

Study of Prevalence of Lower backache and its Risk Factors in Young Doctors as an Occupational Hazard

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Abstract

Background: Lower backache is one of the most common health problems seen worldwide in general population as well as among health care professionals. Working conditions for health care professionals have been considered major risk factor for the development of musculoskeletal disorders. Occupational hazards associated in medical community are least studied in the developing region.

AIM: The aim of study was to investigate the prevalence of lower backache and associated risk factors among residents of clinical and paraclinical departments.

Materials and Methodology: All the resident doctors of clinical and paraclinical branches of our institute were mailed self-reporting questionnaire, designed using google form to be filled over one-month time. Questionnaire was divided into five parts. Residents who fulfilled the inclusion and exclusion criteria and who gave consent were considered for the study. Each resident was informed about the aims, objectives, procedure.

Results: Of the total 100 resident doctors, 81 filled google form, 48(59.26%) were male and 33(40.74%) were female, 43(53.08%) complaint of pain and 38(46.1%) did not, of those who had pain 67% develop after joining residency and 32.55% had pain before joining residency. 68 (83.95%) residents exercised for variable duration, 51.47% out of them develop pain and 48.52% did not. 13(16.04%) Residents never exercised, of them, 61% develop pain and 38.46% did not. BMI was calculated and out of 81 residents, 4(4.93%) were underweight, 21(25.92%) were having normal BMI, 24(29.62%) were overweight, 32(39.50%) were obese. Out of 81 resident doctors, 56 worked for >8 hours and of them 32(55.17%) complaint of pain and 26 (44.82%) did not, whereas 25 residents worked for <8 hours, 11 (47.82%) developed pain and 12(42.85%) did not. Severity of lower backache was assessed by VAS score categorized as mild (1-3), moderate (4-7) and severe (8-10), 31% had mild pain and 24% had moderate pain.

Conclusion: Lower backache is common health problem faced by general population as well as health care professionals, which is one of reasons of decreased performance at work and one of cause for absenteeism from work. It is one of occupational hazard amongst health care professionals, if recognized early can be prevented from getting chronic condition affecting the functional ability of individual.

Keywords: Low Back Pain, Risk Factors, Doctors, Occupational Hazard.

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Introduction

Lower backache is one of the most common health problems seen worldwide [12] in general population [5] as well as amongst health care professionals. 70-80% of all people have backache at some time in their life. The annual prevalence of back pain ranges from 15-45% with point prevalence being 30% in developed countries [1]. In India, Prevalence of lower backache was found to be 42.4% per year and 22.8% per week in young adults [4] and prevalence of neck pain and backache in the medical community has ranged from 56% to 60% as estimated by various studies. [2][10][11]

Lower backache is major cause of disability-affecting the performance at work and general well-being [12] of health care professionals. Many risk factors related to age, sex, height, weight, physical demands of work place, psychological factors, occupational postures are identified but any single cause of onset of lower backache is still not clear and so it become difficult to diagnosis.

The cause of lower backache is a multifactorial [8] and it should be thoroughly evaluated and investigated. Any structure that involves the spine is a potential source of backache [8], like nerve root compression due to protruded disc, sudden jerky movements of spine, unusual weight bearing leads to muscular backache. Other factors include lack of exercise, nutritional deficiencies, excess weight and poor postures etc. So, it becomes important to differentiate between non occupational and occupational pain clinically [8].

Literature shows that working conditions for health care physicians have contributed to musculoskeletal disorder (MSD)[15]. Many factors related to work, amongst healthcare professionals lead to lower backache making it an occupational hazard, such as working in one posture for long hours: prolonged standing, prolonged sitting[15], working in awkward postures/uncomfortable postures for long hours, lifting heavy objects/shifting patients from statures to operation table, increased and variable demand of presence at work place and variable working hours in different specialties.

Lower backache if not given attention at early stage can become chronic [8]. Chronic lower

backache leads to functional limitations impacting psychologically and socially. Psychologically, it manifests as stress, irritability, poor concentration, insomnia, anxiety, and depression [3, 16]

Literature shows that many studies have been conducted, which focused on prevalence of lower backache and risk factors amongst nursing staff and various specialties in developed countries. Occupational hazards are associated with every occupation but least studied amongst health care professionals in the developing region. Few studies are on prevalence of lower backache and its risk factors among nursing staff [10] dentists [11] Ophthalmologists [2] etc.

This study was conducted to study the prevalence of lower backache and its associated risk factors among resident doctors of multiple specialties. It includes residents of clinical and paraclinical branches like Internal medicine, General Surgery, Orthopedics, Anesthesiology, Radiology, Pediatrics, Ophthalmology, Dermatology, Respiratory Medicine, E.N.T and Pathology.

Materials and Methods:

Study design: It is a survey, duration: One-time study.

Survey was conducted at L.N. Medical College, Bhopal, tertiary care center. In our study, resident doctors of different clinical and paraclinical branches were considered who fulfilled the inclusion and exclusion criteria. A Self reporting Questionnaire (survey) was designed using google form and was distributed among all the resident doctors of different specialties, using Email and WhatsApp and they were explained the Aims, Objectives, Procedure of the research study. All the resident doctors were contacted personally, telephonically and through mails to fill the google form. Questionnaire included questions related to: 1) Demographic data. 2) General questionnaire. 3) Questionnaire about factors contributing to lower backache. 4) Questionnaire related to severity of lower backache. 5) Nordic questionnaire. Responses received were analyzed using Excel Spreadsheets, Graphs and Charts.

Inclusion criteria:

1) Age 23-40 years, 2) Gender-male and female. 3) Resident doctors of Clinical and paraclinical branches. 4) Years of experience: ≥ 1 year. 5) Who gave consent.

Exclusion Criteria:

1) Age >40 years 2) Trauma to Lumber spine or Vertebral fracture. 3) Past history of spine disease (Pott's spine, PIVD) 5) Who do not give consent.

Questionnaire was divided into 5 parts, which includes questions related to:

1. Demographic data: name, age, sex, marital status, weight, height of participants.
2. General questions: Specialty, years of experience, working hours per day, exercise-habit, history of travel and mode of travel, smoking and alcohol intake, questions related to mental health status, work place stress, and work satisfaction and any family history of lower backache.
3. Factors contributing to lower backache: working in same posture for long hours like prolonged standing or prolonged sitting, any repetitive movements like twisting of spine or forward bending of spine, working in uncomfortable posture, walking for long hours, moving or lifting heavy objects.
4. Characteristic of lower back ache: Development of Lower backache before/after joining work, is it related to your profession, how often one is affected by lower backpain, duration of experiencing backpain, severity of lower backpain assessed on VAS SCORE, any kind of treatment taken for lower back pain.
5. Nordic questionnaire: for musculoskeletal pain.

Results

Of the total 100 resident doctors, 81 filled google form and submitted and those who did not respond were excluded from the study. Out of 81 residents, 48(59.26%) were male and

33(40.74%) were female [TABLE I] and their mean age was 28.6 years with age range from 24-38 years. 28.4% were married and 71.6% were unmarried.

Amongst all resident doctors, 43(53.08%) complaint of pain and 38(46.1%) did not and out of those who had pain 67% develop after joining residency and 32.55% had pain before joining residency and 19(44.2%) said it was related to profession and 24(55.81%) said it was not.

68 (83.95%) residents said they are involved in exercises (like aerobics, cardio, stretching) for variable duration (daily, few days/weeks, few weeks/month) and 13(16.04%) said they do not exercise and out of those who exercised, 51.47% develop pain and 48.52% did not. Residents who were not involved in exercise, of them, 61% develop pain and 38.46% did not. Therefore, it can be seen from our study that exercise has variable role on the development of lower backache, as well as protective, in those who exercised. [TABLE I]

We calculated BMI, using weight (kg) and height (meter) of participants using Quetelet index: $\text{weight (kg)/height (m)}^2$ and were categorized according Revised Consensus Guidelines for Asian Indians [17][18]. We found that, out of 81 residents, 4(4.93%) were underweight, 21(25.92%) were having normal BMI, 24(29.62%) were overweight, 32(39.50%) were obese. We took BMI 25 as reference range and it was seen that participants whose BMI is <25 , of them 51% developed pain and whose BMI is >25 , 56.25% developed pain, which shows that as BMI increases chances of getting lower backache increases. [TABLE I]

Of 81 residents, 27(33.33%) gave family history of lower backache and 18(41.86%) develop pain and 54 (66.66%) do not give family history and of them 25 (58.14%) develop pain, so in our study we did not found strong correlation of family history with backache. [TABLE I]

In our study very few residents responded for alcohol consumption and smoking, so correlation cannot be established between smoking and alcohol consumption as a risk factor for development of lower backache.

TABLE I: Demographic data of respondents:

S. No.	Variables	Category, n (%)	Pain, n (%)	No pain, n (%)
1.	Sex	Male ,48 (59.26%)	21, (43.75%)	27(56.25%)
		Female,33 (40.74%)	22, (66.66%)	11(22.9%)
2.	BMI (kg/mt ²)	Underweight (<18.5 kg/mt ²)	3 (75%)	1 (25%)
		Normal or lean (18.5-22.9kg/mt ²)	11 (52.38%)	10 (47%)
		Overweight (23.0-24.9 kg/mt ²)	11 (45.83%)	13 (54%)
		Obese (>25 kg/mt ²)	18 (56.25%)	14 (43%)
3.	Exercise (Aerobics, cardio, stretching)	Yes, 68 (83.95%)	Yes,51.47%	Yes,48.52%
		No, 13 (16.04%)	No,61%	No,38.46%
4.	Family history	Yes, 27 (33.33%)	Yes,18(41.86%)	Yes,9 (23.68%)
		No, 54 (66.66%)	No,25(58.14%)	No,29 (76.31%)

TABLE II: Prevalence of Lower backache among different Specialty:

S. No.	Specialty	Total number of Residents	Pain, n (%)
1.	Anesthesiology	15	10(66.66%)
2.	General Medicine	11	4 (36.36%)
3.	General Surgery	12	8 (66.66%)
4.	Obstetrics and Gynecology	7	6 (85.71%)
5.	ENT	3	3 (100%)
6.	Orthopedics	8	2 (25%)
7.	Ophthalmology	4	2 (50%)
8.	Respiratory Medicine	5	1 (20%)
9.	Pediatrics	3	2 (66.66%)
10.	Pathology	4	3 (75%)
11.	Dermatology	3	1 (33.33%)
12.	Radiodiagnosis	6	1 (16.66%)

It was seen that prevalence of lower backpain was highest in ENT Surgeons(100%) followed by Obstetrics and Gynecology (85.71%), Pathology (75%), Anesthesiology (66.66%), General surgery (66.66%), Ophthalmology (50%), General medicine (36.36%), Dermatology (33.33%), Orthopedics (25%), Respiratory medicine (20%), Radiodiagnosis (16.66%) in decreasing order. It was seen in our study that because of small sample size, results were biased in some specialties. [TABLE II]

Risk factors for Lower Backache:

1). Duration of working hours:

Out of 81 resident doctors,56 residents worked for >8 hours and of them 32(55.17%) complaint of pain and 26 (44.82%) had no pain, whereas out of 25 residents who worked for <8 hours, 11 (47.82%) developed pain and 12(42.85%) did not. And among various specialty following results were seen.

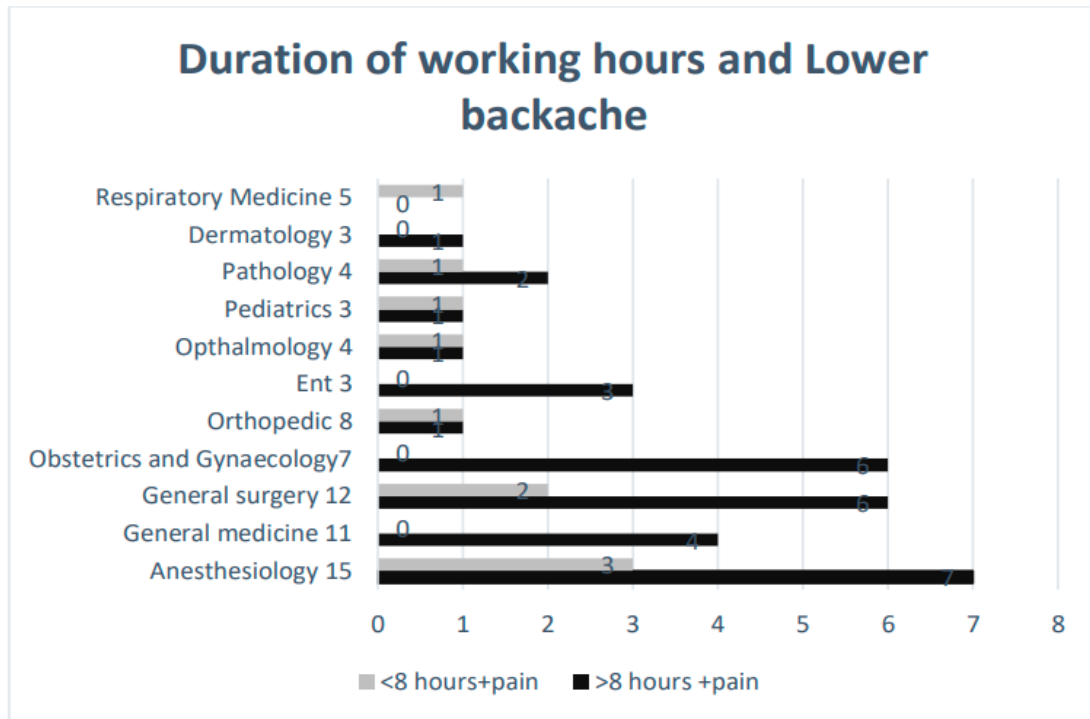


Chart I: Relation of Duration of Working Hours as A Risk Factor for Lower backache In Different Specialties.

Thus, study showed that long working (>8 hours/day) hours became a risk factor for the development of lower backache in following specialties Obstetrics and Gynecology, General Surgery, Anesthesiology, ENT, General Medicine and Pathology in decreasing order. 2) Posture related risk factors:

TABLE III: Relation of different Postures at work place as risk factor for lower backache in different specialties:

Specialty	Prolong standing +pain N (%)	Prolong sitting +pain N (%)	Forward bending +pain N (%)	Twisting of spine +pain N (%)	Uncomfortable posture +pain N (%)
Anesthesiology (15)	9, (90%)	2, (20%)	5, (50%)	1, (10%)	7, (70%)
General medicine (11)	2, (50%)	2, (50%)	0, (0%)	1, (25%)	2, (50%)
General surgery (12)	8, (100%)	6, (75%)	4, (50%)	0, (0%)	8, (100%)
Obstetrics and Gynecology (7)	5, (83.33%)	0, (0%)	2, (33.33%)	1, (16.66%)	0, (0%)
Orthopedic (6)	2, (100%)	1, (50%)	2, (100%)	0, (0%)	2, (100%)
Ophthalmology (4)	0, (0%)	2, (100%)	0, (0%)	0, (0%)	1, (50%)
Pediatrics (3)	0, (0%)	2, (100%)	1, (50%)	1, (50%)	2, (100%)
Respiratory Medicine (5)	1, (100%)	1, (100%)	0, (0%)	0, (0%)	0, (0%)
Dermatology (3)	0, (0%)	0, (0%)	1, (100%)	0, (0%)	1, (33.33%)
Radiodiagnosis (6)	0, (0%)	1, (100%)	0, (0%)	1, (100%)	0, (0%)
Ent (3)	2, (66.66%)	1, (33.33%)	1, (33.33%)	1, (33.33%)	2, (66.66%)
Pathology (4)	1, (33.33%)	3, (100%)	0, (0%)	1, (25%)	1, (25%)

Following results were derived from TABLE III:

1. Different working postures at work place for prolong duration were related as risk factors in different specialties:

A. Prolonged standing was most prominent risk factor among Orthopedic, General Surgery, Respiratory Medicine, Anesthesiology, Obstetrics and Gynecology, ENT in decreasing order.

B. Forward bending as a risk factor was seen in Orthopedics, Anesthesiology, General surgery, Pediatrics, Obstetrics and Gynecology in decreasing order.

C. Uncomfortable posture was related to lower back pain equally in Orthopedics, General Surgery, Pediatrics followed by Anesthesiology, ENT, General Medicine, Ophthalmology in decreasing order.

3. Work related stress as a risk factor:

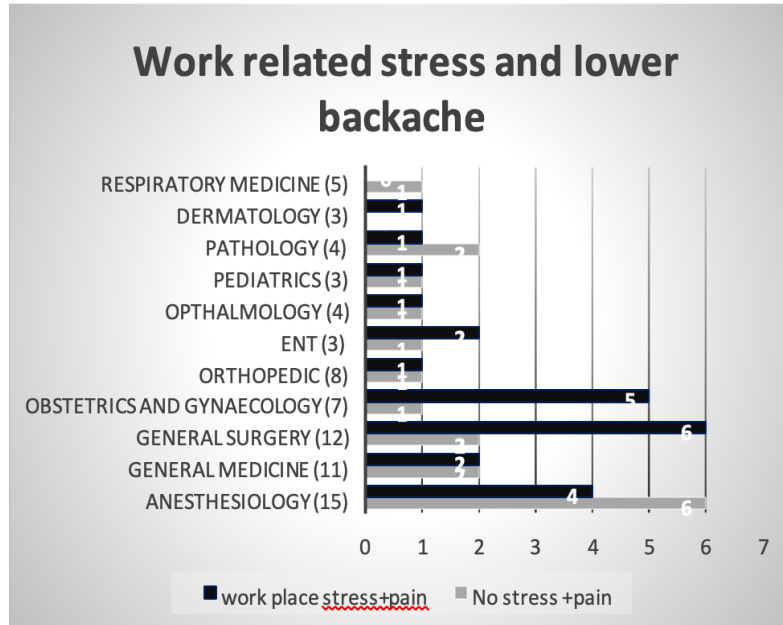


CHART II: Relation of Work-Related Stress as a Risk factor for Lower Backache in different specialties:

Chart II shows, work related stress as a prominent risk factor among General Surgery, Obstetrics and Gynaecology, Anesthesiology, ENT, General Medicine in decreasing order.

SEVERITY OF LOWER BACKACHE AND IT'S IMPACT ON PHYSICAL HEALTH AND MENTAL HEALTH:

1. SEVERITY OF LOWER BACKACHE : was assessed by VAS(VISUAL ANALOG SCALE):

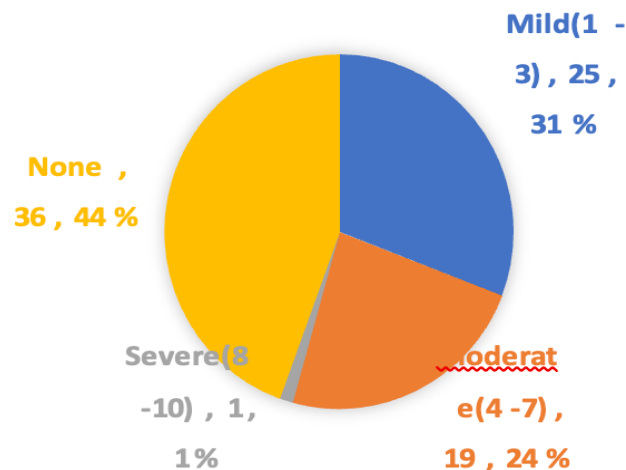


CHART III: Prevalence of severity of lower backache assessed by VAS score.

2. IMPACT ON PHYSICAL HEALTH: Few residents took rest from work and some kind of treatment because of lower backache.

TABLE IV: Response of residents who required rest from work for variable duration and any treatment taken.

1.Do you need to take rest?	Resident’s Response	Number(%)
	Yes	25 (58.13%)
	No	18 (41.8%)
2. How long?	Hours	22 (88%)
	Days	3 (12%)
3.Do you take any kind of treatment for lower backche?	Drugs	5 (11.6%)
	Physiotherapy	4 (9.30%)
	Both	3 (6.97%)

One resident doctor needed to change the mattress and cot to relieve the lower backpain.

3. IMPACT OF LOWER BACKACHE ON MENTAL HEALTH:

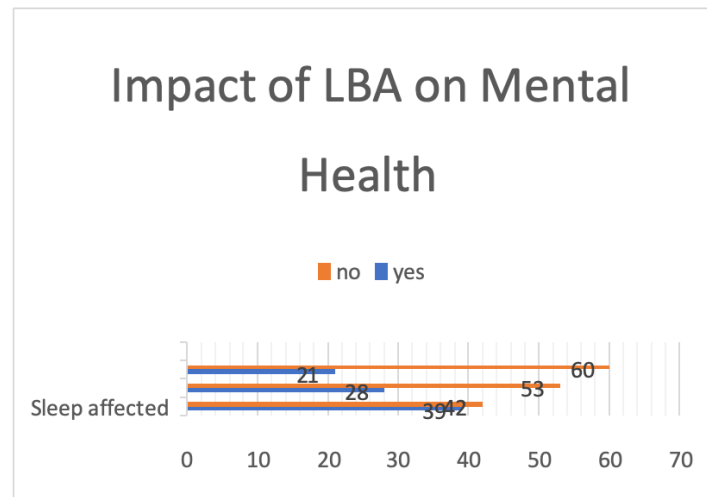


CHART IV: Impact of lower backache on mental health.

Chart IV shows impact of lower backache on mental health:

1.39,(48.14%) residents said their sleep was affected due lower backache.

2.28,(34.56%) residents said they constantly felt under stress.

3.21,(25.3%)residents said their routine decision making was affected because of lower backache.

Discussion

Lower backache is one of the common occupational problem affecting the general population [19] as well as health care professionals [20].It is one of the major cause of disability affecting the performance at work and general well-being [12].Lower Backache as an occupational hazard among health care workers has been studied internationally in

developed regions but less studied in developing region.

The study conducted is an observational study aimed to study the prevalence of lower backache among resident doctors and associated risk factors in tertiary care center Bhopal. Our study reported 53.03% prevalence of lower backache among residents of different specialties within past 12 months and results were comparable to results of study by *Salvi Shah and Beena Dave* among doctors in Surat which showed prevalence of 36.82% [3].

Present study results were also consistent with a study conducted by *Ramesh venkatesh and Sumit Kumar* who studied prevalence of lower backache amongst the ophthalmologists [49%] [2]. *Samad shams vahdati et al* conducted a study on lower backache among doctors of

different specialty, from Tabriz University, Iran and reported the prevalence of 56.8% [5].

Our study showed, higher prevalence of lower backache among females, 66.66%, as compared to males 43.75%, as consistent with study results, 68.88% in women and 31.11% in men by *Salvi Shah and Beena Dave* [3]. *F. O. Omokhodion et al* reported increased prevalence of lower backache among women (64%) relative to men (37%) [21] similar to present study.

In our study, out of 81 resident doctors, 67% developed pain after joining the residency and 32.55% had pain before joining the residency which is in accordance to another study by *TS Wong et al* in Malaysia [23]

We found that, 83.95% doctors exercised and 16.04% did not and of those who exercised, 51.47% develop pain and 48.52% did not. Amongst those who never exercised, 61% develop pain, so exercise has variable role in prevention of lower backache. It has a protective role in some of those who exercised which is as comparable to the results of *Henchoz et al* study [9].

Role of BMI was studied using Quetlet's index and residents were categorised according to Revised Consensus Indian Guidelines [17][18] and it was found that, 4 were underweight, 21 were having normal BMI, 24 were overweight, 32 were obese. Keeping a reference BMI of 25, those who had BMI <25, 51.02% developed pain and with BMI >25, 56.25% developed lower backache, so increasing BMI increases the chances of lower backache as which is consistent with results of *Rahman shiri study*[22], *HUNT study* [6].

We studied the prevalence of lower backache among different specialty, it was seen that highest prevalence was seen in ENT, followed by Obstetrics and

Gynaecology, Pathology, Anesthesiology, General Surgery, Pediatrics in decreasing order. Among the factors which contributed to lower backache were:

1. Working hours of >8 hours/day, 55.7% developed pain and the speciality which affected the most were ENT, Obstetrics and Gynaecology, Anesthesiology, General surgery.

2. Other work related factors include prolonged standing, prolonged sitting, Forward bending, twisting of spine and uncomfortable postures and it was found in our study that these factors affected resident doctors differently in different specialty. In literature prolonged standing and forward bending is strongly associated with lower backache [23]

3. Work related stress was one of contributing factors in causation of lower backache in certain specialties like General Surgery, Obstetrics and Gynaecology, Anesthesiology, ENT, General Medicine, Orthopedics in decreasing order as comparable to study results by *Derek smith et al*[24]

4. Severity of lower backache was assessed using VAS score and it was found that, 35% had mild pain (1-3), 24% had moderate pain (4-7) and 1% had severe pain (8-10) and 25 residents said they need to take rest (few hours ,days) from work because of lower backache. 11.6% took drugs, 9.30% required physiotherapy and 6.9 % required both for pain.

5. Psychological impact of lower backache seen in our study was ,39(48.14%) residents said their sleep was affected, 28 (34.56%) residents said they constantly felt under stress, 21(25.3%) residents said their routine decision making was affected because of lower backache.

This study has some limitations, more number of residents were required to represent the population of health care professionals and because of small sample size in certain specialties results were biased.

Conclusion

Our study concluded that there is higher prevalence of Lower backache among health care professionals than general population. Residents of certain specialties were affected more, decreasing their functional ability and performance at work. Many factors like gender, BMI, exercise, working speciality has strong correlation with lower back pain. Work related factors like working hours/day, posture related factors like prolong standing ,prolong sitting, forward bending, uncomfortable posture which contributed to pain can be identified early and early interventions can be made to prevent this occupational hazard.

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