



Active Transportation among 10 -12 Year Old School Children in Nairobi City County, Kenya

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Background

- Active Transport (AT) refers to human powered (i.e., non-motorized) modes of transportation
- Modes include walking, running, cycling, non-motorized wheel chairing, roller skating, canoeing/kayaking, etc. (Sallis et al., 2004).
- Children and youth who engaged in AT to/from school had higher daily PA levels and greater aerobic fitness than those who were driven to school (Larouche et.al., 2014; Onywera et al., 2012).
- To date, most of the research on AT among children and youth has focused on the trip to and from school, hereafter referred to as active school transport (AST).

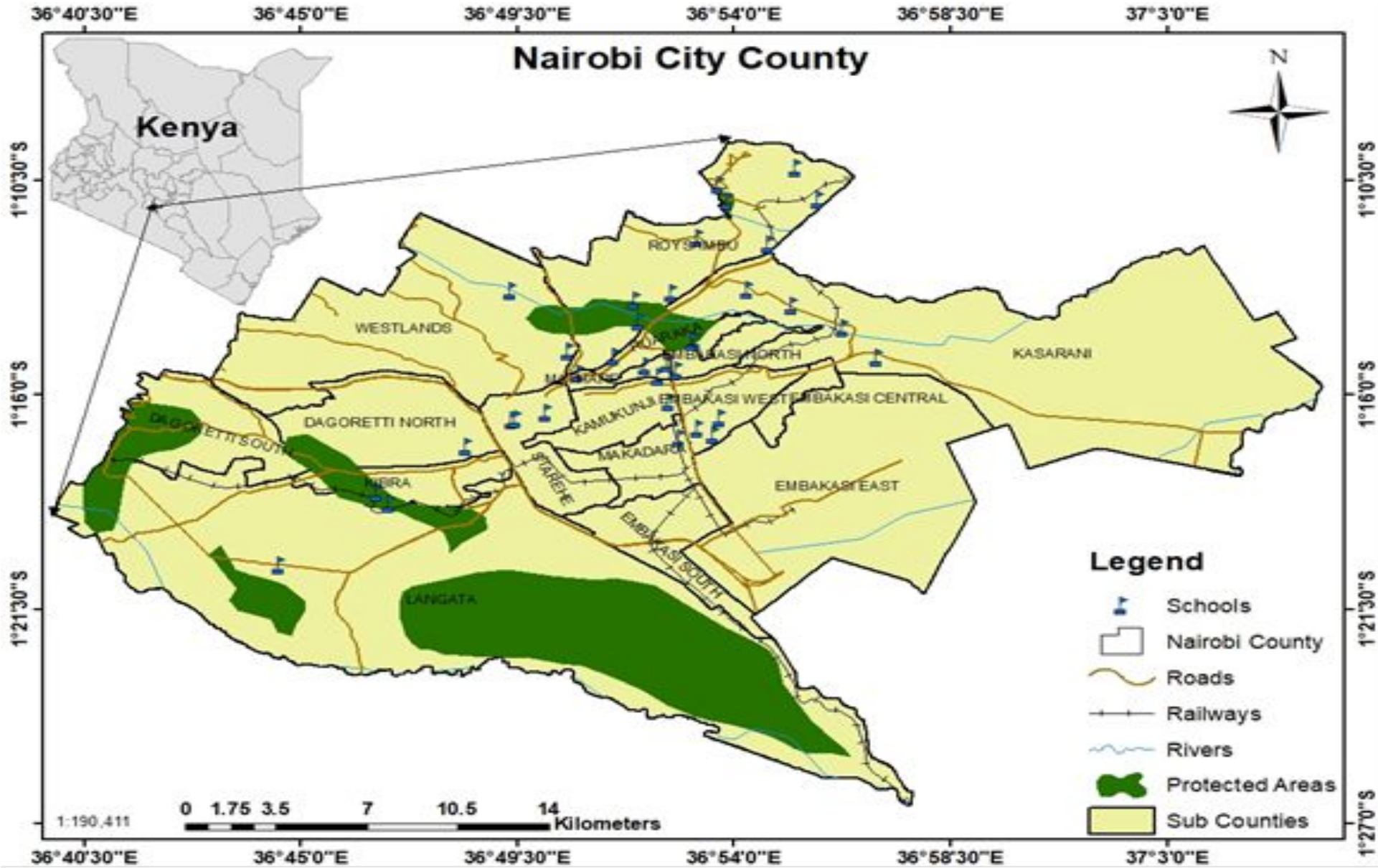
Statement of the problem

- Physical inactivity pose significant challenges to public health and study in active transportation may offer guidance and solutions
- Dietary and Physical Activity (PA) transition contribute to worldwide obesity epidemic among children and adults (Ahmed et al., 2013; Onywera, 2010)
- Adoption of AT modes by children has the potential to significantly improve PA levels and promote healthy lifestyle
- Most of the studies have focused on general road users and mostly trips to work with few focusing on children's AT to school and within built environments.
- The purpose of this study therefore was to determine factors that influence active transportation (AT) to school and other destinations and resultant impact on PA rates for 10 – 12 year-old children

Objectives of the study

- i. Assess AT modes to school and other destinations among 10 – 12 year-old school children in high socio-economic status, mid socio-economic status and low socio-economic status areas in Nairobi City County.
- ii. Determine barriers of AT to school and other destinations for 10 – 12 year-old children in high socio-economic status, mid socio-economic status and low socio-economic status areas in Nairobi City County.
- iii. Examine the effects of socio – economic status of 10 – 12 year-old school children on AT in high socio-economic status, mid socio-economic status and low socio-economic status areas in Nairobi City County.
- iv. Determine in pedometer step count for 10 – 12 year-old children in high socio-economic status, mid socio-economic status and low socio-economic status areas in Nairobi City County.
- v. Analyse difference in pedometer MVPA rate for 10 – 12 year-old children in high socio-economic status, mid socio-economic status and low socio-economic status areas in Nairobi City County.

Study location



Methodology

- Ethical clearance and Research approvals – obtained for the project
- Data was collected from May – Nov 2015
- Data was analysed using - SPSS version 21
- Chi-square test was used to determine difference in children's responses on AT and PA rates
- A one-way ANOVA test used decide whether results are significant
- Statistical level of significance was set at 0.05

Results – participants' characteristics

| Participant Characteristics | n (877) | (%) |
|-----------------------------|------------|--------------|
| Region | | |
| HSES | 214 | 24.4 |
| MSES | 357 | 40.7 |
| LSES | 306 | 34.9 |
| Total | 877 | 100.0 |
| Age | | |
| 10 | 288 | 26.0 |
| 11 | 280 | 31.9 |
| 12 | 369 | 42.1 |
| Total | 877 | 100.0 |
| Gender | | |
| Boy | 395 | 45.0 |
| Girl | 482 | 55.0 |
| Total | 877 | 100.0 |



Results – AT Modes and SES

| | | Transportation Mode | | | | | | Total |
|--------|------|---------------------|---------|----------|------------|-----------|------------|-------------|
| | | Walk | Bike | Run | Car/Van | Bus/Train | Motorcycle | |
| Region | HSES | 101(11.5%) | 0(0.0%) | 11(1.3%) | 57(6.5%) | 23(2.6%) | 1(0.1%) | 193(22.0%) |
| | MSES | 274(31.2%) | 1(0.1%) | 14(1.6%) | 64(7.3%) | 24(2.7%) | 1(0.1%) | 378(43.1%) |
| | LSES | 254(29.0%) | 0(0.0%) | 29(3.3%) | 14(1.6%) | 8(0.9%) | 1(0.1%) | 306(34.9%) |
| Total | | 629(71.7%) | 1(0.1%) | 54(6.2%) | 135(15.4%) | 55(6.3%) | 3(0.3%) | 877(100.0%) |

Results – Barriers to AT Modes and SES

| Region | Low AT Rate | Moderate AT Rate | High AT Rate | Total | χ^2 | P-value |
|--------------------------------------|-------------|------------------|--------------|-------------|---------------|---------------|
| Environmental factors | | | | | | |
| LSES | 16(37.2%) | 87(40.5%) | 203(32.8%) | 214(24.4%) | 47.267 | 0.0000 |
| MSES | 14(32.6%) | 87(40.5%) | 256(41.4%) | 357(40.7%) | | |
| HSES | 13(30.2%) | 41(19.1%) | 160(25.8%) | 306(34.9%) | | |
| Total | 43(4.9%) | 215(24.5%) | 619(70.6%) | 877(100.0%) | | |
| Psychosocial/Planning factors | | | | | | |
| LSES | 89(32.2%) | 108(35.2%) | 73(24.8%) | 214(24.4%) | 19.546 | 0.0006 |
| MSES | 112(40.6%) | 133(43.3%) | 112(38.1%) | 357(40.7%) | | |
| HSES | 75(27.2%) | 66(21.5%) | 109(37.1%) | 306(34.9%) | | |
| Total | 276(31.5%) | 307(35.0%) | 294(33.5%) | 877(100.0%) | | |
| Safety factors | | | | | | |
| LSES | 28(29.8%) | 69(25.4%) | 117(22.9%) | 214(24.4%) | 2.889 | 0.5766 |
| MSES | 33(35.1%) | 113(41.5%) | 211(41.3%) | 357(40.7%) | | |
| HSES | 33(35.1%) | 90(33.1%) | 183(35.8%) | 306(34.9%) | | |
| Total | 94(10.7%) | 272(31.0%) | 511(58.3%) | 877(100.0%) | | |

Barriers



Results – Children’s Pedometer step count

| | Day 1 steps | Day 2 steps | Day 3 steps | Day 4 steps | Day 5 steps | Day 6 steps | Day 7 steps | Mean Weekly Steps |
|---------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|----------------------------------|
| Mean | 13447.76 | 12906.57 | 12488.51 | 11653.36 | 12063.18 | 12236.87 | 11740.69 | 12362.42 |
| Std. Deviation | 7660.380 | 7237.392 | 8781.286 | 7052.424 | 9509.934 | 7663.930 | 7898.383 | |
| F | 12.426 | .212 | .461 | .157 | 1.490 | 2.532 | 1.821 | |
| Sig. | 0.0001 | .809 | .631 | .854 | .226 | .080 | .163 | |

Results – Children’s MVPA rates

| | Day 1 MVPA | Day 2 MVPA | Day 3 MVPA | Day 4 MVPA | Day 5 MVPA | Day 6 MVPA | Day 7 MVPA | Mean Weekly MVPA |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------------|
| Mean | <i>57.78</i> | <i>52.57</i> | <i>49.12</i> | <i>45.98</i> | <i>49.15</i> | <i>49.37</i> | <i>48.31</i> | <i>50.32</i> |
| Std. Deviation | <i>55.305</i> | <i>37.253</i> | <i>36.514</i> | <i>35.747</i> | <i>46.491</i> | <i>38.226</i> | <i>37.115</i> | |
| F | <i>2.31</i> | <i>3.06</i> | <i>7.02</i> | <i>.38</i> | <i>1.87</i> | <i>1.55</i> | <i>2.17</i> | |
| Sig. | <i>.100</i> | <i>.047</i> | <i>.001</i> | <i>.681</i> | <i>.155</i> | <i>.213</i> | <i>.115</i> | |

Summary of Results/Conclusion

- Majority of children 629 (71.7%) walked to school and other destinations
- Barriers affected AT use by the children across the SES areas in Nairobi City County
- Among the SES factors, only level of education and vehicle ownership affected children's use of AT modes
- The children recorded high pedometer steps counts; 1st day with mean -13447.76. weekly mean of 12362.42, majority attained the recommended pedometer step count per day recommended by WHO

Conclusion

- The study established that most children opt for AT modes to school and around their neighbourhoods; this is a departure from most literature
- Children's AT mode choice is a factor of variety of variables in play. Parental perceptions, the built environment, design/planning, social factors and policy measures all work together to either sustain or suppress the growth of AT mode choice by children

Recommendations

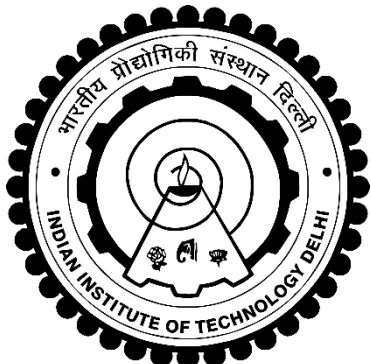
- Nairobi City County in liaison with other stakeholders (ministry of transport and infrastructure development; MoEST) to improve neighbourhoods hence increasing AT modes. This is significant in lifestyle diseases and COVID-19 mitigation.
- Need for systemic approach by all stakeholders to promote AT mode use and create awareness of AT health benefits
- Need for parents to encourage AT modes use by children
- Research focusing on other counties, other age groups, combination of qualitative methods, investigation of social factors like community connections, cohesion, engagement and trust

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