Prevalence and risk factors of low back pain in nurses working at Tikur Anbessa specialized hospital and Zewditu memorial hospital, Addis Ababa, Ethiopia

A cross-sectional study

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Abstract

BACK GROUND

Studies showed slightly higher lifetime prevalence of lower back pain (LBP) among nurses and it is also a common cause of morbidity in the general as well as the working population. But, it is under studied in nurses working in Ethiopia.

Objective

The main objective of this study was to assess the prevalence of low back pain and associated risk factors among nurses working at Tikur Anbessa specialized and Zewditu Memorial hospitals.

Methods and materials

A cross-sectional study including all randomly selected nurses currently working in the above two hospitals was conducted using a structured self-administered questionnaire.

Results

Three hundred sixteen nurses (123 [38.9%] males and 193 [61.1%] females) participated in the study. The 12 month prevalence of LBP was 147 (46.5%). The prevalence was slightly higher in female nurses (50.3%).

LBP was significantly associated with working hours, bad body posturing, having direct patient contact and previous history of trauma. 74 (50.3%) and 13 (8.8%) nurses reported mild and severe LBP, respectively. Chronic LBP accounted for 83.7% cases. Only 63 (42.9%) of nurses with LBP sought treatment. 49 (27.1%) nurses had been off-duty in one time or the other in the past one year and the total work days lost were 427 days.

Conclusion

Though it is not associated with a significant loss of work days, LBP is prevalent among nurses. Different occupational and non-occupational factors increased the risk. This can decrease the day to day effectiveness and job satisfaction of nurses and affect quality of their lives as well as patient care.

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ACRONYMS

BMI: Body mass index

CI: Confidence interval

COR: Correlation and linear regression

FMoH: Federal ministry of health

HSDP: Health sector development program

ICU: Intensive care unit

JUSH: Jimma University Specialized hospital

LBP: Low back pain

OR: Operation room

SD: Standard deviation

TASH: Tikur Anbessa Specialized Hospital

WHO: World health organization

ZMH: Zewditu Memorial Hospital

CHAPTER ONE

INTRODUCTION

Background

Low back pain (lumbago or lumbosacral pain) occurs below the 12^{th}rib and above the gluteal folds (1, 2).

LBP is a common cause of morbidity in the general population as well as the working population. It has been shown that 60–85% of the general population suffer from LBP at some time during their lives and the global prevalence of LBP showed that it is a major problem throughout the world and is most prevalent among females and persons between the ages of 40–80 years (4, 7). It occurs in similar proportions in all cultures, interferes with quality of life and work performance, and is the most common reason for medical consultations (5). Acute back pain is the most common presentation and is usually self-limiting, lasting less than three months regardless of treatment.

Studies showed slightly higher lifetime prevalence of LBP among nurses, results varying between 56% and 90% (12, 17).

Despite the fact that acute episodes that last up to three months are the commonest presentation of LBP and recurrent bouts of such episodes is the norm. Chronic LBP ultimately is more disabling and dispiriting because of the physical impediment it causes and its psychological effects (5).A longitudinal study across eight years indicated the same intensity of LBP in almost half of the nurses, thus supporting a recurrent rather than a progressive nature of LBP (14).

Statement of the problem

The WHO identified in 2006 a minimum density threshold of 22.8 skilled health professionals/10,000 people to provide the most basic health coverage. In 2010, Ethiopia's density of skilled health professionals was 2.7/10,000 and by 2035, the country is required to have a 1354% increase to meet the WHO minimum threshold of 22.8/10,000 (18).

Ethiopia suffers from an acute shortage of healthcare workers at every level. The country began implementing HSDP in 1997. One of the program's eight components is to expand the supply and productivity of health personnel. FMoH statistics showed that the total number of nurses BSc, and diploma in the 2nd and 3rd phases of HSDP were 17,300 (1:4, 222) and 18,146 (1:4, 250) respectively (19).

It has been shown that 60–85% of the general population suffers from LBP at some time during their lives (3, 4).

Among nurses the lifetime prevalence was found to be slightly higher, varying between 56% and 90%, which is slightly higher than the general population (17).

Little is known about the prevalence and risk factors of LBP among the general population of Ethiopia though it is widely investigated worldwide. Same is true about work related musculoskeletal disorders, which pose a major health and socioeconomic problem in modern society. One study showed a high 12 month prevalence of LBP among nurses working in Jimma University Specialized Hospital (JUSH), more prevalent among female nurses (67.5%) and it was also associated with occupational hazard and poor knowledge of back care ergonomics (11).

Significance of the study

Despite the growing literature on LBP among the nursing staffs, very little is known about the state of the problem in Ethiopia. The main objective of this study will be to determine the prevalence and risk factors of LBP among nurses. It will give a clue for more effective planning of a multi centered study of LBP among the nursing professionals and prevention and management of LBP.

CHAPTER TWO

LITERATURE REVIEW

LBP is a common cause of morbidity in health care workers especially nurses and this is widely attributed to the manual handling that the job requires (4, 7). Nurses are frequently required to undertake heavy lifting, often with a bent or twisted posture. Biomechanical investigations have confirmed that such tasks generate high spinal stresses (20).

In a longitudinal study across eight assessing course of LBP among 1307 nurses working in a large university hospital in Switzerland, LBP was highly prevalent at baseline. Thirty five per cent of the nurses complained of mild LBP (1–7 days) and 33% reported moderate to severe LBP (>8 days) within the preceding 12 months. They found that LBP was stable for eight years in approximately half the nurses irrespective of its intensity at baseline. They suggested that LBP takes a recurrent rather than an aggravating course (14).

In a study comprising 2405 hospital based nurses employed by Southampton University Hospitals Trust, 1659 of them completed questionnaires (a response rate of 69%). Of these, 97% were women and 50% worked full time. The ages of responders ranged from 19 to 65 with mean 38 and median 36 years. Among female nurses the lifetime and the one year period prevalence of LBP was 60% and 45%, respectively, and 10% had been absent from work because of back pain for a cumulative period exceeding four weeks (12).

In an analytical cross sectional study designed to investigate acute and chronic LBP in a total of 1,246 Iranian nurses (576 (46.23%) male and 670 (53.77%) female) and its association with exposure to physical violence as well as its personal and ergonomic risk factors, both acute and chronic LBP were associated with physical violence experience and both were predicted by positive past history of LBP as well as frequent bending and carrying of patients (13).

The overall prevalence of LBP among OR nurses in Gaza Governmental Hospitals was 70.6%. The prevalence of pain was 68.2% among males and 78.8% among females. The highest complaint of LBP (100.0%) was reported among those who have a long work experience (23 – 36 years). The prevalence of LBP was 82.8% among those who have BMI more than 30. There were no significant differences between genders, years of experience and BMI and LBP

distribution (P > 0.05). Prolonged time standing during surgery was the main risk factor for LBP (67.1%), followed by work overload (65.0%), lifting and transferring patients (62.9%) (6).

In a cross-sectional-descriptive study of occupational-related back pain among Jordanian nurses working in different areas of critical and general wards from two major governmental hospitals in Jordan, the majority of participants were female (64.6%) and younger than 40 years (93.3%), with range from 23 to 51 years (Mean 35 ± SD 5.2). Most were ICU nurses (35.3%), and almost two thirds were single (58.7%). 21.3% were smokers, and 78.7% spent their duty standing for a while. Only 20% of nurses were overweight, with BMI from 25 to 29. Nurses who were smokers show no significant difference of back pain in comparison with non-smokers. 76.7% reported the LBP happened after they started practicing nursing. Frequency of back pain mostly reported was once a week (38%). Though statistically insignificant, the highest frequency of back pain was among nurses with experience of more than 8 years (30.6%) and ICU nurses (36%) (8).

The cumulative life-prevalence of LBP among health care providers (n=931) working at a district hospital in Sibu, Malaysia was 72.5% and the yearly prevalence was 56.9%. Chronic LBP prevalence was noted in 5.1% of the cases, with staff nurses (38.8%) and community nurses (19%) most commonly reporting LBP. 84.1 % of LBP sufferers developed symptoms only after starting work at the hospital. Treatment was sought in 34.1% of LBP sufferers and traditional treatments (60.5%) were preferred over modern treatments (27.7%) and the researchers' explanation was the likely association with the lack of knowledge (71.2% claimed little or no knowledge of back care) and training among the staff (77.9% untrained). Only 7.3% required sick leave or absence from work due to LBP. Risk factors associated with LBP were professional categories, bad body posture, the increased levels of lifting, levels of job satisfaction and stressful job demands (P<0.05). Association between advanced age, the seniority of working experience and tobacco consumption with LBP was not statistically significant (P>0.05) (15).

In a cross sectional study aiming to measure the magnitude of LBP among Hong Kong nurses and its association with the work-related psychological strain and patients handling activities, 377 nurses were interviewed and 153 (40.6%) reported having LBP within the last 12 months. Risks were increased where nurses self-reported that they only occasionally or never enjoyed their work, where frequent manual repositioning of patients on the bed was required, and where they were required to assist patients while walking (21).

In 150 nurses working at Zagazig University Hospitals, Egypt, LBP prevailed in 79.3% of them. The highest percentage was found among nurses working in the ICU (95.0%) followed by the surgical departments (88.1%) and the internal medicine departments (74.6%), and the lowest was in the outpatient clinics (64.0%). Chronic LBP complaints (>3months) were seen in 76.5% of nurses, followed by recurrent complaints in 17.6% and acute complaints (<2months) in 5.9%. Regarding LBP duration, 29.4% of nurses complained of LBP lasting for 1–7 days, and 31.1% had LBP for 7–30 days, and 39.5% had LBP for more than 30 days. LBP was highest among nurses older than 40 years (86.5%, $P < 0.02$). LBP was seen in 49 of 72 (68.1%) nurses with BMI less than 30 kg/m2, whereas it was seen in 70 of 78 (89.7%) nurses with BMI of 30 kg/m2 or more. Work related physical risk factors include heavy lifting (85.7%), twisting (83.2%), prolonged standing (73.9%), prolonged sitting (71.4%), walking for long distances (70.6), and bending forward (69.8%). In this study the highest percentage of LBP complaints was in nurses employed for 20 years or more (86.1%). Seniority in the establishment, duration of employment, work shift, and hours of work per month did not have a significant relationship with LBP complaints. Thirty five (29.4%) nurses suffered from mild LBP (lasting for 1–7 days), 37 (31.1%) nurses suffered from moderate LBP, and 47 (39.5%) nurses suffered from severe LBP. The duration of sick leaves was 1–7 days among 58.8% of nurses with LBP, followed by 8–30 days (25.2%), and then more than 30 days (16%). In those who sought medical advice, 40.33% received NSAIDs and muscle relaxants, 23.53% received physiotherapy, 16.63% used topical preparations, 14.28% required time off work, and 5.88% used a back belt (10).

In a cross sectional study that included 741 nursing professionals from five selected low resource setting hospitals in Uganda, the average age of the respondents was 35.4 (SD 10.7) years and majority were female (85.7%). The average working hours per week was 43.7 (SD 18.9) hours and the mean career duration was 11.9 (SD10.5) years. About 59.5% were married. The 12-month period-prevalence of musculoskeletal disorder at anybody site was 80.8%, the most common site being the lower back (61.9%). Significant risk factors reported included bent posture (OR 2.25, 95% CI), twisted posture for long (OR 1.97, 95% CI) and mental exhaustion (OR 2.05, 95% CI). Female respondents were 2.26 times more likely to report lower back pain than their male counterparts (9).

In a cross-sectional survey carried out among nurses in Murtala Mohammad Specialist Hospital (MMSH), Kano, North-West Nigeria, where 408 respondents (148 [36.27%] males and 260 [63.73%] females) participated, the 12 month prevalence of LBP was 73.53%. LBP was more prevalent among female nurses (68%). Two hundred (66.67%) of the LBP cases believed that their LBP was related to their work (occupation) while 40 (13.33%) and 60 (20.00%) associated their back pain with domestic and previous trauma, respectively. Eighty nurses (26.67%) working in the Obstetrics and Gynecology department including labor room/ward showed high prevalence of LBP. The duration of LBP was acute lasting less than 2 weeks in 140 (46.67%) and chronic lasting more than 3 months in 102 (34%). Prevalence of LBP increased with age. All respondents with no LBP had previous knowledge of back care hygiene. 220 (73.33%) LBP respondents had no knowledge of back care hygiene. 130 (43.34%) nurses indicated that their pain was mild and 54 (18%) reported it was severe. About 107 (35.67%) nurses who reported LBP had been off-duty in one time or the other for the past 12 months. 125 (41.67%) sought relief from medical consultation prescriptions, 81 (27%) did physiotherapy, while the remaining 94 (31.33%) self-medicated themselves (16).

Among 508 Ethiopian and Nigerian respondents (178 [35%] males and 330 [65%] females), the 12 month prevalence LBP was 360 (70.87%). LBP was more prevalent among female nurses (67.5%) than the male nurses (32.5%). It was also associated with occupational hazard and poor knowledge of back care ergonomics. The prevalence of LBP was highest among nurses in Obstetrics and Gynecology Unit (26.67%) and least among tutors (4.17%). There was a significant association between gender, knowledge of back-care ergonomics and prevalence of LBP ($p < 0.05$). Nurses only lost 202 days (0.15%) of the total working (508x365) days. Though, longer sick leaves (7563 days) were medically advised and applied for, only about 2.7% of the applied sick leaves were granted on technical and/or administrative grounds against medical recommendation and advices (11).

CHAPTER THREE

OBJECTIVES

General objective

To assess the prevalence and risk factors of low back pain in nurses working at Tikur Anbessa specialized hospital and Zewditu Memorial hospital

Specific objectives

- To assess the magnitude of LBP
- To assess treatment seeking behavior of nurses
- To determine factors associated with LBP

CHAPTER FOUR

METHODS AND MATERIALS

Study area

The study was conducted in Tikur Anbessa Specialized Hospital and Zewditu Memorial Hospital involving nurses currently working in both facilities. TASH is the largest referral public hospital in Ethiopia and it has been the main teaching hospital for both clinical and preclinical training of most of disciplines. It has 836 nurses.

ZMH is currently operated by the Ministry of Health. Currently, it has 264 working nurses in different departments.

Study period

The study was conducted from August – December, 2016

Study design

A cross-sectional study was conducted among nurses working at TASH and ZMH

Source population

All nurses currently working at the hospitals

Sample size and sampling technique

Sample size calculation

$n = Z^2 P (1-P)/e$

Where: n is the sample size, z = 1.96 (normal distribution curve). P is the expected prevalence = 50%, as there has not been a published study done regarding the prevalence and risks of LBP in nurses of both BLH and ZMH before. **e** is the error of the estimate (absolute precision) (± 5%); with 95% confidence level.

$$n = 1.96^2 \times 0.5\ (0.5) / 0.05^2 = 384$$

Sampling technique

Convenience sampling technique was used.

Study variables

Independent variables: Age, sex, marital status, height, weight, BMI, working department, number of children, history of back injury while working, period of working experience, knowledge of back care ergonomics, physical exercising , work posture, number of lifts or transfers per day, cigarette smoking, job satisfaction

Dependent variables: prevalence of LBP, lost work days, change in working unit, type of treatment sought

Data collection material and process

The Nordic Musculoskeletal Questionnaire was developed from a project funded by the Nordic Council of Ministers with the aim of developing and testing a standardized questionnaire methodology allowing comparison of low back, neck, shoulder and general complaints for use in epidemiological studies (23). A self-administered modified Standardized Nordic questionnaire for the analysis of LBP was prepared and distributed to be filled by all participating nurses. The questionnaire consisted of 33-item questions. Questionnaires were distributed to be filled by participating nurses and later were collected back by nurses assigned by the principal investigator.

Data processing analysis

Data were uploaded to IBM SPSS statistics version 21. Monovariate analysis and multiple binary logistic regressions were used to identify significant association between variables.

Cross tabulation and Chi-square test were done for binary and multiple entry variables to calculate P value, odds ratio, and CI. CI which doesn’t cross 1 is significant (P value less than 0.05).

Ethical consideration

Protocol approval was obtained from the Ethical Review Committee of the Department of Neurology and the Institutional Review Board (IRB) and Research and Publication Committee of the School of Medicine of Addis Ababa University. Before questionnaires

were filled, study subjects were given details of the study aim and were provided with clear informed written consent at the beginning of the questionnaire. No names were required and confidentiality was guaranteed. Participants were informed that they can withdraw at any time and guaranteed that data was only to be used for research purpose.

Data quality assurance

Each questionnaire was checked for completeness and those incomplete ones were eliminated from the research.

Eligibility criteria

Inclusion criteria: all nurses employed by TASH and ZMH currently working in both hospitals

Exclusion criteria: nursing experience less than one year, Pregnancy, those who delivered in the past three months, nurses in training, having any back pain before commencing nursing

68 questionnaires were excluded because of incompleteness.

Operational definitions

- By low back trouble is meant ache, pain or discomfort in the area between 12th ribs and lower gluteal fold whether or not it extends from there to one or both legs (sciatica) (25).
- Acute low back pain: pain of <3 months in duration
- Chronic low back pain: pain that has persisted beyond normal tissue healing time (or about three months) (29).

CHAPTER FIVE

Results

Among the 316 studied nurses, 147 (46.5%) suffered from LBP. Of the 123 male respondents, 50 (40.7%) reported LBP and among the 193 female participants, 97 (50.3%) reported having LBP. There was no significant association (P>0.05) between gender (sex) and prevalence of LBP among nurses (Table 1).

The ages of responders ranged from 21 to 58 with mean 31.6 and SD 8.4. 188 (59.5%) participants were between the age of 18-30 years, while 86 (27.1%) and 12 (3.8%) were in the age groups of 31-40 years and 51 or more years, respectively. There was no significant association between LBP complaints and age and marital status of the studied nurses (P >0.05) (Table 1 and 3).

Two hundred twenty (69.6%) nurses had a normal BMI and 5 were obese. Only 95 (43.2%) nurses with a normal BMI reported of having LBP (Table 3).

Among 15 nurses working in medical wards, 11 (73.3%) reported having LBP and of 16 pediatric and 32 surgical ward nurses, 12 (75.0%) and 19 (59.4%) complained of LBP, respectively (Table 3).

Nursing experience above 5 years, working hour greater or more than 50 hours per week and having direct patient contact were found to have significant association with the risk of having lower back pain. But, there was no significant association between the prevalence of LBP and job satisfaction, performing patient or object lifting and number of lifts or transfers done per day (Table 3).

One hundred ninety respondents (60.1%) had previous knowledge of back care hygiene of whom 99 (51.1%) had LBP. 48 (38.1%) LBP respondents had no knowledge of back care hygiene (Table 1 and 3).

Among non-occupational risk factors studied, only previous history of trauma to the back showed a significant association with LBP. Of the 316 participants, 18 (5.7%) reported previous history of trauma to their back and 16 (88.9%) of them complained of having LBP (P=0.00, COR=10.2) (Table 3).
Previous history of trauma, bad body posturing, direct patient contact and working hour happened to increase the risk of LBP independently (Table 3).

Regarding LBP frequency, of the 147 nurses with LBP, 3.4% complained of having a daily LBP, 37.4% had LBP once a week and 27.2% had LBP few times a year. 50.3% and 8.8% complained of mild and severe LBP, respectively. 94 (63.9%) reported having LBP in the last seven days. 123 (83.7%) nurses reported LBP that lasted more than three months (Table 2).

49 (33.3%) respondents with LBP had been off-duty in one time or the other in the past one year. Out of this, the duration of sick leave was 1–10 days among 28.6% of nurses. Only one reported 3 months of off-duty. The total working days for all respondents were 115,340 days (316X 365) and total off-duty days were 427 (0.37%) (Table 2).

Of those with LBP, 63 (42.9%) sought treatment. 50 (34.1%) and 22 (14.9%) sought relief from painkillers and physiotherapy, respectively. 19 (12.9%) had bed rest. One (0.6%) had undergone surgery. About 40 (27.1%) who reported LBP had to change working department or duty (Table 2).

Table 1. Monovariate analysis of variables affecting LBP in nurses working at TASH and ZMH in the year 2016

Variables	Category	Frequency	Percentage
Age (year)	<30	188	59.5
	31-40	86	27.2
	>40	42	13.3
Gender	Male	123	38.9
	Female	193	61.1
Marital status	Single	136	42.9
	Married	167	53.0
	Divorced	13	4.1
Number of children	0	164	51.9
	1-3	124	39.2
	≥4	28	8.9
Cigarette smoking	Current	15	4.7
	Quitted	292	92.4
	Never	9	2.8
BMI	<18.5	26	8.2
	18.5 – 24.9	220	69.6
	≥ 25	70	22.2
Working department	OR	42	13.3
	Emergency	47	14.9
	Medical ward	15	4.7
	Surgical ward	32	10.1
	Orthopedic ward	20	6.3
	GYN/OBS	33	10.4
	Pediatric ward	16	5.0
	ICU	37	11.7
	Office work	5	1.6
	OPD	69	21.8

Variables	Category	Frequency	Percentage
Direct patient contact	Yes	275	87.0
	No	41	13.0
Perform lifting patient or objects	Yes	217	68.7
	No	99	31.3
Number of lift or transfer per day	1-5	148	68.2
	6+	69	31.8
Working hour (per week)	< 50 hours	246	77.8
	≥ 50 hours	70	22.2
Bad body posture	Yes	195	61.7
	No	121	38.3
Knowledge about back care	Yes	190	60.1
	No	126	39.9

Job satisfaction	Poor	95	30.1
	Neutral	141	44.6
	High	80	25.3
Nursing experience	≤ 5years	195	61.7
	> 5 years	121	38.3
Current participation in regular exercise	Yes	103	32.6
	No	213	67.4
Previous history of trauma	Yes	18	5.7
	No	298	94.3

Table 2. Frequency, severity, chronicity, lost work days and type of treatment sought due to LBP in nurses working at TASH and ZMH in the year 2016

	Category	**Number of nurses**	**%**
Frequency of LBP	Daily	5	3.4
	Once a week	55	37.4
	Once a month	29	19.7
	Few times a year	40	27.2
	Less than once a year	18	12.3
	Those with LBP within the past 1 week	94	63.9
Severity of LBP	Mild	74	50.3
	Moderate	60	40.8
	Severe	13	8.8

Chronicy of LBP	≤ 3 months	24	16.3
	>3 months	123	83.7
Number of lost work days due to LBP	1-5	20	13.6
	6-10	22	15.0
	11- 15	3	2.0
	>15	4	2.7
	Total work days lost	427	0.37
Treatment sought	Painkillers	50	34.1
	Muscle relaxant	0.0	0.0
	Use of back belt	3	2.0
	Physical exercise	9	6.1
	Physiotherapy	22	14.9
	Surgery	1	0.6
	Bed rest	19	12.9
	Traditional	2	1.4
	Changed working department or duty	40	27.1
	Others	1	0.6
	No treatment sought	84	57.1

Table 3. Association of variables with prevalence of LBP in nurses working at TASH and ZMH in the year 2016

Variables		Number	With LBP	%	P Value	AOR (95% CI)
Age (years)	<30	188	39	42.9	.712	.830(.309-2.231)
	31-40	86	38	44.2		
	>40	42	13	43.3		
Gender	Male	123	50	40.7	.175	.667 (.371-1.197)
	Female	193	97	50.3		
Marital status	Single	136	62	45.6	.272	1.490(.732-3.035)
	Married	167	81	48.5		
	Divorced	13	4	30.8		
Number of children	0	164	75	45.7	.136	.587(.291-1.182)
	1-3	124	56	45.2		
	>= 4	28	16	57.1		
Cigarette smoking	Current	15	4	26.7	.089	.404(.142-1.150)
	Never	292	137	46.7		
	Quitted	9	6	66.6		

Variables	Category	Frequency	With LBP	%	AOR	95% CI
BMI	<18.5	26	10	38.5	.185	1.590(.801-3.158)
	18.5 – 24.9	220	95	43.2		
	≥ 25	70	42	60		
Working department	OR	42	14	33.3	.058	2.922(.963-8.872)
	Emergency	47	18	38.3		
	Medical ward	15	11	**73.3**		
	Surgical ward	32	19	**59.4**		
	Orthopedic ward	20	6	30.0		
	GYN/OBS	33	16	48.5		
	Pediatric ward	16	12	**75.0**		
	ICU	37	14	39.5		
	Office work	5	4	80.0		
	OPD	69	33	47.8		
Direct patient contact	Yes	275	137	**49.8**	**.004**	**4.168(1.566-11.097)**
	No	41	10	24.4		
Perform lifting patient or objects	Yes	217	106	48.8	.658	.857(.432-1.699)
	No	99	41	41.4		
Number of lift or transfer per day	1-5	148	71	47.9	.358	1.745(.532-5.720)
	6+	69	35	50.7		
Working hour (per week)	< 50 hours	246	100	40.7	**.001**	**3.353(1.632-6.887)**
	≥ 50 hours	70	47	**67.1**		
Bad body posture	Yes	195	118	60.5	**.000**	**4.080(2.191-7.601)**
	No	121	29	23.9		
Knowledge about back care	Yes	190	99	51.1	.637	1.160(.627-2.146)
	No	126	48	38.1		
Job satisfaction	Poor	95	48	50.5	.460	1.158(.785-1.706)
	Neutral	141	64	45.4		
	High	80	35	43.7		
Nursing experience	≤ 5years	195	82	42.1	.230	.640(.309-1.325)
	> 5 years	121	65	**53.7**		
Current participation in regular exercise	Yes	103	53	51.4	.817	1.079(.565-2.061)
	No	213	94	44.1		
Previous history of trauma	Yes	18	16	**88.9**	**.001**	**15.783(3.038-82.007)**
	No	298	131	43.9		

Chapter Six

Discussion

The 12 month prevalence of LBP was 147 (46.5%). The prevalence was slightly higher in female nurses (50.3%). LBP was significantly associated with working hours, bad body posturing, having direct patient contact and previous history of trauma. 74 (50.3%) and 13 (8.8%) nurses reported mild and severe LBP, respectively. Chronic LBP accounted for 83.7% cases. Only 63 (42.9%) pof nurses with LBP sought treatment. 49 (27.1%) nurses had been off-duty in one time or the other in the past one year and the total work days lost were 427 days.

The high 12 month prevalence is closer to results reported by others (12, 15, and 21). This could be due to the critical shortage of staff nurses in all setups. Females were found to have a slightly higher prevalence of LBP. This might be due to the fact that they slightly out number male nurses or because of the physical changes that are brought by parity. Other studies have also reported a higher LBP prevalence in females (11, 16).
Age was not found to increase the risk of LBP. This could be explained by the fact that more than half of the nurses who participated in the study were below the age of 30 years and this age groups are not expected to have a longer experience that can predispose them to LBP. Our result concurs with that reported by others (15).

Marital status, parity, cigarette smoking or BMI did not affect the risk of LBP. Though more than half of the nurses were married, only 28 had 4 or more kids. Among 25 (4.7%) nurses who gave a current smoking history, only 4 (26.7%) reported LBP. 42 (60%) nurses with BMI of 25 or more reported LBP. But BMI did not stand out as an independent risk factor of LBP. A LBP

prevalence of 82.8% and 89.7% have been reported among nurses with BMI more than 30 (6, 10).

A higher number of nurses with nursing experience of more than 5 years reported LBP (53.7%). But seniority of working experience was not a significant risk factor of LBP. Those who are seniors are likely to be older and they are likely to be assigned to departments which are less demanding. A high prevalence of LBP was also reported by other studies among those who had long work experience (6, 8, and 10).

Direct patient contact (P=0.008, AOR=3.453, CI = 1.378-8.653), hours of work per week (P=0.001, AOR = 3.319, CI = 1.654-6.659) and bad body posture (P=0.000, AOR=4.286(2.349-7.820) were found to increase the risk of LBP independently. These factors are known to predispose nurses to occupational hazards. Many studies have reported a strong association between LBP and work related factors (6, 9-13, 15, 16 and 21).

A higher percentage of nurses working in medical, surgical and pediatric wards reported LBP but there was no significant association with LPB risk (P>0.05). When compared to OR and ICU, prolonged standing, poor body posturing and lifting and transferring of either patients or objects is lower in the wards. In other studies the highest percentage of LBP was found among nurses working in the ICU and surgical, internal medicine and Obstetrics and Gynecology departments including labor room (11, 16).

I have noticed that a significant number of nurses do not have any knowledge about back care ergonomics. Of those who reported to know how to take care of their backs (190), 51.1% had LBP. So the mere presence of back care knowledge is not adequate and nurses need to practice them in their daily practice. Significant association between ergonomic risk factors and prevalence of LBP were reported by others too (11, 13).

Except for previous history of trauma to the back (P value = 0.001, AOR = 14.635 (2.958-72.414)), other non-occupational risk factors did not turn out to have a significant relation with LBP. Trauma is a known risk factor for LBP.

Majority (50.3%) of nurses had mild LBP. This could be due to that most (123 (83.7%)) of the nurses had chronic LBP and the mostly reported frequency of LBP were once a week (37.4%) and few times a year (27.2%). Only 13 (8.8%) nurses had severe LBP. Similar results have been reported regarding frequency and chronicity of LBP (8, 10). In contrast, others have found a quite high proportion of nurses to suffer from an acute lasting severe LBP (10, 14, and 16).

Only 63 nurses with LBP (42.9%) sought treatment. This poor treatment seeking behavior might be a result of the fact that majority of the nurses suffered from mild LBP or due to poor knowledge about LBP treatments or negligence. Majority sought relief from painkillers (34.1%), physiotherapy (14.9%) and bed rest (12.9%). A study reported that only 34.1% of LBP sufferers sought treatment and in and 60.5% preferred traditional treatments over modern treatments (27.7%) (15).

Of all nurses with LBP, only 49 (27.1%) nurses had been off-duty at different occasions in the past one year and reported about 427 (0.37%) lost work days of the total 115,340 working (316 x 365) days. Given the high prevalence of LBP, it is not associated with significant loss of work days. Since the majority of nurses suffer from mild LBP, they may not needed a longer off-duty days. Others have found that though longer sick-leaves were medically advised, only few of the applied sick leaves were granted (11).

Chapter Seven

Limitations of the study

Since it is a hospital based study involving only one profession, the result might not be generalizable to the general population.

Convenience sampling method may have introduced selection bias.

Conclusion

Though it is not associated with a significant loss of work days, LBP is prevalent among nurses. Different occupational and non-occupational factors increased the risk. This can decrease the day to day effectiveness and job satisfaction of nurses and affect quality of their lives as well as patient care.

Recommendation

Increasing the number of staff nurses, developing regular back care hygiene trainings and updates, equipping hospitals with all necessary lifting aids, encouraging nurses to develop the habit of engaging in regular physical exercises and motivating them to develop treatment seeking behavior are recommended to decrease work related hazards as well as prevalence of LBP.

ANNEX I

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1.

Annex II

INFORMATION SHEET FOR PARTICIPANTS

INFORMATION SHEET, ENGLISH VERSION

Addis Ababa University, School of Medicine

Department of Neurology

Addis Ababa, Ethiopia

GENERAL INFORMATION ABOUT THE STUDY

STUDY TITLE:

PREVALENCE AND RISK FACTORS OF LOW BACK PAIN IN NURSES WORKING AT TIKUR ANBESSA SPECIALIZED HOSPITAL AND ZEWDITU MEMORIAL HOSPITAL, ADDIS ABABA, ETHIOPIA

NAME OF THE INVESTIGATOR

Hanna Assefa, MD, Neurology Resident, Department of Neurology, School of Medicine, Addis Ababa University

NAME OF THE ADVISOR

Abenet Taffese, MD, Assistant professor of Neurology, Department of Neurology, School of Medicine, Addis Ababa University

GENERAL INFORMATION ABOUT STUDY PARTICIPANTS

You are being asked to participate in this research study because data collected will help us to know more about prevalence and risk factors of low back pain in nurses.

The study doesn't require any invasive procedure. We do not anticipate any risks for you participating in this study. We will keep all personal information in the research record private and confidential. Your participation in the study is completely voluntary and you may choose to stop participating at any time.

SCOPE OF THE STUDY AND COMPENSATION FOR PARTICIPATION

You will not be compensated for participating in this study. You will not be penalized if you do not wish to participate in this study. The information we derive from this study will helpus get better knowledge in back pain prevalence in the nursing population. You may ask any questions you have and take time to decide. You may withdraw your consent at any time. If you feel comfortable to participate in this study, please sign in the consent form provided in order to begin your participation.

INFORMED CONSENT FORM, ENGLISH VERSION

STUDY TITLE:

PREVALENCE AND RISK FACTORS OF LOW BACK PAIN IN NURSES WORKING AT TIKUR ANBESSA SPECIALIZED HOSPITAL AND ZEWDITU MEMORIAL HOSPITAL, ADDIS ABABA, ETHIOPIA

NAME OF THE RESEARCHER

Hanna Assefa, MD, Neurology Resident, Department of Neurology, School of Medicine, Addis Ababa University

NAME OF THE ADVISOR

Abenet Taffese, MD, Assistant professor of Neurology, Department of Neurology, School of Medicine, Addis Ababa University

1. I confirm that I have read to the participant and the participant understands the information for the above study. I had the opportunity to answer questions satisfactorily.
2. The participantunderstands that the participation is voluntary and is free to withdraw at any time without legal rights being affected.
3. The participantunderstands that relevant data will be collected during the study. The participantgives permission for relevant individuals to have access to my record.
4. The participantagrees to take part in the study named above.

-- ---------------------- ---------------

Name of Data collector Date Signature

INFORMATION SHEET, AMHARIC VERSION

<u>ለጥናቱ ተሳታፊ ነርሶች የመረጃ ቅጽ</u>

ኣዲስ ኣበባ ዩኒቨርሲቲ

የህክምና ትምህርት ክፍል

የነርሽ ትምህርት ክፍል

ኣዲስ ኣበባ፣ ኢትዮጵያ

<u>ሀ) የጥናቱ ኣጠቃላይ ይዘት መግለጫ</u>

<u>የጥናቱ ርዕስ፡-</u>በጥቁር ኣንበሳና በዘውዲቱ መታሰቢያ ሆስፒታል የሚሰሩ ነርሶች ላይ የሚከሰተውን የወገብ ህመም ጥልቀትና ስፋት እንዲሁም ተያያዥ ምክንያቶችን ማወቅ ነው።

<u>የጥናቱ ተመራማሪ ፡</u>

ዶ/ር ሃና ኣሰፋ (ሶስተኛ ኣመት የነርቭ ህክምና ተማሪ)

የነርቭ ህክምና ትምህርት ክፍል፣ የህክምና ትምህርት ቤት

ኣዲስ ኣበባ ዩኒቨርሲቲ

<u>የጥናቱ ኣማካሪ፦</u>

ዶ/ር ኣብነት ታፈሰ (በነርቭ ህክምና ረዳት ፕሮፌሰር)

የነርቭ ህክምና ትምህርት ክፍል፣ የህክምና ትምህርት ቤት

ኣዲስ ኣበባ ዩኒቨርሲቲ

<u>የጥናቱ ጥቅም</u>

የዚህ ጥናት ጥቅም በጥቁር ኣንበሳና በዘውዲቱ መታሰቢያ ሆስፒታል የሚሰሩ ነርሶች ላይ ከስራ ጫና ጋር ተያይዞ ሊከሰት የሚችለውን የወገብ ህመም ጥልቀትና ስፋት መጠን እንዲሁም ተያያዥ ምክንያቶች ማወቅ ነው። የችግሩን ስፋትና ጥልቀት እንዲሁም የወገብ ህመምን ሊያስከትሉ የሚችሉትን ተያያዥ ምክንያቶች ለይቶ ማወቅ በቀጣይ ችግሩን ለመከላከል ይረዳል።

<u>መረጃ ለማግኘት; የተመራማሪው ኣድራሻ</u>

ዶ/ር ሃና ኣሰፋ፣ የነርቭ ህክምና ትምህርት ክፍል፣ የህክምና ትምህርት ቤት

ኣዲስ ኣበባ ዩኒቨርሲቲ

ኢሜል፦ hanniza13@yahoo.com ስልክ ቁጥር፦ 0911899351

<u>የምርምሩ ስነምግባር ኮሚቴ ኣድራሻ</u>

የህክምና ትምህርት ቤት፣ ኣዲስ ኣበባ ዩኒቨርሲቲ

ፖ.ሳ.ቁ፦ 1171 ኣዲስ ኣበባ፣ ኢትዮጵያ

ስልክ ቁጥር፦ 0118961396

INFORMED CONSENT FORM, AMHARIC VERSION

<u>የጥናቱ ተመራማሪ ፦</u>

ዶ/ር ሃና ኣሰፋ (ሶስተኛ ኣመት የነርቭ ህክምና ተማሪ)

የነርቭ ህክምና ትምህርት ክፍል፣ የህክምና ትምህርት ቤት

ኣዲስ ኣበባ ዩኒቨርሲቲ

<u>የጥናቱ ኣማካሪ፦</u>

ዶ/ር ኣብነት ታፈሰ (በነርቭ ህክምና ረዳት ፕሮፌሰር)

የነርቭ ህክምና ትምህርት ክፍል፣ የህክምና ትምህርት ቤት

ኣዲስ ኣበባ ዩኒቨርሲቲ

1) ከላይ በተሳታፊ ነርሶች መረጃ የተጠቀሱትን ኣንብበላቸው ተረድተዋል። እናም ጊዜ ወስደው ለማሰብም ሆነ ጥያቄ ለመጠየቅ እድሉን ኣጊኝተዋል። ጥያቀቄቸውንም መልሻለሁ።
2) ተሳትፎኣቸው ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሰረተ መሆኑን እንዲሁም በምንም ኣይነት ህጋዊ መብት ሳይገደዱ በማንኛዉም ጊዜ ጥናቱን ማቋረጥ ወይም ላለመሳተፍ ነጻ መሆናቸውን ኣስረድቼኣለሁ።
3) በጥናቱ ወቅት ኣስፈላጊው መረጃዎች እንደሚወሰዱ በሚገባ ኣስገንዝቤኣለሁ። መረጃዎችን እንዳገኝ ፈቃድ ኣግኝቻለሁ።
4) ከላይ በኣርስቱ በተጠቀሰው ጥናት ዉስጥ ለመሳተፍ ፈቃደኛ መሆናቸውን ኣረጋግጬኣለሁ።

የመረጃ ሰብሳቢው ስም፦-------------- ቀን---------------------- ፊርማ ----------------------

Annex III

DATA COLLECTION FORMAT

Data collection format on prevalence of low back pain in nurses working at TASH and ZMH

Instruction: Please put "✓ "to indicate the answers on the appropriate boxes provided and answer specifically for the open ended questions accordingly.

I have been properly informed of the objectives of the study, the possibility of withdrawing at any time and that the under filled data will be kept confidential and will be used only for this research's purpose and I have agreed to participate. ☐

Do not write your name!

Part I. Demographic Data

Identification

1) Age: ________
2) Sex: Male ☐ Female ☐
3) Marital status: Single ☐ Married ☐ Divorced ☐ Widowed ☐
4) How many children do you have: ________
5) Height: ________
6) Current weight: ________
7) Do you smoke cigarette? Yes ☐ Never smoked ☐ Quitted ☐
8) For how long you worked as a nurse: ________
9) At what department are you currently working? ________
10) For how long you stayed at this (the above mentioned) department: ________
11) How many hours a week do you work? ________
12) Do you have direct patient contact Yes ☐ No ☐
13) If your answer is Yes for question 13, specify your tasks ________

14) Do you perform patient or object lifting or transfer? Yes ☐ No ☐

15) If your answer is Yes to question 15, how many lifts or transfers do you do per day? ________

16) Does your current job requires bad body posturing (bending, long time standing..)

Yes ☐ No ☐

17) Do you have any knowledge about how to take care of your back? Yes ☐ No ☐

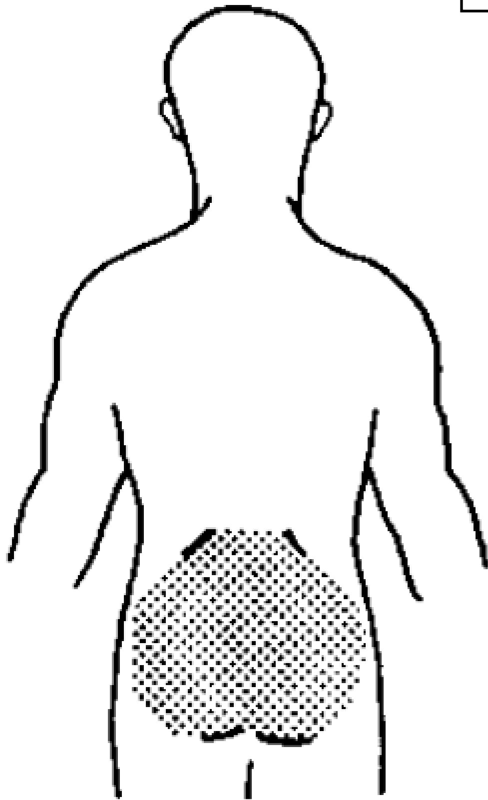
18) Rank your job satisfaction: Poor ☐ Neutral ☐ High ☐

19) Do you currently participate in a regular physical exercise: Yes ☐ No ☐

20) Do you have history of trauma to the back? Yes ☐ No ☐

21) If your answer is Yes to question 21, explain when the trauma occurred and the type of trauma you had ________________________________

22) Do you have low back pain/trouble (By low back trouble is meant ache, pain or discomfort in the shaded area whether or not it extends from there to one or both legs (sciatica))? Yes ☐ No ☐



23) If your answer is yes to question 23, for how long do you have low back pain: ________

24) If your answer is Yes to question 23, do you think your back pain is associated with your nursing job? Yes ☐ No ☐

25) If your answer is Yes to question 25, what do you think causes the back pain (you can have more than one answer)

a) Heavy lifting

b) Poor body posture (prolonged sitting, standing, bending)

c) Work related falls or other traumas

d) Do not know

e) Other (specify) ______________________________

26) What is the total length of time that you have had low back trouble during the last 12 month?

a) 0 days

b) 1--7 days

c) 8--30 days

d) More than 30 days, but not every day

e) Every day

27) Have you had low back trouble at any time during the last 7 days? Yes No

28) How do you rate the severity of your back pain? Mild moderate severe

29) Have you ever sought treatment to your back pain Yes No

30) If your answer is Yes to question 30, specify treatment type (painkillers, physiotherapy, surgery, bed rest, belt, traditional …) ______________________________

31) Have you ever had to change department or duties because of low back trouble?

Yes No

32) Have you ever taken sick leave due to low back pain? Yes No

33) If your answer is Yes to question 33, specify the number of days that you lost from work in the past one year: ______________________________