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

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Abstract

Low back pain (LBP) is recognized as a cause of morbidity in the developed nations in different occupational situations, in specific in health care workers (HCWs) including physicians, nurses and technicians, who are vulnerable to LBP. About 60–80% of the general people suffer from LBP at some time during their lives. Health care workers There is no enough care about workplace health and safety problems facing the health care work force in developing nations such as Libya. Thus, work-related problems among health care workers in operating room at Al-Fateh Children Hospital in Benghazi city, Libya are described in this study. **Methods:** Cross-sectional data were collected through a questionnaire that included four classes: work-related demographics, occupational injury/illness, reporting behaviour, and safety concerns. **Results:** Health care 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 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. If not, proper manual lifting must implemented. 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:

Pain is a protection mechanism designed to create the subject defend an injured part from other damage It refers as particular sensation. Low back pain (LBP), perhaps more precisely called lumbago or lumbosacral pain, occurs below the 12th rib and above the gluteal folds. Low back pain (LBP) is recognized as a cause of morbidity in the developed nations in different occupational situations, in specific in health care workers (HCWs) including physicians, nurses and technicians, who are vulnerable to LBP. About 60–80% of the general people suffer from LBP at some time during their lives. However, an evidence stated that, health care workers (HCWs) present high rates of work-related illnesses and injuries,[1] Recent studies also showed that the main health concerns can negatively impact the health and performance of health care workers was musculoskeletal injuries in specific Low back pain (LBP) during performing duties. The mechanical hazards in the hospitals include LBP from manual lifting patients and equipment that can make HCWs as a one of the occupations most affected by LBP.[2][3] An evidence conducted the mechanical hazards in the hospitals include LBP from manual lifting of objects, equipment and patients founded that patients lifting put medical staff as one of the occupations most affected by LBP. [4] High physical work load and work stress have recently added to this list. 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 mentioned that LBP remains the most common reason of early retirement, sickness absence, job changes among the workers.[7] HCWs are often required to lift and transport patients and/or equipment in awkward situation, particularly in developing nations as lifting aids are not always offered or feasible.[7][8] Thus, LBP is still the main concern disturbing the life quality and work productivity.[9] 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.[10][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 was78.1%.[13] Accordingly, This study was carried out to determine the prevalence and risk factors of LBP among health care workers (Operating room) in Al-Fateh Children Hospital.

Methods

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

Study Design:

A descriptive cross-sectional study was conducted among health care workers at the operating rooms of the Al-Fateh children hospital in Benghazi city, Libya.

Data Collection:

Data was collected through using a questionnaire that was performed 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. The questionnaire was distributed to all participants by researchers. After a period of time the researchers returned to collect the completed questionnaires.

Sample Population and Sample Size:

The total population in the surgical unit (operating room) in the different shift was 23 health care workers. Also, the participation rate (Response Rate) was 100%.

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:

There was no ethical issues and applying for ethical approval was made in order to collect the data.

Inclusion criteria

The study includes all workers, who experience one year and more.

Exclusion criteria:

The study excludes workers with history of back surgery and pregnant female workers and workers with less than a year experience.

Results

This study found out the outcome of 23 study subjects in the purpose of determine the prevalence of Low Back Pain (LBP) among health care worker in the operating rooms of the Al-Fateh children hospital and explore the potential risk factors associated with LBP. Table-1 presented 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	5	15.2
	Nurse	25	58.5
	Technician	2	3.4
Gender	Male	6	4..3
	female	25	58.5
Age	21-30	2.	34.4
	31-40	22	36.7
	41-50	2	3.4
	51-60	2	3.4
Experience years	0-5 years	8	48.2
	6-10 years	4	24
	11-15 years	2	3.4
	16-20years	7	43.7
	21-25 years	2	3.4
	more than 26 years	2	3.4
Qualification	Diploma	22	36.7
	Bachelor's degree	2.	34.4
	postgraduate certificate	-	-
	Master	-	-
	PhD	1	7.6
Marital status	Single	2.	34.4
	Married	24	45.4
	Divorce	-	-
Working hours	6 hours	22	36.7
	12 hours	8	48.2
	24 hours	1	7.6
Work shift	Day shift	21	41.1
	Rotatory shift	22	36.7
Are you smoking	Never	26	64.8
	Current smoker	4	24
	Previous smoker	2	3.4
Exercise	None	25	58.5
	Everyday	3	26.3
	weekly	1	7.6
	monthly	2	3.4

Among the affected study subjects who suffered 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 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	6	4.
	Once /twice a week	7	44
	Once/twice a month	7	44
Severity of LBP	Mild	25	70
	Moderate	5	15
	Severe	2	3
Complaining LBP related to duty	Pre on to post duty	4	24
	On duty	4	11
	On to post duty	6	4.
	Post duty	4	11
LBP Description	Localised LBP	26	63
	LBP with numbness	2	3
	Pain of the leg/ buttock	4	11

Table 3- presented that study subjects who suffered from LBP, there was a significant association between LBP occurrence and job description (P-value= 0.032). However, the association between others socio-demographic characteristics of health care workers in the surgical unit including gender, age, marital status, experience, smoking, qualification, work hours and work shift with LBP frequency was not significance. Based on P-values listed on this table, it cleared that those studied variables were independent and did not affect one another.

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	-	4	2	...41
	Nurse	5	4	6	
	Technician	2	-	-	
Gender	Male	4	1	1	..584
	Female	3	5	5	
Age	20-30	4	4	3	..517
	31-40	4	3	3	
	41-50	2	-	-	
	51-60	-	2	-	
Experience Years	0-5	1	4	3	..613
	6-10	2	2	2	
	11-15	2	-	-	
	16-20	1	4	4	
	21-25	2	-	-	
	<26	-	2	-	
Qualification	Diploma	4	4	4	0.198
	BSc	1	4	4	
	Postgraduate	-	-	-	
	Master	-	-	-	
	PhD	-	1	-	
Marital status	Single	4	4	3	0.880
	Married	3	4	3	
	Divorce	-	-	-	
Working hours	6 hours	4	1	3	..483
	12 hours	1	4	1	
	24 hours	-	2	2	
Work Shift	Day shift	4	4	3	..327
	Rotatory shift	1	4	3	
Smoking	Never	3	6	5	...66
	Current	4	-	-	
	Previous	-	2	-	
Exercise	None	4	5	4	..136
	everyday	1	1	-	
	weekly	-	-	1	
	monthly	-	-	2	

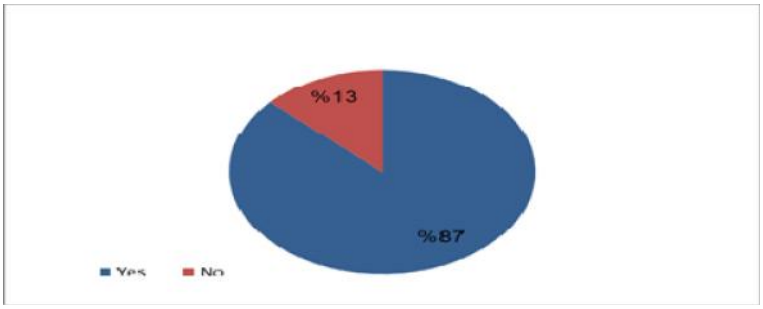


Figure (1): The Frequency of LBP (Prevalence of LBP)

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

Table 4: Low Back Pain consequences

Variable	Category	Frequency	Percentage%
Effect of LBP on personal Life	No Effect	6	4.
	Little Effect	22	37
	Moderate effect	3	26
	Severe Effect	2	3
Effect of LBP on Duties	No Effect	6	4.
	Little Effect	21	41
	Moderate Effect	3	26
	Severe Effect	-	-
Sick Leaves due to LBP	yes	3	26
	no	27	67
Modified job due to LBP	yes	-	-
	no	14	2..
Sleeping disturbances	no	8	48
	Rare	1	8
	insomnia	4	24
	discomfort	6	4.
	interrupted sleep	1	8
Frequency percentage of nurse's comment about effects caused by their LBP	restriction of activity and movement	27	67
	taking many days off	-	-
	thinking to leave job	3	26
	restriction of activity, movement and taking many days off	-	-
Receive any spine surgery	Yes	1	8
	No	12	82

Table-4 presented the effect of LBP on personal life and duties of health care workers, data determined 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 due to LBP. On the other hand, all of them did not modify 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.

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	2	1	1	..373	3.463
Little	5	4	4		
Knowledgeable	-	1	2		
Total	**7**	**7**	**8**		

Also the association between knowledgeable levels of the health care workers and LBP frequency was no significant (P-value= 0.484) as presented in Table 5. It cleared that the two studied variables were independent and did not affect one another.

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 showed that the association between conducting training of the health care workers and LBP frequency was not significant (P-value= 0.065) so it seen that the two studied variables were independent and cannot affect one another. Also, LBP frequency had a significant association with lifting objects and patients in this unit (Table-8).

In addition, there was 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**		

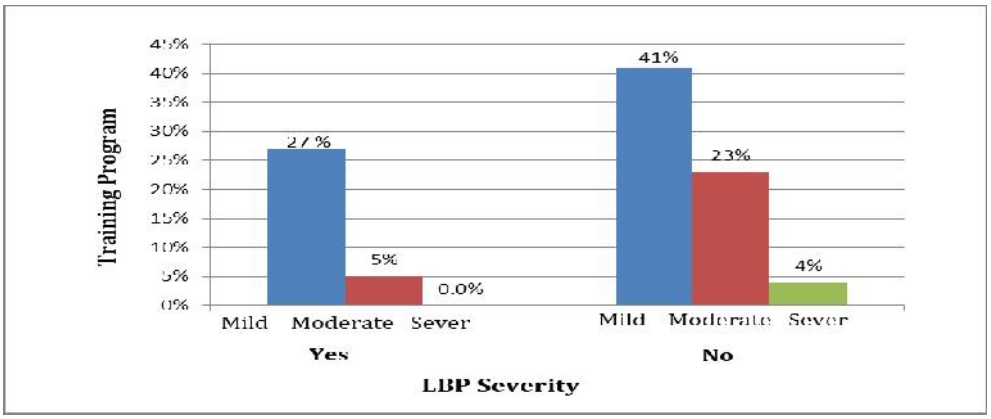


Figure (2): The association of Training program and LBP Severity

In the figure-2, the health care workers in the surgical unit did not conducted any training program regarding performing their duties properly, complained with (41%) mild LBP, (23%) moderate LBP, and (4%) sever LBP with (P-value= 0.547, Chi-Sq=1.56). Thus, there was no association among these variables.

Additionally, figure-3 presented that there was no significant association between different working hours and the severity of LBP among the health care workers in this unit as most of them suffered mild LBP even though their working hours were 6 hours daily (P-value= 0.788, Chi-Sq=1.71)

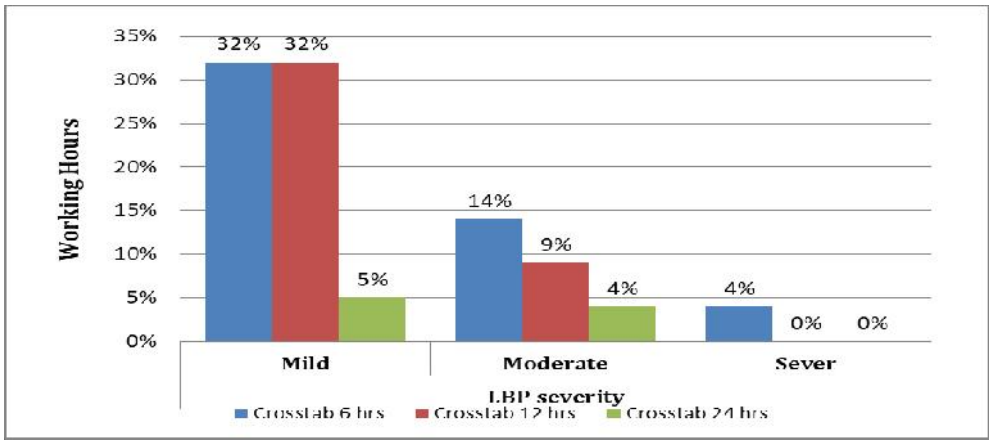
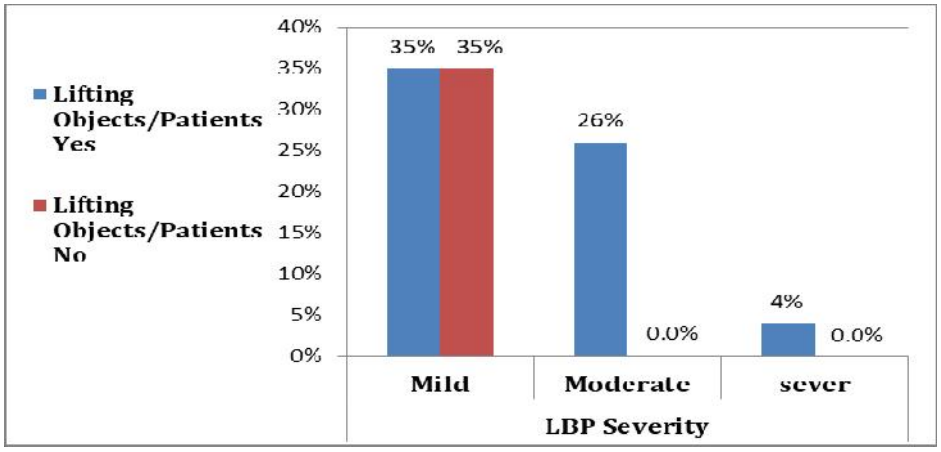


Figure (3): The association of Working hours and LBP Severity



Figure(4): The association of Lifting Objects/Patients and LBP Severity

The majority of the health care workers as presented in Fig-4 suffered from mild LBP with 35% for each different group whether workers who performed lifting tasks or not. 26% of health care workers who performed lifting tasks, suffered of moderate LBP. Thus, there was 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) did not present any significant association with LBP severity, except the age factor, which explored 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	0.209	5.87
	Nurse	44	22	4		
	Technician	0	4	0		
Gender	Male	27	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

The outcome of this study presented that the prevalence of LBP related to performing duty was 87% of health care workers at this unit. 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 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 a clear association with LBP severity as most old workers were suffered LBP severity. These result similar to the outcome of a 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, and also no association between smoking frequency and LBP complains (p-value= 0.077). Previous studies displayed that individual factors including smoking can threaten them to progress LBP.[5][6][12]
Moreover, LBP frequency and severity had a 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 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

Health care 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 health care workers contribute to a large extent to these results. Longitudinal research and exploration willreveal 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.
- If it is not affordable to provision lifting equipment, proper manual lifting policy must implemented.
- 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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