disease. In WG Boissonnault led), Examination in Physical Therapy Practice.**,. *Screening for Medical Disease.* New York: Churchill Livingstone,;33.
- Randall T. & McMahon K. (1991), **Screening for Musculoskeletal System Disease. In WG Boissonnault (ed), Examination in Physical Therapy Practice.**,. *Screening for Medical Disease.* New York: Churchill Livingstone.
- Saal J. & Saal J.(1989), **Nonoperative treatment of herniated lumbar intervertebral disc with radiculopathy: An outcome study.**,. *Spine*; 14:431.
- Sinaki M. (1988), **Exercise and physical therapy.**,. *In Riggs BL, Melton U III (eds): Osteoporosis: Etiology, Diagnosis, and Management.* New York, Raven Press, , pp 457-479.



- Sinaki M. & Grubbs N. (1989), **Back strengthening exercises: Quantitative evaluation of their efficacy for women aged 40 to 65 years.**, *Arch Phys Med Rehabil*; 70:16.
- Sinaki M. & Mikkelsen B. (1984), **Postmenopausal spinal osteoporosis: Flexion versus extension exercises.**, *Arch Phys Med Rehabil*; 65:593
- Sinaki M. (1993), **Basic Clinical Rehabilitation Medicine**, ed 2. St Louis, Mosby-Year Book, , pp 209-236.
- Sinaki M., Chan C. & Plucinski T. (1993), **Spondylolisthesis of the osteoporotic spine.**, *In Proceedings of the Fourth International Symposium on Osteoporosis and Consensus Development Conference. Hong Kong, March 27-April 2, , P 106.*
- Sinaki M., Limburg P. & Wollan P. (1996), **Correlation of trunk muscle strength with age in children 5 to 18 years old.**, *Mayo Clin Proc*; 71:1047.
- Sinaki M., Lutness M. & Ilstrup D. (1989), **Lumbar spondylolisthesis: Retrospective comparison and 3-year follow-up of two conservative treatment programs.**, *Arch Phys Med Rehabil*; 70:584.
- Sinaki M. & Nicholas J. (1994), **Metabolic bone diseases and aging.**, Philadelphia, Williams & Wilkins, , pp 107-122.
- Sato H. & Kikuchi S. (1993), **The natural history of radiographic instability of the lumbar spine**, *Spine*;18:2075.
- Turek S. (1977), **Orthopaedics: principles and their application**, Philadelphia: Lippincott;287.
- Twomey L. & Taylor J. (1987), **Physical therapy of low back pain.**, new York: Churchill livingstone;2.
- Thorn G. (1977), **Harrison's Principles of Internal Medicine**, (8th ed). New York: McGraw-Hil.
- Virta L. & Ronnema T. (1993), **The association of mild-moderate Isthmic lumbar Spondylolisthesis and low back pain in middle-aged patients is weak and it only occurs in women.**, *Spine*;18:1496.
- Wiltse L., Newman P. & Macnab I. (1976), **Classification of spondylolysis and spondylolisthesis.**, *Clin Orthop*; 117:23.
- White A. & Anderson R. (1991), **Conservative care of low back pain.**, Baltimore: Williams & Wilkins;225

# Annexes

# (Annex 1)

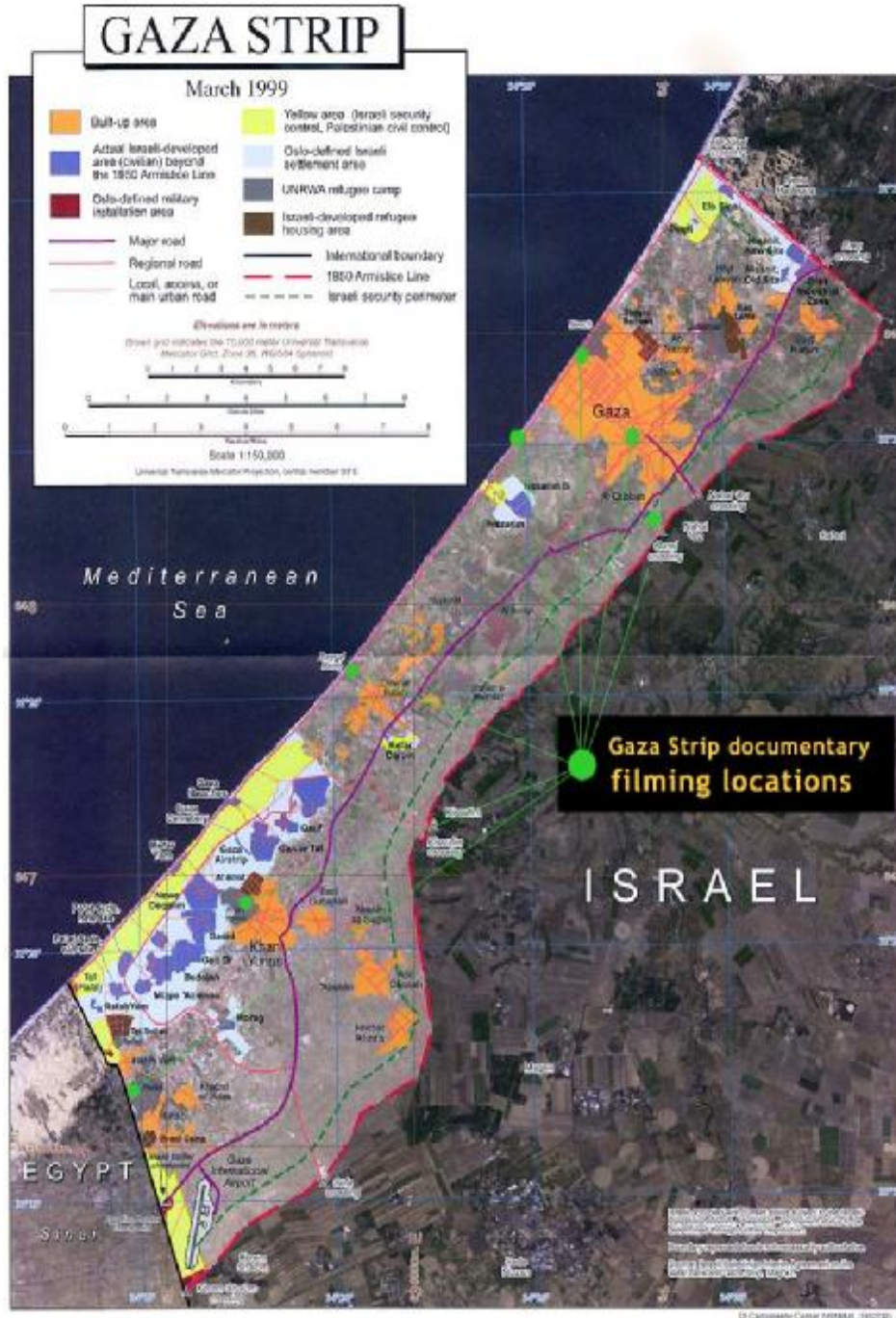
## (Map of Palestine)



(<http://www.mideastweb.org/misrael.htm> [Accessed 4/4/2008]).

(Annex 2)

(Map of Gaza Strip)



<http://www.littleredbutton.com/gaza/map.html> [Accessed 4/4/2008]

### (Annex 3)

#### (Explanatory letter for experts)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

السيد الدكتور / : \_\_\_\_\_ حفظه الله

السلام عليكم ورحمة الله وبركاته

يقوم الباحث بإعداد دراسة للحصول على درجة الماجستير في علوم التأهيل والدراسة  
بعنوان:

(مدى انتشار آلام الظهر والعوامل الخطرة المسببة له بين العاملين في مجال العلاج الطبيعي في قطاع غزة)

ويقوم الدكتور :خميس الاسي بالإشراف على هذه الدراسة، والباحث قام بإعداد استبانته سيتم  
توزيعها على جميع العاملين في مجال العلاج الطبيعي في المراكز والمستشفيات التابعة لوزارة  
الصحة والأهلية ووكالة الغوث .

لذا نرجو من سيادتكم التكرم وإبداء آراؤكم في الاستبانة المرفقة من حيث ملاءمتها في الحصول  
على المعلومات اللازمة لقياس مدى انتشار آلام الظهر والعوامل الخطرة المسببة له بين العاملين  
في مجال العلاج الطبيعي في قطاع غزة وتعديل اي فقرة ترون أنها بحاجة إلى تعديل.

شاكرين لكم حسن تعاونكم

وتفضلوا بقبول فائق الاحترام والتقدير

الباحث: فضل محمد مسعود

أخصائي العلاج الطبيعي بمستشفى الوفاء للتأهيل الطبي / غزة - الشجاعة .

جوال رقم: 0599472241

بريد الكتروني: [Fdlmasoud@yahoo.com](mailto:Fdlmasoud@yahoo.com)

## (Annex 4)

### (Experts panel names)

<b>Member</b>	<b>Place of work</b>
Dr. Mohammad K .Nasser	The head of physiotherapy collogue of applied medical sciences/ Al-Azhar university-Gaza
Dr. Faraj A. Abu Rayya	The head of physiotherapy-UNRWA
Dr. Fadel N. Naim	Orthopedic Surgeon (El-Wafa Medical Rehabilitation Hospital)
Dr. Jamil Al dahrawi	Education / psychology-Islamic university-Gaza
Dr. Yosef Al kahloot	Education / Islamic university-Gaza
Dr. Yosif Safi	Education / Al-Aqsa university-Gaza
Dr. Sanna Abu Dagga	Education / psychology-Islamic university-Gaza
Mr. Ali H. Abu Riala	The head of nursing departments (El-Wafa M. R. Hospital)
Mr. Mossa Abu Mustaf	The head of occupational therapy department (El-Wafa Medical. Rehabilitation Hospital)

## (Annex 5)

### (Questionnaire explanatory letter (the Arabic version))

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

حفظهم الله

الأخوات والإخوة الزملاء

السلام عليكم ورحمة الله وبركاته

يقوم الباحث بدراسة " مدى انتشار آلام الظهر والعوامل الخطرة المسببة له بين العاملين في مجال العلاج الطبيعي في قطاع غزة".

إن هذا البحث يشكل جزءاً ضرورياً من دراستي للحصول على درجة الماجستير في علوم التأهيل / بالجامعة الإسلامية - بغزة، وقد تم اختياركم ضمن مجموعة العاملين في مجال العلاج الطبيعي للإجابة على العبارات الواردة فيها.

إذا كنت توافق على المشاركة في هذه الدراسة، يُرجى التكرم بقراءة العبارات التالية بدقة والإجابة عنها بموضوعية لما في ذلك من أثر كبير على صحة النتائج والنصائح التي سوف يتوصل إليها الباحث. مع التأكيد بأن هذه البيانات سوف تُستخدم لأغراض البحث العلمي فقط، وستُعامل بسرية تامة.

أوافق

لا أوافق

ملاحظه / الوقت اللازم لتعبئة الاستبانة كاملة لا يستغرق أكثر من ١٥ دقيقة.

شاكرين حسن تعاونكم

الباحث: فضل محمد مسعود  
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## (Annex 6)

(The primary version of questionnaire in Arabic)

### الجزء الأول

#### البيانات الشخصية:

- (١) العمر ----- سنة
- (٢) الجنس  ذكر  أنثى
- (٣) الطول ----- سم
- (٤) الوزن ----- كجم
- (٥) الحالة الاجتماعية  أعزب/ة  متزوج/ة  مطلق/ة  أرمل/ة
- (٦) عدد مرات الحمل ----- مرة
- (٧) عدد الأطفال في العائلة ----- طفلا
- (٨) المستوى التعليمي  دبلوم  بكالوريوس  ماجستير  دكتوراه
- (٩) هل تدخن؟  نعم  لا
- (١٠) معدل عدد السجائر في اليوم؟ ----- سيجارة

### الجزء الثاني

#### بيانات العمل:

- (١١) في أي قسم من أقسام العلاج الطبيعي تعمل حاليا؟  قسم داخلي  قسم خارجي  أخرى حدد مكان العمل الحالي:----- .
- (١٢) مكان العمل التخصصي في فروع العلاج الطبيعي (بإمكانك اختيار أكثر من إجابة) .  
 علاج طبيعي عام  تأهيل العظام.  قسم النساء والولادة  قسم الحروق  
 تأهيل الأعصاب  تأهيل القلب والجهاز التنفسي  وحدة العناية المركزة  خاص  أخرى
- (١٣) عدد سنوات الخبرة الإجمالية: ----- سنة.
- (١٤) عدد ساعات العمل في الأسبوع: ----- ساعة.
- (١٥) عدد أيام العمل أسبوعيا: ----- يوم
- (١٦) عدد المرضى الذي تعالجهم أسبوعيا : ----- مريضا.



- ١٧) معدل ساعات الجلوس أثناء تأدية جلسات العلاج الطبيعي للمرضى في اليوم: ----- ساعة.
- ١٨) معدل ساعات الوقوف أثناء تأدية جلسات العلاج الطبيعي للمرضى في اليوم: ----- ساعة.
- ١٩) معدل ساعات المشي أثناء تأدية جلسات العلاج الطبيعي للمرضى في اليوم : ----- ساعة.
- ٢٠) أنواع الرياضة التي تمارسها ؟  كرة قدم  كرة يد  كرة طائرة  سباحة  المشي  الجري  أخرى  لا أمارس أي نوع من الرياضة.
- ٢١) هل حمل المريض جزء اساسى من عملك ؟  نعم  لا
- ٢٢) هل تستخدم رافعة لنقل أو تغيير وضعية المريض ؟  نعم  لا
- ٢٣) هل تعمل مع حالات خاصة بعد انتهاء العمل ؟  نعم  لا
- ٢٤) إذا كانت إجابتك نعم حدد ارتفاع السرير الذي تستخدمه أثناء تأديتك لجلسة العلاج الطبيعي للمريض خارج العمل ؟  منخفض الارتفاع  متوسط الارتفاع  عالي الارتفاع  لا يوجد سرير

## الجزء الثالث

### بيانات عن انتشار آلام الظهر:

- ٢٥) هل تعاني الآن من آلام في الظهر ؟  نعم  لا
- ٢٦) إذا كانت إجابتك نعم ، حدد مكان الألم ؟  أعلى منطقة الظهر  وسط الظهر  أسفل منطقة الظهر  يمتد إلى الساق اليمنى  يمتد إلى الساق اليسرى
- ٢٧) هل عانيت من آلام في الظهر في الأشهر الثلاثة السابقة ؟  نعم  لا
- ٢٨) كيف بدأ الألم أول مرة ؟  تدريجي  مفاجئ
- ٢٩) كيف يبدأ الألم حالياً ؟  تدريجي  مفاجئ
- ٣٠) حدد مواصفات الألم الذي تعاني منه الآن ؟  خذلان  حرقان  لسعات كهربائية  نبض  غير واضح  أخرى
- ٣١) هل عانيت من آلام في الظهر قبل عملك في مجال العلاج الطبيعي ؟  نعم  لا
- ٣٢) إذا كانت إجابتك نعم ، أوصف حدة الألم بعد عملك في مجال العلاج الطبيعي ؟  أقل  لم يتغير  اختلف  ازداد الألم  أصبح غير محتمل

٣٣) حدد إن أمكن عدد الإجازات المرضية التي حصلت عليها بالأيام بسبب آلام الظهر منذ ٦ أشهر ؟ ----- يوماً.

## الجزء الرابع

### بيانات خاصة بشدة الألم:

٣٤) حدد الدرجة التي تعتقد أنها تقابل شدة الألم الذي تعاني منه؟  
 لا يوجد ألم  ألم بسيط جداً  متوسط  ألم فوق المتوسط  ألم شديد

٣٥) هل تعاني من أي آلام أخرى بالإضافة إلى آلام الظهر ؟  نعم  لا  
٣٦) إذا كانت الإجابة نعم ، حدد أكثر الأماكن التي تشكو منها من الآلام خلال عملك ؟  
 الرقبة  الكتف  المرفق  الرسغ  الإبهام  الأصابع   
 الفخذ  الركبة  الكاحل  غير ذلك

## الجزء الخامس

### أسباب آلام الظهر

٣٧) هل تعرضت لأي إصابة في الجهاز الحركي أثناء ساعات عملك في مجال العلاج الطبيعي خلال ٦ شهور الأخيرة ؟  نعم  لا  
٣٨) إذا كانت إجابتك نعم، اذكر عدد المرات ----- مرة  
٣٩) هل تعرضت لأي إصابة في الجهاز الحركي بعد انتهاء ساعات عملك في مجال العلاج الطبيعي خلال ٦ شهور الأخيرة ؟  نعم  لا  
٤٠) إذا كانت إجابتك نعم، اذكر عدد المرات ----- مرة  
٤١) ما نوع الإصابة التي تعرضت لها ؟  
 كسر في العظام  إصابة في غضروف الفقرات  تمزق في الأربطة  تمزق في العضلات  خلع في المفصل  أخرى  
٤٢) ما هو النشاط الذي قمت به وكان سبب لتلك الاصابه ؟ بإمكانك اختيار أكثر من إجابة ؟  
 تطبيق لبعض الأعمال  تكرار لبعض المهام  الانحناء إلى الأمام

- الانتقال إلى الجوانب  نقل مريض  حمل مريض ثقيل أو جهاز ثقيل
- الانزلاق  التدرج و السقوط .
- البقاء فترة طويلة من الوقت على نفس الوضعية  تطبيق علاج يدوي .
- العمل بوضعية غير مريحة أو مكان ضيق  التعرض لحركة مفاجئة عند علاج المرضى.
- العمل عندما تكون متعبا  غير ذلك

(٤٣) في أي أماكن العمل تعرضت للإصابة ؟

- مستشفى حكومي  مستشفى غير حكومي  مركز خاص لتأهيل الأطفال  في بيت المريض
- مركز خاص للعلاج الطبيعي  عيادة تابعة لوكالة الغوث  عيادة تابعة لوزارة الصحة
- أخرى .

(٤٤) هل بلغت رسميا عن إصابتك ؟  نعم  لا

(٤٥) منذ تعرضك لآلام الظهر ، هل تزداد أعراض الألم عند ممارستك لعملك في مجال العلاج الطبيعي؟  نعم  لا

(٤٦) إذا كانت الإجابة نعم ؟ أي النشاطات التالية يمكن إن تعيد لك الآلام؟  
بإمكانك تحديد أكثر من إجابة

- حمل الأشياء الثقيلة  الثني أو الالتواء  المكوث بوضعية معينة لفترة طويلة
- العلاج اليدوي

تكرار لمهام معينة  نقل المريض  أداء النشاطات فوق مستوى الرأس

مد الذراع

صعود الدرج  جلوس القرفصاء  المشي  العمل بوضعية غير مريحة

ضيق المكان  غير ذلك

(٤٧) هل راجعت أي طبيب بسبب الإصابة ؟  نعم  لا

٤٨) ما نوع العلاج الذي تلقينته ؟

طبي  جراحي  تمارين  راحة  علاجات أخرى

٤٩) هل انخفض معدل آلام الظهر بعد العلاج الذي تلقينته ؟  نعم  لا

٥٠) هل ازداد معدل آلام الظهر بعد العلاج الذي تلقينته ؟  نعم  لا

٥١) هل الإصابة دعتك لتغيير نمط عملك ؟  نعم  لا

٥٢) إذا كانت الإجابة نعم ، ما هو التغيير ؟ (بإمكانك تحديد أكثر من إجابة )

تجنب حمل الأشياء الثقيلة  تغيير أوضاعك أثناء العمل باستمرار.

تغيير برنامج العمل اليومي  تجنب اي عمل إضافي  تعديل فترات العمل الغير المنتظمة

التحكم بعدد المرضى في اليوم .  تشجيع المريض على الاعتماد على نفسه أثناء الجلسات

تقليص ساعات العمل إلى أقل من المعتاد

الابتعاد عن الأشياء التي تحتاج إلى جهد يدوي.  طلب المساعدة من الآخرين

اخذ فترات من الراحة أثناء الجلسة  استخدام معرفتك بميكانيكية الجسم للحفاظ على ظهرك

التوقف عن عمل الجلسة عند الشعور بآلام في الظهر  اخذ فترات من الراحة على

مدار الدوام  زيادة استخدام الأجهزة الكهربائية في علاج المرضى.

٥٣) من وجهة نظرك، أي العوامل التالية أكثر تسببا لظهور آلام الظهر؟ (بإمكانك تحديد أكثر من إجابة)

زيادة الوزن  حمل الأشياء الثقيلة  بذل مجهود أكثر من الطبيعي  وضعية غير

مريحة في العمل  وضعية الثني والتلوي أثناء العمل  لبس الأحذية العالية

ارتداء الملابس الغير مناسبة  الجلوس لفترة طويلة  التدخين  التوتر العصبي والنفسي

الوقوف لفترة طويلة  الإكثار من التمارين الرياضية

ضغوطات العمل  عدم الرضا الوظيفي  زيادة عدد أفراد الأسرة

## الجزء السادس

بيانات تتعلق بالجهد المبذول و الوقاية والنصائح الخاصة بآلام الظهر ووضعيته أثناء العمل:  
من واقع خبرتك بآلام الظهر، هل هذه الأشياء قد تعمل على زيادة آلام الظهر عندك ؟

٥٤ العاملون في مجال العلاج الطبيعي بحاجة إلى توعية أكثر ونصائح لمنع ظهور آلام الظهر

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٥٥ العمل في الأقسام الداخلية تستوجب بذل جهد اكبر مع المرضى

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٥٦ العمل في الأقسام الداخلية مع عدم مراعاة أوضاع الظهر السليمة تزيد من نسبة ظهور آلام الظهر

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٥٧ العمل في الأقسام الخارجية تستوجب بذل جهد اكبر مع المرضى

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٥٨ العمل في الأقسام الخارجية مع عدم مراعاة أوضاع الظهر السليمة تزيد من نسبة ظهور آلام الظهر

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٥٩ العمل في العيادات التابعة لوكالة الغوث تستوجب بذل جهد اكبر مع المرضى

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٦٠ العمل في العيادات التابعة لوكالة الغوث مع عدم مراعاة أوضاع الظهر السليمة تزيد من نسبة ظهور آلام الظهر

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٦١ العمل في العيادات التابعة لوزارة الصحة تستوجب بذل جهد اكبر مع المرضى

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

٦٢ العمل في العيادات التابعة لوزارة الصحة مع عدم مراعاة أوضاع الظهر السليمة تزيد من نسبة ظهور

آلام الظهر  أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

من واقع خبرتك بآلام الظهر، هل هذه الأشياء قد تعمل على تخفيف آلام الظهر عندك ؟

(٦٣) تقليل ساعات العمل.

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

(٦٤) تقليل عدد المرضى الذين تعالجهم في اليوم.

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

(٦٥) استخدام أكثر لوسائل الأمان أثناء العمل من أسرة وكراسي – ناقلات ، أجهزة ذات

ارتفاع مناسب.  أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق

بشدة

(٦٦) أخذ فترات راحة أكثر أثناء الدوام :

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

(٦٧) حركات الصلاة من قيام وركوع وسجود تشعرك بنوع من الراحة في الظهر .

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

(٦٨) مصارحة المريض بأنك تعاني من آلام الظهر وستوقف عمل الجلسة معه

أوافق بشدة  أوافق  لا أعلم  لا أوافق  لا أوافق بشدة

انتهت الأسئلة

شكرًا لتعاونك في تعبئة هذا الاستبيان

## (Annex 7)

### (The final version after panel committee of questionnaire in Arabic)

#### الجزء الأول البيانات الشخصية والعمل

١.	العمر (سنة)	٢٥-٢٠	٣٠-٢٦	٣٩-٣١	٤٠ فما فوق
٢.	الجنس	ذكر	أنثى		
٣.	الطول (سم)	١٦٥-١٥٠	١٧٥-١٦٦	١٧٦ فما فوق	
٤.	الوزن (كجم)	٦٥-٥٠	٧٥-٦٦	٨٤-٧٦	٨٥ فما فوق
٥.	الحالة الاجتماعية	أعزب/ة	متزوج/ة	مطلق/ة	أرمل/ة
٦.	المستوى التعليمي	دبلوم	بكالوريوس	دراسات عليا	
٧.	مكان العمل في العلاج الطبيعي	مؤسسة حكومية	مؤسسة أهلية	وكالة الغوث	
٨.	عدد سنوات الخبرة	٣-١ سنوات	٦-٤ سنوات	٧ سنوات فما فوق	
٩.	عدد المرضى الذين تعالجهم يوميا	٥-١ مريضا	٦-٨ مريضا	٩ فما فوق	

#### الجزء الثاني

#### انتشار آلام الظهر:

١.	أعاني الآن من آلام في الظهر	نعم	لا	
٢.	ينتقل الألم إلى:	الساق الأيمن	الساق الأيسر	وسط الظهر
٣.	أعاني من آلام في الظهر خلال ال ٣ أشهر السابقة	نعم	لا	
٤.	أعاني أو عانيت من آلام في الظهر منذ أكثر من ٦ أشهر	نعم	لا	
٥.	بدأ الألم أول مرة بشكل تدريجي	نعم	لا	
٦.	بدأ الألم أول مرة بشكل مفاجئ	نعم	لا	
٧.	حصلت على إجازات مرضية بسبب آلام الظهر	نعم	لا	
٨.	أعاني من آلام في الظهر قبل عملي في العلاج الطبيعي	نعم	لا	

الجزء الثالث

شدة آلام الظهر:

١. درجة الألم الذي أعاني أو عانيت منه هي:			
<input type="checkbox"/> شديدة	<input type="checkbox"/> فوق المتوسطة	<input type="checkbox"/> متوسطة	<input type="checkbox"/> بسيطة جدا
٢. يوصف الألم الذي أعاني أو عانيت منه ب:			
<input type="checkbox"/> الخذلان	<input type="checkbox"/> الحرقان	<input type="checkbox"/> اللسع الكهربية	<input type="checkbox"/> النبض
<input type="checkbox"/> الغير واضح			

الجزء الرابع

عوامل وأسباب وعلاج ظهور آلام الظهر:

١. تعرضت لضربة في الظهر أثناء عملي في العلاج الطبيعي		<input type="checkbox"/> نعم	<input type="checkbox"/> لا
٢. أسباب أو عوامل ظهور آلام الظهر هو: (يامكانك اختيار أكثر من سبب).			
<input type="checkbox"/> أعمل بوضع غير مريح	<input type="checkbox"/> حملت مريض ذو وزن ثقيل		
<input type="checkbox"/> أقف لفترات طويلة من الزمن	<input type="checkbox"/> أمشي لفترات طويلة من الزمن		
<input type="checkbox"/> أجلس لفترات طويلة من الزمن	<input type="checkbox"/> الانحناء إلى الأمام والالتواء إلى جميع الجهات		
<input type="checkbox"/> قمت بعمل علاج يدوي	<input type="checkbox"/> أعالج أعداد كبيرة من المرضى أسبوعيا		
<input type="checkbox"/> أعمل لساعات عمل طويلة أسبوعيا	<input type="checkbox"/> عدم استخدامي رافعة لنقل أو لتغيير وضع المريض		
<input type="checkbox"/> قمت بحركة مفاجئة	<input type="checkbox"/> أليس حذاء عالي أثناء قيامي بالعمل		
٣. راجعت الطبيب بسبب آلام الظهر		<input type="checkbox"/> نعم	<input type="checkbox"/> لا
٤. نوع العلاج الذي تلقيته هو:			
<input type="checkbox"/> طبي	<input type="checkbox"/> راحة	<input type="checkbox"/> مشد خاص بالظهر	
<input type="checkbox"/> علاج طبيعي	<input type="checkbox"/> جراحي		
<input type="checkbox"/> أخرى: (حدد) -----			
٥. ظهر تحسن على آلام الظهر بسبب العلاج الذي تلقيته		<input type="checkbox"/> نعم	<input type="checkbox"/> لا
٦. من وجهة نظرك، أو بشكل عام، أي العوامل التالية ممكن أن يكون عامل خطر لظهور آلام الظهر؟ (يامكانك اختيار أكثر من عامل).			
<input type="checkbox"/> عوامل لها علاقة بالعمل مثل: حمل الأشياء-الدفع-الني - الجلوس والوقوف والمشي لفترات طويلة			
<input type="checkbox"/> عوامل لها علاقة بالعمر والجنس (ذكر أو أنثى)			
<input type="checkbox"/> عوامل لها علاقة بالقوام (مثل تشوهات الظهر وطول أو قصر احد الأطراف السفلية)			
<input type="checkbox"/> عوامل لها علاقة بالمشاكل النفسية والاجتماعية مثل (الإحباط - القلق - الهستيريا - الطلاق - الصداع المزمن)			
<input type="checkbox"/> عدم ليونة العمود الفقري	<input type="checkbox"/> عدم ممارسة الرياضة		
<input type="checkbox"/> كثرة التدخين	<input type="checkbox"/> عوامل خاصة بالتغذية		
<input type="checkbox"/> زيادة الوزن	<input type="checkbox"/> لبس الأحذية العالية		



الجزء الخامس

اقتراحات العاملين في مجال العلاج الطبيعي للتقليل أو الحد من ظهور آلام الظهر:

١. تقليل ساعات العمل إلى أقل من المعتاد في أقسام العلاج الطبيعي				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٢. أخذ فترات من الراحة خلال ساعات الدوام الرسمي				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٣. التحكم بعدد المرضى الذين يتم استقبالهم في اليوم				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٤. تعديل فترات العمل غير المنتظمة				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٥. ممارسة الرياضة بصورة يومية				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٦. ارتداء ملابس خاصة أثناء العمل في العلاج الطبيعي				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٧. ارتداء حذاء طبي أثناء العمل				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٨. تغيير أوضاعي أثناء العمل باستمرار من جلوس ووقوف ومشى				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

٩. استخدام أسرة وكراسي وناقلات أجهزة ذات ارتفاع مناسب أثناء العمل				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

١٠. الابتعاد عن الأشياء التي تحتاج إلى جهد يدوي				
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق	<input type="checkbox"/> لا أوافق بشدة

١١ . تجنب حمل الأشياء الثقيلة			
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق بشدة
١٢ . طلب المساعدة من الآخرين عند اللزوم لتجنب ظهور آلام الظهر			
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق بشدة
١٣ . توعية ونصائح أكثر لمنع ظهور آلام الظهر			
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق بشدة
١٤ . استئذان المريض للتوقف عن عمل الجلسة عند الشعور بالألم			
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق بشدة
١٥ . زيادة عدد العاملين في مجال العلاج الطبيعي			
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق بشدة
١٦ . حركات الصلاة من ركوع وسجود تعمل على تخفيف آلام الظهر			
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق بشدة
١٧ . آلام الظهر قد يؤثر على أدائك الوظيفي			
<input type="checkbox"/> أوافق بشدة	<input type="checkbox"/> أوافق	<input type="checkbox"/> لا أعلم	<input type="checkbox"/> لا أوافق بشدة

وفي الختام لا يسعني إلا أن أشكركم جزيل الشكر

الباحث: فضل محمد مسعود

جوال رقم: 0599472241

بريد الكتروني: [Fdlmasoud@yahoo.com](mailto:Fdlmasoud@yahoo.com)

**(Annex 8)**

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**(Questionnaire explanatory letter (the English version))**

*Ethical considerations*

**Low back pain – Questionnaire  
Physiotherapy professions Gaza strip  
Explanatory letter**

**Dear colleague:**

**I will appreciate your participation in this low back pain research.**

**This questionnaire is part of my study at rehabilitation sciences. The Islamic university of Gaza, Palestine.**

**The aim of this study is to study the prevalence and risk factors of low back pain among physical therapy professionals in Gaza Strip.**

**This questionnaire gives you the opportunity to tell us what you think about this issue.**

**If you agree to be involved in this study, read this pages carefully and**

**Please answer all questions to the best of your ability.**

**Your answers are confidential.**

**No need to write down your name.**

Agree

Disagree

**N.B: The answer no need more than 15 minutes**

**With best wishes**

**Researcher: Fadel Mohammed Masoud**

**Mobile number: 0599472241**

**E-mail: [Fdlmasoud@yahoo.com](mailto:Fdlmasoud@yahoo.com) or**

**[Fdlmasoud@hotmail.com](mailto:Fdlmasoud@hotmail.com)**

## (Annex 9)

### (Questionnaire (the English version))

#### The first Portion: Personal and work data:

1.	Age (Years)	<input type="checkbox"/> 20-25	<input type="checkbox"/> 26-30	<input type="checkbox"/> 31-39	<input type="checkbox"/> Above 40
2.	Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female		
3.	Height (cm)	<input type="checkbox"/> 150-165	<input type="checkbox"/> 166-175	<input type="checkbox"/> Above 176	
4.	Weight ( kg)	<input type="checkbox"/> 50-65	<input type="checkbox"/> 66-75	<input type="checkbox"/> 76-84	<input type="checkbox"/> Above 85
5.	Marital status	<input type="checkbox"/> Single	<input type="checkbox"/> Married	<input type="checkbox"/> Divorce	<input type="checkbox"/> Widow
6.	level of education	<input type="checkbox"/> Diploma	<input type="checkbox"/> P.A	<input type="checkbox"/> Post graduate	
7.	Place of P.T work	<input type="checkbox"/> Governmental	<input type="checkbox"/> NGOs	<input type="checkbox"/> UNRWA	
8.	Years of experience	<input type="checkbox"/> 1-3	<input type="checkbox"/> 4-6	<input type="checkbox"/> Above 7	
9.	Number of patients treatment per day	<input type="checkbox"/> 1-5 pat.	<input type="checkbox"/> 6-8 pat.	<input type="checkbox"/> Above 9 pat	

#### The second Portion: Prevalence of low back pain:

1.	Complaining of low back pain now		<input type="checkbox"/> Yes	<input type="checkbox"/> No
2.	Pain radiating to: ( area of pain )	<input type="checkbox"/> Right leg	<input type="checkbox"/> Left leg	<input type="checkbox"/> Central
3.	Complaining of low back pain within the last 3 months		<input type="checkbox"/> Yes	<input type="checkbox"/> No
4.	Complaining or was complain of low back pain more than 6 months		<input type="checkbox"/> Yes	<input type="checkbox"/> No
5.	The pain started gradual onset		<input type="checkbox"/> Yes	<input type="checkbox"/> No
6.	The pain started sudden onset		<input type="checkbox"/> Yes	<input type="checkbox"/> No
7.	I have got a sick leave due to low back pain		<input type="checkbox"/> Yes	<input type="checkbox"/> No
8.	Pain existed before working in physiotherapy field.		<input type="checkbox"/> Yes	<input type="checkbox"/> No

### The third portion: Severity of pain

2.	The pain is / was describe as:			
<input type="checkbox"/> Numbness	<input type="checkbox"/> Burning	<input type="checkbox"/> Electric	<input type="checkbox"/> Throbbing	<input type="checkbox"/> Dull

1.	The degree of pain or severity of symptoms is / was:			
<input type="checkbox"/> Severe	<input type="checkbox"/> Moderate	<input type="checkbox"/> Mild	<input type="checkbox"/> Minimal	

### The fourth Portion: Causes, Risk factors and Medication of low back pain

1.	Sustained to back trauma during physiotherapy work	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.	The causes (Risk factor) of low back pain was :( May be select more than one)		
<input type="checkbox"/>	Uncomfortable position	<input type="checkbox"/>	Lifting heavy patients
<input type="checkbox"/>	Prolonged standing	<input type="checkbox"/>	Prolonged walking
<input type="checkbox"/>	Prolonged sitting	<input type="checkbox"/>	Bending and twisting
<input type="checkbox"/>	Performing Manual Therapy Techniques	<input type="checkbox"/>	Big number of patients weekly
<input type="checkbox"/>	Longtime hours weekly	<input type="checkbox"/>	Don't use lifter to change or transfer the patient
<input type="checkbox"/>	Sudden movements	<input type="checkbox"/>	Wearing high shoes during work
3.	Seek medical help	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.	Types of treatments		
<input type="checkbox"/>	Medical	<input type="checkbox"/>	Rest
<input type="checkbox"/>	Physiotherapy	<input type="checkbox"/>	Surgical
<input type="checkbox"/>	Others, (specify): -----		
5.	The treatments improve your low back pain	Yes <input type="checkbox"/>	No <input type="checkbox"/>

6.	From your opinion or In general, Which of the following are the most important risk factors in low back pain among physical therapy professionals :( May be select more than one)	
<input type="checkbox"/>	Occupational factors like lifting, pushing, twisting, and sitting or standing or walking long time	
<input type="checkbox"/>	Personal-related factors ( age and gender )	
<input type="checkbox"/>	Postural factors (kyphosis, lordosis and discrepancy in the length of the lower limbs)	
<input type="checkbox"/>	Psychosocial factors (depression, anxiety, hysteria, divorce, chronic headache)	
<input type="checkbox"/>	Lack of spinal mobility	<input type="checkbox"/> Lack of sport
<input type="checkbox"/>	Heavy Smoking	<input type="checkbox"/> Improper nutrition
<input type="checkbox"/>	Increase weight (Obesity)	<input type="checkbox"/> Wearing high shoes during work

**The fifth Portion: Physiotherapy professionals suggestions and recommendations to reduce low back pain**

1.	Reduce work hours				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Uncertain	disagree	Strongly disagree

2.	Take More Rest Breaks or Pauses during the Workday				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Uncertain	disagree	Strongly disagree

3.	Control of patient number during daily work				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Uncertain	disagree	Strongly disagree

4.	Change Work Schedule (Overtime. Irregular Shifts).				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Uncertain	disagree	Strongly disagree

5.	Practicing sport daily				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Uncertain	disagree	Strongly disagree

6.	Wearing comfortable clothes during work				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Uncertain	disagree	Strongly disagree

7.	Wearing comfortable shoes during work				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly agree	Agree	Uncertain	disagree	Strongly disagree

<b>8.</b>	Change Working Position Frequently			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>9.</b>	Uses comfortable beds highs, stools and lifters			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>10.</b>	Avoiding Manual Techniques			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>11.</b>	Avoid heavy lifting			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>12.</b>	Help from Other Person if needed.			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>13.</b>	Need advices and education to prevent low back pain			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>14.</b>	Stop Working When Hurt or When Symptoms Occur			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>15.</b>	Increase physical therapy professional numbers			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>16.</b>	Praying movements decrease low back pain			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree
<b>17.</b>	Low back pain will probably influence your occupation			
<input type="checkbox"/> Strongly agree	<input type="checkbox"/> Agree	<input type="checkbox"/> Uncertain	<input type="checkbox"/> disagree	<input type="checkbox"/> Strongly disagree

*Thank you for completing this Questionnaire*

(Annex 10)

(Ethical approval letter to Palestinian Ministry of Health)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

السيد الدكتور: سالي وزير الصحة د. باسم يعقوب حفظه الله ورعاه  
السلام عليكم ورحمة الله وبركاته .  
الموضوع: تسهيل مهنة باحث .

بمايه نشتم جهودكم مع اجل العمل على تطوير الكادر الطبي في وطننا كجيب .  
انا الطالب : مفضل محمد مسعود قد انجزت متطلبات ابرمه لئيل درجة الباجستير في علوم بتأصيل  
خمسه برنامج اخصه لنفسيه وبتعمقه باطاسه بسلامه ربتزه .  
وعنوان رسالتي هي "مدى انتشار الامراض المنقولة بالحيوان في مجال البعلاج الطبيعي  
في قطاع غزة" ، وذلك بترجمه سياتكم لوانتم على منفي لغرضه للذوق وتوزيع بوسيتياف  
الذي سياتم مع خلداه . جمع ابحاثي في مجال البعلاج الطبيعي لعاملين في وزارة الصحة  
والتي سياتم مع مستشفيات وبعاه اوليه .  
ربدتك لله شاكرا .

مقدم طبي  
الطالب : مفضل محمد مسعود  
التاريخ : ١٤/٩ / ٢٠١٧

صادق: -----  
وارد: ١٤١٦ -----  
تاريخ: -----

الأف برون م  
الأف برون م  
على لوانته  
مدير عام  
مدير عام  
مدير عام



(Annex 11)

(Ethical approval letter to Health services in UNRWA)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



1150 هاتفنا الداخلي

**الجامعة الإسلامية - غزة**  
The Islamic University - Gaza

عمادة الدراسات العليا

ج م ع / 35  
Ref. 2007/09/18  
Date

الأخ الدكتور/ أيوب العالم  
مدير دائرة الصحة بوكالة الغوث  
السلام عليكم ورحمة الله وبركاته،


**الموضوع: تسهيل مهمة طالب ماجستير**

تهديكم عمادة الدراسات العليا أطهر تحياتها، وترجو من سيادتكم التكرم بتسهيل مهمة الطالب/ فضل محمد محمود مسعود برقم جامعي 2004/4841 المسجل في برنامج الماجستير بكلية التربية تخصص الصحة النفسية والمجتمعية/علوم التأهيل، وذلك بهدف الحصول على المعلومات التي تساعد في إعداد بحث بعنوان:


"مدى انتشار آلام الظهر والعوامل المسببة له بين العاملين في مجال العلاج الطبيعي في قطاع غزة"

والله ولي التوفيق،،،

عميد الدراسات العليا



د. مازن إسماعيل هنية





Approved  
5.11.2017

صورة إلى: -  
مف. -

ص.ب. 108 الرمال غزة فلسطين    تلفون: +970 (8) 286 0700    فاكس: +970 (8) 286 0800    public@iugaza.edu.ps    www.iugaza.edu.ps

(Annex 12)

(Ethical approval letter to El-Wafa Medical Rehabilitation Hospital)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**الجامعة الإسلامية - غزة**  
The Islamic University - Gaza

عمادة الدراسات العليا

هاتفنا الداخلي: 1150

رقم ..... ج س ع /35/

Ref. .... 2007/09/18

التاريخ ..... Date .....

الأخ الفاضل/ أ. تيسير البلتاجي  
مدير عام جمعية الوفاء الخيرية  
السلام عليكم ورحمة الله وبركاته،

حفظه الله،

**الموضوع: تسهيل مهمة طالب ماجستير**

تهديكم عمادة الدراسات العليا أعطر تحياتها، وترجو من سيادتكم التكرم بتسهيل مهمة الطالب/ فضل محمد محمود مسعود برقم جامعي 2004/4841 المسجل في برنامج الماجستير بكلية التربية تخصص الصحة النفسية والمجتمعة/علوم التأهيل، وذلك بهدف الحصول على المعلومات التي تساعد في إعداد بحث بعنوان:

"مدى انتشار آلام الظهر والعوامل المسببة له بين العاملين في مجال العلاج الطبيعي في قطاع غزة"

والله ولي التوفيق،،

السادة مسؤولي الجمعية  
المعنون  
الميرالعم

  
عميد الدراسات العليا

  
د. مازن إسماعيل هنية

صورة إلى -  
شك.

www.iugaza.edu.ps

تلفون 286 0700 | 970 + | fax 286 0800 | 970 + | Email: public@iugaza.edu.ps



## (Annex 14)

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### (Important ways to prevent LBP)

- 1. Practicing sport:** The most important thing you can do to keep your spine healthy, and the rest of your body, is to exercise. The best way to start is to think of an activity that you enjoy, and do it. Your goal should be to exercise at least 30 minutes each day (or on most days of the week). Whatever activity you choose, make sure it gets you breathing a little harder than usual. This is good for your circulation. Also, include some strength training to keep muscles healthy and strong. Some examples are walking, jogging, biking, swimming, even gardening can be considered exercise if done vigorously.
- 2. Doctor Checkups:** Regular checkups with your doctor are important, no matter what your age. Make a plan to see your physician at least once a year to make sure all your systems are working smoothly. If you are experiencing back pain, and cannot seem to find any relief, it is definitely time to see your doctor. Today there are many treatment options available so you do not have to live with back pain.
- 3. Lose weight:** It is estimated that over half of all Americans are overweight. It is important to know that obesity contributes to the development of heart disease, diabetes, high blood pressure, cancer, and back pain. While the spine is designed to carry and distribute the body's weight, excessive weight can strain the spine. Eventually, the spine will begin to wear out.  
Give your spine a break by shedding those unwanted and unnecessary pounds. Don't know how to start? Talk to your doctor. He or she can help you find a weight loss and exercise plan that best suits your needs.
- 4. Maintain good posture:** You may think that slouching when sitting or standing is relaxing your muscles. Actually, it makes your muscles work harder. Good posture, which involves standing and sitting in a balanced and neutral position, is the best way to avoid straining your spine.
- 5. Take enough rest:** Sleep is an essential nutrient for our bodies and where we sleep can make all the difference. If you are having trouble sleeping or find that you wake in the morning more tired than when you went to bed, you may need to take a good look at where and how you sleep. A good mattress allows you to maintain the same natural spinal alignment that you have when standing. When your body is allowed to rest in its natural position, muscles are relaxed and sleep is more refreshing.