

INCIDENCE OF BACK PAIN, KNEE PAIN AND NECK PAIN IN URBAN MIDDLE CLASS POPULATION OF LAHORE

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ABSTRACT

We carried out an open invitation Population study (Epidemiological) in an Urban Middle class population of Lahore. The study was aimed to provide information regarding occurrence of back pain, neck pain and knee pain in a given population and also to find if there is any correlation between these three parameters to hypertension and diabetes. 363 patients were included in this study. 19.8 per cent had back pain, 20.4 per cent had knee pain and 11 per cent had neck pain. The study has provided an estimate of the magnitude of problem of these painful disorders in the community which otherwise is not reported. The results have been derived and correlation between various parameters established.

INTRODUCTION

The International Association for the study of pain defines pain "as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage". At its most basic level pain is both a physical phenomenon (presence of discrete neural pathways) and a psychological or emotional experience ("It hurts".) Teleologically, pain serves the useful function of prevention of tissue damage (Ferrant, F.M; 1990).

Low back pain is the most costly musculoskeletal ailment. In United States of America the estimated cost per year is a \$16 billion to \$50 billion for actual medical

payments and lost productivity. 50 per cent of patients with back pain recover by two weeks and 90 per cent have no pain by three months; by one year only 2% still have pain. In 1986 more than 11 million patients had low back impairments and 5.6 million patients were disabled by low back pain in United States.

50 per cent to 80 per cent population will experience one episode of low back pain during adult life that temporarily interferes with the ability to perform normal activities. The typical age at onset is in the third decade of life; low back pain reaches its peak in individuals 55 to 64 years old and then decreases in those older than 65 years.

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Students ~~t-tests~~ were used to compare the mean ~~of continuous~~ factors (e.g. age, etc) ~~between the groups~~. For categorical indices (e.g. ~~whether diabetic or not~~) cross-tabulation ~~was used~~ and chi-square distribution ~~value computed~~. For both the t-distribution ~~and chi-square~~ distribution a p

value of $= < 0.05$ was treated as statistically significant.

The raw data from the study is given in 1-2.

The results of the analyses are listed in tables 3-8.

TABLE - I

Raw data (continuous variables)

Parameter	Mean	Standard Deviation
Age (years)	42.91	13.01
Height (cm)	165.57	8.98
Weight (kg)	71.09	12.21
6.79	3.09	Total family members
0.306	0.633	Number of injuries in family last year

TABLE - II

Categorical variables)

Number	Percentage
8	15.8
57	15.7
186	51.24
72	19.8
74	20.4
40	11.0
55	15.4
208	57.3

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Raw data (ca

Parameter
Diabetics
Hypertensive
Aches/pains in joints
Backache
Pain in Knees
Pain in the Neck
Body mass index > 30
Percent predicted body weight > 110

Deyo and Tsui-Wu (1987) derived epidemiological data from more than 10,000 responses to National Health and Nutrition Examination Survey II in USA. In this study cumulative lifetime prevalence of low back pain was 13.8%. Deyo and Tsui-Wu (1987) in survey of 1,516 men and women correlated low back pain disability with Socio-economic factors. They also found significant correlation between more education with fewer disability days. Frymoyer and Cats-baril (1997) presented a hypothetical model of new method of predicting low back pain disability. Hadler N.M. (1987) reviewed complex medical, Social, Vocational and ergonomic of low back pain. Spitzer, WO et al (1987) published a special supplement on epidemiology, diagnosis and treatment of low back pain. Svensson and Anderson and Svenson and Wilhelmsson (1983) correlated work history and ergonomic factors with low back pain and calculated lifetime incidence of low back pain to be 61% with a prevalence of 31% in a random survey.

The knee is the most commonly affected joint by the degenerative Joint disease. The usual degeneration of advancing age is greatly accentuated under certain circumstances and becomes extremely disabling. The condition is frequently preceded by: Injury, Obesity, Deformity, Infection, Rheumatoid arthritis, Gouty Arthritis and Subchondral Necrosis of bone (Turek, S.L. 1984).

Characteristically, degenerative joint disease (OA) involves the weight bearing diarthrodial joints. The cause is unknown. In cervical spine the process first affects the lower intervertebral discs. Osteophytes develop at the joints of Luschka and apophyseal joints. Hypertrophy of the

longitudinal ligament and ligamentum flavum is typical. The other causes of neck pain include trauma, Inflammatory disease (both infective and non-infective) and Tumors.

PATIENTS AND METHODS

It was advertised locally that a health checkup free of charge was to be performed. Information about this was disseminated through the use of banners and distribution of leaflets in the neighbourhood. The study period lasted one week. Subjects belonging to any particular age group were neither encouraged to or discouraged from participating.

Each individual was allocated a study number to serve as his/her identity. The data, otherwise, was kept anonymous. A trained doctor asked questions and made a series of measurements. The following parameters were recorded:

1. Age (in year)
2. Sex
3. Waist (in cm)
4. Weight (in kg)
5. Known diabetic (yes/no)
6. Known hypertensive (yes/no)
7. Total number of family members.
8. Resting blood pressure (systolic and diastolic) was measured.
9. A sample of blood was drawn for random serum glucose estimation.

The details of the procedures adopted, the precautions taken for blood pressure and serum glucose measurement are given in a separate study, dealing with results of blood pressure, obesity and blood sugar.

The following questions were asked about
the symptoms:

(A) Do you suffer from pain/ache in any
joint? Yes/No

If yes specify whether you have:

Backache Yes/No

Pain Knees Yes/No

Pain in the neck Yes/No

(B) Please specify the number of
episodes in your family over the past year.

This data was organised on a data base
using a programme written in dbase IV. It

was then analysed using the statistical
programme for social sciences.

RESULT

In this paper only the results
pertaining to the rheumatological symptoms
will be presented. The results regarding
analysis of factors related to diabetes and
hypertension have been presented in a
separate publication. A total of 363
individuals were recruited to the study over
a period of one week; of these, 69.7%
(253) were males and 30.3% (110) were
females. The following indices were
computed from those already available:

Body mass index	=	Weight in kg/(height in meters) ² .
Mean blood pressure	=	Diastolic blood pressure + 1/3 pulse pressure).
Waist weight ratio	=	Waist in cm/weight in kg.
Percent predicted body	=	(weight in kg/predicted body weight in kg) x 100
Hypertensive (total)	=	Known hypertensive + those diagnosed during this study.

Descriptive statistics are presented for the following groups

Pain ache in joints?	Yes Group I	No Group II
Backache?	Yes Group I	No Group II
Pain in the Knees?	Yes Group I	No Group II
Pain in the neck	Yes Group I	No Group II

INCIDENCE OF BACK PAIN, KNEE PAIN AND NECK PAIN IN URBAN MIDDLE CLASS

TABLE - III
Relationship of "backache" to other factors/ indices (t-tests).

Index or Factor	Mean (Standard deviation)		t value of	Degrees of freedom	Degrees p value
	Backache present	Backache absent			
Age (years)	44.78 (11.94)	42.45 (13.24)	1.36	361	0.17
Blood Sugar level (mg/dl)	147.79 (95.35)	143.44 (88.44)	0.37	361	0.71
Body mass Index	27.02 (4.50)	25.72 (4.17)	2.33	361	0.02
Waist/weight ratio	1.33 (0.19)	1.31 (0.17)	0.77	361	0.44
Mean blood pressure	99.28 (13.53)	98.80 (12.83)	0.28	361	0.78

TABLE - IV
Relationship of "backache" to other variables (chi-square tests).

Index or factor	Count (expected count)		x ²	Degrees of freedom	P Value
	Backache Present	Backache absent			
Diabetes 43	Present	35(31.5)	124 (127.5)	0.62	1 0.
	Absent	37 (40.5)	167 (163.5)		
Pain in 004 the Knee	Present	24 (14.7)	50 (59.3)	8.31	1 0.
	Absent	55 (64.1)	268 (258.9)		
Hypertension 09	Present	34 (29.6)	115 (119.4)	1.12	1 0.
	Absent	38 (42.4)	176 (171.6)		

TABLE - V
Relationship of "Pain in the knees" to other indices/factors (t-tests)
 * = separate variance estimate

Index or factor	Count (expected count)				
	Backache Present	Backache absent	x 2	Degrees of freedom	P Value
Age (Yrs)	48.73 (11.20)	41.42 (13.04)	4.4	361	<0.0001
Blood Sugar mg/dl	179.72 (107.35)	135.24 (82.43)	3.32	96.15	0.001
Waist weight cm	1.35 (0.23)	1.30 (0.16)	1.76	92.42	0.08
Total family	7.41 (3.61)	6.63 (2.94)	1.70	99.42	0.09
Mean blood pressure	101.43(13.94)	98.24 (12.63)	1.90	361	0.059

TABLE - VI
Relationship of "Pain in knees" to other variables (chi-square tests).

Index or factor	Count (expected count)					
	Backache Present	Backache absent	x 2	Degrees of freedom	P Value	
Diabetes mellitus	Present	48 (32.4)	111 (126.6)	15.70	1	0.0001
	Absent	26 (41.6)	178 (162.4)			
Hypertension	Present	38 (30.4)	111 (118.6)	3.56	1	0.06
	Absent	36 (43.6)	178 (170.4)			
Backache Present	Present	24 (14.7)	48 (51.3)	8.31	1	0.004
	Absent	50 (59.3)	241 (231.7)			
Pain in the neck	Present	15 (8.2)	25 (31.80)	6.97	1	0.008
	Absent	59 (65.8)	264 (257.2)			

INCIDENCE OF BACK PAIN, KNEE PAIN AND NECK PAIN IN URBAN MIDDLE CLASS

TABLE - VII
"Pain in the neck" and other factor (t-tests)

Index or factor	Mean (Standard deviation)		t value	Degrees of freedom	p value
	Pain in the neck present	pain in the neck absent			
Age	45.38 (9.08)	42.61(13.40)	1.71	62.29	0.09
Blood sugar (mg/dl)	165.98 (95.93)	141.62 (88.72)	1.62	361	0.11
Total family members	6.70 (2.88)	6.80 (3.13)	-0.20	361	0.85
Mean Blood pressure	101.46 (12.89)	98.57 (12.95)	1.33	361	0.18
Body mass index	27.48 (4.43)	25.79 (4.21)	2.38	361	0.18
Waist	92.70 (10.98)	92.02 (12.44)	0.33	361	0.74
Waist/weight ratio	1.34 (0.16)	1.31 (0.18)	0.93	361	0.36

TABLE - VIII
"Pain in the neck" other factors indices (chi - square)

Index or factor		Count (Expected count)		x ² t	Degrees of freedom	Significance
		Pain in the neck present	pain in the neck absent			
Hypertension	Present	22 (16.4)	127 (132.6)	3.0	1	0.08
	Absent	18 (23.6)	196 (190.4)			
Diabetes mellitus	Present	25 (17.5)	134 (14.5)	5.56	1	0.018
	Absent	15 (22.5)	189 (181.5)			
Backache	Present	17 (7.9)	55 (64.1)	12.97	1	0.0003
	Absent	23 (32.1)	268 (258.9)			
Pain in	Present	15 (8.2)	59 (65.8)	6.97	1	0.008
	Absent	25 (31.8)	264 (257.2)			

DISCUSSION

The individuals participating in the study were aware that the "health check-up" included blood pressure and blood sugar estimation. However, they had no prior knowledge that questions about rheumatological symptoms were to be put to them. Therefore, even though the results of blood sugar and blood pressure measures during the study cannot be generalised to the population of urban Pakistani middle class segment, the same is not true of questions regarding joint symptoms. Since the participants had no "prior" knowledge they could not have selected themselves for the study and rendered the sample biased. This aspect preserves the power of the study to generalise findings of joint symptoms to the population at large, even though it is of an open invitation design.

The raw data (Tables 1, 2) shows that the mean body weight of the study subject is in excess of the desirable given that the mean height is only 165.6 cm, especially as both parameters have remarkably small standard deviations. Average family size is a high 6.79. There is a large number of diabetics and hypertensives. This could be explained by the fact that individuals suffering from these diseases probably selected themselves for the study. However, as discussed above, the same reservations cannot be expressed about rheumatological complaints. A substantial number of

participants are frankly obese with a body mass index of > 30 . This has been used as an index of obesity for this study. A large number of individuals suffer from the rheumatological symptoms enquired about (table 20). When the relationship of these different symptoms to other variables was studied, the following observations were made:

Individuals with the non-specific symptom of "aches/pain in joints" were more likely to be older, obese (body mass index > 30 , percent predicted body weight > 110 and a higher waist-weight ratio), and have a higher mean blood pressure and blood sugar (table 3-4). They were also more likely to suffer from backache.

Subjects admitting a history of backache, were more likely to be obese, and have pain in the knees and neck. No significant relationship was encountered to diabetes and hypertension or age. This could be due to the inclusion of younger subjects with backache.

For pain in the neck, once again, only obesity, diabetes and backache and painful knees were statistically significantly related.

In subjects with "pain in the knees", age, obesity, diabetes mellitus, backache, pain in the neck, and a large sized family were significantly more common, though the same was not true of hypertension.

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