PJN
ISSN 1680-5194

PAKISTAN JOURNAL OF NUTRITION

ANSInet
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

Pakistan Journal of Nutrition 4 (6): 361-365, 2005
ISSN 1680-5194

Physical Activity Behaviours of Female Pupils and Possible Influences of Urban Environments on Eating

L.O. Eboh and T.E. Boye
Department of Physical and Health Education, Delta State University, Abraka, Nigeria

Abstract: Relationships among children's physical activity behaviors and factors that might indicate increasing health risks have not yet been firmly established in developing nations. Eating and activity behaviours, is an area in research, particularly in developing communities, like Nigeria, where changes in lifestyle have had profound effects on the population – densely populated urban area and risk of heart diseases. The main thrust of this study was to examine specific aspects of lifestyles of school children who lived in an extremely dense urban area of the troubled Niger-Delta region of Nigeria. The participants were 25 males and 25 females school children in five schools in Warri metropolis (oil-city) of Nigeria, recruited by the school principals. A purposive sampling technique was used in selecting the subjects, with the consent of their parents. The BEACHES" instrument, developed by Mckenzie was adopted. For this study, every target child was visited in his/her home for 1 hour session, along with six (20 minutes observation) sessions at the child's school during recess periods. Number and lengths of observations were based on optimum suggested by Mckenzie *et al.* (1991). Findings revealed low participation rate, school children involved in sedentary activity during their recess time passivity and low occurrence patterns at home based activities. All may be attributed to the unfriendly environment of the area under study. The need to make a friendly area was therefore suggested

Key words: Ingestion, walking and running, social interaction, observation

Introduction

Ingesting food at any time was observed as an eating behaviour, whereas physical activity was considered to be any action (or inaction) observed during the observation period (Sallis *et al.*, 1995). Although children are typically active, Babatunded (1999) posited that this pattern gradually changed with age, until one-third of boys and one-half of girls failed to meet health-related guidelines for moderate, to vigorous physical activity.

Relationships among children's physical activity dietary behaviors and factors that might indicate increasing health risks have not yet been firmly established. Nevertheless studies (Mckenzie *et al.*, 1997 and Ojo, 2003) have started providing cleared pictures of behaviors of children. Their findings, related to activity behaviour, indicated parental modeling, ethnic differences and location of play, that is, in-or out -of-doors, and degree of prompting, all were significant in levels of activity in which children engaged.

Physical activity, dietary behaviour and health are more difficult to understand with respect to their relationships. Early studies on eating habits had been unable to substantiate an association between caloric intake and obesity in adult (Muoboghare, 2001), and more likely to suffer from high levels of serum cholesterol (Leung *et al.*, 1994). It had been found that more active children have higher amounts of high-density Hpoprotein (HDL) cholesterol in their blood pressures (Fraser *et al.*, 1983).

Surprising, few studies had been conducted to discover potential determinants of physical activity (Dishman and Sallia, 1994), while studies (Dertz, 1983, Leung *et al.*, 1994), while studies (Dertz, 1983, Leung *et al.*, 1994, Muoboghare, 2001), suggested physical activity was beneficial to health. Because behaviors, such as eating and physical activity, take place in environments influenced by interpersonal, social, physical and public policy factors (Mcleroy *et al.*, 1988), researchers suggested investigations should employ multiple domains approach, to study aspects of domains approach, to study aspects of lifestyles, such as dietary and physical behaviors. It is necessary to utilize an observation system that can integrate assessment of behaviors in a variety of setting, where it is likely a wide range of environmental and social influences affect behaviors.

Eating and activity behaviors as concept, is pertinent, an area to research into, in developing nations like Nigeria. Changes in lifestyles have had at least two profound effects on the population. First, combination of densely populated urban areas and shortage of recreational spaces limits potentials for outdoor exercise (Hong *et al.*, 1988; Ataire, 2002). Second, risk of heart disease, as demonstrated by high serum cholesterol levels and high intakes of fat (Leung *et al.*, 1994), is considered to be a result of changing eating habits, related to a more westernized diet and lifestyles. Speculations and concerns about health related behaviors of

children/school pupils, has been raised due to the combinations of changing eating behaviors and lack of open spaces in our schools and communities today (Ataire, 2002).

Concerns rose by researchers in North America and Europe (Sallis and Mckenzie, 1991), Hong Kong (Macfarlane, 1997), and in Nigeria (Muoboghare, 2001), over the state of children's health related fitness behaviors, and observed similar patterns among local children. Consequently, there is a feeling that Nigerian children, particularly the school children are gradually becoming more westernized, but extent to which dietary and physical activity behaviors have become health problems is not yet known. The main thrust of this study was on exploratory research project to examine specific aspects of lifestyles of school children who lived in an extremely dense urban area of the Niger- Delta region of Nigeria in West Africa.

Materials and Methods

Subjects: The participants were 25 males and 25 females Niger-Deltans, residents in five schools located in Warri metropolis (Oil city-Nigeria), recruited by the school principals. Due to the intrusive nature of the study, it was impossible to obtain a random sample. Therefore, school principals were asked to approach and inform parents about the study. If parents were willing to include their child as a target participant, parental informed consent was obtained. Following this initial introduction, a letter containing acknowledgment of the informed consent, and a more detailed description of the study, was sent to the parents. Although parents were informed they could withdraw their children at anytime, there were dropouts during the study. Ten research assistants were employed by the researchers, who are the researchers' postgraduate students. After the communication, each research assistant contacted parents of five children to whom they had been randomly assigned to schedule observation times for home and school recess visits.

Every target child was visited in his/her home for 1 - hour sessions, along with six 20 - minute observations sessions at the child's school, during recess periods. Weather conditions were suitable for observations on the open-air playgrounds, and no rescheduling of observations was necessary. Numbers and lengths of observations were based on optimum numbers suggested by Mckenzie *et al.* (1991).

Reliability and validity of the instrument: The instrument's reliability and validity were reported after extensive field testing, which demonstrated feasibility of utilizing direct observation and direct data entry methods (Mckenzie *et al.*, 1991). Mckenzie and colleagues examined associations among BEACHES variables by computing means of variables over the first four weeks of home, lunch and recess observations. Validity of behavioral variables was supported by the pattern of associations among variable (Mckenzie *et al.*, 1991).

To replicate the BEACHES study, ten student's research assistants were recruited and attended week long training course. Coding skills were developed and refined by repeated viewing of prepared video tapes depicting typical behaviors, likely to be encountered in the homes, and during school recess observation periods. Behaviour categories were identical to those described in the direct observational system designed by Mckenzie *et al.* (1991), enabling research assistants to record observations on a range of behaviors.

Prior to the study commencing, research assistants were given instructions and then practiced their observational skills until independent inter-observer agreement of 85% had been reached or exceeded. Inter-observer agreement scores were calculated from interval by interval assessments, and recorded as percentages of agreement (Darst *et al.*, 1989)

In addition to weekly group meetings with the principal researchers, to check inter-observer reliability, research assistants were provided opportunities encountered during observation sessions. These sessions were useful because research assistants were able to report incidences providing insights into behaviors of the target children.

Data analysis: The data were derived from momentary time sampling, using 30 seconds for observations and up to 30 seconds recording, making it possible to generate data on how much time children spent participating in various activities. Observations were coded and directly transferred from lap top computers to a central computer. These data represented what was observed during an average of 5.5 hours for each of the 50 subjects. Behaviors coded included lying, sitting, standing, active (such as slow and easy walking) and very active (such as running). SPSS was used to analyze data. Because activity levels were met distributed normally, a designated 5% of cases with largest and smallest values were excluded. Mean and Standard Deviations for percent occurrences for each BEACHES category relating to physical activity were calculated. For this study, percentage of observations comparing social interactions and ingestion behaviors of target were calculated, and chi-square tests utilized.

Results and Discussion

Social and Physical Environments: Fig. 1 shows eating behaviors among all participants at home and school were particularly low. The figure also indicates target children were observed to eat more frequently at school than at home.

In Table 1, shows during home observations, the mother was the principal adult present 38.16% of observations,

Table 1: Ingestion Behaviors and Social Interactions

Location		Alone	Mother	Father	Sibling	Peers	TR.	G. Parent	Servant	X^2
Home	a.	10.37	28.16	2.03	32.90	1.90	---	4.30	10.80	
	b.	4.40	10.06	15.03	12.91	8.02	--	7.40	11.40	11.4*
School	a.	1.00	---	---	----	76.96	19.10	---	---	
	b.	48.00	---	---	----	31.81	13.73	---	---	21.85**

Note: a = $ of observation of the presence of interactions; B =% of ingestion in the presence of interactions.
df = b, P<.05; **School df =2, P<.001

whereas siblings were with the target child 32.90% of the time. In 10.37% of observations, the target child was the only person in the room with the research assistant, in 15.1% of observations, a house keeper or grand parent was present. The significant chi-square on social integrators and ingesting behaviors was 11.45, df= 6, P < .05), indicating Significantly low occurrence of eating at home.

At school, 76.96% of the observations were recorded with a class note; during 31.81% of the time they were eating. Only 1% of target children were observed alone, but in 48% of these observations, they were eating 1.

They were observed in the presence of a teacher 19.10% of that time, and eating 13.73% of that time. The chi-square test result was 21.85 (df-2, P<.001).

In the physical environment category, homework was the strongest environmental influence, occupying almost 30% of observations, while TV watching ranked second with 20% and food found to be available 9.44% of the time. The home was the only place where observations took place since members of (lie target group were 6 to 8 years of age, and not permitted to leave the home to play. At school, target children were able to access a wider range of locations. Just over 67% of observations took place in classrooms, while 32% observations were taken in school play spaces, such as covered playgrounds.

Eating and activity: Eating behaviours showed target student ingested food in 11.21% of home observations, but were observed eating during 28.14% of observations at school.

Observations of physical activities revealed this sample of young children was extremely inactive at home. Moreover, this inactivity extended to school recesses. Sitting was observed in 69% of observations in the home setting and was substantially less (22%) during school recess. Walking lowly increased from 7:47% at home to 29% at school but no significant increases from, home to school was observed in every active behaviours involving running, jumping. Research assistants reported teachers overly discouraged running among the children during recesses, because they would return to classroom sweating.

Their investigation was conducted to examine eating and activity behaviours to understand more about lifestyles of children who lived in extremely -dense urban areas. While it is reasonable to believe environmental conditions influenced behaviours, it is difficult to explain the ecological relationship between what children did and the settings in which those behaviours took place. Findings of this study cannot be generalized, but suggest potential influences on diet and physical activity behaviours requiring further investigation.

Eating behaviours: The significant chi-square on social interactions and ingesting behaviours indicated presence of others might have influenced low occurrences of eating behaviours. Research assistants reported target children were inhibited in terms of activity and lie likely to ingest food when adults were present. In some cases, target children were reminded by the supervising adult to be on their best behaviours in the presence of the researchers. Data presented represented what was observed during observation periods, cannot be extrapolated to show adult influences extended beyond observation periods. However, it is reasonable to export adults influenced eating behaviours by exerting controls over target children and their siblings

In contrast to adult control at home, school recess provided a social environment conducive to eating. From observational data, certain characteristics were evident. For example, through various forms of social reinforcements, sanctioned consumption of food during recess. School observations showed almost 30% of participant's ingested food, and were with peers in 31.18% of these leases. During this time their physical activities consisted of 40% standing, and 28.18% walking slowly, thus providing a suitable condition in which target children could ingest food. Result indicated mothers or grandparents came to schools at recesses to provide their child with food. Other children were given money to purchase food form the school shops, which opened during recesses to sell snacks to students. This arrangement provided social reinforcements, so school recesses were associated with ingestion of food, rather than participation in vigorous activities.

Activity behaviours: Environmental influences arc now considered (o be major factors in influence of physical activity. It had been suggested, the more time children spent outdoors, the more likely they were to engage in physically active play (Sallis and Mckenzie, 1991).

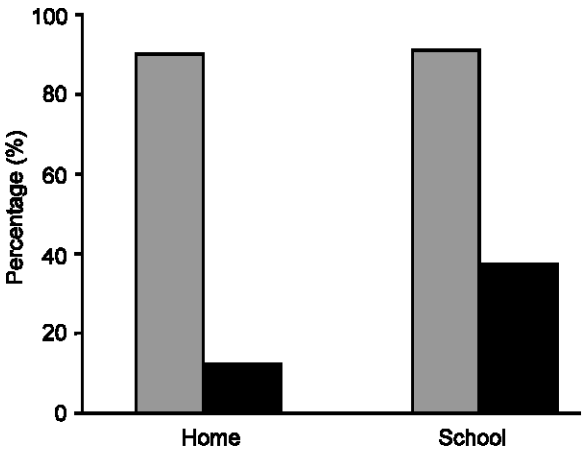

Fig. 1: Percentage of observed Eating Behaviors at Home and School

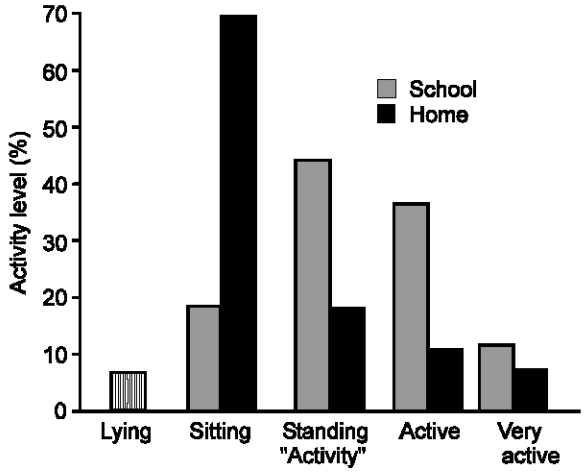

Fig. 2: Percentage of Time Spent in Activity at Home and School

However, results of this study suggested that while young children stood and walked more than they did at home, they did not increase running or other, very active behaviours while at school. It is understandable that restricted living conditions, lack of available play spaces surrounding the home, and limited access to public amenities, deter children from being physically active (Kleges *et al*., 1990). If space is a factor, it is not unreasonable to expect vigorous physical activity to increase with availability of space in which to play. However, these data did not support such an expectation. Apparently, school playgrounds did not facilitate participation among these children.

Data suggested social interactions might shape degree of activity and patterns of eating. In this study, children reacted to sanctions of parents at home and teachers at schools. Apparently, supervising adults at home discouraged eating and vigorous play, and encouraged passive behaviours, such as homework and TV watching. Even when the child was at school, boisterous play or vigorous activities were forbidden by supervising teachers, because in some cases, die playground space surrounding the school was too small fir large numbers of primary school children to play games requiring space. In addition, there was an absence of play stations, ropes, balls or other play objects that could be used to facilitate children's play.

Conclusions: This study was conducted to examine situations that might influence lifestyles of children living in dense urban area of the so neglected area of the Niger-Delta region in Delta State, Nigeria. Ecological factors described in this study, appeared to affect behaviours pattern of Niger-Delta urban children in similar ways to those in other societies. For example, children in this study, just as children in Mexican-American elementary schools spent the majority of their recess time being sedentary (Mckenzie *et al*., 1997).

Patterns of low occurrences of home-based activities that are situation ally determined are common in both Niger-Delta environment of Nigeria and North America. Not only did Nigeria children indicate similar norms to Western societies, but in some cases they may have exceeded them in terms of low participation rates. Niger-Delta region in Nigeria did not participate at levels of activity of sufficient intensity to have any effects on fitness and health (Sallis and Mckenzie, 1991). While low levels of physical activity at home were to be expected, it was not unreasonable to expect school recess periods to give rise to spontaneous participation in play. This was not the case in this study and gave rise to speculation that children in densely populated urban areas, like Warri (Oil city in Nigeria),might not be forming habits encouraging highly active behaviours during free time at school. Apart from limitations of physical environments confining free play of children in the Niger-Delta environment there are other forces influencing children's behaviours. Social influences associated with traditional and familial standards of child care, and behaviours in presence of strangers (such as research assistants), might be linked to passivity of the children at home.

References

Ataire, F.Q., 2002. Childhood health related physical Fitness Among pos-primary students A paper read at Agbon Teacher's college, Isiokoro. Napher-SD Week. Unpublished.

Babatunded, F.S., 1999. Children's physical Activity choices: A development analysis of gender, intensity level and time. Pediat. Exer. Sci., 10: 151-164.

Darst, P.W., D.R. Zakrajsek and V.H. Mancini, 1989. Analyzing Physical Education and Sport Instruction. (2 ed.) Champaign IL: Human Kinetics.

Dertz, W.H., 1983. Childhood obesity; Susceptibility, cause and Management. J. Pediat., 10: 676-686.

Fraser, E.R., L.B. Philip and L. Harris, 1983. Nutritional habits during childhood. J. School Health Edu., 4: 68-79.

Hong. Y., K.M. Clun and J.X.L. Li, 1998. Health-related fitness of school children in 1 long Kong and Mainland China. J. Compar. Phy. Edu. Sport, 20: 2-10.

Kleges, R.C., T.J. Coates, L.M. Moldern Haner-Lleges, B. Holzer, J.I. Ganstavson and J. Banies, 1990. Effects of obesity, social interaction, and physical cnvironnncnj on physical activity in pre-schoolers. HcaUh Psvclioiogy, 9: 435-449.

Leung, S.F., M.Y. Ng, B.Y. Tan, W.K. Lam, S.F. Wang, Y.C. Xu and W.P. Tsang, 1994. Serum cholesterol and dietary fat of two populations. In Southern Chinese Asian Pacif. J. Clin. Nutr., 3: 127-130.

Macfarlane, D.J., 1997. Some disturbing trends in the level of habitual physical activity in Hong Kong primary school children: Preliminary finding: Hong Kong J. Sport Med. Lipids and Lipoproteins in Black Children and adolescents. J. Adol. Health, 4: 55-60.

Mckenzie, T.L., J.F. Sallis, P.R. Nader, T.L. Patterson, J.P. Elder, C.C. Berry, J.W. Rupp, C.J. Atkin and M.J. Buono, 1991. BEACHES: An observational System for Assessing Children's Eating and Physical Activity Behaviours and Association Events. J. Appl. Behav. Anal., 24: 141-151.

Mckenzie, T., J.F. Sallis, J.P. Elder, C.C. Berry, P.L. Hoy, P.R. Nadat, M.M. Zive and S.L. Broyyies, 1997. Physical activity levels and prompts in young children at recess: a two-year study of a bi-ethnic sample. Research Quarterly for Exercise and Sports, 68: 195-2002.

Mcleroy, K.R., D. Bibeau, A. Stecker and K. Glanz, 1988. An ecological passpective on health promotion programmes. Health Education Quarterly, 15: 351-377.

Muoboghare, P., 2001. The relation between physical activity and serum paper presented during the Annual National Association of School Health Education Delta Sate University Abraka.

Ojo, D.T., 2003. Relationship of Cardiovascular fitness and physical activity to Cardiovascular disease risk factors in children and adults. Am. J. Epidemiol., 127: 933-94.

Sallis, J.F. and T.L. Mckenzie, 1991. Factors parents use in selecting play spaces for young children. Archives of Pediatric and Adolescent medicine, 151: 414-417.

Sallies, J.Fi, C.C. Berry, S.L. Broyles, T.L. Mckenzie and P.R. Noder, 1995. Variability and Tracking of physical Activity over Two years in Young children. Medicine and Science in sports and Exercise, 27: 1042-1049, and Sport Science, 5: 42-46.