

Original Research

Knowledge, attitudes and practices of educators and administrators on pre-primary education in Dodoma, Tanzania

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Abstract: This study aims to assess the knowledge, attitudes and practices of educators and administrators regarding pre-primary education in Tanzania. Educators' knowledge, attitudes and practices is a paramount for effective instruction in the provision of pre-primary education. Although the importance of educators in promoting pre-primary education in schools is emphasized in the literature, little is known about teachers' knowledge, attitudes and practices regarding this theme in Tanzania. Early quality care and education provided to a child determine the level of the child's physical, affective and cognitive development into the future. This study is based on Bronfenbrenner's Ecological Systems Theory, which conceptualizes child development as influenced by interacting systems at multiple levels. A mixed-methods approach, incorporating both qualitative and quantitative methods, was used in this study, along with a case study design. The study included 45 participants: 20 educators (PPE teachers) and 25 administrators from ward, districts and national levels. Data were collected through descriptive surveys, interviews and classroom observation. All participants supported the promotion of early childhood education in the Dodoma region. The findings indicated that the knowledge, attitudes and practices of educators and administrators in pre-primary education were insufficient. Children's learning practices were insufficient and not age-appropriate compared to those as in other countries, and children's overall performance in socio-emotional, literacy and numeracy domains was low. Measures to improve the qualifications of pre-primary teachers and administrators are urgently needed to ensure they possess necessary knowledge, attitudes, and skills to nurture young children's potential. Based on the study's findings, which highlight that pre-primary education is a vital component of Tanzania's overall education system it is recommended that the government collaborate with educational stakeholders and development partners to strengthen professional development for both teachers and administrators. When teachers are well trained and motivated, they are more committed to their work, and the quality of learning for young children is significantly enhanced.

Keywords: Administrators, Attitudes, PPE teachers, Early childhood education, Pre-primary education, Knowledge

Introduction

Early childhood education (ECE), particularly pre-primary education (PPE), is internationally recognized as a critical foundation for children's lifelong learning, health, and well-being. Evidence from global research consistently shows that high-quality early learning experiences

contribute to improved cognitive, socio-emotional, and physical development, with long-term benefits extending into adulthood (UNESCO, 2020; WHO, 2018; Yoshikawa et al., 2013). Investment in PPE is linked to higher school completion rates, increased productivity, and reduced social inequalities, making it a strategic priority for education systems worldwide (Cheng et al., 2014; Jeong et

Received: Dec.5, 2025; Revised: Feb.9, 2026; Accepted: Mar.17, 2026; Published: Mar.26, 2026

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DOI: <https://doi.org/10.55976/dma.42026149413-27>.

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al., 2012; Mligo, 2023). International frameworks such as the Sustainable Development Goals (SDG 4.2) emphasize ensuring that all girls and boys have access to quality early childhood development, care, and pre-primary education. However, access alone is insufficient; the quality of PPE provision is a decisive factor in determining children's developmental outcomes.

Promoting pre-primary education (PPE) is a strategic priority in many countries worldwide (Ali & Mligo, 2023; UNESCO, 2020; WHO, 2018), as it provides children with a strong foundation in a caring, nurturing, and safe learning environment. Early childhood is a critical period during which appropriate care and education significantly influence children's physical, socio-emotional, and cognitive development, shaping outcomes later in life (Felfe & Lalive, 2012; Jeong et al., 2021; Yoshikawa et al., 2013; Mligo, 2023; 2025; Ndijuye, 2020).

Pre-primary educators play a pivotal role in implementing responsive PPE curricula that support holistic learning and development in the early years (Akinrotimi, Olotu, & Adegoke, 2020; Mligo, 2017a; Mligo, 2017b). Education administrators are equally important, as they raise community awareness, facilitate early investment in children's education, and ensure adherence to education policies and regulations. Administrators serve as key intermediaries between government structures, schools, and communities by providing guidance, monitoring implementation, and encouraging parents and guardians to enrol their children in PPE programmes (Cheng et al., 2014; URT, 2019).

Despite the recognized importance of PPE, evidence indicates that the knowledge, attitudes, and practices (KAP) of educators and administrators in pre-primary education remain inadequate, with negative consequences for children's learning outcomes. Studies in Tanzania and other contexts report low levels of socio-emotional development, literacy, and numeracy among children, largely due to inappropriate teaching practices and limited professional capacity among educators and administrators (Ndijuye, 2020; RTI International, 2014; UNICEF, 2017; UWEZO, 2020; Yoshikawa et al., 2013). In many cases, children's learning activities are not developmentally appropriate because of limited pedagogical knowledge and weak institutional support (Ofori et al., 2022; Yidana & Mumuni, 2023).

Access to quality PPE services is further limited by inadequate community awareness, insufficient government investment, poor infrastructure, and a shortage of qualified teachers. These challenges hinder children's ability to reach their full developmental potential (Annonciata & Nadege, 2020; Mligo, 2023; Ofori et al., 2022). The early childhood period is especially sensitive, as developmental gaps at this stage can have long-lasting effects on learning, health, and well-being throughout the life (UNICEF, 2020; WHO, 2018).

Pre-primary education constitutes the first structured learning environment outside the family and has a significant

impact on children's socialisation and learning trajectories. Through play-based and child-centred approaches, children develop foundational cognitive, social, and motor skills while forming relationships with peers (Ali & Mligo, 2023; Jeong et al., 2021; Muhammed, Mligo, & Seni, 2022). However, the effectiveness of these approaches depends largely on educators' pedagogical competence and the support systems provided by administrators. Research consistently shows that inadequate training, limited supervision, and weak professional support undermine the quality of PPE provision (Akinrotimi et al., 2020; RTI International, 2014).

Although the literature highlights the importance of qualified PPE educators, there is limited empirical evidence regarding educators' and administrators' KAP in Tanzania (Bakuza, 2014; UNICEF, 2017; UWEZO, 2020). This study therefore contends that improving early childhood education outcomes requires changes in the perceptions and practices of teachers, administrators, parents, and communities concerning the value of early investment. Poor beginnings in early childhood are linked to adverse health, educational, and socio-economic outcomes that persist across generations (Felfe & Lalive, 2012; Mligo, 2021; WHO, 2018).

Literature review

Context of pre-primary education in Tanzania

In Tanzania, pre-primary education is formally recognized within the education system and is guided by national policies and curriculum frameworks (URT, 2019; URT, 2023). Despite these policy commitments, the implementation of PPE remains uneven, particularly in rural and resource-constrained areas. Studies have reported shortages of qualified PPE teachers, inadequate infrastructure, limited learning materials, and insufficient supervision, all of which negatively affect children's learning outcomes (Ndijuye, 2020; UWEZO, 2020).

Dodoma Region reflects many of these national challenges. While efforts have been made to expand access to PPE, concerns persist regarding the quality of teaching and learning, as well as the capacity of educators and administrators to implement developmentally appropriate practices. In response, development partners such as Children in Crossfire (CiC) have implemented targeted PPE interventions in selected councils, notably Kongwa and Chamwino, focusing on capacity building, learning environments, and institutional support. These initiatives provide an important opportunity to examine differences in KAP between areas that have received targeted interventions and those that have not.

Key indicators of quality pre-primary education

Quality pre-primary education is characterized by several interrelated indicators. These include the presence of trained and motivated educators, developmentally appropriate and play-based pedagogy, safe and stimulating learning environments, effective child assessment practices, and strong systems of leadership, supervision, and governance (UNICEF, 2017; RTI International, 2014). Educator, child interactions, particularly those that promote dialogue, emotional security, and active participation, are widely recognized as central to effective early learning. Equally important are administrative and institutional conditions, such as policy support, monitoring mechanisms, adequate infrastructure, and resource allocation. Without these enabling conditions, even well-designed curricula and policies may not translate into meaningful learning experiences for young children.

STEM pedagogy

STEM learning has become a critical component of early childhood education because of its potential to enhance young children's knowledge, attitudes, and practices related to learning. Early exposure to STEM concepts supports the development of scientific reasoning, problem-solving, collaboration, creativity, and communication skills during formative stages of development (Dorouka et al., 2020; Taufikin, 2025). When children encounter STEM experiences early, they become familiar with scientific and mathematical ideas, as well as computational thinking, which fosters positive learning attitudes and reduces anxiety towards complex concepts.

The use of educational technologies such as robotics, coding toys, and mobile applications further strengthens these learning processes by providing interactive, multisensory experiences and immediate feedback that sustain motivation and engagement (Taufikin, 2025; Papadakis & Kalogiannakis, 2022). Research indicates that when digital tools such as tablets, block-based coding platforms, and educational applications are integrated within play-based learning environments, they enhance conceptual understanding and active participation (Dorouka et al., 2020). Consequently, STEM-oriented approaches in early childhood education contribute not only to cognitive development but also to the formation of positive attitudes and effective learning practices that underpin children's long-term engagement with education.

Educator and administrator attitudes, knowledge, and practices

Educators' and administrators' knowledge, attitudes, and practices (KAP) play a pivotal role in shaping the quality of PPE. Teachers' beliefs about how young children learn influence their instructional choices, including the use of

play-based learning, storytelling, assessment strategies, and classroom management (Akinrotimi et al., 2020; Cheng et al., 2014). Positive attitudes towards early childhood education are associated with more responsive, child-centred pedagogical practices, while limited knowledge or negative perceptions often result in inappropriate, teacher-centred instruction. Administrators similarly influence PPE quality through planning, supervision, resource allocation, and community engagement. Their attitudes toward early childhood education affect prioritization within education systems, enforcement of standards, and support for professional development. Weak administrative support and supervision have been identified as major constraints to effective PPE implementation in low- and middle-income contexts (RTI International, 2014; UNICEF, 2017).

Although international and national literature underscores the importance of qualified educators and effective administration in PPE, empirical evidence on the knowledge, attitudes, and practices of educators and administrators in Tanzania remains limited, particularly at scale and across multiple administrative levels. Existing studies often focus on access, enrolment, or child outcomes, with less attention to the combined roles of educators and administrators in shaping PPE quality. Furthermore, few studies have systematically compared PPE implementation between intervention and non-intervention contexts within the same region. As a result, there is limited understanding of how targeted capacity-building initiatives influence educator and administrator practices and, by extension, children's learning experiences.

This study addresses these gaps by assessing the knowledge, attitudes, and practices of pre-primary educators and administrators across intervention and non-intervention councils in Dodoma Region. By adopting a mixed-methods approach, the study aims to generate evidence to inform policy, practice, and future investments in quality and equitable pre-primary education in Tanzania.

Research aims

The main focus of this study was to assess the knowledge, attitudes, and practices of educators and administrators of pre-primary education in the Dodoma region. Specifically, the study aimed to:

- Examine educators' and administrators' perceptions of pre-primary education;
- Identify prevailing teaching and administrative practices and possible intervention options; and
- Determine the knowledge and attitudes required of PPE teachers to ensure effective teaching and learning.

Methods and materials

This study employed a mixed-methods approach, utilising both qualitative and quantitative methods within

a multiple case study design (Creswell, 2014; Yin, 2014), with each district council treated as a separate case. Two councils (Kongwa and Chamwino) served as intervention cases, while the remaining councils acted non-intervention comparison cases. Within each case, descriptive survey methods, classroom observations, and semi-structured interviews were used to examine educators' and administrators' knowledge, attitudes, and practices (KAP). The descriptive survey component captured patterns and prevalence of practices across cases, while qualitative methods enabled in-depth contextual understanding, consistent with Yin's (2014) case study approach.

Study location

This study focused on the Dodoma region and included all 7 districts and one town council, as it is the focus for project scaling. Within the 7 districts and one town council, a total of 46 wards in the region had an equal chance of being selected. In each selected ward, one primary school was purposefully selected based on accessibility and the presence of PPE classes. Of the 46 wards, only 20 primary schools had a PPE class, so 20 PPE teachers (educators) were purposively selected. However, during implementation and data analysis, some schools were dropped or replaced due to inaccessibility or missing data. Schools involved in the study were purposefully selected. Kongwa and Chamwino districts were designated as intervention councils because they had previously participated in a structured PPE capacity-building programme implemented by Children in Crossfire between 2020 and 2022. The remaining councils had not received this intervention and were therefore classified as non-intervention councils. This distinction informed sampling and analysis, enabling comparison of KAP outcomes across different implementation contexts.

Study participants

The target participants in this study were educators and administrators. Educators are PPE teachers while administrators included Ward Education Officers (WEO), Quality Assurance Officers (QAO), District Education Officers (DEO) and Regional Education Officer (REO). Schools and participants were selected using purposive sampling to ensure the inclusion of information-rich cases relevant to pre-primary education. At the ward level, one primary school offering pre-primary education (PPE) was selected based on accessibility, enrolment of PPE learners, and the availability of a designated PPE teacher. In total, 46 wards were considered; however, only 20 wards had schools with active PPE classes at the time of data collection. Consequently, 20 schools and 20 PPE teachers were included. The final sample comprised 45 participants, including 20 PPE teachers and 25 administrators. Teachers' demographic data included years of teaching experience, professional qualifications, class size, and gender distribution of learners. Administrators' characteristics

included role designation, level of administration, and years of service. These characteristics were consistently reported across all analyses. During data collection, some schools were dropped or replaced due to physical inaccessibility, incomplete data, or teacher absence. Replacement schools were selected from the same district using the same criteria to maintain comparability. Administrators were purposively recruited based on their official roles and direct involvement in PPE planning, supervision, and implementation at ward, district, regional, and national levels.

Data collection

Several methods were used to establish the knowledge, attitudes and practices of educators and administrators regarding the delivery of quality and equitable pre-primary education. These methods were semi-structured interviews, classroom observation and a descriptive survey. Administrators from the district and national levels were interviewed twice, with the second interview serving as a follow-up to address gaps identified after the analysing the first interview. and each interview lasted 40–55 minutes. Both interviews focused on their knowledge, attitudes and practices in pre-primary education and educational achievements, including the school learning environment and the extent of their pedagogical practices. Educators completed the questionnaires, which took 45–60 minutes, and were then individually observed in the classroom for 50–55 minutes, to address gaps identified in the questionnaires. The observation protocol focused on teacher–child interactions, use of play, classroom organization, and learner engagement, guided by developmentally appropriate practice indicators. Data from classroom observations reflected differences in children's learning performance. All study participants gave their consent for classroom observation, completion of questionnaires and interviews. Children's learning performance was assessed indirectly through classroom observations of literacy, numeracy, socio-emotional engagement, and participation in age-appropriate learning activities. Observational indicators were aligned with internationally recognized early learning domains (UNICEF, 2017; RTI, 2014). To enhance validity, observation findings were triangulated with teacher survey responses and administrator interviews. Reliability was strengthened by using a standardized observation checklist applied consistently across all schools and councils.

Data analysis

Quantitative data from teacher questionnaires were analysed descriptively using frequencies and percentages. Qualitative data from interviews and observations were analysed thematically through a multi-step process: familiarization with transcripts, initial open coding, grouping codes into categories, and development of overarching themes. Integration of qualitative and quantitative data took place during interpretation, where

survey results were compared with observational and interview findings to identify convergence, divergence, and explanatory patterns across intervention and non-intervention councils.

Ethical statement

All ethical requirements were met. Ethical approval was obtained from the University Review Board Committee, and research clearance and permits were secured from the relevant authorities. Written informed consent was obtained from parents and teachers for themselves and for the pupils involved in the study. All participants were informed about the purpose of the research, assured that the data would be used for research purposes only, and that confidentiality and anonymity would be maintained throughout and after the study. Participation was voluntary, and consent to publish was obtained from all participants.

Findings

This study builds on findings from a baseline assessment conducted in 2021 by the international organization Children in Crossfire (CiC), which examined the implementation of pre-primary education (PPE) in two district councils of Dodoma Region, namely Chamwino and Kongwa. Between 2020 and 2022, under its country

strategy (2017–2021), CiC implemented a flagship PPE project in Dodoma Region. With the adoption of a new country strategy (2022–2026), CiC aims to institutionalize quality and equity in early learning and to scale up PPE interventions across Tanzania.

In this context, CiC commissioned a higher learning institution to conduct a similar assessment across all seven districts and one town council in Dodoma Region, including Chamwino and Kongwa, where the earlier study had been conducted. The objective was to assess the implementation of PPE at scale while examining differences in knowledge, attitudes, and practices (KAP) between intervention councils (Kongwa and Chamwino) and non-intervention councils. This approach enabled a comparative analysis of performance and practices across different administrative contexts.

The knowledge, attitudes, and practices of educators and administrators regarding pre-primary education were assessed using multiple data collection methods at school, ward, district, and national levels. Data from educators were collected through descriptive surveys and classroom observations, while administrators provided information through interviews. Quantitative data were analysed descriptively using percentages, whereas qualitative data were analysed thematically, with responses organized into key themes and categories.

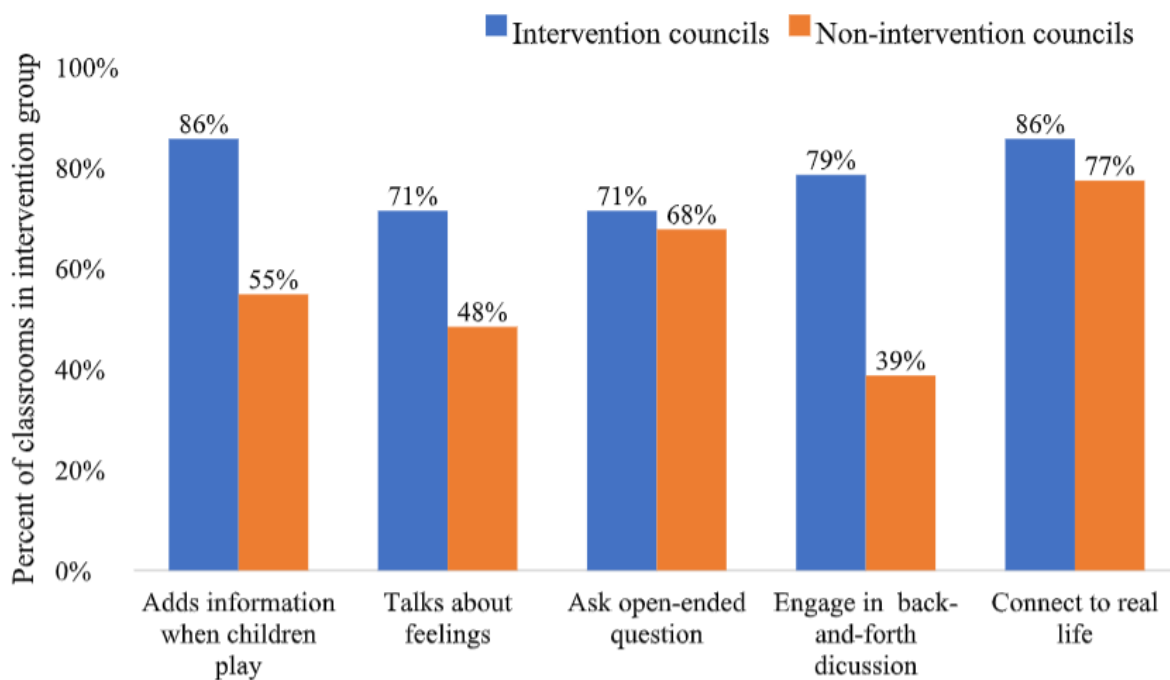


Figure 1. Teachers observed practices to promote dialogue and conversation

Knowledge, attitudes and practices of PPE educators

The assessment of educators' KAP covered both intervention and non-intervention councils and examined the following thematic areas:

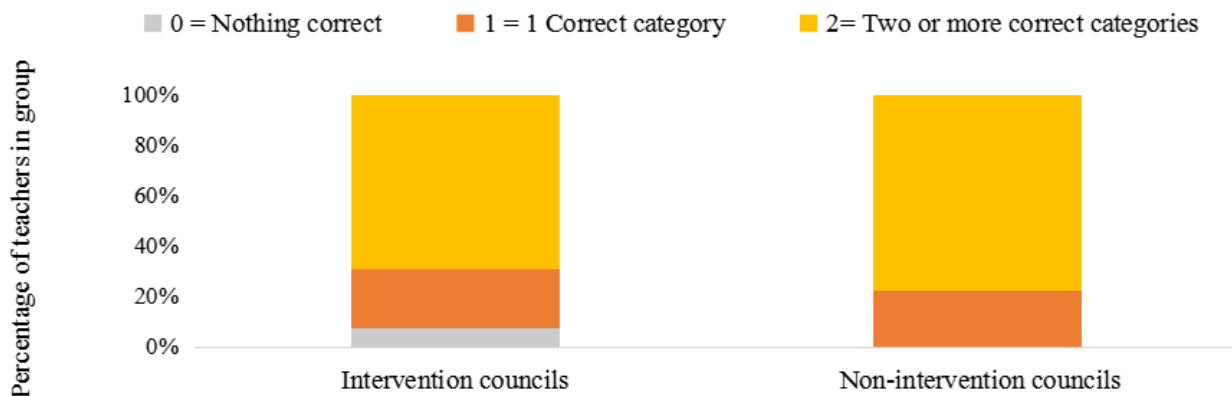
- Teachers' observed practices in promoting dialogue and conversation;
- Teachers' knowledge of the importance of play;
- Teachers' knowledge of child assessment;
- Teachers' knowledge of storytelling and singing;
- Teachers' knowledge of child protection;
- Teachers' observed practices in promoting strong relationships; and
- Teachers' observed classroom leadership activities.

Data collected from PPE teachers included information on their qualifications, class sizes, children's sex distribution, and their overall KAP related to pre-primary education and cross-cutting issues. Survey results indicate that teachers in the intervention councils of Kongwa and Chamwino showed a stronger tendency to implement practices that

promote dialogue and extend conversations with children (Figure 1). These practices are associated with improved language development and reflect a more interactive and child-responsive learning environment.

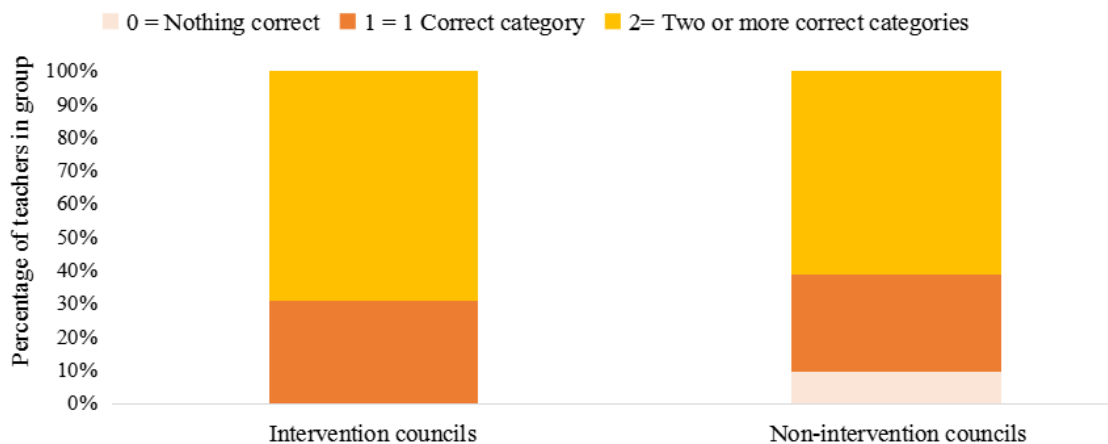
Additionally, a slightly higher proportion of teachers in intervention councils demonstrated knowledge of the importance of pre-primary education compared to those in non-intervention councils. This finding suggests increased awareness of the value of early childhood education among educators who have benefited from targeted interventions.

Figures 1, 2, 3, and 4 show that there were no substantial differences between intervention and non-intervention councils regarding teachers' knowledge of play-based learning, storytelling, and child assessment. However, a modest difference was observed in teachers' awareness of child protection protocols, with educators in intervention councils demonstrating slightly higher levels of knowledge (Figure 5). This finding highlights the need for targeted training to strengthen teachers' understanding of child safeguarding across all settings.



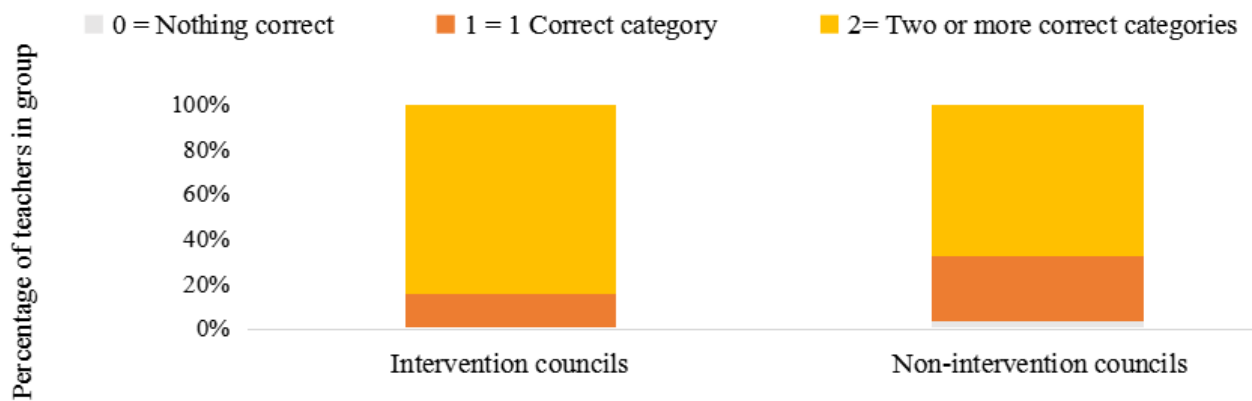
Categories include cognitive development, socio-emotional, gross/motor, learning, enjoyment

Figure 2. Teachers' knowledge about importance of play



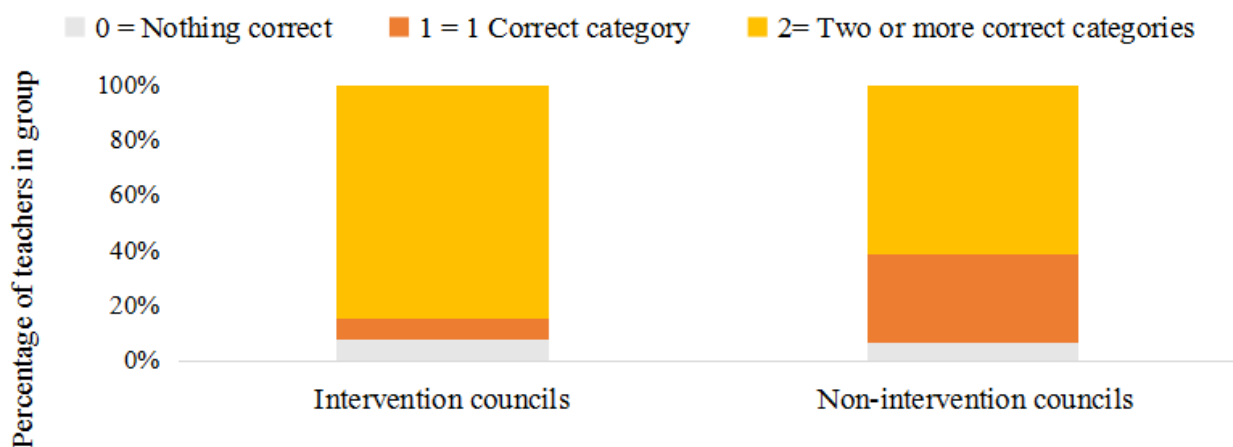
Categories include continuous assessment, individual assessment, involve parents, across domains, play-based

Figure 3. Teachers' knowledge about assessment of children



Categories include language, grasp abstract concepts, apply logic, cause/effect, enjoyment

Figure 4. Teachers' knowledge about importance of storytelling and singing with children



Categories include outdoors, indoors, safe materials, clean environment, water

Figure 5. Teachers' knowledge about child protection

Regarding relationship-building practices, both intervention and non-intervention classrooms showed similar patterns. However, teachers in intervention classrooms were more frequently observed engaging with children at eye level and responding to their individual needs (Figure 6). These practices foster trust, strengthen teacher-child relationships, and contribute positively to children's socio-emotional development.

Figure 7 further indicates that non-intervention classrooms relied more on teacher-led literacy and mathematics activities than intervention classrooms. This suggests that, despite progress in intervention areas, further support is needed to promote child-centred and experiential learning approaches that encourage active participation and critical thinking among pre-primary learners.

Establish knowledge, attitudes and practices (KAP) of administrators

Data on the KAP of administrators were collected through interviews with ward, district, and national education

officials. District-level officials provided information on planning, budgeting, enrolment, monitoring mechanisms, and the availability of qualified PPE teachers. Ward-level officials reported on children's eligibility, vulnerability, enrolment, and attendance in PPE programmes, as well as their own knowledge, attitudes, and practices related to pre-primary education. National-level officials contributed information on policy guidance, monitoring, and evaluation mechanisms.

The assessment of administrators' KAP focused on three main themes:

- Leadership involvement in PPE activities;
- Government engagement in strategic planning and management; and
- Mechanisms for monitoring the quality of teachers and children's learning.

Findings indicate that government oversight of early childhood education is exercised through multiple channels, including direct involvement in PPE activities, provision

of policy guidelines, and monitoring and evaluation at different administrative levels. Figure 8 summarizes

leadership involvement in PPE activities at the ward level.

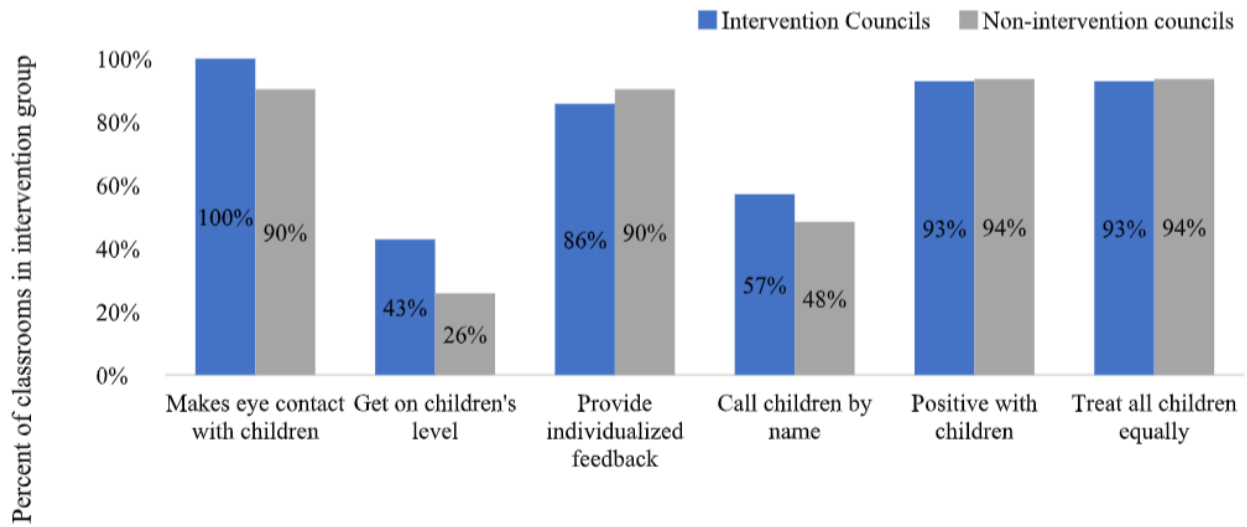


Figure 6. Teacher observed practices to promote strong relationships

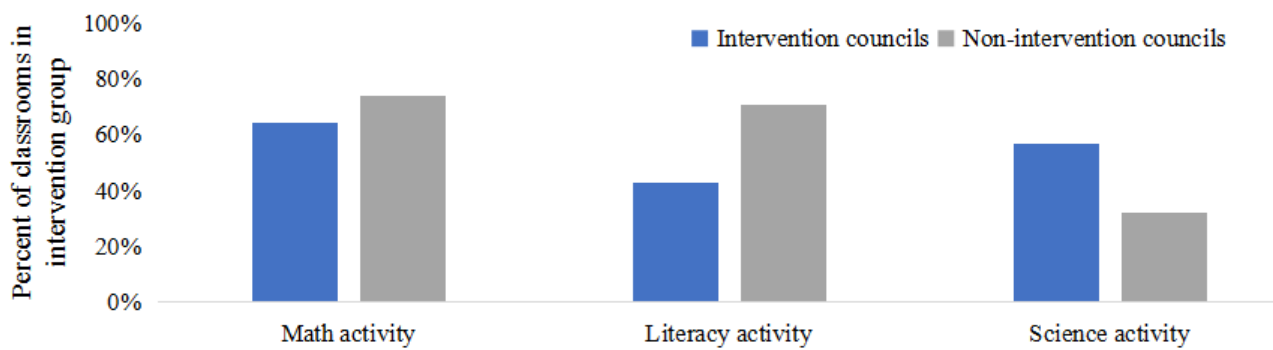


Figure 7. Teachers observed leading activities

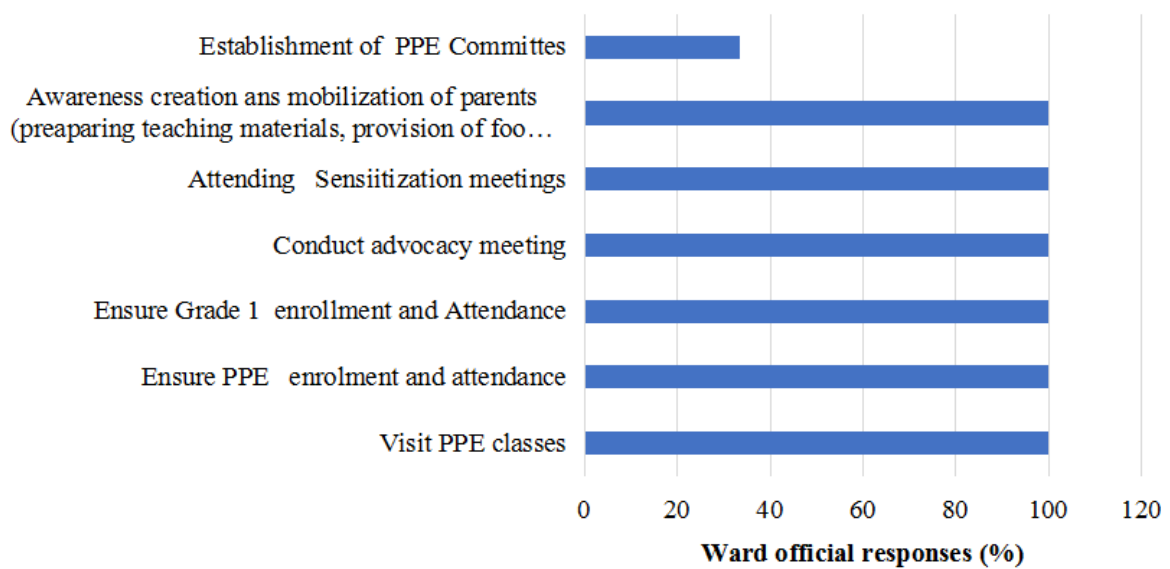


Figure 8. Leadership involvement in PPE Activities

Government engagement in PPE also includes strategic planning processes, such as incorporating PPE into sectoral plans, developing policies and regulations, and establishing operational guidelines and frameworks. In addition, the

government plays a central role in recruiting, developing, and monitoring the quality of PPE teachers, as illustrated in Figures 9 and 10.

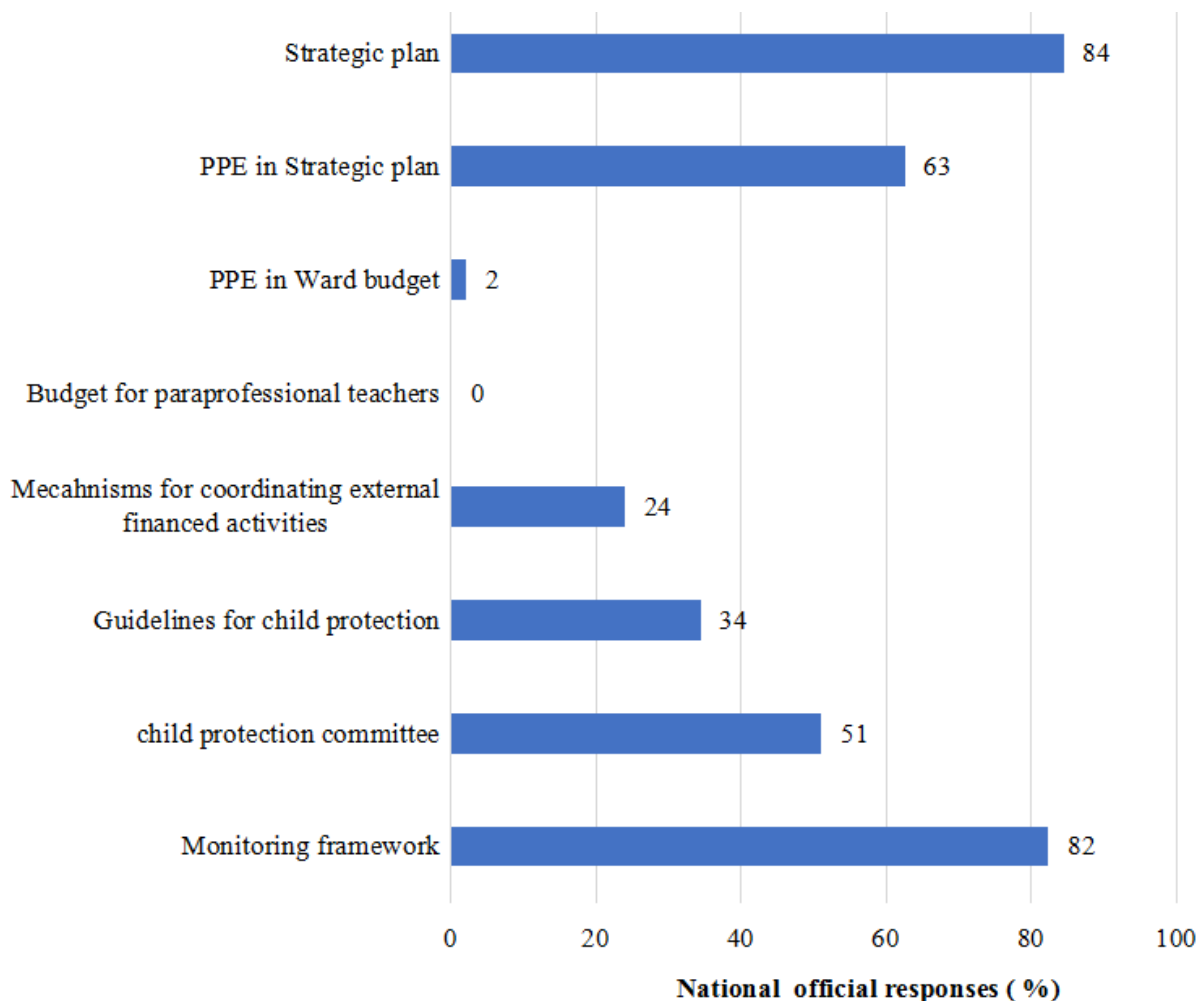


Figure 9. Government involvement in strategic planning and management\

Government oversight findings indicate that the government plays a crucial role in overseeing early years' basic education through direct engagement, provision of guidelines, and monitoring and evaluation, emphasizing the importance of collaborative efforts in pre-primary education.

The government is also involved in strategic planning related to PPE, including the inclusion of PPE in strategic plans, formulation of policies and regulations, and the development guidelines and frameworks. Additionally, the government is responsible for the recruitment, development, and monitoring of the quality of PPE teachers. However, gaps remain in supervision, enforcement of standards, and sustained professional support for educators.

Challenges facing effective implementation of PPE

Despite ongoing government efforts, several challenges continue to hinder the effective implementation of pre-primary education. These challenges include the lack of school meals, long distances to schools, shortages of qualified teachers, inadequate infrastructure (including classrooms and sanitation facilities), and low levels of parental awareness (Figure 11). Challenges were consistently reported across all categories of respondents, including educators, ward officials, and district officials, although their prioritization varied by group. Ward-level officials highlighted infrastructural constraints and limited community awareness as particularly significant barriers to PPE implementation.

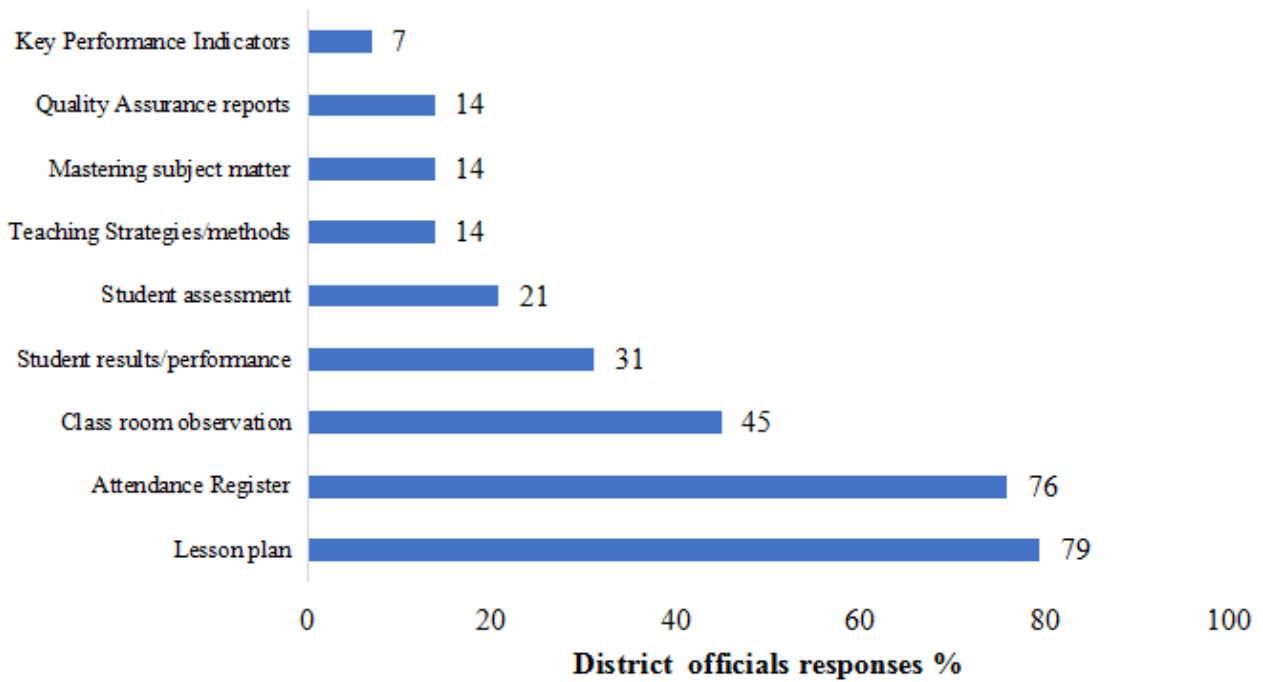


Figure 10. Mechanisms for monitoring quality of teachers and children learning

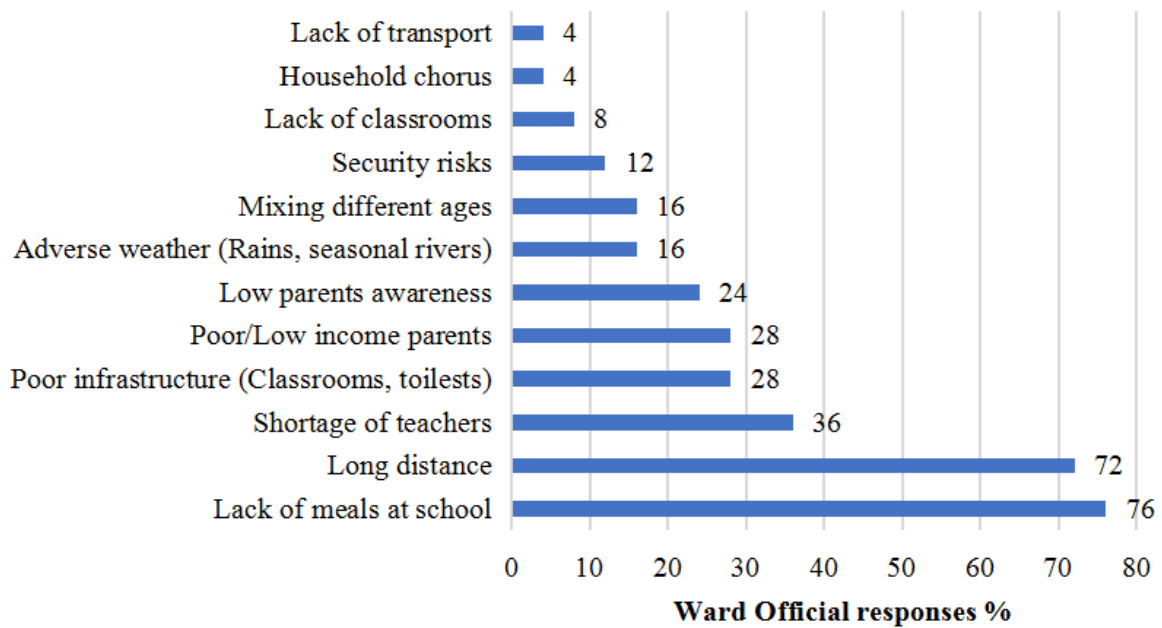


Figure 11. Challenges facing PPE

Addressing challenges facing pre-primary education

Study participants proposed various strategies to address the identified challenges. These included improving school infrastructure, recruiting qualified teachers, and allocating

dedicated budgets for PPE. Additional recommendations included providing school meals, increasing parental awareness campaigns, ensuring the availability of age-appropriate learning materials, and strengthening capacity-building initiatives for in-service teachers.

Essential knowledge and attitudes for PPE teachers

Another theme that emerged from the data concerned the essential knowledge and attitudes required of PPE teachers

to ensure effective teaching and learning. Table 1 presents participants' responses regarding key competencies and attitudes considered necessary for effective delivery of PPE.

Table 1. Essential knowledge and attitudes for PPE teachers

S/N	Items	No of Responses	Percentages (%)
1	Subject-matter expertise	15	75
2	Understanding of interdisciplinary connections	10	50
3	Pedagogical knowledge	12	60
4	Current affairs and real-world applications	8	40
5	Patience and empathy	11	55
6	Intellectual humility	7	35
7	Neutrality and Fairness	10	50
8	Respect for diverse perspectives	8	40
9	Encouragement of critical thinking	10	50
10	Cultural beliefs and practices	9	45

A critical analysis of Table 1 above reveals the essential knowledge and attitudes that teachers of (PPE) should possess to ensure effective teaching and learning. Teachers were asked to respond to a questionnaire regarding the extent to which the listed items in the table can be considered essential knowledge and attitudes. The results indicated that some items were rated higher than others. For instance, teacher competence in subject-matter expertise (75%), pedagogical knowledge (60%), patience and empathy (55%), neutrality and fairness (50%) as well as encouragement of critical thinking (50%) were found to be more highly engaged compared to other items which were ranked lower in relation to essential knowledge and attitudes for PPE teachers.

This implies that PPE teachers, to some extent, possess the knowledge and attitudes necessary to ensure effective teaching and learning. PPE teachers should combine competence in subject matter, and deep interdisciplinary knowledge with strong pedagogical skills and attitudes such as intellectual humility, curiosity, the ability to adapt lessons to diverse learners, fairness, and respect for diverse perspectives (Eleje et al., 2022; Yidana & Yidana, 2023; Ofori, et al., 2022). This blend enables PPE children to understand complex issues, think critically, and engage responsibly with society. For those items which were rated low, this implies that PPE teachers need to make improvements to enhance the teaching and learning of PPE children (Cheng, et al., 2014; UNICEF, 2014).

This finding aligns with the study conducted by Ofori, et al. (2022) in Ghana on teachers' perceptions of pedagogical content knowledge which revealed that deep subject matter knowledge is essential for effective teaching and learning

and cannot be taken for granted. It has a significant impact on teaching and pupils learning, and it is used as a criterion to define professional teaching knowledge. Moreover, research suggests that, when recruiting or evaluating teachers, personal and attitudinal qualities such as a passion for inquiry and deep thinking, communication skills, fairness, enthusiasm, and open-mindedness should be considered not just academic credentials (Eleje et al., 2022; Yidana & Yidana, 2023; Okewole, et al., 2015).

Discussion

The findings of this study are best understood through Bronfenbrenner's Ecological Systems Theory, which conceptualizes child development as influenced by interacting systems at multiple levels: microsystem, mesosystem, ecosystem, and macrosystem (Bronfenbrenner, 1979). Applying this framework highlights how educators' and administrators' knowledge, attitudes, and practices shape pre-primary education outcomes within broader institutional and policy contexts. The microsystem is all about classroom and child-teacher interactions. At this level, the findings revealed that children's learning experiences were directly shaped by teachers' pedagogical knowledge, attitudes, and daily classroom practices. The mesosystem involves school leadership, supervision, and community linkages. At this level, interactions between schools, education offices, and families influenced the quality of PPE implementation. Weak supervision, limited mentoring of teachers, and inconsistent engagement with parents constrained effective teaching and learning. In

intervention councils, stronger coordination between teachers, ward education officers, and quality assurance officers appeared to support better instructional practices.

The ecosystem concerns administrative support and institutional conditions. At the ecosystem level, district and regional administrative structures shaped teachers' working conditions and professional capacity. Administrators' knowledge and attitudes influenced decisions on teacher deployment, training opportunities, monitoring, and resource allocation. The findings revealed gaps in supervision, limited professional development opportunities, and insufficient infrastructure in many non-intervention councils, which indirectly affected classroom practices and children's learning.

The macrosystem in this study reflects the policy environment and sociocultural context. At the macrosystem level, national education policies, curriculum frameworks, and societal perceptions of early childhood education shaped the overall enabling environment for PPE. Although Tanzania has established supportive policies and curricula, implementation gaps persist due to limited enforcement, insufficient investment, and variable prioritization of PPE across councils. Cultural beliefs and limited parental awareness further influenced enrolment, attendance, and support for early learning.

The knowledge, attitudes and practice (KAP) of educators and administrators play a central role. Where knowledge and pedagogical competence are strong and attitudes positive, practices tend to support children's cognitive and socio-emotional development such as critical thinking, early literacy and numeracy (Eleje et al., 2022; Yidana & Yidana, 2023; Ofori, et al., 2022). Where knowledge or attitudes are weak, teaching quality suffers (Yidana & Yidana, 2023). This study found out that teacher practices play a pivotal role in shaping early childhood education outcomes. Pre-primary teachers KAP survey results reveal that in the intervention councils of Kongwa and Chamwino, there is a noticeable trend towards implementing practices aimed at fostering discussion and extending conversation (see Figure 1), thereby enhancing language development among pre-primary teachers. This proactive approach highlights a commitment to creating interactive and engaging learning environments conducive to holistic child development (Mligo, 2021; 2025). Moreover, a slightly higher proportion of teachers in intervention councils demonstrate knowledge about the importance of pre-primary education (PPE), indicating a growing awareness of the significance of early childhood education among educators in these areas.

The study observed that children's learning practices were age-appropriate compared to those in other countries (see *Te Whāriki New Zealand Ministry of Education, 2017*). Educators and teachers lack sufficient knowledge of pre-primary pedagogical skills to help young children learn or understand the holistic needs of pre-primary children (Birbili, 2013; Cheng et al., 2014). The main argument of this study is that changes are needed in from the

perspectives of parents, teachers, administrators and wider community regarding the importance of early investment. Several studies indicate that, a poor start in life can lead to poor health, inadequate nutrition, compromised social and emotional well-being, and inadequate learning, resulting in low adult earnings as well as social tensions (Mligo, 2020; 2023; Ndijuye, 2020; UNICEF, 2014; WHO, 2018). Negative consequences impact not only the present but also future generations (Felfe & Lalive, 2012). Children need to socialise with their peers through various forms of play in pre-primary settings. For example, spontaneous learning through play may better support children's development of motor skills. Learning in a play context could help children socialise, build relationships and prevent anti-social behaviour. Child-centred learning is viewed more effective for these learning outcomes (Bartlett & Mogusu, 2013; Muhammed, Mligo & Seni, 2022).

The findings of this study indicate that many shortcomings in the implementation of the pre-primary education are due to inadequate knowledge and attitudes among the PPE teachers as well as ineffective supervision by educational officers. This result aligns with the study by Akinrotimi, Olotu and Adegoke (2020) who reported that educators' knowledge, attitudes and practices are essential for effective instruction in pre-primary education. The government has attempted to revise the Educational and Training Policy of 2014 version 2023, PPE curriculum of 2023 but the knowledge and attitudes of practitioners remain insufficient (URT, 2019; 2023). These policies and guidelines are intended to ensure that objectives are achieved. However, the lack of effective supervision of policies and guidelines in schools, as revealed in the analysis of data in Figure 9 and Figure 10 on government involvement in strategic planning and management and mechanisms for monitoring the quality of teachers and children's learning, remains a concern. This situation may lead to an increase in the number of pre-primary teachers who have not attended PPE training to gain the necessary knowledge and attitudes for working with young children (Ali & Mligo, 2023; Muhammed, Mligo & Seni, 2022).

Therefore, significant progress has yet to be made in producing specialist PPE teachers for early childhood education, as shown in the analysis of data in Figure 1, 2, 3 and 4 above. Even if institutions are running programmes to produce pre-primary school teachers, the fact remains that the government has established few pre-primary schools where graduates of such programmes can be employed (Akinrotimi, Olotu & Adegoke, 2020; Bukko & Liu, 2021). Studies by Barlet and Mguiso (2013), Ali and Mligo (2023), and Ofori et al. (2022) support the findings of this study that effective practices in PPE classes require collaboration between the government and other educational stakeholders. Unqualified PPE teachers have relatively limited knowledge of and attitudes towards pre-primary education, and the least informed among them are poor teachers from rural areas for whom the kindergarten is very distant (Birbili, 2013; Bukko & Liu, 2021).

Findings also revealed that through targeted initiatives and capacity-building programs, educators in intervention councils have undergone a transformative journey, resulting in tangible improvements across various domains. This finding is similar to those of Yidana & Yidana, (2023) and Ofori et al. (2022), who reported the importance of professional development for teachers in enhancing effective teaching and learning practices. One of the most notable outcomes is the improved implementation of practices aimed at promoting discussion and extending conversation and language development among young learners, as shown in the analysis of data in Figure 1. In terms of relationship-building interactions, educators in intervention classrooms demonstrate a more child-centered approach, engaging with children on their level more frequently see Figure 6. This nurturing environment fosters positive social-emotional development and enhances overall learning outcomes as it was reported by various studies (Bakuza, 2014; Ndijuye, 2020; UNICEF, 2017; UWEZO, 2020). Furthermore, the findings align with studies conducted by Akinrotimi, Olotu and Adegoke (2020) in Nigeria, which highlighted the importance of the learning environment for effective practices in PPE classes.

Additionally, educators in intervention councils, particularly in Kongwa and Chamwino, have exhibited a greater understanding of the importance of PPE. This increased awareness signifies a shift in attitudes towards early childhood education, recognizing it as a pivotal phase in shaping children's lifelong learning journey. While no major disparities exist in knowledge concerning play, storytelling, and assessment between intervention and non-intervention councils, there are slight differences in understanding child protection protocols. This highlights the need for continued training and support to ensure comprehensive adherence to child safeguarding practices.

Conclusion

The findings of this study show that the knowledge, attitudes, and practices (KAP) of educators and administrators play a crucial role in shaping the quality and effectiveness of pre-primary education. Evidence from the Dodoma Region indicates that intervention councils demonstrated notable improvements in PPE practices compared to non-intervention councils. This suggests that targeted capacity-building initiatives, combined with adequate resources and supportive learning environments, can significantly enhance the delivery of pre-primary education, as observed in schools in Kongwa and Chamwino.

The study also found an increased emphasis on teaching practices that promote dialogue and language development in intervention councils. However, slight disparities in awareness and implementation of child protection protocols remain, highlighting the need for comprehensive and consistent training for all pre-primary teachers.

While some progress has been made, gaps in pedagogical knowledge, supervision, and professional support continue to limit the effectiveness of PPE implementation in non-intervention settings.

Consistent with previous studies, this research confirms that effective pre-primary education depends not only on curriculum reforms and policy frameworks but also on the competencies, attitudes, and motivation of educators and administrators. Where pre-primary education is undervalued, insufficiently resourced, or poorly supervised, implementation remains weak and learning outcomes are compromised. Conversely, where educators receive adequate training, support, and supervision, children benefit from improved learning experiences and developmental outcomes.

This study provides empirical evidence that improving PPE quality requires multi-level interventions. Enhancing classroom practices without addressing supervision, administrative capacity, and policy implementation yields limited gains. The observed differences between intervention and non-intervention councils illustrate the value of targeted capacity-building initiatives and coordinated system-level support. Overall, the study underscores the importance of sustained investment in human resources, institutional capacity, and supportive policy environments to ensure quality and equitable access to pre-primary education in Tanzania.

Recommendation

Based on the findings this study recommends that the government provide support to PPE teachers, quality assurers, and education officers by strengthening professional development. The government should enhance professional development opportunities for pre-primary teachers, quality assurance officers, and education administrators. Continuous capacity-building initiatives for educators and administrators are essential to improve the quality and effectiveness of PPE programs and to equip them with the knowledge, attitude for better classroom practices. Also, improving working conditions and motivation, such as increasing remuneration, enhancing working conditions, and establishing clear career progression pathways for PPE teachers is critical for increasing motivation and retention. Creating conducive working environments, including manageable class sizes and adequate teaching resources, should be prioritized. Sufficient resources are needed to deliver high-quality instruction and support holistic child development. By investing in targeted capacity building educators can be empowered to create stimulating learning environments that foster optimal growth and learning outcomes for all children. Furthermore, the government needs to enhance supervision and monitoring. Education authorities should strengthen supervision and monitoring mechanisms to ensure effective implementation of PPE policies, guidelines, and standards. Regular classroom

observation, supportive feedback, and accountability systems are necessary to maintain quality across both intervention and non-intervention councils.

Acknowledgements

Author is grateful to the Children in Crossfire (CiC) for the financial support to conduct this study. Acknowledgements are also conveyed to educators/teachers and administrators of the respective schools for providing required data for this study. Author is also grateful to all Ward, District and National Education Officers in Dodoma region for their valuable support during this study.

Author's contributions

The author developed the study idea, aims, and research framework. Designed the research methods, instruments, and procedures for data collection. Managed data entry tools, coding, and digital platforms used in the analysis, conducted statistical analysis, and thematic analysis. Conducted fieldwork, collected data in pre-primary schools, and supervised research assistants. And finally, the author produced the manuscript.

Conflict of interest

No competing interest in relation to the work to report.

Funding

The author received financial support for the research from Children in Crossfire (CiC).

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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