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Prevalence and Profile of Back Pain in Nigerian Adolescents

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Key Words

Adolescents • Back pain • Nigerians

Abstract

Objective: This study aimed to investigate prevalence, characteristics, perceived predisposing factors and mode of treatment sought for back pain among school-aged adolescents in Nigeria. **Subjects and Methods:** A self-administered questionnaire employed in this cross-sectional study was distributed to 4,400 students [mean age 15.0 ± 1.7 years (range 10–19)] from 44 randomly selected schools. **Results:** Of the 4,400 questionnaires, 3,185 were completed (1,455 boys and 1,730 girls), thereby yielding a response rate of 72.4%. The lifetime and point prevalence of back pain were 59 and 17%, respectively. Low back pain was the most prevalent type, reported by 25%. The prevalence of back pain was 59.7% among boys and 57.5% among girls. Back pain was significantly associated with age, religion and involvement in commercial activity ($p < 0.05$). Among those with back pain, most cases were mild (56%), but chronic in 21%, and 27% used self-medication. Prolonged sitting posture (17%) was the most implicated predisposing factor to back pain. **Conclusion:** Back pain is common among Nigerian adolescent students, but it is mostly mild. The prevalence of back pain increased with advancing age in both genders. More research is needed to find necessary risk factors and interventions including appropriate back education to reduce back pain.

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Introduction

Back pain in adolescents is reported to be common and it is considered as a growing public health crisis, one that may inundate a generation of young people [1, 2]. Some reports indicate that back pain in adolescents could lead to serious disability, reduced work capacity, and require increased medical attention [3, 4]. However, the gravity of these consequences has been played down in some other studies that believe that the symptoms are often mild, frequently forgotten and rarely requiring medical attention except in recurrent cases [1, 2].

Studies from Western countries have put the lifetime and point prevalence of back pain in adolescents within the range of 56–59% and 15–39%, respectively [2, 5]. These prevalence rates are reported to approach that seen in adults in some studies [2, 5, 6]. Harreby et al. [7] reported that recurrent back pain during the adolescent years may be a precursor for chronic back pain in adulthood. Volinn [8], in a review of surveys, reported that although little is known about the epidemiology of low back pain in the low- and middle-income countries, the rates of low back pain in these countries seem to be lower than in the industrialized countries. More or less anecdotally, the general assumption is that back pain in Africa is lower than in the developed countries. In contrast, a recent review reported that the prevalence of back pain among Africans is rising and should be of concern [9]. It is recommended that research in back pain in adolescents

Table 1. Characteristics of the study population (n = 3,185)

	Number	%
Respondents' distribution by age group		
10–13 years	510	16
14–16 years	2,038	64
17–19 years	637	20
Gender distribution		
Male	1,455	46
Female	1,730	54
Distribution of religion		
Christianity	2,216	69.6
Islam	922	28.9
African traditional worshipper	47	1.5
Involvement in commercial activity		
Yes	969	52
No	894	48

may help in understanding the risk factors for back pain in adolescents and provide evidence for a relevant prevention strategy [5, 7]. Unfortunately, there appears to be a dearth of studies on the prevalence of back pain in adolescents from Africa. The aim of this study was to investigate the prevalence, characteristics, perceived predisposing factors and mode of treatment sought for back pain among school-aged adolescents from Nigeria.

Subjects and Methods

The World Health Organization's [10] definition of adolescents as people ranging from 10 to 19 years of age was adopted. From the list of registered schools obtained from the zonal education authority of the 11 local government areas in and around Ibadan metropolis, Nigeria, 4 schools from each local government area were randomly selected for a total of 44 secondary (22 public and 22 private) schools. Originally, the study was designed to recruit 100 students from each of the 3 arms of the senior secondary category in each school, therefore yielding a total of 4,400 students within the defined age range. Ethical approval was obtained from the University of Ibadan, University College Hospital, Institutional Review Committee, Nigeria. The approval of the various school authorities and the verbal assent of the respondents were obtained.

Procedures

A 3-section self-administered questionnaire that sought information on the respondents' demographic profile, history and pattern of back pain, perceived risk factors and mode of treatment sought for back pain was employed as the survey instrument (Appendix). It was tested for clarity and comprehensibility in a pilot study among 92 students from 1 of the selected schools observed for 7 days between test and retest.

The back was defined as including the entire region from the neck to the buttocks (cervical, thoracic and lumbar regions), and back pain as pain, ache or discomfort in those areas. Students were asked to indicate the exact anatomical site of pain and the mode of treatment employed. The questionnaires were administered (O.A., C.A.) to the students in the classroom of their various schools.

Data Analyses

The data were analyzed through descriptive statistics of mean, standard deviation and percentages. A kappa coefficient was calculated for the reliability test. The questionnaire items yielded an agreement percentage that ranged from 97 to 100%, and the corresponding kappas ranged from 0.86 to 1.00; χ^2 tests were used to test the association of back pain with age, gender, religion, and time spent in activity. The alpha level was set at $p < 0.05$. The data analyses were carried out using SPSS 13.0 version software (SPSS Inc., Chicago, Ill., USA).

Results

Of the 4,400 questionnaires, 3,185 were completed, thereby yielding a response rate of 72.4%. There were 1,730 girls (54.3%) and 1,455 boys (45.7%). The characteristics of the study population are presented in table 1. Most of the respondents (2,038, 64%) in this study were within the age range of 14–16 years. The distribution of back pain in all respondents by age group is given in table 2; 1,863 (59%) respondents reported having had back pain in their lifetime, and the prevalence rose with increasing age. The lifetime prevalence of high, mid and low back pain was 19, 15 and 25%, respectively. 529 (17%) of the respondents reported that they had back pain on the day of the study; 21% reported that they had suffered from chronic back pain lasting for more than 3 months in duration, a majority (1045, 56%) reported a history of mild back pain, and 201 (11%) reported a severe history. The mode of intervention used by the respondents in managing their back pain is presented in table 3; 495 (27%) engaged in self-medication, while 396 (21%) sought no treatment at all. The associations between lifetime prevalence of back pain and gender, religion and involvement in commercial activities are presented in table 4. There were significant associations ($p < 0.05$) between back pain and religion and involvement in commercial activities, with an overweight of back pain among those belonging to Christianity, but not with gender.

Most of the respondents (969; 52%) who reported back pain were involved in some form of work or venture for commercial purposes apart from their normal school activities and household chores. With respect to postures/positions in the course of daily activities, 863 (45%) of the

Table 2. Back pain in all the students and by age groups in years

	All students (n = 3,185)		10–13 years (n = 510)		14–16 years (n = 2,038)		17–19 years (n = 637)	
	n	%	n	%	n	%	n	%
Lifetime prevalence of back pain	1,863	59	260	51	1,200	59	403	63
Point prevalence of back pain	529	17	89	18	328	16	112	18
Back pain lasting >3 months	682	21	111	22	225	11	346	54
Regions of back pain								
High back pain (cervical region)	598	19	54	11	393	19	151	24
Mid back pain (thoracic region)	486	15	94	18	268	13	124	19
Low back pain (lumbar region)	779	25	112	22	539	26	128	20
Severity of back pain								
Mild	1,045	56	138	27	485	24	422	66
Moderate	617	33	78	15	318	16	158	25
Severe	201	11	44	9	100	5	57	28

Table 3. Modes of interventions due to back pain

Modes of intervention	Number	%	%BP
Medical assistance	370	12	20
Self-medication	495	16	27
Change in posture	350	11	19
No treatment	396	12	21
Other	252	8	14

Number and percentages of the whole group (%) and back pain group (%BP).

Table 4. Associations between lifetime back pain and age group, gender, religion and involvement in commercial activity

	n	%	χ^2	p value
Association between age and back pain				
10–13 years	260	51.0	17.96	0.001
14–16 years	1,200	58.9		
17–19 years	403	63.3		
Association between gender and back pain				
Male	868	59.7	1.493	0.222
Female	995	57.5		
Association between religion and back pain				
Christianity	1,373	62.0	26.709	0.001
Islam	478	51.8		
African traditional worshipper	12	25.5		
Involvement in commercial activity				
Yes	969	52	988.29	0.001
No	894	48		

respondents with a history of back pain reported that sitting was the most assumed posture. The frequencies of other reported postures were: walking (n = 425, 22.8%); bending (n = 309, 16.6%); standing (n = 289, 15.5%). The factors perceived to be responsible for the onset of their pain by the respondents with a reported history of back pain are given in figure 1. Prolonged sitting posture (n = 319, 17.1%) was the major perceived predisposing factor linked to back pain, followed by frequent bending (n = 223, 12.0%). The respondents' reports on postures that aggravate and relieve the intensity of their back pain are shown in figures 2 and 3. According to the result of this study, back pain led to disturbance of sleep in 578 (31%) and interference with school time in 653 (35%) of the respondents.

Discussion

This survey investigated the prevalence and pattern of back pain in school-aged Nigerian adolescents. The lifetime and point prevalence rates of back pain observed in this study are within the range for lifetime and point prevalence rates from Western countries and also approach rates of back pain in adults [2, 5, 6]. These prevalence rates represent a potential serious health problem as adolescent back pain is reported to be a strong and independent risk factor for the experience of back pain as an adult.

The pattern of back pain in adolescents observed in this study was consistent with previous studies [11, 12] as

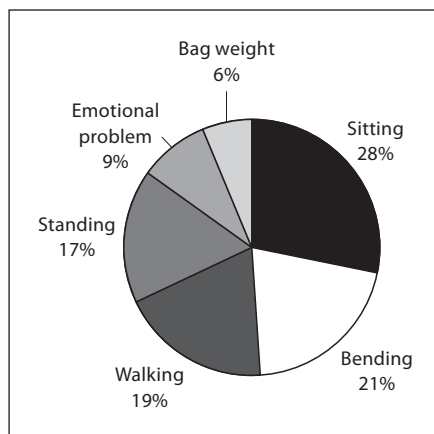


Fig. 1. Frequency distribution of perceived factors responsible for back pain among the adolescents.

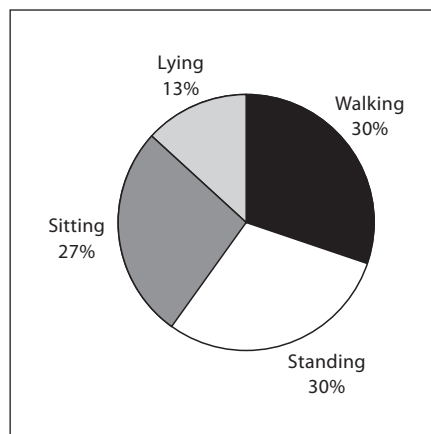


Fig. 2. Frequency distribution of positions that aggravate back pain among the adolescents.

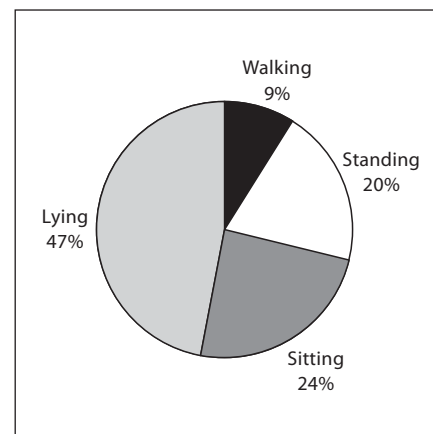


Fig. 3. Frequency distribution of positions that relieve back pain among the adolescents.

low back pain was the most common type and the prevalence increased with increasing age. There was no significant gender difference in the prevalence of back pain among the adolescents; a finding not consistent with some previous reports [2, 13, 14] but similar to others [6, 11]. Noteworthy is the report of higher prevalence among girls [2, 14] attributed to puberty or menstrual cycle [14–16] or the fact that boys tend to worry less about this problem [14]. However, the finding of no significant gender difference in back pain prevalence in adolescents is open to speculations, as to our knowledge, no explanation has been postulated.

In consonance with some studies [1, 2], the majority of the adolescents from this study reported their back pain episodes to be mild. The rate of chronic back pain in this study was high. Conversely, the literature is somewhat scant on the chronicity of back pain in children and adolescents. In this study, sitting posture among others was perceived as the most important predisposing factor responsible for the onset of back pain and this agrees with results of previous studies [2, 17]. In addition, many researchers have implicated mechanical factors such as carrying backpacks, sport participation, and trauma as key risk factors for back pain in adolescents [6, 18].

This study found that involvement in commercial ventures and other money-making activities outside of the daily household chores was significantly associated with higher rates of back pain in adolescents. It is important to state that commercial ventures among children and adolescents are very rampant and it is becoming a menace in

the Nigerian society. However, it is difficult to draw conclusions about this association without a proper adjustment for confounders. It is presumed that older children work more than younger ones, and back pain increases with age. Future studies are needed to test the influence of possible cofounders such as age.

The finding from this study also revealed that postural modification was found useful by a substantial percentage of the adolescents in relieving their back pain. Self-medication was the most common intervention in the management of back pain among adolescents in this study, as almost 20% used that remedy. This could be a reflection of unrestricted access to off-the-shelf analgesic drugs such as acetaminophen, aspirin, diclofenac, ibuprofen, or naproxen. It could also be a result of the recurrent nature of back pain among the affected adolescents [1]. With respect to seeking medical care from professionals, our finding is slightly at variance with the study of Burton et al. [1] in which only 15% of the population with back pain sought direct medical treatment. It can be deduced that the percentage who sought medical care represents the more severe cases of back pain. Weisel [2] reported that the decision to seek medical attention among adults with back pain is often a signal of a patient's inability to cope with their symptoms rather than a direct reflection of underlying pathology. This assertion may be true in adolescents.

The cross-sectional nature of this study has a potential limitation on the external validity of the findings. However, we tried to minimize this by randomly selecting the

schools. Nationwide surveys with larger sample sizes are therefore warranted to evaluate the burden of back pain in Nigerian adolescents. Like all other cross-sectional studies, it is possible that our respondents might have given vague answers due to recall bias.

If the potential health consequences and disease impact of back pain in Nigerian adolescents are to be avoided or reduced, there is a need for preventive programs in the form of back education and risk factor modifications during school age. Unfortunately, data on the prevalence of back pain in adolescents from Africa are limited [9] and there seem to be no available studies from Nigeria. This may be further complicated by the fact that the focus of health interventions and research funding directions in health in the recent years has shifted to HIV and AIDS epidemic among African adolescents [19]. Nonetheless, some previous studies have suggested that back health education may be effective at reducing the incidence of back pain in young people [20, 21]. Approaches to reduce the risk of adult back pain may include primary and secondary prevention of back pain in children and adolescents. Therefore, health education strategies in schools for adolescents could include advice along the lines of adult back schools and ergonomics.

The World Health Organization has identified school as an effective setting in which to improve health of

young people [22]. School children are reported to be receptive to back care-related knowledge and postural habits, which may play a preventive role for back pain in adults [23]. Therefore, intervention studies in schoolchildren focusing on back pain prevention are promising but too limited to formulate evidence-based guidelines [23]. Nonetheless, some Western countries have nationwide datasets on the prevalence of back pain and established national education curriculums for back health targeted at young people [24, 25]. Further studies with a follow-up into adulthood are needed to evaluate the long-term effect of early intervention and the possible detrimental effect of spinal loading at a young age [23].

Conclusion

This study revealed that back pain is common, but mostly mild among Nigerian adolescents; the prevalence of back pain increased with increasing age. Most of the adolescents in this population used self-medication for their back pain. We recommend that more research be done to find necessary interventions, including appropriate education regarding the risk factors, postural modifications and access to health care and treatment in order to reduce back pain in adolescents.

References

- Burton AK, Clarke RD, McClune TD, Tillotson KM: The natural history of low back pain in adolescents. *Spine* 1996;21:2323–2328.
- Weisel WS: Back pain in adolescents: raging public health crisis or benign growing pain? *Back Lett* 2002;17:25:32–34.
- Harreby M, Nygaard B, Jessen T, Larsen E, Storr-Paulsen A, Lindahl A, Fisker I, Laegaard E: Risk factors for low back pain in a cohort of 1,389 Danish school children: an epidemiologic study. *Eur Spine J* 1999;8:444–450.
- Salminen JJ, Erkintalo MO, Pentti J, Oksanen A, Kormanen MJ: Recurrent low back pain and early disc degeneration in the young. *Spine* 1999;24:1316–1321.
- Ebbehoj NE, Hansen FR, Harreby MS, Lassen CF: Low back pain in children and adolescents. Prevalence, risk factors and prevention. *Ugeske Laeger* 2002;164:755–758.
- Taimela S, Kujala UM, Salminen JJ, Viljanen T: The prevalence of low back pain among children and adolescents: a nationwide, cohort-based questionnaire survey in Finland. *Spine* 1997;22:1132–1136.
- Harreby M, Neergaard K, Hesselsoe G, Kjer J: Are radiological changes in the thoracic and lumbar spine of adolescents risk factors for low back pain in adults? A 25-year prospective cohort study of 640 school children. *Spine* 1995;20:2298–2302.
- Volinn E: The epidemiology of low back pain in the rest of the world. A review of surveys in low- and middle-income countries. *Spine* 1997;22:1747–1754.
- Louw QA, Morris LD, Grimmer-Somers K: The prevalence of low back pain in Africa: a systematic review. *BMC Musculoskel Disord* 2007;8:105.
- World Health Organization (WHO) Working Group: Use and interpretation of anthropometric indicators of nutritional status. *Bull WHO* 1986;64:929–941.
- Olsen TL, Anderson RL, Dearwater SR, Kriska AM, Cauley JA, Aaron DJ, La Porte RE: The epidemiology of low-back pain in an adolescent population. *Am J Public Health* 1992;82:606–608.
- Salminen JJ: The adolescent back: a field survey of 370 Finnish school children. *Acta Paediatr Scand Suppl* 1984;315:1–122.
- Newcomer K, Sinaki M: Low-back pain and its relationship to back strength and physical activity in children. *Acta Paediatr* 1996;85:1433–1439.
- Salminen JJ, Pentti J, Terho P: Low-back pain and disability in 14-year old school children. *Acta Paediatr* 1992;81:1035–1039.
- Leboeuf-Yde C, Kyvik KO: At what age does low back pain become a common problem? A study of 29,424 individuals aged 12–41 years. *Spine* 1998;23:228–234.
- Wedderkopp N, Leboeuf-Yde C, Andersen LB, et al: Back pain reporting pattern in a Danish population-based sample of children and adolescents. *Spine* 2001;26:1879–1883.
- McKenzie RA: *The Lumbar Spine: Mechanical Diagnosis and Therapy*, ed 1. Waikanae, Spinal Publications, 1981, pp 81–120.
- Negrini S, Carabalona R, Pinochi G, et al: Backpack and back pain in schoolchildren: is there a direct relationship? *J Bone Joint Surg Am* 1998;80B:247.

- 19 Lopez A, Mathers C, Ezzati M, Jamison D, Murray J: Global and regional burden of disease and risk factors, 2001: Systematic analysis of population health data. *Lancet* 2006; 367:1747–1757.
- 20 Balague F, Nordin M, Dutoit G, Waldburger M: Primary prevention, education and low back pain among school children. *Bull Hosp Joint Dis* 1996;55:130–134.
- 21 Cardon G, de Bourdeaudhuij I, de Clercq D: Generalization of back education principles by elementary school children: evaluation with a practical test and a candid camera observation. *Acta Paediatr* 2002;90:143–150.
- 22 World Health Organization (WHO): Promoting health through schools: a summary and recommendations of WHO's Expert Committee on Comprehensive School health Education and Promotion. WHO Techn Rep Ser 870. 1996, pp i–vi, 1–93.
- 23 Cardon G, Balagué F: Low back pain prevention's effects in schoolchildren. What is the evidence? *Eur Spine J* 2004;13:663–679.
- 24 Currie C, Hurrelmann K, Settertobulte W, Smith R, Todd J: Health and Health Behaviour among Young People. WHO Policy Series: Health Policy for Children and Adolescents. Issue 1. Copenhagen, WHO, 2000.
- 25 Hakala P, Rimpela A, Salminen JJ, Virtanen SM, Rimpela M: Back, neck and shoulder pain in Finnish adolescents: National cross-section survey. *BMJ* 2002;325:743.

Appendix

Section 1: Personal information

- 1 What is your age (as at last birthday)? _____
- 2 What is your sex? _____
- 3 What is your religion? _____
- 4 What is class/level _____

Section 2: Information on back pain

- 1 Have you ever experienced any symptom of pain, ache, or discomfort in your back before? Yes/No
- 2 Are you experiencing any symptom of pain, ache, or discomfort in your back now? Yes/No
- 3 If your answer is 'yes' to question 2 above, how severe or serious is the symptom of back pain that you feel using a scale of 0–10; where 0 = no pain and 10 = worst pain (please tick a number that best describes the severity of the symptom of back pain)

0	1	2	3	4	5	6	7	8	9	10
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No pain

Worst pain

- 4 Where exactly on your back region do you feel the symptoms of back pain?
 - a High back pain (neck region)
 - b Mid back pain (thoracic region)
 - c Low back pain (lumbar region)
- 5 Have you had these symptoms of back pain lasting for 3 months or more? Yes/No
- 6 Do you have pain on standing? Yes/No
- 7 Do you have pain around the waist? Yes/No
- 8 What do you think could be responsible for the back pain you have experienced?
 - a Sitting most of the time Yes/No
 - b Standing most of the time Yes/No
 - c Walking most of the time Yes/No
 - d Depression or anger Yes/No
 - e Activities that require bending Yes/No
 - f School bag weight Yes/No
- 9 Do you engage in other activities after closing at school other than household chores? Yes/No

- 10 If your answer is 'yes' to question 10, please indicate the type of activity you engage in
 - a Leisure activities e.g. watching TV
 - b Commercial activity/hawking
 - c Others (please specify) _____
- 11 What postures do you assume most in your daily activities?
 - a Sitting
 - b Standing
 - c Walking
 - d Frequent bending
- 12 Is the back pain affected by a change in posture? Yes/No
- 13 If you answered 'yes' to question 14, please check the option that applies
 - a It is relieved
 - b It is aggravated
- 14 What is the best position that relieves the pain?
 - a Sitting
 - b Standing
 - c Lying
 - d Walking
 - e Others (please specify) _____
- 15 Does the pain prevent you from sleeping? Yes/No
- 16 Does the pain interfere with school? Yes/No

Section 3: Information on interventions to relieve back pain

- 1 Have you ever treated yourself or sought treatment from any health professional as a result of the back pain? Yes/No
- 2 If you answered 'yes' to question 1 above, please indicate the type of intervention employed to relieve back pain
 - a Visit a doctor/physiotherapist/nurse
 - b Self-administered drugs
 - c Change in posture/position
 - d Others (please specify) _____
- 3 Was there any improvement in the symptoms of the back pain as a result of treatment? Yes/No

Thank you for your assistance