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Type a Behavior and Body Postures among Mechanical Lower Back Pain Patients

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Type a Behavior and Body Postures among Mechanical Lower Back Pain Patients

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Abstract

The objective of the present study was to explore associations between Type A behavior and body postures among mechanical lower back pain patients. Data were collected from 100 LBP (50 males and 50 females, aged 21-50 years) patients out of that 82 percent were from IT profession and who were previously diagnosed as having mechanical lower back pain and were taking a physiotherapy treatment in orthopedic hospital in Pune (India). Data were collected by using *Jenkins Activity Survey* (Jenkins et al., 1979), and *Body Postures Style Assessment Scale* developed by researcher. Analysis of results showed significant gender differences on Type A behavior scale ($t = 3.26$, $p < .01$), Speed and Impatience Scale ($t = 3.98$, $p < .01$), and Job Involvement Scale ($t = 4.71$, $p < .01$), but no significant gender differences was found on Hard-Driving and Competitive scale ($t = 1.53$, $p > .05$). Gender difference was found on total body posture ($t = 2.42$, $p > .05$) style variable. In body posture style, gender differences were found only on seating position ($t = 3.40$, $p < .01$), and significant positive correlation was found between Type A behavior and poor body posture ($r = .28$, $p < .05$) in male sample, but not in female sample ($r = .03$, $p > .05$). Poor seating postures were reported by 68 per cent females and 86 per cent males, and poor driving postures were reported by 72 per cent females and 82 percent males.

Key Words: Type A Behavior and body posture, Type A Behavior and Health, Type A Behaviors and Mechanical Lower Back Pain, Body posture and Lower Back Pain.

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Introduction

Now a days, lower back pain is extremely common and perhaps more costly in all over the world. Low back pain is having a substantial social and economic impact on most industrialized nations. Lower back pain cause more disability among working-age adult than any other disability and it is second most frequent cause of absenteeism in work places (Seffinger & Hruby, 2007). In India, 60 per cent of people have significant back pain problem at some time or other in lives and 80 per cent people from industry and 60 per cent of general population experience lower back pain (Sharma, 2012).

Type A Behavior

Type A behavior pattern is "an action-emotion complex that can be observed in any person who is aggressively involved in chronic, incessant struggle to achieve more and more in less time, often in competition with other individuals or forces" (Friedman & Rosenman, 1974, cited in, Taylor, 1999). Type A behavior people shows some characteristics, such as easily aroused hostility, a sense of time urgency, and competitive achievement striving.

Number of empirical studies has been conducted to understand Type A and Type B difference in physiological and health variables. (Jamal, & Tourigny, 1998; Sibilia, Picozzi, & Nardi, 1995; Taylor & Cooper, 1989, cited in Jamal 2007), and Type A behavior pattern found associated with a range of health complains, such as cardiovascular disease (Miller et al., 1996), psychosomatic complains (Barling & Charbonneau, 1992; Jamal, 1990), vital exhaustion (Appels et al., 1993), and burn out (Jamal & Vishwanath, 2001; Maslach, 1985; Nowack, 1987). Type A behavior and ill-health is primarily found accounted for by the irritability/impatience dimension (cited in, Hallberg et al., 2007).

Type A Behavior and Body Posture

There are limited numbers of empirical studies are available in personality and lower back pain. Sylvain and Wael (2012) conducted study to evaluated relationship between personality and body posture which is most important cause of mechanical lower back pain and results showed that extraverted personalities found correlation with Kyphosis-lordosis posture, conversely, introverted personalities found associated with flat-back and sway-back posture. In another study, Bru et al., (1993) conducted a study to understand the association between personality traits and musculoskeletal pain from the neck, shoulders and lower back, and results showed that Type A behavior mediate back pain, especially neck and shoulder pain, results showed that the mediating effect of personality traits are influenced by occupational demand characteristics.

In driving, Evans et al., (1987) conducted study to understand the relationship between Type A behavior and driving, result found positive correlation between Type A behavior and rash driving behavior, such as Type A drivers break, pass, and blow their horns often than Type B drivers. West et

al., (1992b) also found positive association between Types A behavior and self-reported fast driving among British drivers (cited in, James et al., 1993).

In gender studies, Jenkins et al., (1965) found younger females (18-25) found less on Type A behavior than males. Waldron (1977) also found males show higher Type A behavior than females counterpart (cited in JAS Manual, 1979), males are more likely to exhibit the Type A behavior pattern than females in relationship of work experience (cited in Sorenson et al., 1987). In contrast, some studies (Koskenvuo et al., 1981; Waldron et al., 1980) found females were higher on Type A behavior than males (cited in Baker et al., 1984).

Type A behavior pattern and its variables such as, hard-driving, time urgency, and job pressure found higher in female post-graduate students than male post-graduate students (Agbu, 2010). Moss and associates (1986) found 64 per cent of Type A behavior in women as compare to men, but some studies did not find any gender differences on Type A behavior pattern (Hicks and Schretlin, 1981; McCranie et al., 1981; & MacDougall et al., 1979).

In work setting, Chesney et al., 1986, (cited in, Friedman, 1996), observed significantly less prevalence of Type A behavior in housewives than in working women, and white collar employees were found significantly higher on Type A behavior than blue collar employees (Haynes and Levine, 1978).
The present study try to understand the relationship between Type A behavior and body posture style among Mechanical/or non-specific lower back pain patients, and gender differences on same.

Mechanical Lower Back Pain

Mechanical Lower back pain is "non-traumatic musculoskeletal disorder affecting the low back," (Punnett, et al., 2005), which is not secondary to another disease or injury cause, such as cancer or motor vehicle or any accidents.

Nachemson (1979) defined back pain as "Acute, sub-acute or chronic low back pain, which is characterized by either a slowly or a suddenly occurring rather sharp pain with or without radiation over the buttocks or slightly down the leg, and concomitant restriction of motion."

There are three types of back pain problems. First is non-specific or mechanical back pain, which varies with physical activity such as, prolonged sitting, bending forward and with time, mechanical back pain located in the lumbosacral region, buttocks, and thighs, with no radiation to foot or toes (Brotzman, 2003).

Second is nerve root pain which also called as sciatica in which the root of the nerve is pressed, and the third type is cauda equina syndrome and it is serious type of nerve root problem where nerves are pressed on at very bottom of spinal cord (www.backcare.org.uk).

According study, lower back pain was found strongly associated to genetic component and hard work (Charlotte, 2004). Occupational risk factors, job status, working hours/day, and standing hours/day were found as the most influencing on LBP prevalence (Mendelek, et al., 2011). The common causes

of mechanical low back pain were found bending, twisting, and lifting movements with inefficient biomechanical postures, trauma, and prolonged repetitive activities, including prolonged standing (Seffinger & Hruby, 2007).

Body Posture and Back Pain

The Posture Committee of the American Academy of Orthopaedic Surgery (1947, cited in Calilliet, 1981), defined healthy posture as ‘‘skeletal alignment defined as a relative arrangement of the parts of the body in a state of balance that protects the supporting structures of the body against injury or progressive deformity.’’ (cited in, Pynt et al., 2001).

Kendal (1983) described major types of body posture. The first is ideal, the second is Kyphosis-lordosis (means faulty posture where individual shows increased flexion of the upper spine and increased extension of lower spine), and the third is flat-back and the fourth is sway-back (cited in, Sylvain & Wael, 2012). Total body posture style included seating, standing and driving posture. Lis et al., (2007) found that seated posture have significant impact on the prevalence of low back pain among workers who spend at least 50 per cent of their sitting with awkward working posture. A poor sitting posture may produce back pain in itself without any additional other strains of living (Magora, 1972; McKenzie, 1979). In another study, increased risk of LBP in sedentary jobs, and found relationship between prolonged sitting and symptoms of LBP (Magora, 1972; 1974). Pope et al., (1991) reported the positive relationship between prolonged standing and LBP symptoms (cited in Pope et al., 2002).

Hartivigsen and his associates (2000) reviewed 35 studies dealing with sitting at work in relation to low back pain published from 1985 to 1997, out of this one study (Lee et al., 1994) was found association between prolonged sittings in ‘poor seating posture’ with one year period prevalence of LBP (cited in Hartivigsen et al., 2000), and out of 21 studies only five studies were found significantly and negatively correlated with sedentary occupation and seating at work when white-collar workers were compared with blue-collar workers. Sedentary occupations were found as a cause of lower back pain (Kelsey, 1975; Magora, 1972). Setting is a risk factor for lower back pain due to prolonged and monotonous low-level mechanical load imposed by the seated posture (Van Dieen et al., 2001), and poor seated posture, sitting behavior and seat design are thought to be contributing factors to LBP (cited in Pynt et al., 2001). Some studies showed positive association between driving and back problems in males only (Hedge, 2012), and reported association between prevalence of neck pain and LBP among regular bike users (Milosavljevic et al., 2012).

In gender differences study, Mork and Westgaard, (2009) investigated sitting posture and low back muscle activity in twenty-one female computer worker, and results showed that all subjects who adopted a markedly flexed back posture while seated at work accounted 19 per cent (sitting) to thirty-eight per cent (standing) of intra-individual variation in muscle activity.

Dunk & Callaghan (2005) studied students upper body kinematics and seat pressure profiles and findings showed that regardless of chair and task perform males average lumber and trunk angles were significantly more flexed than female students and females sat with their centre of mass closer to the seat pan centre of pressure than males during sedentary work. Studies also reported that gender affected a person's posture while driving (Coke et al., 2007; Na et al., 2005; Reed et al., 2000, cited in Donnelly, 2007).

Objective of the Study

The purpose of this study was to examine:

(1) The relationship between Type A behavior and body posture style among Mechanical/lower back pain patients.
(2) To find out, if any gender differences in Type A behavior scales and body posture styles among mechanical/lower back pain patients.

Hypotheses

1. Male LBP patients show higher score on Type A behavior and its associated dimensions than female LBP patients do.
2. There is no gender difference on seating, driving and total body posture style among LBP patients.
3. Type A behavior is positively associated with total poor body posture in male and female LBP patients.

Methodology

Sample

By using purposive sampling method data was collected from 100 lower back patients (50 males, and 50 females) aged 21-50 years old who were diagnosed as having mechanical lower back pain since six months and were taking a physiotherapy treatment in orthopedic hospital in Pune city (India). Data shows that out of that 82 per cent patients were from IT profession and rests were form different occupations. Data of nerve root pain/sciatica patients and cauda equina syndrome patients were not included in this study.

Tests used in the study

Jenkins Activity Survey (Jenkins et al., 1979).

The JAS is a self-report multiple-choice questionnaire it consists of 52 items designed to measure Type A behavior pattern. The test is scored on four scales: Type A scale and three factorial independent component of this broader construct namely:

a. *Speed and Impatience*: which deals with the time urgency revealed in the style of Type A behavior. High scoring shows person eats very rapidly, impatience, hurry, strong tempers, and become irritated easily.

b. *Job Involvement*: It expresses degree of dedication to occupational activity. High score on this indicated that having challenging, high pressure job, they work overtime and confront deadlines.

c. *Hard-Driving and Competitive*: This factor involves perception of oneself as hard-driving, conscientious, serious, competitive, and putting forth more effort than others.

For scoring, each response alternative is assigned numerical points based on the item regression weight and the optimal scaling weight for that response. The sum of the points for all the items in a particular scale constitutes a raw score. The internal consistency reliability coefficient of test was reported as .85.

Body Posture Assessment Scale (R. S. Mhaske, 2012)

It consists of 15 item scale which measures seating body posture and driving (two wheeler) body posture style. For scoring, the individual respond to each item on a five-point scale, and sum of the points for all the items in a particular area constitutes a raw score ranging from The Cronbach's alpha coefficients of reliability of the scale is .69, the higher score indicates the poor body posture of the individual, and lower score indicates good body posture.

- *Statistical Analysis*

The Product-moment correlation will be used to examine the relationship between Type A behavior scales and body posture and t-test to measure gender differences in Type A behavior and body posture.

Results and Discussion

Gender Differences

According to Table-1, result shows the mean for males on Type A behavior was 254.40, σ = 38.98, and for females 227. 08 and σ= 44.59 and t value was 3.26 ($p < .01$), results shows that male and female are different on Type A behavior. The mean for males on Speed and Impatience scale were 177.18 and σ = 51.40, and for females 141.56, and σ = 36.93, and t value was 3.98 ($p < .01$), which is significant. The mean for males on Job Involvement scale was 177.10, and σ = 31.15, and for females 150.06, and σ = 26.05, and t value was found 4.71, ($p < .01$). The mean for males on Hard-Driving and Competitive scale was 141.80, σ= 36.84, and for females 131.22, and σ = 32.19, and t value was 1.53, ($p > .05$), which was not found significant. Therefore, first hypothesis, 'male patient's shows higher score on Type A behavior scale than female patients do' was accepted.

The findings of the present study were supported by previous studies, such as Jenkins et al., (1965), and Waldron's (1977) were found men were higher on Type A behavior than females, and Haynes and Levine's (1978) study reported that white collar men were significantly higher on Type A behavior

than blue collar men. In the present study, 82 percent males were from IT profession and this is considered to be a white collar job and this findings are supported the present the study findings.

Table 1. *Shows Pearson's product-moment correlation matrix of Type A behavior and its associated dimensions and body posture style among male and female lower back pain patients (Males = 50, & Females = 50)*

Variables	Gender	Seating Posture	Driving Posture	Total Body Posture Style
Type A behavior scale	Male	.15(NS)	.09(NS)	.28*
	Female	.10(NS)	.18(NS)	.03(NS)

* Correlation is significant at the 0.05 level (NS = Not Significant)

On seating posture, the mean for males was 16.82, σ = 2.30, and for females 14.82, σ = 3.46, and t value was 3.40, ($p < .01$), which shows significant differences on poor seating posture. As graph 2 & 4 shows, 43 male and 34 female showed poor seating postures. On driving posture, t value was 1.86. ($p > .05$) which is not significant, but cut off scores on driving posture are comparatively higher in male than female.

On total score of body posture, mean for males was 46.54, σ = 5.72, and for females 43.46, σ = 6.93, and t value was 2.42, ($p < .05$) which found significant.

As graph 1, shows higher cut off scores on seating and driving posture and high cut off score shows poor body posture.

Although, previous findings are not reported exact gender differences on body posture among LBP patients, but some previous studies (Dunk & Callaghan, 2005) reported that average lumber and trunk angles of males were found significantly more flexed than female and females sat with their centre of mass closer to the seat pan centre of pressure than males during sedentary work that may be leading toward the poor seating body posture. In another findings, Mork and Westgaard, (2009) were reported that female adopted a markedly flexed back posture while seated at work. In the present study 68 per cent female patients and 86 per cent male patients reported poor seating posture and 72 percent female and 82 per cent male patients reported poor driving posture which supported by previous studies. Therefore, the second hypothesis, 'There is no gender difference on seating, driving and total body posture style among LBP patients,' was partially accepted.

Correlation

In correlation (Table-2) positive and significant correlation ($r = .28$, $p < .05$) was found between Type A behaviour and total body posture style in male patients only, and positive but not significant correlation ($r = .03$, $>.05$) was found among total body posture in female patients. Thus, the third hypothesis

stated that 'Type A behavior is positively associated with total poor body posture in male and female LBP patients,' was partially accepted.

Table 2. *Shows means, standard deviation and t-test result for male and female LBP patients on Type A behavior and its associated scales and body posture style (Male N = 50, Female N = 50)*

Variables	Gender	Mean	SD	t
Type A behavior scale	Male	254.40	38.98	3.26**
	Female	227. 08	44.59	
Speed and Impatience scale	Male	177.18	51.40	3.98**
	Female	141.56	36.93	
Job Involvement scale	Male	177.10	31.15	4.71**
	Female	150.06	26.05	
Hard-Driving and Competitive scale	Male	141.80,	36.84	1.53 (NS)
	Female	131.22	32.19	
Seating Posture	Male	16.82	2.30	3.40**
	Female	14.82	3.46	
Driving Posture	Male	16.28	3.33	1.86 (NS)
	Female	15.06	3.22	
Total score of Body Posture	Male	46.54	5.72	2.42*
	Female	43.46	6.93	

** Correlation is significant at the 0.01 level * Correlation is significant at the 0.05, Level, NS = Not Significant

The previous findings are supported the present study, Sylvain & Wael, (2012) reported relationship between personality and poor body posture. Bru et al., (1993) also reported that Type A behavior mediate back pain, especially neck and shoulder pain, and this mediating effect of personality traits are influenced by occupational demand characteristics. Above stated research findings are supporting the present study finding to some extent and on the basis of this finding we can say that Type A behavior may work as mediating factor between poor body posture and lower back pain.

As per previous findings, Type A behavior was found associated with hard-driving, time urgency, and job pressure (Agbu, 2010), long working hours (Sorensen, et al., 1987), impatience, hurry, strong tempered and irritating behavior (Jenkins, et al., 1979), and due to these characteristics Type A person may not be able to give attention on his/her proper seating posture at work, and previous findings also showed the relationship between seating posture and prevalence of LBP (Lis et al., 2007), and poor driving habits were also found positively associated with Type A behavior (Evans et al., 1987).

The present findings are similar with previous findings. Although, the present study did not explain any direct relationship between Type A behavior and poor body posture, but on the basis of previous and present study we can infer that Type A behavior may lead person toward poor seating and driving

posture, and eventually lower back pain. As per previous (Lee et al., 1994) findings stated that prolonged setting in 'poor seating posture' is one cause of prevalence of LBP and present study found positive relationship between Type A behavior and poor body posture in mechanical lower back male and female patients.

Conclusions

After studying the obtain results, the following conclusions may be drawn:

1. Male lower back pain patients (LBP) are higher on Type A behavior scale, Speed and Impatience scale, and Job Involvement scale than females patients.
2. Male LBP patients are higher on poor seating and total body posture than female.
3. There are no gender differences on Hard-Driving and Competitive scale, and poor driving style.
4. The Type A behavior is found positively associated with total body posture style among male LBP patients but not in female LBP.

Limitation of the present study

The following are limitations of the present study:

1. The sample size was very small and restricted to only some profession/employees, hence, no comparisons or generalization in other profession/employees.
2. It was limited to 21 to 50 years LBP only.
3. This study did not compare samples of nerve root pain/sciatica patients with mechanical LBP patients.

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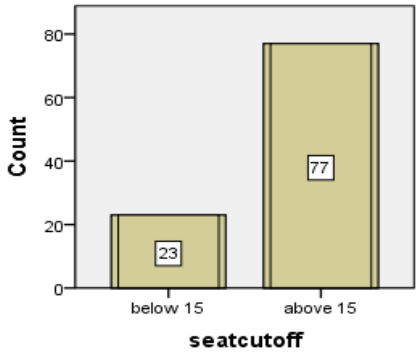
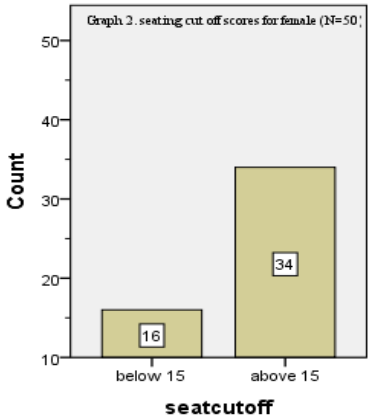
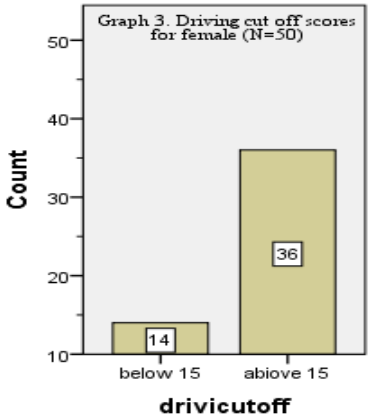
Graph 1. Seating & driving posture cut of scores for total data (N = 100)



below 15 score shows good seating & driving posutre & above 15 scores shows poor seating posture.

Graph 2 & 3 showing seating and driving cut off scores for females lower back pain patient





Graph 4 & 5 showing seating and driving cut off scores for males lower back pain patients