Short Research Article

Prevalence and Risk Factors of Low Back Pain among Healthcare Staff in Operating Rooms at Al- Fateh Children Hospital

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Abstract

Nursing is considered as a hazardous occupation over the world, but little is care about workplace health and safety problems facing the nursing work force in Libya. Thus, work-related problems among a sample of nurses in Benghazi city, Libya are described in this study. **Methods:** Cross-sectional data were collected through a self-administered questionnaire that included four classes: work-related demographics, occupational injury/illness, reporting behaviour, and safety concerns. **Results:** Healthcare workers experience a higher prevalence of low back pain (LBP) complaints (87%), due to no proper policy related to LBP, the job nature has exposed them to this health issue. Main contributing factors which can increase the risk exposure of LBP were age, occupation, smoking and lifting objects, equipment and patients. The main concerns were overload and work stress. **Conclusion:** In Libya, healthcare workers are considered as a critical health and safety concerns, resulting of weakness of policies in healthcare organizations. **Recommendation:** The LBP prevalence is significantly high. Thus, a proper no weight lifting policy should be considered. Further research should investigate the work organization factors that contribute to these concerns and strengthen policies to encourage health and safety at work.

Key words: lower back pain, work-related illnesses, musculoskeletal injuries, Nurses health issues.

Introduction:

Musculoskeletal Disorders at work in particular Low Back Pain (LBP), bring a main health and socio-economic problem in modern society. About 60–80% of the general people suffer from LBP at some time during their lives. However, it has been found that, healthcare workers (HCWs) present high rates of work-related illnesses and injuries, particularly among nurses where the lifetime prevalence of LBP was found to be slightly higher, varying between 56% and 90%.[1] Recent studies represent that four main health concerns facing healthcare workers (HCWs) comprise musculoskeletal injuries, basically low back pain (LBP), shift working, and needle stick injuries

but, high physical work load and work stress have been recently added to this list. [1] LBP is still the main concern disturbing the life quality and work productivity plus absenteeism pattern and disabilities in healthcare workers. Where in developed countries, 15% to 64% is estimated as the 12-month prevalence of LBP and more than 79% in developing countries. [2] LBP is also considered as the second cause of adult disability in the United State.[3]

LBP is a well-acknowledged source of morbidity in the developed countries, where several studies have knowledgeable the occurrence of LBP in general population and occupational settings. Healthcare workers including nurses and surgical and emergency physicians within the healthcare sector that are vulnerable to LBP.[4] Besides to individual and psychosocial variables including age, gender, physical status, smoking and workplace stress, main ergonomic factors that can threaten them to progress LBP include awkward postures, carrying and repositioning patients, prolonged standing, and working without sufficient breaks.[5][6]

An evidence conducted the mechanical hazards in the hospitals include LBP from manual lifting of objects, equipment and patients. This evidence found that patients lifting put medical staff in specific nurses as one of the occupations most affected by LBP. [7] Describing the extent of musculoskeletal injury in healthcare staff, survey displayed that they often lost 750,000 days a year as a result of back pain.[8]

Additional evidence displays that LBP is the most common reason of early retirement , sickness absence, work changes and a fall in the work speed among the working population.[9] Healthcare workers are essentially needed to lift and transport patients or equipment, often in challenging environment mainly in developing countries where lifting aids are not always available or practicable. [10] Also risk of work related LBP are associated with working in operational room, where the highest LBP prevalence was in surgical department compared to other departments in hospital. [11] LBP was predicated to cause 818.000 disabilities adjusted life years lost every year at workplace.[12] Moreover, the prevalence of LBP among healthcare workers in the operating room was 78.1%.[13] Accordingly, This study was carried out to determine the prevalence and risk factors of LBP among healthcare staff (Operating room in particular) in Al-Fateh Children Hospital.

The Aim:

This study aimed to determine the prevalence of Low Back Pain (LBP) among healthcare staff and explore the potential risk factors associated with LBP among them (Operating room in particular) in Al-Fateh Children Hospital.

The objectives:

- To determine the rate of LBP prevalence among medical staff in operating room.
- To identify the risk factors among medical staff in theatre room.

Methods

Study Site:

This study was conducted in the operating rooms of the Al-Fateh children hospital (Public Hospital) in Benghazi city, Libya.

Study Design:

A descriptive cross-sectional study was conducted on randomly selected medical staff in the operating rooms of the Al-Fateh children hospital in Benghazi city, Libya.

Data Collection:

Data was collected through using a questionnaire that was performd in English. Statistical analysis was performed by chi square to measure the association between independent variables and LBP (P-Value<0.05, CI=0.95) and to identify the risk factors related to LBP. The study period was from December 2016 to January 2017.

Questionnaire Design:

The questionnaire includes 34 multiple choice questions. The following information was provided:

- Socio-demographic data: age, gender, educational level and marital status, smoking and experience years.
- General information on occupation and work load: job description, job satisfaction, part- time work, shift work, night work, frequent lifting, awkward working posture, repetitive movements.
- Prevalence and duration of low back complaints: ever LBP, first occurrence of LBP, hospitalization or job change due to LB, effects on work and leisure time activities, sick leave, medical history, current LBP, problems due to LBP, conducting training program, intervention program and general awareness regarding LBP.

Sample Population and Sample Size:

The total population in the surgical unit (operating room) was 23 healthcare staff (n=23).

Statistical analysis:

The collected data was analyzed by using IBM SPSS (The Statistical Package for Social Sciences) Version 22 Software. The percentage and frequency of demographic information was determined and compared. Chi-square also was used to determine the association between participants' characteristics, risk factors and LBP prevalence with a statistical significance level of $P<0.05$.

Ethical considerations:

Preliminary request letter was sent to Al- Fateh children hospital to get permission to carry out this study in the operating room. The approved letter had been obtained from them through a preliminary agreement by signing the letter of request.

Exclusion criteria:

The study excludes workers with history of back surgery and pregnant female workers.

Results

This study find out the outcome of 23 study subjects in the purpose of determine the prevalence of Low Back Pain (LBP) among medical staff in the operating rooms of the Al-Fateh children hospital and explore the potential risk factors associated with LBP. Table-1 presents that the majority of the study subjects were nurses by 69.6% while the rest of them were physicians by 26.1% except only one technician. Also 69.6% of the study subjects were females. Most of the study subjects ranged from 21 years to 40 years. 47.8 % their qualification were diploma and 43.5 were Bachelor's degree.

Table 1: Socio-demographic characteristics of medical staff in surgical department

Characteristics	Category	Frequency	Percentage %
Occupation	Physician	6	26.1
	Nurse	16	69.6
	Technician	1	4.3
Gender	Male	7	30.4
	female	16	69.6
Age	21-30	10	43.5
	31-40	11	47.8
	41-50	1	4.3
	51-60	1	4.3
Experience years	0-5 years	9	39.1
	6-10 years	3	13
	11-15 years	1	4.3
	16-20years	8	34.8
	21-25 years	1	4.3
	more than 26 years	1	4.3
Qualification	Diploma	11	47.8
	Bachelor's degree	10	43.5
	postgraduate certificate	0	0
	Master	0	0
	PhD	2	8.7
Marital status	Single	10	43.5
	Married	13	56.5
	Divorce	0	0
Working hours	6 hours	11	47.8
	12 hours	9	39.1
	24 hours	2	8.7
Work shift	Day shift	12	52.2
	Rotatory shift	11	47.8
Are you smoking	Never	17	73.9
	Current smoker	3	13
	Previous smoker	1	4.3
Exercise	None	16	69.6
	Everyday	4	17.4
	weekly	2	8.7
	monthly	1	4.3

Among the affected study subjects who were suffering from LBP in Table-2 , the severity of pain were 70 % (mild pain), 26 % (moderate pain), and 4 % (severe pain). Most of the study subjects were suffered from LBP at least once or twice a week/ a month. The frequency of complaining LBP related to duty were 3 (Pre on to post duty) healthcare workers, 5 (On duty) healthcare workers, and 7 (On to post duty) healthcare workers. Thus, the prevalence of LBP related to performing duty was 20 out of 23 healthcare workers at this unit (87%). Also 74 % of those healthcare workers described their LBP as localized, 22% suffered from pain of the leg/ buttock and 4 % with numbness pain.

Table 2: Prevalence and Severity of LBP

Variable	Category	Frequency	Percentage %
LBP	All the time	7	30
	Once /twice a week	8	35
	Once/twice a month	8	35
Severity of LBP	Mild	16	70
	Moderate	6	26
	Severe	1	4
Complaining LBP related to duty	Pre on to post duty	3	13
	On duty	5	22
	On to post duty	7	30
	Post duty	5	22
LBP Description	Localised LBP	17	74
	LBP with numbness	1	4
	Pain of the leg/ buttock	5	22

Table 3- represents that study subjects who were suffering from LBP, there are significant association between LBP occurrence and job description(p-value= 0.032) and smoking (p-value= 0.077). However, the association between others socio-demographic characteristics of healthcare staff in the surgical unit including gender, age, marital status, experience, qualification, work hours and work shift with LBP frequency is not significance. Based on P-values listed on this table, it clears that those studied variables are independent and do not affect one another.

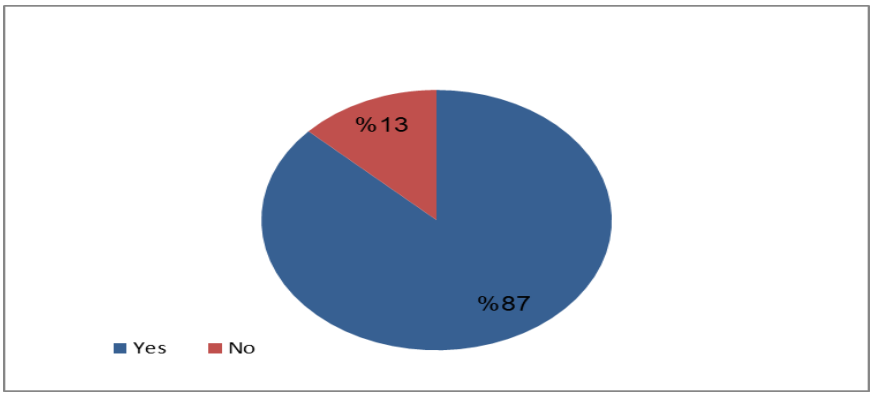


Figure (1): The Frequency of LBP (Prevalence of LBP)

Among all of (23) study subjects, 87 % (n=20) subjects had been suffering from LBP and 13% (n=3) subjects had not been suffering LBP in the surgical unit of the hospital.

Table 3: The association of LBP Prevalence and Socio-demographic Characteristics

Characteristics	Category	LBP Frequency			P- value < 0.05
		All the time	Once/twice a Week	Once/twice a month	
Occupation	Physician	0	5	1	0.032
	Nurse	6	3	7	
	Technician	1	0	0	
Gender	Male	3	2	2	0.693
	Female	4	6	6	
Age	20-30	3	3	4	0.628
	31-40	3	4	4	
	41-50	1	0	0	
	51-60	0	1	0	
Experience Years	0-5	2	3	4	0.724
	6-10	1	1	1	
	11-15	1	0	0	
	16-20	2	3	3	
	21-25	1	0	0	
	<26	0	1	0	
Qualification	Diploma	5	3	3	0.198
	BSc	2	3	5	
	Postgraduate	0	0	0	
	Master	0	0	0	
	PhD	0	2	0	
Marital status	Single	3	3	4	0.880
	Married	4	5	4	
	Divorce	0	0	0	
Working hours	6 hours	5	2	4	0.394
	12 hours	2	5	2	
	24 hours	0	1	1	
Work Shift	Day shift	5	3	4	0.418
	Rotatory shift	2	5	4	
Smoking	Never	4	7	6	0.077
	Current	3	0	0	
	Previous	0	1	0	
Exercise	None	5	6	5	0.247
	everyday	2	2	0	
	weekly	0	0	2	
	monthly	0	0	1	

Table 4- represents that 30 % of study subjects refer that there is no effect of LBP on their personal life also on their duties while the rest of those confirm that there is an effect ranging from little, moderate and severe effect. With 52 % little effect on duties.

Table 4: Low Back Pain consequences

Variable	Category	Frequency	Percentage%
Effect of LBP on personal Life	No Effect	7	30
	Little Effect	11	48
	Moderate effect	4	17
	Severe Effect	1	4
Effect of LBP on Duties	No Effect	7	30
	Little Effect	12	52
	Moderate Effect	4	17
	Severe Effect	0	0
Sick Leaves due to LBP	yes	4	17
	no	18	78
Modified job due to LBP	yes	0	0
	no	23	100
Sleeping disturbances	no	9	39
	Rare	2	9
	insomnia	3	13
	discomfort	7	30
	interrupted sleep	2	9
Frequency percentage of nurse's comment about effects caused by their LBP	restriction of activity and movement	18	78
	taking many days off	0	0
	thinking to leave job	4	17
	restriction of activity, movement and taking many days off	0	0
Receive any spine surgery	Yes	2	9
	No	21	91

Table-4 shows the effect of LBP on personal life and duties of healthcare workers, data presents that 30 % of target group had no effect whether on their personal life and their duties. Also 48 % had little effect of LBP on their personal life while 52 % had little effect of on their duties. 78 % of them suffered with restriction of activity and movement were caused by LBP. On the other hand, all of them do not modified their job due to suffering LBP but only 17 % were thinking to leave their jobs and 78 % never had sick leave due to LBP. 39 % stated that there was no sleep disturbance while 30 % felt discomfort 91 % of study subjects did not receive any spine surgery during their life. Also the association between knowledgeable levels of the healthcare workers and LBP frequency is no significant (P-value= 0.484) as presented in Table 5. It clears that the two studied variables are independent and do not affect one another.

Table 5: The association of Knowledgeable Level and LBP Frequency

Knowledgeable level	LBP Frequency			P-value < 0.05	Chi-Sq.
	All the time	Once/twice a week	Once/twice a month		
None	1	2	2	0.484	3.463
Little	6	3	5		
Knowledgeable	0	2	1		
Total	**7**	**7**	**8**		

Table 6: The association of Training and LBP Frequency

Training	LBP frequency			P-Value < 0.05	Chi-Sq.
	All the time	Once/twice a week	once/twice a month		
Yes	0	4	3	0.065	5.45
No	7	3	5		
Total	**7**	**7**	**8**		

Table-6 shows that the association between conducting training of the healthcare workers and LBP frequency is clearly significant (P-value= 0.065) so it seems that the two studied variables are dependent and can affect one another. Also, LBP frequency has significant association with lifting objects and patients in this unit (Table-8). In contract, there is no association between working hours and LBP frequency (P-value=0.394, CI= 0.95) as presented in Table-7.

Table 7: The association of Working hours and LBP Frequency.

Working hours		LBP Frequency			P-Value < 0.05	Chi-Sq.
		All the time	Once/twice a week	Once/twice a month		
	6 hours	5	2	4	0.394	4.093
	12 hours	2	5	2		
	24 hours	0	1	1		
Total		**7**	**8**	**7**		

Table 8: The association of Lifting objects/patients and LBP Frequency

Lifting Objects/Patients	LBP Frequency			P-Value < 0.05	Chi-Sq.
	All the time	Once/twice a week	Once/twice a month		
Yes	7	2	6	0.008	9.775
No	0	6	2		
Total	**7**	**8**	**8**		

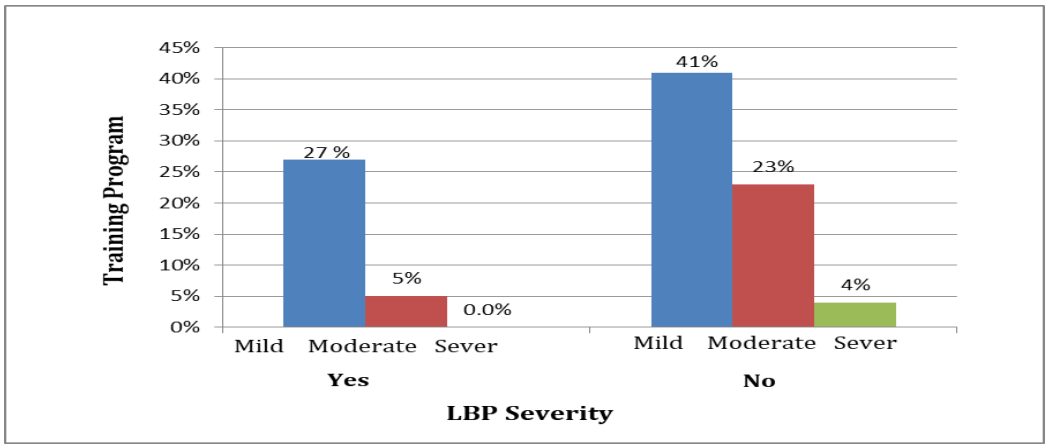


Figure (1): The association of Training program and LBP Severity

In the figure-1, the healthcare workers in the surgical unit do not conducted any training program regarding performing their duties properly, complaints with (41%) mild LBP, (23%) moderate LBP, and (4%) sever LBP with (P-value= 0.547, Chi-Sq=1.56). Thus, there is no association among these variables. Additionally, figure-2 presents that there is no significant association between different working hours and the severity of LBP among the healthcare workers in this unit as most of them suffer mild LBP even though their working hours are 6 hours daily (p-value= 0.788, Chi-Sq=1.71)

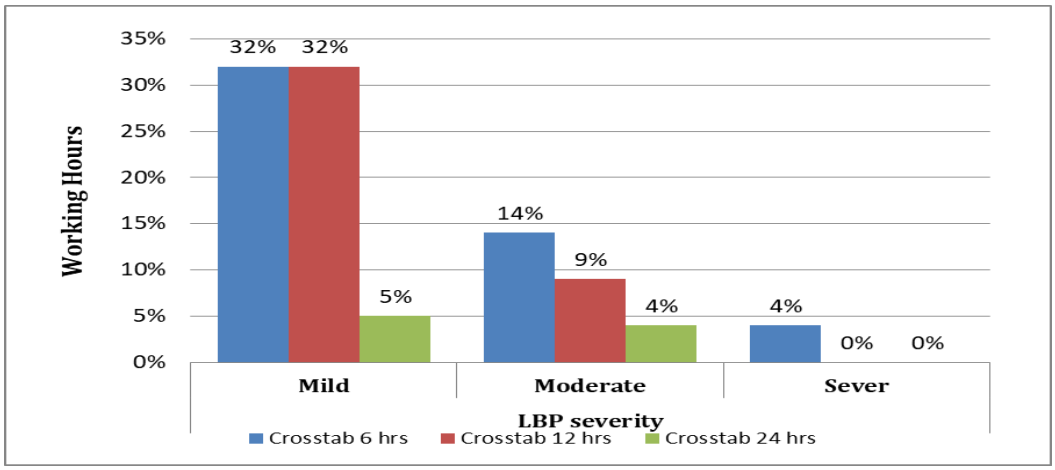
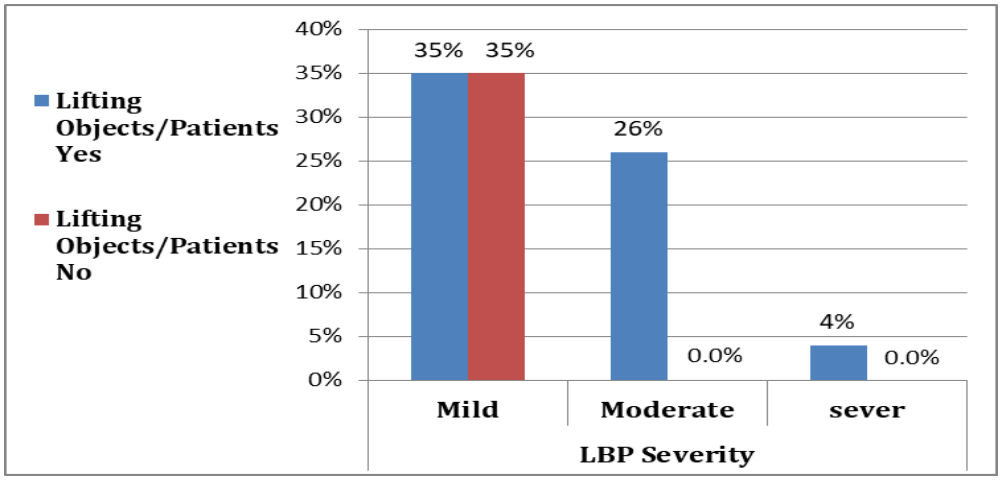


Figure (2): The association of Working hours and LBP Severity



Figure(3): The association of Lifting Objects/Patients and LBP Severity

The majority of the healthcare workers as presented in Fig-3 suffer from mild LBP with 35% for each different group whether workers who perform lifting tasks or not. 26% of healthcare workers who perform lifting tasks, suffer of moderate LBP. Thus, there is a positive significant association (P-value=0.04) between these variables. On the other hand, the majority of demo-graphic factors including occupation, gender, marital status and etc (Table-9) do not present any significant association with LBP severity, except the age factor, which shows clear positive relationship with LBP severity (P-value=0.001).

Table 9 : The association of Demographic Factors and LBP Severity

Demo-graphic Factors		LBP Severity %			P-Value	Chi-Seq
		Mild	Moderate	Sever		
Occupation	Physician	26.0%	0	0	0.209	5.87
	Nurse	44	22.0%	4		
	Technician	0	4	0		
Gender	Male	18	13	0	0.418	1.75
	Female	52	13	4		
Age	21-30	30	13	0	0.001	23.4
	31-40	35	13	0		
	41-50	0	0	4		
	>60	4	0	1		
Experience	0-5	31	9	0	0.565	8.65
	6-10	9	4	0		
	11-15	0	4	0		
	16-20	26	4	5		
	21-25	0	4	0		
	>26	4	0	0		
Qualifications	Diploma	26	22	0	0.270	5.17
	BSc	35	4	4		
	PhD	9	0	0		
Marital Status	Single	26	17	0	0.314	2.31
	Married	44	9	4		
Work Shift	Day shift	35	13	4		

	Rotatory	35	13	0	0.619	0.958
Smoking	Never	62	14	5	0.061	9
	Current	0	14	0		
	Previous	5	0	0		
Exercise	None	48	17	4	0.842	2.72
	Daily	9	9	0		
	Weekly	9	0	0		
	Monthly	4	0	0		

Discussion

A cross-sectional study was used to determine the prevalence of LBP among healthcare workers in surgical unit in Al-Fatah hospital in Benghazi city of Libya. The outcome of this study presented that the prevalence of LBP related to performing duty was 20 out of 23 healthcare workers at this unit (87%). This indicates that there was a critical situation regarding the workers' health. An evidence in operating room showed that the prevalence of LBP among nurses in the operating room was 78.1%.[13] This result do agreed with the outcome of another study in Libya (2016) found out that the prevalence rate to LBP was 55 % among nurses at emergency department in Benghazi Medical Centre (BMC).[10] Additionally, the prevalence rate of LBP among nurses over 12 months in hospital in Tunisia (2017) was 58.1% which is high and bringing light on importance of suitable ergonomic management policy.[13] A study also in 2017, showed that nurses experience a higher prevalence of LBP and work-related musculoskeletal complaints because of no suitable management policy implemented in hospitals.[11] Accordingly, it is necessary to implement solutions for these risks and hazards at work and apply prevention actions of ergonomics at work.

The majority of demo-graphic factors of this current study subjects including occupation, gender, marital status and etc do not showed any significant association with LBP severity, except the age factor, that presented clear positive correlation with LBP severity as most old workers were suffered LBP severity. These result similar to the outcome of another study in BMC as it has been found, the exposure to LBP increased among older age groups so the age factor is presented positively associated with chronic LBP.[6][10] Also, a study among nurses in hospital in Bangladesh, where found positively association between age with chronic LBP.[12] Although there was no association of LBP and smoking severity of Pain, clear association was appeared with smoking frequency and LBP complains (p-value= 0.077). Evidence displayed that individual factors including smoking can can threaten them to progress LBP.[5][6][12]

In addition, LBP frequency and severity had significant association with lifting objects and patients in the surgical unit of the current study. An evidence conducted in the hospitals include LBP from manual lifting of objects, equipment and patients. This evidence found that patients lifting put medical staff in specific nurses as one of the occupations most affected by LBP. [7] Accordingly, Lifting task is considered as one of the main ergonomic factors that can threaten healthcare workers to

progress LBP. [5][6] Moreover, the subjects of this study who were suffering from LBP, presented that there were significant association between LBP occurrence and occupation (p-value= 0.032). More than half (16 out of 23 workers) were nurses so this explain the reason of this association because of the duty of nurses in surgical unit so the job has exposed them to this problem. Without doubt, many studies mentioned that healthcare workers in particular nurses were the highest LBP complains.[5][6][7][9] This study also found that the majority of the study subjects did not perform any sort of exercise as the routine exercise can enhance body health, performance, and tolerance of quick fatigue and can clearly diminish the risk exposure to LBP. The another study in Libya had same outcome regarding exercise.[10] Give an impression on the lifestyle of Libyans that it is relatively free of the culture of exercise.

Conclusion

Healthcare workers experience a higher prevalence of low back pain (LBP) complaints due to no proper policy related to LBP, the job has exposed them to the problem. Most of them showed the same intensity of complaints. Thus, it might be suggested that LBP proceeds a recurrent rather than an aggravating course, which should be measured in the future management of LBP in the healthcare sector. It is supposed that improved managing strategies among healthcare workers contribute to a large extent to these results. Extra research and exploration will reveal supposed predictive factors.

Recommendation

- The prevalence of the problem is significantly high. Thus, a proper no weight lifting policy should be considered.
- Hospitals should be well equipped with all necessary lifting equipment. All these might go a long way in reducing the high rate of LBP among healthcare workers.
- Implement and review education training course on back care ergonomics and patient transfer should be organized for nurses on regular basis.

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