

DETERMINANTS OF BACKACHE- A CASE-CONTROL STUDY AT RIYADH, SAUDI ARABIAVinodkumar Balakrishna Pillai Padmakshamma¹, Devi Gayathri Indirabhaamma²¹Additional Professor, Department of Orthopaedics, Government Medical College, Thrissur, Kerala.²Managing Partner and Gynaecologist, Anchal Hospital for Mother and Child, Anchal, Kollam, Kerala.**ABSTRACT****BACKGROUND**

Low back pain is the second most common symptom related reason for clinician visits in the United States. Up to 84 percent of adults have low back pain at some time in their lives. Low back pain poses an economic burden to society mainly in terms of the large number of work days lost by a small percentage of patients who develop chronic back pain. Lifestyle diseases are defined as those problems that evolve due to changes in lifestyle. The contributing factors are bad food habits, physical inactivity, wrong body postures, habits and personality including sleep and disturbed biological clock. Spinal disorders contribute to loss more than 20 million of productive life years. Wrong sitting and standing posture while working gives stress to backbone and leads to chronic backache. Regularly spending a lot of time in front of computer may also lead to muscular pain of neck and back. People who lift heavy weight are predisposed to disc diseases and sciatica. In this background this study was conducted to

1. Determine the obesity as a risk factor for back ache
2. Find out other factors that contribute to backache.

MATERIALS AND METHODS

Study Design- Case-Control Study.

Study Period- April 1, 2014, to March 31, 2015.

Study Site- KMCR, Al-Malaz, Riyadh, KSA.

All persons coming to Orthopaedics OP during the study period with back pain both males and females for the first time constituted the cases and a person coming to orthopaedics OP without backache

Exclusion criteria- Acute trauma with RTA and fall.

Data was collected by self-administered structured questionnaire and personal examination and investigation evaluation.

Software support- Excel, SPSS

RESULTS

1) BMI with OR (odds ratio) 4.85(p=0.000, 95%; CI 2.30-10.19); 2) Stress-OR=2.82(p=0.002, 95%; CI 1.45-5.50); 3) Personality-OR=2.94 (p=0.003, 95%; CI 1.45-5.96).

The other factors tested having OR more than one were-1) Age, OR=1.15; 2) Exercises, OR=1.24; 3) Existences of co-morbid conditions, OR=1.21; 4) Smoking, OR=2.02; but shows no statistically significant difference.

CONCLUSION

People with BMI more than or equal to 30 has 5.57 times more chance to contract backache. Similarly, stressful persons had 3 times and having type A personality had 4times higher chance to get back pain and its sequelae. People having disturbed sleep was also have 3 times higher risk. People having regular exercise were protected from backache. The other risk factors were age, gender, co-morbid conditions, but this study could not prove a statistically significant difference. The most common spinal disorder anatomically was thoracolumbar spine disorders (39.4%).

KEYWORDS

Backache, BMI, Case-Control Study, Obesity, Stress.

HOW TO CITE THIS ARTICLE: Padmakshamma VBP, Indirabhaamma DG. Determinants of backache- A case-control study at Riyadh, Saudi Arabia. J. Evid. Based Med. Healthc. 2017; 4(32), 1865-1871. DOI: 10.18410/jebmh/2017/364

BACKGROUND

A comprehensive approach is needed to combat the

*Financial or Other, Competing Interest: None.**Submission 27-03-2017, Peer Review 02-04-2017,**Acceptance 12-04-2017, Published 18-04-2017.**Corresponding Author:**Dr. Vinodkumar Balakrishna Pillai Padmakshamma,**Additional Professor, Department of Orthopaedics,**Government Medical College, Thrissur, Kerala.**E-mail: bpinodkumar@gmail.com**DOI: 10.18410/jebmh/2017/364*

increasing prevalence of these lifestyle diseases. Our health system, must assume the responsibility of not only treating people, but also advising and guiding them about how to deal with and prevent some of these medical conditions.

Nearly, 60% of the deaths in worldwide are contributed by noncommunicable diseases. It affects both male and females equally and is more prevalent in urban and developed countries rather than rural and developing nations. In India, 10% of adults have hypertension, 4% have diabetes mellitus, 3/1,000 suffer from stroke. Low back pain is the second most common symptom-related

reason for clinician visits in the United States. Up to 84 percent of adults have low back pain at some time in their lives. Low back pain poses an economic burden to society, mainly in terms of the large number of work days lost by a small percentage of patients who develop chronic back pain.¹

Lifestyle diseases are defined as those problems that evolve due to changes in lifestyle. The contributing factors are bad food habits, physical inactivity, wrong body postures, habits and personality including sleep and disturbed biological clock. Spinal disorders contribute to loss more than 20 million of productive life years.

Wrong sitting and standing posture while working stresses the backbone and leads to chronic backache.² Spending a lot of time in front of computer may lead to muscular pain of neck and back. The neck muscles at front may grow short and tighten while muscles at the back grow longer, larger and may become weak, which leads to stiffness of neck along with headache, fatigue and exhaustion. Bumpy journey shakes our body too much injuring vertebrae with time. It may cause spinal cord injury and leads to spondylosis. People who lift heavy weights are predisposed to disc diseases and sciatica.^{3,4}

Objectives of the Study

Primary-

1. To determine the obesity as a risk factor for back ache.
2. To find out other factors that contributes to backache.

Cases

Inclusion Criteria- All persons coming to Orthopaedics OPD during the study period with back pain both males and females for the first time.

Exclusion criteria- Acute trauma with RTA and fall.

Control

A person coming to orthopaedics OPD without backache.

MATERIALS AND METHODS

Research Question- Is obesity measured in terms of BMI (calculated by weight in kilograms and height in centimetres converted into M²) more than 30 is a risk factor to get back pain in people seeking treatment in a polyclinic in Riyadh, Saudi Arabia?

Study Design- Case-control study.

Study Period- April 1, 2014, to March 31, 2015.

Study Site-KMCR, Al-Malaz, Riyadh, KSA.

Study Population- Those people seeking treatment in Orthopaedics OP of a private polyclinic, Riyadh, KSA, with back pain excluding acute accident cases.

Reference Population- Those living in Saudi Arabia (both Saudis' and expatriate; males and females).

Sample Size- Sample size is calculated based on the assed odds ratio=4, power of the study 80%, confidence limit 95%, alpha error of 0.05, case-control ratio 1:1.

Cases- Controls; 98:98=196.

Instrument- Structured self-administered closed questionnaire and partial open-ended questionnaire.

Study Variables-

1. Age- It is divide into 3 groups- 1) Less than 40; 2)40-60yrs.; 3) More than 60.
2. Gender- 1) Male; 2) Female.
3. Body Mass Index-Calculated by the software that is automatically generated establishing the validity of the instrument of measurement. It is grouped into 3 groups- 1) Less or equal to 24.9-normal; 2) 25-29.9-overweight; 3) More or equal to 30- obese.
4. Occupation- Is classified into skilled and unskilled and job into manual labourer, office work and people who needs constant travelling including driver.
5. People are compared based on the nationality. Indians are grouped into Keralites and others based on the assumption that the major patient group is from Kerala.1) Saudi; 2) Kerala; 3) Rest of India;4) Rest of Asia; 5) Africa, if expatriates "years lived in Saudi" was recorded.
6. Education-Studied-1) Less than or equal to 12TH standard; 2) More than 12TH; 3) Professionals.
7. The personal factors- i) Stress-a) Present; b) Not present (as per the patient's statement). ii) Personality-a) High-risk personality; b) Low-risk group. iii) Sleepinghours whether they get-a) Goodsleep; b) Disturbed sleep. iv) Duty hours-a) Day; b) Night; c) Both day and night. v) Food habits whether taking homemade food or totally from hotels or both from home and hotel.
8. Character of seeking health services- Are they regularly seek services or taking self-treatment or occasionally taking services.
9. Methods adopted-Indigenous, modern medicine or mixed.
10. Drug habits- Taking regular or irregular treatment.
11. Smoking- Yes (regular use) or not a habit.
12. Adherence to treatment- Present or not.
13. Status- Whether insured or not.
14. Whether doing exercises regularly or irregularly or not doing exercises or ignorant regarding the methods and use of exercises.
15. Co-morbid conditions like diabetic mellitus, hypertension or cardiac disease, previous obesity, thyroid diseases, liver disease, uric acid, collagen vascular disease and any other conditions.

Outcome Variable-

1. Spinal disorder (yes/no).
2. Classification of spinal disorders.
 - a) Disc diseases.
 - b) Spondylosis.
 - c) Structural abnormalities.
 - d) Mixed.

Data Analysis- Data is collected by self-administered structured questionnaire and personal examination and investigation evaluation.

Software support-Excel, SPSS.

RESULTS

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|------------|--------------|---------------|--------------------|
| Saudi | 29 | 13.9 | 13.9 | 13.9 |
| Kerala | 90 | 43.3 | 43.3 | 57.2 |
| Other India | 37 | 17.8 | 17.8 | 75.0 |
| Other Asia | 44 | 21.2 | 21.2 | 96.2 |
| Others | 8 | 3.8 | 3.8 | 100.0 |
| Total | 208 | 100.0 | 100.0 | |

Table 1. Nationality of Patients

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|------------|--------------|---------------|--------------------|
| <40 | 83 | 39.9 | 39.9 | 39.9 |
| 40-60 | 112 | 53.8 | 53.8 | 93.8 |
| >60 | 13 | 6.3 | 6.3 | 100.0 |
| Total | 208 | 100.0 | 100.0 | |

Table 2. Age (Years)

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|------------|--------------|---------------|--------------------|
| Male | 142 | 68.3 | 68.3 | 68.3 |
| Female | 66 | 31.7 | 31.7 | 100.0 |
| Total | 208 | 100.0 | 100.0 | |

Table 3. Gender

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|------------|--------------|---------------|--------------------|
| <24.9 | 38 | 18.3 | 18.3 | 18.3 |
| 25-29.9 | 105 | 50.5 | 50.5 | 68.8 |
| >=30 | 65 | 31.3 | 31.3 | 100.0 |
| Total | 208 | 100.0 | 100.0 | |

Table 4. BMIGP

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|------------|--------------|---------------|--------------------|
| >=30 | 74 | 35.6 | 35.6 | 35.6 |
| <30 | 134 | 64.4 | 64.4 | 100.0 |
| Total | 208 | 100.0 | 100.0 | |

Table 5. BMI->=30 as Group-1

| | Frequency | Percentage | Cumulative Percent |
|--------------|------------|--------------|--------------------|
| Regular | 48 | 23.1 | 23.1 |
| Irregular | 115 | 55.3 | 78.4 |
| No | 35 | 16.8 | 95.2 |
| Ignorant | 10 | 4.8 | 100.0 |
| Total | 208 | 100.0 | |

Table 6. Exercises Behaviour of Patients

Co-Morbid Conditions

| | Frequency | Percentage | Valid Percent | Cumulative Percent |
|--------------|------------|--------------|---------------|--------------------|
| Present | 67 | 32.2 | 32.2 | 32.2 |
| Absent | 141 | 67.8 | 67.8 | 100.0 |
| Total | 208 | 100.0 | 100.0 | |

Table 7. Comorbid Conditions

| | Frequency | Percent | Cumulative Percent |
|--------------------|------------|--------------|--------------------|
| Disc | 13 | 12.5 | 12.5 |
| Spondylosis | 9 | 8.6 | 21.1 |
| Structural problem | 54 | 51.9 | 73 |
| Mixed | 28 | 26.9 | 100 |
| Total | 104 | 100.0 | |

Table 8. Pathological Causes of Back Pain

| | Weight | BMI |
|---------|-------------------|----------|
| Mean | 77.060 | 28.47702 |
| Median | 76.250 | 28.00000 |
| Mode | 70.0 ^a | 25.000 |
| Minimum | 49.4 | 18.000 |
| Maximum | 152.0 | 53.000 |

Table 9. Central Tendency of Weight and BMI

| | | Case Control | | Total |
|--------------|----------|--------------|------------|------------|
| | | 1.0 | 2.0 | |
| Age | <40 | 37 | 46 | 83 |
| | 40-60 | 62 | 50 | 112 |
| | >60 yrs. | 5 | 8 | 13 |
| Total | | 104 | 104 | 208 |

Table 10. Age* Spinal Disorder (Case) No Spinal Disorder (Control)Cross-Tabulation

| | | Case Control | | Total |
|--------------|--------|--------------|------------|------------|
| | | 1.0 | 2.0 | |
| Gender | Male | 66 | 76 | 142 |
| | Female | 38 | 28 | 66 |
| Total | | 104 | 104 | 208 |

Table 11. Gender * Case-Control Cross-Tabulation

| | | Case Control | | Total |
|--------------|---------|--------------|------------|------------|
| | | 1.0 | 2.0 | |
| BMIGP | <24.9 | 10 | 28 | 38 |
| | 25-29.9 | 44 | 62 | 106 |
| | >30 | 50 | 14 | 63 |
| Total | | 104 | 104 | 208 |

Table 12. BMIGP * Case-Control Cross Tabulation

| | | Case Control | | Total |
|--------------|------|--------------|------------|------------|
| | | 1.0 | 2.0 | |
| BMI301 | >=30 | 56 | 18 | 74 |
| | <30 | 48 | 86 | 134 |
| Total | | 104 | 104 | 208 |

Table 13. BMI More than or Equal to 30 taken as One Group- Case Control Cross Tabulation

| | | Case Control | | Total |
|--------------|-------------------|--------------|------------|------------|
| | | 1.0 | 2.0 | |
| National | Saudi | 17 | 12 | 29 |
| | Kerala | 40 | 50 | 90 |
| | Other India | 21 | 16 | 37 |
| | Other Asia | 20 | 24 | 44 |
| | Africa and others | 6 | 2 | 8 |
| Total | | 104 | 104 | 208 |

Table 14. National * Case Control Cross Tabulation

| | | Case Control | | Total |
|--------------------------------|-----|--------------|------------|------------|
| | | 1.0 | 2.0 | |
| Nationality Kerala vs. rest | 1.0 | 41 | 49 | 90 |
| | 2.0 | 63 | 55 | 118 |
| Total | | 104 | 104 | 208 |

Table 14a. Keralite as One Group *Case Control Cross Tabulation

| | | Case Control | | Total |
|--------------|---------|--------------|------------|------------|
| | | 1.0 | 2.0 | |
| Comorbid | Present | 37 | 30 | 67 |
| | Absent | 67 | 74 | 141 |
| Total | | 104 | 104 | 208 |

Table 15. Comorbid * Case Control Cross Tabulation

| | | Occupation | | |
|--------------|--|------------|------------|------------|
| | | Skilled | Unskilled | Total |
| Case | | 48 | 56 | 104 |
| Control | | 52 | 52 | 104 |
| Total | | 100 | 108 | 208 |

Table 16. Case Control * Occupation Cross Tabulation

| | | Job | | | | Total |
|--------------|-----|-----------------|-------------|-------------------|----------|------------|
| | | Manual Labourer | Office Work | Travelling/Driver | No job | |
| Case Control | 1.0 | 24 | 57 | 23 | 0 | 104 |
| | 2.0 | 36 | 53 | 14 | 1 | 104 |
| Total | | 60 | 110 | 37 | 1 | 208 |

Table 17. Case Control * Job Cross Tabulation

| | | Stress | | Total |
|--------------|-----|------------|-----------|------------|
| | | Present | Absent | |
| Case Control | 1.0 | 69 | 35 | 104 |
| | 2.0 | 41 | 63 | 104 |
| Total | | 110 | 98 | 208 |

Table 18. Case Control * Stress Cross Tabulation

| | | Duty | | | Total |
|--------------|-----|-----------|------------|---------------|------------|
| | | Day | Night | Day and Night | |
| Case Control | 1.0 | 24 | 64 | 16 | 104 |
| | 2.0 | 42 | 43 | 19 | 104 |
| Total | | 66 | 107 | 35 | 208 |

Table 21. Case Control * Duty Cross Tabulation

| | | Personality | | Total |
|--------------|-----|-------------|------------|------------|
| | | A | B | |
| Case Control | 1.0 | 62 | 42 | 104 |
| | 2.0 | 28 | 76 | 104 |
| Total | | 90 | 118 | 208 |

Table 19. Case control * Personality Cross Tabulation

| | | Smoking | | Total |
|--------------|-----|------------|------------|------------|
| | | Yes | No | |
| Case Control | 1.0 | 58 | 46 | 104 |
| | 2.0 | 45 | 59 | 104 |
| Total | | 103 | 105 | 208 |

Table 22. Case Control * Smoking Cross Tabulation

| | | Sleep | | Total |
|--------------|-----|------------|-----------|------------|
| | | Normal | Disturbed | |
| Case Control | 1.0 | 42 | 62 | 104 |
| | 2.0 | 70 | 34 | 104 |
| Total | | 112 | 96 | 208 |

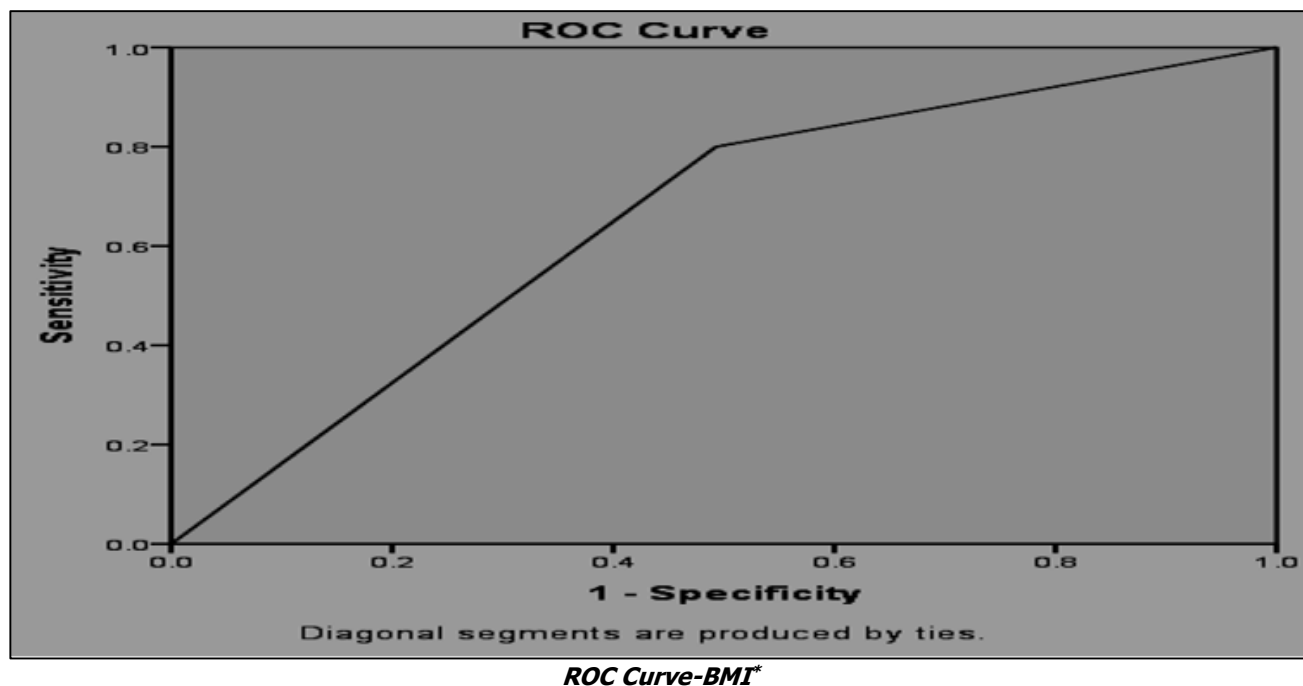
Table 20. Case Control * Sleep Cross Tabulation

| | | Exercises | | | | Total |
|--------------|-----|-----------|------------|-------------|-----------|------------|
| | | Regular | Irregular | No Exercise | Ignorant | |
| Case Control | 1.0 | 15 | 70 | 15 | 4 | 104 |
| | 2.0 | 33 | 45 | 20 | 6 | 104 |
| Total | | 48 | 115 | 35 | 10 | 208 |

Table 23. Case Control * Exercises Cross Tabulation

| Variables in the Equation | | | | | | | | |
|---------------------------|--------|-------|--------|----|-------|---------|----------------------|--------|
| | B | S.E. | Wald | df | Sig. | Exp (B) | 95% C.I. for Exp (B) | |
| | | | | | | | Lower | Upper |
| Age | 0.140 | 0.317 | 0.196 | 1 | 0.658 | 1.151 | 0.618 | 2.143 |
| Gender | -0.571 | 0.457 | 1.563 | 1 | 0.211 | 0.565 | 0.231 | 1.383 |
| Bmi301 | 1.578 | 0.379 | 17.321 | 1 | 0.000 | 4.845 | 2.304 | 10.187 |
| Stress | 1.037 | 0.341 | 9.240 | 1 | 0.002 | 2.821 | 1.445 | 5.504 |
| Personality | 1.079 | 0.360 | 8.983 | 1 | 0.003 | 2.942 | 1.453 | 5.958 |
| Job | -0.341 | 0.191 | 3.193 | 1 | 0.074 | 0.711 | 0.489 | 1.034 |
| Exercises | 0.218 | 0.237 | 0.848 | 1 | 0.357 | 1.244 | 0.782 | 1.979 |
| Comorbid | 0.189 | 0.373 | 0.256 | 1 | 0.613 | 1.208 | 0.581 | 2.509 |
| National | -0.038 | 0.151 | 0.062 | 1 | 0.803 | 0.963 | 0.717 | 1.294 |
| Smoking | 0.704 | 0.414 | 2.890 | 1 | 0.089 | 2.021 | 0.898 | 4.547 |
| Constant | -6.381 | 1.719 | 13.775 | 1 | 0.000 | 0.002 | | |

Table 24. Logistic Regression



*BMI-A continuous variable.

In this case-control study, a sample size of 208, (104 cases and 104 controls) results were analysed as follows.

Diagnosis

Anatomical diagnosis-

Thoracolumbar disorders (39.4%). This is mainly due to the faulty posture they have adopted at home, work place, etc. The cervical region (21.15%). These are very common in computer workers, professionals and also other people who are constantly using computer either as a part of their job or otherwise. Nearly, 30% have mixed disorders, i.e. both cervical and lumbar or thoracic and lumbar or cervical and lumbar or whole spine disorders like ankylosing spondylitis or DISH (diffuse idiopathic skeletal hyperostosis).

Pathological diagnosis

12.5% of the study group have pure intervertebral disc prolapse, 8.6% had degenerative spondylosis mainly due to ageing sequelae. 51.9% have back pain along with an old fracture not properly treated, scoliosis, facet arthropathy, spondylolisthesis and hyperostosis. 26.9% have mixed disease.

Risk factors

Age

In this study, people above 60 years were at 1.43 times riskier to get back pain, but it is not statistically significant ($p=0.2032$; 95%, CI; 0.8223-2.5082). Theoretically, as age advances, the degeneration of spine increases, but this result maybe because of the fact that increase in BMI rather than the age contribute more as a causative or independent risk factor.

Gender

Females were 1.56 times more affected ($p=0.1374$; 95%, CI; 0.87-2.82), no statistically significant difference.

BMI

People having BMI more than or equal to 30 were at 5.57 times higher risk to get low back pain ($p=0.0001$; 95%, CI; 3-10.55).

In this study, 18.3% has normal weight, 50.5% has overweight and 31.3% has obesity. Those had spinal disorders 50% of them have obesity and 44% are overweight demonstrating the significance of overweight as an independent risk factor. 10% with back pain maybe have pathological causes.

Others

Nationality- Keralites living in Saudi Arabia were not at a higher risk to get spinal disorder ($p=0.263$). Co-morbid conditions like diabetes, hypertension, liver diseases, kidney diseases, pre-existent obesity, other metabolic conditions like vitamin D3 deficiency are not independent risk factors to get spinal disorders ($p=0.2996$).

Occupation- Skilled worker/unskilled work ($p=0.5294$), or a manual labourer ($p=0.1416$) were not at risk, but people having long travel particularly drivers are at 2. Five times (95%, CI; 1.1-5.7) higher risk ($p=0.0357$) than others who took part in the study.

People having stress had 3 times higher risk to get back pain and its sequelae than their counterparts who have a relaxed mind. ($p=0.001$, 95%, 1.72-5.33). Similarly, type A personality people have 4 times higher risk than type B personality ($p=0.001$; 95%, CI; 2.23-7.2). People having disturbed sleep are also 3 times higher risk ($p=0.001$; 95%, CI; 1.72-5.35). People having night duty is 2.6 times riskier than those with day duty alone in their carrier

($p=0.0030$; 95%, CI; 1.4-4.9). Of these 3 factors, stress and sleep can be easily modified and the disadvantages of type A personality (rigidly organised persons) can also be overcome by regular meditations and exercises.

Even though not statistically significant, smoking-1.65($p=0.0722$; 95%, CI; 0.96-2.85) also contribute to back pain maybe due to the loss of immunity, loss of vascularity and chronic cough.

Exercises- People doing regular exercise were protected from development of back pain, ($p=0.0037$; 95%, CI; 0.2-0.7). 4.8% of people were ignorant about the benefits of exercises and 16.82% are not doing exercises even though they are aware of the benefits. We can target these people in health education programmes, so that to improve the health benefits.

Co-morbid conditions ($p=0.2996$)- 32% of total persons were having this. The major conditions were diabetes-10.5%, hypertension and cardiovascular problems-14.42%, gout-6.7%, other problems were liver diseases, kidney diseases and collagen vascular diseases. Two vitamin D3 deficiency cases were present in this study.

Follow Up After One Month

| | Number | Percentage |
|--------------|------------|------------|
| Improved | 80 | 77 |
| Not improved | 11 | 10.5 |
| Worsened | 13 | 12.5 |
| | 104 | 100 |

After Two Months

Of the 80; 7 had recurrence of back pain - it was cured in 7 days by nonsteroidal anti-inflammatory medications and ointments. One needed MRI to confirm the diagnosis. It was intervertebral disc prolapse alone at lumbar 4-5 disc space. 13 of the worsened needed 5-10 sessions of physiotherapy and injections to cure neuralgic pain along with the pain medications. Out of 13 who were worsened, 10 improved, 3 of them underwent weight reduction protocols and still continuing it. Schedules were done at their own home town. One returned to India for naturopathy-aided weight reduction. Regarding exercise programmes, no one was against the exercise protocols and those who had experienced difficulty initially are very well cooperative now.

To overcome the confounding effects of risk factors, logistic regression done. The factors found to be significantly contributing to back pain were-

1. BMI with OR (odds ratio) 4.85, ($p=0.000$; 95%, CI 2.30-10.19).
2. Stress- OR=2.82($p=0.002$; 95%, CI; 1.45-5.50).
3. Personality-OR=2.94($p=0.003$; 95%, CI; 1.45-5.96).

The other factors tested having OR more than one were-

1. Age; OR=1.15,
2. Exercises; OR=1.24,
3. Existences of co-morbid conditions; OR=1.21,
4. Smoking; OR=2.02, but shows no statistically significant difference.

ROC Curve

The receiver operating characteristic or ROC curve is a graphical plot that illustrates the performance of a binary classifier system as its discrimination threshold is varied. It is plotted against true positive rates and false positive rates at various thresholds settings. The ROC curve is thus the sensitivity as a function of fall out. In this study, cases and controls are assed with the BMI as a continuous variable; the cut of value that accommodate maximum number (67%) of patients is BMI ≥ 23 .

Discussion

The low back pain maybe simple or complex.⁵ Nine out of 10 people with simple back pain recover completely within six weeks. The spine is a complex structure composed of vertebrae, intervertebral discs, interconnecting joints, network of nerves, muscles, tendons and ligaments. Diseases of any of these elements can produce incapacitating pain.⁵ Major risk factors linked to develop low back pain are-⁶

1. Age- Older people are more susceptible than young adults/children.
2. Gender-Predominantly females.
3. A stressful job.
4. Pregnancy.
5. A sedentary lifestyle.
6. Anxiety.
7. Depression.
8. Obesity/overweight (more prone to develop type 2 diabetes also).
9. Smoking.
10. Strenuous physical activity or physical work not done properly.
11. Structural, metabolic, trauma-related sequel, inflammatory and neoplastic disorders.

Data analyzed from this study clearly showed

Obesity is found to be a risk factor in this study. BMI more than or equal to 30 was found to have 5.57 times more risk. People aged more than 60 years (1.43 times) and females (1.56 times) were also at increased risk to develop back ache. Long route drivers, people with stressful life style and those with Type A personality were the other group of people who were at increased risk to develop back ache.

Unlike other conditions, lifestyle diseases can be prevented by making simple changes in the daily routine that can change the quality of life such as- Balanced nutritional intake by avoiding fatty foods and unhealthy fast food. Following proper ergonomic principles in work places especially in computer work where prolonged sitting in the same posture maybe adopted. People can move around during continuous sitting like taking half-hour break or doing stretching exercises during every hour that will increase the blood circulation and take away the lactic acids that is accumulated in the muscles. This break is not a loss of productivity, but it increases the efficiency of the workers. Regular brisk walking, which helps by- a) Increasing blood circulation; b) Removal of lactic and uric

acids; c) Press tightening the joints and balancing the body fitness. Undergoing regular medical checkups and taking curative and preventive measures at appropriate time and finally by developing a positive mental health.

CONCLUSION

The conclusions of this study are as follows.

1. Obesity is found to be a risk factor in this study. BMI more than or equal to 30 is 5.57 times more risk ($p=0.0001$; 95%, CI; 3-10.55).
2. Age more than 60 years was associated with 1.43 times higher risk. ($p=0.2032$; 95%, CI; 0.8223-2.5082).
3. Females are 1.56 times more affected than males ($p=0.1374$; 95%, CI; 0.87-2.82).
4. Co-morbid conditions are not independent risk factors to get spinal disorders ($p=0.2996$).
5. The most common spinal disorder anatomically was thoracolumbar spine disorders (39.4%).
6. 12.5% of the study group had pure intervertebral disc prolapse, 51.9% had back pain along with an old fracture not properly treated, scoliosis, facetar arthropathy, spondylolisthesis and hyperostosis.
7. 26.9% of the patients had mixed disease.
8. Long route drivers are at 2.5 times higher risk than others (95%, CI; 1.1-5.7) ($p=0.0357$).
9. Stressful people had 3 times higher chance to get back pain and its sequelae ($p=0.001$; 95%, 1.72-5.33). Similarly, type A personality people have 4 times higher risk ($p=0.001$; 95%, CI; 2.23-7.2).
10. People having disturbed sleep have 3 times higher risk ($p=0.001$; 95%, CI; 1.72-5.35).
11. People having regular exercise is protected from getting back ache. ($p=0.0037$; 95%, CI; 0.2-0.7).

Limitations of the Study

1. To demonstrate the true influence of BMI- a long-term study having a time period of 2 to 5 years is needed, then only follow up of the patient is possible.

2. More sample size, which would have enabled a stratified analysis of lifestyle diseases.

Future Scope

American literature says that the females are at a higher risk regarding spinal diseases are concerned similar to our study; but literature from developing countries do not support this. So, a large sample-sized multicentric study can explore more into it.

The present study could not establish a statistical significance of influence of co-morbid conditions like diabetes, hypertension, vitamin D3 deficiency, etc. With spinal disorders. Vitamin D3 deficiency is a common problem in India as well.

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