Socio-demographic and work related variables as predictor of persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano state, Nigeria

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Abstract
The development and persistence of low back pain may be influenced by several factors which include lifestyle factors, previous pain symptoms, psychological factors, work place factors as well as socio-demographic variables. The focus of this study was to determine the socio-demographic and work related variables as predictor of persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria. One hundred and twenty nine newly referred low back pain patients for physiotherapy participated in the study. This study was a cross sectional study involving patients that were newly diagnosed of back pain, referred and receiving physiotherapy. The convenience sampling technique was used to select the patients based on the inclusion criteria. The data obtained was analysed using simple percentage and multiple regression for stated hypothesis at 0.05 level of significance. The findings reveal that all the variables are not significant predictor of persistence of back pain and disability. The study recommended that determinants of low back pain recovery by clinician should include other clinical factors not only reduction in pain intensity.

Keywords: socio-demographic, work related variables, Kano state, back pain and disability

Introduction
Pain in the soft tissues of the back is extremely common among working adults. Back pain is widespread in many countries and is associated with substantial financial cost and loss of quality of life. In the United States, the National Arthritis Data Movement in a national survey shows that each year some 15% of adults report frequent back pain or pain lasting more than two weeks (Lawrence, Helmick, Arnett, Deyo, Felson, Giannini, Heyse, Hirsch, Hochberg, Hunder, Liang, Pillemer, Steen, Wolfe, 1998). Of all the symptoms involving the regions of the back, low back pain was identified by the pan American Health Organization as one of the top three occupational health problems to be targeted by surveillance within the World Health Organization (WHO) region of America (Choi, Tennassee, Eijkemans, 2001) [4], (Juul –Kristensen, Sogaard, Stroyer, Jensen, 2004) [11]. (Omokhodion and Sanya, 2003) [16] Also reported that low back pain is the most common cause of work–related disability among office workers in Ibadan Oyo State, Nigeria with one–year prevalence ranging from 23% to 38%. In various working populations, the attributable fractions of physical load in the occurrence of back disorders varied between 11% and 58% (Burdof, Rosignol, Fataallah, Robert, 1997) [2]. Low back pain is a symptom that cannot be validated by an external standard. It is a disorder with much possible aetiology, occurring in many groups of the population, and with many definitions.
During the past two decades, considerable advances have been made in developing bio-psychosocial models to describe the transition from acute injury to chronic pain. These advances utilized novel conceptualization of cognitive behavioural factors such as pain and related fear avoidance (Vlaeyen and Linton,

2000) [13], which appear to influence the development of chronic pain in many individuals. The aetiology of low back pain is not fully understood but is assumed to be of multi-factorial in origin indicating that individual physical and psychological factors can contribute to their development and persistence (Manchikanti, 2000). There is an ample evidence for a strong association with physical risk factors such as manual handling of materials, heavy physical work, frequent bending and turning, lifting and forceful movement (Burdof, Rosignol, Fataallah, Robert, 1997) [2], (Hoogendorn, Van Poppel, Bongers, Koes, Bouter, 1999) [9]. A previous study also identified several factors associated with low back pain (Juul –Kristensen, Sogaard, Stroyer, Jensen, 2004) [11]. Others also cited level of education, smoking (Shiri, Karppinen, Leino-Arjas, Solovieva, Viikari-Juntura, 2010) [21] and sleep deprivation (Muto, Muto, Seo, Yoshida, Taoda, Watanabe, 2006) [15]. Described prolonged driving as a risk factor while work related risk factor such as accumulated computer usage has been linked to more risk of low back pain (Ortiz-Hermandez, Tamez-Gonzalez, Martinez-Alcantara, Mendez-Ramirez, 2003) [17]. Various psychosocial problems such as high level of stress (Yip, Ho, Chan, 2001) [26], low job satisfaction and low social support also contributed to an increased occurrence of back pain, (Rugulies, Krause, 2008) [20].
The bio-psychological models of pain transition utilized novel concept utilizations of cognitive-behaviour factors such as pain related fear avoidance, which appear to influence the development of chronic pain in many individuals. The ability of psychological factors to influence the development of chronic back pain by shaping behaviour and amplifying peripheral

sensation in this mode is well supported by considerable research (Vlaeyen and Linton, 2000) [13]. (Schmidt, Kohlmann, 2005) [22] Also reported that a wide range of risk factors have been associated with the development and persistence of low back pain including lifestyle factors, previous pain symptoms, psychological factors, work place factors as well as socioeconomic variables. Among these, two sets of risk factors have demonstrated a particular importance in predicting the course of low back pain. Previous pain episodes (George, 2002), (Picavet, Schuit, 2003) [19] and (Jones, Johnson, Wiles, Chaddock, Potter, Roberts, 2006) [10] as stated by Cochrane Back Review Group (Boufer, Pennick. Bombardier, 2003) [1] highlighting factors that influence the outcome of sub-acute back pain as a major challenge to improve diagnosis. In addition to the well-known biomedical conditions and occupational biomechanical characteristics, certain psychosocial factors have also been causally linked with poor outcome of low back pain in recent years (Van Tudler, Becker and Bekkering, 2006) [24]. This study was conducted to assess how selected physical, clinical, socio-demographic and lifestyle factors influence persistence of back pain and disability in a cross-section of civil servants receiving physiotherapy in tertiary health facilities in Kano.

Research Question
1. Do socio-demographic and work related variables as predictor of persistence of back pain among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria?

Hypothesis
Socio-demographic and work related variables as a significant predictor of persistence of back pain among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria

Significance of the Study
The outcome of this study has provided information on how physical, clinical, socio-demographic and lifestyle factors have affected the recovery of back pain patients in a Nigerian setting. This report will help in providing better counselling and rehabilitation for the back pain patients. The outcome of this study has also provided clinical evidence on the average duration of recovery in back pain patients newly referred for physiotherapy. This evidence will help in setting treatment goals for Nigerian patients with back pain.

Methodology
This study was a cross sectional study involving patients that newly diagnosed of back pain, referred and receiving physiotherapy. The sample for this study comprised of 120 respondents. The convenience sampling technique was to select patients who met the inclusion criteria. The instrument for the collective of data was socio demographic data and the Oswestry Low Back Pain and Disability Questionnaire (Vlaeyen and Linton, 2000) [13]. The completed questionnaire forms were thereafter sorted, coded, and analyzed with the use of percentage and multiple regressions to test the stated hypotheses at 0.05 level of significance.

Data Analysis and Presentation of Results

Table 1: Influence of demographic variables on knowledge of chronic back pain in patient attending Federal Medical Center, Gusau, Zamfara State, Nigeria

Independent variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig	Remarks
	β	S.E				
Gender	0.445	0.824	0.475	0.629	0.001	NS
Most assumed posture	-.347	2.180	-.047	-.059	.874	NS
Nature of occupation	1.138	1.143	0.397	7.996	0.072	NS
Type of marriage	1.138	1.143	.397	6.996	.082	NS
Marital status	-.871	2.155	-.111	5.404	.071	NS
Occupational status	-.671	1.005	-.111	5.404	.004	NS
Education	-.577	1.390	-.0576	-.003	.874	NS
Break period	1.40	1.679	0.83	0.98	0.211	NS
Years of work	0.47	1.089	0.019	1.60	0.327	NS
Hours of work	0.08	0.97	0.311	0.51	0.060	NS

Table 2 observes that, most assumed posture, nature of occupation, type of marriage, marital status, occupational status, education, break period, years of work and hours of work is not a significant predictor while gender is a significant predictor of persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria. All the computed is not significant, that is (p>0.05) expect for gender.

Table 2: Summary of Multiple Regression Result showing the composite effect of independent variables on persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria

Source of variance	df	Ss	Ms	F-ratio	Sig	Remark
	8	131.473	181.110	21.638	0.001	NS
	120	217.530	0.307			
	128					

Note: S represents Significant; NS represents Not Significant Multiple R = 0.301, Multiple R^2= 0.304, R^2 ADJUSTED=0.10, **F** – VALUE= 0.638

The result of regression analysis of persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria, recorded a coefficient of determination which is the adjusted R^2 value of 0.30 implies that the variables included in the model explain 30% variation on the persistence of back pain and disability among civil servants receiving physiotherapy were explained by the independent variables included in the model which include gender, most assumed posture, nature of occupation, type of marriage, marital status, occupational status, education, break period, years of work and hours of work. The remaining 70% can be attributed to error in specification and the exclusion of other factors from the model. All the variables such as gender, most assumed posture, nature of occupation, type of marriage, marital status, occupational status, education, break period, years of work and hours of work were statistically insignificant except for gender which is significant predictor. The regression was analyzed at 0.05 level of significance. Conclusively, this means that all the six (10) variables taken together accounted for 10% of the variance in persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria.

The F-Statistic is 21.638; this is very low and statistically significant at 0.05 levels. This is greater than its theoretical values. The F-statistic confirms that persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria is statistically related to the independent variables of gender, most assumed posture, nature of occupation, type of marriage, marital status, occupational status, education, break period, years of work and hours of work.

Discussion on Findings

The result of this study shows that socio-demographic factors had no significant association with persistence of low back pain and disability in low back pain patients receiving physiotherapy. This might be due to the fact that we investigated an educated population sample that is in paid employment. The attributable proportion of males persisting with disability at three months of receiving physiotherapy was found to be higher than their female counterparts, this is a possible reflection of the frequency distribution of participants in this study though this supports the conclusion drawn by (George, 2002) [7], that low back pain did not directly produce premature mortality but cause substantial disability and has a potentially severe societal consequence which estimates about 50% higher for men than women. Some authors have demonstrated the ability to identify patients at risk of poor work and functional outcome using a combination of pain intensity, fear avoidance, function and mood, but have been unable to predict persistent pain (Linton, Boersma, 2003) [13]. Others have shown that psychological factors, in particular distress and somatisation, are strong predictors of chronic low back pain (Pincus, Burton, Vogel, Field, 2002). In the development of LBP in acute cases, studies have suggested that fear-avoidance beliefs are an influential psychological factor (Leeuw, Goossens, Linton, Crombez, Boersma, Vlaeyen, 2007) [13], and (Fritz, George and Delitto, 2001) [7] which is consistent with findings of this study. This also supports the conclusion drawn by (Fritz, George, and Delitto, 2001) [7] in their study that there is positive correlation between FAB and concurrent disabling low back pain. Changes in FAB scores have been

shown to correlate with changes in disability following treatment (Woby, Watson, Roach, Urmston, 2004) [25], indicating a relationship between the two. This is also in consistence with the findings of this study. The scores of body mass index at 12th week shows a positive correlation with persistence of pain in this study; this might have resulted from cumulative period of inactivity and sedentary nature of the job of the participants. This is consistent with the study of (Fransen, Woodward, Norton, 2002). That a higher body mass index at three months correlates with persistence of pain.

Conclusion

Based on the findings from this study, it was obvious that socio-demographic and work related variables as not predictor of persistence of back pain and disability among civil servants receiving physiotherapy in tertiary health institutions in Kano, Nigeria.

Recommendation

Based on the findings of this study, the following recommendations are made:

1. Patients' education to observe break periods at regular intervals during the working hours should be emphasized by clinicians.
2. Determinants of low back pain recovery by clinician should include other clinical factors not only reduction in pain intensity.
3. Patients should be encouraged to observe active rest and light physical activities during the process of rehabilitation.

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