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Original Research Article.

A Study of the Prevalence of Low Back Pain and Associated Risk Factors Among Surgical Staff in Sudair Area, Saudi Arabia

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ABSTRACT

Introduction: Low Back Pain (LBP) is one of the commonest musculoskeletal disorder and an important occupational hazard among healthcare professionals (HCPs) that are a major concern among the Operating Room (OR) staff. This cross-sectional study is an attempt to assess the prevalence, characteristics, and risk factors of low back pain among operating room (OR) staff in hospitals located in Sudair area, Saudi Arabia.

Methods: This was an institutional based cross-sectional study, conducted in Sudair area which includes (Majmaah, Hawtah Sudair, Tamir and ALGhat), Majmaah, Riyadh region in Saudi Arabia. All the surgical staff working in the operation theatre in King Khalid, Hawtah Sudair, Tamir and ALGhat hospitals in Sudair area were included in the study. Data was collected by close-ended questionnaire and analyzed by SPSS version 22.

Results: A total of 88 (80%) participants responded. It was found that LBP was prevalent among 61.4% male sand 38.6% females. Activities by participants in OR (Operation Room) which were significantly associated with the risk of the development of LBP were lifting objects above the waist, rotation of the trunk while carrying weights, bending to lift objects and assisting patient transfer from bed to chair or vice versa. Rest and analgesics were reported to be the most common relievers from the back pain.

Conclusion: LBP is a common health concernamong OR staff. Activities in the OR associated with the risk of acquiring LBP were found to contribute to this problem. We recommend designing educational interventional programs and training/workshop to teach OR staff the best preventive measures to avoid this problem.

Keywords: Low Back Pain, Operating Room Staff, Healthcare Professionals, Majmaah, Saudi Arabia.

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INTRODUCTION

It is estimated that 70-85% of the population of the United States of America (USA) is affected by back pain at some point in their lifetime, with an annual prevalence of 15-45%.[1,2] Studies in Britain have focused on prevalence of back pain increasing with passage of time (36.4% rising to 49.1%).[3] Low back pain can have many causes but, most people (>85percent) have "nonspecific low back pain", which could mean that the pain is not associated with any specific disease or abnormality in the spine.[4] Many people are diagnosed with a degenerating disc or arthritis, but problems in muscles, ligaments or other causes may equally be responsible.[4] Low back pain can be indicative of serious causes (history of cancer, unexplained weight loss >10 kg within 6 months, age over 50 years or under 18 years old, night pain or pain at rest, failure to improve with therapy, Urinary Incontinence or retention and saddle anesthesia).[5] Other studies have indicated risk factors for low back pain like smoking, obesity, older age, female gender, physically strenuous work, sedentary work, a stressful job, job dissatisfaction and psychological factors such as anxiety or depression.[4] In the United Kingdom, back pain was the most common cause of leave absenteeism from work during 1988 – 1989 survey and was responsible for approximately 12.5% of all sick days.[6]In a study in a tertiary care center in Makkah, Saudi Arabia, low back pain prevalence Operating Room (OR) staff was a 74.2%.[7] Another study in a Kuwait hospital among health professionals projected a 70.9% lifetime prevalence of low back pain .[8] Similarly among medical practitioners, a study done in King Abdul Aziz Medical City, Riyadh found 83.9% lifetime prevalence of low back pain .[9] A similar study among Turkish hospital workers like nurses, physicians and technicians etc. found that most (65.8%) of them had experienced low back pain while 61.3% reported its occurrence during the last 12 months[10]. Hospital workers who were affected the most were the nurses (77.1%),

secretaries (54.1%) and hospital aides (53.5%).[10] Age, female gender, smoking, occupation, perceived work stress and heavy lifting were statistically significant risk factors associated with low back pain in this study ($p< 0.05$).[10]

OBJECTIVES

General

Determine the prevalence and risk factors of low back pain among surgical room staff at King Khalid, Hawtah Sudair, Tamir and ALGhat hospitals, Sudair area, Saudi Arabia.

Specific

- Estimate the prevalence of low back pain among surgical room staff.
- Study the association between low back pain and risk factors among the surgical staff.
- Determine the impact of low back pain on the functional efficiency and the quality of life of the surgical staff.

METHODS

This was an institutional based, cross-sectional observational study conducted at Sudair area which includes (Majmaah, Hawtah Sudair, Tamir and ALGhat), Majmaah, Riyadh region in Saudi Arabia.[11] Sample size included all the OR staff from across all specialties in the chosen hospitals. Sampling was done by complete enumeration method and we included all categories of OR staff from different specialties in King Khalid, Hawtah Sudair, Tamir and ALGhat hospitals in sugar area. The total study population came to around 110 participants.

Data was collected by a pre – structured, pre-tested close – ended questionnaire. The questionnaire was composed of the following sections: Questions concerning personal and sociodemographic information: age, gender, height, weight, specialty, etc. Questions concerning general LBP risk factors: smoking, psychological stress, standing time, etc. Questions concerning OR specific risky activities: lifting, transferring, or pulling patients or objects, etc. Questions concerning LBP characteristics: the presence of LBP, severity, duration, treatment etc.

The questionnaire was delivered to the surgeons' departments and clinics if they didn't have duty on the same day in the OR. For the rest of the OR staff, the questionnaires were distributed in the OR after obtaining permission from the head of the OR department. The research objectives were explained to each participant separately. The questionnaires distributed in this study showed no personal identifiers and so the confidentiality of participants was maintained. Of the 110 questionnaires distributed, 88 responded. The data collected was entered into SPSS 23.0 software and analyzed for prevalence of LBP and the strength of association between LBP and the risk factors.

The ethical approval was obtained from Majmaah University ethics committee.

Table 1: Characteristics of study participants

Variable		Have experienced LBP	
		N	Percent %
Total		88	100%
Age	<24	2	2.3
	25-34	26	29.5
	35-44	26	29.5
	>45	34	38.6
Gender	Male	54	61.4
	Female	34	38.6
Specialty	Nurse	34	38.6
	Gyne Obs	7	8
	Orthopedic	16	18.2
	Anesthesiologist	8	9.1
	General surgery	14	15.9
	Ophthalmologist	2	2.3
	urology	1	1.1
	ENT	1	1.1
	Dental	2	2.3
	I did not have to	3	3.4
BMI	Underweight(<18.49)	3	3.4
	Normal(18.5-24.99)	40	45.5
	Overweight(25-29.99)	30	34.1
	Obese(>30)	14	15.4
	I did not have to	1	1.1
Height	<159 cm	21	23.6
	160 – 169 cm	23	25.8
	170 – 179 cm	25	28.1
	>180 cm	14	15.7
	I did not have to	5	6.7
Smoker	Yes	11	12.5
	No	76	86.4
	I did not have to	1	1.1

Table 2: Association between common risk factors and LBP

Risk Factors	N	Univariate regression analysis	
		OR (95 % CI)	P- value
Age	88		
<24		11.693 (8.91 – 15.34)	0.818
25-34		1.275 (0.004 – 4.05)	0.934
35-44		2.256 (0.10 – 4.05)	0.768
>45		1	--
Gender	88		
Male		0.705 (0.000-1041.717)	0.925
Female		1	--
Specialty	88		
Nurse		1.178(-20.559 - 20.559)	0.987
Gyne Obs		1.149(-21.868 - 21.868)	0.871
Orthopedic		1.182(-20.956-20.956)	0.955
Anaesthesiologists		1.78(-21.474 - 21.474)	0.950
General surgery		3.294(-17 - 23.588)	0.736
Ophthalmologist		1.225(24.796-24.796)	0.974
urology		39.527(39.527-39.527)	--
ENT		1.111(-28.632-28.632)	0.988
Dental		1	--
BMI	88		
Underweight(<18.49)		1.296 (8.404 – 19978715.6)	0.976
Normal(18.5-24.99)		0.188 (0.000 – 76.204)	0.585
Overweight(25-29.99)		1.065 (0.005 – 209.600)	0.981
Obese(>30)		1	--
Height	88		
<159 cm		0.617 (4.444 – 8578.885)	0.921
160 – 169 cm		0.279 (0.000 – 170.036)	0.697
170 – 179 cm		1.434 (0.003 – 807.567)	0.911
>180 cm		1	--
Smoker	88		
Yes		0.30 (8.532 – 10.849)	0.244
No		1	--
Work environment	88		
Mild		0.613 (0.000 – 1022.149)	0.897
Moderate		0.202 (7.119 – 575.334)	0.694
Severe		1	--
Standing time	88		
1-4h		9.633 (0.000 – 369469.239)	0.674
5-8h		3.539 (0.000 – 82854.956)	0.806
>8h		1	--
Sitting time	88		
1-4h		9.135 (0.000 – 242653.15)	0.471
5-8h		3.158(0.041 – 241.216)	0.603
>8h		1	--
Exercise	88		
Yes		0.691 (0.13 – 35.739)	0.854
No		1	--

RESULTS

Table (1) shows that 38.6% of the participants with low back pain were over 45 years of age, 2.3% were under 24 years old and 29.5% were aged 25 to 34 years. Prevalence of low back pain among males was 61.4% and among females was 38.6%. Among various specializations the most number of affected participants were Nurses (38.6%)followed by Orthopedics (18.2%), General Surgery (15.9%), Anesthesiologists (9.1%), Gynecology and Obstetrics (8%), Ophthalmology and Dental (2.2%) and Urology and ENT (1.1)Distribution according to the body mass index (BMI) showed that 45.5% participants with normal BMI, 34.1% of overweight (BMI 25 – 29.9), 15.4% obese participants (BMI > 30.0) and 3.4% underweight (<18.49) participants were affected with low back pain. On comparing the prevalence of low back pain among participants in terms of height we found that23.6% of patients with low back pain were below 159 cm, 25.8% between 160 - 169 cm, 28.1% between 170 - 179 cm, and 15.7% taller than 180 cm.12.5% of people with low back pain smoke, and 86.4% of people with low back pain do not smoke.

Table (2) shows that the value of p-value is greater than the 5% level of significance in all values. This means that there is not

a relationship between the common risk factors and lower back pain experienced by surgeons. Table (3) shows that most of the hazardous activities were not significantly associated with LBP (p > 5%)in the following activities (lifting objects above the waist, rotation of the trunk in carrying weights and bending to lift objects, moving the patient to bed or chair) Patient to mobile and ambulance patients). Activities associated with pulling the patient to bed or repositioning the patient in bed is significantly associated with the occurrence of low back pain in the healthcare personnel.

Table (4) shows that the severity of pain among physicians was 12.9%, while personal care was 8%, while lifting pain was 25%, 8.5% was walking, while sitting was 17.3%, standing was 16.8%, and pain at sleep was the result was 12%, the social life was 5.8% while the pain was a travel impediment of 8.4%.The total score was obtained by summarizing scores of all sections, giving a maximum of 50 points. The final result is expressed as a percentage of the following formula: (total points / (5 × number of questions answered) × 100%

Table 3: The relationship between OR risky activities and LBP

Risk Factors	Univariate logistic regression			Multivariate logistic regression (Adjusted)		
	N	OR (95 % CI)	P- value	N	OR (95 % CI)	P- value
Are you Lifting objects above the waist	80	1.522 (-18.427- -18.427)	0.217	80	3.322 (-60.233 -60.233)	0.922
Are you rotating torso while bearing weight	80	0.012(-2.961 – 2.653)	0.914	80	1.521 (-99.49 – -99.15)	0.997
Are you bending to lift an item from floor level	80	0.526 (1.753 – 3.883)	0.46	80	1.022(99.49 – 99.49)	0.997
Are you transferring patients onto bed or chair	80	4.767 (20.261 – 20.261)	0.290	80	9.784 (-43.167 – 43.150)	1
Are you transferring patients onto a stretcher	80	4.767(20.261 – 20.261)	0.290	80	7.349 (44.143 – 44.231)	0.998
Are you ambulating a patient	80	3.874 (20.030 – 20.030)	0.490	80	6.157 (35.432 – 35432)	0.994
Are you pulling a patient up the bed	80	5.115 (20.352 -20.352)	0.024	80	4.963 (20.030 – 20.030)	0.497
Are you repositioning a patient in bed	80	4.295 (20.139 – 20.139)	0.036	80	4.921(19.484 – 19.401)	0.997
Do you have chron's disease	80	3.664 (2.260 – 5.067)	0.000	--	--	--

Table 4: Results of the Disability Index Analysis

Section	Grades						N Valid	N Missing	Total	% The result
	0	1	2	3	4	5				
Pain Intensity	49	16	16	7	0	0	76	13	89	12.9
Personal Care	52	17	5	1	0	0	75	14	89	8
Lifting	22	31	8	9	5	0	75	14	89	25
Walking	56	10	7	1	0	1	75	14	89	8.5
Sitting	45	13	9	2	2	4	75	14	89	17.3
Standing	33	28	8	5	1	0	75	14	89	16.8
Sleeping	58	9	0	2	0	6	75	14	89	12
Social Life	58	15	2	1	0	0	76	13	89	5.8
Travelling	49	23	3	1	0	0	76	13	89	8.4

DISCUSSION

In this study, it was found that 80% of the employees of the surgical staff working in the operation theatre in King Khalid, Hawtah Sudair, Tamir and ALGhat hospitals in Sudhir area (including surgeons, anesthesiologists, nurses, anesthesiologists and technicians) had complained of low back pain at some point in their careers, where the sample was 110 professionals and the response was 88 professionals .

It was found that males complained of low back pain more than females, where the proportion of males was 61.4%, whereas in other studies males with LBP accounted for 68.2%in comparisons with females 78.8 %.[12] In other studies, 22.2 % of the males reported LBP while 55.6% of the total female reported LBP showing a reverse trend in prevalence.[13]

In our study, we found the highest incidence of lower back pain (Nurse 38.6% and Orthopedic 18.2%). In addition, we found the lowest incidence of low back pain (ENT, urology). This is lower than the rate of the LBP among nurses or technicians who found that 84.4% in a multicenter study was conducted in Taif, Saudi Arabia.[13] These values are generally comparable with the values reported globally for the spread of the LBP among nurses ranging from 70.6 to 80% and prevalence among or technicians who hover around 84%.[12-14] This study also showed that 15.9% of surgeons

in Sudair complained of low back pain. This was lower than studies done in other countries like Iran whereas high as 84.8% surgeons were found to be suffering from low back pain.[12]

However, the relationships between lower back pain and specialization, psychological stress, sitting and standing time were not statistically significant. Further studies with larger samples of health workers may be needed to confirm associations noted and clarify possible causes. Other studies conducted worldwide including Saudi Arabia did show that smoking, high body mass index, advanced age, gender, inactivity, long time, and perceived stress were significantly associated with lower back pain.[10]

Activities such as lifting heavy objects over the waist, moving patients on a bed or chair, transporting patients on a stretcher, patient aid, re-positioning patients, pulling the patient to the top of the bed, and rotating the trunk with some weight showed an association with low back pain and it was consistent with other studies.[15] In this study, we found that some of these activities were really linked to the very existence of lower back as consistent with other studies.

Participants in the study reported that rest and painkillers were the best back pain relievers. Studies on the same subject have drawn the same conclusion.[9] Larger sample size including staff or different centers is needed to achieve more accurate and comprehensive results.

CONCLUSION

Educational programs are needed for the OR staff to teach them the best way to prevent this problem. Such programs may include practical sessions on how to lift and pull heavy objects as well as some exercises that could be carried out during work. We also recommend enrolling the OR staff in stress management courses. It is also important to consider the shoes that a staff wears during work. Enhancing sports activities and designing programs to encourage weight reduction may also help. Future prospective randomized studies will be needed to evaluate such educational programs in order to find the best way to solve the problem and to improve the OR staff quality of life**.**

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