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An Appraisal of Independent Mobility towards Advancing Child-friendly Military Barrack Community Milieu in Developing Countries

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Abstract

Independent mobility means children's opportunity of free play in the neighborhood without adult supervision. Meanwhile, mobility restriction has affected child environmental friendliness of military barrack community in developing countries including Nigeria. The aim of this study is to explore underlying parameters of independent mobility in advancing child-friendly barrack. Thirty journal articles in children's environment studies were reviewed and analyzed in relation to military geographies and its built environment. Children's level of independent mobility influences their physical, social, cognitive, and emotional developments. Consequently, walking or cycling-friendly environment as active travel mode for children was found to have positively contributed to improved quality of life.

Keywords: : Independent Mobility, Child-friendly Environment, Active Travel Mode, Military Barrack Community

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1.0 Introduction

Children's opportunity of free play in a neighborhood without adult's supervision is largely determined by active travel mode especially walking and cycling. It supports cognition development, sense of identity, freedom, responsibility, confidence, self-esteem, and social skill. The general public perception occasioned in some studies that children have lost their free range poses threat to their wellbeing and quality of life. However, this has continued to find support in the literatures. Although, many Americans have a militarized idea following the contemporary security challenges and regular experience as if attack and defense principle of warfare is a subjective life construct. Invariably, public space too which fosters socialization has equally diminished and the public sphere continued to be perceived as dangerous and begging for control of those unprepared for act of war. Globally, Armed Forces Barracks, installations, and Police Barracks are built in the low densely populated areas of towns and cities to protect national security interests. Military installations are particularly of sizeable expanse of land strategically located in outskirts to enable training exercises and usually far away from the general public. However, high traffic locations are avoided to allow for future expansion and upgrade to meet projected personnel population. Unfortunately, many of the barracks and installations in Nigeria cities have merged with residential neighborhood and business districts due to urban expansion.

In the real sense, military *milieu* refers to a surrounding culture, family, neighborhood, school, people and everything that makes up the surroundings of military barracks. It also means the environmental condition and multicultural environment in which someone acts or lives and works. Moreover, it envelops economic disparity, class mobility, cultural values and gender roles. Sometimes the milieu shapes a person. The military barracks range from small outposts to military cities containing up to 100,000 people. Barracks size is

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usually determined by its establishment status, function and population of personnel to be quartered. The roles of the military in national defence, internal operations, peace keeping and humanitarian intervention necessitated the establishment of many military barracks in the developing countries including Nigeria. Typically, the operation area is often restricted, only authorized persons are permitted access irrespective of whether is a military personnel or not. Military barracks community usually provide a condominium housing estate with shared facilities for military personnel, offices and dining facilities. They also provide support facilities such as fast food restaurants, snack bar, gas station, religious centre (churches and mosque), schools, hospital or clinic, shopping and convenience retail stores, and beauty salon. Sporting facilities such as fitness centres, libraries, athletic fields, basketball hoops, child development centres automotive workshops, hobby/arts and crafts centres, bowling centres, and community activity centres. Based on this, an understanding of the military geographies, culture and its built environment in developing countries is necessary. It is the bedrock for assessing independent mobility towards advancing a child-friendly military barrack community. The geographical space of military barracks community can be harnessed by representations like maps, models, and how children can make decisions using such representations without compromising the security. It is important to note that military barracks community is a reflection of the society in terms of culture, social, political, economic and other policies that affect human existence. Noteworthy, is the social responsibility and civil-military relations advocacy that enable socio-economic facilities in barracks such as hospitals, religious centres, markets, and schools provide services for the public in developing countries including Nigeria.

Nevertheless, the study on children's mobility was first analyzed in the 1990s by measuring the territorial range which implies the geographical distance from children's home to places where they have freedom to play and socialize (Kytta *et al.*, 2015). The concept of independent mobility was later operationalized as a license to move around freely without adult's accompaniment in the environment. Meanwhile, the degree of a mobility license started with rules laid by parents concerning children's permission to cross roads or to ride a bicycle freely (Kytta *et al.*, 2015). It was also complemented later by studies on the degree of licenses to visit friends and shopping malls on their own. Other studies have attempted to measure the free range to destinations within a certain period of time. This was achieved by using records of mobility. Due to further advancement in technology, infrastructure for population, longitudinal data connections, geospatial mapping, and statistical software makes it possible to systematically test complex hypotheses. Independent mobility enhances physical activity and children's opportunity to learn through interaction with their surroundings in past studies conducted (Hanapi & Ahmad, 2016). In addition, the overall effect of independent Mobility indicators and built environment on children's quality of life employed active travel like walking. Despite the benefit of independent mobility to quality of life, children's health and wellbeing, this behavior has declined in many developed and developing countries including the military barrack communities across Nigeria. Likewise, children's degrees of license to travel freely have reduced in many countries including Britain Australia, the USA, Sweden, and in Finland as found in recent studies. The average time per week children spend in active travels like walking and cycling has reduced over the years (Tranter & Sharpe, 2012) as children's home school journey by car has increased. Further review of articles through national surveys showed reduction in active travel which suggests a simultaneous decrease in opportunities for independent travel. Other studies also have revealed that children's ability to travel independently in communities to public spaces in leisure time has reduced. This is attributable to factors such as security and safety, stranger's danger, urbanization, traffic, and parental fears. Parent's safety-consciousness was found to override the benefits of independent mobility in many countries. Some other studies have showed significant relationship between parental safety perception and children's active travel. These include studies on independent mobility with inconsistencies in defining and measuring the important parameters such as public open space (Chaudhury *et al.*, 2015). In which case, children are limited between home, school and places for children's play under adult's supervision. This is attributable to rampant cases of kidnapping, armed robbery, rituals, and human trafficking. Likewise, the crime reports from media of children being abducted by strangers in public spaces are perceived to be responsible for parents' fear of safety, especially in Nigeria with far reaching impact on barracks community and children's quality of life.

On the other hand, the independent and active mobility to school, friends and leisure activities involved changes in socio-cultural and neighborhood attributes as well as policy issues (Fyhri *et al.* 2018). Individual and family features that were found to have affected independent mobility include age, maturity and gender, family structure, socioeconomic status, ethnicity, gender of parent, and parent employment. It also includes minor factors such as weight of school bags, convenience, family spending time together, and trip chaining. Environmental factors like weather, urban form, pathways, connectivity of green spaces, and distance to school and other destinations also affect independent mobility. Similarly, the role of social trust and conception of risk have been identified as important factor on decision making about children's freedom to move around independently (Zhang, Yao, & Liu, 2017). Other related challenges with low independent mobility include cognitive, emotional, and social developmental impacts which increases family time for chauffeuring. Since the factors affecting loss of mobility and impacts vary geographically, research need to consider different settlement areas as major parameter.

Studies on school travel as an indicator in Finland, Norway, and Japan have been identified to have a higher level of independent mobility compared with other countries. It was found that 26% of English and 33% of Australian children moved freely to and from school. In contrast, levels of independent mobility are more reflective of income as important parameter, with children from poorer backgrounds experiencing much higher levels of independent mobility than those from their richer counterparts in developing countries. It means that wealthier children experienced less independent mobility. Finally, most studies focused on inner urban and suburban neighborhoods that do not reflect the diversity of settlement patterns in which children live of which the barrack community in developing countries is essential. Existing researches in developing countries have limited capacity to inform effective policies and interventions especially to advance a research agenda that will fill existing gap in the literature. To avoid the pitfall of past studies on military barrack space a review of parameters and findings in literatures on related areas is necessary. On this notes, this study begins with an overview of the military geographies, culture and its built environment. It also appraised active travel modes with focus on home-school journey and other

destinations. Lastly, factors inhibiting independent mobility with various parameters and its implication on children was reviewed based on lessons from developed countries to advance child-friendly military barracks communities in Nigeria.

2.0 Literature Review

In order to appraise independent mobility towards advancing child-friendly military barracks in Nigeria, the literature review will cover a brief overview of military geographies, culture and its built environment, active travel modes and some factors of independent mobility that affects children's quality of life.

2.1 An Overview of Military Geographies, Culture and its Built Environment

The research on independent mobility towards advancing child-friendly cities in most developing countries is confronted with challenges of lack of national data, policies, acts, improper planning regulation and implementation. Also inhibiting the study is dearth of information and in-depth researches on children and environment as obtainable in developed countries. Hence, these studies seek to review articles available from developed countries and unpublished articles from developing countries. The domain of barracks is chosen as a case study in developing countries for a pilot study being a sizable community that has all facilities required for the study as earlier mentioned. This will eventually lead to research that will encompass a city in the future. The fact that military barracks conduct security checks or set up a time restriction to control influx like any other condominium housing estate does not make it completely restricted. Military geographies can be expressed from the perspective of how military activities and institutions are constituted geographically. It covers a wide scope including analysis of military land use and the environmental impacts of military activities, explorations of representations and interpretation of military landscapes. It also involves investigations into the economic and social relations of military capabilities and the lifestyle of military personnel. The military environmental discourses draw its inspiration from related literatures. This involves the cultural geography of space and place. However, it is not limited to entities existing outside of social practice, rather most analysts are concerned with the way natural environment are constituted through a number of social and cultural practices.

Moreover, the historical and comparative exploration of military culture covers the relationship between military culture and the larger society. The study of military culture is not exhaustive and not limited to the conduct of war but the study of those beliefs, norms, values, rituals, and other symbolic productions that organize and sustain military organizations. The uniqueness of the military reflects in preparation and conduct of ceremonies, military discipline, etiquette, staff work, and military technology that affects residents especially the children. The regimental, bullying, and hazing culture have affected environmental friendliness of barracks and perception of children independent mobility by parents in travel mode choices. Therefore, little or nothing has been said on children and opportunity to harness independent mobility in advancing child-friendly military barracks community in developing countries including Nigeria.

Looking back to the early eighteenth century, soldiers' were quartered with private citizens or in rented motels. This practice was later found to become insufficient for troop living and sleeping needs. In addition, discipline, absence without official leave, and desertion were difficult to control. Thus, the First British barracks were built in Ireland in 1713 and England in 1721 designed by Mr. Nicholas Hawksmoor. Barracks varied in size and design but they were typically organized around a barrack square. Usually overcrowded, troops were allocated only 200-300 cubic feet of space per man. In comparison, prisoners were allocated a minimum of 600 cubic feet of space per man. The conventional concept of the military's place in society as evolved from the Western experience emphasizes organizational separation of the military to perform its national defence role. Consequently, contemporary security issues like ethno-religious, economic, and political crisis and internal security problems such as militancy, insurgency, kidnapping and other transnational crimes have necessitated the maintenance of large military population and barracks in developing countries especially in Nigeria. The population of children in barracks is more than adults especially ages of 6-12 years in primary schools. This explains justifies establishment of more than one primary school in large barracks like Air Force Base Lagos, Kaduna, and Makurdi in Nigeria. Notably, barracks built environment set up for military and paramilitary housing purposes consist of the operation, training or equipment storage area which is often restricted. The other zones are semi-public and public where children relate with their environment. Although this study is limited to military barracks but the result and finding in the research is applicable to para-military barracks and other housing estates in the developing countries. The right of children to officially reside with parents is adequately provided for in the Harmonized Terms and Condition of Service with maximum age of 18years (HTACOS, 2018). Government and military authorities in Nigeria have made efforts to ensure children participation in barracks activities with the provision of schools, and play areas but still have a lot to do in making barracks child-friendly. Barracks therefore remain Government and public interest in developing countries as posited by Okafor, BN (2016). He used the military and police barracks as a case study of public institution.

2.2 Active Travel Modes Experience in Children Setting

Studies on children's independent mobility and active travel modes considered walking, cycling, car, and public transport as variables. Studies showed that children's freedom to explore their cities independently or by active travel modes have reduced in many western nations since 1970s. However, literature on design, urban form, and transport indicates steps to change societies and promote children's freedom in active travel and mode choice to school (Zhang et al., 2017). It was discovered that more is required than the implementation of travel behaviour change programs of which the main issue is lack of effective strategies to inspire children and parents. Moreover, urban areas have witnessed massive use of the private car as a daily means of travel. This is largely responsible for congestion, waste of time looking for a parking place, and stressful situations that affects quality of life. Other impacts are inefficient use of resources, atmospheric and noise pollutions. Meanwhile, the dimension of non-motorized practices such as preferences of street characteristics

for walking offers a critical perspective on mobility policies and construction of local travel space (Ernawati, 2016). Insights from a case study of Copenhagen on declines in children's active transport and independent Mobility have been spontaneous in many western nations over recent decades. Despite the growing understanding of policy changes that would lead to increase in children's active travel, it has not been possible to reverse the trends in children's mobility in most nations.

Another study explored the prevalence of walking in home school journey for ages between 11 to 13 years. Physical activity such as walking to school has emerged in response to the increased prevalence of sedentary lifestyle in children. Public health practitioners and urban planners carried out a survey and monitor walking practices in space and time. This was done with a view to developing appropriate interventions. Evidence suggests that interventions to increase active school transportation need to acknowledge spatial and temporal differences in walking behaviour. Moreover, other researchers have examined differences in school transport between urban and rural places. It was found that urban children tend to walk more for school purposes than others. The provision of sidewalks was significantly related to active school travel, while other design characteristics such as intersection density tend to negatively correlate with the walking.

Children's freedom to move independently in their environment is a key feature of a child-friendly environment especially in poor neighborhood (Ghanbari-azarneir, Anbari, & Hosseini, 2015). Parent's dilemma regarding the perception of being seen as faring poorly result in social traps which is responsible for failure of policies to walk. Social trap occurs when parents make decisions about their child's travel behaviour without the knowledge of what other parents might be doing. Parents then feel trapped into chauffeuring their child to and from school and into preventing them from cycling or walking as a means of home school journey. It may be due to traffic volume around school that make parent feel that it is dangerous to allow their children walk or cycle to school and other play areas as children do have preferences for outdoor environment especially in school. Parents also have the fears that others will perceive them as uncaring parents by not conforming to chauffeuring culture. The remedy to social traps is to allow intervention between individual parents and caregivers which can advance into forum for collective decision making about children active travel and mode choice behaviour. Parent's awareness of the negative consequences of car dominated travel on their children's health due to lack of physical activity will help in travel mode choice behaviour, and this can change with such intervention. Studies revealed in Asian cities that people work less than before and children are less active than before (Cubukcu et al., 2015). Based on this, impacts of mobility restriction on children will be examined drawing lessons from previous studies in developed and developing countries

2.3 Factors of Independent Mobility that Affect Children's Quality of Life

Mobility restriction is basically an outcome of rural urban migration, high volumes of traffic, parents' perception of social dangers, and the recalcitrance attitudes of children. Other parameters such as convenience, weather conditions or school compulsory restrictions are parents' considerations to drive their children to school instead of walking. Studies conducted on mobility restrictions showed that children's home school journey in Italy have been affected. It was also found that 71% of children between the ages of 7 to 12 years were escorted by adults to and from school. Similarly, it was discovered that mobility restriction affects female children than male. Moreover, size and the densities of a city are fused to the opportunities for independent mobility. Notably, results of past researches indicated that children in the rural or lower-density neighbourhood enjoyed higher degree of licence compared to children in high-density city environment (Villanueva et al., 2012). Although the actual mobility has not corroborated the extent of possibilities the rural children have to travel around independently in contrast with urban children. Consequently, the neighbourhood also have an impact on children's independent mobility (Kolodinsky et al., 2013). Studies from many developed countries have shown reduction in the prevalence of active travel and independent mobility (Timperio, & Crawford, 2008). Since 2002 only about 40% of UK children 7-13 years have been allowed freedom of home school journey without supervision (Fyhri & Hjorthol, 2009) and a recent research conducted in Australia revealed that less than 46% of children walk or cycle to school and below 38% are free to travel. Emerging evidence suggests that active transport to and from school increases with age during childhood, particularly from childhood to adolescence, though some studies have shown that active transport declines with age (Tranter et al., 2012). Individual, social and physical environmental level factors influence independent mobility and physical activities behaviour (Veitch et al., 2017)

On the other hand, the traffic and safety measures put in place by creating traffic-separated areas influences children's mobility with emphasis on the importance of neighborhood cohesion and connectedness (Lin et al., 2017). It was further revealed that children living in apartment buildings with courtyards close to the parks in Rome and in new neighborhoods enjoyed independent Mobility. Friends can also influence a child to travel around freely. Likewise, studies conducted in different countries indicated that the degree of liberty enjoyed by Finnish children to travel around without accompaniment is higher than children in many other countries. The other children with relatively low degrees of license were found in Australia, Italy, and Portugal.

In the European context, the perception of social dangers in the middle European countries is greater than Scandinavian countries. Children seem to be apprehensive of people than traffic. As such, children's level of independent Mobility affects their physical, social, cognitive and emotional development. In another study conducted, a decline in the motor and social development of 5-year olds was observed. Children were noticed to be deficient in playing independently outdoors, streets, and in open yards. Furthermore, studies have equally emphasized the importance of spontaneous outdoor play on children's motor physical development. Mobility restrictions also have significant impact on the development of emotional bonds between children and the natural environment. Thereby, a sense of responsibility for the environment is developed. Moreover, the research that investigated the mobility restriction of children residing in a low-income area of core London shows that 90% of the children have difficulty making reference to meaningful place. Meanwhile, in their research on rural children in the UK, Matthews et al. (2000a, b) found that social places were more significant to children than natural places. This was due to children's restriction to natural environment owing to parental fears and fencing-off of private land. Nevertheless, a study finds no relationship between mobility licenses and meaningful place or its distance from home. Consequently,

some studies analyzed the impacts of mobility restriction on the development of independence and identity formation. This was buttressed by a study that revealed 5-year olds who played independently in their neighbourhood making references to diverse and rich set of activities and play compared with children of the same age that played regularly in playgrounds.

Furthermore, a number of studies have indicated that actual mobility promotes a sense of knowledge acquisition, planning and structuring of child-friendly environment in poor neighborhood (Ghanbari-azarneir et al., 2015). Apart from the influence of mobility restrictions on children's development, broader effects on society are noticeable in these studies. The reduction in children's independent mobility causes additional time that parents requires for chauffeuring and shrinks their free time. It was found in other studies that several countries with traffic jams on home school journey have challenge. In general, reduction in children's independent mobility is a major constraint towards promoting active travel-mode choices and the concept of child-friendly environment. Nevertheless, dearth of information on the relevance of independent mobility as against the wrong perception of people in relation to the mobility restriction in military barracks community have created a gap for further study in children's environment and human behaviors. This has equally led to the deprivation of thousands of children living in barracks of adequate wellbeing and quality of life in developing countries including Nigeria.

3.0 Method

In an attempt to appraise independent mobility in the Military barracks community, this study made use of search process in order to select relevant studies for review. Journal articles obtained through electronic databases from UTM e-library, Google scholar, Science Direct and AMER Publications from 2012 to 2017 were used. Comments were made based on personal observations on parameters and findings in bringing out the gap for further studies during the meta-analysis. The search range was from 1989-2018 publications. Though, it was stated earlier that the study of children and nature dates back to 18th century as introduced by romantic literature, but all necessary documents were searched up to 1979 in related areas. Selective search was performed from journals of social sciences and humanity, environmental psychology, health and place. Multi-disciplinary journals in built environment, urban planning, transport geography and geography of military were also referred. It was revealed that the journals of transport and health published the largest percentage of articles on the subject. Search terms included independent mobility, mobility restriction, active travel mode, child-friendly environment, and land use. Furthermore, personal observation reference lists of the selected publications were checked to identify more studies as well as personal profiles of notable authors for further information.

Additionally, the interfaces between the independent Mobility and built environment that can help develop child friendly military barrack community in related discipline were considered and viewed in the context of the military barracks milieu for further studies. Relevant studies were consulted including unpublished theses and articles as related works on military barracks specific to children and environment are inadequate. A total of 30 journal articles relevant to the topic were selected and reviewed (see Table 1). The reviewed study considered parameters or variables as influential factors that determine independent mobility results while findings can assist in policies and implementation strategies towards advancing child-friendly military barrack community context towards improved quality of life in developing countries especially Nigeria.

4.0 Results and Discussion

This study appraised independent mobility towards advancing child-friendly military barracks community in developing countries by looking at past works. It revealed significant connection between the independent mobility through walking as the most active travel mode in improving the wellbeing and quality of life of children in military barrack community. An overview of military geographies, culture and barracks built environment was discussed, active travel mode parameters considered including use of car, public transport, biking and walking based on lessons from developed countries. Most of the studies used mixed mode of quantitative and qualitative research methodology approach owing to the complex nature of researches on children and environment. Greater percentages (90%) of journal articles reviewed were obtained from Science Direct through UTM e-library from 2007 to 2018 and AMER Journal articles from 2012 to 2017. The outline in Table 1 showed summary of records on articles reviewed by title, authors, and year of publications in the first column, parameters in the second, findings in the third and conclusion in the fifth column. Attention was focused on the parameters and findings for analysis in this study.

Basically, the publications considered are between 2007-2018. It was revealed that a greater number (70%) of studies conducted were in the developed countries of Europe and few developing countries of Asia little or nothing in Africa. Most of the studies employed multi-disciplinary approach to examine contending issues which are cross-sectional in nature. Not less than 60% of the studies seek to investigate the association of independent mobility and child-friendly environment. The age categories of children were taken into consideration as well as gender in most of the studies. The location and climate were not properly considered in some studies. The research parameters were highlighted in the second column of Table 1. In order to confirm that independent mobility is significant in promoting a child-friendly environment, many of the studies laid emphasis on active travel mode in favour of walking or cycling to improve health through physical activity. Furthermore, effects of independent mobility on social and physical environment, need for policies on parents licence, measures to ensure safety within certain range, time and destination were stressed. Importance of natural outdoor spaces to social and cognitive development of children was emphasized. The strength of association between independent mobility and physical environment is high in all the studies reviewed. The pitfall in the parameters identified needed to be included holistically in researches to determine independent mobility towards advancing child-friendly military barracks in Nigeria.

Table 1: Summary of Twenty-seven Selected Reviewed Studies

1	Children's Views on Child-Friendly Environments in Different Geopolitical, Cultural and Social Neighborhoods. Nordstrom,(2007)	12-year-old children living in geographical, cultural and socially different urban neighborhoods.	The result shows that three dimensions in particular apply to the children's responses. Therefore there is need for change in current city planning practice.	*Adults views not compare with children in the study.
2	Association between the built environment and children's independent mobility: A meta-analytic review Sharmin and Kamruzzaman, (2018)	7-12 years old children living in a poor neighborhood	It was found that places offering varieties of play opportunities are more likely to become children's favorite among liked places.	After safety, the main concern should be to provide a variety of affordances for play.
3	Physical environmental characteristics promoting independent and active transport to children's meaningful places Broberg, Salminen, and Kytta (2013)	13 BE-CIM links and published between 1980 and 2016. Overall effect size (ES), using the reported results from the primary studies and based on a random effect model	Four BE factors, CIM association, traffic neutral association, and the remaining eight factors with negative association. Living in a dead end street was found to have the strongest positive ES (0.352), with moderate level of consistency across the primary studies.	Limitation in term of aggregation of different CIM dimensions to derive overall ES. Finding serve as a guide for policy makers on urban design It finally unveil the reason for inconsistent finding on this topic.
4	What neighborhood area captures built environment features related to adolescent physical activity? Boone-Heinonen <i>et al.</i> , (2017)	7-12 years old children over 3 years	Trees are intriguing and multifaceted, satisfying many of the children's private and social needs.	Exploitation of tree affordances during place-based play reflected connectedness to place and utilization of trees became more versatile over time
5	'Being on the move': Time-spatial organisation and mobility in a mobile preschool Gustafson and Burgt, (2015)	GIS- derived characteristics of interest PA(MVPA) and PA facility and street connectivity within 1,3,5 and 8.05km	BE-MVPA relationship varied by BE characteristic. higher MVPA was generally related to resource counts and intersection density within 1-5 and 1km of respondents homes	More research in diverse geographic areas, as well as further examination of age and sex differences is required
6	Children's independent mobility in Portugal: effects of urbanization degree and motorized modes of travel Lopes, Cordovil, and Neto, (2018)	22 of 4-5years old children both boys and girls, in a preschool bus for Monday to Friday between 9am to 3pm	The findings show that the social order of the mobile preschool is 'being on the move' and that the travelling shapes the time-spatial organisation, with major implications for daily routines and activities	This peculiar study on the mobile preschool not usually covered in the field of geography to understand travel among location and on children development through outdoor learning at early life
7	Children's independent mobility to school, friends and leisure activities Fyhri and Hjorthol,(2018)	Mobility license, actual mobility, fear of traffic, stranger danger and sense of community were compared in highly, moderated and non-urbanized environments according to gender.	Increase urbanization leads to decrease of children licenses to independently cross and cycle main roads; go out after dark and go to places other than school. Decrease independent active home-home travel and leisure time activities. Parental fear regarding traffic is the most frequent concern regarding children safety	Children's freedom of movement in the highly urbanized setting is very restricted due to a pervasive automobile dependence, proposing a shift from a motorized to a workable city
8	Citizen involvement in promoting sustainable mobility. Ibeas, dell'Olio, and Montequin, (2015)	Parents with children within 6-12years recruited from NTS 2005. 3- variables, transport to school, sports and friends	Distance to school and children's age were the most influential variables on CIM measured as an index	Future research should aim at replicating these results using data that are more directly applicable for SEM analysis.
9	Controlling mobility, performing boarderwork: cycle mobility in Copenhagen and the multiplication of boundaries Jensen, (2018)	Group of students from the university of Cantabria. Mega focus group were held in 3-different days	The study shows the necessity of citizen participation in developing policies and plans related to sustainable mobility	The MFG have been useful in providing a territorial representation of peoples' perception and opinions through zoning process
10	Disney-Pixar to the rescue: harnessing positive affect for enhancing Children's active mobility Tranter and Sharpe (2017)	Car Public transport Biking Walking	The study shows that the policies of socially inclusive cycle track systems add to urban boarderwork.	Articulations of a cycle-dependent to different categories of cycling Copenhageners embedded in policies y
11	Estimating the effect of mobility and food choice on obesity in rural, northern environment Kolodinsky <i>et al.</i> , (2017)	Food choice Obesity Geographic location	A broad affective response- amongst viewers makes them more open to new ideas change the way we think and feel it provides the clue to a new approach to energy collector thinking cognition.	Focus group studies may provide further insight into ways in which such films could promote positive effect and openness to new ways

5.0 Conclusion

12	The last free-range children? Children's independent mobility in Finland in the 1990s and 2010s/ Kyta, <i>et al.</i> , (2017)	Complex association of variables with being overweight or obsessed were considered	The result indicate that food choice, mobility, demographic characteristics and normative beliefs are related to energy imbalance	Further research is needed to build data sets that include both food and activity environments that are generalizable beyond the study area included in the study
13	Gender equality and women's participation in transport cycling Prati, (2017)	Gender parameter	Four RMEs were identified and mapped. -short distance environment, -motorized environments, -non-motorized environments -long distance environments	Need to unravel the relationships between retail activity and non-motorized accessibility, in order to reach sustainable planning goals
14	Is there a gender gap in school travel? An examination of US and adolescents McDonald, (2012)	Gender of Male and Female considered	The composite indicator of gender equality index was associated with women's participation in transport cycling	future studies needs to investigate gender equality effects in investment in cycling infrastructure cycling
15	The influence of neighborhood environment and household travel interaction on school travel behavior: an exploration using geographical-weighted models Miltra and Buliung, (2014)	Male Female	Males walk to and fro school more than females	Participation of females in biking to school programme
16	"Cycling was never easy!" An analysis of e-bike commuters' motives, travel behavior and experiences using GPS-tracking and interviews Plazier, Weitkamp, and van den Berg (2017)	Built environment characteristics parameter	Result shows that built environment near both home and school locations was associated with the odds of walking	More research required to understand inter-household similarities in behaviors that are spatially structured.
17	An explanation of the relationship between adults' work trip mode and children's school trip mode through the Heckman approach Deka, (2013)	Adults and Children	*energy consumption for school commuting is strongly dependent on the school level.*link between land use pattern and energy consumption for school commuting	Guide future policies focused on transport energy consumption at the local scale
18	A troublesome transport challenge? Working round the school run Jain, Line, and Lyons, (2011)	Selection of variables	Household adults' decision to drive to work significantly increased children being dropped off at school and decreases their likelihood of walking and biking	It suggest that children's mode choice studies should not ignore how parents or caregivers travel to work
19	The determinant of commuting mode choice among school children in Beijing Shengxiaoxiao and Pengjun (2015)	Time is the major variable	Time was the problem – including time for travelling and coordinating activities in time and space and being punctual	The research did not generate transferable solution to transport practice,.
20	Travel –to school distances in Sweeden 2000-2006: changing school geography with equality implication Andersson, Malmberg and Osth (2012)	Cultural context	It was found that the specific institutional and cultural context in Beijing is an important determinant of school accessibility and modal split for junior secondary school students	Need to fill the gaps in travel behavior in relation to more school choice, school quality and special distribution of educational opportunities
21	Children aged 9-14 living in disadvantaged areas in England: Opportunities and barriers for cycling Christie <i>et al.</i> , (2011)	Distance and Destination	Travel to school distances has increased since the year 2000. The pattern of differential mobility showed geographical school choice affect of depleting local schools in disadvantaged areas of students with less disadvantaged background	
22	A Model Development for Children's Walking in Neighborhood Mansoureh Rezasoltania*, Mostafa Behzadfara, Ismail Saidb(2015)	9 - 11 year old children who are in mid childhood.	the research, the created model discovered the connections between nine captured factors all together with spatial knowledge. In	<i>Studies on more extensive variables</i>
23	A Review on Environmental Characteristic that Influence Children Physical Activities in Low Cost Housing Hanapi and Ahmad (2015)	Children living in high-density low-cost housings, time spent outdoors	Revealed 4 physical characteristics (poor safety, crowding, inadequate facilities and poor neighbourhood relationship, were found to be the major contributors in less physical activities among children.	More research regarding the manipulation of the physical environment in low-cost housing as an effort to enhance physical activity among children is needed.
24	Children's Sense of Attachment to the Residential Common Open Space Shabak <i>et al.</i> ,(2015)	physical characteristics of the place,	Designing an open space for children to fulfil their physical and mental needs should be different with existing adult design criteria	The relationships between a sense of place attachment and each specific characteristics of the place can be more studied in the future research.

literature review covers active travel modes in home-school journey and other destinations. The significance of environment to children was stressed and the need to uphold commitment in creating a good living condition for children's human right was incorporated. Notable

25	Dimensions Underlying Local People's Preference of Street Characteristics for Walking Ernawati, (2016)	local people's preference of street characteristics for walking with 300 respondents	The five factors account for 51.7% of the variance in local people's preference of street characteristics for walking.	further study is necessary to test the consistency of the scale in various studies of the street characteristic for walking.
26	Obesity, Physical Activity, Spatial Environmental Characteristics in Three Types of Residential Settings Cubukcu <i>et al.</i> , (2014)	Planned and unplanned developments for low, moderate, and high income neighbourhoods. Three spatial setting characteristics	Results, showed no differences in variables	More research is on call for obesity and physical activity investigation in developing countries
27	Identification of Child-Friendly Environments in Poor Neighborhoods Ghanbari-Azameir <i>et al.</i> , (2015)	40 Children 6-12 years of age from a poor neighborhood	Children preferred more challenging places, flexible spaces, locations with the chance of finding new friends. They preferred natural elements in their play settings.	Future studies could concentrate on these elements' features.

indicators and significant factors militating against natural children's place were highlighted to be explored in further studies and peculiarity of children's place in the military barracks. Similarly, longitudinal studies examining patterns and predictors of active travel and independent mobility to school and other destinations are scanty. The extent of the restriction needed to be studied and a model developed to employ the concept of independent mobility to enhance child-friendly military barracks. Furthermore, the need for policies on parents' license, measures to ensure safety within certain range, time and destination was found to be necessary. Importance of natural outdoor spaces to social and cognitive developments of children was emphasized to promote good health through physical activities. The findings in the reviewed studies identified parameters as a major determinant of outcome. Moreover, sensitivity and wrong perception concerning military environment have accounted for dearth of information and low level of research in the built environment. Considering the barracks as condominium housing that allows shared facilities, results from residential estates and campuses are applicable to military barracks. Consequently, there will be potential benefit in extending the policy of walking to improve independent mobility of children to school and open spaces. Therefore, emphasis on increasing the amount of incidental activities necessary to reduce sedentary lifestyle by developing barracks community with mixed land use and promoting active transport modes of walking or cycling-friendly environment will improve quality of life for children.

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