

# The Effects Of A Nigerian Back School Model On The Knowledge Of Patients With Low Back Pain

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## Abstract

**Objective:** To determine the effects of a Nigerian Back School Model (NBSM) on the back care knowledge of patients with low back pain (LBP). **Method:** One hundred and thirty patients with LBP were randomly assigned into two equally sized groups - back school (BSG) and control groups (CG). In addition to drug therapy and physiotherapy, the BSG was shown a 30-minute documentary, and each member of this group was also given a copy of a 24-page handbook. Back care knowledge (BCK) was assessed prior to the intervention and four-weeks after the intervention using a 40-item questionnaire. Data were analyzed using Mann Whitney U and t-tests at  $p > 0.05$ . **Results:** The mean BCK score of participants in BSG was significantly higher ( $p < 0.001$ ) than those in CG after the intervention. Participants with multiple episodes of LBP had significantly ( $p < 0.05$ ) higher BCK than those with a single episode in both BSG and CG. The mean increase in BCK of BSG was significantly higher than CG after intervention ( $p < 0.05$ ). The BCK of participants with post secondary school education was significantly higher than that of those with secondary school education in both BSG and CG. **Conclusion:** The NBSM was effective in improving the BCK of patients with LBP. Educational attainment and episodes of LBP were important factors in the acquisition of BCK among the participants.

## INTRODUCTION

Low back pain (LBP) is a major cause of disability that affects all populations in the world; it may be acute or chronic in nature and no general consensus exists regarding the most effective mode of treatment [1, 2]. Recurrent episodes are a common feature of LBP, particularly when it is not properly treated [3]. According to Taimela et al. [4], up to 35% of patients with LBP develop a chronic problem. This tendency for recurrence and chronicity along with poor response to treatment probably led to the development of a wide variety of treatment approaches by many health care providers from different professional backgrounds [5]. These treatment approaches were developed in the 1950s through 1980s [6-11]. Back school constitutes another approach in the prevention and management of LBP developed about the same period.

The first back school, the Swedish Back School, was developed in Sweden by Zachrisson-Forssell in 1969 for Volvo factory workers [12]. Back school soon became popular in many parts of the world, especially in North America and Britain. Within ten years, many other back schools, such as the American Back School, California Back School, Canadian Back School, and the Derby Back School

were developed [13]. Although the formats and contents vary widely, most back schools provide information on epidemiology of back pain, structure and functions of the back, causes of back pain, practical demonstration of wrong and correct resting and working postures as well as exercises for the prevention and/or alleviation of back pain [12]. Modern back schools are now presented using either video or compact disc documentaries.

The effect of health care programmes on LBP has been assessed using various parameters. Among these parameters are knowledge, attitudes and opinions of those who attended 'back school'. In a study of an initial attempt to develop a back school that would be Nigerian culture-friendly, back care knowledge of a group of industrial workers who were exposed to the initial protocol was improved significantly immediately and 8 weeks post-training [14]. A twelve-month follow up study also showed that there was a 23% reduction in the number of staff reporting to the factory's physiotherapy clinic with LBP [15]. These findings served as impetus for the development of a Nigerian model of back school, details of which have been presented in a previous study [16].

This study was designed to determine the effects of a Nigerian back school model on the knowledge of patients with LBP newly referred for physiotherapy.

**MATERIALS AND METHODS**

A total of 130 patients with low back pain (LBP) were recruited over a period of three months. They were newly referred patients with mechanical LBP, that is, those with no history of pathology causing the LBP and whose pain was influenced (made worse or better) by the McKenzie movement diagnosis tests [9]. Information on age, sex, occupation, marital status, clinical history of LBP, number of LBP episodes during the 12 months prior to the study was obtained from participants through interviews and from their hospital files prior to intervention. Weight, height and back care knowledge (BCK) were also assessed in all the participants at the beginning and at the end of the four-week treatment intervention, using a knowledge score questionnaire from a previous study [14]. The total marks obtained were noted and recorded.

The 130 patients with LBP were randomly assigned into two equally sized groups - back school (BSG) and control groups (CG). The NBSM documentary was shown only to the participants in BSG in small groups as they became available. One researcher went through the NBSM Handbook with each participant before each participant was giving a copy. Participants were also encouraged to go through the handbook regularly and to apply what they had learnt to their daily living activities. The approval of the ethical committee of the University of Ibadan and University College Hospital (i.e. UI/UCH) Institutional Review Committee and the authorities of the National Orthopaedic Hospital, Igbobi, Lagos, South-West Nigeria was obtained. The purpose of the study was explained to the participants in an informed consent form, and only those who consented were included in the study.

**DATA ANALYSIS**

The results were summarized using descriptive statistics of mean ± standard deviation, frequency, percentage and bar chart. Inferential statistics of Mann-Whitney U, Kruskal Wallis and t-tests were used to determine significant difference between variables.

**RESULTS**

The mean age of participants in the back school group (BSG) and the control group (CG) were 48.18±12.59 years and 47.54±11.69 years respectively (Table 1). Thirty three

(50.8%) and 38 (58.5%) of the participants in the BSG and CG had one episode of back pain respectively, while 32 (49.2%) and 27 (41.5%) of the participants in BSG and CG had at least 2 episodes of back pain respectively. Chi Square analysis showed that there was no significant difference (p>0.05) in the episodes of LBP between the two groups. Figure 1 shows that the occurrence of back pain below age 26 was low among the participants. This number increases gradually with increasing age, peaking at age above 45 years.

The majority of the participants in BSG (89.2%) and in CG (61.5%) had never had any form of health education on the care of the back prior to the period of the study. Of the 32 participants who had had some form of health education on back care, 25 (78.10%) were in the CG, while 7 (21.90%) were in the BSG. The most commonly-reported source of information was the hospital (Figure 2).

The back care knowledge of the participants in the two groups pre-intervention was poor, as the participants in two groups scored less than fifty percent of the maximum obtainable mark of 40. The pre-intervention mean back care knowledge score of the participants in the CG was significantly higher (p=0.01) than those in the BSG (Table 2).

**Figure 1**

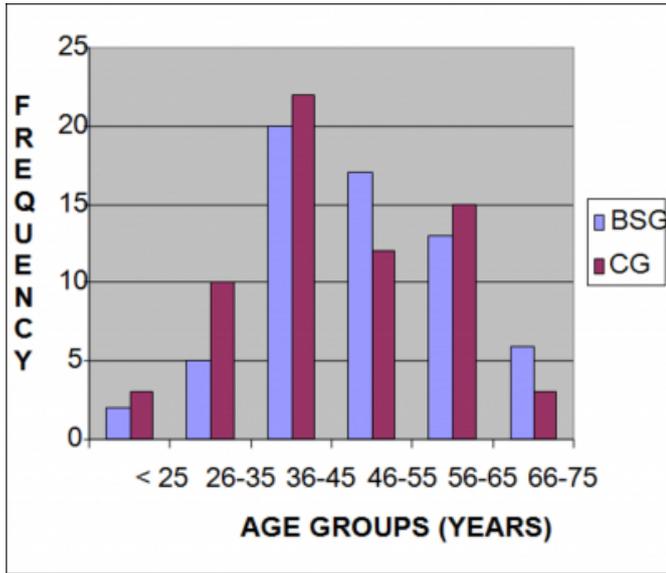
Table 1: Age, Physical Characteristics and Working Experience of Participants.

	Back School Group X ± SD	Control Group X ± SD	t	p-value
Age (years)	48.18 ± 12.59	47.54 ± 11.69	0.30	0.76
Height (m)	1.68 ± 8.15	1.67 ± 6.98	1.90	0.06
Weight (kg)	79.15 ± 14.46	73.32 ± 11.28	2.56	0.01*
BMI (kg/m <sup>2</sup> )	27.93 ± 5.42	26.28 ± 3.93	1.99	0.05
Working Experience (years)	16.33 ± 10.89	15.98 ± 10.41	0.19	0.85

\*Significance at p = 0.05

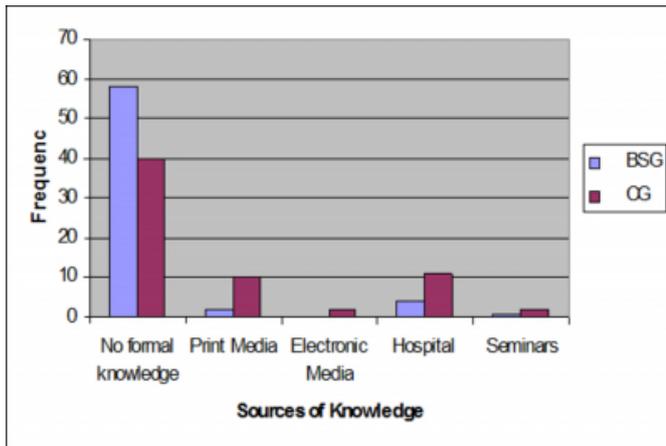
**Figure 2**

Figure 1: Occurrence of Low Back Pain by the Participants' Age Distribution



**Figure 3**

Figure 2: Participants' Sources of Back care Knowledge



**Figure 4**

Table 2: Mann Whitney U Analysis of Participants' Back Care Knowledge in the BSG and CG.

	Back School Group X ± SD	Control Group X ± SD	U	p-value
Pre- Intervention	13.37 ± 6.09	16.54 ± 7.19	-2.71	0.01*
Post- Intervention	28.46 ± 4.93	22.54 ± 5.47	6.49	<0.001*
Z	-15.53	-15.36		
P - value	<0.001*	<0.001*		
Change in Knowledge Scores	15.09 ± 6.48	6.00 ± 5.64	48.14	<0.001*

\*Significance at p = 0.05

However, the post-intervention mean back care knowledge score of the participants in the BSG was significantly higher ( $p < 0.001$ ) than that of those in the CG. Although the mean back care knowledge scores of the participants increased significantly post-intervention in the two groups, a Kruskal-Wallis test showed that the change in the mean back care knowledge score of the participants in the BSG was significantly higher ( $p < 0.05$ ) than of the participants in the CG (Table 2).

The Mann Whitney U test showed that the pre- and post-intervention mean back care knowledge score of the participants with post secondary school education was significantly higher than those with secondary school education in the BSG and CG (Table 3).

The mean back care knowledge scores of the participants with at least 2 episodes of back pain was significantly ( $p < 0.05$ ) higher than those with one episode in the BSG and CG pre-intervention; however, there was no significant difference ( $p > 0.05$ ) between the mean back care knowledge scores of the participants with multitude episodes and one episode of back pain in the BSG and in the CG post-intervention (Table 4).

**Figure 5**

Table 3: Mann Whitney U Analysis of the Influence of Participants' Educational Attainment on Back Care Knowledge in BSG and CG.

	Secondary School X ± SD	Post Secondary School X ± SD	U	p-value
<b>Pre-Intervention:</b>				
Back School Group	8.00 ± 5.57	11.02 ± 5.87	86.00	0.013*
Control Group	9.00 ± 3.34	17.53 ± 7.05	77.50	0.003*
<b>Post-Intervention:</b>				
Back school Group	22.43 ± 7.70	29.19 ± 4.01	94.00	0.021*
Control Group	17.88 ± 5.00	23.19 ± 5.24	100.40	0.011*

\*Significance at p = 0.05

**Figure 6**

Table 4: Mann Whitney U Analysis of the Influence of Number of Episode(s) of Back Pain 12 Months Prior to the Study on the Participants' Back Care Knowledge.

	One Episode X ± SD	Multiple Episodes X ± SD	U	p - Value
<b>Pre-Intervention:</b>				
Back school Group	12.97 ± 5.87	14.78 ± 6.37	410	0.04*
Control Group	15.00 ± 7.38	18.70 ± 6.44	350	0.03*
<b>Post-Intervention:</b>				
Back school Group	28.58 ± 4.06	28.34 ± 5.76	524	0.96
Control Group	22.37 ± 4.80	22.78 ± 6.38	467	0.54

\*Significance at p = 0.05

**DISCUSSION**

The age range of participants, in this study, shows that low back pain (LBP) occurs in adults of all age groups. However, the occurrence of LBP increases with age especially after 25 years. This finding is in agreement with the observation of Wyke [17] and Herta and Turks [18] that significant LBP begins at about 35 years old. One possible reason for this observation is that between 35 and 45 years is the period in life where most people are very active in their jobs. Therefore, efforts made towards the prevention of LBP, which is associated with much disability, is worthwhile.

The participants in both groups were similar in age, physical characteristics and work experience except for body weight and body mass index. The significant difference observed in the body weight between the participants in the back school group (BSG) and control group (CG) may be because there were more females in the CG than there were in the BSG.

The majority of the participants in both groups had never had any previous health education on back care. This finding suggests that organized back care education or back school (documentaries and books) is not readily available in Nigeria, and that it is probably not routinely included in the care of patents with low back pain in hospitals in Nigeria. For those participants who had some form of back education, the most commonly reported source of information was the 'Hospital'. These patients probably picked up some information on back care from health care providers during their visits to hospital by chance. Such information might not be adequate, and might not be provided at times most useful to patients. This is supported by the comment of one of the participants in the back school group:

"...The only regret I have is that I was not exposed to this back school (NBSM) earlier..."

mean back care knowledge score of the participants in each group was less than fifty per cent of the total score obtainable. This implies that the participants had poor back care knowledge prior to the study. The results show that the back care knowledge score of the participants in each group significantly increased post-intervention. This finding supports the suggestion that patients' experience during hospital treatment can bring about some improvement in their back care knowledge. The results also reveal that, even though the CG scored significantly higher than the back school group pre-intervention, the BSG had significant higher knowledge score post-intervention. Consequently, the increase in the back care knowledge of the participants in the BSG was significantly higher than that of the participants in the CG. This means that the gain in back care knowledge through attendance at NBSM was much higher than that gained when patient education was not provided during the treatment of patients with low back pain. This finding corroborates with the results of many previous studies [3,14,19-21] that organized back care education programme and back school are able to improve the back care knowledge of participants.

The finding that there was a significant difference between participants with secondary and post-secondary education at the beginning of the study shows that participants with higher educational status are likely to have some form of knowledge of back care. This finding agrees with that of Nwuga [19], indicating a correspondence between education levels and back care knowledge reported that the more educated a person was, the higher the tendency for him to have some form of back care knowledge. At the end of the

four weeks treatment period, the results also suggested that participants with higher educational status were likely to have acquired more information from the newly developed NBSM. This finding agrees with that of Akinpelu and Odebiyi [14], indicating a correspondence between education levels and the tendency to acquire back care knowledge reported that the more educated a person was, the higher the tendency for him/her to acquire more information from an organised back care education programme and/or back school.

Participants with multiple episodes of LBP appeared to have more back care knowledge than those with single episode. One reason for this phenomenon may be connected to the number of times these participants were exposed to their health practitioners. Sanya and Ogunjuyigbe [21], in a study on learning habits, reported that multiple exposures to a formal back care education enhance the learning ability of the participants. Also, constant repetition of a sequence of demonstrations followed by practice has been reported to enhance learning [22].

## **CONCLUSION**

It was concluded that the newly-developed Nigerian Back School Model was able to improve the participants' back care knowledge. The NBSM can, therefore, be used as a health education programme for patients with low back pain. Back care knowledge obtained by formally educating people on how to modify their postural habit at rest and work may reduce the occurrence of low back pain or its recurrence in those who already have it.

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