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Feasibility of Tiyanjane: A Family-School-Community Intervention Promoting Parental Involvement in the Education of Children with Disabilities in Malawi

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Abstract: Evidence-based and theory-informed interventions focusing on parents of children with disabilities in low-income countries are scarce. This study examined the feasibility of Tiyanjane, a 12-week pilot intervention developed to promote parental involvement in the education of children with disabilities in Malawi. A mixed-method approach was employed based on five aspects of Bowen's feasibility framework: acceptability, demand, implementation, practicality, and limited efficacy. Twenty-one participants (13 caregivers, four teachers, and four local leaders) participated in the study. Standardised measures, namely the Parent and Family Adjustment Scale (PAFAS) and the Multidimensional Scale of Perceived Social Support (MSPSS), were employed to evaluate changes in parental practices, adjustments, and perceived social support. Qualitative data were collected through focus groups and in-depth interviews, to assess the feasibility of the intervention. Tiyanjane showed promise in promoting parental involvement in the education of children with disabilities. The intervention demonstrated high fidelity, achieving 100% retention, and 95% attendance. Local resources, commitment from participants and facilitators, and strong family school-community ties enabled the practicality and execution of the intervention. Significant improvements were observed in the PAFAS and MSPSS scores across the assessed post-intervention outcomes. Minor logistical issues including resource and implementation challenges were reported. Tiyanjane was feasible for the facilitators and participants in the Malawian context. Further studies are needed to assess the programme's adaptation, integration, and expansion in other contexts before scaling up.

Keywords: parent involvement; children with disabilities; community engagement; education; feasibility study; family-school-community partnerships; low-income-countries; supportive relationships

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1. Introduction

Article 24 of the United Nations' Convention on the Rights of Persons with Disabilities (UNCRPD) stipulates that state parties must ensure that persons with disabilities have access to inclusive quality education on an equal basis with others. However, persons with disabilities often experience less favourable educational outcomes than their non-disabled peers (Kuper et al. 2018). They are less frequently enrolled in school, less likely to complete primary or secondary education, and have fewer years of schooling (UNESCO 2018). It is important to address the educational challenges faced by children with disabilities by supporting their learning both at home and at school. One effective strategy is encouraging parental involvement in the education and social development of children with disabilities. (Bariroh 2018; Roy and Giraldo-García 2018; Yılmaz Bodur and Aktan 2021). Parents play a crucial role in supporting their children's cognitive and emotional development while also promoting inclusive school practices that recognise and respond to each child's individual needs (M. L. Banks and Zuurmond 2015; Butler et al. 2022). Consistent with other studies (Ljungberg and Schön 2023; Klein-Cox, Tobin, and Denby 2023), we use the terms' parents' and 'caregivers' interchangeably in this study.

Approximately 240 million children worldwide have disabilities, with about 80% living in low- and middle-income countries, where there is a significant need for parenting support (UNICEF 2021; Martins et al. 2024). Research has shown that culturally sensitive and community-focused programmes are essential for effectively supporting children with disabilities (Zuurmond et al. 2019; Smythe et al. 2023; Nalugya et al. 2023). For instance, programmes and interventions that provide education and social support to family caregivers have been shown to influence stress levels and the overall quality of life (Linden et al. 2024). However, in low-resource settings, such as Malawi, few interventions have been developed to support caregivers of children with disabilities. Barriers such as poverty, limited resources, psychological stress, and societal stigma exacerbate the challenges that families encounter when supporting their children's education (Lynch et al. 2024; Lena Morgon Banks, Kuper, and Polack 2017; Musendo, Zuurmond, et al. 2024; Mbazzi et al. 2020). Banks et al. (2022) emphasised the necessity of providing further support to these families by collaborating with schools and communities along with implementing laws, policies, and monitoring mechanisms to ensure that positive and inclusive school experiences for children with disabilities are possible and become the norm (Lena M. Banks et al. 2022a).

Despite the recognised importance of parental involvement, there is a significant gap in culturally sensitive, evidence-based interventions in Malawi that are designed to engage parents of children with disabilities in education. Yet, there is a growing demand for theory-driven studies to enhance feasibility, acceptability, and delivery in practical settings (O'Cathain et al. 2015). The Medical Research Council (MRC) strongly supports the implementation of an initial "feasibility" phase when developing and evaluating complex interventions (Craig et al. 2008). This stage pertains to an early assessment to ascertain whether a programme is viable and beneficial before committing resources to full-scale trials (Campbell et al. 2000; Hallingberg et al. 2018; Skivington et al. 2021). However, in most LMICs, empirical evidence regarding the role of caregivers in supporting the education of children with disabilities is limited, resulting in a limited understanding of their experiences in both educational and social contexts (Lena M. Banks et al. 2022b; Jumbe et al. 2022).

To fill this research gap, it is essential to develop and implement targeted interventions that will improve the academic and social outcomes of children with disabilities through their caregivers in low-resource settings. The research presented in this paper centres on a new intervention that was co-developed with stakeholders in Malawi, called Tiyanjane, which translates to "Let us unite" in Chichewa. This initiative is grounded in Epstein's theory of overlapping spheres of influence (Alflasi, Al-Maadadi, and Coughlin 2018; Epstein 2018), which identifies six key areas of parental involvement: parenting, communication, volunteering, learning at home, decision-making, and community collaboration (Joy Caño et al. 2016). It emphasises the interconnected roles of families, schools, and communities in nurturing a supportive educational environment (Stacer and Perrucci 2013; Kimaro and Machumu 2015).

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This study aimed to assess the feasibility and preliminary effects of Tiyanjane in rural Malawi, concentrating on five components of the Bowen feasibility framework: acceptability, demand, implementation, practicality, and initial efficacy (Bowen et al. 2009). Our central research question was linked to the broader inquiry that characterises most feasibility studies, asking, "...whether a future trial can be conducted, should be conducted, and if so, how?" (Eldridge et al. 2016; Hallingberg et al. 2018). Specifically, we conducted a study to assess the feasibility of Tiyanjane by asking how acceptable the intervention was to those delivering and receiving it, the resource needs, and whether further testing and scale-up are warranted (Smith, van der Groen, and Learmonth 2023).

2. Materials and Methods

2.1. Study Design

We conducted this feasibility study using a prospective mixed-method design, focusing on five components of Bowen's feasibility framework: acceptability, demand, practicality, implementation, and limited efficacy (Bowen et al. 2009). The study did not include three other components—adaptation, integration, and expansion—as they were deemed more closely related to scaling existing programmes and, therefore, not applicable at this stage.

Following the MRC guidelines for developing complex interventions (Skivington et al. 2021), we took several steps to guide the pilot and feasibility assessment of Tiyanjane. First, we systematically reviewed the literature on interventions involving parents of children with disabilities (Musendo et al. 2023). The second step involved a qualitative, formative study that explored the factors (barriers and facilitators) influencing parental involvement in Malawi (Musendo, Zuurmond, et al. 2024). Third, we co-designed a pilot intervention using participatory workshops and consensus-building meetings with parents, teachers, community members, and other stakeholders in Northern Malawi (Musendo, Chirwa, et al. 2024). The pilot intervention was implemented between March and July 2024.

2.2. Setting

This research was conducted in the rural Kalambwe area of Nkhata Bay District, Malawi. A rural setting was preferred because most of Malawi's population (approximately 84%) resides in rural areas (National Statistics Office 2019). The pilot activities revolved around a local primary school in the Kalambwe community, which had a student population of 803 (51% female) at the time of the study in 2023-4. The school had 72 children with disabilities enrolled in mainstream classes. It was also involved in our formative study, in which we identified the main factors influencing parental involvement in their children's education (Musendo, Zuurmond, et al. 2024). Kalambwe School was selected to participate in the pilot study due to its demonstrable active involvement, interest, and commitment throughout the intervention development phase.

2.3. The Intervention

Tiyanjane, (Let Us Unite) is a community-based programme developed to promote parental involvement in the education of children with disabilities in Malawi. The details of Tiyanjane's intervention co-development process and content have been published elsewhere (Musendo, Chirwa, et al. 2024). The intervention was conducted using in-person activities. To implement the activities, four local facilitators—a teacher, a parent, a person with a disability, and a community member—received five days of training and support to work closely with 20–25 male and female participants (parents, teachers, and local leaders). A summary of the intervention components was described using the Template for Intervention Description and Replication (TIDieR) checklist (Hoffmann et al. 2016), which is presented in Table S2. Alongside the two weeks allocated for training, the facilitators and participants conducted two-hour practical sessions on a mutually agreed day for ten weeks. An outline of these weekly sessions is presented in Table S3. A participant was considered to have 'completed' the intervention if they had participated in eight or more sessions, which was deemed

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appropriate for the participant's circumstances through discussion with the facilitators and the research teams.

2.4. Participants and Recruitment

We used active recruitment strategies, such as seeking referrals from school adminstrators/teachers and disability advocacy groups and individuals who participated in earlier stages of this research, to identify potential participants for the study. Participants were eligible if they met the following predefined criteria: (i) parents or primary caregivers of school-aged children with disabilities (6-17 years) enrolled at the participating school, (ii) schoolteachers of learners with disabilities, or (iii) local community leaders involved in school management committees. Potential participants were expected to commit to the 12-week intervention period. Of the 33 individuals identified, 29 were screened by the research team during home visits and individual discussions at the school. Caregivers were asked the Washington Group Questions to assess the type and severity of their children's functional difficulties(Washington Group 2020). A total of 21 participants met the inclusion criteria, provided informed consent, and were enrolled in the study.

The sociodemographic characteristics of the 21 recruited Tiyanjane participants are presented in Table 1. The average age varied by group, with parents and caregivers averaging 42.9 years (range: 20–73), teachers at 38.3 years (range: 30–49), and local leaders at 50.5 years (range: 30–62). Most of the participants were female (81%). Education levels were lower among parents, with 54% not completing primary school, whereas all teachers had post-secondary education. Employment varied, with 62% of the parents being self-employed. Among children with disabilities, 38% had physical impairments, whereas 31% had hearing or visual impairments. None of the caregivers had a child with intellectual disabilities, a limitation we noted in our co-design paper, further underscoring the low enrolment of children with intellectual disabilities in the Malawian school system. (Musendo, Chirwa, et al. 2024).

Table 1. Description of the participants' characteristics.

Characteristics	Parents/Caregivers (n=13)	Teachers (n=4)	Local leaders (n=4)
Gender	11 Female 2 Male	4 Female 0 Male	3 Female 1 Male
Age Range (years)	Range: 20-73 Mean: 42.9 (SD: 13.4)	Range: 30-49 Mean: 38.3 (SD: 8.3)	Range: 30-62 Mean: 50.5 (SD: 12.5)
Marital Status	9 Married/Living together (69%) 3 Widowed (23%) 1 Single (8%)	3 Married/Living together (75%) 1 Divorced (25%)	2 Married/Living together (50%) 2 Widowed (50%)
Education Level	7 Primary Incomplete (54%) 3 Primary Complete (23%) 3 Secondary Incomplete (23%)	4 More than Secondary (100%)	2 Secondary Incomplete (50%) 2 Secondary Complete (50%)
Occupation	8 Self-employed (62%) 4 Unemployed (31%) 1 Student (8%)	4 Employed (100%)	2 Self-employed (50%) 1 Agriculture (25%) 1 Unemployed (25%)
Household Size	Range: 3-10 Mean: 6.9 (SD: 2.1)	N/A	N/A
Children's age (years)	Range: 6-15 Mean: 11.5 (SD: 2.4)	N/A	N/A
Child's Disability	5 Physical (38%) 4 Hearing (31%) 4 Visual (31%)	N/A	N/A

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2.5. Data Collection

Ethical approval for this study was obtained from the Ethics Committees of LSHTM, UK, and the University of Livingstonia, Malawi. The participants, all aged 18 and above, were informed of the study purpose, the voluntary nature of their participation, and their right to withdraw from the study at any stage of the interview or discussion. Each participant provided written or thumb-printed informed consent to participate in this study. All the interviews were conducted in both safe and private classrooms at a local school. To limit potential biases, power imbalances and perceived coercion data were collected by independent research assistants, both male and female, who were not directly affiliated with schools, communities, or local organisations.

Data were collected by the first author (D.M.) and by three local research assistants. Two research assistants were female (B.C. and E.S.), and one was male (C.K.). Following the training offered by the lead author, B.C. and C.K. administered pre- and post-intervention quantitative surveys and monitored intervention fidelity through weekly fidelity checks, including attendance registers and after-action review meetings (Crowe et al. 2017). D.M., B.C., and E.S. participated in the post-intervention follow-up qualitative study. The data collection methods are described below.

2.5.1. Quantitative Measures

Eligible participants provided their basic sociodemographic data at the time of their consent. They also participated in surveys at baseline and within one month post-intervention. We used two validated tools to assess limited efficacy. Parenting practices and family adjustment, including family relationships and teamwork, were assessed using the PAFAS-Parent and Family Adjustment Scale (Mejia et al. 2014). The 30-item PAFAS prompts participants to evaluate their parental consistency, coerciveness, positive encouragement, family relationships, and teamwork. Each of the 30 items was rated from 0 to 3, with some items being reverse-scored (i.e. 0=3, 1=2, 2=1, 3=0) before calculating the total score for each subscale. The PAFAS has demonstrated validity and reliability among parents of typically developing children and those with developmental/intellectual disabilities in Australia (Kelly et al. 2022). The PAFAS has also been validated in four non-English languages: Spanish, Chinese, Indonesian, and Portuguese (Martins et al. 2024), and in another study using data from 15 different countries (Pandya 2018). Social support was assessed using a global measure of perceived support, known as the MSPSS - Multidimensional Scale of Perceived Social Support tool (Zimet et al. 2010). This 12-item questionnaire assessed perceptions of support from family, friends, and significant others on a scale of 1 (very low) to 7 (very high). The MSPSS has shown acceptable validity and reliability among Chinese (Wang et al. 2017)and Korean (Jeong, Jeong, and Bang 2013) parents of children with cerebral palsy. However, neither the PAFAS nor the MSPSS has ever been employed among parents of children with disabilities in Malawi. We translated the PAFAS and MSPSS tools into Chichewa and then back into English to ensure accuracy. To ensure that the questions made sense in the Malawian context, we pretested them with caregivers and adjusted them based on their feedback.

2.5.2. Observational Monitoring

Practical session activities were progressively monitored by combining the observation and discussion techniques. A fidelity checklist, which included attendance logs, was used along with weekly after-action reviews by the research team and facilitators to share observations of the activities. The outcomes of these reviews were recorded in weekly diaries and communicated to the first author, who participated in a series of virtual feedback sessions

2.5.3. Qualitative Measures

Within a month of completing the pilot intervention, follow-up interviews and focus groups were conducted with participants (parents, teachers, and local leaders) and facilitators to explore the programme's acceptability, demand, implementation, practicality, and initial efficacy testing (Bowen

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et al. 2009). The details of the definitions of these concepts are available in Supplementary Table S1. B.C. and E.S. facilitated three focus groups with caregivers and local leaders in Chichewa. D.M. held one focus group with teachers and conducted in-depth interviews with four facilitators in English. These discussions were held to gather participants' perspectives and experiences of the intervention, aligning them with good practice recommendations in implementation research (Hamilton and Finley 2019). The main focus group and interview questions asked for participants' and facilitators' experiences with the programme, including what they found helpful or challenging. They also explored how parents applied what they had learned, any difficulties faced at home and in the community, and ideas for improvement. The discussions also covered the perceived changes in family life, children's education, and community support. Given the important role of social connections, participants were also asked to share how community support networks facilitated learning and improved parenting practices. Each focus group lasted 60–90 minutes, and in-depth interviews lasted 30-45 minutes.

2.6. Data Analysis and Management

The interviews and focus groups were recorded using encrypted digital audio recorders. They were then transcribed and translated from Chichewa into English, where applicable. Personal data were anonymised using unique IDs and stored securely in a password-protected system that was accessible only to the research team. Data were organised, uploaded, and coded using ATLAS.ti software version 24.0.0, following essential transcript and quality checks.

We analysed the qualitative data using a thematic approach based on the primary feasibility themes of demand, acceptability, implementation, practicality, and limited efficacy (Bowen et al. 2009). The thematic analysis process was guided by Braun and Clarke's six-step thematic framework(Braun and Clarke 2006). First, we read the transcripts to familiarise ourselves with the data. Subsequently, D.M. and C.M. generated initial codes using deductive and inductive approaches. Subsequently, themes were identified based on these codes. The themes were reviewed and refined by D.M., C.M., and B.C. to ensure relevance and coherence. Finally, the findings are interpreted to provide a comprehensive and nuanced interpretation of the data. We also conducted a thematic analysis to track data from fidelity and after-action reviews. This enabled us to assess how consistently the intervention was implemented, examining whether activities were altered, cancelled, or conducted as intended (Pérez et al. 2020).

Pre- and post-survey data were analysed using paired sample t-tests in SPSS v25 by D.M. and M.C.. We performed the Shapiro-Wilk test (Rochon, Gondan, and Kieser 2012) to determine the normality of both the pre-and post-intervention data. The mean differences were calculated to assess the magnitude of the change(Moreau and Wiebels 2021)

2.6. Researcher Reflexivity, Positionality and Trustworthiness

Reflexivity and consideration of positionality are crucial for maintaining the integrity of the study. The research team engaged in self-reflection to understand how our background could influence various aspects of the research process and outcomes. The first author, leveraging his Zimbabwean and community development experience, had relevant knowledge of the participatory methods essential to the study's context. Recognising the impact of being an outsider, the team held regular review meetings to reflect on, consider, and address potential biases. To enhance the trustworthiness of the study, we collaborated with a multi-stakeholder Project Support Group in Malawi alongside a five-member academic advisory panel from the LSHTM. We also received an invaluable local mentorship from a senior researcher at a university in Malawi.

3. Results

Overall, the participants responded positively to the intervention, indicating its feasibility and appropriateness for addressing the factors influencing parental involvement in children's education,

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particularly for those with disabilities. Despite some initial resistance and distrust stemming from past negative experiences with other agencies, the satisfaction levels among caregivers and local leaders were high. Participants affirmed their intention to continue the programme's activities and implement learned strategies, although they acknowledged challenges related to sustainability and resources. An interpretation of the primary focus areas presented in this section is provided in the Supplementary Table S1.

3.1. Acceptability

3.1.1. Perceived Appropriateness

Tiyanjane was considered to be appropriate for local contextual needs and priorities. Study participants felt that the programme addressed misconceptions surrounding parental roles in educating their children with disabilities. Teachers appreciated the programme's relevance in its focus on engaging parents in home and school settings. A teacher noted, "The part of the programme that focused on parental involvement at home and school was beneficial. Before this programme, caregivers struggled to engage in their children's education" (T4, Female). A local leader welcomed the decision to participate in the programme, emphasising that the community now recognises the importance of uniting and supporting children with disabilities (CL1, Male). The respondents emphasised unity and collaboration among participants and facilitators in addressing their real challenges. A facilitator remarked, "We identified the problems faced by the parents and discussed how to overcome them, determining who would be responsible for resolving the issues"(F2, Male).

3.1.2. Initial Resistance

The minimum expected target number of participants (13 caregivers and 12 families) was Tiyanjane. However, some community members hesitated to join the programme. One concern raised was distrust of the intentions of external agencies in the community regarding their programmes. Some male participants expressed negative experiences with previous initiatives that exploited their children's disabilities or misused personal information for their benefit. One male parent said," Some men are still reluctant [to participate in Tiyanjane]. In the past, organisations took [personal] records and used them elsewhere, reporting higher numbers than the real needs of their donors. This has caused some people to hesitate to trust the new programmes, thinking their names will be misused" (P6, Male). Some caregivers were also concerned that the programme would not fulfil its promises. For example, a parent stated,"At first, when they [the local facilitators] told us they were registering children with disabilities, we were doubtful. We thought it might end up like many other programmes that never follow their promises" (P7, Female).

3.1.3. Satisfaction

Participants and facilitators were generally satisfied with their experiences as part of the pilot intervention. Caregivers, particularly mothers, expressed satisfaction that their children had received additional support from their participation in the programme. One female parent shared, "When Tiyanjane members [facilitators] visited [during recruitment], I explained how my child has difficulty hearing, and we used to shout for him to hear properly. Now, when we call him, he hears better. Even at school, he used to sit behind the class, making it harder to hear, but the teacher now lets him sit in front where he can hear better" (P3, Female). Local leaders also expressed satisfaction: "We also love Tiyanjane. It is in our hearts now" (CL2, Female 2). Participants liked the lessons learned from their activities, such as structured meetings, home visits, and community sensitisation. A community leader stated, "We are very grateful for this programme. It has opened our eyes to things we did not know before" (CL3, Female). There were no reports of dissatisfaction expressed by the participants.

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3.1.3. Intent to Continue the Use

Almost all the participants were willing to continue with Tiyanjane's activities after the pilot phase ended. Several parents emphasised not wanting the group to end its activities and their commitment to "continue the work" (F1, Female) or "keep the momentum" (F2, Male) of the programme. Recognising the programme's value, the participants committed to continue buying school materials for their children by contributing small amounts of money to a village bank. One parent mentioned that their contribution helped them buy school material (P8, Female). Local leaders were also willing to extend the programme's reach to villages beyond Kalambwe. However, teachers and local leaders acknowledged the potential challenges of sustaining programme activities outside the formal structure or resources provided by Tiyanjane. One teacher stated, "It will take extra effort from us to keep caregivers engaged and to remind them of the importance of their roles" (T2, Female). A local leader also highlighted the need for funding to continue certain activities, such as providing school materials and support for children.

3.2. Demand

3.2.1. Actual Use

The participants were eager and felt able to implement and practice the methods and lessons learned from the programme. A teacher mentioned practical examples of the skills learnt: "Another strategy we learned was involving parents more actively in their child's education. For example, we now send simple homework assignments that parents can help their children with, strengthening the relationship between home and school" (T1, Female). Compared to the past, a parent reported, "teachers who were not previously giving homework are now giving homework. Children also improve because we help them write homework" (F1, Female). Other teachers reported being able to adapt their teaching methods to accommodate disabled learners and create more inclusive lesson plans. Nonetheless, teachers, caregivers, and facilitators acknowledged the potential difficulties in maintaining the use and momentum after structured assistance from Tiyanjane ended.

3.2.2. Expressed Demand

Participants saw the programme as necessary because it met important community needs. Many families in this area also showed an interest in joining. One community leader noted that outreach efforts increased local interest in the project. A parent participant explained, "Other people are contacting us, expressing their desire to join" (P8, Female). All participants remained active throughout the 12-week implementation period, and none of them dropped out of the study. The participants also agreed that there was a high demand for the programme. However, others could not enrol because they specifically targeted a limited number of participants for the pilot initiative, namely caregivers from 12 families. One parent noted that among the 60 children with disabilities at the participating school, Tiyanjane selected only a few (P13, Female). However, there was a need to "ensure that other children are also supported and do not feel excluded' (P13, Female).

3.2.3. Perceived Benefits

Nearly all the participants felt that Tiyanjane encouraged better connections and mutual understanding among the involved people. Teachers provided extra support and collaborated with the families to address the challenges faced by their children. Local leaders also observed benefits, noting "a good relationship between parents, teachers, and children. This has been a positive development, helping us to move forward and address the challenges children face" (CL4, Male). Teachers also reported developing new skills, such as "how to adjust teaching methods to accommodate learners with disabilities. I have learned how to create more inclusive lesson plans and ensure that all learners, regardless of their abilities, can participate and succeed in the classroom" (TF1, Female). Several parents reported benefits for children who became more actively involved in learning at home and school, such as increased confidence and engaging in classes with peers. One parent shared, "I have seen a change in my child, the

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way she was before, and how she is now, that there is a clear difference. She used to be shy, even with teachers, but now she can communicate well with them" (P8, Female).

3.3. Implementation

3.3.1. Degree of Execution

All planned activities (see Supplementary Table S2) were carried out as scheduled, with only minor adjustments made on implementation days. Although most activities occurred on Wednesday afternoons, minor adjustments were implemented to align them with stakeholder availability. This was especially important for advocacy meetings and community awareness events to ensure that intervention plans remained on track. Planned meetings with parliamentary representatives did not occur, because they were busy and unavailable until the end of the pilot phase. Delays in starting sessions owing to late arrivals were also experienced, although they were promptly addressed through improved coordination. One facilitator explained the negative implications of these delays, stating, ”We needed to ensure that we started on time. In some sessions, we had delays because some parents arrived late, which affected the session's timing” (F3, Female). A community leader also highlighted the need for better planning in the provision of materials, suggesting, "We should also make sure the activity guidelines are available in advance so that everything is well-prepared" (CL2, Male). Overall, the participants felt that the quality of the programme's execution was high because of the strong collaboration between the participants and facilitators.

3.3.2. Success or Failure of Execution

Tiyanjane’s recruitment and retention rates indicated successful pilot implementation with minimal participant attrition (See Figure S1). Of the 29 persons screened for eligibility, 21 (four teachers, four leaders and 13 caregivers) met the eligibility criteria and consented to participate. Findings from our monitoring tools (fidelity checklists and after-action reviews) showed consistent delivery of weekly practical sessions, such as home visits, community awareness events, parent-teacher conferences, class observations, and action planning. The programme recorded 100% participant retention during the duration of the study. Overall, there was a 95% participation rate during the 12-week programme (teachers 98%, facilitators 96%, caregivers 95%, and local leaders 90%). The lowest attendance rate among participants was 86%. Respondents felt the programme’s success was rooted in the participants' open communication and understanding. A facilitator observed, "The key success of the programme was the increased communication between parents and teachers. This communication allowed parents to better understand their children's needs" (F4, Male).

3.4. Practicality

3.4.1. Factors Affecting Implementation

Parents, teachers, and community leaders highlighted the key factors affecting the pilot's success of the pilot. Strong commitment and acceptance from parents play crucial roles. A facilitator noted that caregivers were "open about their child's needs and willing to seek help" (F4, Male), reinforcing the importance of a united approach. The community also positively received and supported the programme, enabling smoother implementation. One leader observed, "We found it easy because the committee members, teachers, and parents have come together like a union" (CL3, Female). Teachers aim to facilitate better understanding and support for families. One parent shared, "We worked well together without any problems. The organisation was good, and the instructions we received were clear" (P9, Female). At the same time, Tiyanjane facilitators were dedicated and reported to play an essential role in ensuring that the programme ran smoothly. However, some challenges were noted, including resource shortages, such as educational materials required by parents to support their children and tools or materials needed by participants for school volunteering activities, such as cleaning or minor classroom repairs. The scheduling issues were also addressed. For example, one

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teacher highlighted these difficulties, noting, "We needed to ensure that we started on time. We had some delays because the parents arrived late, which affected the session timing." (T4, Female).

3.4.2. Amount or Types of Resources Needed to Implement

The successful implementation of Tiyanjane was linked to the provision of resources, including homework books, training handouts, and promotional materials (branded bags and t-shirts), to enhance visibility and community engagement. Participants, including caregivers, also contributed resources such as tools, materials, and wheelbarrows from their homes to help with school cleaning, highlighting group members' high levels of engagement. A community leader mentioned, "There were times when we needed to write things down, but we had to find materials ourselves" (CL3, Female). Participants and facilitators highlighted the need for more resources, including books, teaching aids, and training materials, to help parents grasp the information presented in the programme more effectively. One facilitator mentioned, "Some caregivers needed extra support to understand the lessons and having more resources would have helped" (F1, Female). Despite these shortcomings, participants showed a willingness to contribute and ensure that the programme completed its activities.

3.5. Limited Efficacy

3.5.1. Effects on Parents' Behaviours

Table 2 presents the pre-and post-intervention scores for the PAFAS measures reported at baseline and one month after pilot completion. Although most pre-intervention variables did not follow a normal distribution, most post-intervention variables were normally distributed. In the PAFAS, a lower score indicated positive parenting behaviours and stronger family relationships. In contrast, higher scores may suggest issues such as inconsistent discipline, a lack of emotional support, and ineffective communication, which can negatively affect family dynamics and child development (Martins et al. 2024; Mejia et al. 2014). While changes were markedly positive across all parenting practice outcomes, the most notable improvement was in parental consistency, with mean scores improving from 8.62 (SD=1.76) to 1.58 (SD=0.49) post-intervention. In terms of family adjustment, the largest improvement was observed for family relationships, with the mean score improving from 3.85 (SD=2.85) to 0.81 (SD=0.88)

Table 2. Results from pre-post-intervention surveys with caregivers based on PAFAS measures.

Outcome	Pre-intervention Mean(SD)	Post-intervention Mean(SD)	Mean difference (95% CI)	P-values[1]
PAFAS Parenting Practices				
Parental consistency	8.62(1.76)	1.58(0.49)	7.03(5.82 to 8.25)	<0.001
Coercive parenting	6.15(3.05)	1.28(0.42)	4.88(2.97 to 6.78)	<0.001
Positive encouragement	1.46(1.05)	0.03(0.09)	1.44(0.84 to 2.03)	<0.001
Parent-child relationship	3.85(1.28)	0.03(0.08)	3.82(3.03 to 4.6)	<0.001
PAFAS Family Adjustment				
Parent adjustment	3.23(1.48)	0.58(0.38)	2.65(1.91 to 3.38)	< 0.001
Family relationships	3.85(2.85)	0.81(0.88)	3.04(1.53 to 4.55)	< 0.001
Parental teamwork	2.11(1.54)	0.62(0.49)	1.75(0.6 to 2.9)	0.009

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3.5.2. Effects on Perceived Social Support

The pre-and post-intervention MSPSS scores are presented in Table 3. Higher MPSS scores indicate greater support from family, friends, and significant others (Zimet et al. 2010). Improvements were observed across all three outcomes, with the largest change observed within the friends subscale, indicating increased social connection (3.48 (SD 1.42) pre-intervention to 5.35 (SD 0.76) post-intervention).

Table 3. Results from pre-post-intervention surveys with caregivers based on MSPSS measures.

Outcome	Pre-intervention Mean(SD)	Post-intervention Mean(SD)	Mean difference (95% CI)	P-values[2]
Perceived Social Support (MSPSS				
Significant Other subscale	4.02(1.46)	5.38(0.49)	1.37(0.51 to 2.22)	0.005
Family subscale	3.21(1.31)	4.21(1.3)	1(0.27 to 1.73)	0.011#
Friends subscale	3.48(1.42)	5.35(0.76)	1.87(1.04 to 2.69)	< 0.001**

4. Discussion

Our findings suggest that the Tiyanjane pilot intervention was feasible, particularly regarding the programme's acceptability, practicality, implementation, demand, and limited efficacy. The programme achieved full retention (100%) and adherence (95%). Participants expressed that the intervention was successfully implemented, with activities delivered as planned, despite the resource constraints. According to the pre-and post-survey data, there were significant improvements in the PAFAS and MSPSS scores across all assessed outcomes after the intervention, suggesting a positive impact on parental behaviour and support. These findings indicate the programme's potential through the collaboration of families, schools, and communities. The reported challenges included practical issues such as delays in starting times and insufficient resources, initial reluctance among certain community members to enrol, and concerns about what will happen when structured support for the programme is no longer available.

Feasibility research can help to bridge the gap between research and practice by guiding early improvements in intervention strategies (Smith, van der Groen, and Learmonth 2023). Our study highlights key elements that could enhance effective programme execution, such as community ownership, collaboration, flexibility in planning activities, and ensuring the timely availability of essential resources, which aligns with the findings of previous studies. For example, the benefits of community and stakeholder engagement, as well as supportive networks, have been highlighted in earlier studies of parental involvement (Haldane et al. 2019; Yılmaz Bodur and Aktan 2021; McLinden et al. 2018; Musendo, Zuurmond, et al. 2024). Involving local stakeholders at various stages helped to ensure that the findings were grounded, relevant, and applicable within the sociocultural context of our participants.

The practical implementation of this participatory research study was partly facilitated by continuous feedback mechanisms that allowed for timely identification and resolution of emerging challenges through after-action reviews. Meanwhile, participatory research and practice methods can yield beneficial results, particularly in resource-constrained settings (Guthold et al. 2023). Insights from other feasibility studies, including Participatory Learning and Action for Disability (PLA-D) intervention in Uganda (Kuper et al. 2023) and the Juntos initiative in Brazil (Smythe et al. 2023), underscore the importance of mobilising stakeholders to achieve positive effects. In our context, the

[2] ** Significant at < 0.05 **significant at p < 0.01*

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results can help position Tiyanjane as a viable intervention to address the locally identified educational challenges faced by families of children with disabilities in low-income settings.

Although the evidence from this feasibility study is preliminary, our research contributes to the existing knowledge by providing empirical evidence on the feasibility of community-based interventions within Malawi. It also offers a practical framework for implementing similar interventions and building stronger family-school-community partnerships in other low-income settings. The pilot study has provided groundwork for tailoring and refining the program; however, further work is needed to inform policy implications and whether and how to scale-up this intervention. For example, there is a need to assess the programme in other sociocultural and geographical settings, as well as to assess the long-term impact and sustainability. Future research must also include comparative analyses with other family-school-community initiatives to help understand the conditions under which such programmes can be sustained and incorporated into policy.

Our findings should be considered within the context of the strengths and limitations of this study. We used a mixed-methods approach, utilising several data sources, to provide rich insights into research phenomena that may not be fully understood using only qualitative or quantitative methods. The application of Bowen's feasibility framework (Bowen et al. 2009) offers a structured process and an opportunity to assess multiple facets of feasibility (Teresi et al. 2022). However, this study has some limitations. First, it involved a single community in a rural area of Malawi. Consequently, these findings may not be generalisable to other populations and settings, including families and individuals living in urban areas. Second, the pilot intervention was tested only once within a brief timeframe, making assessing integration, scalability, and sustainability impractical. Third, a potential limitation of this study is that the assessment primarily relied on responses from participants and facilitators in the programme only, which may not fully capture the broader community or institutional perspectives. Fourth, the participants were familiar with the researchers observing this programme. There is a risk of social desirability bias in their responses, as they may have provided more socially acceptable answers; to gain a more comprehensive understanding of the feasibility of the intervention, future research should consider involving other stakeholders such as policymakers, school administrators, and disability advocacy groups or organisations.

5. Conclusion

To our knowledge, this is the first co-designed intervention study to assess a family-school-community programme supporting children with disabilities in Malawi. Our study presents preliminary evidence that a parental involvement programme is feasible within the Malawian context, with parental behaviour and support improvements. The achievements of the intervention concerning its acceptability, demand, implementation, practicality, and limited efficacy underscore the importance of culturally sensitive community-based programs in enhancing educational outcomes for children with disabilities. The intervention requires further testing with a more diverse sample and long-term follow-up. Before proceeding to larger-scale studies, it is necessary to extend the pilot and feasibility testing to other families in different contexts, including urban settings. Future research should also focus on assessing the long-term sustainability of Tiyanjane's impacts, exploring its scalability to various settings, and examining its potential integration in existing systems to further enhance parental involvement.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org. Table S1, Table S2, and Figure S1.

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