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Co-Designing Tiyanjane, a Participatory Intervention to Promote Parental Involvement in the Education of Children with Disabilities in Malawi

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Abstract: This paper describes the co-design of a participatory group intervention developed to promote and enhance parental involvement in supporting the education of children with disabilities in Malawi. The intervention was developed through participatory co-design workshops and consensus meetings involving 23 stakeholders, including parents, teachers, and community leaders. The Behaviour Change Wheel framework and the Delphi technique guided the intervention development process, ensuring theoretical robustness and contextual relevance. The proposed intervention, Tiyanjane ('Let Us Unite'), includes facilitator and participant training and practical face-to-face sessions over 12 weeks. The intervention targets four key areas: developing family action plans, holding regular meetings, providing ongoing support at home and school, and facilitating training and information exchange. This participatory approach, involving a wide range of local stakeholders, offers valuable insights into the process and outcomes of co-developing culturally relevant and theoretically grounded interventions to address the needs of families with children with disabilities in low-resource settings. Future research should include an evaluation of the feasibility and acceptability of the intervention and examine its applicability in diverse sociocultural settings within LMICs (low- and middle-income countries).

Keywords: parental involvement; education; children with disabilities; Behaviour Change Wheel (BCW); low-and middle-income countries; intervention development; theory-based; COM-B model

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1. Introduction

Several studies have highlighted the significant roles that parents play in enhancing their children's academic performance, social skills, and emotional growth in educational settings [1–3]. Their active involvement is even more fundamental in the education of children with disabilities in low-income settings, where resources and support systems tend to be inadequate [4]. Acknowledging that parental involvement is a complex construct

defined in several ways [5], our paper defines 'parental involvement' as a range of activities and behaviours undertaken by parents or primary caregivers to support their children's education. This involves helping their children with home learning, volunteering at school, participating in school events, attending parent–teacher meetings, and advocating for their children's needs within the educational system [6–8].

The prevalence of childhood disability in Malawi is high. The 2018 Malawi Population and Housing Census estimated that six percent of the children in Malawi had disabilities [9,10]. This figure may understate the reality, considering that an estimated 1.3 billion individuals, or 16% of the global population, currently experience a significant disability, with eighty percent of those with disabilities living in developing countries [11]. In Malawi, practical challenges, including socioeconomic limitations, cultural stigma, and restricted capabilities and opportunities, frequently hinder parental involvement in the education of children with disabilities [12–14]. Masulani-Mwale et al. (2018) found that only 30% of parents of children with intellectual disabilities were involved in their children's education, mainly because of insufficient knowledge and limited community support [15]. Cultural beliefs and practices, such as keeping children with disabilities away from public life or reluctance to send them to school at an appropriate age, further worsen the situation, leading to their exclusion from educational opportunities [16]. In some areas of rural Malawi, some parents choose to keep their children at home due to stigma and discrimination [17]. In addition, the education system itself is often ill-equipped to accommodate children with disabilities [18]. These challenges hinder parental abilities to effectively support their children's education, making it harder for these children to access the educational opportunities they need to thrive [19,20].

When parents become involved, they play a crucial role in helping children with disabilities integrate into society, which is essential in reducing social isolation and stigma [21]. Improving parental involvement through tailored interventions can benefit children with disabilities and their parents in low-income countries and in resource-limited contexts [22,23]. A growing body of evidence suggests that intervention programmes for parents of children with disabilities can improve various aspects of their lives [24–27]. For instance, studies in Ghana, Kenya, Uganda, and South Africa have demonstrated that children with disabilities whose parents are actively involved in their education exhibit higher academic and social performance [28–32]. Parents can also benefit from increased confidence and competence in supporting their children's education, thus contributing to more empowered and resilient family units [3]. A recent systematic review found that group-based caregiver support interventions in low- and middle-income countries (LMICs) could significantly aid efforts to involve them more [33]. Other examples of parental/caregiver interventions include the participatory group 'Juntos' programme in Brazil [34], caregiver education through peer groups in Ghana [35], and the Obuntu Bulamu peer-to-peer support intervention in Uganda [31,36].

However, most of the existing research and interventions have been developed in high-income contexts [22,36–38]. A substantial gap exists in our understanding of how they can be adapted or developed in low-income settings [28,30]. In addition, the few existing parental involvement interventions typically consist of a single strategy and focus only on family or parental characteristics, beliefs, and behaviours, without sufficient attention to the broader context and role of systematic and structural factors [2,39]. There is a need for interventions grounded in robust theoretical frameworks explicitly and contextually tailored to low-income settings [40,41].

1.1. Theoretical Frameworks and Guidance

The Medical Research Council (MRC) recommends that the development of complex interventions should be guided by appropriate evidence and cohesive theoretical frameworks [42]. Theoretical frameworks and participatory design methods may enhance the acceptability and effectiveness of the interventions [43]. This study employed a co-design approach and applied the Behaviour Change Wheel (BCW) framework [44] as a systematic approach to developing behavioural change interventions. A modified Delphi technique was adapted to refine the intervention further [45].

Behaviour Change Wheel: The BCW guide for designing interventions provides an evidence-based and stepped approach to modifying behaviours. It supports intervention developers by considering various options and selecting only the most promising behaviours [46]. The BCW framework was developed from 19 frameworks of behaviour change identified in a systematic literature review [44]. As shown in Figure 1, the capability, opportunity, and motivation (COM-B) concepts are central to the BCW and are considered vital components that influence behavioural change [47]. Surrounding the COM-B system are nine possible intervention functions that address capability, opportunity, or motivation deficits, such as education, persuasion, incentivisation, and coercion. The outer layer of the BCW includes seven policy categories aimed at supporting intervention functions [48,49].

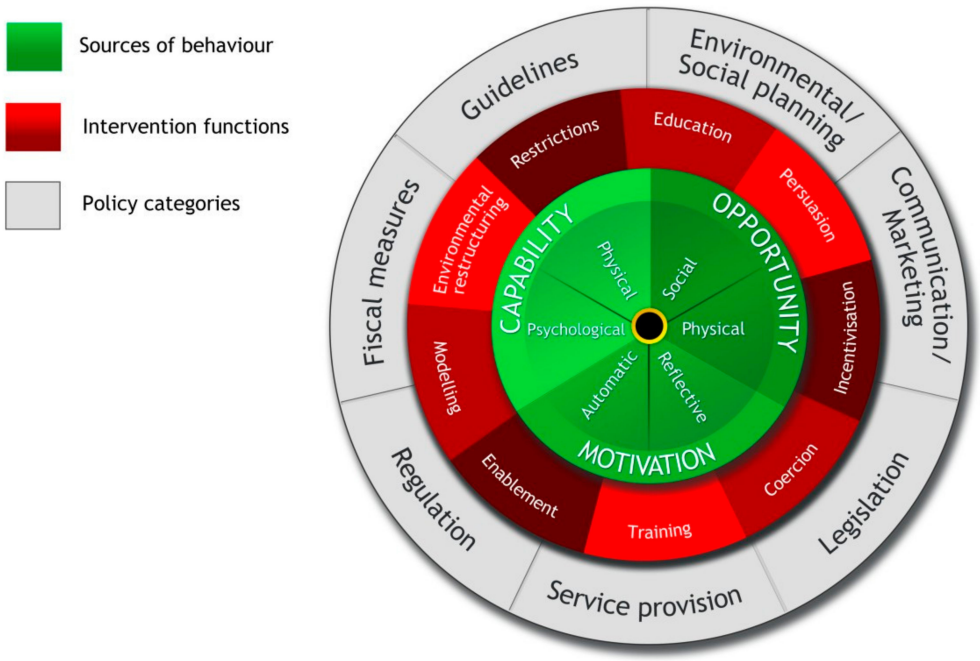

Figure 1. Behaviour Change Wheel. Adapted from Michie, et al. 2011 [44], under the terms of the Creative Commons Attribution 2.0 License (CC BY 2.0).

Although the BCW had not yet been employed to develop educational interventions for parents of children with disabilities in low-income contexts at the time of writing this paper, it has shown adaptability and versatility in other contexts. The BCW has been used to develop behavioural interventions related to dietary behaviour in Ireland [50], gestational diabetes in South Africa [41], and healthy eating and active living among children and adolescents in Cameroon [51] and to improve lifejackets for drowning prevention among occupational boaters in Uganda [52]. The BCW framework allows for the systematic analysis and selection of an intervention, which may involve using one or more specific behaviour change techniques to change a particular target behaviour effectively [53].

Delphi Technique: The Delphi method is a structured communication technique for collecting and synthesising expert and stakeholder opinions and achieving consensus on

a specific topic [54,55]. This method helps establish consensus among participants, select practical intervention priorities, and develop contextually relevant strategies [56]. This was deemed a potentially adaptable and flexible technique during the development of our intervention in Malawi.

1.2. Co-Designing and Reporting Intervention Development Processes

Collaboration with target populations is fundamental for the development of effective behavioural change interventions. The term 'co-design' is frequently used interchangeably with co-production, co-creation, or co-development [57]. This denotes the merging of design thinking, stakeholder experiences, scientific evidence, and participatory principles in creating community-specific solutions to community-specific issues [58]. Co-design can contribute to better recruitment, retention, and understanding of how change can be achieved [59]. Co-design can also bridge the research–practice gap often created when evidence- and theory-based interventions fail to translate into practice [43].

There is a need for tailored interventions to help parents of children with disabilities in Malawi to ensure that solutions are relevant to the needs of their community. Although there have been advances in the understanding, reporting, feasibility, piloting, implementation, and evaluation of interventions [60], the stage of developing the intervention itself has received less attention [61]. Documenting the processes involved in developing theory-based interventions, particularly those that actively engage target users as equal partners, is crucial for understanding how to design and implement local solutions to local challenges [43]. Comprehensive reporting is also essential as it can guide future research and practice by offering valuable insights for developing and adapting interventions in similar contexts.

1.3. Aims and Objectives

This study describes the process and methods used to develop Tiyanjane, a theory-based and context-informed group intervention co-designed to promote parental involvement in supporting the education of children with disabilities in Malawi. This study was guided by the research question, 'How can a theory-based and contextually informed participatory intervention be co-designed to enhance parental involvement in the education of children with disabilities in Malawi?' The subsequent phase that follows the Tiyanjane co-design process will involve the pilot implementation of the intervention and the assessment of its acceptability, feasibility, and practical application in real-world settings.

2. Materials and Methods

This study followed the MRC complex intervention guidelines to develop and test interventions [42]. We followed the GUIDED checklist to improve the transparency and consistency of the intervention development process [60], progressing through several phases, as shown in Figure 2.

The initial study (Phase 1) involved a systematic literature review of interventions that promote parental involvement in the education of school-aged children with disabilities, as detailed in [37]. The systematic review included peer-reviewed primary intervention studies published in English between 2000 and 2021, which were identified through searches of nine databases. The review identified 21 articles, most of which (n = 17) were from high-income countries. The study also highlights the need for context-specific interventions in LMICs to address the challenges and barriers faced by families of children with disabilities in these settings.

The second study (Phase 2) was a formative qualitative study exploring the factors influencing parental involvement in supporting the education of children with disabilities

in Malawi [23]. Focus groups and in-depth interviews were conducted with 25 participants, namely, teachers, parents, and children with disabilities in the Nkhata Bay District, Malawi. Using the capability–opportunity–motivation–behaviour (COM-B) model for analysis, we found that while parents were willing, optimistic, and self-motivated about their involvement, they faced constraints, such as limited knowledge of their children's learning needs, time, low confidence, and financial challenges. Limited support from schools and communities has hindered the opportunities for involvement. This study (Phase 3) is focused on the third phase (intervention development), which was informed by the first two phases.

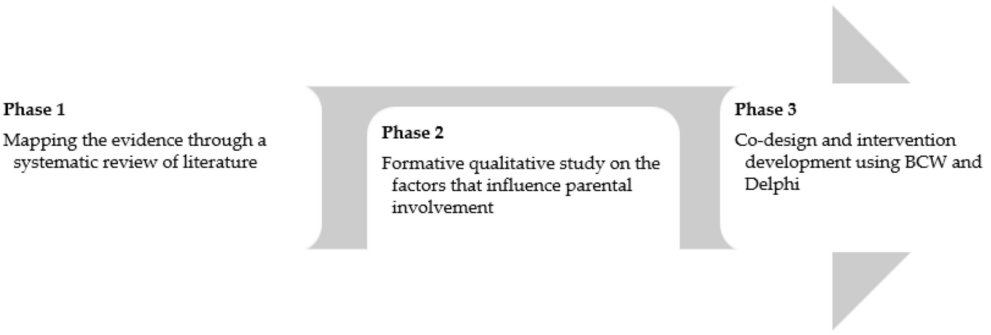

Figure 2. Iterative Design Phases for the Intervention Development Process.

2.1. Study Design

This study employed a participatory co-design methodology incorporating the BCW framework and Delphi technique to guide the development of the intervention. The BCW framework [44] provided a systematic approach to understanding and addressing behaviour change issues applicable to the intervention, while the Delphi technique [45] helped facilitate stakeholder consensus and refine the intervention.

2.2. Setting

This study was conducted in a rural area in the Nkhata Bay district of Northern Malawi, which is characterised by a diverse economy encompassing agriculture, fishing, forestry, local commerce, industry, and tourism. Approximately 18% of the population in this district lives in extremely poor conditions [9]. The researchers selected the district in collaboration with the local educational authorities, the Inclusive Education Project, supported by the Church of Central Africa Presbyterian (CCAP) in Malawi, and Sense Scotland in the UK. Furthermore, the location was chosen for its potential to shift to CCAP's educational initiatives following the completion of a future pilot test phase. A three-day co-design workshop was held at the district's local teacher development centre. Afterwards, smaller follow-up consensus meetings took place: two were conducted online through Zoom, while the other two occurred in person in Malawi.

2.3. Participants and Recruitment

A total of 23 individuals participated in the co-design workshop held in March 2023. Participants were purposefully sampled to ensure the representation of males (n = 11) and females (n = 13) with different roles in educating children with disabilities. Stakeholders were recruited through existing district structures based on their experience with working with children or persons with disabilities in the education sector. All the participants were aged $\geq$18 years and provided written informed consent to participate in this study. The sampled caregivers had children aged 12–14 with disabilities. Of the 23 participants in the co-design workshop, 10 were selected by their peers to form a core group responsible for finalising the development and refinement of the intervention. The participants were

selected based on voluntary participation and availability. In our study, only one caregiver of a child with intellectual impairment was identified and was available to participate. This likely reflects barriers to educational access for children with intellectual disabilities, resulting in the low enrolment of these children in school environments and their families being left out of supportive interventions. Table 1 presents the demographic characteristics of the participants.

Table 1. Description of the Participants' Characteristics.

Participants (n = 23)	Characteristics	Workshop Participants (n = 23)
Sex (23)	Female	13
	Male	10
Participant category (23)	Caregivers/parents	10 (6f)
	Teachers	3 (2f)
	Community leaders	3 (2f)
	Non-governmental organisation	3 (0f)
	Disabled advocacy group	2 (1f)
	Government officials	2 (0f)
Child impairment category of engaged parents	Sensory: hearing = 5 and visual = 1	6 (3f)
	Physical	3 (2f)
	Intellectual	1 (0f)

2.4. Intervention Development Overview

The intervention development process was structured into three stages: understanding behaviour, identifying intervention options, and identifying content and implementation options, as shown in Figure 3.

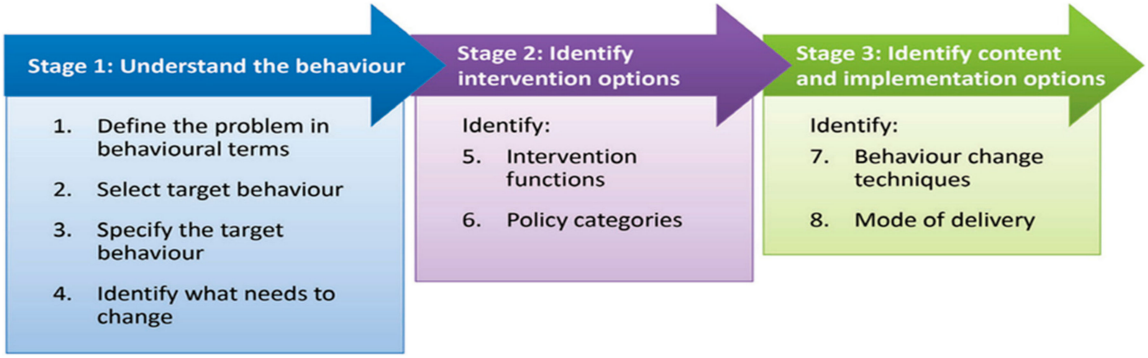

Figure 3. Stages in the BCW Intervention Development Process. Adapted from Michie, et al. 2011 [44], under the terms of the Creative Commons Attribution 2.0 License (CC BY 2.0).

The workshops were led by the lead author (DM), with two trained research team members (one male (BC) and one female (CK)) moderating the small-group activities. The participatory workshops focused on Stages 1 and 2, following Steps 1–6 of the BCW. Subsequent virtual and in-person core group meetings were utilised to achieve the third stage, which involved identifying the content and implementation options for the proposed intervention. During the workshops, participants engaged in structured activities, such as small-group discussions to select key barriers, brainstorming sessions to generate ideas for intervention functions, and plenary sessions to prioritise intervention options. The process was iterative, allowing for the continuous refinement of ideas and ensuring that it was grounded in the participants' lived experiences and to reflect the realities of their context. A facilitative approach to managing and limiting power dynamics and maximising participation was implemented and conducted in small working groups.

2.4.1. Intervention Development Stage 1: Understanding Parental Behaviours

To address Step 1, i.e., defining the problem in behavioural terms, small-group discussions explored three key questions to help identify (i) the behaviours, (ii) the individuals involved in performing them, and (iii) the specific settings in which these behaviours occur. The moderators led small-group discussions for individual idea generation, followed by whole-group plenary sessions to collectively present, analyse, and refine their ideas, agreeing on the behavioural aspects of the identified problem.

Step 2 focused on identifying the target behaviours for the intervention. A ranking exercise, based on individual votes and group discussions, was used to select the target behaviours based on the following criteria suggested by Michie et al. (2011): the potential impact of changing the behaviour; the ease of changing the behaviour; the importance and positive spillover effect that could result from changing the behaviour; and the ease of measuring the behaviour [44].

In Step 3, the target behaviours were specified through collaborative discussions in category-specific groups, focusing on practical actions that could be implemented by different groups, such as parents, teachers, and community leaders. The discussions allowed participants to collectively identify and reach a consensus on five questions recommended in the BCW: (i) Who needs to perform the behaviour? (ii) What must they do to achieve the desired changes? (iii) When do you need to do so? (iv) Where will they do so? and (v) How often do you do so?

In Step 4, workshop participants were encouraged to focus on identifying what needed to be changed to increase parental involvement in supporting their children's education at both school and home. DM presented results from our formative study on the factors that influence parental involvement in educating children with disabilities in Malawi [23]. After the presentation, the participants used their knowledge and experience to identify context-specific changes highlighted through the COM-B model (capability, opportunity, motivation, and behaviour). In the plenary sessions, participants ranked issues from 'very promising' to 'unacceptable,' establishing priorities for intervention.

2.4.2. Intervention Development Stage 2: Identifying Intervention Options

In the second stage of the co-design process, the group worked on identifying the intervention functions that could best encourage parental participation in the identified target behaviours (Step 5). The facilitator introduced the seven intervention functions outlined in the BCW, and the participants discussed and translated them into the local language. The participants then formed small groups and used the APEASE criteria, i.e., acceptability, practicability, effectiveness/cost-effectiveness, affordability, safety/side effects, and equity criteria, to prioritise the intervention functions [47]. The group then discussed and agreed to the preferred intervention functions according to their potential impact, ease of execution, and alignment with the community's beliefs and resources.

Participatory activities and appropriately pitched communication/language facilitated the understanding and engagement of individuals with varied backgrounds and experiences in Step 6 of the BCW. We formed small groups, each led by trained moderators, to introduce policy categories using local examples that participants could relate to. For instance, "guidelines" were linked to rules or instructions given at home or school and "communication/marketing" to share essential messages in the community. The moderators guided the participants through a consensus-building process to determine the most appropriate policy categories for the intervention. The pros and cons of each policy category are discussed, considering factors such as the ease of implementation and cultural relevance. After sharing their perspectives, the participants voted on their preferred policy category using coloured stickers (e.g., green for most preferred, yellow for neutral, and red

for least preferred). The facilitator then tallied the votes and led a discussion to reach a consensus on the final results.

2.4.3. Intervention Development Stage 3: Identifying Content and Implementation Options

In the third stage, the core group met virtually and in person to discuss the intervention content (Step 7) and identify potential delivery modes (Step 8), with support from the lead author and facilitators. The objective was to identify specific behaviour change techniques (BCTs) that should be incorporated into the intervention and to optimise its effectiveness. However, we faced challenges with the technical terminology and translations meant to describe the BCTs. The core group found Step 7 to be complex and not well-aligned with the differing literacy levels of the participants. Consequently, the group adopted a revised version of the Delphi method to simplify this process.

The Delphi approach involved multiple rounds of structured feedback from the participants. In the first round (virtual), participants verbally provided their opinions on the potential intervention components and delivery methods. Responses were collected by the lead author, who synthesised them, tallied the most commonly mentioned ones, and later shared them with each group. In the subsequent round, the participants reviewed the summarised feedback, refined their opinions, and re-ranked the options by scoring them from 0 to 5. This iterative process continued until a consensus was reached on the ranking of the intervention's most feasible and practical components. The themes that emerged from the Delphi process were integrated with findings from the broader participatory design process to finalise the intervention components in the final meeting, which was held face-to-face.

During Step 8, the core group comprehensively discussed the mode of delivery for the intervention components. They explored options such as face-to-face interactions and distance delivery. They also debated whether the intervention targeted individuals, specific groups, or an entire group. Ultimately, the group reached a consensus on the final intervention components, which they shared with an international advisory group of academic experts for their input.

3. Results

3.1. Understanding the Behaviour

Step 1: The co-design workshop defined the problem as the parents' limited involvement and participation in the education of children with disabilities at home and school.

Step 2: From a list of 27 potential behaviours, the participants identified and ranked four potential target behaviours based on the criteria listed in Table 2. Potential target behaviours were (i) developing family action plans, (ii) conducting regular meetings, (iii) providing follow-up support, and (iv) facilitating training and information sharing.

Step 3: The core group focused on specifying the target behaviours for the intervention by addressing key practical questions, such as who needs to perform the behaviours, what needs to be done, and when, where, and with whom. The target behaviours were further refined through collaborative discussions, as detailed in Table 3. For example, parents were identified as responsible for developing and executing family action plans to support their children's education, with specific actions to be taken at home and school. Similarly, the group highlighted the need for regular meetings among parents, teachers, and community leaders to foster better communication and support.

Step 4: The final target behaviours were considered necessary to promote parental involvement in the education of children with disabilities, including who, what, when, where, and with whom they should be performed. Table 4 summarises the behaviour

analysis and specific COM-B components that must be influenced for the intervention to be effective.

Table 2. Potential Target Behaviours Identified by the Participants.

Potential Target Behaviour(s)	Likely Impact	Ease of Implementation	Likely Spillover	Ease of Measurement	Score Out of 4
Developing and implementing family action plans to promote habit formation	4	3.3	3.7	3.7	3.7
Hold regular meetings and influence change activities with other stakeholders	3.7	3.7	3.3	3.7	3.6
Provide follow-up support to families of children with disabilities at home and in school	4	3.3	3.3	3.3	3.5
Facilitate training and information-sharing platforms to share knowledge and awareness	3.7	3.3	3	2.3	3.1

Table 3. Specification of Target Behaviours for the Intervention.

Target Behaviour	Who?	What?	When?	Where?	with Whom?
Developing and executing family action plans	Parents	Write, share, and review plans of action to support children, including what, when, where, and who will do the actions	Every school term	School and home	Teachers and community leaders
Conducting regular meetings and influencing activities	Parents, teachers, and community	Meetings and activities that bring together parents, teachers, communities, and other professionals	Weekly	School, community, and home	Decision makers and the public
Providing follow-up support activities at home and in school	Teachers and community leaders	Home visits and follow-up support meetings with families of children with disabilities	Monthly	Home and community	Parents
Facilitating training and information-sharing platforms	Parents, teachers, and community	Group training activities to address knowledge and information gaps	Every school term (3 months)	Home and school	Facilitators and the public

The proposed activities require collaborative efforts from different actors to ensure that the approach is comprehensive and participatory. The participants collaborated to link the four key target behaviours with specific COM-B constructs, ensuring that the intervention would address the identified barriers [44]. The outcomes of the discussions are as follows:

- Developing and executing family action plans: Parents often deprioritise their children's education because of daily life challenges, workload, and resource constraints. This barrier relates to the COM-B construct of reflective motivation.
- Conducting regular meetings and influencing activities: There are limited opportunities for parents to engage with schools and a lack of confidence/skills to influence educational practices. These barriers were associated with the COM-B constructs of physical opportunity and psychological capability.
- Offering follow-up support activities at school and home: Parents require supportive social environments and systems that tackle the challenges preventing them from engaging actively. This barrier corresponds to the COM-B construct of social opportunity.
- Facilitating training and information exchange: There is a lack of knowledge and motivation to support children with disabilities due to insufficient understanding of the

stakeholders' roles, children's rights, and disabilities. These barriers were associated with the COM-B constructs of psychological capability and automatic motivation.

Table 4. Summary of Behaviour Analysis to Identify the COM-B Components to be Influenced.

Target Behaviour	Who?	COM-B Construct	Details of What Needs to Be Influenced and Why It Is Important	Needs to Be Influenced for Change to Happen?
Developing and executing family action plans	Parents	Motivation (Reflective)	Due to workloads, challenging practicalities of daily lives, and lack of resources, parents often fail to prioritise the education of their children	Yes
	Parents and teachers	Capability (Psychological)	Parents and teachers need to have the tools and skills to plan for their children and the motivation to follow up on their commitments	Yes
Conducting regular meetings and other influencing activities	Parents, teachers, and community leaders	Opportunity (Physical)	There are limited opportunities for interaction and support for parents, often due to a lack of school openness and invitation for parents to engage in school activities	Yes
	Parents, teachers, and community leaders	Capability (Psychological)	Parents, teachers, and community leaders need knowledge, skills, and confidence to engage local leaders and influence change	Yes
Providing follow-up support (at school and at home)	Teachers and community leaders	Opportunity (Social)	Parents feel inadequately supported by other parents, the school, and the community, restricting opportunities to learn from others and be able to also support their children	Yes
Facilitating training and information-sharing platforms	Parents	Capability (Psychological)	Insufficient capacity to support children due to a lack of knowledge and understanding of disabilities, education rights, and how to be involved	Yes
	Parents and community leaders	Motivation (Automatic)	Unhelpful parental and community attitudes towards the children with disabilities and their families	Yes
	Teachers and community leaders	Capability (Psychological)	Teachers and community leaders have limited knowledge of how to support parents of children with disabilities	Yes

3.2. Stage 2: Identifying the Intervention Function Options (Steps 5–6)

In Step 5, the prioritisation process led to the selection of five key intervention functions: education, environmental restructuring, enablement, persuasion, and training. These functions were considered most suitable for helping parents, teachers, and community members support the education of children with disabilities. The selected functions were carefully aligned with criteria such as affordability, practicability, and equity, which are critical for ensuring the feasibility of the intervention. Incentivisation, modelling, and coercion were excluded because of concerns regarding affordability and sustainability.

In Step 6, three policy options were selected to support the intervention functions: guidelines (developing and disseminating documents that provide evidence-based recommendations for action in response to specific situations), communication or marketing (encompassing correspondence, mass media, and digital marketing campaigns), and service provision (including materials and social resources).

Following a participatory voting process, the participants unanimously agreed on "Tiyanjane", a Chichewa word that translates to "Let Us Unite", highlighting the programme's emphasis on collaboration among families, schools, and the community. The key intervention functions and associated activities of Tiyanjane are shown in Figure 4.

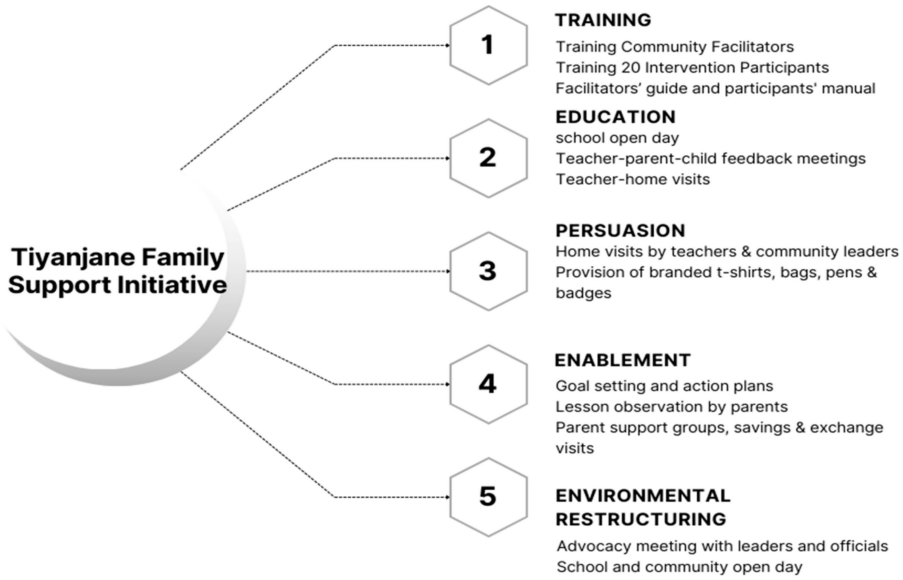

Figure 4. Key Intervention Functions for Tiyanjane.

3.3. Stage 3: Identifying Content and Implementation Options

For Steps 7 and 8, it was decided that Tiyanjane would be a multi-faceted comprehensive intervention implemented across various local contexts, including homes, schools, and community settings. The programme will involve parents, teachers, and community members in collaborative face-to-face group activities that seek to (a) educate parents, teachers, and community leaders about disability issues and educational rights; (b) assist parents in setting goals and monitoring their children's progress; and (c) create a more inclusive environment for families of children with disabilities through community support and advocacy. The main components of the intervention included training for facilitators and participants, ten practical sessions conducted over ten weeks, and the sharing of promotional resources, such as homework books, activity-reporting diaries, t-shirts, and branded bags (Supplementary File S1). The intervention is expected to (a) address capability by providing parents with the tools and knowledge necessary to support their children's education; (b) enhance opportunities by creating structured interactions between parents, teachers, and community leaders; (c) ensure sustained motivation and opportunity through ongoing engagement with families; and (d) build capability by addressing the knowledge gaps between parents and community members. The primary activities for each session over the ten weeks are detailed in Supplementary File S2.

4. Discussion

The method used to create Tiyanjane aimed to offer a comprehensive approach to promote parental involvement in supporting the education of children with disabilities [62]. The programme includes facilitator and participant training, ten weekly practical sessions, and promotional resources to improve parents' capabilities, create opportunities for structured interactions, sustain motivation, and address knowledge gaps. Tiyanjane emphasises working together through a participatory process to enhance the knowledge, skills, opportunities, and motivations of parents, teachers, and community members.

The BCW framework was instrumental in guiding the development of the proposed intervention. However, the complexity of the BCT taxonomy, coupled with issues such as language barriers, varying levels of literacy among participants, and technical terminology inherent in the BCW, posed difficulties for some participants in Stage 7 (such as selecting appropriate BCTs). To address these challenges, the Delphi technique was used to facilitate consensus among teams. Previous studies have similarly reported challenges when choos-

ing the most appropriate intervention for BCTs [63,64]. Others have integrated the BCW and Delphi components into their participatory intervention design efforts [51]. In this instance, utilising our case, integrating aspects of the Delphi technique was particularly useful for managing the complexity and adapting a part of the BCW framework to the context. The Delphi method complements the BCW by providing a flexible iterative process that captures diverse perspectives [45]. Using multiple rounds of verbal feedback, the researchers refined the intervention components while ensuring that they were both culturally appropriate and aligned with the participants' preferences and needs. Future research should investigate how this feedback method, in combination with other participatory techniques, can enhance the co-design of similar interventions.

Engaging stakeholders in the co-design of Tiyanjane significantly improves its effectiveness by acknowledging and integrating broader structural factors such as socioeconomic conditions, cultural dynamics, and systemic inequalities [62]. The co-design method successfully involved multiple stakeholders, acknowledged power dynamics, and promoted widespread participation. There is a growing interest in progressing participatory co-design methods and incorporating them into community-based participatory research [51,65,66]. The co-design approach was inclusive, aiming to ensure that different voices, especially those of often-marginalised individuals, such as parents of children with disabilities, were heard. Several other studies have also supported the importance of participatory methods in addressing power dynamics during intervention development and in being sensitive to cultural and contextual elements within the study population [67,68].

Tiyanjane was designed to address common barriers caregivers face, such as pressures related to daily life challenges, workload, and resource constraints. The intervention provides structured training to enhance caregivers' understanding of their roles [69,70] and fosters small-group mentorship hubs to build confidence in their engagement with educators [29,71]. To accommodate workloads and time constraints among the caregivers, the facilitators and participants agree on flexible scheduling of activities [72,73]. The programme utilises community-donated space and equipment, and therefore, there is no direct financial cost to participants [74]. In addition, community events and advocacy efforts are included to address cultural stigma around disability [24,75]. Involving male and female caregivers in every activity promotes gender equity and encourages shared caregiving responsibility [76,77].

The intervention development process has several strengths. We demonstrate a new application of the BCW framework and Delphi technique and expand the application of the BCW framework to new domains of disability and parental involvement to support children's education in low-income settings. We present a novel collective application of the BCW framework and the Delphi technique while also expanding the application of the BCW framework to new areas of disability and parental involvement in low-income settings. Tiyanjane's development was grounded in formative research, deemed essential for customising evidence-based programmes [78,79]. This was also preceded by a systematic review of the intervention literature [37] and primary research that identified barriers and facilitators of parental involvement in Malawi [23].

Despite its valuable findings and insights, this study had several limitations. The participants involved in the workshop and the core group were purposefully sampled based on their roles as parents, teachers, or community leaders. While this approach ensured that different stakeholders were engaged, we recognise that they were a highly motivated group of participants. Involving just one parent of a child with intellectual disabilities may limit the overall generalisability of the study findings and the Tiyanjane programme. This deserves attention in future research on this intervention, mainly through broader recruitment strategies to ensure a more diverse representation of various disability

types. Although the adapted Delphi technique helped establish a structured approach to consensus building, we acknowledge that its use virtually also posed challenges to the full engagement of all participants. This method requires more time and is considered complex, with the potential to reach a consensus in an inherently subjective manner [45]. This study was conducted in a rural district in Malawi, which may limit the generalisability of our findings to other settings. It is important to note that although the Tiyanjane intervention was designed to be comprehensive and focused on several aspects, such as training, education, and environmental restructuring, it may not address all the barriers to parental involvement in the education of children with disabilities. Systemic issues such as inadequate funding for special education, limited access to assistive devices, and broader societal attitudes towards disabilities are beyond the scope of this intervention. These factors may hinder progress, indicating that the intervention can only be part of a broader strategy to tackle the complex challenges faced by families of children with disabilities.

Our findings provide opportunities for future research. Pilot testing of Tiyanjane in Malawi is required to assess its feasibility and acceptability, including evaluating the acceptability of the intervention among target users and identifying potential facilitators, barriers, and uncertainties in its implementation. Future research should also explore the adaptability of Tiyanjane to different cultural contexts; understanding the feasibility and effectiveness of the programme in diverse settings with varying cultural practices, resource levels, and educational systems is essential. Additionally, research should focus on evaluating the long-term impact and sustainability of the intervention, including how increased parental involvement can be maintained over time and what factors contribute to sustained engagement.

5. Conclusions

This study presents the process and results of co-designing Tiyanjane, a community-supported intervention that promotes parental involvement and supports educational outcomes for children with disabilities in low-resource settings. Utilising the BCW framework, we selected and prioritised contextual barriers to parental involvement in Malawi. The intervention aims to foster family–school–community partnerships through capacity building, structured peer support networks, and collaboration among caregivers, teachers, and community members while providing practical training to facilitators and participants. The findings underscore the potential of theory-based participatory interventions to foster practical community-driven changes. The programme's feasibility and acceptability will be assessed after a pilot testing exercise.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/disabilities5010026/s1, File S1: Brief Description of the Tiyanjane Programme; File S2: Key Components of the Ten Tiyanjane Practical Sessions.

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Informed Consent Statement: Informed consent was obtained from all the participants involved in this study.

Data Availability Statement: The original contributions of this study are included in this article. Further studies should be directed towards the corresponding authors.

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