

MAGNITUDE OF LOW BACK PAIN AND ASSOCIATED FACTORS AMONG
TEACHERS OF PRIMARY AND SECONDARY SCHOOLS IN JIMMA TOWN,
SOUTH WEST ETHIOPIA.



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JIMMA, Ethiopia

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Abstract

Background: Low back pain is the most frequent type of musculoskeletal disorder with a very high prevalence globally as well as nationally. Even though with high prevalence and great impact on individual life, there is limited evidence that showed the magnitude and factors associated with low back pain among primary and secondary school teachers in Jimma town, Ethiopia.

Objective: This study aims to assess the magnitude of low back pain and associated factors among primary and secondary school teachers of Jimma town.

Methods: Institution-based cross-sectional study was conducted from April 11, to June 11, 2022. A total of 305 participants were recruited and reached using simple random sampling method. Data were collected using an interviewer-administered structured questionnaire. The collected data were checked for completeness, cleaned, coded and entered into Epidata version 4.6 and exported into SPSS 23 for further coding and analysis. Data were summarized using mean, frequency, percentage or proportion, and represented using text, table, graph accordingly. Odds ratio alongside 95% confidence interval (CI) were estimated to measure the strength of the association between variables of interest. Level of statistical significance was declared at p value ≤ 0.05 .

Result: The life time magnitude of low back pain was 57.7 %, 95% CI :(52.8%, 63.6%). Of this 83%, 95% CI :(77.3%, 88.6%) teachers had LBP with in twelve months time. Factors associated with low back pain were Being male (AOR =0.14; 95% CI: (0.072-0.26), age < 30 years (AOR=0.3, 95% CI :(0.14-0.48), Sleeping hours <6 hours (AOR=3.54, 95% CI; (1.86-6.72), prolonged standing (AOR= 5.55, 95%CI: (2.73-9.76),

Conclusion: This study showed high magnitude of low back pain among teachers, when compared to Addis Ababa. Sex, age, sleeping hours, prolonged standing and were factors significantly associated with low back pain. Jimma town education Bureau needs to introduce prevention interventions.

Keyword: Jimma town, Low back pain, magnitude, schools, Teachers.

Tables of Contents

	Page
Acknowledgments.....	I
Abstract.....	II
Tables of Contents	III
List of Tables	VI
List of figures.....	VI
List of Abbreviations/Acronyms.....	VI
Chapter1. Introduction	1
1.1. Background Information.....	1
1.2. Statement of the Problem.....	3
1.3. Significance of the Study	5
Chapter2. Literature Review.....	6
2.1. Magnitude of low back pain among school teachers	6
2.2. Factors associated with Low back pain.....	6
2.2.1. Socio -demographic factors	7
2.2.2. Work environmental factors.....	7
2.2.3. Behavioral factors:	8
2.2.5. Co morbidity:	8
2.3. Conceptual framework.....	9
Chapter3. Objectives.....	10
3.1. General Objective:	10
3.2. Specific objectives	10

Chapter4. Methods and materials.....	11
4.1. Study area and study period.....	11
4.2. Study design.....	11
4.3. Source and Study population	11
4.3.1. Source population	11
4.3.2. Study population	11
4.4. Inclusion and Exclusion criteria:.....	11
4.5.1. Inclusion criteria:	11
4.5.2. Exclusion criteria:	11
4.5. Sample size and sampling procedures	12
4.5.2. Sampling procedure	13
4.6. Variables of the study	13
4.6.1. Dependent variable:	13
4.6.2. Independent variables	13
4.7. Operational definitions.....	15
Data collection tools:	17
4.8. Data collection procedures.....	17
4.9. Data quality assurance	17
4.10. Data processing and analysis	17
4.11. Ethical considerations	18
4.12. Dissemination of results.....	18
5. Results.....	19
5.1. Magnitude of Low back pain among teachers	19
5.2. Socio-Demographic Characteristics:.....	21
5.3. Behavioral factors	23
5.4. Work-Related Characteristics of Respondents.....	23

5.5. Psychosocial characteristics.....	23
5.6. Co-morbidity characteristics.....	24
5.7. Factors Associated with Low Back Pain.....	24
6. Discussions	27
Limitations of the study	28
7. Conclusions & Recommendations	29
7.1. Conclusions.....	29
7.2. Recommendations.....	29
References.....	30
Annexes	32
Annex I: Information Sheet and Consent Form	32

List of Tables

Table 1. Calculated sample size using Epi info	12
Table 2. Socio-demographic characteristics of low back pain among school teachers in jimma town, 2022.....	22
Table 3. Factors associated with low back pain among school teachers in Jimma town, 2022 ...	26
Table 4. Questionnaire	37

List of figures

Figure 1 Conceptual framework of low back pain and associated factors	9
Figure 2. Severity of low back pain among teachers of Jimma town 2022	20
Figure 3. characteristics of low back pain by its duration among teachers injimma town 2022 ...	19

List of Abbreviations/Acronyms

ADL	Activity of Daily Living
BADL	Basic Activity Daily Living
BMI	Body Mass Index

CLBP	Chronic Low Back Pain
GP	General Practitioner
IADLs	Instrumental Activity of Daily Living
LBP	Low Back Pain
LBT	Low Back Trouble
LOS	Length of Stay
MSD	Musculoskeletal Disorders
UK	United Kingdom

Chapter 1. Introduction

1.1. Background Information

Musculoskeletal disorders (MSD) is the most common and costly occupational health problems in the world(1). It was the main cause of disability in life years. It has also a double burden of economic costs, health care needs, and major social problem. Because of poor awareness of ergonomic issues, lack of adequate training, and other problems in developing countries, occupational-related MSDs have increased(2).

Low back pain (LBP) is the leading cause of MSD in both developed and developing countries, which is an important health and socio-economic problem with greater life time prevalence of the general population(3). LBP was defined as pain in the area on the posterior aspect of the body from the lower margin of the twelfth ribs to the lower gluteal folds with or without pain referred into one or both lower limbs that lasts for at least one day(4). Work-related LBP is a pain originating from work and/or exacerbated by it.(5) school teachers have an increased prevalence of MSD(1). It has a substantial effect on school teacher's quality of life resulting in frequent sick leave, functional impairment, absenteeism and early retirement (8-10).

Low back pain is very costly for the healthcare system and industry. But can easily be prevented, and physicians are a major role players to stop it from becoming chronic and disabling(6). hospital admissions and length of stay(LOS)in admitted Patients for LBP are increasing(7). teacher with LBP had difficulty in performing almost all explored activities of daily living (ADL) and(IADL(8).

Since chronic low back pain had highest pain intensity and the severe physical dysfunction, early and sufficient treatment should be given to prevent high socio-economic costs and pain chronicity(12).

The strategies to prevent and manage low back disorders include both workplace-based and health care-based interventions. an integrated approach including both types of intervention is needed to tackle the problem effectively(9)(10)

1.2. Statement of the Problem

Low back pain is the most frequent type of musculoskeletal disorders(14).The prevalence of LBP is very high globally and It is the leading cause of disability worldwide (15). The lifetime prevalence among teachers in Spain was 96.5% (15). and in Asian countries, it ranges from 47.1%-54.23%(3)(16-17). In Africa, the prevalence of low back pain ranges from 47%-65 % and the majority of them had a minimal disability(18-20). In Ethiopia, LBP prevalence in school teachers was estimated to be (74%) Mekele, (53 %) Gondar and (44%) Addis Ababa (21-23).

All persons with LBP had at least 1 episode of back pain lasting for a week or more and had lost workdays than patients who had not (11). LBP is the first problem to cause activity restriction and absence from work throughout the world(12). The neuropathic components of LBP are particularly responsible for increased economic costs (30). Even if LBP has a short-term cost inclination at the first LBP episode, the costs decline over time after the symptoms have got a clinical attention but it has a great impact on the overall resource use and work loss(13).

According to scholars: factors such as knowledge, gender, age, marital status, obesity, frequent bending, twisting, heavy physical load, static postures, repetitive movements, smoking, sleeping disturbance, job satisfaction, stress, migraine and asthma are factors supposed to be associated with low back pain(1)(10)(12)(15)(17)(19)(21)(23-26).

LBP is a very common pain syndrome with a tremendous socio-economic impact. In the past, it was demonstrated that LBP not only influences individual's physical and psychological constitutions, but it also affects various areas of life ranging from individual socio- economic aspects to public healthcare issues(12).

Prevention strategies of occupational back pain can be Primary prevention which is before occurrence, Secondary prevention of chronicity as well as recurrence of symptoms and Tertiary prevention to reducing disability(6).

In Ethiopia, LBP is continuing as major public health issue. Even though the magnitude of the problem is high compared to Malaysia and Addis Ababa(17)(23), it has severe consequences physically, psychologically, socially as well as economically. However, LBP is not well studied among school teachers in Jimma. Therefore, this study aimed to assess the magnitude of low back pain and associated factors among primary and secondary teachers in Jimma school teachers, south west Ethiopia.

1.3. Significance of the Study

Despite the government and public health institutions are trying to manage the burden of LBP, the problem is still continuing among school teachers. This study was conducted to create awareness about LBP in order to fill the knowledge gaps among school teachers and their governing body as well as anyone who needs it.

Moreover, the finding from the study could support school teachers, government, policy makers, and researchers in particular and country at large to create productive generation.

The result of this study will build the knowledge of health care providers and public health specialist' about LBP. This will benefit teachers by showing the magnitude and the severity of their pain to their organization and maximize their health seeking behavior. It also provides up to date comprehensive information on low back pain for researchers, healthcare policy makers and program developers in order to concentrate on the problem. This study contributes some Knowledge about Low back pain of Jimma town school teachers to the existing body of knowledge.

Therefore, it is justifiable to have this study, which describes the magnitude of LBP and associated factors among teachers as the information that obtained will help in designing the appropriate treatment measures of LBP.

Chapter2. Literature Review

2.1. Magnitude of low back pain among school teachers

In Iran, the high school teachers shows high point prevalence and lifetime prevalence 31.66%, 54.23% respectively, ($P < 0.05$), they seemed to be at more risk for developing LBP(3). And also elementary school of Klang valley Malaysia, higher prevalence of low back pain problem among rural (46.3%) and urban (47.8%) respectively(17). Lower back pain was the leading global cause of disability in 2015 in most countries(2).

Most studies in Africans shows Low back pain is rising (8) Low back had the highest prevalence in Nigeria keno and rural Kenya primary school teachers ,85.71% and 64.98% respectively with the majority of them reporting minimal disability(19)(20).

The prevalence of LBP among school teachers in Mekele and Gonder were (74.8%) (95% CI: 71.4-78.2) and (53.8%) respectively(21)(22). most of Addis Ababa Governmental School teachers, experienced low back pain 44% (23). The prevalence was substantially higher in women (82.2%) than among men (66.1%), among 1st- and 2nd-cycle school teachers was almost comparable at 79.9% and 70.7%, respectively

2.2. Factors associated with Low back pain

Many studies are concerning the low back disorders risk factors, including of socio demographic, environmental, psychosocial or personal risk factors

2.2.1. Socio-demographic factors

Study done in Malaysia showed that female teachers had a significantly higher prevalence of low back pain (48.1%) than men (39.6%) (17). It is significantly associated with female gender (20). in marital status, low back pain (LBP) was high prevalence among widowed and divorced teachers(19). age 30-40 years and >40years(23), The incidence of low back disorders has also been strongly associated with job type and poor work climate(5).

2.2.2. Work environmental factors

Regarding the work environmental factors, low back pain epidemiology had showed an overlap of occupational exposures such as frequent bending and twisting, heavy physical load, static postures and repetitive movements(25)

According to this study, the loads most teachers had were carrying work books, exam papers and heavy sports equipment carried by the physical education teachers, sitting for a long period was the second associated factor of low back pain (25.2%), which includes, marking an exam, assignments and working books. then prolonged standing is the third one(23.4%).Activities during physical education classes are walking up stairs and down stairs is the fourth associating factor of low back pain (13.5%). lastly, working on a computer was the fifth associated factor (6.3%)(17).

prolonged standing during sessions, and lack of physical activity were found statistically significant and independently associated with LBP(21).

The multivariate logistic regression revealed that, lack of ergonomic training, Inadequate number of teachers in school, prolonged sitting positions and a poor work place social environment were strongly associated with LBP(27).

2.2.3. Behavioral factors:

According to a study conducted among Malaysia, Iran and Mekele school teachers LBP is strongly associated with smoking habit (17) in a systematic review, poor general health and characteristics of the person increase risk of a future episode of LBP(14). Teachers who had sleep disturbance were 3 times more likely to experience LBP when compared to those who had no sleep disturbance(21).

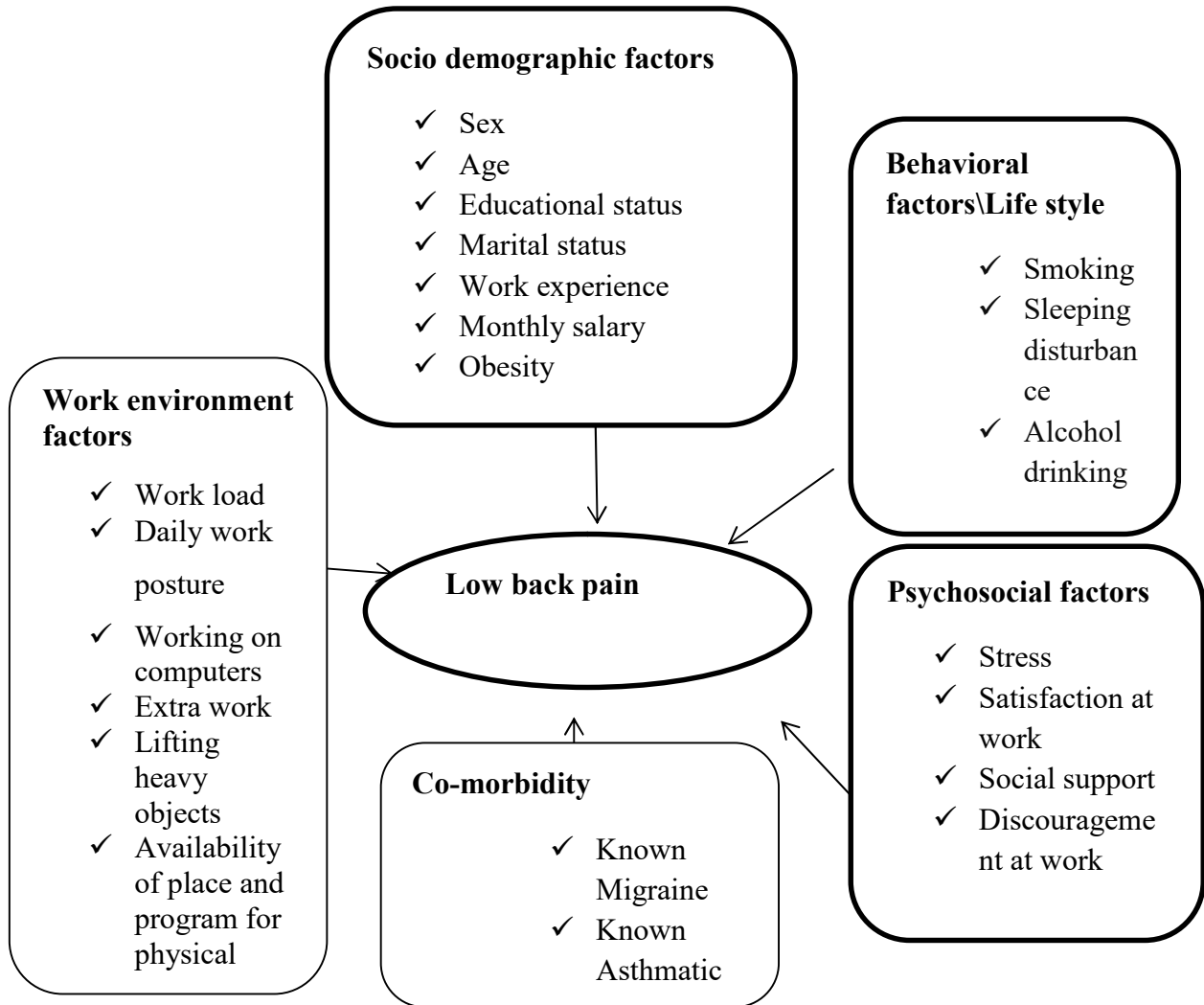
2.2.4. Psychological- related factors

LBP has a significant association with Job dissatisfaction $p=0.017$ ((26)(1).) Stress is the main psychosocial factors that may cause LBP (21). in a systematic review physical and psychological stress increase risk of a future episode of LBP(14).

2.2.5. Co morbidity:

Regarding Co morbidity with LBP, A history of low back injury was strongly associated with low back disability with $p<0.001$ (26).and also in other studies, that migraine was co-morbid with LBP(12). Nearly one-fifth (16.5%) of the teachers said that they had asthma, and 69.1% felt low back pain during their fits of coughing (21).

2.3. Conceptual framework



- Solid line indicates independent factors which have a direct association with the outcome variables.

Figure 1 Conceptual framework of low back pain and associated factors. (Adapted from: Donabedian et al., 1982)

Chapter3. Objectives

3.1. General Objective: To assess the magnitude of low back pain and associated factors among primary and secondary school teachers in Jimma town, south west Ethiopia.

3.2. Specific objectives

- To determine the magnitude of LBP among primary and secondary school teachers in Jimma town, south west Ethiopia.
- To identify factors associated with low back pain among primary and secondary school teachers in Jimma town South West Ethiopia.

Chapter4. Methods and materials

4.1. Study area and study period

The study area is Jimma town of the Oromia region, Ethiopia, which is located at 350 km south west of Addis Ababa the capital city of the country. Administratively the town is divided into 17 Kebeles (From Jimma town municipality.) The town has two Universities, 2 colleges, 1 Technical and Vocational school, 16 Secondary schools, 53 primary school and 61 kindergartens. Primary and secondary school teachers in Jimma town were 2093. Of which 1070 were males and 1023 were females. (Gain from Jimma town education bureau of human resource office). The study period was from April, 2022 –May, 2022.

4.2. Study design

Cross-sectional study was conducted.

4.3. Source and Study population

4.3.1. Source population

All teachers working in primary and secondary school in Jimma town were the source population.

4.3.2. Study population

The study populations were all randomly selected teachers in selected schools who were available during data collection period in Jimma town.

4.4. Inclusion and Exclusion criteria:

4.5.1. Inclusion criteria:

Full-time teachers were included in the study

4.5.2. Exclusion criteria:

Full-time teachers, who have been 3rd trimester pregnant women to (prevent confounder) and all part time teachers, were excluded from the study.

4.5. Sample size and sampling procedures

4.5.1. Sample size determination

Sample size calculation for the first objective: will be determined using the single population proportion formula. (Mekele elementary School prevalence of LBP, was found to be 74.8%)(21), $p=0.748$ $q=0.25$ $Z_{\alpha/2}=1.96$, Critical value at 95% confidence level $d=5\%$ margin of error level of precision or maximum error to commit. n : Required sample size

$$n = \frac{(Z_{\alpha/2})^2 P (1- P)}{d^2} \quad n = \frac{(1.96)^2 0.748(0.25)}{0.05^2} =$$

$$287 \text{ samples}$$

Non-response rate

$$287 + (287 * 0.1) = (28.7 + 287) = 315.7 \sim 316.$$

Sample size calculation for the second objective

Table 1: Calculated sample size using Epi info

s.n	Variables	Confidence level	Power	Proportion of outcome among exposed	Ratio	AOR	Proportion of outcome among unexposed non-exposed	Sample size	References
1	Job stress	1.96	80%	54%	1	3.66	81.1%	216	(28)
2	Prolonged standing during session	1.96	80%	77.7%	1	4.78	94.3%	158	(21)
3	Sex (being female)	1.96	80%	37.8%	1	3.02	65%	120	(29)

Since the sample size calculated by the single population formula is greater than the sample size which is calculated by Epi info, I took the calculated, 316.

4.5.2. Sampling procedure

The total populations from all schools were 2093. The lists of all school teachers were available from Jimma town education office. 316 samples were selected using simple random sampling method from their registration book from Jimma town education office.

4.6. Variables of the study

4.6.1. Dependent variable:

- **Low back pain (yes vs no)**

4.6.2. Independent variables

- **Socio-demographic factors**
 - ✓ Sex
 - ✓ Age
 - ✓ Obesity
 - ✓ Religion
 - ✓ Educational status
 - ✓ Marital status
 - ✓ Work experience
 - ✓ Monthly salary
- **Work environment factors**
 - ✓ Work load
 - ✓ prolonged standing or sitting
 - ✓ Availability of physical activity program
 - ✓ Working on computer
 - ✓ Year of experience

- **Behavioral factors/ Life style**
 - ✓ Smoking habit
 - ✓ Physical activity
 - ✓ Sleeping habit
 - ✓ Drinking alcohol
- **Psychosocial factors**
 - ✓ Satisfaction at work
 - ✓ Discouragement
 - ✓ Irritation condition to others
 - ✓ Relationship with others at work
 - ✓ Social support
- **Co-morbidity/ Medical illness**
 - ✓ Known asthmatic problem
 - ✓ Known Headache (migraine)
 - ✓ Other health problem

4.7. Operational definitions

Low Back Pain: pain in the area on the posterior aspect of the body from the lower margin of the twelfth ribs to the lower gluteal folds with or without pain referred to one or both lower limbs that last for at least one day(4).

Work-related low back pain: is low back pain originating in the context of work and considered clinically to have been probably caused, at least in part, or exacerbated by the job.

Acute and sub-acute low back pain: is also defined as pain that lasts less than 6 weeks and 6-12 weeks respectively,

Chronic low back pain is defined as a pain that lasts 12 weeks and longer.

Secondary school teachers: all teachers working in the school providing four-year educational program, that is all teachers working in the first cycle of secondary School(9-10 grade) and second cycle of secondary school(preparatory (11-12 grade)

Primary school teachers: all teachers working in the school providing eight-year educational program, that is all teachers working in the first cycle of Primary School(1-4 grade) and second cycle of primary school(5-8 grade)

Full time teachers: teachers who works in the school in 8 hours/day (not part time teachers)

Lifetime Prevalence: is the proportion of individuals in a population that at some point in their life (up to the time of assessment) have experienced a "case"(30).

Annual Prevalence: The experience of LBP at any point in the past 12 months.

Point Prevalence: The experience of LBP, at the data collection time.

Satisfaction: An employee will be considered satisfied with a job when his/her satisfaction level is good.

Physical Exercise: refers to performing any kind of physical exercise at least two times per week for 30 minutes.

Job Stress: is the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker(31).

Cigarette Smoking: Smoking cigarette at least one sticks of cigarette per day

Alcohol Drinking: The consumption of any kind of alcohol, at least two times a week.

Lifting Heavy Objects Refers to lifting, carrying, pulling, or pushing heavy loads weighing 25 kilograms and above every day or every other day.

Prolonged standing: standing of teachers at least for 30 minutes without a break

Prolonged sitting: sitting of teachers at least for 30 minutes to do something.

Heat problem: the air become hot /cold

Sleeping disturbance: disorders of initiating and maintaining sleep.

4.8. Data collection tools:

Structured questionnaire was developed by reviewing relevant literatures(21)(22)

4.9. Data collection procedures

Data collection was conducted by six data collectors' and two supervisors using face to face interview methods.

4.10. Data quality assurance

The questionnaire was prepared in English Version, translated in to Amharic and Afan Oromo language and retranslated in to English by linguistic professional. Training for data collectors and supervisor was given for two days by the investigator. The questionnaire was pre-tested to identify the potential problems of the questionnaires, unanticipated interpretations and cultural objections to any of the questions in 5% of respondents having similar characteristics with the study subjects from Seka secondary school teachers. Based on the pretest results, the questionnaire was additionally adjusted contextually and terminologically, and administered to the whole sample of teachers. Checking of the daily filled questionnaires and regular supervision was made by the supervisor.

4.11. Data processing and analysis

The collected data were checked for completeness, cleaned then coded and entered into Epidata version 4.6 and exported into SPSS 23 for further coding and analysis. Data were summarized using mean, frequency, percentage or proportion, and represented using text, table, graph accordingly. The outcome variable (LBP) is coded 1 for 2 for no. The association between outcome variable (LBP) and independent variables was explored by binary logistic regression

analysis and the adjusted crude odds ratio (COR) was computed at a 95% CI. Multicollinearity between exposure variable was checked; VIF >10 or tolerance <0.1 were considered as a threshold.

The data were fitted with binary logistic regression, to determine the independent factors associated with (LBP), a multivariable logistic regression analysis was done. Variables having a P-value <0.25 in the bi-variable analysis were taken in the multivariable analysis to avoid the potential effect of confounders. The covariates were entered into multivariable logistic regressions by the Backward Wald method. The Adjusted odds ratios with a 95% CI were Calculated to see the strength of association. The significant association was set at a p-value of <0.05 in the multivariable logistic regression analysis.

4.12. Ethical considerations

The study was carried out after getting permission from the ethical review board of the school of public health, Jimma University. Each respondent was informed about the objective of the study. Then, written consent was obtained from each study participants to participate in the study. Those teachers who refuse to participate in the study were not forced. Confidentiality was granted for information collected by keeping the privacy of the respondents while filling out the questionnaire and arranging a collection box to drop the responses by them. Teachers who have low back pain were linked to hospitals or other health institutions.

4.13. Dissemination of results

The final report will be presented as partial fulfillment of the degree of Master of public health to the department of epidemiology, Jimma University. The findings of the study will be submitted to Jimma University School of Public Health, Jimma town education office. Also, the results will be disseminated through Publication in local or international journals.

5. Results

5.1. Magnitude of Low back pain among teachers

The majority of them experienced Low back pain throughout their life time 176(57.7 %), 95% CI :(52.8%, 63.6%). Of this 146(83%), 95% CI :(77.3 %,88.6%) of them experienced LBP with in twelve-months. The majority of teachers 140(79.5%) developed low back pain after employment. Nearly half of the respondents felt the pain during standing for teaching 72(40.9%), but some of them felt it during sitting 37(21%). Approximately half of the respondents 84(47.7%) & 76(43.2%) had mild to moderate pain respectively. The majority of the school teachers experienced acute low back Pain 146(48%). in this study the prevalence of LBP was higher among females 243(79.5%) than male teachers 124(40.7%).

A possible cause of LBP that the respondent stated could be prolonged standing 113(37.2%), followed by lifting heavy objects 70(23%).

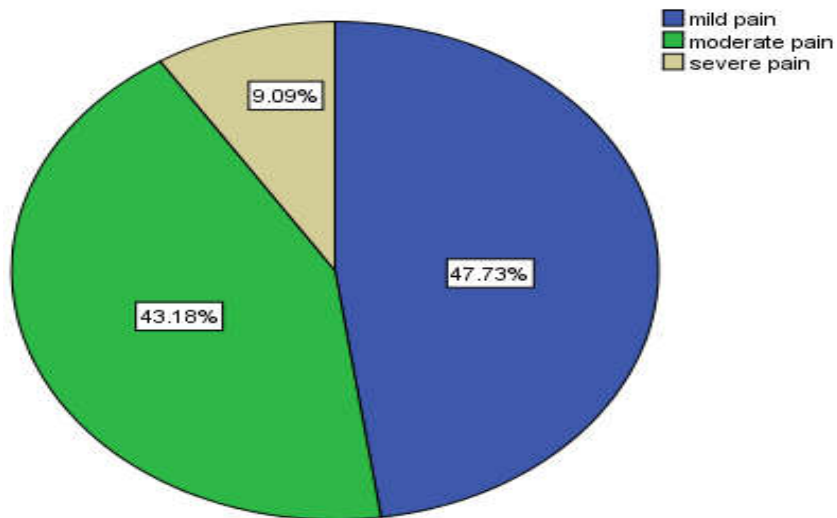


Figure 2. Severity of low back pain among school teachers of Jimma town, August 2022 (n=305)

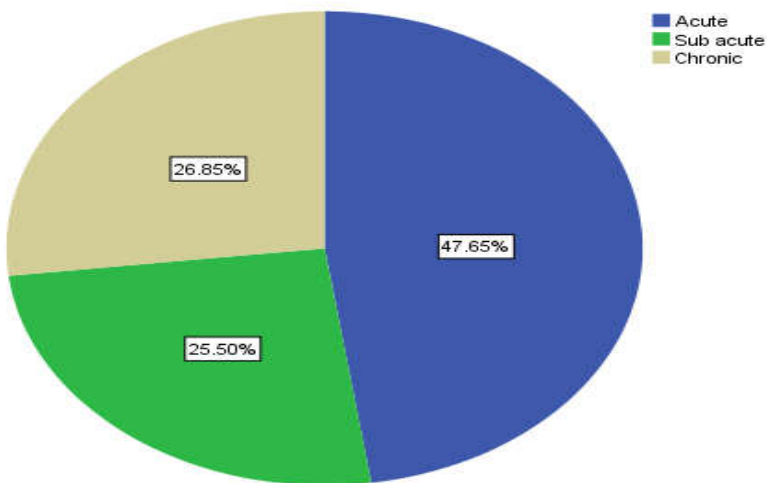


Figure 3. Characteristics of low back pain by its duration among school teachers of Jimma town, August 2022 (n=305)

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5.2. Socio-Demographic Characteristics:

A total of 305 primary and secondary school teachers were interviewed. The response rate was 96.5%. Majority, 220(72%), of respondents were elementary school teachers, More than half 172(56.4%) were males. two third 189 (62.0%) of school teachers were >30 years of age.

The mean age of teachers was 32.59 with standard deviation (8.563). Nearly half of the respondents were Orthodox Christians 140(45.9%), followed by Protestant 781(25.6%). Majority of them were degree graduates 181(59.3%), followed by masters 69(22%). Approximately two third of teachers were married 192(63%), Majority224 (73.4) worked for >10 years.

Table 2: Socio- demographic characteristics of low back pain among jimma town school teachers August 2022, (n=305)

Variable	Categories	Low Back Pain		Frequency	Percent
		Yes Freq. (%)	No Freq. (%)		
Sex	Male	70(40.7%)	102(59.3%)	172	56.4
	Female	106(80.1%)	27(20.5%)	133	43.6
Age	≤30 years	46(39.7%)	70(60.3%)	116	38.0
	>30Years	130(68.8%)	59(31.2%)	189	62.0
Religion	Orthodox	68(48.6%)	72((51.4%)	140	45.9
	Muslim	52(73.2%)	19(26.8%)	71	23.3
	Protestant	44(56.4%)	34(43.6%)	78	25.6
	Catholic	12(92.3%)	1(7.7%)	13	4.3
	Others	0(0%)	3(100%)	3	1.0
Educational Status	Masters	33(47.8%)	36(52.2%)	69	22.6
	Degree	103(56.9%)	78(43.1%)	181	59.3
	Diploma	35(76.1%)	11(23.9%)	46	15.1
	Certificate	5(55%)	4(44.4%)	9	3.0
Marital status	Married	116(60.4%)	76(39.6%)	192	63.0
	Single	54(52.9%)	48(47.1%)	102	33.4
	Divorced	5(71.4%)	2(28.6%)	7	2.3
	Widowed	1(33.3%)	3(67.5%)	4	1.3
Work experience	≤10 years	31(38.3%)	50(61.7%)	81	26.6
	>10	145(52.2%)	78(%)	224	73.4
Work place	Elementary	136(61.8%)	84(38.2%)	220	72.1%
	High school	40(47.1%)	45(52.9%)	85	27.9%

5.3. Behavioral factors

Out of 305 respondents, 30(10%), 43(14.1%), and 95(31%) of the respondents experienced smoking, chat chewing, and alcohol drinking respectively. Almost one-third 112 (36.7%) and 107(35.1%) of respondents had sleep disturbance and sleeping hours less than 6 hours per day.

5.4. Work-Related Characteristics of Respondents.

The majority of the teachers were exposed to Prolonged standing positions 272 (89.9%). The mean (standard deviation) time of standing per day without any break was 1.10(0.303,) hours. Nearly one-third of 160 (56%) teachers had a break of less than one hour per day. Near to two third of 193(68%) school teachers were exposed to prolonged sitting, and the mean (standard deviation) sitting time per day was 1.32(0.476). The commonest reported reason for sitting for a long time in teaching was marking exams which 78(36.1%) Regarding the work shift of the teachers 222 (78%) of teachers were working during the day. Most of the teachers were using teaching aid devices 268(87.9%). Almost half 151(49.5%) of teachers had been lifting heavy materials, and two third 202 (66.2%) of respondents had worked for > 30 hours per week.

5.5. Psychosocial characteristics

Almost three fourth 226 (74.1 %) & 224(73.4% of school teachers were both satisfied and felt happy with their working environment. Above half 178(58.3%) of teachers were encouraged at work, majority 282(92.5%) of the teachers had a good relationship with others in the work area.

5.6. Co-morbidity characteristics

About 137(44.9%), 57(18.7%), and 85(27.9%) of the respondents responded that they had a recurrent headache, asthmatic problem and history of low back injury respectively. Out of 137(44%) teachers with recurrent headaches 64(39.8%) responded that they experienced LBP during their headaches.

5.7. Factors Associated with Low Back Pain

Factors of Low back pain like Socio-demographic, behavioral, working environment, psychosocial and co-morbidity were analyzed by bi-variable and multivariable analyses using a binary logistic regression model. Multicollinearity between independent variables in the model was checked, and the variance inflation factor (VIF) was found acceptable (1.582). In the Bi-variable logistic regression analysis Sex, Age, marital status, work experience, smoking, sleeping hours, prolonged standing, break time, teaching aid devices, extra work other than teaching, were significantly associated with Low back pain at the p -value of less than 0.25.

However, in the multivariable logistic regression sex, age, sleeping hours, prolonged standing, and extra work were found statistically significant and independently associated with low back pain at a p-value of less than 0.05.

The odds of low back pain were reduced by 85% (AOR =0.14; 95% CI: (0.072-0.26) among male teachers compared with female teachers. The odds of low back pain were reduced by 70% (AOR=0.3, 95% CI:(0.14-0.48) among teachers whose age group is below 30 years when compared to age group greater than 30.

Teachers who had sleeping hours less than 6 hours were 4 times (AOR=3.54, 95% CI; (1.86-6.72) higher chance to develop LBP than those who had sleeping hours greater than 6 hours. The odds of low back pain were 6 times (AOR= 5.55, 95%CI: (2.73-9.76) higher among teachers who had prolonged standing compared with teachers who didn't stand for a prolonged hours. The odd of low back pain were 3 times (AOR= 2.55,95%CI ;(1.34-4.86) higher among teachers having extra work other than teaching compared with teachers with no extra work.

Table 3: Factors associated with low back pain among school teachers in Jimma town

October, 2022 (N=305)

Variables		Low Back Pain		COR(CI)	AOR(CI)
		Yes Freq. (%)	No Freq.(%)		
Sex	1. Male	70(40.7%)	102(59.3%)	0.18(0.12-0.3) 0.000(.000)	0.14(0.0720.26)** 0
	2. Female	106(80.1%)	27(20.5%)		
Marital status	1. Single	116(60.4%)	76(39.6%)	1.357(0.84-2.2)* - -	0.48(0.24-0.97) 0.37(0.04-3.3) 3.6(0.2-58.6)
	2. Married	54(52.9%)	48(47.1%)		
	3. Divorced	5(71.4%)	2(28.6%)		
	4. Widowed	1(33.3%)	3(67.5%)		
Age	1. ≤30	46(39.7%)	70(60.3%)	0.298(0.18-0.48)	0.3(0.14-0.48)**
	2. >30	130(68.8%)	59(31.2%)		
Work experience	1. ≤10	31(38.3%)	50(61.7%)	0.338(0.2-0.57)*	0.5(0.2-1.2)
	2. >10	145(52.2%)	78(%)		
Smoking	1. yes	24(77.4%)	7(22.6%)	2.75(1.15-6.6)*	4.3(0.3-64.7)
	2. no	152(55.5%)	122(44.5%)		
Sleep hours	1. <6 hours	81(75.7%)	26(24.3%)	3.3(1.9-5.6) 12.5(1.3-116.5)	3.54(1.86-6.7))**
	2. 6-9 hours	93(48.7%)	98(51.3%)		
	3. > 9 hours	2(28.6%)	5(71.4%)		
Prolonged standing	1. Yes	166(61%)	106(39%)	3.6029(1.7-7.9)	5.55(2.73-9.76)**
	2. No	10(30%)	23(69.7%)		
Break time	1. ≤1 hour	109(61.6%)	68(38.4%)	1.482(0.934-2.350)	1.4(0.76-2.6)
	2. > 1 hour	66(52%)	61(48%)		
teaching aid	1. Ye	160(59.7%)	108(40.3%)	1.9(1.0-3.9).*	1.63(0.63-4.2)
	2. No	16(43.2%)	21(56.8%)		
Extra work	1. Yes	72(69.2%)	32(30.8%)	2.1(1.27-3.5)	2.55(1.34-4.86)**
	2. No	104(51.7%)	97(48.3%)		

*Associated only by univariable analysis, ** Associated both by both univariable and multivariable at p-value ≤ 0.05.

6. Discussions

The life time prevalence of low back pain among teachers was 176 (57.7%) of them 146(83%) were the twelve month prevalence. Being female, age less than 30 years had negatively, significant association with low back pain and sleep hours less than six hours, prolonged standing, and extra work other than teaching had positively significant association with low back pain.

The life time prevalence result is in line with the studies conducted in Iran(3). Gondar 57.5%(22), However, It is higher than the studies conducted in Addis Abeba (44%)(23)Malaysia, (40.4%) (17). but lower than 74.8% in Mekele(21), 64.98% in Kenya(20), 85.71 in Nigeria(19) , Spain 96.5%(15). Variation observed compared with other studies might be due to the differences in sample size, methodology other factors.

The twelve month prevalence were higher than Botswana 12-month prevalence which is 55.7%(Botswana)(26), 73.53% Nigeria(19),(53.8%)Gonder(22), (54.9%) Mekele(21).

Male teachers have 0.14 times less risk of developing low back pain than females teachers, in line with study done in Sweden, Iran, Kenya, Addis Abeba(13)(20)(23). Though the main reason is not clear, it could be because of their life style variation, anatomical differences and females with many children. Teacher whose age is less than thirty is 0.3 times less chance of developing low back pain than teachers age greater than thirty years, in line with study done in Iran and Addis Abeba(3)(23).

One of the possible reasons for the difference between older age teachers and younger ones could be that as people get older, weakness of muscles in the lower back could happen and the intervertebral discs may not tolerate injuries. Teacher who had prolonged standing during teaching were almost 6 times higher chance of developing low back pain compared with teacher who had no prolonged standing. which is in line with study done in Addis Abeba (27).

Teachers who had sleeping hours less than 6 hours were four times higher chance to develop LBP than those who had sleeping hours greater than 6 hours. the result was similar with the study done in Mekele and Gonder,(21)(22),The possible reason for the difference could be those who were disturbed during sleeping and sleep less than 6 hrs lack sufficient rest than those who did not. Extra work, Teachers who had extra work has 3 times higher risk of developing Low back pain than teachers who had not. It is Similar with study done in Addis Abeba (23).

The effect of increasing the number of certain factors like prolonged standing during teaching, sleep time less than 6 hours, having extra work were because of shortage of teachers, economical, social & family factors.

Limitations of the study

Even though this study tried to show the prevalence of associated factors of low back pain among the elementary& high schoolteachers, the result of the study was depending on self-reported data of the participants which were susceptible to recall bias causing under or overestimation, Small sample size when compared to other country is one the limitation because of feasibility, the study was not out of the limitations of cross sectional studies.

7. Conclusion& Recommendations

7.1. Conclusions

In this study, both the life time prevalence and the twelve-month prevalence of school teachers in Jimma town was high when compared with Addis Ababa and other countries implying that LBP is the public health importance among teachers of Jimma. Modifiable factors like less break time <1 hour, sleep hours < 6 hour, and extra work were largely accounted for the development of low back pain;

7.2. Recommendations

To Jimma Town education Bureau & schools

Have to introduce prevention interventions to reduce low back pain by considering factors associated with the outcome, decrease work load(extra work) of teachers by adding number of teachers, assist them by providing materials like furniture and so on, to support them on teaching part in order to minimize the burden.

To teachers: To apply all preventive and safety measures, to develop health seeking behavior and have regular follow up if they are sick.

Researchers: I recommend Researchers to do further studies on the problem.

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Annexes

Annex I: Information Sheet and Consent Form

Information Sheet and Consent Form Prepared for teachers who are going to participate in the research project, assessment of low back pain and associated risk factors among teachers in Jimma town, South West Ethiopia.

Title of the Research Project:

Low back pain and associated risk factors among teachers in governmental secondary school of Jimma town, South West Ethiopia

Name of Investigator: WubanchiBishaw

Name of the Organization: Jimma University College of Medicine and Health Sciences, School of Public Health.

Introduction:

This information sheet and consent form is prepared to explain the study you are being asked to join. Please listen carefully and ask any questions about the study before you agree to join. You may ask questions at any time after joining the study. This research team includes one principal investigator, four data collectors, one supervisor and two advisors from Jimma University.

Purpose of Research Project

The purpose of this research is to assess low back pain and associated risk factors among governmental Secondary school teachers in Jimma town. The study will be helpful in determining the current prevalence of low back pain and associated factors among these work groups and contributes much to design appropriate prevention and intervention strategies. It also will serve as baseline information for subsequent studies in the country.

Procedure

To assess low back pain and associated risk factors among teachers in Jimma town governmental secondary schools, we invite you to take part in this project. If you are willing to participate in this project, you need to understand and sign the agreement form. Then after, the questionnaire will be given to you and you will fill it. You do not need to tell your name to the data collector or write on the questionnaire and all your responses and the results obtained will be kept confidentially by using coding system whereby no one will have access to your response.

Risk/ Discomfort

By participating in this research project, you may feel that it has some discomfort especially on wasting your time about 30 minutes. We hope you will participate in the study for the sake of the benefit of the research result. There is no risk in participating in this research project.

Benefits

If you participate in this research project, there may not be direct benefit to you but your participation is likely to help us in assessing low back pain associated risk factors among teachers. Ultimately, this will help us to work on prevention and intervention strategies.

Incentives/Payments for Participating

You will not be provided any incentives or payment to take part in this project.

Confidentiality

The information collected from this research project will be kept confidential and information about you that will be collected by this study will be stored in a file, without your name, but a code number assigned to it and it will not be disclosed to anyone except the principal investigator and will be kept locked with key.

Right to refuse or withdraw

You have full right to refuse from participating in this research. You can choose not to respond to some or all questions if you do not want to give your response. You have also the full right to withdraw from this study at any time you wish, without losing any of your right.

Person to contact:

This research project will be reviewed and approved by the ethical clearance committee of Jimma university research and publication office. If you want to know more information, you can contact the committee through the address below. If you have any question you can contact any of the following individuals (Investigator and Advisors) and you may ask at any time you want.

Investigator:

1. WubanchiBishaw: Jimma University, Faculty of public health, College of Medical and Health Science, Department of Epidemiology.

Cell phone: +251- 9 17-007-764, E-mail: wubebishaw@gmail.com

Advisors:

1. Zerihun Kura(BSc., MPH):

Cell phone: +251-913-793-980, E-mail: zerihunkura2007@gmail.com

2. Addis Birhanu (Bsc. MPH)

Cell phone: +251-920-190-163**E-mail:** addisbirhanu94@yahoo.com

JIMMA University

College of health sciences

School of public health, Department of epidemiology

Questionnaire for assessment of low back pain and associated risk factors among teachers in governmental Secondary schools of Jimma town, South West Ethiopia.

Questionnaire identification number _____

Name of health institution _____

Verbal consent form before conducting interview

Hello, I am _____. I am working in the research team of Jimma University, School of public health. The aim of this study is to assess prevalence of low back pain and associated risk factors among teachers in the Jimma town working in the governmental primary and secondary schools, south West Ethiopia 2022. you are chosen to participate in the study by chance. The purpose of this study is to generate information about magnitude of low back pain and associated risk factors among teachers in the town; which may help the policy makers, responsible persons in the school, other stakeholders to take actions based on the findings. The study will include various and private life questions. In order to effectively achieve the objective of the research, we are requesting your help. There are questions related to low back pain and associated risk factors for you to fill completely there is no need to put your name on the questionnaire; no individual response will be reported. Your response will be kept completely confidential. It is your full right to refuse in responding any question or all of the questions. If you don't want to participate you can leave the questionnaire empty.

However your honest answers to these questions will help us in better understanding of the magnitude of low back pain and associated risk factors. So, we are requesting you to give your honest responses and keep participation. It will take a maximum of 30 minutes to answer these questions.

Would you willing to participate please?

1. Yes 2. No

If you are willing to participate in the study please visit the next page.

Name and Signature of the data collector who sought the consent _____

Date of interview _____ time started _____ time completed _____

Checked by supervisor: Name and signature _____

date _____

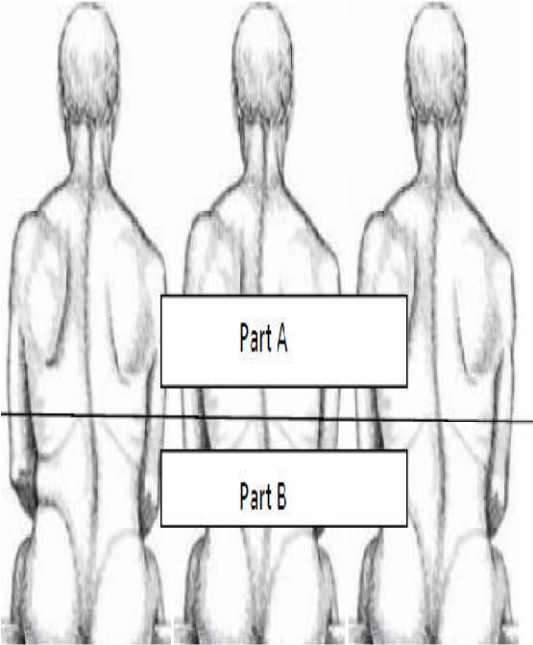
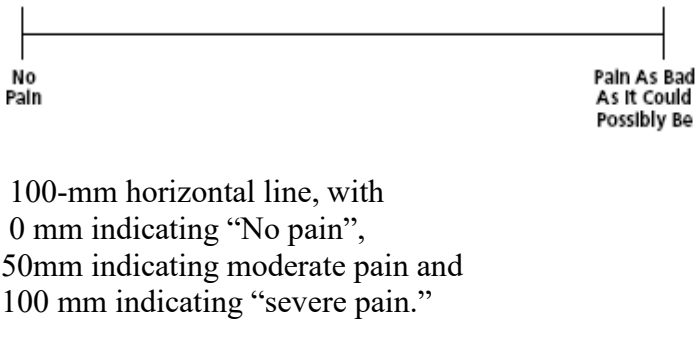
Questionnaire identification number _____

Annex II: Questionnaire

Section one: Questions related to Socio demographic information

No	Question	Possible Response	Code
Q101	Sex	1. Male 2.Female	
Q102	Age	_____years	
Q103	Religion	1. Orthodox 3. Protestant 2. Muslim 4. Catholic 5. Others (specify) _____	
Q104	Your Educational status	1. Master 2. BSc. degree 3. Diploma 4. certificate 5. others(Specify) _____	
Q105	Marital status	1.Married 4.Widowed 2.Single 5.Separated 3.Divorced	
Q106	Work experience in year	_____year	
Q107	Monthly salary in birr	_____birr	

Section two: Questions related low back pain.

Q201	Have you ever experienced low back pain in your entire job career?	<ol style="list-style-type: none"> 1. Yes 2. No
Q202	<p>If yes for Q201 on which part you feel the pain? See the following picture.</p>  <p>The area indicated below the line (part B) is your low back.</p>	<ol style="list-style-type: none"> 1. part A 2. part B 3. both part A and B
Q203	When was you developed the pain?	<ol style="list-style-type: none"> 1. Before employment 2. After employment
	<p style="text-align: center;"><i>Visual Analog Scale (VAS)†</i></p>  <p>100-mm horizontal line, with 0 mm indicating “No pain”, 50mm indicating moderate pain and 100 mm indicating “severe pain.”</p>	<ol style="list-style-type: none"> 1. “mild pain 2. Moderate pain 3. Unbearable pain
Q204	Occurrence of the back pain	<ol style="list-style-type: none"> 1. During standing 2. Only during teaching

		3. During sitting 4. During sleeping 5. During walking 6. During physical exercise 7. Others _____	
Q205	Frequency of the back pain	1. Only once 2. Some times 3. Frequently 4. Always	
Q206	Had you experienced the back pain in the last 12 months?	1. Yes 2. No	
Q207	If yes for Q206 For how long you experienced the pain?	1. Less than 6 week 2. 6-12 weeks 3. More than 12 week	
Q208	Do you know what cause this back pain to you?	1. Yes 2. No	
Q209	If yes for Q208 , what were the possible causes of your back pain?	1. Prolonged standing 2. Prolonged sitting 3. Lifting heavy loads 4. Injury in the back 5. Sitting and doing work on computers 6. I don't know 7. Others _____	
Q2010	How many days of work have you missed because of your back pain?	_____ days	

Section three: Question on behavioral factors

Q301	Are /were you have smoking experience?	1. Yes 2. No	
Q302	Are /were you have khat chewing experience?	1. Yes 2. No	
Q303	Are /were you have alcohol drinking experience?	1. Yes 2. No	
Q304	Do you have sleeping disturbances?	1. Yes 2. No	
Q305	How many hours do you sleep per day?	_____ hour	
Q306	Are you experienced in doing regular exercise/ physical activities?	1. Yes 2. No	
Q307	Do you have proper eating habit (eat with regular interval and include variety in your meal)?	1. Yes 2. No	

Section four: Question on working environment

Q401	Do you have standing during your teaching practice?	1. Yes 2. No	
Q402	If yes for Q401 How long you stand during your teaching practice without break in hour per day?	_____ hour per day	
Q403	Break time per day?	_____ hour per day	
Q404	Do you have prolonged sitting position at you work?	1. Yes 2. No	
Q405	If yes for Q404 , how long you sit at work in hour per day?	_____ hour per day	
Q406	If yes for Q404 ,What expose you for prolonged sitting?	1. Exam marking 2. Assignment marking 3. internet use 4. Others _____	
Q407	Do your institution have place for physical activities?	1. Yes 2. No	
Q408	Does your institution have any program for physical activity?	1. Yes 2. No	
Q409	If yes for Q408 Do you practice in the programs of your institution for the physical activities?	1. Yes 2. No	
Q4010	Your Work shift	1. Day 2. Night 3. Both night and day	
Q4011	Do you have office at your work place?	1. Yes 2. No	
Q4012	If yes Q4011 Do you have your own chair and table in your office?	1. Yes 2. No	
Q4013	If yes Q4012 is your chair is comfortable?	1. Yes 2. No	
Q4014	If yes Q4012 is your table is comfortable?	1. Yes 2. No	
Q4015	If yes Q4012 is your chair is suited as per your height?	1. Yes 2. No	
Q4016	If yes Q4012 is your table is suited as per your height?	1. Yes 2. No	
Q4017	Do you use any teaching aid device?	1. Yes 2. No	
Q4018	If yes for Q4017 which type of device you use?	1. Chalk and board only 2. Flip chart	

		3. Over head projector 4. Laptop and LCD projector 5. Other	
Q4019	Do you lift any heavy materials?	1. Yes 2. No	
Q4020	If yes for Q4019 What type of heavy materials you lift?	1. Teaching aid device 2. Other heavy material	
Q4021	Do you have extra work other than teaching in this institution?	1. Yes 2. No	
Q4022	If yes Q4021 , how many hours per week?	_____ hours per week	
Q4023	Do your working class have ventilation problem?	1. Yes 2. No	
Q4024	Do your working class have lighting problem?	1. Yes 2. No	
Q4025	Does your working area have noise?	1. Yes 2. No	
Q4026	Do your working class have thermal problem?	1. Yes 2. No	
Q4027	Your total work load in hour per week at your institution.	_____ per week	

Section five: Question on psychosocial behavior

Q501	Are You satisfied with working environment and work culture?	1. Yes 2. No	
Q502	Have you been discouraged and depressed?	1. Yes 2. No	
Q503	Do you feel exhausted?	3. Yes 4. No	
Q504	Have you feel happy at work area?	1. Yes 2. No.	
Q505	Do you get irritated or angry at other persons more often than usual?	1. Yes 2. No	
Q506	If yes for Q505 , to whom you get angry?	1. Family 2. Colleagues 3. Supervisor	

		4. Boss 5. Others	
Q507	Do you have stress?	1. Yes 2. No	
Q508	If yes for Q507 for which type of stress you are experienced?	1. Family related stress 2. Financial constraint 3. Health related stress 4. Stress at work 5. Worries about future	
Q509	Do you have good relationship with your boss?	1. Yes 2. No	
Q5010	Do you get support at your work?	1. Yes 2. No	
Q011	If yes for Q5010 from whom you get support?	1. From colleagues 2. From supervisors 3. From boss 4. Others	

Section six: Question on co morbidity

Q601	Do you have recurrent or severe headache?	1. Yes 2. No	
Q602	If yes for Q601 was you feel low back pain at that time?	1. Yes 2. No	
Q603	Do you have asthmatic problem?	1. Yes 2. No	
Q604	If yes for Q603 do feel low back pain at that time?	1. Yes 2. No	
Q605	Do you have history of low back injury in your life time?	1. Yes 2. No	
Q606	If you have other disease specify	_____	

Thank you very much for your help!!

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2014

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1.

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1.

2.

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Q101		1. _____ 2. _____	
Q102		_____	
Q103		1. _____ 2. _____ 3. _____ 4. _____ 5. _____	
Q104		1. _____ 2. _____ 3. _____ 4. _____ 5. _____	
Q105		1. / 2. / 3 / / 4 / /	
Q106	()	_____	
Q107		_____	

:

Q201	?	1. _____ 2. _____	
Q202	Q201 ?	1. _____ 2. _____ 3. _____	

()

Q203	?	1. 2.	
	<p style="text-align: center;"><i>Visual Analog Scale (VAS)†</i></p>	1. 2. 3.	
Q204	?	1. 2. 3. 4. 5. 6. 7.	
Q205		1. 2. 3. 4.	
Q206	12 ?	1. 2.	
Q207	Q206 ?	1. 6 2. 6-12 3. 12	
Q208	?	1. 2.	
Q209	Q208 ?	1. 2. 3. 4. 5. 6. 7.	
Q2010	?		

:

Q30 1	/ ?	2.	
Q30 2	/ ?	2.	
Q30 3	/ ?	2.	
Q30 4	?	2.	
Q30 5	?	_____	
Q30 6	/ / ?		
Q30 7	()?		

:

Q401	?	1. 2.	
Q402	Q401 / ?	_____	
Q403	?	_____	
Q404	?	1. 2.	
Q405	Q404 ?	_____	
Q406	?	1. 2. 3. () 4. _____	
Q407	/ ?	1. 2.	
Q408	Q407	1.	

	- ?	2.	
Q409	Q408 ?	-	1. 2.
Q4010			1. 2. 3.
Q4011	?		1. 2.
Q4012	Q4011	?	1. 2.
Q4013	Q4012	?	1 2
Q4014	Q4012	?	1. 2.
Q4015	Q4012	?	1. 2.
Q4016	Q4012	?	1. 2.
Q4017	?		1. 2.
Q4018	Q4017	?	1. 2. 3. 4. 5.
Q4019	?		1. 2.
Q4020	Q4019	?	1. 2.
Q4021	?		1. 2.
Q4022	Q4021	?	_____
Q4023	?		1. 2.
Q4024	?		1. 2.
Q4025	?		1. 2.
Q4026	?		1. 2.
Q4027			_____

Q501	?	1. 2. 3.	
Q502	/ ?	1. 2.	
Q503	?	1. 2.	
Q504	?	1. 2. 3.	
Q505	?	1. 2.	
Q506	Q505 ?	1. 2. 3. () 4. 5. _____	
Q507	?	1. 2.	
Q508	Q507 ?	1. 2. 3. 4. 5. 6. _____	
Q509	/ / ?	1. 2.	
Q5010	?	1. 2.	
Q5011	Q5010 ?	1. 2. 3. 4. _____	

Q601	?	1. 2.	
Q602	Q601 ?	1. 2.	
Q603	?	2. 2.	

Q604	Q603	?	1. 2.	
Q605		?	1.	2.
Q606			_____	

YUNIVARSIIJIIMMAA

KoolleejiiSaayinsiiFayyaa

DhaabbatafayyaaHawaasaaDameeIpidiyamoolojii

Gaaffii-qorannoon (questionnaire) kundhukkubadugdaabarsiiisotamanaBarumsaasadarka 1^{ffaa} fi 2^{ffaa} magaalaJimmaakessakanjiruubaruu fiyyeeffata.

GaaffiiJalqabaduraeyyamanamagaafatamuugaafachudha.

Salaamataa!

Akkamjirtaa?Aniobbo/addee _____jadhama.AniammaQorannooGaree (Team Research) YuniivarsiitiiJimmaakessaahojjachaanjira. Atiiscarraadhaanfilatamteetta.

KaayyoonQorannookanaabara 2014 irrattibarsisootaamanabarumsaasadarka 1ffaafi 2ffaamagaalaaJimmaakessattibarsiiisajiranirrattisababahojjiidhaankanka'eenmiidhama /dhukkuba/ dugdaamuudatan fi sababnibiraanmuudatanaddabaasuunbaruudha..

KaayyoonQorannookanaadhukkubadugdaabarsiiisotaahammamta'uusaabaruufimsababniidhukku bichaadeibiibarsiiisotaakkaragaattifudhanneeilaaluufi.Qorannoonkunqajeelfamahaaraaqophessun, namootamanabarumsakessattiittigafatamummaakanqaban, dhaabbileedhimmamtoota,fikanbirootiifakkafurmaannibarbaadamuufgodha.

Gaaffii-

qorannoonkungaaaffiijireeynaadhimmadhunfaaqaba..Qorannoosirriihojjachuufgaaffiisigaafadhuuf deebiidhugaanaafdeebisuunnagargaari.Gaaffii-qorannoo kana kesstimaqaankeehingafatamus ,hinbarbaachisuus.

Iccitiindhimmakesnieegama.Gaffiilleekanaagadiijiranhundaguutuundirqamamiti.Gaaffiileefdeebiikennuyoohinbarbaanneguutumaaguututtidhisuunnidanda'ama.Garuudeebiingaffiileefkennamusiriita'uunisaniidhukuubadugdaabarsisootairrajiruufsababniisaamaalakkata'eebaruufnugargaara

ifaakantu"udebiinkeeflephedhankankasaamegargaarsaakabajadhanisingafadha.

Gaffiileenguutuundeebisuufyoodanatedaqiiqaa 30 fudhata.

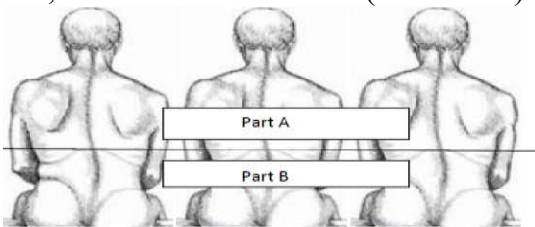
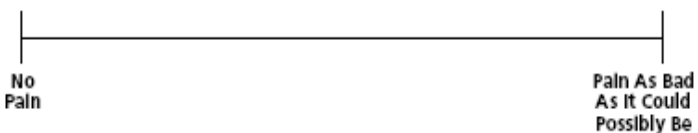
1. Gaaffii-qorannoo kana guutuuffedhiikessanii?1.EEeyyee

2. Mitii

Deebiinkessan "Eeeyyee" yoojettanifuulaittiAanuttidarbMaqaafimallatooragaasassaabaa

Lakk	Gaaffii	Debii	Kodii
Q101	Saalaa	1.dhiiraa 2.Durbaa	
Q102	Umuri	Waggaa _____	
Q103	Amantaa	1. Orthoddoksii2.Muusliimaa 1. Protestaantii4.Cathooliikii	
Q104	SadarkaaBarumsaa	1. Maastarsii 2. BSC diigrii 3. Diipiloomaa 4. Sartafkettii 5. Kan-biiraa _____	
Q105	Gaa'ila	1. kanhinheerumnee (hinfuunee) 2. kanheerumtee (kanfuudhee) 3. wal-hiikee/wal-hiiktee 4. kandu'ee/kanduutee	
Q106	Muxxannohojii	Waggaa _____	
Q107	MindaaJi'a	Qarshii _____	

KUTA 2 GaaffiiDhukkubadugdaawalqabateef

Q201	Hojiikeerrattiimidhaansalphaata'edugdakeeirratiiisiqu nnamebeekaa?	1. Eeeyyee 2. Lakkii	
Q202	Yoodebbinkegaaffilakkofsaa 10 irrajiruufieeyye(1) ta'e, essairraattisidhukubee/ (fakkiilaalii)  Midhaansalphata'esararaa (B) jalaakanjiruudhaa	1. Iddoo A irratti 2. Iddoo B irratti 3. Lammanuirratti	
Q203	Yoomdhukubiinkunsijalqabee?	1. Hojiiqaxaramuuk ootinduraa 2. Hojiiqaxaramuuk ootinboodaa	
	<i>Visual Analog Scale (VAS)†</i>  100-mm horizontal linee, 0 mm=Dhukubniihinjiruu 50mm= Dhukubaxinnoo	1. Dhukubniihinjiruu 2. Dhukubaxinnoo 3. Dhukubaciimoo	

	100 mm =Dhukubaciimoo		
Q205	Yerookamdhukkubniikunsittidhaga'ama	<ol style="list-style-type: none"> 1. yeroodhaabbadhuu 2. yeroobarsiisuu 3. Yerootaa'u 4. YerooCiisuu 5. Yerooadeemuu 6. Yeroodhaqnakoosochii 	
Q206	Haaladaddeebiidhukkubichaaakamii?	<ol style="list-style-type: none"> 1. Yerootokkoqofa 2. Darbeedarbee 3. Daddeebi'ee 4. Yeroohundaa 	
Q207	Ji'a 12 darbeekessaadhukubnidugdaa(daddeebi'eesittidhaga'ameebeekaa?	<ol style="list-style-type: none"> 1. Eeeyyee 2. Mitii 	
Q208	Gaaffii 207 irratti'eeeyyee"yoojettee, hammayoomittituraa?	<ol style="list-style-type: none"> 1 .torban 6 gadii 2.torban 6 hangatorban 12tti 3. turban 12 olii 	
Q209	Dhukkubnikunakkamakkasittika'eebeektaa?	<ol style="list-style-type: none"> 1. Eeeyyee 2. Hinbeekuu 	
Q210	Gaaffii 209 irratti"eeeyyee"yoojettee, ka'uumsiidhukubichaamaalinii?	<ol style="list-style-type: none"> 1. Yeroodheeraadhaabbachuu 2. Yeroodheeraataa'uu 3. Qodaaulfaataabaachuu 4. Miidhamadugdaa 5. Yeroodheeraakompuuter aanhojjechuun 6. Kanbira _____ _____ 	
Q211	Sababadhukubakanaan ,hammamhojiiirraahaftanii?	Guyyaa _____	

Guyyaa _____

Kuta 3 gaaffihaalahojjataaa(dafqaanbuulaa)

Q301	Siigaaraa (tamboo) xuxxuu/ xuxxaaturtanii?	1. Eeyyee Miti	2.	
Q302	Caatiiqaamtuu/qaamaaturtanii	1. Eeyyee	2. Miti	
Q303	Dhugaatiidhugduu/dhugdaaturtanii?	1. Eeyyee	2. Miti	
Q304	Rakkinahirribaqabduu?	1. Eeyyee Miti	2.	
Q305	Guyyattihammamraftuu?	Sa'a		
Q306	Muxxannooispoortiihojjachuuqabdaa?	1. Eeyyee	2. Miti	
Q307	Muxxanoonyaataagaariinyaachuuqabdaa?	1. Eeyyee	2. Miti	

Kuta 4 gaffiIddoohojiilaaluu

Q401	Yeeroohundaadhaabbeteniibarsisttuu	1.Eeyyee	2.Miti	
Q402	Gaaffii 401 irrattieeyyeyoojetteesa'a a meeqadhaabbattaa?	Sa'a _____		
Q403	Guyyaatokkottiaragalffiiammamqabdaa	Sa'a		
Q404	Yeroodheeraatessanihojjetuu	1. Eeyyee	2. Miti	
Q405	Gaaffii404 irrattieeyyeyoojettee, sa'a a meeqateessuu	Sa'a _____		
Q406	Yeeroodheeraaakkatessanukansingodhumaalini?	1. Qoormaatasiirreessu 2. Hojiimanasiirreessuu 3. Intarneetii fayyadamuu 4. Kanbiraayoojirateebarr eessa _____		
Q407	Iddoonhojiikessanibakkasportiinittihojjattanuqaba a?	1. eeyyee2.mitti		
Q408	Gaaffii 407 irrattieeyyeyoojettee, sagantaanispoortiihojjatamuuqabaa?	1. eeyyee2.miti		
Q409	Gaaffii 408 irrattieeyyeyoojettee, Atissagantaakanakessajirtaa (spoortiihojjetaa)?	1. Eeyyee2.Miti		
Q410	Yeroonkamhojiihojjattuu?	1. Guyyaa 2. Halkan 3. Lammanuu		
Q411	Iddoohojjattanuukutaqabdu?	2. Eeyyee	2. Miti	
Q412	Gaaffii 411 irrattieeyyeyoojettee, kutaakeessan	1. Eeyyee2.Miti		

	Minjaalaafibarcuumaqabduu?		
Q413	Gaaffii 412 irrattieeyyeyoojettee, Minjaalichiifibarcuumichiisiniimijataa?	3. Eeyyee	2.Miti
Q414	Gaaffii 413 irrattieeyyeyoojettee, Minjaalichiifibarcuumichiitaa'uumsakessaniifsiirrii dha	1. Eeyyee	2. Miti
Q415	Meeshaaittinbarssiftanuuffayyadamtu?	1. Eeyyee	2. Miti
Q416	Gaaffii 415 irrattieeyyeyoojettee, maalmaalittifeyedamta	1. Boronqii fi Gabateegurraachaa	2. Flip chaartii 3. Projactarii 4. LaaptopiiifiLsiidii 5. Kanbirayoojiratte Barreessi
Q417	Meeshaaulfaataabaattuu?	1. Eeyyee	2.Mitii
Q418	Gaaffii 417 irrattieeyyeyoojettee.maalifmaalbaattuu?	1. Meeshaaittinbarsiisuu	2. Kanbira _____
Q419	Manbarumsaa kana kessaalaakanhojjattanuuhojiibiraacaqabduu?	1. Eeyyee	2.Miti
Q420	Gaaffii 419 irrattieeyyeyoojettee, torbeetiisa'ameeqaahojjattuu?	Sa'a _____	
Q421	Kutaanittihojjattanuquilleensaaqulquluuqabaa?	1. Eeyyee	2. Miti
Q422	KutaanittihojjattanuRakkinaifaaqabaa?	1. Eeyyee	2. Miti
Q423	Kutaanittihojjattanuusagaleenrakkisuujiraa?	• Eeyyee	2. Miti
Q424	Kutaanittihojjattanuurrakkinniho'aasqabaa?	1. Eeyyee	2. Miti
Q425	Torbeekessaahojiinkanisinitijabaatuusa'ameeqaa?	Sa'aati _____	

kutaKuta 5 gaafiixinsammuuilaallatee

Q50 1	Hojiikanangammadduu?	Inangammadaa	2. Lemmenumitii
Q50 2	RakkinniiHamileeisinitidhagahameebeek aa?	1 Eeyyee	2. Miti
Q50 3	dadhabbiisinitidhagahameebeekaa?	1 Hamileqaba.	2. Lemmenumitii 3. Hamilehinqabu

Q50 4	Iddohojiikessanitiigammadduu?	1. nangammadaa Lemmenumitii 2. 3hingammadduu	
Q50 5	Yeroodarbeccaalaattinamaabirrattiartuu?	1 Eeyyee 2. Miti	
Q50 6	Gaaffii 505 irratiyooeeyyeejette, Enyuutiartuu?	1. Maatiitti 2. Hojjataakanbiratti 3. Supervisoritti 4. Hojjachisaatti 5. Kaanbiratti _____	
Q50 7	Ni cinqamtuu?	1 Eeyyee 2. Miti	
Q50 8	Gaaffii 507 irratiyooeeyyeejetteMaaliifcinqamtuu?	1. Maatiidhaanwalqabatee 2. Maalaqaanwalqabatee 3. Fayyyaadhaanwalqabatee 4. Hojiidhaanwalqabatee 5. Jiireynagarafunduraanwalqabatee 6. Kanbira _____	
Q50 9	Hojjachiisaadhanwaligaltuu? Gargaarsaargattuu?	1 Eeyyee 2. Miti	

Kutaa 6 dhukubaanwalqabatee

Q601	Bowwumataqabduu?	1 Eeyyee 2. Miti	
Q602	Gaffii 601 yooeeyyeejettee, Yannaamatabowwu,sidhukkubuu,dhuukubniidugdaassittidhaga'amaa?	1 Eeyyee 2. Miti	
Q603	Dhukkubaasmiiqabdaa?	1 Eeyyee 2. Miti	
Q604	Gaffii 603 irratti yooeeyyeejettee, Yennaassmiidukubsattuu,dhukubnidugdaasittidhagahamaa?	1 Eeyyee 2. Miti	
Q605	Dugdaisagaragadiitinmidhamniissinirraga'eebeekaa	1 Eeyyee 2. Miti	
Q606	Dhukubabiraayooqabaattebarreessii	1 Eeyyee 2. Miti	

ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Faculty of Public Health in effect at the time of grant is forwarded as the result of this application.

Name of the student: _____

Date. _____ Signature _____

APPROVAL OF THE FIRST ADVISOR

Name of the first advisor: _____

Date. _____ Signature _____

APPROVAL OF THE SECOND ADVISOR

Name of the second advisor: _____

Date. _____ Signature _____

APPROVAL OF INTERNAL EXAMINER

Name of the internal examiner: _____

Date. _____ Signature _____