

Early Childhood Development Disparities, Comparative Analysis Among Rural and Urban Tanzania

Ignas Lukanga¹ & Suzana S. Nyanda¹

¹ Department of Policy, Planning and Management, Sokoine University of Agriculture, Tanzania

Correspondence: Ignas Lukanga, Department of Policy, Planning and Management, Sokoine University of Agriculture, P.O Box 3021 Morogoro, Tanzania.

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Abstract

Early childhood development (ECD) initiatives are championed globally due to their proven ability to help children at risk of developmental delay attain their developmental potential. A comparative study was conducted using a mixed research approach to assess child development disparities among rural and urban children across the domain of child development. The study was conducted in Ilemela municipal and Mvomero districts representing urban and rural settings. Quantitative data were collected using the adopted ZamCAT tool administered to 334 children randomly selected from the 2017 children enrolled in the community-based early childhood development (CBECD) initiative. While qualitative data were collected using focus group discussions with the parents ($n = 4$) and in-depth interviews ($n = 14$) with the key informants. Quantitative data were analysed using the SPSS (version 25), and a content analysis was employed to analyse the qualitative data. Findings indicated a significant difference in child development status between rural and urban children ($p = 0.009$). A noteworthy difference was in favour of rural children with a large effect size ($\eta^2 = 0.142$). Most children (90%) from rural settings were developmentally on track compared to urban children (79.7%). Furthermore, rural children outperformed urban children significantly in literacy numeracy ($p = 0.000$) and learning domains ($p = 0.000$). The observed disparities were due to more time invested by the parents from rural than the urban set-up on childcare. The study recommends that the government and ECD stakeholders engage in capacity strengthening for parents to ensure children attain their development potential.

Keywords: early childhood development, developmental domains, early stimulation, developmentally on track

1. Introduction

Human beings endure different development levels at any particular time from childhood to maturity. The endurance depends on the attained skill set built from earlier stages, degree of support, context and a suite of other variables. This development from childhood to the maturation stage is a function of the conceptual, behavioural and environment the children were exposed (Mascolo, 2008). As a vital development milestone, childhood is a critically maturational and interactive process resulting from the progression of physical, cognitive, language, social and emotional aspects experienced during the early stages of life (Black et al., 2017; Fraser-Thril, 2021). There are four main child development domains: literacy-numeracy, physical, learning and socio-emotional development (Loizillon et al., 2017). The literacy-numeracy domain measures a child's cognitive and language ability through recognising shapes, numbers and alphabet naming. Physical and social-emotional domains measure children's ability on fine and gross motor skills and the children's ability to engage with other children during play. Moreover, the learning domain measures children's learning through a child's ability to follow simple directions and task completion. Various factors influence childhood development which is highly determined by the mentioned domains. Such factors include nutrition, security and safety, early learning, health and responsive caregiving, as highlighted in the nurturing care framework (WHO, 2018). The interaction between these factors and how they affect early childhood development can be assessed by the expression of the higher performance of a child.

The level of expression on physical, cognitive and socio-emotional developmental processes is vital in defining the development status quo of a child but also a guiding tool to forecast the extent of maturity in later stages (Britto et al., 2011; McCoy et al., 2017a; Lucas et al., 2018). Given the importance of the early years in shaping the child's brain, all interrelated factors that influence the child's development should be holistically integrated, including all

key attributes that linger around nutrition and stimulation service factors. These factors foster and stir access to social services such as quality early childhood education, health, clean water and good nutrition, and a safe environment for early learning and stimulation through Early Childhood Development (ECD) centres (Minh et al., 2017). It was included in the sustainable development goals to ensure that early childhood growth and development through stimulation and learning is implemented effectively globally (Ritcher et al., 2017). Highly determined by the settings of their establishment, ECD initiatives build a good foundation for later life since they are helpful in the transpiring range of aspects from attaining educational achievement, economic productivity, and an effective hold of responsibilities.

Childhood development in sub-Saharan African countries like Tanzania is still a prevalent challenge. This is highly contributed by poor nutrition, limited access to health services, inadequate parental care, and an unfavourable environment to support children's growth and development (Baker-Henningham & Boo, 2010; Sayre et al., 2015). For example, in Tanzania, it is estimated that 3 million children aged 0-5 years are stunted, whereby lack of childhood care plays a significant part, among other factors (World Bank, 2015; URT, 2018). To attain childhood development as the means to improve human potential, various strategies to combat the challenges associated with childhood development are in place. Different ECD initiatives aimed at improving early childhood development have been advocated at international, national and local levels. At the international level, the advocacy has involved organisations such as the Firelight Foundation and the World Bank (Hapunda et al., 2021). Other than that, notable efforts in Tanzania set forth to ensure children attain their development potential (World Bank, 2017). At the national level, the government established the National Costed Plan of Action for Most Vulnerable Children (MVC) 2013–2017, aimed at enhancing the well-being of most vulnerable children by protecting their rights and increasing access to healthcare, adequate nutrition and education (URT, 2012, 2016). The initiative introduced new response mechanisms and strengthened the available systems for addressing the challenges faced by MVC at the community and national levels.

Further, dedicated efforts have been supported by establishing the National Multisectoral Nutrition Action Plan (2016–2021) to address malnutrition at a national level. The strategy mainstreamed its initiatives on improving the delivery of nutrition services to children and other vulnerable populations by strengthening human resources and health centres. At the local level, various civil society organisations are undertaking early childhood stimulation programs adopting the Care for Child Development (CCD) approach developed by UNICEF as an implementation guiding tool (World Bank, 2018).

SAWA Wanawake Tanzania (SAWA) and Tanzania Home Economics Association (TAHEA) are complementing government efforts through the implementation of a community-based early childhood development (CBECD) initiative in the Morogoro and Mwanza regions. These non-governmental organisations played a vital role in providing early childhood stimulation services. SAWA mainstreamed the provision of stimulation services through home visiting, where parents are visited by village volunteer counsellors and the establishment of ECD centres at the community level to strengthen the availability of ECD services in rural settings. TAHEA, on the other hand, focused on home visiting programs and community ECD centres and delivered the services using community health workers and paraprofessional ECD caregivers to improve child development status in an urban set-up.

Despite the efforts, the prevalence rate of not attaining optimal childhood development potential among children in Tanzania poses at 70% (EGPAF, 2018). The present comparative studies on child development across rural and urban Tanzania concentrated much on child nutrition, access to quality healthcare and early childhood education (Mtahabwa, 2011; Mwakayoka et al., 2017; Ndijuye & Rao, 2018; Zhu et al., 2021) with limited information on rural-urban child development disparities across the developmental domains and overall child development. This study aimed to investigate the disparities in childhood development status between the rural and urban areas in Tanzania by specifically comparing children's performance under each domain of child development with their residence. The study hypothesises that the distribution of child development status is the same across the urban and rural settings due to equal provisions offered by the initiative. The findings from this study will contribute to developing ECD policy in Tanzania and inform the ECD stakeholders on the area of focus and the difference in demands of ECD services between rural and urban children.

1.1 Theoretical Framework

The study is informed by two complementary theories developed to explain human development from the juvenile stages. The theories include Erickson's psychosocial developmental theory and Piaget's cognitive development theory. These two theories cut across the early childhood development domain and explain the importance of attaining developmental domains that must be nurtured from the early stages of human development and, therefore, from the study 0–6 years. Erickson's psychosocial development theory focuses on meaningful social interactions

in attaining physical and socio-emotional developmental domains, which are vital development domains evaluated and enhanced through early childhood stimulation services. Piaget's theory, on the other hand, focuses on cognitive domain development, which plays a crucial role in attaining proficiency in literacy and numeracy as well as the learning domain (Cherry, 2020). Since the study focuses on measuring child development status and how the stimulation services influence attaining them. The two theories are applicable as they shine the light across all four major child development domains assessed in this study. Hence the two theories informed the study design and choices of data collection tools used to capture the aspects of child development and the data analysis in this study.

2. Methodology

2.1 Description of the Study Area

The study was conducted in Mvomero District and Ilemela municipal found in Morogoro and Mwanza Regions. Mvomero districts are geographically located at 6.3°S 37.45°E while Ilemela municipal is at 02°35'S 32°55'E. According to Tanzania's national nutrition survey (2014), the prevalence rate of stunted children in the Mwanza and Morogoro region was 34.2% and 36.9%, respectively, which indicates that the population is at higher risk (WHO, 2018). This higher prevalence rate was a pushing factor for establishing the CBECD initiative in its second implementation phase in the regions mentioned above from 2017–2020. The initiative focused on improving access to ECD services for vulnerable families with children aged birth to 3 years, guided by WHO/UNICEF's CCD package through capacity strengthening to local partners. The rationale for choosing Mvomero district and Ilemela municipal was to represent the urban and rural set-ups. Also, they were actively involved in the Community-Based Early Childhood Development Initiative implemented by SAWA and TAHEA under the funding Firelight foundation (Hapunda et al., 2021).

2.2 Research Design

The study employed a cross-sectional research design which involves gathering information at a given time from people of different age groups and developmental stages (Balakrishnan, 2014). The design helped assess child development status reasonably quickly across the domains of development from rural and urban settings and the gathering of qualitative data using FGDs and in-depth interviews. Furthermore, data gathered through this design allows comparison between two studied groups and testing of the study hypothesis.

2.2.1 Sampling Procedures and Sample Size

The purposive sampling technique was employed to select the regions, districts, wards and villages as the areas had many children enrolled in the CBECD initiative implemented by SAWA and TAHEA. Afterwards, a simple random sampling was adopted to select children from benefited households. Yamenes' formula for calculating sample size was employed where a total sample of 334 children was obtained out of the total 2017 children, which constituted 803 children from urban and 1214 children from rural set-ups who enrolled and received stimulation services offered by the CBECD initiative (Yamane, 1973). Since the number of children enrolled in the CBECD initiative differed among rural and urban set-ups, the proportionality method was employed to determine the representativeness of each set-up, where 133 respondents were obtained for urban and 201 for rural settings.

$$\text{Yamane's formula is } n = N/[1 + (N \cdot e^2)] \quad (1)$$

Where: n is the sample size (334), N is the sampling frame (2017), and ' e ' is the sampling error at 0.05. To capture parents' perception of the mainstreamed services, the study conducted focus group discussions and in-depth interviews with the key informants from both study areas. The participants were purposely selected based on their role during the implementation of the community-based ECD initiative: the key informant interviews involved village leaders, initiative team members and government officials. For triangulation of the information, participants involved in FGDs were parents who benefited from the CBECD initiative and whose children were not assessed during the household survey.

2.2.2 Data Collection

A mixed research approach was employed to collect quantitative and qualitative data. Data collection for children was consented to by their parents before the assessment exercise. Quantitative data was collected through the adopted Zambian Child Assessment Test (ZamCAT), administered to 334 children to measure their developmental status. ZamCAT tool is one of the 147 child development assessment tools tested in three African countries (Zambia, Tanzania and Malawi) and approved by the world bank and UNICEF for assessing child development status (Fernald et al., 2017). The tool measures seven sub-domains of child development as highlighted in the ECD measurement inventory by the world bank. Sub-domains measured under by ZamCAT tool include tactile pattern completion, letter naming, receptive language, fine motor skills, expressive language, serial rapid naming, and executive functioning (Fink et al., 2012). The ZamCAT tool was purposely utilised in this study as it is a context-

based tool for assessing early childhood development status across multiple domains of child development in lower and middle-income countries (Matafwali & Serpell, 2014).

In-depth interviews with the key informants and focus group discussions (FGD) with the parents were conducted to capture qualitative data guided by a questionnaire checklist. To capture information on child development from the parent's perspective, a total of four FGDs (two from each district) comprised of 8–12 participants were conducted. The study involved a total of 14 in-depth interviews with the key informants. Out of 14 key informants, six were working directly for the initiative, including teachers from the ECD centres, home visitors and project officers, two were village leaders, and four were government officials from the social welfare department.

2.3 Data Processing and Analysis

The obtained quantitative data were coded and analysed using a Statistical Package for Social Science (SPSS) (Version 25) to obtain descriptive and inferential statistics. Since the study was aimed at comparing child developmental statuses, the percentages of children who are developmentally on track. The scores obtained from the ZAMCAT assessment were grouped into its four respective child developmental domains as described by UNICEF's Early Childhood Development Index (ECDI) 2030.

ECDI is the measuring indicator for early childhood development status as stipulated in sustainable development goal 4.2. It is the most accepted tool due to its highest reach concerning the countries tasted, population size reached, and its established benchmark for determining child development status across the domains and overall child development status (Unicef, 2014). However, the limited range of age and assessment sets measured by the ECDI questionnaire and the lack of validated benchmarks observed from the ZamCAT tool pose a challenge to the effective measurement of child development if only one of the tools is employed (McCoy et al., 2018). To attain the most acceptable results, the two tools were used together to fill the gap, as the ECDI tool offers room for contextualisation with other locally approved tools for assessing child development across the exact domains (McCoy et al., 2018).

According to Loizillon et al. (2017), the minimum score for attaining child development under each domain is at least two-thirds of the question sets on language/cognitive and social-emotional domains, scoring less than 50% on learning and physical development domains from the assessment test. However, a child must perform well on at least three of four ECDI domains for overall development. Since the outcome variable was categorical and the study aimed at comparing the two population samples, a Mann-Whitney U-test was employed (Rosner & Grove, 1999). The qualitative data were transcribed and analysed through thematic analysis, where the identified themes were presented with supporting quotes.

3. Results and Discussion

3.1 Child Development Status Under Each Development Domain

3.1.1 Literacy-Numeracy Domain

The domain assesses pre-academic skills across the areas of literacy and numeracy and other early learning approaches demonstrated by children during the early stages of child growth. Children were identified as developmentally on track if performing well on at least two of the three exercises of letter naming, shapes and numbers recognition from the ZamCAT assessment test results. The study's results revealed a significant difference ($p = 0.000$) in children's literacy-numeracy developmental domain performance in favour of children from rural settings Table 2. The findings indicated that the mean score for the literacy-numeracy domain was 72.43% for children living in rural a setting which was slightly higher compared to the 64.71% score for children from urban settings as shown in Table 2. This implies that children from rural settings scored relatively higher in assessment areas of literacy numeracy than their urban counterparts. Ngorosho, (2011) reported higher performance in the literacy-numeracy domain among rural children in Tanzania due to increased parent engagement and the quality of the home stimulation environment. Despite the difference, the overall percentage of children who are developmentally on track in the literacy-numeracy domain was higher for both urban and rural settings, 90.2% and 90.5%, respectively. The possible reason for higher scores observed from both set-ups can be increased access to ECD centres services provided by non-governmental organisations through its integrated approaches to improve child nutrition and access to early learning (Mtahabwa, 2009). The study by Qadiri and Manhas (2009) in India reported that most parents agreed that children who attended the ECD centres developed well in pre-literacy and communication skills. According to McCoy et al. (2017b), ECD centres are significantly associated with children's early learning abilities. Alam (2021) also observed this higher percentage and found that 90% of children were developmentally on track in the literacy-numeracy domain.

3.1.2 Physical Development Domain

Fine motor skills development was used to determine children's physical development. Unlike gross motor skills development, the influence of fine motor skills on mastering other developmental domains during early years helps a child explore the environment. As Bushnell and Boudreau (1993, p. 1006) argued, "the emergence of particular motor abilities may determine some aspects of perceptual and cognitive development, rather than the other way around". The current study assessed physical development utilising the fine motor skills exercise from the ZamCAT test by observing children's ability to fasten shirt buttons independently and objects picking exercise. The assessment results were interpreted by the ECDI benchmark, where children who scored 50% and above were considered developmentally on track. The study results reveal a higher percentage of children who are developmentally on track from both urban and rural settings. Results in Table 2 indicate no significant difference in the physical development domain, as most children from urban (96.2%) and rural (99.0%) settings were developmentally on track. According to Tsimeas (2005), the rate of physical development is almost the same for children in urban and rural settings. However, the slight rise in percentage observed for rural children is due to its set-up, which has plenty of open and safe spaces at the home compound for children to play and develop physically compared to the urban set-up. Findings from other studies (Saccani et al., 2013) also show that when children are stimulated around an improved home environment perform well in aspects of the physical developmental domain. For example, the study conducted by Reyhan (2022) found that nearly 100% of rural and urban children attained physical development due to exposure to a safe and enough playing environment. Furthermore, the results from Table 1 show that the average scores in the fine motor skills domain were 92.09% and 91.2% for rural and urban, respectively. The study findings align with Alam (2021), who reported higher children's performance in fine motor skills development with an average score of more than 90%.

Table 1. Results from ZamCAT assessment sub-domains of child development.

Residence of the child		N	Mean	Mean Difference	t-test	P-value
Receptive Language	Rural	201	82.902	3.8545	2.325	0.021
	Urban	133	79.048			
Tactile patterns	Rural	201	60.0498	-1.5292	-0.453	0.651
	Urban	133	61.5789			
Fine motor skills	Rural	201	92.0896	0.88654	0.447	0.655
	Urban	133	91.203			
Executive functioning/Attention	Rural	201	64.3781	24.0774	6.524	0
	Urban	133	40.3008			
Letter naming	Rural	201	54.8093	14.3644	4.785	0
	Urban	133	40.4449			
Serial Rapid Naming	Rural	201	72.9685	-7.232	-1.877	0.061
	Urban	133	80.2005			
Expressive Language	Rural	200	63.2	-1.0105	-0.25	0.803
	Urban	133	64.2105			

3.1.3 Social-Emotional Domain

Social-emotional development is a result of both positive and adverse childhood experiences. The results on children's performance on social-emotional development were generated from serial rapid naming (SRN) and expressive language exercise as measured by ZamCAT assessment. From the ECDI indicators, a child is considered developmentally on track for a social-emotional domain if he can interact well with other children and is not distracted easily. The results from Table 2 show that the percentage of children who are developmentally on track for the socio-emotional development domain was low for both urban and rural children compared to other developmental domains. The percentage of developmentally on track children was 59.4% in urban and 64.7% for rural children, as shown in Table 2. The noted lower performances might be attributed to the children's nutritional status from the studied areas. Metwally et al. (2016) argued that the poor nutritional status of a child is associated with higher risks of children scoring below the average in the socio-emotional development domain. According to URT (2014), the prevalence rate of stunting among children in the Mwanza and Morogoro regions was 34.2% and 36.9%, respectively, which is significantly higher according to WHO standards (WHO, 2018). Furthermore, there was no significant difference in children's social-emotional domain performance between rural and urban ($p = 0.155$), as the mean score was 72.21% and 68.18%, respectively. Considering the two measuring parameters, the serial rapid naming exercise measures children's ability to undertake an assignment under pressure and their ability

to re-correct mistakes without fear as the exercise proceeds. In Table 1, results indicated no significant difference ($p = 0.061$) in the mean score for SRN sub-domain exercise was 72.97% and 80.20% for rural and urban, respectively. Furthermore, the expressive language exercise was used to assess children feeling about the exciting moments and his/her ability to positively engaging with other children. The results indicated no significant difference in expressive language domain mean scores between rural (63.2%) and urban (64.21%). The observed low percentage from urban settings is consistent with the previous studies, which also revealed that developed cities expose children to a wide range of behavioural patterns that risk children's safety and affect socio-emotional development (Brown & Ackerman, 2011; Gong et al., 2016).

3.1.4 Learning

A learning development domain measures a child's ability to complete tasks independently, following the instructions given. This domain was measured across three sub-domains: executive functioning, tactile pattern completion and receptive languages, where children who performed well on at least two of the three assessment areas were considered developmentally on track under the learning domain. The three sub-domains, as mentioned earlier, determine children learning ability as the executive functioning exercises assess a child's working memory, cognitive flexibility and inhibitory control. Tactile pattern completion measures children's ability to problems solving and seriation of items. In contrast, receptive language determines the ability of a child to listen to instructions and implement them appropriately (Matafwali & Serpell, 2014; Fernald et al., 2017). The observed results for the learning domain from Table 2, showed that the percentage of rural children who are developmentally on track was 88.6% which significantly differed from the 66.9% observed in urban children ($p = 0.000$). The findings indicate that rural children have higher cognitive abilities and problem-solving observed through tactile pattern completions exercise well-developed compared to their counterparts, which in turn helps them with self-mastering and understanding. The rural environment comprises enough open spaces that offer room for children to play, facilitating language development as they communicate during playing time and exercise different activities that stimulate cognitive development. According to Gan et al., (2016), the presence of a suitable environment where children can play freely as part of their daily routine has a more significant influence on building children's understanding.

The results for three sub-domains of the learning domain as indicated in Table 1, indicate a significant difference in executive function/attention sub-domain between rural (64.38 %) and urban (40.3%) settings ($p = 0.000$). The difference was in favour of rural settings which explains that the environment in rural settings was more favourable for children's learning than in urban settings. Concurring with this, Freitas et al. (2022), in a rural-urban comparative study conducted in Brazil, reported higher performance by rural children in executive functions compared to urban ones. This was due to limited time on child rearing as the parents engaged in industrial works; hence children spent a long time locked indoors and experienced limited peer interaction, which resulted in low executive functioning, as reported by the study. Furthermore, the results from Table 1, indicate no significant difference for receptive language (0.021) and tactile pattern completion (0.651) domains, respectively. The construct was refined by Fink et al. (2012) on a child development assessment conducted in Zambia. Who reported no significant difference between rural and urban children's performance on tactile pattern completion and receptive language due to early childhood stimulation services received.

Table 2. Comparison of developmental domain attainment between rural and urban children

Development Domains	Residence	\bar{X}	Attained		Not Attained		t-value	P-value
			Count	Percent	Count	Percent		
Literacy-Numeracy	Urban	64.71	120	90.2	13	9.8	3.828	0.000
	Rural	72.43	182	90.5	19	9.5		
Social-Emotional	Urban	72.21	79	59.4	54	40.6	-1.426	0.155
	Rural	68.18	130	64.7	71	35.3		
Physical Development	Urban	91.2	128	96.2	5	3.8	0.447	0.655
	Rural	92.09	199	99	2	1		
Learning	Urban	60.31	93	69.9	40	30.1	4.44	0.000
	Rural	69.11	178	88.6	23	11.4		

3.2 Overall Children's Development Status

3.2.1 Overall Child Development Attainment

Table 3. Overall comparison of child development status

Residence of the child.	Developmentally on Track		Developmentally not on Track	
	Count	Percent (%)	Count	Percent (%)
Urban	106	79.7	27	20.3
Rural	181	90.0	20	10.0

The overall study results were not aligned with the hypothesis testing as the findings revealed a higher percentage of children who are developmentally on track from rural settings 90%, compared to their urban counterparts 79.7% (Table 3). A possible reason can be limited opportunities to explore the environment by urban children due to dense population and limited open spaces, and child abuse incidents, which pose safety threats to the children. For example, in Tanzania, 31.4% of parents from urban settings reported a higher risk of emotional and psychosocial abuse among children than 18.3% of parents from rural counterparts (HakiElimu, 2020). Other researchers (McAlpine et al., 2018) investigating protection risks encountered by children in urban settings of Tanzania revealed that children are exposed to toxic stress due to varied cultural aspects and environmental factors they are exposed. Concurring with this Prado-Gallardo et al. (2021), on assessing child development status across the urban towns of Mexico, reported lower chances of being developmentally on track for children living in urban and municipal settings due to higher population density, crimes rates, limited public spaces and distress.

3.3 Mann-Witney Hypothesis Test Results

The Mann-Witney U test used to compare ordered categorical variables measured among two groups was employed in this study. The test was used to compare the overall child development status among rural and urban children to distinguish the level of performance of children in attaining full development. The result of the study revealed that Child developmental status among rural children (Mean rank = 177.65) differed significantly from those among urban children (Mean rank = 152.16), $U = 11326.000$, $Z = -2.602$, $p = 0.009$, $\eta^2 = 0.142$). From Table 5, the mean rank among rural children (177.65) was higher than that among urban children (152.16), which explains that the child development status among rural children was higher than urban children. Further, the results from Table 4, show that child development status is not the same across the categories of child's residence because the observed $p = 0.009$ is less than the critical value of 0.05 hence rejecting the null hypothesis.

Table 4. The basic output of Mann-Whitney U test results

Hypothesis Test Summary			
Null Hypothesis	Test	Sig.	Decision
The distribution of Child development status is the same across categories of Residence of the child.	Independent-Samples Mann-Whitney U Test	0.009	Reject the null hypothesis.

Note. The significance level is 0.05.

The findings showed a noteworthy difference between the two groups in favour of rural children on overall child development status with a large effect size $\eta^2 = 0.142$. According to Cohens (1988) & Richardson (2011), the classification of effect size $\eta^2 \leq 0.06$ indicates a small effect size, whereas $\eta^2 \geq 0.14$ indicates a large effect size, and the value in between indicates a moderate effect size. This suggests a considerable difference in the delivery and effectiveness of ECS services between rural and urban settings. Furthermore, other research findings (Islam and Khan, 2022) have indicated higher odds for rural children to be developmentally on track than their urban counterparts.

Table 5. Mean ranking results for rural and urban children

status	Ranks		
	Residence of the child	N	Mean Rank
ECD Index	Urban	133	152.16
	Rural	201	177.65
	Total	334	

Table 6. Mann-Whitney U test results

Independent-Samples Mann-Whitney U Test Summary	
Total N	334
Mann-Whitney U	11326
Wilcoxon W	20237
Test Statistic	11326
Standard Error	784.284
Standardised Test Statistic	-2.602
Asymptotic Sig. (2-sided test)	0.009
The significance level is 0.05	

3.4 Parents' Engagement and Child Development Status

The parent's responsiveness primarily influences the child's development status during the early years of life. The study findings indicated that caregivers in urban settings had limited time to engage in stimulation activities with their children compared to their rural counterparts, which led to the higher performance observed from rural children (Table 3). Researchers from elsewhere (Shenderovich et al., 2018) reported higher participation of rural parents in ECS sessions offered by parenting programs than parents from urban settings. Furthermore, access to open spaces for play and engagement of other relatives in stimulation activities facilitated children's development (Froiland et al., 2014; Gan & Liu, 2015). In one of the FGDs, participants pointed out that:

... Most parents were excited that the presence of the ECD centres was a relief; during the day, they could go for other livelihood activities... without being concerned about the children (FGD, Bugogwa Ward, December 2021).

Comment further in regards to child's safety, participants in another FGD expressed their concern as they narrated that:

... time for children to stay at the centres should be increased until late afternoon and during the weekend... this is because it is safer for them to remain at the centres than go to their parents' workplace... (FGD, Kayenze ward, December 2021).

Further investigation with the key informant also revealed that:

"... working environment of the parents is not conducive for the children...in most cases, these places had more child abuse incidences which are more related to physical and emotional attributes" (Key Informant, Ilemela District, December 2021).

The current study reveals that most parents from the urban set-up spend less time in child-rearing due to the nature of their livelihood activities. According to Muhanga (2017), most informal livelihood activities in urban Tanzania are owned by families, with more than 57% of the labour source being the family members. For this reason, parents' livelihood activities limit their time to engage in child stimulation activities with their children, resulting in child developmental delay. The results are consistent with other studies conducted in the urban context in East Africa. It was reported that children whose parents work in informal sectors and they get along with them at their workplaces have low chances of attaining optimal child development due to little attention received from their parents, exposure to an unsafe environment, abusive language and noisy as well as lack of peer interaction (Shukia & Messo, 2018; Hein & Cassirer, 2010).

Further investigation on the factors which influence child developmental attainment found that parents in rural settings engaged in stimulating activities with their children which facilitates the holistic development of their children. This was also complimented by one of the key informants who said:

"...Parents shift temporarily to the farms during the farming and harvesting seasons...during the process, they move with their younger children who still need care and guidance... it is not safe leaving them with other relatives due to higher incidences of child abuse" (Key Informant, Mvomero District, January 2022).

The findings are in line with those reported by Luo et al. (2019) that parents who positively engage in appropriate parenting practices for their children demonstrated higher performance across the multiple domains of child development. From the parents' point of view, early childhood stimulation is essential for optimal childhood development; however, the community-based ECD initiative implemented by TAHEA and SAWA was the only program offering early stimulation services through multiple streaming sources found in the studied areas. Given that providing an appropriate nurturing environment creates favourable conditions for a child's optimal and healthy growth, parents will continue to utilise the knowledge and the infrastructures established since they provide a stimulating environment for their children. Overall findings that rural children have performed better than urban children conflict with some studies. For example, Gan et al. (2016) in a study on children's school readiness in China, reported that children from urban settings outperformed rural children in most developmental domains and overall development status. Similarly, a study by Ndijuye and Rao (2018) on children's early learning between the rural and urban majority in Tanzania revealed that children from urban settings were more developed and performed significantly higher on school readiness assessments compared to rural children. Linking effective development among children and the settings function, a study conducted by Pitchik et al. (2018) on early stimulation and pre-natal nutrition in Tanzania reported significant impacts on child development across all domains of development.

The findings from both rural and urban imply that there is a difference in terms of childcare practices. On the other hand, parents in urban settings are more likely to benefit from the ECD centres than clinic outreaches and home visits, as their children can attend throughout the year. Unlike the rural children who shift from villages to farms during the farming and harvesting season, which affects children's attendance to ECD centres but visited by counsellors and attend monthly clinic outreaches regularly. However, the environment in rural was more favourable for children's development as children could benefit from all stimulation services due to effective parental engagement in the program.

4. Conclusion

Comparing child development status between rural and urban settings, the study concludes that urban and rural settings differ regarding potential factors that influence childhood development. Such factors found from the study include the availability of open spaces, peer interactions, playing materials and parental involvement, as children highly depend on the environment they are raised in as an essential factor determining the extent of child development is attainment. This is supplemented by early stimulation, nutrition, and the provision of other essential services that focus on ensuring a child attains the required development milestones with respect to the childhood development domains. The findings also concluded a significant difference in child development status by residence in favour of rural children who were more developmentally on track compared to children in the urban set-up. This is highly contributed by increased parents' interaction and engagement with their children in stimulating activities in the rural setting. Furthermore, the study concludes that the presence of ECD centres, clinic outreaches and home visiting routines by counsellors in both settings have scaled up access to ECD services which are essential for child development. This affects their school readiness and productivity during adulthood since cognitively, physically and emotionally developed individuals are more productive than those who are not.

From the study findings and conclusions, the following are recommended;

- 1) NGOs and other child development practitioners should also emphasise utilising the space available in urban settings to establish ECD centres. They should also engage parents through awareness campaigns to ensure children attain their development milestones and perform at the highest rate across all domains of childhood development.
- 2) The government, through the responsible ministries for child development, i.e. the ministry of community development, gender elderly and special groups, ensures the effective delivery of ECD services through an improved environment and building the capacity of caregivers on ECD to help children attain their optimal childhood development.
- 3) Other researchers should be inclined to explore rural-urban child development disparities as a further study area. To divulge the factors associated with child development disparities for strengthening the delivery of ECD programs.

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Authors' contributions

IL conceptualized the study, led data collection and statistical analysis, conducted literature review, wrote the first draft of the manuscript, and revised subsequent versions. Dr SSN offered technical supervision throughout the process, also critically reviewed the manuscript for intellectual content. All authors contributed to the article and approved the submitted version.

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No additional data are available.

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