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Low Back Pain Among Medical Students from Dhanmondi Area of Dhaka City Bangladesh

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Abstract

AIMS & OBJECTIVES: Low back pain (LBP) affects both older and younger adults. Medical colleges have time-consuming curricula, possibly perpetuating a sedentary lifestyle causing LBP among medical students. Literature survey has indicated that no study was done or reported to our knowledge about LBP in medical students at Dhaka, Bangladesh. The present descriptive cross-sectional study was therefore designed and conducted to determine the prevalence of LBP and its associated socio-demographic, ergonomics related and psychological factors among medical students from Dhanmondi area of Dhaka city, Bangladesh;

STUDY DESIGN: Descriptive cross-sectional study;

Vol. 4, No. 03; 2020

ISSN: 2581-3366

MATERIALS & METHODS: A total of 200 medical students (gender: 109/54.5% male, 91/45.5% female; age range:18-32 years, mean age ±SD: 23 ±7 years) were included in the study by purposive sampling technique from different medical colleges in Dhanmondi area of Dhaka City such as Bangladesh Medical College and Popular Medical College. LBP and its associated factors were determined and assessed by using a standardized structured questionnaire;

RESULTS: Among the 200 respondents, 110 (55.0%) had history of LBP with 55/108 (50.9%) male and 55/92 (59.7%) female students. The significantly associated factors for LBP were age range (p=0.05), marital status (0.002), monthly income (p=0.001), BMI (p=0.024) and time spend in medical college (0.001). Regarding pain, causes of pain (p=0.001), nature of pain (p=0.001), frequency of pain (p=0.001) and treatment for pain (p=0.004) were significant. Interestingly, ergonomic factors such as posture during work and training and break from working were also associated with LBP significantly (p=0.005). Stress feeling was significantly present in 72/110 (65%) respondents with LBP (p=0.001);

CONCLUSIONS: The prevalence of LBP was 55% which was related to socio-demographic, ergonomic and psychological factors in our respondents. The preventive measures should, therefore, be taken into consideration about all these related risk factors in order to reduce the frequency of LBP in medical students and improve their working environment. Follow-up study for recording this cohort's LBP status in the future was warranted.

Key words: Low back pain, LBP, Medical student

SHORT TITLE: LBP among medical students

INTRODUCTION

Back pain is a common problem for almost any individual. Everybody is likely to have a pain in their back at least once in his or her life time. Low back pain (LBP) is known to affect both older and younger adults. Medical colleges tend to have time-consuming curricula, possibly perpetuating a sedentary lifestyle and a high prevalence of LBP among medical students. A retrospective study involving 103 medical students showed that they were approximately 2.5 times less physically active than the 107 physical education students and spent 3 more hours per day sitting. Strangely, the prevalence of LBP was not higher in medical students than in physically more active students, in spite of their sedentary lifestyle.[1]

Information regarding LBP episode, prevalence, impact, duration, frequency and causes in nursing students and staff nurses (mean age: 26.7±9.0 years) were reported in 2008 by Mitchell et al.[2] They found very high lifetime (79%), 12 months (71%) and 7 days (31%) LBP prevalence across all 3

Vol. 4, No. 03; 2020

ISSN: 2581-3366

years of undergraduate nursing students, but were significantly higher after 12 months of full-time employment, i.e. lifetime (95.5%), 12 months (90%) and 7 days (39%). Around 60% of all respondents with LBP utilized at least one of either treatment or medication or reduced activity.[2] Majority of the nursing students and graduate nurses attributed their LBP to bending or lifting despite recent efforts to reduce manual work place demands (lifting) on nurses. Strategies for managing LBP differed between nursing students and graduate nurses. Given that prevalence rates are very high prior to commencing work, nursing student populations could be a target group for LBP preventive strategies.[2]

In a study with physiotherapy and medical students, Physiotherapy students were reported to have a higher prevalence of LBP when compared with the medical students in all measures and being exposed to the undergraduate study for more than four semesters were independently related with LBP. This study demonstrated an association between undergraduate physiotherapy study and LBP and the length of course exposure was also associated with LBP.[3] A recent study assessed the level of LBP amongst students enrolled in educational programmes that were physically demanding such as BSc in Equine Science, BSc in Physical Education and BSc in Sports and Exercise Science degree programmes. Two factors showed significance as having an influence on LBP, i.e. age and hours of personal training of physical activity. LBP sufferers also displayed poor management of their condition and lack of interest in education and treatment of their problem.[4]

Some investigators carried out cross-sectional studies to evaluate the prevalence of LBP among physiotherapy students. They found a 1 week LBP prevalence of 27%, 1 month of 44%, 1 year of 63% and lifetime of 69%. Also, they concluded that, compared to the first year students, students at all other levels of study incurred a significantly elevated risk for LBP. They compared their results with other prevalence studies and stated that the possibility of the undergraduate physiotherapy study being a risk factor for LBP. They demonstrated this association, observing that the undergraduate physiotherapy programme involves 2.51 times greater chance of experiencing LBP.[5,6,7]

Shrestha et al showed that the prevalence of LBP among dental personnel in Northern-State of Malaysia was about 45%.[8] This finding was comparable to that of Sweden (43%) and some Asian countries such as Thailand (50%) and Hong Kong (43%), but differed markedly from 28% prevalence as reported in Finland by Martin et al in 2004.[9] A host of factors may be attributed to the similarities and differences among countries. But being a middle income country, Malaysia seems to share similar characteristics as Thailand and Hong Kong, two similarly developed economies and societies. Compared to some lesser developed countries, however, the finding seems quite comforting. For instance, Nepalese dentists practicing in universities, government clinics and private practice showed a worse of prevalence at 80%, while 74% of dentists, dental assistants, dental technicians and dental hygienists in Kingdom of Saudi Arabia suffered from LBP, in contrast to 28% prevalence of LBP among dentists in Finland.[8,9]

Vol. 4, No. 03; 2020

ISSN: 2581-3366

There are many reports in the literature concerning the burden of work-related musculoskeletal injuries in physiotherapists.[10,11,12,13] Because medical education is known to be demanding and stressful, Case Western Reserve University developed a programme which included a wellness elective which focused on stress reduction and personal wellness.[14] The purpose of the study was to explore students' perceptions of medical school stress and to assess their perspective on the wellness elective. The essays of 60 medical students enrolled were analyzed using qualitative methodology. It was found that the students felt that: wellness issues should be important for physicians; their own wellbeing had been diminished by the burden of information to be learned in medical school; talking to peers was a useful coping mechanism and the elective gave permission to engage in wellness activities without additional guilt. Based on the students' responses, a wellness elective could be a useful addition to the first- or second-year medical curriculum. [14] In another study, a large majority of the respondents were female (79.1%) and Malays (98.0%). After controlling for potential confounders, the significant risk factor associated with LBP was found to be poor posture.[15]

LBP is a heterogeneous condition which may contribute to variation in reported prevalence in the absence of a gold standard to evaluate LBP.[16] Questionnaires are considered reliable measurement tools for the assessment of this condition.[17] LBP was defined as pain in the area from below the ribs to the hips.[18,19] It was also asked if the pain irradiated to the lower limbs (sciatica) or stayed only in the lumbar region.[19]

Literature survey has indicated that no study was done or reported to our knowledge about LBP in medical students at Dhaka, Bangladesh. The present descriptive cross-sectional study was therefore designed and conducted between September 2012 to February 2013 to determine the prevalence of, and identify factors associated with, LBP among the medical students from selected medical colleges in Dhanmondi area of Dhaka city, Bangladesh.

MATERIALS & METHODS

A total of 200 medical students (respondents) were included in the study using purposive sampling technique with face to face interview considering inclusion criteria, i.e. medical students of both genders age ranged from 18-32 years and exclusion criteria, i.e. medical students below 18 years and above 32 years of age and those refused to give informed consent for the study. Prior to collection of data, permission was taken from the Ethical Committee of State College of Health Sciences (SCHS), Dhanmondi, Dhaka, Bangladesh. Informed consent was taken from the respondents explaining to them the objectives and other formalities about the research project. Data were collected by a structured questionnaire related to socio-demographic characteristics, low back pain (LBP), ergonomic factors and psychological factors. The collected data were checked thoroughly and strictly for any error or information missing and then analyzed by using the Statistical Package for Social Sciences version-16 (SPSS version-16) programme in computer.

RESULTS

Vol. 4, No. 03; 2020

ISSN: 2581-3366

The information related to socio-demographic characteristics, LBP, ergonomic factors and psychological factors and their statistical analyses are presented in Table-I, Table-II, Table-III and Table-IV respectively. There were relations between the LBP and socio-demographic factors, i.e. age, gender, marital status, monthly income and BMI (Table-I); LBP and other information related to it, i.e. Type of footwear, time expend in medical college, longest time without break, causes of back pain, duration of back pain , nature of back pain, how often have (frequency of) pain, treatment for pain and current treatment (Table-II); LBP and ergonomic factors, i.e. posture during working, ergonomic training, break from working, adjustable chair (Table-III) and LBP and psychological factors, i.e. stress feeling, status of social support (Table-IV).

Table-I: Age, Gender, Marital status, Monthly family income & BMI by LBP of the respondents and their statistical analysis

Presence of LBP				**Chi-squared test***
Age	**Yes**	**No**	**Total**	$\chi2=7.758$ df=1 p=0.05
18-24	71	74	145	
25-32	39	16	55	
Total	**110**	**90**	**200**	
Sex	**Yes**	**No**	**Total**	$\chi2=1.575$ df=1 p=0.210
Male	55	53	108	
Female	55	37	92	
Total	**110**	**90**	**200**	
Marital status	**Yes**	**No**	**Total**	$\chi2=9.749$ df=1 p=0.002
Married	25	6	31	
Unmarried	85	84	169	
Total	**110**	**90**	**200**	
Monthly family income	**Yes**	**No**	**Total**	$\chi2=10.870$ df=1 p=0.001
Yes	30	8	38	
No	80	82	162	
Total	**110**	**90**	**200**	
BMI	**Yes**	**No**	**Total**	$\chi2=9.468$ df=3 p=0.024
Underweight	3	20	23	
Normal Weight	95	43	138	
Over Weight	6	28	34	
Obese	**1**	**4**	5	

Vol. 4, No. 03; 2020

ISSN: 2581-3366

Total	**105**	**95**	**200**	

* P ≤ 0.05: Significant; P > 0.05: Not significant;

Table-II: Type of foot-wear, Time expend in medical college, Longest time without break, Causes of pain, Duration of pain, Nature of pain, Frequency of pain, Treatment for pain and Current treatment by LBP of the respondents and their statistical analysis

	Presence of LBP			**Chi-squared test***
Type of foot wear	**Yes**	**No**	**Total**	$\chi2=4.644$; df=3; P=0.200
Flat	55	42	97	
Balance	28	25	53	
Semi flat	18	21	39	
High heel	9	2	11	
Total	**110**	**90**	**200**	
Time spend in medical college	**Yes**	**No**	**Total**	$\chi2=16.136$; df=1; P=0.001
1-6 hrs	51	67	118	
7-12 hrs	59	23	82	
Total	**110**	**90**	**200**	
Longest time spend without break	**Yes**	**No**	**Total**	$\chi2=1.466$; df=1; P=0.226
<2 hrs	68	63	131	
>=2 hrs	42	27	69	
Total	**110**	**90**	**150**	
Causes of back pain	**Yes**	**No**	**Total**	$\chi2=1.922$; df=4; P=0.001
Non respondent	1	89	90	
Trauma	15	0	15	
Over weight	15	1	16	
Pathological condition	7	0	7	
Unknown cause	72	0	72	
Total	**110**	**90**	**200**	
Duration of back pain	**Yes**	**No**	**Total**	$\chi2=1.960$; df=2; P=0.00
Non respondent	0	89	89	
<6 month	60	1	61	
>6 month	50	0	50	
Total	**110**	**90**	**200**	

Vol. 4, No. 03; 2020

ISSN: 2581-3366

Table –II: Continued

Nature of pain	**Yes**	**No**	**Total**	
Non respondent	0	89	89	$\chi2$= 1.960; df=3; P=0.001
Temporary	82	1	83	
Continuous	14	0	14	
On movement	14	0	14	
Total	**110**	**90**	**200**	
Frequency of pain	**Yes**	**No**	**Total**	
Non respondent	2	88	90	$\chi2$=1.844; df=5 P=0.001
Never	5	0	5	
1-3 in month	35	1	36	
Every week	22	0	22	
Twice or more a week	17	1	18	
Every day	29	0	29	
Total	**110**	**90**	**200**	
Treatment for pain	**Yes**	**No**	**Total**	
Non respondent	1	89	90	$\chi2$=1.923; df=4; P=0.04
Go to physician & take medicine	14	0	14	
Go to physiotherapist	11	1	12	
Take medicine	44	0	44	
None	40	0	40	
Total	**110**	**90**	**200**	
Current treatment	**Yes**	**No**	**Total**	
Non respondent	0	88	88	$\chi2$=1.921; df=2; P=0.001
Yes	42	1	43	
No	68	1	69	
Total	**110**	**90**	**200**	

* $P \leq 0.05$: Significant; $P > 0.05$: Not significant

Table-III: Posture during working, Ergonomic training, Break from working and Chair adjustable by LBP of the respondents and their statistical analysis

Presence of LBP				**Chi-squared test**
Posture during working	**Yes**	**No**	**Total**	
Sitting	39	23	62	$\chi2$=10.571 df=2 p=0.005
Standing	26	20	46	
Both	45	47	92	

Vol. 4, No. 03; 2020

ISSN: 2581-3366

Total	**110**	**90**	**200**	
Ergonomic training	**Yes**	**No**	**Total**	χ^2=8.671 df=1 p=0.005
Yes	20	4	24	
No	90	86	176	
Total	**110**	**90**	**200**	
Break from working	**Yes**	**No**	**Total**	χ^2=12.775 df=3 p=0.001
Once an hour	51	39	90	
Once every two hour	41	36	77	
Once every four hour	10	14	24	
More than four hour	8	1	9	
Total	**110**	**90**	**200**	
Chair adjustable	**Yes**	**No**	**Total**	χ^2=4.644 df=1 p=0.20
Yes	59	50	109	
No	51	40	91	
Total	**110**	**90**	**200**	

* P ≤ 0.05: Significant; P > 0.05: Not significant;

Table-IV: Stress feeling and status of social support by LBP of the respondents and their statistical analysis

Presence of LBP				**Chi-squared test**
Stress feeling	**Yes**	**No**	**Total**	χ^2=33.421 df=1 p=0.001
Yes	72	22	94	
No	38	68	106	
Total	**110**	**90**	**200**	
Status of social support	**Yes**	**No**	**Total**	χ^2=0.897 df=1 P=0.344
Good	104	82	186	
Poor	6	8	14	
Total	**110**	**90**	**200**	

* P ≤ 0.05: Significant; P > 0.05: Not significant;

Vol. 4, No. 03; 2020

ISSN: 2581-3366

DISCUSSION

LBP is ranked as one of the main causes of disability and inability to work. The present questionnaire-based cross sectional study aimed to determine the prevalence of LBP and its related factors among medical students at Dhaka, Bangladesh. The study revealed that a large majority of the respondents, i.e. 55% (110/200) had experience of LBP. Therefore, the prevalence of LBP in medical students was 550 per 1000 respondents which was quite high as reported in other studies.[1,3,14] LBP scores relatively high among medical students as compared with the prevalence rates in the general population.[4,6,20] LBP is known to affect both older and young adults. Medical colleges tend to have time – consuming curriculum, possibly perpetuating a sedentary life style leading to high prevalence of LBP among the medical students.[6,21,22]

Socio-demographic characteristics of our respondents suggested that large proportion of the medical students belong to the younger age group of 18-24 years (n=145, 72.5%) and age group of 25-32 years (n= 55, 27.5%). Male gender was 109 (54.5%) and female gender was 91(45.5%). Regarding marital status, unmarried were 169 (84.5%) and married were 31(15.5%). About other factors, 38 (19.0%) respondents had monthly income, 162(81.0%) respondents had no monthly income and 138 (69.0%) had normal BMI. These characteristics and their relations with LBP are presented in Table-I.

The information related to LBP such as time of study, type of footwear, time expend in medical college, longest time without break, experience of LBP, duration of pain, cause of LBP, nature of back pain, severity of pain, frequency of pain, change in daily life for pain, type of change, treatment received and current treatment and their relations with LBP are stated in Table-II. The data on ergonomic factors such as posture during working, ergonomic training, break from working, adjustable chair, upper back rest, distance between seat and working table, backrest of chair are summarized and documented in Table-III. The psychological factors such as stress in working and social support and their relations with LBP are presented in Table IV.

The results indicated that LBP was significantly dependent on, age ($p<0.05$), range of BMI ($p=0.024$), marital status ($p=0.002$), monthly family income ($p=0.001$), time (hr) spend in medical college ($p=0.001$), causes of back pain ($p=0.001$), duration of back pain ($p=0.001$), nature of pain ($p<0.001$), frequency of pain ($p=0.001$), treatment for pain ($p<0.001$), current treatment for pain ($p<0.001$), posture during working ($p=0.005$), ergonomic training ($p=0.005$), break from working ($p=0.001$) and stress feeling ($p=0.001$).

It was evident from the results that LBP in our respondents were related with a large number of factors i.e. LBP is multi-factorial in medical students at Dhaka, Bangladesh. The prominent factors were gender, marital status, BMI, monthly family income, time spend in medical college, posture during working, ergonomic training, break from working, treatment for pain, stress feeling, etc. Most of the respondents had temporary pain (72.7%, 80/110) and 1-3 times in a month (31.8%, 35/110). LBP seemed to be a heterogeneous condition which contribute to, and might be the reason for, variations in the prevalence reported in various studies.[16,17,23] In the absence of 'a gold

Vol. 4, No. 03; 2020

ISSN: 2581-3366

standard' to evaluate LBP, semi-structured questionnaire is considered to be a reliable measurement tool for the assessment of this condition i.e. LBP.[4,11,24,25]

Wadell had developed and reported a clinical model for the treatment of LBP. [26] To achieve the goal of treating patients rather than spines, low-back disability should be approached as an illness rather than LBP as a purely physical disease. One must distinguish pain from disability, the symptoms and signs of distress and illness behavior from those of physical disease, and normal from substantive diagnoses. He also suggested that management must change from a negative philosophy of rest for pain to more active restoration of function. Only a new model and understanding of illnesses by physicians including physiotherapists and patients alike would make real change possible.[26]

Although some evidence suggests an increasing prevalence of back pain throughout later childhood, it is difficult to ascertain whether this reflects a true increase in prevalence or just greater recognition of the problem by researchers and research subjects.[27] Nevertheless, various studies have highlighted a variety of risk factors for LBP in young people such as classroom posture, backpacks, computer usage and psychological factors. As today's university students, particularly medical students, may be a generation increasingly burdened by LBP, it is essential that clinicians and physiotherapists keep abreast of contemporary issues and risks, so that they may more effectively deal with the growing menace.[27]

Thomas et al developed a programme to promote stress resilience and self-care in first year medical students.[28] They reported that first-year medical students value explicit guidance on ways to bolster stress resilience and self-care during medical school study. It is important, however, to clarify as to how the information is relevant to their future practice and profession as physician. Bejia et al reported that because of its frequency and consequences on student life as well as professional life later, LBP represents a real health problem among hospital staff.[29] Many factors were reported to be associated to LBP urging medical teams to take some preventive measures to reduce this affliction.[20,29,30]

In conclusion, LBP seems to be a heterogeneous condition and it is multi-factorial in medical students at Dhaka, Bangladesh. LBP urges medical teams to take some preventive measures to reduce this affliction. It is essential that clinicians and physiotherapists keep abreast of contemporary issues and risks, so that they may more effectively deal with this growing menace.

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Vol. 4, No. 03; 2020

ISSN: 2581-3366

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Vol. 4, No. 03; 2020

ISSN: 2581-3366

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