

TUJMS

Tobruk University Journal Of Medical Sciences



Editor-in-chief:
Professor Nagi Idris
University of Tobruk, Tobruk, Libya.
nagi.idris@tu.edu.ly

**Tobruk University Journal of Medicine Science
(TUJMS)**

Volume 1 Issue 1, December 2018

Contents:

Autism Rate in Libya and Foodstuff Options to Progress Children with Autism Spectrum Disorder

PP. 1-12

Amal R Agila

Role of Conventional Magnetic Resonance Imaging in Evaluation of Lumbar Disc Degenerative Disease

PP. 13-26

Gihan O. Taher

Should Institutions of Higher Education Include Water Quality Issues in the Undergraduate Curriculum?

PP. 27-39

Arij Mousa

Tumor Rate in Eastern and Western Libya and Impact of Eating Style on Patients

PP. 40-51

Amal R. Agila

The Role of the Physiotherapy in Treatment and Prevention of Sacroiliac Joint Dysfunction

PP. 52-58

Sana I. Souliman, Abeer I. Suliman, Afaf A. Suliman, Zenaahameed, Dalalomer

Autism Rate in Libya and Foodstuff Options to Progress Children with Autism Spectrum Disorder

Amal R Agila

Ph.D, Assistant Professor, Food Science, Department of Nutrition, Faculty of Medical Technology, University of Tobruk, Tobruk, Libya.

Corresponding author: Department of Nutrition, Faculty of Medical Technology, University of Tobruk, Tobruk, Libya

Abstract

Healthy diet choices may improve health and skills of children with autism. The present study aimed to illustrate the frequency of autism spectrum disorder in Libya, to demonstrate effect of sex and age variables on children with autism and explain a specific dietary program with important recommendations to progress the abilities and skills. 275 suspected cases of autism spectrum disorder were documented during 2012 to 2017 in Tobruk National Association for Autism. Only, 241 cases (183 males and 58 females) aged from 3 to 20 years old were diagnosed to confirm the incidence of autism or not and were statistically analyzed. Among 241 cases, 167 (69.3%) (121 males and 46 females) only have autism spectrum disorder, whereas, 74 cases (30.7%) have no autism condition. Results showed that boys were approximately more three times than girls to have autism. There was statistically significant association between males and females for getting autism spectrum disorder ($P= 0.019$). Autism can affect both genders, but it may be more specific for males than females. Also, results revealed that there was no evidence of a statistically significant relationship between the incidence of autism in males and females according to their age ($p = 0.218$). This point ups that there is no specific autism incidence according to age because autism may occur from the birth. There is no treatment for autism, but mixed factors may help to improve the conditions such as introducing adequate nutrition to the child with a combined effort of country and institution with parents to enhance the skills, abilities and activities of children with autism.

Keywords: *Healthy diet choices, autism spectrum disorder, Tobruk National Association for Autism, incidence, improve the conditions.*

INTRODUCTION

Autism spectrum disorder (ASD) is a life-long situation and represents difficulties in social reaction, communication and the ability to connect with repetitive behaviors ^[14]. In some cases, it is associated with neurofibromatosis or Down's syndrome^[11,3]. The major symptoms of ASD include hardness in spoken language and responding to others with strange behavior ^[11]. The severity of the symptoms is varied from mild to high of the autism ^[14,3, 4, 5]. Approximately, 85% of children with autism have gastrointestinal (GI) disorder that may cause a tendency for chronic constipation, diarrhea and bowel inflammation. While 39% of children with autism have seizure disorders which a person temporarily appears “absent” with sleep dysfunction. Also, They have sensory problems such as weakness in their sights, sounds, smells, tastes and movement. Some children with autism have a tendency to pica which includes eating non-food items such as dirt, clay, chalk or paint chips ^[14].

The main cause of ASD is unknown, but the disorder may be related to many factors such as genetic or environmental factors. For example, this disorder commonly occurs in identical twin with autism and in many young siblings in the same family. Refereeing to genetic factor, no specific genes reflect the incidence of autism, but it may be affected by rare genetic syndromes, including Fragile X, Williams's, Angelman , tuberous sclerosis and chromosome 15 duplication syndromes ^[11, 14]. Some studies implied that environmental factors may cause ASD including being born before 35 weeks of pregnancy, pregnant mother dialing with alcohol or some medications such as sodium valproate used to treat epilepsy during pregnancy ^[11]. Also, autism may occur due to the exposure to low levels of mercury, especially eating fish during pregnancy. But, other studies of 30 years research documented that there is no relation between mercury exposure and autism. This indicates that consuming many fish meals during pregnancy is not related to disorder incidence. Despite of this finding, the United States Food and Drug Administration (FDA) "recommended that a pregnant woman limits her consumption of fish" ^[15]. In some cases, a pregnant woman may use some antibiotics or other drugs that negatively affect the fetal brain. Also The incomplete digestion of some peptides come from metabolism of gluten protein in wheat and its products and casein protein in milk and dairy products may before breakdown pass into bloodstream and may damage the fetal brain and cause the symptoms ^[13]. There is no treatment for ASD, but, the medications consider important to treat many conditions such as sleeping problems, depression, and self-harming. These medications may lead to significant side effects and are usually only prescribed by a specialist doctor ^[11, 1].

Many young people with autism have sensitivity to some foods and have behavioral matters during mealtime. This makes parents worry about giving healthy diet to their children. Also, this will increase the probability of intake of

inadequate nutrients to be more common than in those unaffected by the disorder. Practically, children with autism may have low intake of calcium and protein. Calcium considers an essential element for building strong bones, while protein is crucial for growth and mental development ^[7]. Bad nutrition may lead to enhance a child's risk for social difficulties and poor academic achievement. This leads to promote risk of diet-related diseases such as obesity and cardiovascular diseases in adolescence and adulthood ^[11].

This study is aimed to illustrate the magnitude of autism spectrum disorder in Libya, to clarify the effect of sex and age variables on children with autism, to explain dietary program with healthy foods for improving autism, and to provide the important recommendations to develop the abilities and skills.

2. Materials and Methods

Study Design

Data were obtained from the registry office in National Autism Association in Tobruk and collected from multiple geographic sites in Libya including tobruk, tamimy, derna, beer al ashhab, benghazi, martoba, shahat, alghaara, kanbot, al berdy, mersalak , ain mara, Tripoli and Zaweia.

A total of 275 cases were recognized in National Autism Society in Tobruk and were suspected of autism during 2012 to 2017 . In this study, only 241 cases (183 males and 58 females) aged from 3 to 20 years old were diagnosed to confirm the incidence of autism or not. Graphs and percentage formulas of children with autism were calculated using Microsoft office excel 2010 program.

Ethical Consideration

This study is a part of autism spectrum disorder studies. The study protocol was approved by the ethics committee of the Scientific Research in Tobruk University. All parents of children with autism were informed about the research and gave oral consent. No parent refused our aim for this study.

Statistical Analysis

Descriptive statistics was calculated and data were analyzed using IBM SPSS Statistics Software (version 20.0, SPSS, Inc., Chicago, Illinois, USA). The Pearson Chi-square test was used to assess the significance of the association between males and females being diagnosed with autism spectrum disorder according to their sex and age variables.

Pearson's chi-squared "when at least one cell had an expected frequency of less than five" ^[2]. In all tests, $\alpha < 0.05$ was regarded statistically significant. All confidence intervals (CIs) were calculated at the 95% level of statistical significance.

3. Results and Discussion

275 suspected cases of autism spectrum disorder were documented during 2012 to 2017. Among the cases, 241 children (183 males and 58 females) who have been diagnosed to confirm the incidence of autism or not were from different cities in Libya and were statistically calculated and analyzed.

The approximate percentage of males and females were 75.9 % and 24.1 %, respectively. This indicates that males are almost 51.8 % more likely than females to develop autism.

One of the important finding in this work showed that the number of suspected autism cases have been increased, especially in the years 2013 and 2015 (Figure 1). However, there was a decline in the cases number in the years 2016 and 2017. The significant increase in autism incidence rates may suggest that there has been no progress made in autism control in Libya.

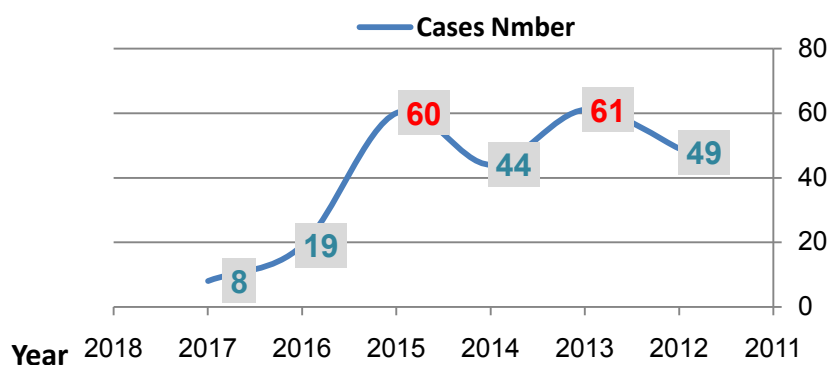


Figure 1: Distribution of children who have been diagnosed in the National Autism Society in Tobruk from 2012 to 2017 (n= 241).

The age of 241 cases (183 males and 58 females) was arranged from 3 to 20 years (born from 1998 to 2015). Approximately, 4.1% (10 cases) occur in teenagers born from 1998 to 2002, while 46.5 % (112 cases) occur in children born from 2007 to 2010.

Teenagers with autism should offer psychological therapy and medications. They also require social learning program to develop their skills for daily living [11].

Another finding implied that 50 cases were children born in 2009. This frequency number was the highest among 241 cases born between 1998 to 2015. The second frequency number was 45 cases in children born in 2011. The frequency of suspected cases who have been diagnosed to confirm autism incidence according to date of birth is shown in Figure 2.

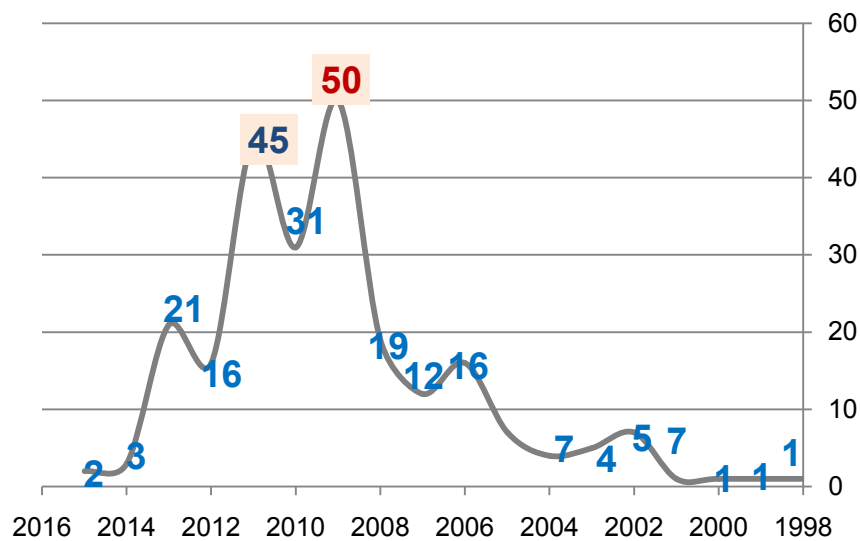


Figure 2: Frequency of Suspected Cases who have been diagnosed to Confirm Autism Condition According to Date of Birth (n=241).

Of 241 cases, 167 diagnosed with autism (121 males and 46 females) were from different cities in Libya, whereas 74 cases have no autism condition (Figure 3):

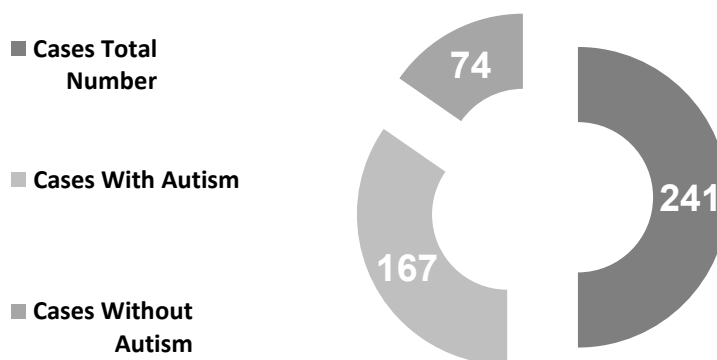


Figure 3: Number of Cases Have Autism Spectrum Disorders in Autism National Society, Tobruk. Among 167 cases (69.3%) (121 males and 46 females) there were 64 males with autism spectrum disorder aged from 5 to 10 years. Also, results show that boys are approximately more three times than girls to have autism. There was statistically significant association between

males and females for getting autism spectrum disorder according to sex ($P=0.019$).

Along the same line, autism can affect both genders, but it may be more specific for males than females. Results demonstrated that there was no evidence of a statistically significant relationship between the incidence of autism in males and females according to their age ($p = 0.218$). This illustrates that there is no specific autism incidence according to age because autism may occur from the birth.

The researchers previously noted that 20% of autism cases may be related to genetic disorders ^[14]. Also, failure to detect a significant difference between males and females cases distributed according to age may be due to small sample size and short duration for collecting data. On other hand , of 241 cases, about 74 cases (30.7%) have no autism condition (Figure 4).

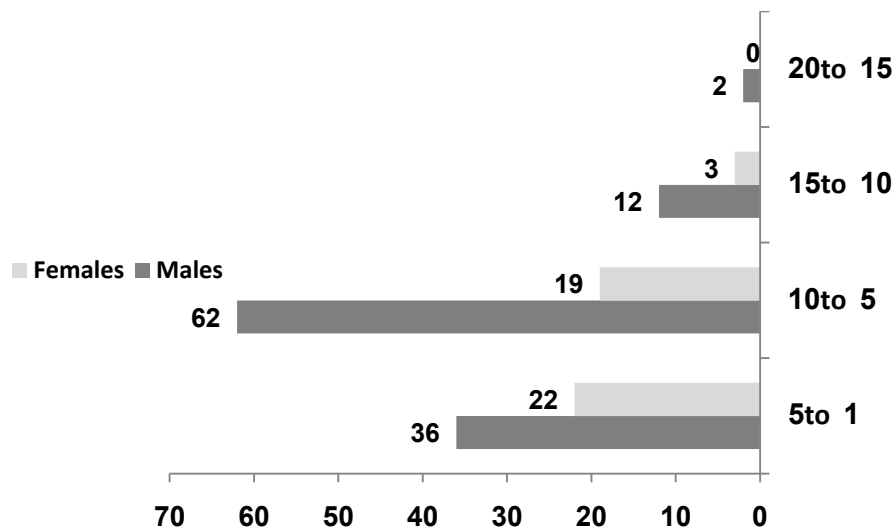


Figure 4: Distribution of Males and Females with Autism Spectrum Disorder According to Age (n=167).

Along with 167 cases with autism, 6 cases (3.6%) (3 males and 3 females) were started public schools with normal children due to improvement in skills and abilities.

According to the registry office of National Autism Association in Tobruk, 167 children diagnosed with autism were from multiple geographic sites in Libya (Figure 5). Approximately, 124 child with autism from Tobruk because of their presence within the population of Tobruk city compared to other cases that live in distant cities, which may make it difficult to reach the association for registration.

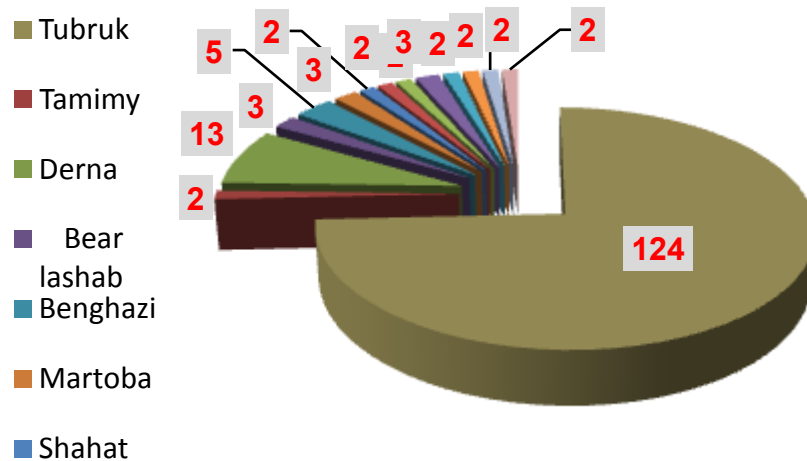


Figure 5: Children with Autism from Different Cities in Libya (n=167).

4. Autism & Nutrition

4.1 Nutritional Choices for Autism

The way to autism treatment starts with consumption of healthy diet. So that some foods should be added and removed from diet consider the first step to enhance the health of children with autism. Certain food nutrients should be avoided such as gluten (wheat) and casein (milk). Gluten is the protein in wheat, as well as other grains such as rye, barley, spelt, triticale and commercial oats, while casein is a protein found in dairy products such as milk, yogurt, butter, cheese, cream, ice cream. Eating these types of foods may increase autism situation ^[8]. Some researchers documented that removing casein (milk protein) and gluten (wheat protein) from diet may helpful to treat the autism ^[7].

Conversely, other researchers implied that there is no evidence confirmed that removing casein and gluten is an effective treatment for autism or decrease behavioral and sleeping habits ^[11, 6]. Additionally, gluten protein is found in other foods and should be avoided such as artificial flavors and coloring, spices, potato chips and fries. Whereas, casein protein is also found in foods should be avoided such as milk chocolate, lactic acid, canned tuna and hot dogs. But, it is difficult to confirm that child with autism is fully avoided from these nutrients because the ingredient may be hidden within processed foods.

Child can eat gluten-free foods; for example the homemade bread with fresh texture is preferred to children with autism ^[8]. Also gluten free white flour, pizza, pancakes, chicken nuggets, ghee, coconut oil, coconut milk, olive oil, sesame oil, nut milk, peanut, sunflower seeds, rice, corn, nuts and seeds flour, potato, potato flour, bean flour, apple cider vinegar, ketchup, vanilla extract, homemade cheese without any cheese substitute are recommended ^[8,9]. On other hand, a previous study reported that the restricted foods (gluten and casein free)

may lead to enhance the risk of inadequate intake of vitamin D, vitamin B12, omega-3 , calcium, and zinc ^[2, 5, 7, 15].

4.2 Introducing Foods to Children with Autism

Gastrointestinal disorder is common among children with autism; therefore child must stay away from certain foods such as some spicy and acidic foods ^[10]. Children with autism commonly have hypersensitivity to textures; therefore, mother should give a concern to how a food feels in the mouth, rather than its flavor ^[7]. For example, child may sensitive to a specific food; therefore, mother can give the food in the different ways as chop it or can blend and cook it.

If the child continues to reject a selected food, mother can chop food into smaller pieces according to the child's preference ^[10]. Or try giving him a selected food with different similar foods. For example, mother may needs to give her child one serving of vegetables and one of protein for dinner. So she can put five types of these foods on the table and allow her child to choose at least one vegetable and one protein. Mother should help her child to explore a new food by looking at it, touching it and smelling it. Also, mother should allow her child to play with a new food to enhance familiarity and decrease mealtime anxiety. This is because many children with autism are afraid to try new foods. Sometimes, mixing a new food with a favorite one can help ^[7]. For example, mother can add honey or ketchup to the meal to encourage her child to eat foods ^[10].

4.3 Dietary Program for Children with Autism

In the breakfast, Child should have a proper serving of proteins, carbohydrates and fats. The examples choices for breakfast include homemade bread from corn flour, egg, peanut butter, honey, pancake, and fruits such as blueberries, banana, peach, apple, grape and pear. In the lunch, proteins, vegetables, fats, and starch should be added to the meal. The examples of choices for lunch include lamb or beef meat, chicken, homemade burger or chicken nuggets, boiled vegetables, vegetable soup, vegetable salad, potato pasta, rice, sweet potato, fried potato, rice cake, starch bread, and corn. In the dinner, a simple diet is recommended. The examples of choices for dinner include: vegetable soap, mashed potato, egg, vegetable salad, carrot slices, corn flour bread and fruits ^[8].

5. Recommendations

The recommendations are to reduce the symptoms of autism spectrum disorder and to develop mental skills of children with autism:

5.1 Tips for Country

Libyan government gives the right help to people with disabilities and people with autism. These recommendations are to give additional information about a

proper assistance for children with autism and their families. The country should provide some facilities and resource to help recovery from autism condition ^[11, 12]

- Grant disability living allowance for adults with autism aged 16 – 65 to support their daily living life.
- Provide permanent housing accommodation, especially for people require 24 hours care.
- Offer jobs for people with autism to get benefit from employment and provide awareness training for them before and after they start work.
- Finance the organizations and institutions that give the assistance and support to children with autism.

5.2 Tips for Institution

Institution should provide personal, social, emotional support and assistance to children with autism. Here are some important tips help the health care institution to develop the children skills ^[11, 12]:

- Institution should have local autism specialist teams with further training and qualifications for making more assessments. This Local autism teams should confirm that every child or young person diagnosed with autism has a case manager to support and manage their treatment. This team should be associated with education and social care services. The local autism specialist team should include:
 - Mental health specialists, such as a psychologist and psychiatrist to provide psychological health care.
 - Pediatrician is to provide medical care.
 - Speech and language therapist is to improve and treat communication problems.
 - Dietician is to provide specific dietary program with healthy foods.
- Offer children with autism a series of interviews about the change in the behavior, family history and child's development history.
- Offer a series of appointments to monitor and observe specific skills and activities.
- The institution should assist people with autism by encourage using computers or other devices, such as a speech output device to improve their communication difficulties.
- The institution should make a plan for future care for people with autism.

5.3 Tips for Parents

The parents of child diagnosed with autism play an essential role in helping their child to improve his skills. They should help their child to communicate, reduce anxiety and improve his behavior. There are many advices help enhancing the children skills and abilities ^[11, 7]:

- Parents should use child's name, so that the child knows they are addressing him.
- Parent should keep background noise to a less level.
- Parents should keep language simple.
- Parents should speak slowly and clearly, with pauses between words.
- Parents should permit extra time for their child to process what they have said.
- Parents should help their child to make some decisions. For example, parents can help their child to decide what items to buy at the local shop and financial issues.
- Parents should read autism books, cookbooks, videos, and autism websites to become familiar with the diet and understand helpful information about autism.

6. Conclusion

In Libya, boys are approximately more three times than girls to have autism spectrum disorder. This study demonstrates that the combined role of country, institution and parents in caring for young people with autism is very important to improve their activities and skills. This considers the most strategy for developing children diagnosed with autism spectrum disorder. These activities and skills include development of communication (using pictures to assist communication), social interaction (the ability to understand other people's feelings and respond to them), imaginative play (encouraging pretend play) and academic skills (child requires to develop his education, such as reading, writing and math).

Our finding strongly suggested that mixed factors may help to treat children with autism. These factors include introducing adequate nutrition to the child daily meal such as high levels of fruits and vegetables, a proper serving of proteins, carbohydrates and fats, calcium, minerals and vitamins. The other factors are parent's assistance and providing additional help to parents. One example of parent's assistance includes giving their child a different food in a different way and paying attention to how a food feels in the mouth rather than its flavor. Also, country should provide additional help to parents because caring for child with autism can be challenging. These factors may enhance child

growth, ability and activity. Further research are needed to confirm the role of nutrition in improving the symptoms of the autism.

In short, families can make informed decisions about the therapies they choose for their children if nutritional or medicinal therapy.

Acknowledgement

We acknowledge the National Society of Autism Spectrum Disorder in Tobruk for providing the research facilities. Also, we thank Ms Nada Al lebedy, Mr. Rezeq Farag and Ms. Malia Farag for their assistance in collecting the data. A specific thank for Mr. Khalel Maayouf for his strong and continuous support.

References

1. Doja A, Roberts W (2006) Immunizations and autism: a review of the literature. *J Neurol Sci.*, 33(4): 341 - 346.
2. Graf-Myles J, Famer C, Thum A, Royster C, Kahn P, Soskey L, et al. (2013) Dietary adequacy of children with autism compared to controls and the impact of restricted diet. *J Dev Behav Pediatr.*, 34 (7).
3. Herbert M R (2004) Neuroimaging in disorders of social and emotional functioning: what is the question?. *J Child Neuro.*, 19(10): 772 – 84.
4. Herbert MR, Harris GJ, Adrien KT (2002) Abnormal asymmetry in language association cortex in autism. *Annal Neuro J.*, 52: 558 – 596.
5. Hiroshi Y, Toshie Y, Kazuya Y, Tomiko I, Toyoharu T (2005) Mineral imbalance in children with autistic disorders. *Biomed Res Trace Elem J.*, 16(4): 285 – 292.
6. Hyman S (2010) Popular autism diet does not demonstrate behavioral improvement. <https://www.urmc.rochester.edu/news/story/2860/popular-autism-diet-does-not-demonstrate-behavioral-improvement.aspx>. Cited Jan 12, 2018.
7. Kuschner E (2013) Seven ways to help a picky eater with autism. Available from: [www. autism speak.com](http://www.autism-speak.com). Cited Jan 24, 2018.
8. Matthews J (2013) Nutrition Guide. <http://www.generationrescue.org/resources/nutrition-guide/>. Cited Dec 15, 2017.
9. Millward C, Ferriter M, Claver S, Connell-Jones G (2008) Gluten-and casein free-diet for autistic spectrum disorder. *Cochrane Database Syst Rev.*, 2: CD003498. doi: 10.1002/14651858.CD003498.pub3.
10. Nath S (2014) Feeding problems in children with autism. Available from: <https://iancommunity.org/ssc/feeding-problems-children-autism>. Cited Dec 21, 2017.
11. NHS Choices (2016) Symptoms of autism spectrum disorder. Available from: <http://www.nhs.uk/Conditions/Autistic-spectrum-disorder/Pages/Symptoms.aspx>. Cited Jan, 2018.

12. NICE [National Institute for Health and Care Excellence] (2014) Autism spectrum disorders in adults. Evidence Update, 59. <https://www.evidence.nhs.uk/Search?q=autism+in+adults>. Cited Jan 5, 2018.
13. Ryan R. (2016) Autism: 'How diet cured my son'. Available from: <http://www.dailymail.co.uk/health/article-149500/Autism-diet-cured-son.html>. Cited Jan 1, 2018.
14. Volpe CJ, Grayson A (2016) Autism: symptoms. Available from: <https://www.autismspeaks.org/about-us/contact-us>.
15. Wijngaarden EV, Smith T, Evans K, Yost K, Love T, Thurston S, et al. (2013) Study : No link between mercury exposure and autism-like behaviors. PublicRelease. Available from: https://www.eurekalert.org/-pub_releases/-2013-07/uorm-snl072313.php. Cited Feb 6, 2018.

Role of Conventional Magnetic Resonance Imaging in Evaluation of Lumbar Disc Degenerative Disease

Gihan O. Taher

Corresponding Author: Radiology Department, Faculty of Medicine, Tobruk University, Tobruk, Libya.

Abstract

Lower back pain secondary to degenerative disc disease is a condition that affects young to middle-aged persons with peak incidence at approximately 40 y. MRI is the standard imaging modality for detecting disc pathology due to its advantage of lack of radiation, multiplanar imaging capability, excellent spinal soft-tissue contrast and precise localization of intervertebral discs changes. This study is aimed to evaluate the characterization, extent, and changes associated with the degenerative lumbar disc disease by Magnetic Resonance Imaging. A total 109 patients of the lumbar disc degeneration with age group between 17 to 76 y were diagnosed & studied on 1.5 Tesla Magnetic Resonance Imaging machine. MRI findings like lumbar lordosis, Schmorl's nodes, decreased disc height, disc herniation, disc bulge, disc protrusion and disc extrusion were observed. Narrowing of the spinal canal, lateral recess and neural foramen with compression of nerve roots observed Ligamentum flavum thickening and facet arthropathy was observed. This study showed that males were more commonly affected in Degenerative Spinal Disease & most of the patients show loss of lumbar lordosis. Decreased disc height was common at L5-S1 level. More than one disc involvement was seen per person. L4 – L5 disc was the most commonly involved. Annular disc tear, disc herniation, disc extrusion, narrowing of spinal canal, narrowing of lateral recess, compression of neural foramen, ligamentum flavum thickening and facet arthropathy was common at the L4 – L5 disc level. Disc bulge was common at L4 – L5 & L5 – S1 disc level. L1- L2 disc involvement and spondylolisthesis are less common. Lumbar disc degeneration is the most common cause of low back pain. Plain radiograph can be helpful in visualizing gross anatomic changes in the intervertebral disc. But, MRI is the standard imaging modality for detecting disc pathology due to its advantage of lack of radiation, multiplanar imaging capability, excellent spinal soft-tissue contrast and precise localization of intervertebral discs changes.

Key Words: Degenerative disc disease, Magnetic Resonance Imaging, Low back pain.

INTRODUCTION

Lower back pain secondary to degenerative disc disease is a condition that affects young to middle-aged persons with peak incidence at approximately 40 y. With respect to radiologic evidence of lumbar disc degenerative disease, the prevalence of disc degeneration increases with age, but degenerated discs are not necessarily painful. Low back pain secondary to degenerative disc disease affects men more than women. The main symptom of disc degeneration after low back pain is sciatica. Sciatica pain occurs mostly on one side of the body. It is a sharp shooting type of pain. Mild tingling sensation, dull ache, or burning sensation can occur. Pain may radiate to the calf or sole of the foot. Sciatic pain aggravates on standing, walking, bending, straining and coughing. In severe case, patient becomes unable to move around (1,2) . Patients with lumbar disc degenerative disease can be presented with sensory disturbances in legs, claudication and relief of pain with bending forwards (5).

There are many risk factors associated with the lumbar disc degenerative disease like advancing age, smoking, obesity, trauma, heavy weight lifting, height, genetic factors and hereditary factors. Certain occupations like machine drivers carpenters and office workers are also associated with it. Antero-posterior (AP) and lateral views of the plain X-ray can be helpful in visualizing gross anatomic changes in the intervertebral disc. It is best visualized on lateral view of X-ray. However, MRI is the standard imaging modality for detecting disc pathology due to its advantage of lack of radiation, multiplanar imaging capability, excellent spinal soft-tissue contrast and precise localization of intervertebral discs changes (6,7).

The basic purpose of conducting this study is to evaluate the relation between different aspects of lumbar degenerative disc disease and their MRI findings, and to characterize MR Imaging of the disc degenerative changes of lumbar spine. Also, it is aimed to evaluate extent of the involvement of the degenerative disc disease and its sequel and to identify the changes associated with the degenerative disc disease.

2. Materials & Methods

The present study considers combination of a cross-sectional and observational study. The duration of the study was 2 months from 17 October 2016 to 18 December 2016. A total 40 patients of lumbar disc degeneration from toubruk city in Libya were diagnosed on 1.5 Tesla MRI machine. All the observation was done by one Radiologists.

patients

Role of Conventional Magnetic Resonance Imaging in Evaluation of Lumbar Disc Degenerative Disease

Patients between 17 to 76 y of the age with low back pain were included in the study after obtaining a verbal consent. Patients with the history of trauma, prior surgery, spinal infections, active malignancy, pregnancy, cervical spine involvement, were excluded from the study. In the study 40 patients were enrolled and their demographic findings noted. The following MRI findings were noted: lumbar lordosis preserved or not [Table/Fig-1,2] , Schmorl's nodes present or not [Table/Fig-3] , decreased disc height as compared to the upper and lower vertebral levels.

Disc Desiccation It is a common degenerative change of intervertebral discs. On MRI imaging, the disc loses its central high T2 signal (8)[Table/Fig-4] Normally, central nucleus pulposus shows high signal intensity on T2WI and peripheral annulus, low signal intensity on T2WI [Table/Fig-5].

Disc Herniation

Whenever the displacement of disc material beyond the limits of the intervertebral disc space is called as a disc herniation. A herniated disc may or may not be covered by annulus fibroses. Herniation can be focal or bulging. When herniation is less than 180 degree disc circumference it is called a focal disc herniation and when it is 180 to 360 degree beyond the edges of the ring apophyses it is called disc bulge [Table/Fig-12] . If herniation & bulge was present, it was marked with a "Y".

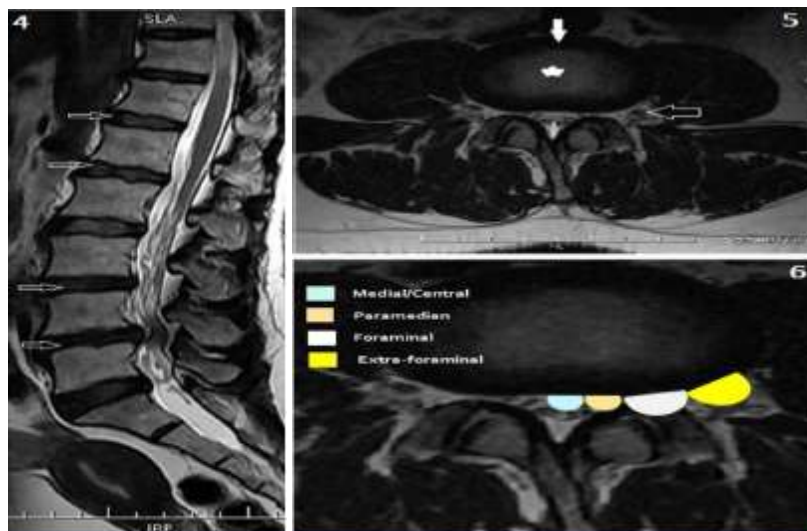


[Table/Fig-1]: Sagittal T2 Weighted MR Image: Normal lumbar lordosis
[Table/Fig-2]: Sagittal T2 Weighted MR Image: Loss of lumbar lordosis with straightening of lumbar spine. Decreased L4-L5 disc height with degenerative changes in adjacent end plate is present. L2-L3, L3-L4 & L4-L5 posterior disc bulge

Loss of lumbar lordosis with straightening of lumbar spine. Decreased L4-L5 disc height with degenerative changes in adjacent end plate is present. L2-L3, L3-L4 & L4-L5 posterior disc bulge.



[Table/Fig-3]: Sagittal T2 WI shows Schmorl's node at the superior aspect of L2 vertebral body (open white arrow)



[Table/Fig-4]: T2 Weighted Sagittal MR Image: Lumbar Disc Desiccations(open white arrow) [Table/Fig-5]: Axial T2 Weighted MR Image-Normal: High signal intensity nucleolus pulposus in center (solid white star) and peripheral low signal intensity annulus fibroses in disc (solid white arrow).

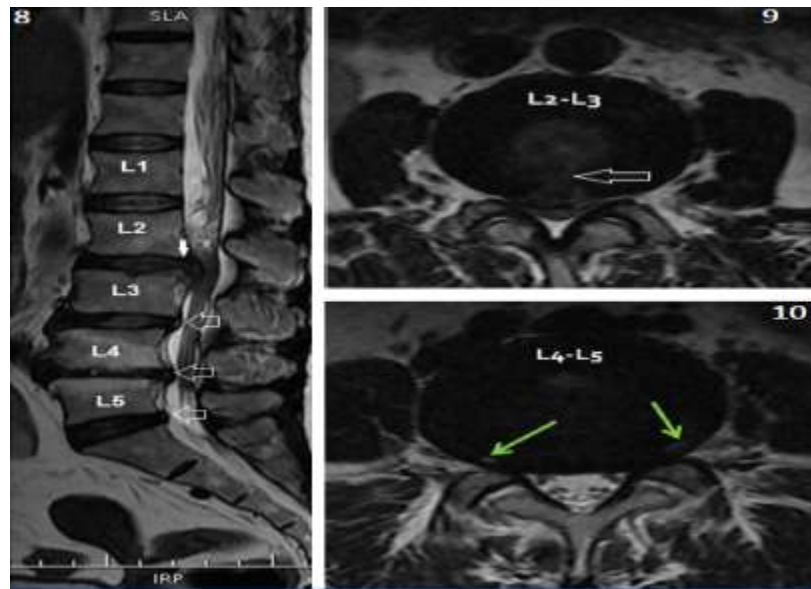
Look normal traversing (open small white arrow) & exiting nerve roots (open largewhite arrow)[Table/Fig-6]: Axial T2 Weighted MR Image for axial localization: Medial/Central, Paramedian, Foraminal& Extra-foraminal

Disc Protrusion & Extrusion

Role of Conventional Magnetic Resonance Imaging in Evaluation of Lumbar Disc Degenerative Disease

Disc protrusion indicates that the distance between the edges of the disc herniation is less than the distance between the edges of the base.

If disc protrusion was present it was marked with “Y”. Whenever the distance between the edges of the disc material is greater than the distance at the base is called as disc extrusion [Table/Fig-13,14].



[Table/Fig-8]: Sagittal T2 Weighted MR Image of same patient: High signal intensity in annulus fibroses at L2- L3 disc suggestive of Annular Fissure with herniation of disc material in spinal canal & caudal migration of herniated disc material (solid white arrow).

Narrowing of spinal canal is present. L3-L4, L4-L5 & L5-S1 shows posterior annular tears (open white arrow).

Note Decreased disc height of L4-L5 with adjacent end plate high signal intensity.

Loss of lumbar lordosis is seen [Table/Fig-9]: Axial T2 Weighted MR Image: High signal intensity in annulus fibroses at medial/central part of L2- L3 disc (open white arrow) suggestive of Annular Fissure with herniation of disc material in spinal canal.

Narrowing of spinal canal & bilateral lateral recess with compression of bilateral traversing as well as exiting nerve roots is seen [Table/Fig-10]: Axial T2 Weighted MR Image: High signal intensity in annulus fibroses at bilateral foraminal position of L4- L5 disc (green arrow) suggestive of Annular Fissure with disc buldge.

Narrowing of spinal canal & bilateral lateral recess with compression of bilateral exiting nerve roots is seen



[Table/Fig-13]: T2 Weighted Sagittal MR Image: L5- S1 disc extrusion (white open arrow) with narrowing of spinal canal is seen [Table/Fig-14]: T2 Weighted Axial MR Image of same patient: High signal intensity in annulus fibroses at right foraminal location of L5- S1 disc (open white arrow) suggestive of Annular Fissure with disc extrusion. Narrowing of spinal canal is present. Right lateral recess narrowing with compression of right exiting nerve roots is seen. Ligamentum flavum appears normal. However bilateral facet arthropathy (solid white arrow) is present

[Table/Fig-15]: Sagittal T2 Weighted MR Image : High signal intensity in annulus fibroses at L4- L5 disc with herniation of disc material in spinal canal & cranial migration of herniated disc material (open white arrow) leads to narrowing of spinal canal. Loss of lumbar lordosis is noted

Migration

Whenever displacement of disc material is away from the site of extrusion it is called migration. Migration can occur either in cranial or caudal directions [Table/Fig-15,16].

Sequestration

When the displaced disc material has completely lost any continuity with the parent disc it is called sequestration

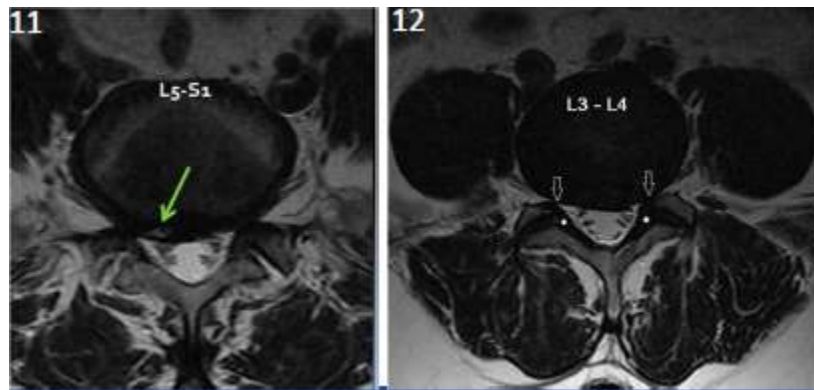
Ligamentum flavum Thickening

Ligamentum flavum thickening was measured on the axial image, perpendicular to the spinal canal axis and parallel to the lamina, where ligamentum flavum were seen along their entire length & measurement were taken at the half length of ligament flavum. A mean thickness of the ligamentum flavum of 4.44 mm in

the patients with the spinal canal stenosis labeled as thickened and 3mm thickness in the control group(9).[Table/Fig-17].

Facetarthropathy

Facetarthropathy was noted as reduction in synovial facet joint space with loss of high signal intensity on T2WI[Table/Fig-18].



[Table/Fig-11]: T2 Weighted Axial MR Image: High signal intensity in annulus fibroses at right paramedian location of L5- S1 disc (green arrow) suggestive of Annular Fissure with disc herniation.

Narrowing of spinal canal & bilateral lateral recess with compression of bilateral exiting nerve roots is seen

[Table/Fig-12]: T2 Weighted Axial MR Image: L3-L4 Disc bulge (Involvement of greater than 1800 circumference).

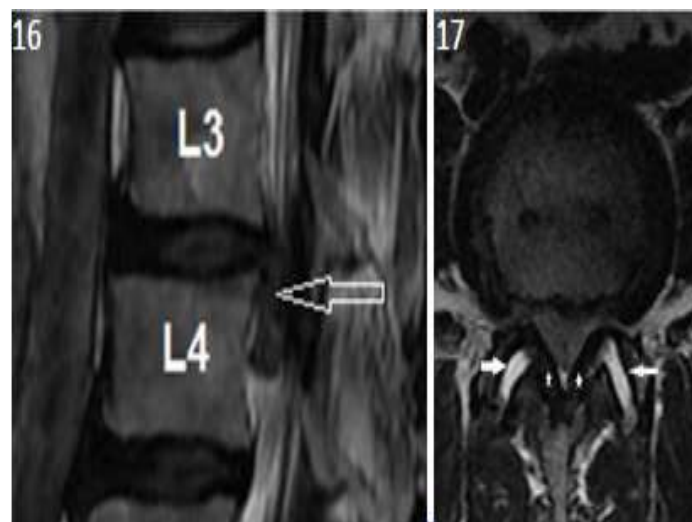
Narrowing of spinal canal and bilateral recess (open white arrow) with compression of exiting nerve roots is present. Ligamentum flavum appears thickened (solid white circle) with bilateral facetarthropathy

Narrowing of the spinal canal

In the mid sagittal T2 Weighted images spinal canal diameter was measured. Spinal canal diameter less than 12 mm, indicates narrowing of the canal .[Table/Fig-19]

Narrowing of lateral recess

A lateral recess is the space which is bounded ventrally by the posterior surface of the vertebral body, dorsally by the superior articular facet, and laterally by the pedicle.



[Table/Fig-16]: Sagittal T2 Weighted MR Image : High signal intensity in annulus fibroses at L3- L4 disc with herniation of disc material in spinal canal & caudal migration (open white arrow) of herniated disc material leads to narrowing of spinal canal [Table/Fig-17]: Axial T2 Weighted MR Image: Bilateral ligamentum thickening (solid white star). However facetal joints appear normal (open white arrow)

Medially, it is open toward the spinal canal. It is measured at the level of the pedicle in axial section as the distance between the posterior aspect of the vertebral body and superior articular facet.

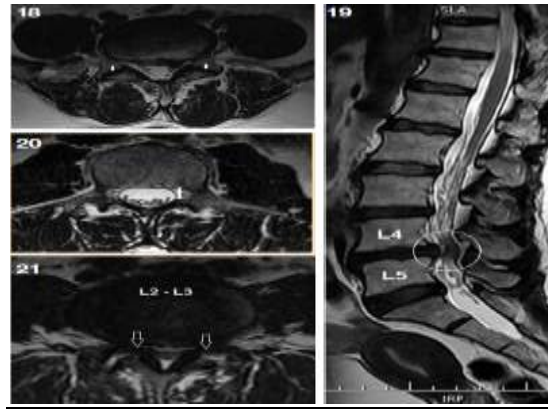
If it is less than 4 mm it is considered abnormal .[Table/Fig-20,21]. Compression of neural foramen was observed in T2W Sagittal image[Table/Fig-22].

Abnormal hyper signal intensity in the spinal cord on T2 weighted images were evaluated for the spinal cord edema. Pre and Para vertebral soft tissue involvement[Table/Fig-23,24], vertebralhemangioma[Table/Fig-25,26] , sacroilitis, lumbarization and sacralization of the vertebra were observed.

Spondylolysis is seen as low signal on T1WI in pars interarticularis [Table/Fig-27].

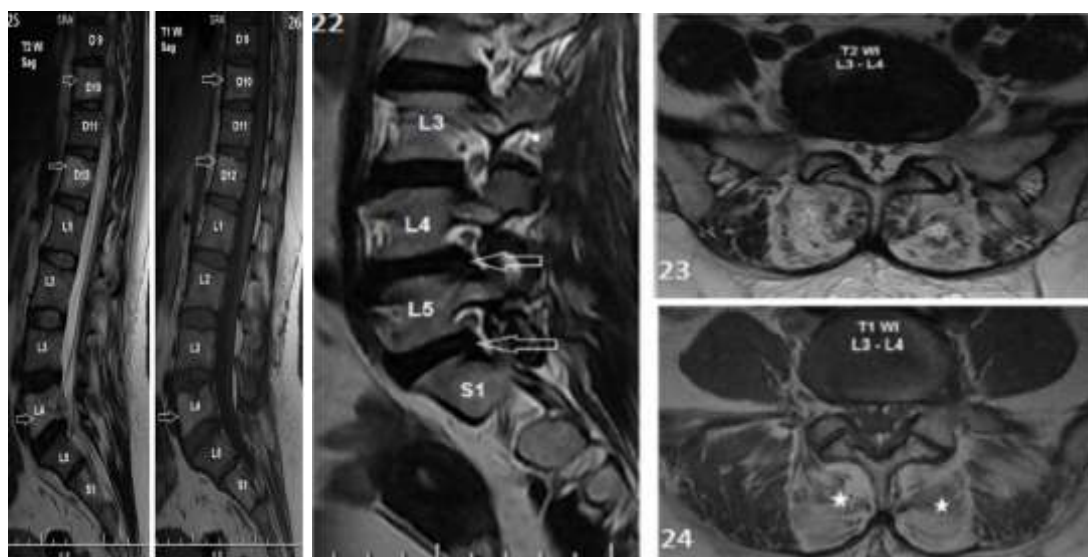
Spondylolisthesis was measured and diagnosed by the methods of Meyer ding. Antero-posterior diameter of the superior surface of the lower vertebral body is divided into four equal parts and is Graded as I,II,III and IV if there is a corresponding slip of <25%, 25-50%, 50-75% and >75%. But we could not divide the data according to the grades of the spondylolisthesis, we simply noted that whether spondylolisthesis were present or not & anterolisthesis or posterolisthesis were present or not [Table/Fig-28,29].

Role of Conventional Magnetic Resonance Imaging in Evaluation of Lumbar Disc Degenerative Disease



[Table/Fig-18]: Axial T2 Weighted MR Image: Narrowing of bilateral facet joint space with loss of high signal of synovial fluid suggestive of facetarthropathy (solid white arrow). Ligamentumflavum appears thickened
[Table/Fig-19]: T2 Weighted Sagittal MR Image: L4-L5 disc herniation with narrowing of spinal canal (white open circle). Lumbar Disc Desiccations is seen to variable extent
[Table/Fig-20]: Axial T2 Weighted MR Image- Normal Lateral recess: Space is bordered laterally by the pedicle, dorsally by the superior articular facet, and ventrally by the posterior surface of the vertebral body. Medially, it is open toward the spinal canal (solid white line). Normally it is greater than 4 mm
[Table/Fig-21]: Axial T2 Weighted MR Image: L2-L3 Disc bulge with narrowing of spinal canal & bilateral lateral recess (open white arrow) with compression of exiting nerve roots. Ligamentumflavum and bilateral facet joint appear normal

Fig-24: Axial T1 Weighted MR Image: Abnormal high signals in bilateral paraspinal muscles (solid white star) on both T1WI & T2WI represents fatty infiltration of bilateral paraspinal muscles.



[Table/Fig-22]: Sagittal T2 Weighted MR Image: L4-L5 and L5-S1 herniated disc leads to narrowing neural foramen (open white arrow) with abutting exiting

nerve roots [Table/Fig-23]: Axial T2 Weighted MR Image: Abnormal high signals in bilateral paraspinal muscles (open white star) on both T1WI & T2WI represents fatty infiltration of bilateral paraspinal muscles.

Note left foraminal L3-L4 disc annular tear[Table/Fig-24]: Axial T1 Weighted MR Image: Abnormal high signals in bilateral paraspinal muscles (solid white star) on both T1WI & T2WI represents fatty infiltration of bilateral paraspinal muscles[Table/Fig-25]: Sagittal T2 Weighted MR Image: Sacralization of L5 vertebral body. Abnormal high signal intensity in D10, D12 & L4 vertebral body in both T1WI and T2W1 without fat suppression suggestive of vertebral body hemangioma (open white arrow).

Note at L4 level there is epidural extension of hemangioma with spinal canal narrowing & central wedging of L4 vertebral body. L4-L5 disc shows posterior disc herniation[Table/Fig-26]: Sagittal T1 Weighted MR Image: Sacralization of L5 vertebral body. Abnormal high signal intensity in D10, D12 & L4 vertebral body in both T1WI (open white arrow) and T2W1 without fat suppression suggestive of vertebral body hemangioma. Central wedging of L4 vertebral body is seen

Intervertebral disc level	Disc involvement (n=327)	Decrease disc height (n=8)	Herniation (n=20)	Disc bulge (n=118)	Narrowing of lateral recess (n=60)	Compression of neural foramina's (n=60)
L1-L2	= 72.1%	=1 12.5%	—	= 2 1.6%	= 1 1.6%	= 1 1.6%
L2-L3	25 = 7.6%	= 3 37.5%	= 2 10%	= 12 10.1%	= 3 5.1%	= 3 5.1%
L3-L4	= 69 21.1%	= 1 12.5%	= 3 15%	= 28 23.7%	= 11 18.3%	= 11 18.3%
L4-L5	125 = 38.2%	= 1 12.5%	= 7 35%	= 39 33%	= 26 43.3%	= 26 43.3%
L5-S1	= 101 30.8%	= 2 25%	= 8 40%	= 37 31.3%	= 19 31.6%	= 19 31.6%

Table/Fig-30: Different variables like Disc Involvement, Decreased Disc Height, Central/Medial Herniation, Disc Extrusion, Disc Bulge, Narrowing of lateral recess, Compression of neural foramen, and their correlation with the Intervertebral disc level indicates most common intervertebral disc level of involvement

Role of Conventional Magnetic Resonance Imaging in Evaluation of Lumbar Disc Degenerative Disease

Intervertebral disc level	Facetal arthropathy (n=19)	Ligamentum flavum thickening (n=19)	Disc extrusion (n=11)	Spinal canal stenosis (n=23)
L1-L2	% = 15.2	5.2% = 1	—	—
L2-L3	= 421 %	% 21 = 4	—	= 417.3%
L3-L4	= 526.3%	%26.3 = 5	—	= 521.7%
L4-L5	= 631.5%	%31.5 = 6	= 654.5%	= 939.1%
L5-Ls1	= 315.7%	%15.7 = 3	= 545.4%	= 521.7%

Table/Fig-31: Spinal Canal Narrowing, Facetal Arthropathy, Ligamentum Flavum Thickening and their correlation with the Intervertebral disc level indicates most common intervertebral disc level of involvement



[Table/Fig-27]: Sagittal T1 Weighted MR Image: Linear low signal intensity in pars interarticularis of L4 and L5 vertebra (solid white arrow) represent spondylolysis without spondylolisthesis [Table/Fig-28]: Sagittal T2 Weighted MR Image: Posterior annular tear in L3-L4 and L5-S1 disc with herniation & spinal canal narrowing. Grade – I anterolisthesis of L5 over S1 vertebral body is seen (solid white arrow) [Table/Fig-29]: Sagittal T2 Weighted MR Image: L5-S1 posterior disc herniation with spinal canal narrowing. Grade – I retrolisthesis of L5 over S1 vertebral body is seen (open white arrow)

3. Results

Total 40 patients were studied in the evaluation of MRI appearance of Degenerative Spinal Disease. were male 21 patients & female were 19 patients. Lumbar lordosis was preserved in 3 (i.e. 7.5% of total patients) patients and loss of the lumbar lordosis was seen in 37 (i.e. 92% of total patients).

As seen in [Table/Fig–30,31] there were a total 327 disc involvements, so per patients average 8.1 disc involvements were found. L4 – L5 disc involvement was common & seen in 125 discs (i.e. 38.2% of the disc involvement). Decrease disc heights were seen in 8 disc levels, from which decreased disc height common at L2-3 level 3 (i.e. 37.5% of decreased disc height).

Herniation in 20 discs (i.e 6.1% of disc involvement), extrusion in 11 discs (3.3% disc involvement) and disc bulge in 118 disc (i.e. 36% of disc involvement). Herniation was common at L5 –S1 disc level (40% of herniation). Extrusion was common at L4 – L5 disc level (i.e. 54.5% of extrusion). Disc bulge was common at L4 – L5 (33% disc bulge) & L5 – S1 disc level (31% disc bulge) & L5 – S1 disc level (31% disc bulge) Spinal canal narrowing was seen in 23 discs (i.e. 7% of disc involvement).

Spinal canal narrowing was common in L4 – L5 disc 9 (i.e. 39.1% of spinal canal narrow. Narrowing of lateral recess and compression of neural foramen were seen in 60 discs (i.e. 18.3% of disc involvement) and both were common at L4 –L5 disc 26 dis (i.e. 43.3% of involvement). Facet arthropathy and ligamentum flavum thickening was seen in 19 disc levels (i.e. 5.8 % of the disc involvement) & both were common at the L4 – L5 disc level.

Results of patients showed Retrolisthesis (i.e. 2.5% of spondylolisthesis). L5 vertebral body listhesis over L4 3.67%. As incidental findings vertebral hemangioma in 4 patients (i.e. 10 % of total patients), marrow edema in 11 patients (i.e. 27.5% of total patients).

4. Discussion

Lumbar disc degeneration is the most common cause of low back pain around the world and majority due to the disc herniation. Due to development of MRI, noninvasive excellent imaging of spine is possible. Men are more commonly affected to the disc degeneration than women. It is most likely due to the increased mechanical stress and injury (10) . The findings of my study were consistent with other studies.(11)

Most common cause of disc degeneration was observed in 4th and 5th decades of life in my study, which was comparable with other studies . Disc desiccation is a common degenerative change of intervertebral discs. It results from the replacement of the glycosaminoglycans within the nucleus pulposus with fibrocartilage which leads to reduced disc height due to reduction in nucleus pulposus volume . Disc degeneration with diffuse disc nucleus pulposus volume

. Disc degeneration with diffuse disc nucleus pulposus volume(12) . Disc degeneration with diffuse disc changes are more commonly found at L4 - L5 and L5 – S1 level (11) and L1 – L2 is least common. This Cranio-caudal direction pattern is also followed by disc herniation. It also can be deduced that lower the lumbar level the higher is the prevalence of disc herniation. Multiplicity in the disc level involvement is common as compared to the single disc involvement; which is also concordance with past studies (13)

compare to the single disc involvement (13); which is also concordance with other studies . The lower back pain and sciatica were due to nerve root compression, which was significantly associated with disc degeneration (14). Spondylolisthesis was more commonly found in the patients of lumbar stenosis as compare to disc herniation, reflecting the fact that during stenosis, laxity of capsule and ligament may result in the development of spondylolisthesis.

Spondylolisthesis was most commonly present at L5 – S1 disc level. This findings is in concordance with a previous study where spondylolisthesis was common at L4 – L5 disc level (3)

5. Conclusion

Lumbar disc degeneration is the most common cause of low back pain. Men are more frequently affected to the disc degeneration than women. Multiple levels of the disc involvement are seen per person. Disc herniation, disc extrusion, narrowing of spinal canal, narrowing of lateral recess, compression of neural foramen, facet arthropathy and ligamentum flavum thickening is common at the L4 – L5 disc level. L1- L2 disc involvement and spondylolisthesis are less common. MRI is the standard imaging modality for detecting disc radiation, multiplanar imaging capability, excellent spinal soft-tissue contrast and precise localization of intervertebral discs changes.

References

1. Neuropathy-sciatic nerve. (2013). sciatic nerve dysfunction; low back pain-sciatica internet. Bethesda (MD): A.D.A.M. Inc. [cited 2012 Aug 12]. Available from: <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001706/>.
2. Bakhsh A. (2010). Long-term outcome of lumbar disc surgery an experience from Pakistan. *J Neurosurgeon Spine.*;12:66.
3. Modic MT, Ross JS. (2007). Lumbar degenerative disc disease. *Radiology*; 245: 43-61.
4. Battie MC, Vide man T, Gibbons LE, Fisher LD, Manninen H, Gill K. (1995). Volvo Award in clinical sciences: determinants of lumbar disc degeneration—a study relating lifetime exposures and magnetic resonance imaging findings in identical twins. *Spine* ;20: 2601–12.

5. ShafaqS, Hafiz MA, Muhammad AKR, AishaR, Arsalan AA, Junaid A. (2003). Lumbar Disc Degenerative Disease Disc Degeneration Symptoms and Magnetic Resonance Image Findings. *Asian Spine J.*;7(4):322–34.
6. Haughton V. (2006). Imaging intervertebral disc degeneration. *J Bone Joint SurgAm*;88 (Suppl 2):15-20
7. Takatalo J, Karppinen J, Niinimäki J, Taimela S, Näyhä S, Järvelin MR, et al. (2009) Prevalence of degenerative imaging findings in lumbar magnetic resonance imaging among young adults. *Spine*;34(16):1716-21
8. Shambrook J, McNee P, Harris EC, et al. (2011). Clinical presentation of low back pain and association with risk factors according to findings on magnetic resonance imaging *Pain*;152:1659–65
9. Park JB, Chang H, Lee JK. Quantitative analysis of transforming growth factor-beta
- 10.1Pa 1976). 2001;26:E492–95in ligamentum flavum of lumbar spinal stenosis and disc herniation. *Spine (Phila*
- 11.etiology. *Radiology*. 2010;257:318-20 (10) Wang YX, Griffith JF. Effect of menopause on lumbar disc degeneration: potential
- 12.Cheung KM, Karppinen J, Chan D, Ho DW, Song YQ, Sham P, et al. Prevalence and
- 13.pattern of lumbar magnetic resonance imaging changes in a population study of one
- 14.thousand forty-three individuals. *Spine (Phila Pa 1976)*. 2009;34(9):934-40
- 15.Lipson SJ, Muir H. Experimental intervertebral disc degeneration: morphologic and
- 16.proteoglycan changes over time. *Arthritis Rheum*. 1981;24:12–21) Takatalo J, Karppinen J, Niinimäki J, Taimela S, Näyhä S, Järvelin MR, et al 13)
- 17.Prevalence of degenerative imaging findings in lumbar magnetic resonance imaging
- 18.among young adults. *Spine (Phila Pa 1976)*. 2009;34(16):1716-21
- 19.Shambrook J, McNee P, Harris EC, et al. Clinical presentation of low back pain and (14)
- 20.association with risk factors according to findings on magnetic resonance imaging *Pain*. 2011;152:1659–65

Should Institutions of Higher Education Include Water Quality Issues in the Undergraduate Curriculum?

Letter to Editor

Arij Mousa

Corresponding Author: Assistant professor, Department of Public Health, Tripoli, Libya.

INTRODUCTION

Should institutions of higher education include water quality issues in the undergraduate curriculum? Yes

Studying people's behavior is important when evaluating whether people should be worried about water quality or not. From this perspective, people should be worried because there are many studies that indicate that people have the right to be worried. Borisova, Brett, and Cassel (2010) studied public opinion about surface water and groundwater quality in Florida.

This paper summarized the survey that was done to examine Florida residents' awareness and attitudes about water quality and quantity issues and strategies to protect water resources.

The survey was mailed to 1,154 randomly selected Florida households in the fall of 2008 and spring of 2009; 523 households completed and returned the survey (45.5% response rate). Doria, Pidgeon and Hunter (2009) found that the media influences public perception. All these articles introduced the issue carefully, but still many other factors that were absent needed to be addressed. It is not surprising that people are apprehensive of and worry about water quality. People worried about water quality for these reasons:

First: History of waterborne disease and outbreaks

History is full of water crises that people will not forget easily. For example, the recent outbreak in the U.S was in Milwaukee, Wisconsin in 1993, where 1.5 million were infected by intestinal pathogens from the water, creating concerns about water quality.

The probability of cryptosporidiosis is related to the resistance of the oocysts of these bacteria to disinfection (Lisle & Rose, 1995). This huge number of infected people is not easy to remove from people's memory.

Second: People do not trust the treatment process.

Although many advanced techniques are used to keep water safe, possible contaminants still exist in the water because of the lack of wastewater plants and also because of chemical resistance. This makes treatment difficult. For example, one study analyzed stream water, raw, settled, filtered, and finished water supplies to identify 106 organic wastewater-related contaminants (OWCs). The results showed that in every sample from the stream water they detected about 40% OWCs, and in other samples about 10% had OWCs. The contaminants detected include selected prescription and non-prescription drugs and their metabolites, fragrance compounds, flame retardants and plasticizers, cosmetic compounds, and a solvent. Some chemicals were not detected in the finished water but they were detected in the stream and raw water (Stackelberg et al., 2004).

Third: Increased use of home filters and bottled water

Increased use of bottled water for drinking is an indicator that people do not trust tap water. Numerous studies show that consumers prefer bottled water due to a more acceptable taste and odor. Bruvold, Rosen and Pangborn (1975) studied consumer perceptions of taste and odor. The study found that consumers judge water quality negatively if the total dissolved solids (TDS) in drinking water increase. The study respondents considered

the water to be unacceptable if it contained more than 500 mg/l of total dissolved solids, and this was the main reason that motivated them to find alternative solutions (Bruvold et al., 1975).

Fourth: Environmental pollution across the world

Oil spills and other crises increase public apprehension. In a recent report by the Natural Resources Defense Council (NRDC), which was an annual survey of water quality and public notification in the U.S., many important results support the claim that people are apprehensive about water quality in many research studies. For example, the report focused on the beaches, or recreational water that people cannot stop using because it is as an important part of their life. The beach water quality was impacted by the oil spill last year. A total of 9,474 reports of oil were received since the oil spill was observed on June 15, 2011 (Dorfman & Rosselot, 2011). These kinds of environmental problems affect the quality of recreational and drinking water, indicating people should worry about the quality of their water.

Fifth: People are affected by the news.

News and other types of media publish the latest news about local and global water quality. People are affected by this news and try to treat their drinking water. For example, one famous news article in Muncie's *The Star Press* showed concern about nutrients in water in the last ten years. This is represented

Should Institutions of Higher Education Include Water Quality Issues in the Undergraduate Curriculum?

in many articles such as Seth Slabaugh's article from 2006, in which he gives a brief history of the issue and says nutrient pollution has been a problem since 1913 in the Limberlost Creek watershed in Indiana due to hypoxia in the water body. People read the news and react because local news talks about problems present in the water, which to them means it is a real problem, and they have to do something to protect their health against disease and risk.

Should institutions of higher education include water quality issues in the undergraduate curriculum? No

First: People are satisfied with the taste and color.

People in some regions of the U.S are happy and satisfied with the drinking water. They do not notice any strange taste or color in their water. Taste and color are important for judging the quality of water for consumers. A report from Corona Research (2008) found that people should not worry about water quality. The report stated that residents in the eastern mountain region generally feel that their water quality is good. People in Idaho felt that their water was fantastic. Some participants said in this interview, "I brag on my water all the time." The study proved that people in this area do not have any problems with water quality. Also, people stated that they do not bother to test their water due to their high trust of the source of drinking water. This high level of trust from the local people about their sources of water gives no reason for people to worry about their water quality.

Second: Bottled water is not safe.

Bottled water is possible to contaminate. A study published by NRDC in March 1999 showed that in Houston, Texas, Superior Water, a bottled water brand, took city water and pumped it directly into bottles without any treatment (Olson, 1999). That means that people should not worry about the water, because if they relied on bottled water, they were drinking tap water. Also demonstrating that bottled water is not any better than tap water, a study entitled "Bottled water contains disinfection byproducts, fertilizer residue, and pain medication" was published in October 2008. The report stated that the bottled water industry is not required to disclose the test results. The report mentioned that consumers now believe that bottled water is not safe, and that it is expensive (Dorfma & Rosselot, 2011).

Third: Efforts to regulate water

Tap water is regulated by the Environmental Protection Agency (EPA), which uses precise regulations, and they act very quickly when any parameter exceeds the maximum level. However, the Food and Drug Administration (FDA) regulates bottled water and is not as strong as the EPA. This agency does not have strong regulations for coliform bacteria. About 100 incidences have been recorded because of contaminated bottled water (Lewis, 2010).

Fourth: Low cost of tap water

In the U.S., bottled water sales are very high; about 9 billion gallons of bottled water is consumed per year. People spend hundreds of millions of dollars on bottled water (Lewis, 2010). Studies that have found contaminants in bottled water make people think differently, that bottled water is not a better option to rely on for daily use. For example, research by Lalumandier and Ayers investigated the level of fluoride and bacterial content in five brands of bottled water and three tap water plants in Cleveland, Ohio. The study showed that only 5% of bottled water in the study met the fluoride requirement. Meanwhile, 100% of tap water met the state fluoride requirements. The study confirmed that bottled water samples have an unacceptable rate of fluoride and bacterial levels (Lalumandier & Ayers, 2009).

It is difficult for people to notice the difference between tap water and bottled water because of the similarity of taste and color. Gleick wrote that most spring water was bottled as natural water without much treatment. A study found that 20% of U.S. spring water has *Giardia* and *Cryptosporidium*. This makes people suspicious about spring water that is bottled, and people spend money for that quality (as cited in Lewis, 2010).

Fifth: People hear about serious problems coming from food, soil and other places

Many other problems in life seem more serious compared with water quality, such as food poisoning. An oil spill can cause fish to be contaminated with chemicals. Cumulative chemical concentrations in aquatic microorganisms can reach the food chain and cause cancer in people. Now people prefer to eat organic food and organic products to have good food. Besides this, bottled water can have negative consequences for the environment because of the high amount of waste generated. This waste can cause environmental degradation and be very costly. I think people can invest this money in stronger net municipal water distribution systems (Lewis, 2010). The above reasons lead people to drink tap water and not trust bottled water.

References

1. Borisova, T., J. Brett, & Cassel, G. (2010). Public opinion about surface water and groundwater quality in Florida. (EDIS document FE844). Gainesville, FL: Food and Resource Economics Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Retrieved from: <http://edis.ifas.ufl.edu/fe844>.
2. Bruvold, W. H., Rosen, A. A., & Pangborn, R. M. (1975). Human perception and evaluation of water quality. *Critical Reviews in Environmental Science and Technology*, 5(2), 153-231.

Should Institutions of Higher Education Include Water Quality Issues in the Undergraduate Curriculum?

3. Corona Research. Water Quality Focus Groups. (2008). Denver, CO: Corona Research, Inc. Retrieved from: <http://npscolorado.com/Statewide%20Water%20Quality%20Focus%20Groups-final%20report.pdf>
4. Doria, M. F., Pidgeon, N., & Hunter, P. R. (2009). Perceptions of drinking water quality and risk and its effect on behaviour: A cross-national study. *Science of the Total Environment*, 407(21), 5455-5464.
5. Dorfma, M., & Rosselot, K. S. (2011). Testing the Waters: A guide to water quality at vacation beaches. (Twenty-first annual report.) New York, NY: Natural Resources Defense Council. Retrieved from: <http://www.nrdc.org/water/oceans/ttw/ttw2011.pdf>
6. Lalumandier, J. A., & Ayers, L. W. (2000). Fluoride and bacterial content of bottled water vs tap water. *Archives of Family Medicine*, 9(3), 246-250.
7. Lewis, M. W. (2010). Costly water. [Review of the book *Bottled and sold: The history behind our obsession with bottled water.*] *Issues in Science and Technology*. Retrieved from: http://www.issues.org/27.1/br_lewis.html
8. Lisle, J. T., & Rose, J. B. (1995). Cryptosporidium contamination of water in the USA and UK: A mini-review. *Aqua - Journal of Water Supply: Research and Technology [AQUA]*, 44(3), 103-117.
9. Olson, E. D. (1999). Bottled water: Pure drink or pure hype? New York, NY: Natural Resources Defense Council. Retrieved from: <http://www.nrdc.org/water/drinking/bw/bwinx.asp>
10. Stackelberg, P. E., Furlong, E. T., Meyer, M. T., Zaugg, S. D., Henderson, A. K., & Reissman, D. B. (2004). Persistence of pharmaceutical compounds and other organic wastewater contaminants in a conventional drinking-water-treatment plant. *Science of the Total Environment*, 329(1-3), 99-113.
11. Slabaugh, S. (2006, December 20). Storm water fees to raise \$858,000 a year. *The Star Press*, p. 3.

Sociological Reconstructionism

Dear Editor:

I am writing to you after I read an article in the Star Press. The article published some news about water quality in Muncie. People have different attitudes towards the safety of water. I do not know whether they are affected by news from the Star Press or not.

The article mentioned some pollutants that have contaminated the White River. These pollutants are nitrates. The area surrounding the river is an agricultural area, and farmers use fertilizers that are rich in nitrate and phosphorus. Also, farmers apply some applications that help them on their farms, but they do not realize that they are increasing nitrate in the water body by using methods such as till drainage. Many environmental problems related to the water are still not

solved yet. Scientists studied and identified the contamination in the area but there are still some barriers that prevent them from applying the appropriate solution to manage these problems.

In order to focus the article from the Sociological Reconstructionism perspective, I need to focus on the groups who might be affected by this topic. First, let us all imagine that we studied two groups of people. The first group is American (native) and has lived in the area for more than 10 years. The second group is an international group who also used to live here in Muncie, Indiana. Both groups in this study will be educated and know a little or more about this issue. The question is: Are they worried about water quality? My expectation is that, yes, they are

worried about water. As I am one from the international group, I will say that, yes, most of my American friends drink bottled water, because they are either lazy or afraid of the tap water. The international group, I think, is more afraid because they think America is an industrial country and it has more problems and different pollutants in the water. Or, they are more satisfied with the water, because they think that America has a good method of treatment and can solve its problems very well. Studying the social perspective is very important in order to observe the relationships between factors that could affect people's behavior, such as religion, academic background, ethics, and so on. Best

Arij Mousa

Cultural Anthropology

Dear Editor:

I would like to share something with you regarding the issue of water quality and anthropological holistic emphasis. According to the Gale Encyclopedia of Public Health, "Sir Edward Burnett Tylor (1832–1917) one of the founders of anthropology, defined culture as 'that *complex whole* which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society' (Tylor 1871, p. 1, emphasis added). It is the holistic emphasis of cultural anthropology that distinguishes it most clearly from other related disciplines. . . . [A]n anthropologist may focus the research on a particular dimension of culture, such as religion or political organization, but that dimension will also be described in terms of its relationship to the 'complex whole' of the local culture".

To observe the chronological status of the issue, the first question that comes to my mind is, "When did people notice that they should be worried about water and start taking measures to keep themselves safe, such as using filters at home or drinking bottled water?"

Should Institutions of Higher Education Include Water Quality Issues in the Undergraduate Curriculum?

I do not know when people started worrying about water like this and what the reasons are for it. I remember that my father drank directly from the well without any treatment for the water. People never complained about water in 1940. What makes people worried about water quality now? Times have changed, and the feeling of worry has also changed. Also, I connect the feeling of unsafe water with the media. What I mean is, when people

started publishing good articles related to the safety of water quality, people became more confident, and when the media relayed bad news about water, people got more worried. Background and other factors related to water quality might affect people's behavior. People are sometimes not aware of their behavior and the reasons that make them afraid or accepting of their water source.

Water quality research and published papers have studied many different issues. Usually the researchers conduct the most serious issue in that time for example examining the microbial contents of the water source after the big outbreak. Also, the oil spills crisis last year make the research focus on the chemical pollution. Moreover the research sometimes it depends on how much claims they have from people. Monitoring and good assessment is the important step to evaluate the problem. The most important concern that people sometimes they do not trust this monitoring. They have many reasons for that such as lack of skills and lack of technology. Also people think sometimes that the federal regulation needs to be updated to regulate new pollutants.

Dear editor it is confusing and hard to estimate how much information that we need in order to put serious steps to help people. Observing the reasons an important and necessary to judge the issue. Cultural anthropology aspect is the hook that used to pull out all the possible reasons and display them in good order.

Best

Arij Mousa

Sociological Resistance

Dear IDEM representative:

I know that you are working hard to make people happy and satisfied with water quality. The area has many different types of resources that people rely on. The most important issue that I noticed is that people think that the ground water is not safe to drink and suspect many kinds of pollutants. Let me describe my view about why people resist government claims about ground water such as in areas that have oil and gas companies. People are not happy about ground water, because the method of extracting the oil by mixing a huge amount of water with chemicals and re-injecting into the aquifer makes people report changes in

water quality “in Arkansas, Colorado, Pennsylvania, Texas, Virginia, West Virginia and Wyoming, where residents have [also] reported changes in water . . . quantity following fracturing operations” (Natural Resources Defense Council, 2011). This type of extracting is

called hydraulic fracturing, or fracking. Using chemicals during the extracting makes people apprehensive of water quality. Regulations and the federal process might give good evidence or real steps to treat water, but the residents have the right to accept or deny. People just depend on unknown sources of information. Sometimes they have good evidence and sometimes they do not. If you try to analyze their apprehension toward the ground water in this case, maybe people noticed some change in the water quality, such as the taste and odor, which are general characteristics of water. In my point of view, the residents should have the right to judge their source of drinking water. This is personal freedom. Recreational water is also a type of general source that all residents should trust. It is used for fishing, swimming, and other activities, and this is considered an important part of their life, and this also gives them the right to accept this water or complain. People are apprehensive when they observe that their creek is full of dirt, especially during rainfall.

Dear IDEM representative,

to make people more confident about ground water, you should find multiple solutions to gain people’s trust, if possible, and if they refuse, they should have scientific reasons for their apprehension. The country’s development involves many different directions for investing money and developing technology to extract and produce many different products to enhance the economy of the country, but this issue could delay production. Let me give you a simple example: An industry produces a good product, and this process ends with throwing waste in the creek, and the industry is also pretreating the water before sending it to the creek. I myself will not drink directly from the creek, because I know it has been polluted, and chemicals such as chlorine and others have negative effects, such as carcinogenic effects on human health. Also, I know that some bottled water companies just fill bottles with the city source, so I will probably choose to drink milk or juice rather than water.

Finally, considering that resistance to federal law can be expected, you should act carefully as a federal agency. Ads in the news and TV programs could help if you have good research to support your claim that the ground water is safe and people should not be worried about the quality and safety of water. On the other hand, people in such agencies should give preference to people’s needs and try to satisfy them by finding a way to help people know the reason why they are worried about water quality.

Department of energy and oil.

Feminist theory (Gender Difference)

Dear Dr. Amal,

I am writing to you about an issue that I think you will understand as a female that holds a higher position in an academic setting. I was looking for somebody that could understand the issue from a feminist perspective, My mind told me that I should write you.

Writing from a feminist perspective means finding out the difference in thinking between women and men. I do not know if this is true or not. Dear madam, I am presenting my issue about whether people should be worried about water quality. I would like to have a feminist perspective as a different point of view. You represent the educated female, and your response is very important to me in discussing the idea from this perspective.

Water quality as a general topic is very important for everybody, and to make this topic more attractive, let us frame this issue as more insightful for women. You will ask me why? Men and women are human and all drink water. But let me ask you this: Have you ever asked yourself if women are more careful and worried about water than men? I am expecting either a “yes” or “no.” If you answer me with a “no,” I don’t have to know the reason for that.

The most important answer for me is “yes.” This is the answer which needs more explanation from your point of view as a higher class educated women. I am curious to know your response. I will also let you share some feminist perspectives as a woman, too.

I would like to translate the issue in other words to make it look more feminist. Women, in my opinion, can sense safety in their bodies as mothers, the feeling during her pregnancy allows her to feel the meaning of safety, the feeling of taking care of her fetus inside her body, the feeling when she sees her baby after delivery, that he is safe and the fluid and blood were feeding him and the confidence that everything was sterile gives her the sense that women are very careful about water.

From the first months until two years the baby gets his food from the safest place, his or her mother’s body, as breast milk. After that, when the baby grows up, the mother wants to have a relatively safe place for her child, as safe as her body was.

This perspective leads mothers to boil water for their babies when they prepare powdered milk, thinking they are careful and want a safe drink for their children. The idea raised from this perspective is that women are close to their children and are a responsible source of food and safety. Therefore, I am

expecting that women will have a higher level of apprehension about water quality compared to men.

Dear President,

Maybe you have another interpretation of this issue to contribute to this framework. You have the right to say no, too, that there is no difference between men and women in terms of their ideas of water quality. I would

appreciate your view and consider your idea as an expert because you are dealing on a daily basis with male and female issues, and your mind thinks in different ways according to the issue or what is in front of you.

The situation could change from time to time, and also people's thinking changes along with the times and the situation, but human feeling might store some old memory that helps him or her reconstruct a modern viewpoint, and this is common in this day because America is a multicultural place, full of differences, and it has a fast pace of development in the world, and people are adjusting according to this development. Many different views could accumulate at the end and result either in good things or as a negative and end up costing this development. Take care, dear President. I hope to hear from you soon. Your response is very important to me.

Again, you have the right not to respond to me. If you think this topic is odd and you do not have anything to add, I fully understand and thank you very much.

Arij Mousi

Social-economic perspective:

Dear CEO of Aquafina bottled water:

I writing to you, sir, to let you know that I am from a water treatment plant in this area of the world, and I am an expert in my field, and I did much research that reveals that our source of water in this city is completely safe. We have not detected any types of pollutants. Also, the water quality of our sources meet the federal water standards. We are making efforts to gain the people's trust of our city water, but the problem is that your company increased its production rate and people either find it at a cheap rate or think it is easy to handle. That is why you have a high rate of disruption. This city also has a large campus, Ball State University, which gives the issue a bit more complexity.

When we observe the age level in this city during the fall semester, I would predict that 20-30 year olds will be the dominant age on this campus. Also, there is a huge diversity of students from around 80 countries, all coming from different cultures from different regions on the earth. The university provides all types of water on campus, from the drinking fountains everywhere, bottled

Should Institutions of Higher Education Include Water Quality Issues in the Undergraduate Curriculum?

water in vending machines, and selling water in the restaurants on campus. I do not know what will happen to your marketing if the students stop paying for these kinds

of bottled water. Of course, there could be many reasons for this – for example, by passing a law that forbids your company to provide the campus as the only supplier for Ball State. The second reason is that students fully understand that the tap water is safer than bottled water.

This awareness could be developed through Ball State news or TV. What is your response in this case? Could you provide the competitive advertisements to challenge that? It is a difficult task I think. Changing personal behavior to fit the niche of the community economy is a hard task. I do not know how strong your claims in this matter are. Do you think these differences and the diversity of this campus will affect the marketing rate if there was a restriction strategy or action taken to change the students' behavior?

I do not know what kind of difference this would make for your company. Let me know your view of point according to this Socio-Economic perspective.

I know it is hard to let your company lose money. Do you have a solution for that? If your company does not meet the standards of the federal law, what do you think will happen? Or if the people start to get afraid and worried about their health? Can you tell them that your company does not meet the federal standard? When you will be able to gain their confidence again?

What ways will you use to reach the point where people trust your company? I believe you put much effort and time into this because people have a negative attitude toward bottled water, as generally they do not care about which brand they use. To me, all bottled water is the same. I do not have any preference and I know, because of my background, that the water quality of both sources (bottled /tap) have minimum and maximum risks.

The power to choose which one depends on people's attitude and acceptance. I am sorry if I have caused any inconvenience by this letter, but your response as a businessman is important, and you serve as an effective person in this company, and you are one person forming a part of this whole.

You can explain your view from two sides - as a normal person and as a businessman who cares about his future and the economy of this community. If you have any extra explanation, please let me know. I would be happy to help you. You can find my contact number by googling my name. I am Arij Mousai from Tripoli University .

Arij Mous

Political Cartoon:



Ref: <http://www.cagle.com/#>

I chose this cartoon because it describes the most common public apprehension toward water quality. People from this cartoon do not trust the water. The cartoon infers that waste water utilities, business interests, agricultural interests and state regulations are not doing anything for water quality. The cartoon describes the actual action for testing water quality and shows that the level of trust is very low because they say even their tears are not so clean and do not meet the water standard. Making cartoons like this describes people's trust and shows how important it is to check those agencies. If their tears are not clean, it means the level of trust is so bad, because normally tears are sterile. The opposite view, according to my prediction, the cartoon could infer that many pollutants have been increased and the agencies and government sectors are not able to follow up all this changing by using the old regulations. The cartoon describes the weakness of the agencies and the federal regulation. This makes the people working hard to retest and assess the water quality.

The cartoon showed that this assessment found that people should worry about water quality, and also people could take other steps toward improving water quality. People are affected by many different types of advertisement, news, cartoons, TV, articles and others. This cartoon is funny and objective direct to the point of people apprehension I like this cartoon because it summarizes the whole issue in a nice picture that has a strong action. Public media have the right to send any message to the people by different types.

Should Institutions of Higher Education Include Water Quality Issues in the Undergraduate Curriculum?

Cartoon in my opinion is a valid and appropriate way for all age .It does not need a high quality writing the simple person cannot understand. The most important the idea for the cartoon and the action that contain the big issue and sometimes the solution too in one cartoon.

References

1. Borisova. T, Borisova, J. Brett, & Cassel Gr (2008). Public Opinion about Surface Water and Groundwater Quality in Florida.
2. Doria, M. F., Pidgeon. N., & Hunter, P. R. (2009). Perceptions of drinking water quality and risk and its effect on behavior: A cross-national study. *Science of total Environment*, 407, 5455-5464.
3. Gallup Organization. (1974). Public attitudes toward the quality of drinking water. Princeton, NJ.
4. Eah,Cl. (2000). Standards Methods for The examination of Water and Wastewater. American Public Health Association. American Water Works Association and Water Environment
5. Stackelberg .E at el (2004).Persistence of pharmaceutical compounds and other organic wastewater contaminants in a conventional drinking-water-treatment plant. Centers for Disease Control and Prevention.USA
6. Rose Lisle, JT, JB(1995)..Cryptosporidium contamination of water in the USA and UK: A mini-review *Aqua - Journal of Water Supply: Research and Technology [AQUA]*. Vol. 44, no. 3, pp. 103-117.
7. Dorfma .M,Rosselot.k (2011). A Guide to Water Quality at Vacation Beachestwenty-first Annu Al report. Retrieved from: <http://www.nrdc.org/water/oceans/ttw/ttw2011.pdf>
8. The Monroe County Water Authority. Retrieved from: <http://www.mcwa.com/MyWater/CleanWaterYouCanTrust.aspx>
9. Water Quality Focus Groups (2008). Retrieved from <http://npscolorado.com/Statewide%20Water%20Quality%20Focus%20Groups-final%20report.pdf>
- 10.NRDC's (March 1999) report: retrieved from <http://www.nrdc.org/water/drinking/bw/bwinx.asp>
- 11.Verhovek,(1997) "It's Wet. It's Bottled. It Sort of Tastes Like Water.," *The New York Times*, p.D2
- 12.Bottled Water Quality Investigation. (2008). Retrieved from <http://www.ewg.org/reports/BottledWater/Bottled-Water-Quality-Investigation>
- 13.Ref: <http://www.cagle.com/#>

Tumor Rate in Eastern and Western Libya and Impact of Eating Style on Patients

Amal R. Agila

Ph.D, Assistant Professor, Food Science, Department of Nutrition, Faculty of Medical Technology, University of Tobruk , Tobruk, Libya.

² Department of Nutrition, Faculty of Medical Technology, University of Tobruk, Tobruk, Libya

Abstract

Bad nutritional and living routines may accountable for occurrence of food related tumors in Libya such as pancreas, stomach, liver, mouth, pharynx , colon, rectum and anus. The present work is aimed to provide a summary on size of pancreas, stomach, liver and colorectal tumors in Eastern and Western Libya, to give information about incidence of lung, breast and colorectal cancers at Tobruk Medical Center in 2017, and to recognize the responsibility of bad nutritional habits in growing cancer. A total of 972 cases diagnosed with cancers were analyzed. Among 972 cases, 785 cases (466 males and 319 females) diagnosed with foodstuff related cancers including pancreas, stomach, liver, mouth, pharynx and colorectal cancers and were gathered from 2005 to 2009 in Eastern and Western Libya. Approximately, 187 cases (40 males and 147 females) diagnosed with lung, breast and colorectal cancers were obtained from Tobruk Medical Center in 2017. A cross sectional study was conducted on 300 Libyan patients with pancreas, stomach, liver, mouth, pharynx and colorectal cancers at Tobruk Medical Center, Al Shefa Clinic and Al Shema Clinic in Tobruk during the period from August 2016 to March 2018. Of 785 patients, there was 382 cases (220 males and 162 females) from Western Libya and 403 cases (246 males and 157 females) from Eastern Libya. About 59.4 % males and 40.6% females were detected with pancreas, stomach, liver, mouth, pharynx and colorectal cancers. Men are just about 18.8 % more expected than women to build up foodstuff related tumors. Among 785 cases, approximately 28% males and 20.6% females from Western Libya, whereas 31.4% males and 20% females from Eastern Libya. Men in Eastern Libya are almost 3.4% more likely than men in Western Libya to develop cancer. While, women in Western Libya are only 0.6 % more likely than women in Eastern Libya to develop cancer. Among interviewed patients, 42% (n = 126) cases ate a lot of fast

foods, while 34% (n = 102) cases rarely ate fruits and vegetables, and 24% (n = 72) patients had past family history. Understanding the role of the high-quality nutrition with excellent bodily movements may encourage health and physical condition of patients with colorectal cancer in Libya.

Keywords: *Bad nutritional and living routines, food related tumors, Eastern and Western Libya, cross sectional study, high-quality nutrition.*

Abbreviations: *WHO: World Health Organization*

INTRODUCTION

Cancer reflects on a most significant sickness in Libya^[8] and may possibly stand for the second reason of death behind cardiovascular diseases.^[18] World Health Organization (WHO) reported that food-related threats may be accountable for some cancer injuries such as colorectal, stomach, liver, pancreas, mouth and pharynx cancers. Colorectal cancer involves cancers of the colon, rectum, appendix and anus. As well, WHO becomes aware of a affiliation between cancer risks and other factors including bad nutritional habits, smoking, and proportion of animal to plant food eaten, value and quality of food, food preparation methods, preserved foodstuff superiority, and standard living style.^[19] Worldwide, cancer is quickly becoming a main reason of mortality, especially among aging populations with past family history in the developing countries, also, cancer is becoming a foremost difficulty in Libya. Colorectal cancer represents the second main universal cause of cancer incidence and mortality in both sexes and is an emerging trouble.^[9] In Libya, colorectal, liver and stomach cancers are most common and occur due to many risk factors. Living style, non healthy cooking, huge stress, cigarette smoking and cultural nutritional habits may represent cancer risk factors.^[8, 18, 19, 4, 10] Cancer incidence in Libya has not been studied for almost a decade.^[4, 9] Colorectal, stomach, liver, and pancreas malignancies are the mainly familiar tumor in men. They regard as a significant illness in Western and Eastern Libya^[8, 4, 10] and may stand for one of main reasons of passing away after cardiovascular diseases.^[18] For example, across the world, at least, 151,000 of new colorectal malignancy cases were yearly accounted.

Poor diet directs to about 30% of cancer incidence in developed countries and 20% in developing countries.^[19] In addition, no diet closely is able to defend from getting cancer, but some natural foodstuffs give a hand promoting body health, maintaining the immune system and reducing the risk of food related cancers.^[7] Well nourishment is essential for growth and restore tissues.^[20] Consequently, utilization a valuable quantity of fruits, vegetables, fibers, minerals, amino acids,

omega-3 and antioxidants may keep a healthy body and diminish cancer danger.^[19] Theses natural foodstuffs lend a hand to patients diagnosed with pancreas,

stomach, liver, mouth, pharynx , colorectal cancers get the right diet to fight the sickness. ^[20] Also, fruits and vegetables contain plenty of vitamins, minerals and antioxidants, which offer a well weight and may decrease the danger of food related cancers ^[3], especially in the beginning of the disease.

The objectives of this research article are firstly; to offer a general idea of size of colorectal, stomach, liver, pancreas, mouth and pharynx cancers cancer incidence in Eastern and Western Libya form 2005 to 2009, and secondly to give information about incidence of lung, breast and colorectal cancers at Tobruk Medical Center in 2017, and finally to spot the role of bad nutritional habits in developing cancer.

2. Materials and Methods

Data Collection and Analysis

Data from multiple sources were used. Statistics were obtained from Misurata National Cancer Institute Registry, the Department of Oncology at the Benghazi Medical Center, Tripoli Medical Center Registry and Tobruk Medical Center Registry. Data were collected from multiple cities in Eastern and Western Libya including Misurata, Khums, Zliten, Sirt, Tripoli, Mesalata, Jofra, Tarhona, zawea, tobruk, tamimy, derna, beer al ashhab, albeda, benghazi, martoba, shahat, alghaara, kanbot, al berdy, mersalak , and ain mara. All personal identifiers were stripped from the data and only significant parameters were analyzed. A total of 972 cases (506 males and 466 females) aged from 25 to 80 years were analyzed. Of 972, 785 cases (466 males and 319 females) diagnosed with diagnosed with pancreas, stomach, liver, mouth, pharynx, colorectal cancers during 2005 to 2009. Also, about 187 cases (40 males and 147 females) diagnosed with lung, breast and colorectal cancers were obtained from Tobruk Medical Center, Tobruk in 2017 from 1th Jan to 31th Dec, 2017.

Data were computerized in a data sheet and percentage formulas of food related cancer patients were calculated using Microsoft office excel 2016 program.

Ethical Consideration

This study is a part of food related cancer studies. The study protocol was approved by the ethics committee of the Scientific Research in Tobruk University. All patients with pancreas, stomach, liver, mouth, pharynx and colorectal cancers were informed about the research and gave oral consent. No patient refused our aim for this study.

Cross Sectional Study

A self administered questionnaire was conducted on three hundred Libyan patients with pancreas, stomach, liver, mouth, pharynx and colorectal cancers at Tobruk Medical Center , Al Shefa Clinic and Al Shema Clinic in Tobruk during the period from August 2015 to March 2018. The patients aged from 34

to 75 years (132 males and 168 females) and the weight of interviewed patients was from 41 to 94 Kg. Data was collected on a form (questionnaire) during the interview with each patient. Participants were asked to detail their nutritional habits throughout one to three years before getting hurt cancer. The questions were only focused on past family history, life style factors including eating red meat, fast foods, drinking gaseous beverages, drinking water and eating fruits and vegetables; and exercise, and smoking status.

Statistical Analysis

An SPSS-based model Statistics Software (version 20.0, SPSS, Inc., Chicago, Illinois, USA) was designed and descriptive statistics were performed. Pearson Chi-square test was used to evaluate the significance of the association between males and females being diagnosed with pancreas, stomach, liver, mouth, pharynx and colorectal cancers. In all tests, $\alpha < 0.05$ was regarded statistically significant. All confidence intervals (CIs) were calculated at the 95% level of statistical significance.

3. Results and Discussion

Data from Misurata, Tripoli and Bengazi Medical Centers from 2005 to 2009

The significance of this work is that it creates a baseline of incidence of food related cancers which supposed to be the backbone for any future national cancer plan in Libya. The characteristics of pancreas, stomach, liver, mouth, pharynx and colorectal cancers population (n=785) was observed on many cities in Eastern and Western Libya. Figure (1) gives details about the number of males and females diagnosed with pancreas, stomach, liver, mouth, pharynx and colorectal cancers in Eastern and Western Libya from 2005 to 2009.

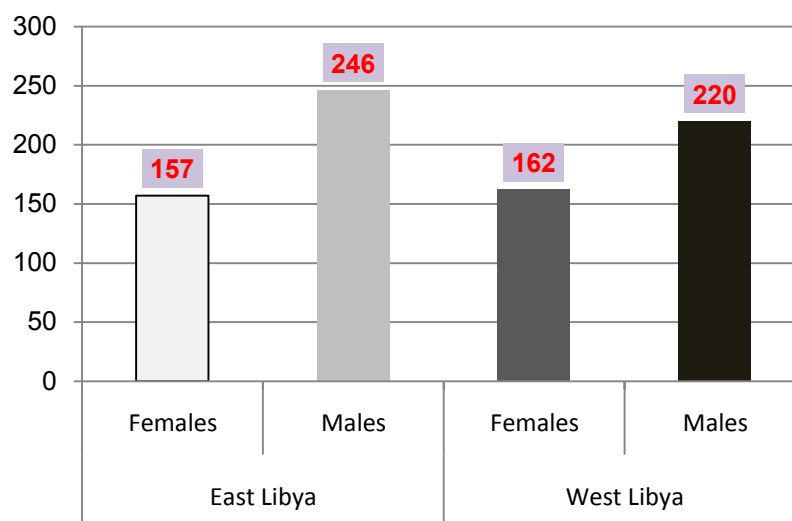


Figure 1. Patients Diagnosed with Pancreas, Stomach, Liver, Mouth, Pharynx and Colorectal Cancers in Eastern and Western Libya from 2005 to 2009 (n=785).

There was no statistically significant association between males and females for getting pancreas, stomach, liver, mouth, pharynx and colorectal cancer ($P=0.319$). The data gave an idea about pancreas, stomach, liver, mouth, pharynx and colorectal cancers can affect both sexes, but men are more suspected than women to develop food related cancers. Also, The general incidence of pancreas, stomach, liver, mouth, pharynx and colorectal cancers was reasonably close between the sexes.

The speed of food related cancers is the maximum in North Africa, where other malignancies happened less frequently. ^[4] In Canada, patients diagnosed with food related cancers at earlier phases had a more opportunity to survive from the disease than patients in North Africa. ^[3] Because, the reduced quality of medical and nutritional care in North Africa increases the death rates. ^[11] Among 785 cases (466 males and 319 females), fairly accurately, 59.4 % males and 40.6% females were detected with pancreas, stomach, liver, mouth, pharynx and colorectal cancers. Data found that men are just about 18.8 % more expected than women to build up food related cancers. This is due to difference in some cultivating conditions including smoking, living approach, food quality, drinking behaviors and job-related exposures (McCann, 2000). Of 785 cases, there was 382 cases (220 males and 162 females) from Western Libya and 403 cases (246 males and 157 females) from Eastern Libya. Approximately 28% males and 20.6% females from Western Libya, whereas 31.4% males and 20% females from Eastern Libya. Men in Eastern Libya are almost 3.4% more likely than men in Western Libya to develop cancer. While, women in Western Libya are only 0.6 % more likely than women in Eastern Libya to develop cancer.

In North America, patients diagnosed with food related cancers at earlier steps had a superior possibility to stay alive.

^[6] But, in Libya, the reduced quality of therapeutic and dietary care, lack of a correct documentation system, missing digitalization of patient records and no central authority to go behind cancer patients on a long term basis will increase the cancer incidence and mortality rates. ^[11, 4] Therefore, understanding the role of the high-quality nutrition with excellent bodily movements may encourage health and physical conditions of patients with pancreas, stomach, liver, mouth, pharynx and colorectal cancers in Libya. With the aim of establish proper cancer control programs, accurate statistics for cancer occurrence are completely crucial. ^[4] Figure (2) shows the total percentage of patients with pancreas, stomach, liver, mouth, pharynx and colorectal cancers in Eastern and Western Libya from 2005 to 2009.

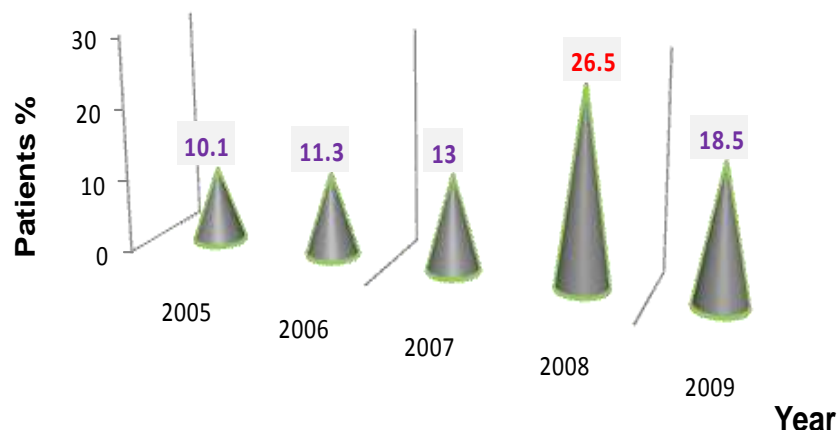


Figure 2 . Percentage of Patients Diagnosed with Pancreas, Stomach, Liver, Mouth, Pharynx and Colorectal Cancers in Eastern and Western Libya from 2005 to 2009

(n =785).

One of the essential finding in this effort demonstrated that the percentage of pancreas, stomach, liver, mouth, pharynx and colorectal cancers have been increased from 2005 to 2009 in some Eastern and Western Libya cities, especially in the year 2008. Libya has the maximum rate of food related cancers in North Africa. ^[4] The significant raise in pancreas, stomach, liver, mouth, pharynx and colorectal cancers incidence rates may suggest that there has been no improvement made in cancer control in Libya. This because Libya is missing of national cancer control plan, similar to several countries of Eastern Mediterranean Area. ^[9] Cancer control should diminish the estimated number of new cases and build up the quality of life for those diagnosed with food related cancers ^[6]. Also, proper control programs necessitate to be in place and healthcare policy should be regulated to take into account the more prevalent and pressing cancers in society. Cancer control requires to be set in place in Libya with the purpose of observe the trends and incidence rates. ^[4] With these founding, we can finally hope to make a change in Libya and raise the level of healthcare facilities.

Data Obtained from Tobruk Medical Center in 2017

Approximately, 187 cases diagnosed with lung, breast and colorectal cancers (40 males and 147 females) were obtained from Tobruk Medical Center, Tobruk from 1th Jan to 31th Dec, 2017. The results show that about 11 and 29 males diagnosed with lung and colorectal cancers, respectively. While, about 29, 50 and 68 females diagnosed with lung, colorectal and breast cancers, respectively (Figure 3). In this study, lung cancer occurs mostly in females; however, a

previous study implied that lung cancer is the foremost cancer in Libya and takes place mostly in smoker men. ^[1]

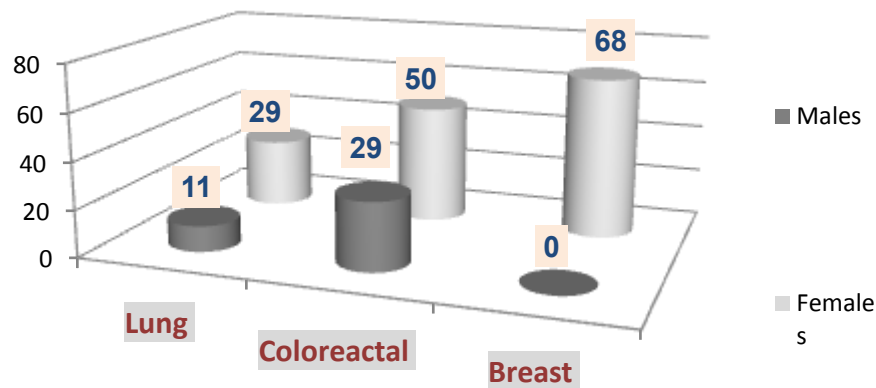


Figure 3. Patients Diagnosed with Lung, Colorectal and Breast Cancers in Tobruk Medical Center in 2017.

Sex-particular incidences were observed substantially between patients diagnosed with cancer. For example, breast cancer occurs only in females and did not occur in female below 20 years old. ^[1] The higher cases diagnosed with cancer were detected in a specific age period. The most affected age by cancers was in females aged 50 - 55 years followed by the age periods from 45 to 50 and 40 to 45 years, respectively (Figure 4). This explains that progress in the age, especially after 40 years old may affect differently on women to develop cancer.

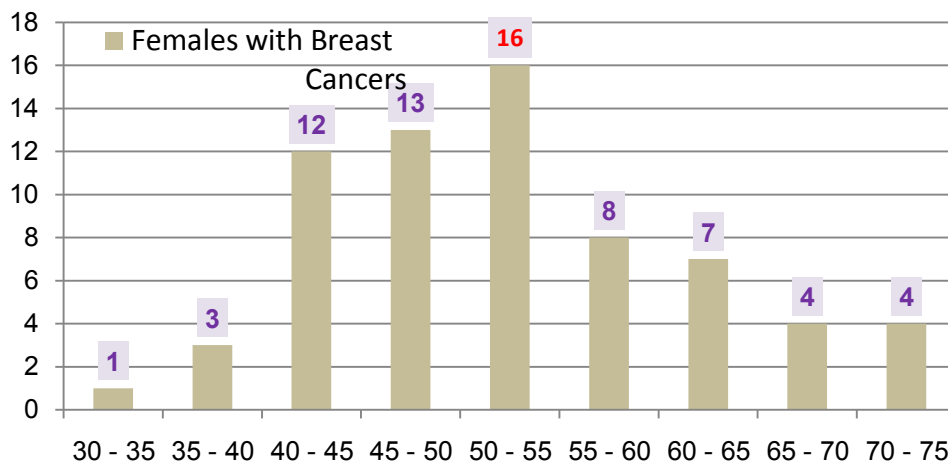


Figure 4. Females Diagnosed with Breast Cancer in Tobruk Medical Center in 2017.

Interviewed Patients with Food Related Cancers and Eating Style

Among 300 interviewed patients diagnosed with pancreas, stomach, liver, mouth, pharynx and colorectal cancers, 42% (n = 126) patients were eating a lot of fast foods , fried potatoes and red meat, while 34% (n = 102) cases rarely ate fruits and vegetables, and 24% (n = 72) patients had past family history (Figure 5). Researchers earlier reported that diet may affect on 30% of all patients diagnosed with cancer.^[19] Also, there is a noticeable connection between living style, nutritional habits and cancer incidence.^[17]

The permanent utilization of red meat (especially fast foods) including beef and lamb, processed meat and saturated fats may enhance the threat of pancreas, stomach, liver, mouth, pharynx and colorectal cancers incidence. However, foods loaded in high-fibers including whole grains, raw vegetables and fruits may defend against cancer because they are physically low in fat and rich in antioxidants and anti-cancer constitutes.^[17] Also, this study found that interviewed men were mostly smokers (90% n = 119). A prior study found that 60% of Libyan males were cigarette smokers.^[19]

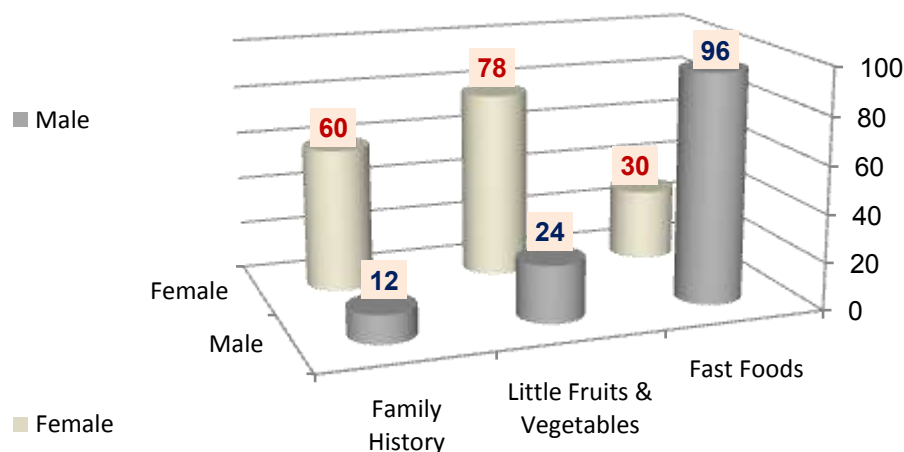


Figure 5. Some Reasons of the Incidence of Pancreas, Stomach, Liver, Mouth, Pharynx and Colorectal cancers (n=300).

The factor that can increase the risk of food related cancers is the bad diet. Consequently, the rising incidence of pancreas, stomach, liver, mouth, pharynx and colorectal cancers may be related to alteration in the diet and the standard of living. Also, the role of physical and chemical carcinogens might be taken in hand as a potential risk factor.^[9] Scientists direct patients with pancreas, stomach, liver, mouth, pharynx and colorectal cancers to follow prescription instructions in the early stages to protect from the condition.^[11] They believe

that there is a noticeable connection between living way, dietary patterns and malignancy incidence^[17], because poor nutrition quality may influence on one third of patients diagnosed with cancer.^[19]

Furthermore, several significant trainings together with doing exercise with a high-quality diet program, stop smoking (especially after meal), avoid alcohol utilization and not skipping breakfast, control weight for obese people are advised and may defend from pancreas, stomach, liver, mouth, pharynx and colorectal cancers.^[12]

Also, eating cooking groceries rich in high-fibers (whole grains), drinking 1 to 2 liter of water daily, eating a lot of raw vegetables and fruits without peel, especially carrots, tomatoes, and citrus fruits, apples, grapes and strawberries may protect from food related cancers. Peels of fruits and vegetables may encourage the over growth of normal flora in the intestine and may cause abdomen disorders in food related cancer patients. Furthermore, eating cooked vegetables, grains and fish may perhaps defend from cancer injury, as they are visibly low in fat and rich in antioxidants and anti-cancer constitutes.^[16, 19, 2, 5, 7, 13] Many scientists encourage using vegetarian diet to protect from cancer.

Conversely, the stable eating of red meats (especially in fast foods) plus eating beef, lamb, processed meats, curing, salting, smoking meats, some sausages and burgers, canned foods, preserved foods, saturated fats, high fat foods, fried foods, margarine, gaseous beverages, and other factors like obesity and smoking may raise the risk of pancreas, stomach, liver, mouth, pharynx and colorectal cancers. Also, smoking represent one of factors of the decline in the developed countries because of health risks.^[4]

Patient with food related cancers should have a scheduled nutrition expertise to estimate the diet to keep body weight in a healthy range for height using body mass index measurement (BMI). Body mass index (BMI) represents as obesity index of the individual and was calculated by using the formula $BMI = \text{weight in kg's} / \text{Height in (m}^2\text{)}$.^[14] Moreover, patient with cancer should drink a valuable amount of water during per day and eat more than 5 cups a day varieties of fresh and cooked vegetables (especially, raw vegetables, leafy green vegetables, carrots, tomatoes, broccoli, cabbage and fruits (citrus fruits, in particular) and whole grains. Additionally, patient with food related cancers should eat foods rich in omega-3-fatty acids with sleeping enough hours each night (7-8 hours) and walking for few hours per week with staying away from negative sensations.^[2, 5, 7, 13]

4. Conclusion

The incidence of pancreas, stomach, liver, mouth, pharynx and colorectal malignancies mostly take places in both sexes but it occurs higher in men than women because of the differentiation in some cultural and nutritional habits

such as smoking, drinking behaviors and job-related exposures. However, the results from Tobruk Medical Center in the year 2017 indicates that colorectal and lung cancers occur in women than men.

The percentage of food related cancer cases have been increased overall during four years in Eastern and Western Libya cities, especially in the year 2008. Men are almost 18.8 % more likely than women to develop pancreas, stomach, liver, mouth, pharynx and colorectal cancers. The interviewed patients had frequently eaten a lot of fast foods , fried potatoes and red meat with eating little of fruits and vegetables before they had cancer, and most of interviewed men were smokers. The most effective age by breast cancer was in women aged from 50 to 55 years.

This study advised that living style and bad nutritional habits including using low quantity of fruits, vegetables and water, eating high calorie fat /meat diet and fast foods; smoking, obesity and huge stress may guide to increase the risks of pancreas, stomach, liver, mouth, pharynx and colorectal cancers. But, permanent consumption of fresh fruits and vegetables without peels, because peels of fruits and vegetables may encourage the over growth of normal flora in the intestine and may cause abdomen disorders. Also, eating cooked vegetables, whole grains, healthy fat containing foods such as avocado, olive oil and nuts may prevent the harm of pancreas, stomach, liver, mouth, pharynx and colorectal cancers.

Further research needed for improving cancer awareness and promoting early detection to minimize the risk of pancreas, stomach, liver, mouth, pharynx and colorectal cancers. Our finding suggests that the lack of knowledge about food related cancer is an important factor affect cancer incidence in Libya, thus there is a need for public educational and nutritional programs about cancer and diet, especially for less educated people.

Acknowledgement

The author acknowledges the Department of Oncology at the Benghazi Medical Center, Tripoli Medical Center, and National Cancer Institute in Misurata for providing the research facilities. Also, we acknowledge the staff in Al Shefa clinic and Al Shema Clinic for their assistance. Finally, we thank Asia Almabruk, Huda Eljunuti, Fatma Almalky, Hania alghzery and Halema Alagab for their attempts in collecting cancer data.

References

1. Abusaa, A. (2006). Sabratha Cancer Registry: first annual report: population based cancer registry. African. Oncology Institute, Sabratha, Libya, p 1-60.

2. ASCO. (2015). Cancer. Net: diet and nutrition. Available from <http://www.cancer.net/navigating-cancer-care/prevention-and-healthy-living/diet-and-nutrition>. Assessed on: Feb 2, 2018.
3. Better Health Chanel. (2014). Fact sheet: cancer and food. Deakin University.
http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Cancer_and_food. Accessed on: Jan 5, 2018.
4. Bodalal Z, Bendaraf R. (2014). Colorectal carcinoma in a Southern Mediterranean country: The Libyan scenario. *World J Gastrointest Oncol.*, 6: 98 – 103.
5. Campbell M, Media D. (2015). Healthy eating: 5 main food groups. Available from <http://healthyeating.sfgate.com/5-main-food-groups-3976.html>. Accessed on: 7 Jan, 2018.
6. Canadian Brest Cancer Foundation. (2013). Breast cancer in Canada. Available from <http://www.cbcf.org/Pages/default.aspx>. Accessed on: Mar 2, 2018.
7. Dyer, D. (2014). Can food reduce your risk of breast cancer?. Available from http://www.breastcancer.org/tips/nutrition/reduce_risk/reduce_risk. Accessed on: Jan10, 2018.
8. El Mistiri, M, Pirani, M, El Sahli, N, El Mangoush, M, Attia, A, et al. (2013). Cancer profile in Eastern Libya: incidence and mortality in the year 2004, *Annals. Oncol.*, 21: 1924 – 1926.
9. El Mistiri M, Pirani M, El Sahli N, El Mangoush M, Attia A, et al. (2010). Cancer profile in Eastern Libya: incidence and mortality in the year 2004. *Annals of Oncology*, 21: 1924–1926.
10. El Mistiri M, Verdecchia A, Rashid I, El Sahli N, El Mangoush M, Federico M. (2007). Cancer incidence in eastern Libya: the first report from the Benghazi Cancer Registry, 2003. *Int J Cancer*, 120: 392 -397.
11. Ermiah, E, Abdalla, F, Buhmeida, A, Larbesh, E, Pyrhonen, S, Collan, Y. (2012). Diagnosis delay in Libyan female breast cancer. *Bio Med Central.*, 5: 2 – 8.
12. Ghalaita A A B, Shanbih FM H, Hussain M A, Rajan AV. (2014). Enhancing healthy lifestyle of UAE nationals in Dubai. *Discov.*, 25: 75-82.
13. Jaret P. (2015). Cancer Nutrition: The Food Cancer Connection. Available from:
http://www.eatingwell.com/nutrition_health/immunity/the_food_cancer_connection. Accessed on: Jan 1, 2018.
14. Kusumaneela B K, Santhi KV, Afnan SK, Krishna V P, Kusuma M. (2015). Effect of diet counseling on type 2 diabetes mellitus. *Intern J Sci Tech.*, 8: 112 – 118.
15. McCann, J. (2000). Gender differences in cancer that don't Make sense-or do they?. *JNCI J Natl Cancer Inst.*, 92: 1560 – 1562.

16. Pippin, J. (2014). Meat consumption and cancer risk. PCRM, USA. Available from <http://www.pcrm.org/health/cancer-resources/diet-cancer/facts/meat-consumption-and-cancer-risk>. Accessed on: Jan 17, 2018.
17. Philips, R. (1975). Role of life-style and dietary habits in risk of cancer among seventh-day Adventists, *Cancer Res*, 35: 3513 - 22.
18. Singh, R , Al-Sudani, O. (2001). Cancer mortality in Benghazi, Libyan Arab Jamahiriya, 1991-96. *East. Mediter. Health J*, 7: 255-273.
19. Tantamango-Bartley, Y, Jaceldo-Siegl, K, Fan, J, Fraser, G. (2013). Vegetarian diets and the incidence of cancer in a low-risk population. *Cancer Epidem. Biomark. Prev*; 22: 286-294.
20. Varmus, H. (2013). Overview of nutrition in cancer care. Available from <http://www.cancer.gov/cancertopics/pdq/supportivecare/nutrition/Patient/page1>. Accessed on : Jan 3, 2018.

The Role of the Physiotherapy in Treatment and Prevention of Sacroiliac Joint Dysfunction

**Sana I. Souliman, Abeer I. Suliman, Afaf A. Suliman, Zenaahameed,
Dalalomer**

Medical Technology, Tobruk University, Topruk, Libya.

Abstract

This study is investigate sacroiliac joint (SIJ) dysfunction to know how to prevention as it is said (Prevention is better than cure) so, have to know causes that increase SIJ pain, to protect and try to educate people against SIJ pain, in addition to study symptoms and treatment SIJ especially by physiotherapy. Also involve study concerned with the assessment cases observed in the city of Tobruk. Sacroiliac joint dysfunction has similar signs and symptoms with low back pain that make physiotherapist and Ortopedics to confuse between them in the diagnosis, sometime Sacroiliac joint dysfunction is diagnosing as low back pain, especially in Topruk because has not the development of technology and devices examination are like therapeutic intra-articular or periticular injection or nerve blocks can be used. For these reasons just one case had been found.

Keywords: SIJ; dysfunction; Topruk; Prevention; Physiotherapy (keywords)

Abbreviations SIJ: Sacroiliac joint dysfunction LBP:Low back pain

P1: patient 1

TENS :Transcutaneous nerve stimulators

INTRODUCTION

The human back is a highly complicated structure. The vertebrae, intervertebral discs, apophyseal joints, sacroiliac joints, the bones of the pelvis, the ribs, the spinal cord and its membranes, spinal nerves with their branches, the muscles and their aponeuroses and tendons, fascias, blood vessels, connective tissue, subcutaneous tissue, ligaments, and the skin are the principal components of this part of the human body. The human body has two sacroiliac joints, one on the left and one on the right that often match each other but are highly variable from person to person (Vleeming, A., et al 2012).

The sacroiliac joint within these structures and it surrounded with important structure, when SIJ have problem may cause pain for it or near structures. (Solonen, K. A. 1957).

The sacroiliac joint could be a possible source of pain, but the frequency of its responsibility is not really know. they were used sacroiliac anesthetic blocks, the gold standard for diagnosis, to determine this frequency the anaesthetics was a relief pain (Maigne et al., 2005). The sacroiliac (SI) joint dysfunction lead to low back pain (Fortin, J. D. 1993).

1.1.Symptoms

The most symptoms common is a pain bottom of the back and often confuse between them and low back pain, they are two difference cases but have the same symptoms. The pelvic girdle pain and may extend to thighs and legs until foets (Steven G. Reviewed 2017). Pain with long sitting or standing (sturesson, B; et al 1989; sturesson, et al 2000).

1.2. Causes and Prevention

1. Women are more susceptible due to the structural difference of the pelvic area in women because the fact that God has the advantage of pregnancy for men, also because the weakness of the bone structure between them and the disorder of hormones after menopause may increase exposure to osteoporosis in women (Cohen, S. P. 2018).
2. Accident: As a result of sudden fall or impact, may cause damage or breakage in the joint area and carry heavy objects suddenly (Jenny Hills ,.web)
3. Athletes: It is the most widespread among athletes due to excessive physical activity and some sports that has suddenly motion may cause stress of the muscles or joint as weightlifting (Fortin, J. D. 1993).
4. Work place: For example, the teacher knows that the teacher has more time in the standing position, which lead to the pressure on this joint, also the student is always in the sitting position, this causes pressure on the joint, especially if it is position of sitting is wrong or the seat is not suitable and medically all these reasons increase the likelihood of infection (Jenny Hills. 2017).

To prevention should avoid all above with the exercise periodically to strengthen the muscles of the abdomen, low back, pelvis, legs and follow a healthy diet and a healthy lifestyle (Douglas I. Allen, DO ,web).

1.3.Treatment

Medication: Analgesics, anti inflammatory and surgery but it is very rare (Giles, L. 2009; Douglas I. Allen, DO ,web). Physiotherapy: bed rest is very important in acute phase. Exercisetheraby to relief or less sacroiliac joint pain, there some

exercises can be very helpful (Jenny Hills. 2017), but have to do with physiotherapist, the patients can't do of his opinion. Electrotherapy by transcutaneous nerve stimulators (TENS): for the relief of chronic pain. Traction is effective in separating the vertebrae which may be necessary to relieve pressure on a disc(Dontigny, R. L. 1979) .Massage for low back by oil especially almond oil can help to relife pain(Jenny Hills. 2017).

2. MATERIALS AND METHODS

In Tobruk, and all patients that need physiotherapy were on the register in Medical Tobrukcentre. It provides daily care, including medications supply, assessment of pain relief, recovery muscles, rehabilitation, and advice about managing his problem and deal with it to improve or treat his problem. Services include exercise therapy, electrotherapy, hot therapy, ice therapy and other). However, this centre is has poor technology.

This study was carried out during the period between January and April 2018. In this research one case has been found in the Tobruk Medical Centre and record the physical assessment as show in a Table (1). And diagnosis by manual examination and radiology (X-ray and CT scan) as Figure (1) and (2). The patient 's therapeutic program was medication (Mobital / İndomethacin / Thiomed) Physical Therapy was Exercisetherapy by strengthen and stretching muscles 10 minutes / 3 times in week.Ultrasound therapy 10 minutes / 3 times in week. Electrothrapy by Transcutaneous Nerve Stimulators (TENS) 10 minutes / 3 times in week.



Figure (1) CT scan.



Figure (2) X-ray.

3. RESULTS AND DISCUSSION

In this research was study about sacroiliac joint dysfunction according to causes, symptoms, prevention and treatment or relief pain. In the Tobruk Medical Centre found only one case (P1) as in a Table (1) has sacroiliac joint dysfunction.

P1 has pain in the muscles of the lower limbs with his activity, he has injury sudden holding of heavy objects, he feels worse when sitting position for long time, he is student and he feel better after physiotherapy by (Exercise, Ultrasound Therapy And Tens) for 6 Weeks in Tobruk medical centre with Medication by (Mobital / Indomethacine /Thiomed

In this studies have noted the sacroiliac joint dysfunction patient has symptom are similar to low back pain for this reason, difficult to diagnosis and find defferent between them, sacroiliac joint dysfunction are primary source for low back pain because all structures of back for examle muscles, nerves, ligaments and other are affacted with sacroiliac joint if it has any proplem vice versa (Fortin, J. D., 1993). For this reasons are record in Tobruk only one case a (P1) as Scroiliac joint dysfunction. Also the SIJs' primary responsibility is to transfer the weight of the upper body to the lower extremities as seen with a P1in Table (1) when he sitting for long time lead to increase pain.

Most common causes of SIJs pain have noted with heavy weight lifting is like pregnant, obesity and athletes as with cobducted study Fortin, J. D., (1993) and (Jenny Hills. 2017)that agreement with this study where p1 injured as result to sudden holding of heavy objects. The Sacroiliac joint pain do not combine with aga, it can infects young and old age for example what noted with a P1 in a Table (1) where was 19 years ago.

The sacroiliac joint dysfunction are most common in women more than man because women have a lot of difference in pelvic girdle region as result for pregnancy in female as in conducted study for Cohen, S. P. (2018).

The P1 in a Table (1) have noted improving with physiotherapy, but physiotherapy that involve exercise should be do with physiotherapist because some exercises is very denger may increase pain or lead to complication. The exercsises is very useful to strength muscles and prevent contraction to protect (Dontigny, R. L. 1979). In addition to use some medication to relif pain as Analgesics as with a P1 in a Table (1) it help him to reduce pain.

Maigne et al., (2005) conducted studies were about the sacroiliac joint could be a possible source of pain and the anesthetic was a relief pain andGiles, L. (2009) studies were about analgesics and anti-inflammmatory to relife pain. This study is agreement with them where a P1 has symptoms are similar to low back pain or lead to low back pain and analgesics are relief pain.

This study revealed many of facts are agreement or defferent with other studies. As mentioned in last part, in the Tobruk Medical Centre record only one case (P1) and other cases record as low back pain as result the samilarsymptomes between the sacroliac joint dysfunction and low back pain where this result was agreement with other studies.

Table 3.1. *phycial assessment of patient.*

Name : P1/male	Date :10/4/2018	Age: 19
CHIEF COMPLAINT: What orthopaedic problem brings you here today? Pain in the muscles of the lower limbs which interferes with his activity		
HISTORY OF PRESENT INJURY: How did it happen? Sudden holding of heavy objects		
WORK RELATED? No		
HAS IT GOTTEN WORSE RECENTLY? No		
WHAT MAKES IT BETTER Analgesics		
WHAT MAKES IT WORSE? Sitting position for long time		
ANY PREVIOUS TREATMENTS? Medication(mobitil/ indomethacine/thiomed) Physical therapy IN TMC (exercise, Ultrasound therapy and TENS) for 6 weeks .		
PAST MEDICAL HISTORY/ILLNESSES: Any serious medical problems? (Diabetes, rheumatoid arthritis, high blood pressure, heart attacks, infections, etc.) NO history of chronic illness		
SURGERIES: (Previous surgery? When & What type of surgery?) appendectomy		
MEDICATIONS: List all medications you take routinely. Name of medicine and strength. How many times a day. NO		
ALLERGIES: Are you allergic to any medications, foods, prep solutions, or materials? NO		
FAMILY HISTORY: Any medical problems in your family, Mother? Or Father? NO		
SOCIAL HISTORY: What kind of work do you do? Student		
DO YOU PARTICIPATE IN ANY RECREATIONAL ACTIVITIES? ANY OTHER INTERESTS? NO		
DO YOU SMOKE TOBACCO? If so, how much? NO		
DO YOU DRINK ALCOHOL? If so, how much? NO		

CONCLUSION

The sacroilac joint dysfunction symptom are similar to low back pain as result one case in tobruk have record.

This research can conclude with this advice:

- Should avoid any exercises or sports that cause extra pressure on the sacroiliac joints or need heavy weight lifting.
- Should be careful about nutrition and avoid obesity.
- Women should do smooth exercise during pregnancy to avoid extra pressure on SJ
- Worker should avoid sitting in uncomfortable position for long time or use uncomfortable chair.

ACKNOWLEDGEMENT

I would like to thank everyone who helped in this paper especially patient that had SIJ dysfunction, my students Dalaomer and Zenaahameed, Tobruk Medical Centre and Tobruk University.

ETHICS

Authors should address any ethical issues that may arise after the publication of this manuscript.

References

1. Cohen, S. P. (2018). Sacroiliac joint pain. *In Essentials of Pain Medicine* (Fourth Edition) (pp. 601-6)
2. Dontigny, R. L. (1979). Dysfunction of the Sacroiliac Joint and Its Treatment. *Journal of Orthopaedic & Sports Physical Therapy*, 1(1), 23-35. doi:10.2519/jospt.1979.1.1.23
3. Douglas I. Allen, DO Sacroiliac joint dysfunction prevention and treatment. (n.d.) Retrieved from <https://www.nypainmedicine.com/blog/sacroiliac-joint-dysfunction-part-2-prevention-and-treatment>
4. Fortin, J. D. (1993). Sacroiliac Joint Dysfunction. *Journal of back and musculoskeletal rehabilitation*, 3(3), 31-43.
5. Giles, L. (2009) "Sacroiliac Joint Dysfunction." 100 Challenging Spinal Pain Syndrome Cases, , 33-35. doi:10.1016/b978-0-443-06716-7.00007-4.
6. Jenny Hills .,(2017) Sacrum Pain (Sacroiliac Joint Pain): The Most Effective Home Treatments, from <http://www.healthyandnaturalworld.com/sacrum-pain..>
7. Maigne, J. Y., & Planchon, C. A. (2005). Sacroiliac joint pain after lumbar fusion. A study with anesthetic blocks. *European Spine Journal*, 14(7), 654-658.
8. Pellis, S. M., Field, E. F., Smith, L. K., & Pellis, V. C. (1997). Multiple differences in the play fighting of male and female rats. Implications for the causes and functions of play. *Neuroscience & Biobehavioral Reviews*, 21(1), 105-120.

9. Solonen, K. A. (1957). The sacroiliac joint in the light of anatomical, roentgenological and clinical studies. *Acta Orthopaedica Scandinavica*, 28(sup27), 3-127.
10. Stureson, B; Uden, A; Vleeming, A (2000). "A radiostereometric analysis of movements of the sacroiliac joints during the standing hip flexion test". *Spine*. 25 (3): 364–8.
12. stureson, B; Selvik, G; Udén, A (1989). "Movements of the sacroiliac joints. A roentgen stereophotogrammetric analysis". *Spine*. 14 (2): 162–5.
13. Steven G. Reviewed (2017) Sacroiliac joint dysfunction. Retrieved from <https://www.spine-health.com/conditions/sacroiliac-joint-dysfunction/sacroiliac-joint-dysfunction-si-joint-pain>.
14. Vleeming, A., Schuenke, . D., Masi, A. T., Carreiro, J. E., Danneels, L., & Willard, F. H. (2012). The sacroiliac joint: an overview of its anatomy, function and potential clinical implications. *Journal of anatomy*, 221(6), 537-567.

الحركي

سناء عيسى سليمان*, عبير عيسى سليمان، عفاف عيسى سليمان, زينة حميد، دلال عمر

التقنية الطبية جامعة طبرق، طبرق، ليبيا

المستخلص: تقوم هذه الدراسة بالتحقق من الخلل الوظيفي لمفصل العجزي الحركي لمعرفة كيفية الوقاية كما يُقال (الوقاية خير من العلاج) لذلك يجب أن تعرف الأسباب التي تزيد من آلام المفصل العجزي الحركي ، لحماية ومحاولة تثقيف الناس ضد آلام المفصل العجزي الحركي أيضا دراسة الأعراض وعلاج المفصل العجزي الحركي خصوصا من خلال العلاج الطبيعي. أيضا هذه الدراسة تعنى بتقييم الحالات التي لوحظت في مدينة طبرق. خلل المفصل العجزي الحرقفي وألم أسفل الظهر لهم نفس الأعراض والعلامات وهذا مايجعل أخصائي العظام والمفاصل في الخلط بينهم في التشخيص وأحيانا خلل المفصل العجزي الحرقفي يشخص كما ألم أسفل الظهر , خاصة في مدينة طبرق لأنها لاتملك التكنولوجيا وأجهزة الفحص المتطورة مثل التشخيصية والعلاجية داخل المفصل أو حول المفصل أو كتل الأعصاب التي يمكن أن تستخدم.

الكلمات المفتاحية: الخلل الوظيفي لمفصل العجزي الحركي, طبرق, الوقاية, العلاج الطبيعي.