



Epidemiology of Low Back Pain in Saudi Arabia

Maryam Ahmed Awaji^{1*}

¹Department of Epidemiology and Biostatistics, College of Public Health and Health Informatics,
King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia.

Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/JAMPS/2016/24173

Editor(s):

(1) Franciszek Burdan, Experimental Teratology Unit, Human Anatomy Department,
Medical University of Lublin, Poland.

Reviewers:

- (1) Timothy Hui, Loma Linda University, CA, USA.
(2) Ayhan Goktepe, Selcuk University, Konya.
(3) Olufemi O. Oyewole, Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria.
(4) Frank Comhaire, Ghent University, Belgium.

Complete Peer review History: <http://sciencedomain.org/review-history/13544>

Original Research Article

Received 7th January 2016
Accepted 6th February 2016
Published 3rd March 2016

ABSTRACT

Background: Low Back Pain (LBP) is a common disorder involving the muscles and bones of the back. The patients ranged in age from 15 to 52 years. The condition may be further categorized by the underlying etiology as either mechanical, non-mechanical, or referred pain. Little is known about the epidemiology of this condition in the Saudi Arabia.

Aim: To review epidemiology of LBP in the Saudi Arabia.

Methods: A computer-based literature search was conducted using relevant keywords to retrieve studies conducted in Saudi Arabia relating to LBP. Fifteen articles were identified initially. After screening for exclusion criteria and retrieving full texts, a total of Twelve articles was used for this study.

Results: Seven studies were cross-sectional and found a prevalence and pattern ranging from 53.2% to 79.17%. Studies about risk factors/prognostic markers were conducted in clinical-settings; using a case-control design mostly (n=4) and Cohort study (n=1). Vitamin D deficiency, to determine the correlation between the vitamin deficiency and pain.

Conclusion: Low Back Pain has multifactorial risks, etiology and increased incidence and prevalence.

Recommendation: Future studies in the Saudi Arabia should focus upon surveying the extent of

*Corresponding author: E-mail: amalahmed.abha@hotmail.com;

LBP, identifying various cultural risk factors and utilization of LBP markers in diagnostic and prognostic enforcement.

Keywords: Low back pain; Saudi Arabia; epidemiology.

1. INTRODUCTION

Health ailments are cosmopolitan. They affect almost every individual in some form at a given stage of life and alter their Quality of Life (QOL). By doing so, they also induce a severe financial and psychological disturbance to the patient and the family members. Understanding such disorders in terms of their occurrence or incidence, etiology and management is important for the modern day health care system. The aim of the current study was to highlight epidemiology of low back pain in Saudi Arabia.

1.1 Etiology

Low back pain was believed to possess various risk or etiologic factors that are associated with habits, physical factors, psychosocial factors and social demographic characteristics. Some of these include Spinal stenosis, spine curvatures, sciatica, spasms in muscles, cancer of spine, herniated to the rupture disk [1].

Further, the deficiency of vitamin – D was considered as a potential etiologic factor in the development of Low back pain in Arab population. A team of researchers has assessed 365 Arab patients who had regular visits to the internal and spinal medicine for a period of six years [2]. These individuals were experiencing lower back pain without any reason since the period above six months. Vitamin D deficiency was due to poor exposure to sunlight. So, inappropriate sunlight exposure could also be involved in causing low back pain in Arabs. The other etiologic factor believed to play role were nationality, culture, occupation and gender among the Saudi females especially when they work in health care departments [3].

Likewise, sprains and strains appear to cause acute back pain. Sprains result due to ligament's tearing and strain results due to tears in muscle or tendon. These pains occur when an individual attempt to lift a heavy object or lifts inappropriately. Radiculopathy is another etiologic agent of low back pain. It could result due to spinal nerve root's injury or inflammation [4].

1.2 Incidence and Prevalence

As part of the Global Burden of Disease Study (GBD) 2010, Expert Group showed that low back pain is among the top ten high burden diseases and injuries, with an average number of DALYs (disability-adjusted life years) higher than HIV, road injuries, tuberculosis, lung cancer, chronic obstructive pulmonary Disease and preterm birth complications [5]. In nations like the United States, its prevalence is between 8% and 57%. According to the estimate provided by the experts, nearly 29% of individuals encounter a low back pain that could disable the individual at a certain stage of his or her life [6].

Estimating the incidence of low back pain is difficult as the incidence of first-ever episodes of low back pain is already high by early adulthood and symptoms tend to recur over time. The lifetime prevalence of non-specific (common) low back pain is estimated at 60–70% in industrialized countries (one-year prevalence 15–45%, adult incidence 5% per year). The prevalence rate for children and adolescents' approaches that seen in adults [7,8]. It then increases and peaks between ages 35 and 55 [9,10].

While substantial heterogeneity exists among low back pain epidemiological studies show that low back pain country prevalence ranges from 1.0% to 58.1% (mean: 18.1%; median: 15.0%), and one-year prevalence from 0.8% to 82.5% (mean: 38.1%; median: 37.4%) [11].

Likewise, a 15% encounter the pain that stays for two weeks, affects 9% of the complete working people with disability. The total prevalence varies between 66% and 80%. It was thought that many low back pain episodes stay for shorter duration and 85% of the events become managed in nearly 7 weeks regardless of the treatment type. But many previous reports have demonstrated that a chronic or recurrent low back pain, had received an evaluation at third, sixth and twelfth month that varies between 36% and 78% [6]. A recent report had mentioned that the estimate specific to the one-year incidence of first attack could range from 6.3 to 15.5% [12]. Whereas, the estimate specific to the one-year episode of any

attack of the disease ranges from 1.5% to the 37%. At the same moment, many individuals experience recurrent episodes due to restricted activity. The recurrence estimates of low back pain vary between 23% and 80%. Low back pain has the potential to influence communities, individuals, whole family members, governments and trade, globally [12]. There is a growing research attention on the epidemiology of low back pain in Saudi Arabia.

Al-Arfaj and others [13], have determined the back pain prevalence in the adult individuals of Al-Qaseem Central Province, Saudi Arabia with the goal of identifying the relevant factors and characteristics. They have carried out a survey that involved a coverage of nearly 1,000 houses in the villages and towns of Al-Qaseem province for a total duration of 18 months. The study team administered questionnaire to 5,900 individuals whose age was 16 years and higher. The questionnaire was about the demographic data, back pain, social, medical and general history [13]. As a result, the study team observed reports of back pain provided by 1085 subjects. Here, back pain appeared to be highly prevalent in the married people compared to the unmarried. Additionally, back pain was found to possess strong correlation with age [13]. It was also significantly linked with height and weight, change in the ability of the work, depression, history of back pain in the family, poor level of education, frequent consultation visits at the local physician, and use of drugs. Likewise, occupational factors such as professional workers, farmers, house wives and unemployed were also linked with the back pain. So, back pain in Arab population representing unindustrialized locations appears to be frequent even though the prevalence was found to be present at a much reduced level compared to some western nations [13].

1.3 Treatment

Vitamin- D could serve as the reliable treatment option. Especially, a vitamin-D2 oral dose of 50,000IU per week or ergocalciferol for nearly eight weeks was considered ideal [14].

The next treatment option is adhering to the policies or norms set by the institutions or authentic bodies and input from the multidisciplinary professionals [15]. Likewise a recognition of certain syndromes associated with LBP and their remedy is another treatment idea.

However, the treatment of low back pain necessitates: Recognition of risk factors, r assessment if there is pain, MRI for verifying the presence of herniated disk or for determining neoplasm infection, and lumbar spinal stenosis, Myelogram-CT scans in few chosen patients in order to verify lumbar stenosis, and Electromyography in few chosen patients in order to distinguish lumbar radiculopathy from different contributors of radicular leg pain [16]. On the other hand, therapy with drugs involves the use of Acetaminophen, Tramadol, and opioids that are short-acting, Tricyclic Antidepressants such as Amitriptyline [16]. Similarly, treatment could involve therapeutic injections such as steroid combined epidural injections, selective joint injections and trigger-point injections. Other methods are use of ultrasound for a ten minute period, use of cold packs, referred to as Cryotherapy, TENS (transcutaneous nerve stimulators) acupuncture and lumbosacral orthosis; Rehabilitation through exercise, operative interventions such as microdiscectomy, laminectomy or inclusion of extra instruments in the operation [16]; Kinesio taping that makes the patients to perform stretch exercises, abdominal muscle strengthening exercises, stretching of iliopsoas and hamstring muscles; Schober's test, physical therapy approach that includes exercises specific to the strengthening of key musculature of back, especially [17].

2. METHODOLOGY

A computer-based literature search was conducted using relevant keywords to retrieve studies conducted in Saudi Arabia Relating to LBP as shown in Appendix 1. Data collected from various journals indexed in PubMed and Google scholar, and some local unpublished master and doctoral theses. Selection criteria depended on keywords of the review article. Regarding to Keywords used in search were Low Back Pain, Saudi Arabia, epidemiology, prevalence, Factor, Incidence, Odds, Pattern, Rate, and Risk. Fig. 1 shows a flowchart of method used to select 15 articles that were identified initially in Table 1. After screening for exclusion criteria (all articles not related to the main keywords to the current study) and retrieving full texts, a total of 12 articles was used for this study. Period of published studies searched was from March 2014 to 2015. Article selection depended on titles and relevance epidemiology of low back pain in Saudi Arabia and worldwide.

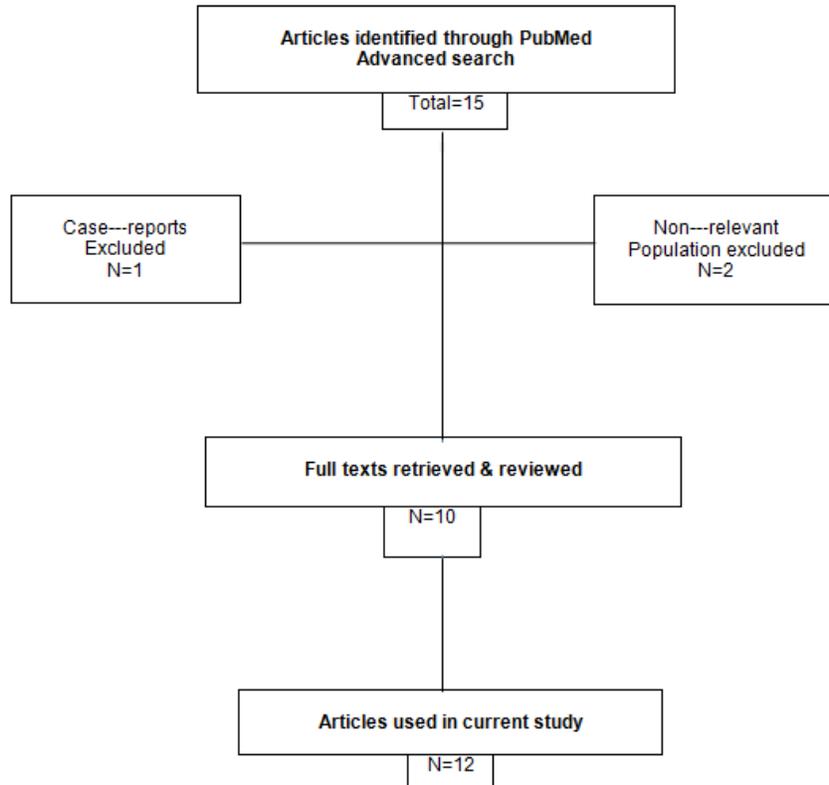


Fig. 1. Flowchart for research results in PubMed

Table 1. Summary table of studies

Study	Place (year)	Study design sample size	Histopathologic verification	Main results
Prevalence studies				
Attar SM	Saudi Arabia 2014 Jan	Cross-sectional 200	Yes	Point prevalence=65.7%
DarwishMA ¹	Saudi Arabia 2013	Cross-sectional A total of 240 secondary school female teachers	Yes	Point prevalence=79.17%.
BehisiMA ¹	Saudi Arabia 2013	Cross-sectional from 964 of 3,295 workers	No	(OR = 3.9, 95% CI = 1.8-8.5).
HassanAE ¹	Saudi Arabia 2004 Dec	Cross-sectional 100 Patients	Yes	Point prevalence=41% with LBP & 59% had nociceptive pain.
BehairyYM ¹	Saudi Arabia 2003 Jun	Case-control 70 Patients	No	Prevalence co-morbidity 24 (34)%
Hasan M. Keriri	Saudi Arabia 2013	Cross-sectional 126 (HCWs) in operating room 12	Yes	Females 78.6% Almost three quarters of them were nurses (74.6%) 25.4% were technicians.
Salameh Al Dajah and Abdalhamed Al Daghdhi	Saudi Arabia 2013 Nov	Cross-sectional 300 Nurses	Yes	The prevalence of work-related LBP was 53.2%.

Study	Place (year)	Study design sample size	Histopathologic verification	Main results
Risk factor studies				
AL-Eisa	Saudi Arabia 2013 Sep	Case-control	Yes	A total of 155 nurses
Prognostic markers studies				
AL-Faraj AS	Saudi Arabia 2003 Feb	Case –control 1,000	Yes	A response was 5,743 (97.4%).
Lingawi_SS	Saudi Arabia 2004 Apr	Cohort (retrospective study) 625 patients	Yes	All, 17 of 625 patients (2.7%) had a new diagnosis
AL-Faraj S	Saudi Arabia 2003 Jan	Case –control 360 patients 90%	Yes	83% patients (n = 299) with low vitamin D
Abdulbari Bener and Mohamud Verjee	Saudi Arabia 2013 Feb	Cross-sectional 2742 patients approached, 2180 agreed (79.5% response rate).	Yes	Prevalence of LBP was 59.2% .52.9% males and 47.1% females

3. RESULTS AND DISCUSSION

Briefly, low back pain constitutes a pain that an individual experience in the lower back portion [1]. It could be acute or chronic. The affected individual could encounter stiffness in the back, reduced lower back movement and problems in maintaining a straight-stand position. This form of pain could refer to the acute low back pain. This form of low back pain could remain for some weeks [1,18]. On the other hand, a low back pain that remains for a prolonged period refers to chronic back pain [1].

Table 1, shows a summery studies included in systemic article review and details has been clarified in context. Seven studies were cross-sectional and found a prevalence and pattern ranging from 53.2% to 79.17%. Studies about risk factors/prognostic markers were conducted in clinical-settings; using a case-control design mostly (n=4) and Cohort study (n=1). Vitamin D deficiency, to determine the correlation between the vitamin deficiency and pain.

3.1 Prevalence Studies

Further, the prevalence studies on low back pain in Arab population appear to be addressed with several questionnaires that furnish important information. In a recent study [19], has studied the low back pain prevalence by emphasizing on the link between the psychological factors such as somatization, depression and anxiety, and low back pain's socio-demographic characteristics in a Qatar cohort.

The study team has recruited nearly 2190 patients who were attending the primary health

care centers. Here, a patient health questionnaire-12 was employed to recognize the cases; questionnaire 15 was employed to determine the somatization, questionnaire-9 to assess depression and generalized anxiety disorder-7 to evaluate anxiety. The findings revealed the presence of Low back pain prevalence in 60% of subjects that involved 54% women and 46% men. Most importantly, low back pain was present in increased proportion (58%) in Qataris. Somatization was found to be higher in patients with low back pain, and then in patients experiencing depression and anxiety. In addition, low back pain suffering patients had pain in the joints, arms and legs at 39% and headaches at 42% as the most common symptoms worth reporting.

This implied that psychological factors occupy a significant portion in the niche of risk contributors that appear to be significantly associated with low back pain.

This had also indicated that low back pain could present or get aggravated in individuals who possess other conditions. This study appears to strengthen an earlier study where low back pain was present as co-occurring disorders in the Arab population in whom neuropathic pain was reported [20].

These researchers have assessed the neuropathic pain prevalence in patients who have encountered chronic low back pain. In this regard, the study team had recruited 110 patients experiencing low back pain. Then, the pain scale, LANSS (Leeds assessment of neuropathic symptoms and signs) was employed for evaluating the neuropathic pain's presence.

Patients who score above or equal to 12 were found to possess neuropathic pain while those who score below 12 were regarded to possess a nociceptive pain. It was observed that nearly 42% of patients with chronic low back pain experienced neuropathic pain and 60% encountered nociceptive pain. So, the potential to recognize the mechanisms specific to neuropathic pain serve as the important strategy in enabling a personalized therapy. Such practice in turn was expected to enhance pain control in those with low back pain. This could indicate that low back pain had a potential etiologic link with neuropathic pain that is undoubtedly adding to certain prevalence [20].

It is also important to consider the fact almost every condition associated with pain possess the involvement of the nervous system. So, neurologic complications do need a thorough evaluation while assessing the prevalence of low back pain in a given population. Some authors have carried out investigations to check that the proportion of low back pain, MRI referrals don't associate with disc disease, to accomplish this, the study team had recruited nearly 635 patients, representing the Kingdom of Saudi Arabia, who received a lumbar spine MRI in the previous 6-months. The test involved proton density, T-1 weighted sagittal images and T-2 weighted axial and sagittal images accompanied with the collection of contrast improved images [21].

Later, it was observed that eleven patients had a novel metastatic disease diagnosis with reference to the bony spine, eight had a primary malignant condition and five were without any such malignancy. Likewise, only two patients were found with spinal tumors such as schwannoma and cons ependymoma. Whereas, five patients were found to possess non-neoplastic conditions that appeared to contribute to low back pain. These are osteoporotic compression fracture, spondylolisthesis, discitis, and syringomyelia. On the whole, only a small proportion (3%) of patients were found to possess a novel diagnosis of low back pain that could be treatable apart from the disc disease, so, a low back pain could emerge from other conditions. This study implied that low back pain in the Saudi region had certain associations with pathologies that need a detailed investigation and laboratory confirmation [21].

3.2 Risk Factors Studies

It is important to note that certain etiologic agents could also serve to increase the risk of low back

pain and hence play as risk factors. In this regard, some sources have already highlighted the following as the risk factors of low back pain. These include possessing spine problems since birth. Previous back surgery, spine related, compression fractures, pregnancy when the back of a woman experiences stress while carrying the baby, previous back injury, family history of back pain, being male, either middle age or elderly [22].

Other causes include age above 30 years, being overweight, pregnant, lack of exercises, depression, activities that involve regular lifting of heavy objects, twisting, bending or that involve vibration of the body such as driving the truck [1,18]. Likewise, some life style associated risk factors are poor routine exercise, performing a job that involves repetitive twisting, motions, bending, lifting heavy objects, continuous sitting, smoking, being under stress, poor posture, and overweight; use of corticosteroids that weaken bones, having depression and chronic coughing. Therefore, negative beliefs, vitamin d deficiency, increased muscular sprain and strains due to intense work activity associated with stretching and bending and other factors mentioned could serve as risk factors of low back pain [22].

However, further studies are largely needed to identify these risk factors at a good proportion in the Arab population, as the studies appear limited. The majority of studies implied that females in the Saudi region appear to be more susceptible to lower back pain. Multiple risk factors in this region make the disease diagnosis a challenging task. This added to the poor awareness of the low back pain and cultural norms is turning the health care a more complicated one. This could be due to working conditions or other stressful events that regularly interfere with the body moments and comfort.

The inclusion of questionnaires in many investigations had furnished insights on the involvement of several risk factors that could be managed with better therapeutic interventions and practices. So, data on low back pain in the region of Saudi Arabia had provided some convincing information that could be considered in the light of the low back pain prevalence in the KSA. However, it was of the opinion that the interpretation of the results must involve a careful interpretation. It is also noteworthy that there are certain literature gaps or the inconsistencies with regard to the resolution of low back pain problem. This trend requires a rectification through a good number of studies.

4. CONCLUSION

The epidemiology of low back pain in Saudi Arabia is a complex issue that needs further studies of multiple risk factors. However, rarity of population-based studies limits generalizability of such evidence. Some of the risk factors that appear worth noting are increased muscular sprain and strains due to intense work activity associated with stretching and bending, vitamin d deficiency, being obese or overweight, previous history of low back pain, spine problems since birth, etc.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Jasmin L. Low back pain- chronic. Available:<http://www.nlm.nih.gov/medlineplus/ency/article/007422.htm> (Accessed 17 January 2016)
2. Al Faraj S, Al Mutairi K. Vitamin D deficiency and chronic low back pain in Saudi Arabia. *Spine*. 2003;28(2):177-9.
3. Behisi MA, Al-Otaibi ST, Beach J. Back pain among health care workers in a Saudi Aramco facility: Prevalence and associated factors. *Archives of Environmental & Occupational Health*. 2013;68(1):30-8.
4. Back PainFact Sheet, NINDS, Publication on November 3, 2015. NIH Publication No. 15-5161. Available:http://www.ninds.nih.gov/disorders/backpain/detail_backpain.htm (Accessed 17 January 2016)
5. Vos T, Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, Shibuya K, Salomon JA, Abdalla S, Aboyans V, Abraham J. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: A systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*. 2013;380(9859):2163-96.
6. Manchikanti L. Epidemiology of low back pain. *Pain Physician*. 2000;3(2):167-92.
7. Hengel KM, Visser B, Sluiter JK. The prevalence and incidence of musculoskeletal symptoms among hospital physicians: A systematic review. *International Archives of Occupational and Environmental Health*. 2011;84(2):115-9.
8. Bos E, Krol B, van der Star L, Groothoff J. Risk factors and musculoskeletal complaints in non-specialized nurses, IC nurses, operation room nurses and X-ray technologists. *International Archives of Occupational and Environmental Health*. 2007;80(3):198-206.
9. Toren A, Öberg K, Lembke B, Enlund K, Rask-Andersen A. Tractor-driving hours and their relation to self-reported low-back and hip symptoms. *Applied Ergonomics*. 2002;33(2):139-46.
10. Prado-Leon LR, Aceves-González C, Avila-Chaurand R. Occupational driving as a risk factor in low back pain: A case-control study in a Mexican population. *Work (Reading, Mass.)*. 2007;31(4):387-96.
11. Merlino LA, Rosecrance JC, Anton D, Cook TM. Symptoms of musculoskeletal disorders among apprentice construction workers. *Applied Occupational and Environmental Hygiene*. 2003;18(1):57-64.
12. Hoy D, Brooks P, Blyth F, Buchbinder R. The epidemiology of low back pain. *Best Practice & Research Clinical Rheumatology*. 2010;24(6):769-81.
13. Al-Arfaj AS, Alballa SR, Al-Dalaan AN, Al-Saleh SS, Al-Sekeit MA, Bahabri SA, Mousa MA. Musculoskeletal pain in the community. *Saudi Medical Journal*. 2003;24(8):863-7.
14. Qari, F. A. Practical approach for the prevention and management of vitamin d deficiency in adults. *Journal of Family Medicine and Primary Care*. 2013;2(4): 315.
15. Al-Eisa E, Al-Abbad H. Occupational back pain among rehabilitation nurses in Saudi Arabia the influence of knowledge and awareness. *Workplace Health & Safety*. 2013;61(9):401-7.
16. Nasser MJ. How to approach the problem of low back pain: An overview. *Journal of Family & Community Medicine*. 2005; 12(1):3.
17. AlBahel F, Hafez AR, Zakaria AR, Al-Ahaideb A, Buragadda S, Melam GR. Kinesio taping for the treatment of

- mechanical low back pain. World Appl Sci J. 2013;22:78-84.
18. Ma B. Low Back Pain- Acute. Available:<http://www.nlm.nih.gov/medlineplus/ency/article/007425.htm> (Accessed 17 January 2016)
 19. Bener A, Verjee M, Dafeeah EE, Falah O, Al-Juhaishi T, Schlogl J, Sedeeq A, Khan S. Psychological factors: Anxiety, depression and somatization symptoms in low back pain patients. Journal of Pain Research. 2013;6:95.
 20. Hassan AE, Saleh HA, Baroudy YM, Abdul-Rahman KI, Najjar MW, Kazi MS, El-Gazar MA, Hafez MA, Abdullah MA, Abdul-Rahman YA, Youseif EA. Prevalence of neuropathic pain among patients suffering from chronic low back pain in Saudi Arabia. Saudi Medical Journal. 2004;25(12):1986-90.
 21. Lingawi SS. How often is low back pain or sciatica not due to lumbar disc disease? Neurosciences (Riyadh, Saudi Arabia). 2004;9(2):94-7.
 22. Web MD, Back Pain Health Center. Available:<http://www.webmd.com/back-pain/news-features> (Accessed 17 January 2016)

APPENDIX 1

Keywords used

Keywords used in Pub-Med's developed search and secondary research to identify articles. Keywords covered three categories: Disease of interest, Epidemiological terms and geographical locations. Logical phrase (AND) was used to link all three categories of key words. The search in all other databases used essentially the disease of interest, epidemiological terms & the Saudi Arabia*.

Low back pain

Diagnosis, OR	Riyadh, OR
Distribution, OR	Jeddah, OR
Epidemiology, OR	Dammam,OR
Factor, OR	Abha,OR
Incidence, OR	Al-Qaseem,OR
Odds	Taif,OR
Pattern, OR	Saudi Arabia, OR
Prevalence, OR	
Prognosis, OR	
Rate, OR	
Risk, OR	
Trend, OR	

Databases searched

Pub Med - www.pubmed.gov
Digital Library – http://www.ac-knowledge.net/ngha/en.wikipedia.org/wiki/Low_back_pain
Evidence Based medicine - www.ebm.bmjournals.com
Clinical Evidence - www.clinicalevidence.com

© 2016 Awaji; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

*The peer review history for this paper can be accessed here:
<http://sciencedomain.org/review-history/13544>*