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RESEARCH ARTICLE

FACTORS ASSOCIATED WITH FUNCTIONALITY OF MENTALLY CHALLENGED CHILDREN AGED 5 TO 14 ATTENDING REHABILITATION CENTERS IN KAMONYI DISTRICT, RWANDA

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Abstract

Disability results in varying degrees of activity limitations but does not imply complete inability. Globally, an estimated 150 million children live with disabilities and face persistent barriers to participation and inclusion in daily life. In Rwanda, disability is recognized as both a human rights and development issue; however, children with disabilities continue to experience social exclusion and limited access to rehabilitative and educational services. Understanding the functional abilities of mentally challenged children and the factors that influence them is therefore essential to promoting inclusion and effective care. This study aimed to determine the level of functionality among mentally challenged children attending rehabilitation centers in Kamonyi District, Rwanda, and to identify factors associated with their functionality based on assessments by parents or guardians. A cross-sectional design was employed involving 153 children aged 5–14 years who attended rehabilitation centers in Kamonyi District. Data were collected using a structured questionnaire and the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0). Descriptive statistics summarized socio-demographic characteristics and functionality levels, while Chi-square tests were used to determine factors associated with functionality at a significance level of $p < 0.05$. Findings revealed that the majority of the children exhibit high functionality in their daily activities, while a significant proportion experience low functionality levels; 57.5% of the children fall into the high functionality category (scores between 0 and 49), whereas 42.5% are in the low functionality category (scores between 50 and 100). Males had a higher proportion of low functionality (54.9%) compared to females (45.1%), while older children (10–14 years) presented better functionality (72.7%) than younger ones (5–9 years) with 27.3%.

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Although demographic characteristics such as age, gender, marital status, and community attitude did not show statistically significant associations ($p > 0.05$), family-level factors including, parental education, supportive beliefs, and economic capacity to afford medical services emerged as the strongest determinants of functionality. Children from families with higher education levels, positive attitudes, and adequate financial means showed superior

functional performance. The study concludes that family-related factors play a pivotal role in improving the functionality of mentally challenged children. It emphasizes that children's developmental outcomes can be significantly enhanced when families are supported through education, empowerment, and access to affordable rehabilitative and health services. The findings highlight the importance of integrating family-centered strategies within national disability programs to promote sustainable inclusion. The study recommends strengthening family centered interventions, expanding access to affordable rehabilitation and specialized medical services, and promoting inclusive community-based programs that empower parents and caregivers to actively support the development and social participation of children with disabilities. Furthermore, policies that ensure equitable health financing and community sensitization are necessary to create supportive environments where all children, regardless of their functional limitations, can achieve their full developmental potential.

Introduction:-

This chapter will show disability as matter and problem of public health sector; the chapter will clearly define the purpose of the study; its problem, relevance, possibility to do it as well as limitations. The study is organized into five chapters: Chapter One introduces the research problem, objectives, significance, scope, and identified gaps; Chapter Two reviews existing literature and past studies related to the research and their gaps; Chapter Three explains the research methodology, including population, sample size, location, data collection, and analysis methods; Chapter Four presents and discusses the findings in relation to the research questions; and Chapter Five provides conclusions and recommendations.

Background of the study:-

Disability leads to activity limitations but does not give inability sense. Having difficult in achieving an activity happens in our daily life. Every one experienced such time of having difficult in functioning. Physically and mentally challenged people have the same needs as everyone else in the community. However, they have some limits in achieving some activities. Disability is defined as mobility, sensory, intellectual, or mental impairments that lead to activity limitations (Talley & Editor, 2019). There are 150 million children with disabilities who face many barriers to their inclusion and participation in everyday activities according to World Report on Disability by the World Bank and the (World Health Organization WHO, 2011).

Globally, the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in its 7th & 26th articles reaffirm that every person has the essential right to life and that all states members shall take all required processes to ensure its effective satisfaction by persons with disabilities on an equal basis with others, but also to achieve the high independence, full physical, mental, social and job-related ability, and full inclusion and participation in all aspects of life. (Assembly, 1948) Previous studies in Sri Lanka indicate that Knowledge of factors that influence the perception of disability can inform future implementation of public-health and community-based initiatives, and may improve social integration of children with disabilities People with disabilities have health related issues, low school results, limited economic opportunities and higher level of financial means than people without disabilities (Landry, Rama, et al., 2015). This is generally due to limited services available to them and the many barriers they face in their daily life (Koszela, 2013). Studies have shown that children with disabilities are disproportionately vulnerable to violence, neglect and abuse, as a result of exclusion and discrimination. Children under age of 5 in developing countries are exposed to multiples risks; malnutrition, poor health and stimulating environment which affect cognitive, motor and social-emotional development (Grantham, 2017).

Across the world the limitation of providing appropriate care is shared; the relevance of needed actions to improve the situation is considered as priority. The World Disability Report, in 2011 estimates that there are between 93 and 150 million disabled children aged under 14 years. The prevalence for moderate and severe disability in this age cohort in Africa is 6.4 per cent. (World Health Organization, 2011). The lack of reliable and appropriately disaggregated data on children with disabilities is an impediment to the formulation of legal frameworks and their implementation, (ACPF, 2014). To date, accurate sex and age disaggregated estimates on children with disabilities are rarely available (People et al., 2013).

A case study was in South Africa where a study revealed that children with disability face barriers to access early childhood development services (Department of Basic Education and UNICEF, 2015). Unicef in 2015, in South Africa conducted a study on children with disability from birth to four years; caregivers of CWD who participated in the study gave an advice to other care givers in the same situation to prioritize having faith, acceptance of the situation, loving the child, seeking medical and rehabilitative services at the clinic or hospital, and treating them like other children. The citations show the current, future need and its dominance in terms of looking for a complete

solution to care for children physically and mentally challenged. The studies did not work on children themselves to know what they have as potentials and weakness. (Grantham-McGregor et al., 2007).

In Rwanda disability is not solely viewed as health issue; it is also viewed as an issue of development and human rights, thus if we do not meet their specific needs, then we are not including and supporting people with disabilities to the best of our ability (Njelesani et al., 2018). The census of people with disabilities in Rwanda, reports that disabled people are both actively and passively excluded in Rwandan society, are seen as objects of charity and their potential and abilities are not recognized (Census of People with disabilities in Rwanda, 2010) Children with disability are seen as a source of shame and often hidden away. All these situations bring together the relevance of tackling the issue and probably teaching children how to care themselves how to interact with others could make them easier to be cared also by their parents/guardians.

Problem statement:-

This study seeks to determine the factors associated with the functionality of children with intellectual disability as they continue to live in difficulty life which even shown by some researches in scientific perspective of the problem such as a systematic review which shows the results of different studies on people with intellectual disabilities as follows; the community participation (domestic life, interpersonal interactions and relationships) of people with intellectual disability is still much lower than non-disabled (Verdonschot et al., 2009) In Vienna Austria, another study confirms that children with intellectual disabilities frequently live with social isolation and disconnectedness from peers (Jacoby et al., 2022).

A study in the eastern Africa region showed that 16 to 20 percent of children with disabilities are victims of abuse. If people with disabilities are more than twice as likely to find healthcare providers' skills and facilities inadequate; nearly three times more likely to be denied health care; and four times more likely to be treated badly (World Health Organization, 2015); we should plan how to address the problem and decrease this situation until to its end. The fifth Rwandan census (2022) gives a number of 391,775 aged of 5 years and above have disabilities among 11,537,934 with the same range age. The number of children its self-including children with intellectual disabilities among this data is unprecised as well as children under this age. As the total number of children without disabilities from 5 to 14 years is 3,254,352 the percentage of children with disabilities is 3.7% it gives a number of 120,411. This mentioned situations did not show the factors that contributed to mentioned results; enhances the stigma around disability; though it's still considered a barrier in the community and has other associated factors to limit either the person with a disability to show, and develop his potential; or to make the community members unseeing the ability in the persons with disabilities including mentally challenged children. Lack of observing mentally challenged children abilities, absence of contributing factors to their better functionality would keep growing if the evidence of the adversary side is no yet shown. Conducting this research will contribute to know more about mentioned scenarios and determine factors associated with functionality of children mentally challenged and suggest recommendations.

The government of Rwanda established laws that guide their citizens in caring /supporting PWDs; with reference to the law relating to the protection of disabled persons in general; Article: 3: every person shall be entitled to equal rights with other persons before the law; he or she shall be respected and be entitled to human dignity. Article 4 says the responsibilities of Centers/associations caring PWDs. Article 5: A disabled person has the right to live in the family in the same conditions as others. Ministerial order establishing regular monitoring of activities of tutors and centers cater for the disabled persons; art 10: rights of disabled person (in center) and Rwandan constitution art 16; All Rwandans are born and remain free and equal in rights and duties.

Purpose of the study:-

The aim of the study will be to assess the level of functionality of mentally challenged children aged 5 to 14 attending rehabilitation centers in Kamonyi District, Rwanda and explore the factors influencing their functionality.

Literature Review:-**Empirical literature review:-****Determine the level of functionality among mentally challenged children:-**

In the United States of America, a study of 2 government institutions the Office of Special Education Programs (OSEP) and The National Longitudinal Transition Study (NLTS), to assess the status of youth with disabilities in the early 21st century, to identify changes among youth with disabilities in their early post-high-school years by comparing 2 cohorts, their report focused on the subdivision of youth represented in NLTS and NLTS2 who had

been out of high school up to 2 years. This work documented changes; over the years, the completion of schools has increased; and their living arrangements were stable over time. However, their involvement in social activities did not change positively such as being a member of a community group activity; the participation is not significant. There was an increased number of youth with disabilities who have been received disciplinary action at school, dismissed from jobs, or arrested. There is also an increased number of youth who completed postsecondary education as well and their presence in employment has increased and earned above minimum federal wages.

Few numbers of youth engage in pursuing either their postsecondary school alone or employment; an increased number decided to combine both education and employment.

Canada. (2012). Masse, L.C., et al. in another study that examined children with disabilities, this study compared two broad groups of children with disabilities. They found that children with neurodevelopmental disorders (NDD/D) had higher levels of participation in physical activities at school than children with chronic medical conditions (CMC). They assessed also differences in participation in supervised and unsupervised physical activities, educational activities, and social or recreational activities. Findings show that participation in educational activities was lowest for the social interaction and psychological subgroups, and higher for the other groups. Regarding this result, children with the lowest participation need supportive intervention to improve their level of participation.

In UK, Mary, L., et al. (2007). studied the Patterns of participation in recreational and leisure activities among children with complex physical disabilities using the Children's Assessment of Participation and Enjoyment (CAPE) measure; their findings indicate the diverse and intensive participation of children in informal activities than formal activities. This participation was less diverse in children from lower income, single parent status, and lower responded parent education. The study created a basic understanding of children with disabilities participation to insight service providers, families, and the system to plan accordingly and improve children's functioning. Vasconcelos, et al. (2009), in Brazil, studied Functional performance assessment of children with cerebral palsy according to motor impairment level; the findings said; there are significant differences between mobility, self-care, and social function domains. Children who use assistive technology to move have poorer functional performance in mobility and self-care than those who can walk without restrictions; when it comes to self-care there is no significant difference in social function between all children groups.

In Taiwan, the author Hwang et al. (2015), studied the participation of children with disabilities focusing on the gap between the independence and the frequency. For children with mild and to severe impairments, the restriction of frequency was greater than that of independence; for children with profound, the restriction was vice versa and the gap become wide with age and the community setting. In South Africa, Van der Linde and Casteleijn (2016), studied 'A comparison of two assessments of levels of functioning in clients with intellectual disability between occupational therapists and nursing staff within a long-term mental healthcare facility in South Africa'; they found that children functioned on the lowest level of creative ability while the Nursing service indicated that children needed six months of fulltime care and had no concept of occupational participation. In another study in the same country, Elloker et al. (2017), worked on stroke patients and assessed the level of functionality using WHODAS 2; the findings showed that the general population is least affected in the domains of getting along with people and cognition; the sampled population was challenged by participation and work activities and more challenged by physical activities including mobility, household activities and self-care.

Factors associated with the functionality of mentally challenged children:-

In Bosnia; in 2014; a study of Memisevic and Sinanovic (2014), was conducted to assess the executive function of children with intellectual disability who had between the ages of 7 and 15 years old age who were attending two special schools; through the use of the Behavior Rating Inventory of Executive Function (BRIEF); the study examined also the differences in executive function about a child's sex, level, and etiology. The sampled population was 90, 54 boys and 36 girls; all were children attending special schools. 42 were children with mild intellectual disability and 48 were children with moderate intellectual disability. Bosnian teachers who were familiar with the children filled in the BRIEF-translated version. The study found that children with intellectual disability had a clinically significant delay in executive function behaviors. About the child's sex; there were no differences found between boys and girls. The largest difference found between the children with mild disability and moderate was on the scale of working memory. The study confirmed the validity of BRIEF as the deficits in working memory increase with the degree of intellectual disability.

A cross-sectional study was conducted by García - Pintor, Morales-Rodríguez, and Pérez - Mármol (2023), to evaluate possible differences in the ability to perform instrumental activities of daily living (IADLs) between people with intellectual disability and those without disability. The sample was 90 people with moderate intellectual disability and 79 participants with no intellectual disability. Their executive functions were evaluated using different scales and test; and the IADLs was assessed using the Lawton and Brody Scale. The results show the higher the function in instrumental activities, the lower the impairment of executive functions. Participants with moderate intellectual disability showed limitations in the performance of IADLs which one side was associated with low performance in executive functions. In United Arab Emirates a study was conducted to develop a scale to provide information on the behavioral adaptation skills in children with and without intellectual disability (ID); 10 domain skill areas of communication, preacademic, listening, social, self-care, self-orientation, motor skills, operational society, life, and health and safety were assessed using the 651 scale items that identify behavioral adaptation deficits. It was administered to 1542 children with disabilities and 920 children without disabilities.

The findings show the correlation between the existence of the disability and the existence of delay based on the results of the adaptive behavior scale; any deficiency in adaptive behavior requires a delay in two or more domains of the scale. The high correlation between the total scores and between the domains supports the assumption that the ECAS measures what it aims to measure, for instance, adaptive functioning (AlMuhairy et al., 2023). In Spain, according to Vilaseca, et al., (2019), demographic and parental factors are closely linked to the developmental outcomes in children with intellectual disabilities. Their study was conducted to examine the relation between demographic variables, parental characteristics, and cognitive, language and motor skills development in children with intellectual disabilities (ID). 89 children of the age of 20 to 47 months were sampled, and completed the Bayley Scales of Infant Development to measure cognitive, motor, and linguistic development; their parents completed questionnaires about demographic information and parental anxiety, depression, parental stress, conjugality and familial functioning through Parental Stress Scale Spanish version.

The findings showed that cognitive development in infants was significantly related to the mother's and father's responsiveness and to the father's teaching scores. The language development was related to a variety of maternal factors (educational level, anxiety, depression, maternal responsiveness) and the father's teaching scores, and none of the factors were statistically related to the child's motor development. In Rwanda, Urimubenshi (2015), explored activity limitations experienced by people with stroke in Musanze District including youth of 24 years old; he found that the limitations were in three types; limitations in walking, in self-care, and in domestic life activities. The majority expressed limitations in walking and sometimes used wheel chairs or other supporters; all participants in the study expressed dependence in self-care activities and some displayed problem in domestic life activities. The National Institute of Statistics of Rwanda (NISIR), 2022, reported that the prevalence of persons with disabilities limitations could be undercounted as the situation for children under 5 years was not captured due to data collection tools not adopted for children with disabilities. However; in terms of reporting the limitations of those persons with disabilities from 5 years and above, the report found that there is a predominance of persons with disabilities having difficulty in seeing compared to other types of disability such as mobility and cognitive.

Theoretical literature review:-

Mentally challenged child; Definition of Disability:-

A mentally challenged child typically refers to a child who experiences cognitive, intellectual, or developmental delays, impacting their ability to learn, communicate, or perform everyday activities at the same level as their peers. This term is often replaced by "intellectual disability" in contemporary use. The authors propose that a disability be defined considering their limitations related to their environment and health conditions; by looking at a child's existing or emergent capacity to perform developmentally appropriate activities and participate, as desired, in society (Haskins et al., 2018). The persons with disabilities include those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others. In 2019 Talley and Editor said "A person functioning and disability is conceived as dynamic interaction between health conditions and contextual factor." Intellectual disability shows a cognitive impairment, which exists from childhood. Children with intellectual disabilities manifest with lower than average intelligence, which influences the development of their insights, language, motor and social skills (Talley & Editor, 2019). In addition, disability is taken with the context of the family's cultural, beliefs and traditions. Theoretical understandings of the social, cultural and structural roles and places of people with intellectual disability underpin the experience of harm. (Robinson, 2013).

Functionality:-

The verb to function has close meaning to the verb to work; and to function gives us the meaning: be in working or running order. An individual also can perform normal daily activities required to meet basic needs, fulfill usual roles, and maintain health and well-being. Functionality of children physically and mentally challenged has different meaning according to the authors; some focus mainly on physical functioning and ability, while others address broader concepts of functioning, for example, whether a chronic condition affects a child's participation in school or play. These measures have the meaning of the practice across circumstances, providing a way to compare degrees of functioning and ability regardless of the specific disorder. They have proven useful in general studies of childhood disability and in assessing improvement(Shree, 2020).

Research suggests different measures to better know the children functional difficulties such as; the Washington Group/UNICEF Module on Child Functioning, finalized in 2016, covers children between 2 and 17 years of age and assesses functional difficulties in different domains including hearing, vision, communication/comprehension, learning, mobility and emotions(Loeb et al., 2017). There is also another example used to measure the child's level of functioning, WHODAs 2.0 (world health organization disability assessment schedule 2.0). It is an instrument that can measure health and disability at population level or in clinical practice. It captures the level of functioning in six domains of life such as cognition, mobility, self-care, getting along, life activities and participation. It is applicable across the cultures; it provides a common metric of the impact of any health condition in terms of functioning (WHO, 2017).

CBCL (child's behavior check list) is a standardized form that parent can fill out to describe their children's behavioral and emotional problems. It has version for 2 to 3 years and 4 to 18 years. It is easy to complete in the period of 5 to 10 minutes. Surveys suggest that up to 15% of children under the age of 5 years may have difficulties in one or more area of development, including speech, language motor; social, emotional and cognitive while most of parents ask themselves if their children are normal(F. Oberklaid et al., 2016). Frank Oberklaid suggest some methods that could help parents to early detect child's development problems; as other professionals in the area the use of developmental checklists is communal for children from birth to 5 years; and other development screening tools; ASQ (Ages, Stages and Questionnaire), Brigance Screens and PEDS(Parents Evaluation of Developmental Status) (Frank Oberklaid & Drever, 2019).

In Rwanda some of study evaluation used ASQ to assess the health and wellbeing of the children and their families in the sites with or without an ECD services(Betancourt et al., 2020). The WHO (World Health Organization) put in place a framework document to describe and organize information on functioning and disability. The document is called ICF (International Classification of functioning, Disability and Health. It gives conceptual basis for the definition and measurement of health and disability. It has been approved for its use in 2001 and in 2007 ICF-CY (International Classification of functioning for children and youth) was published. The classification according to ICF-CY is divided in 2 subdivisions; the first part covers Functioning and Disability and the second part covers contextual factors. Each part of this classification has subdivisions or components. The components of part 1 are: Body functions and structures, activities and participation. The components of part 2 are: Environmental factors, personal factors which were not classified in ICF-CY. This classification is much descriptive and goes beyond normal diagnosis used to have in medical practice. It looks at the child and his environment. This was the criticism of Talley and Crews. But also ICF-CY does not reflect quick answer to the health issue of the child(Robinson, 2013).

Functionality of mentally challenged children and parenting:-

Developmentally normal children are expected to become independent overtime, this is not the case of a child with severe developmental delay and the functioning of children with disability seems impossible in the beliefs people. Although the situation, there is some improvement of development of supporting behavior towards children with disability though there still a gap to fulfill and 38 % of children are still hurtled or abused by members of their community (ACPF, 2014). Caregivers of CWD prioritized having faith, acceptance of the situation, loving the child, seeking medical and rehabilitative services at their clinic or hospital, and treating them like other children are the key advices to any parents live with CWD; The study shown the barriers met by parents in identifying the disability of their children timely and access easily the ECD services or other community based resources(UNICEF, 2015).

Children's behavior problems, parental stress and parental behavior are related. There is evidence that child behavior problems lead to parental stress. The interested part of the article is where the author focused on exploring the empirical evidence for the model of relationship between child's behavior problems and parental stress. Through a draw of 3 components (child behavior problems, parental stress and parenting behavior) he explains that parents and

children affects each other; children's behavior problems lead to stress in parents; and parents under stress adopt a certain parenting behavior that tend to reinforce the child's behavior problems(Hastings, 2016).

Another article examined the stress of parents of 3 groups of children and implications for family intervention.

No matter how the parents try to cope with different difficulties faced in daily life, parents of children of severely impaired children are in chronic state of psychological stress due to the demanding nature of raising a handicapped child, and that stress is manifested in psychological and family difficulties; (Wilkson & Richard, 2018); and the researcher confirmed that parents of children with autism perceived more stress associated with parent and family problems due to time demanding, the fact that parents do not find how to use their free time, lack of babysitter and the child's self-injurious behavior. The experience shown is not far from a parent of a physically and mentally challenged child. Talley and Crews, highlight caring a child physically and intellectually challenged is taken as a process that occurs'- across the life span. It begins with infant care; progresses to child and adolescent care; changes, but continues as we enter adulthood and midlife; and may conclude with end-of-life care(Talley & Crews, 2017).

If we look at caring these children across the continuum of life, it becomes easy to see why it is an issue that involves all people, people without disabilities, people with disabilities, the young and the old, regardless of race, gender, or socio economic status. 'I only hope that I will live one day longer than my daughter'. Said by a man when had a conversation with other parent with child physically and mentally challenged. Some parents confess that; time bath as most difficult need to satisfy,(Talley & Crews, 2017) ; others mention transporting, support in toileting, bathing, and dressing someone with severe disabilities represent demanding physical work and challenging emotional stress.

A study shown that how disability affects parenthood daily lives, but parents gives a message of encouragement "although not easy, having a child with a disability is 'not the end of the world' and caregivers advised that others in their position should try to have faith, accept their situation, equip themselves with a support network and as much information as possible, and to remember that their children with disabilities is a child and needs love and parenting just like all children(Unicef, 2015). On the hand the children as parents face different life limitations; it is the family that coordinates care for the child and ensures that medical practitioners consider the child's functioning in various contexts. The limitations of functioning for physically and mentally challenged children give barriers to their life. The Centre for developmental disability health observed that People with an intellectual disability encounter a number of specific barriers to good health care (Iq, 2014).

The barriers which experienced by children with an intellectual disability include: Limited literacy, Cognitive difficulties, Social/financial circumstances, Communication difficulties between patient and health professionals, Communication, cognitive and economic issues in relation to transport may cause difficulty in accessing health services and/or following recommendations, career issues and Health professional issues where they may rely on careers to arrange regular health checks and reviews. As reported by Centers of disease control and prevention, according to the personal functional, people may have disability of vision, movement, remembering, learning, hearing, communicating, mental health and social relationship (CDC,2018). We cannot talk about functionality of children with disability without talking about rehabilitation. Rehabilitation is a set of measures that assists individuals who experience or who are likely to experience disability, achieve and maintain optimal functioning in their interaction with their environment. Traditionally, rehabilitation outcome measures have focused on the individual's impairment level but recently, outcomes measurement has been extended to include individual activity and participation out comes (WHO & World Bank, 2017).

Raising awareness and challenging negative attitudes are often first steps towards creating more accessible environments for persons with disabilities(ACPF, 2014). Social determinants are conditions in which people are born, grow, work, age and the wider set of forces and systems shaping the conditions of daily life (Lindsay, S., & Edwards, A. (2013). The parents or care givers of children with disability do experience most of the time the stress which shapes negatively their health. The stress will most of the time be the cause of heart disease, reduce the quality of sleep and probably features of depression. The literature has shown that care giving has numerous effects on care givers. Those effects include negative emotions such as isolation, anxiety, anger, sadness, depression etc. It is important to recognize that these emotions are real and that they impact the lives of care giver and the person receiving the care, as well as significant others(Talley & Editor, 2017).

Different authors agree on the same idea that there is a link between disability and poverty. Some examine the impact of poverty on families through five domains; impacts on health (hunger, under nutrition and limited access to health); impacts on productivity (delayed cognitive development& underachievement, limited access to leisure);

impacts on physical environment(mainly home with water leaking, overcrowding, unclean); impacts on emotional well-being (increased stress, low self-esteem) and impacts on family interaction(unconscious unresponsive parenting, marital conflicts over money, increased sibling responsibility) (Turnbull, A. P., & Turnbull III, H. R. (2002)). Across Africa childhood is associated with poverty ACPF (2014). Disability may increase the risk of poverty; poverty may increase the level of disability (World report on disability 2011). Coordinated planning, collaboration and decision making among school staff, families and a network of community agencies is needed for better care of children with disability; (Davies et al., 2019).

Family level, is an important factor to provide emotional support from immediate and extended family. Mothers who received this support seem to perceive disability more positively. This study described strong spousal emotional support as a tremendously important and positive aspect of overall support of the mother. Providing better care for children can produce better results when the care needs of their parents are addressed at the same time. Investing in parent health and well-being will likely improve child health and disability and diminish the impact of disability on a child's functioning and participation in common childhood activities(Landry et al., 2015).

Through an ongoing evolutionary process Community based-rehabilitation (CBR) is shifting from a medical-focused, often single-sector approach, to a strategy for rehabilitation, equalization of opportunities, poverty reduction, and social inclusion of people with disabilities (WHO 2014). Parents should be involved in all aspects of learning and the family is the first source of education for a child and most learning occurs at home (WHO and World Bank, 2019). Community resources to support CWD are part of assistance and support. The lack of necessary support services can make people with disabilities overly dependent on family members and can prevent both the person with disability and the family members from becoming economically active and socially included (WHO and World Bank, 2019). The world report on disability suggested a principle to be considered while working in the area of children with disability; little will change in the lives of the children with disabilities until attitudes among communities, professionals, media and Governments begin to change(UNICEF, 2013).

The possible causes of disability:-

Approximately 70% of individuals with severe intellectual disability and 50% of individuals with mild intellectual disability have an organic or biological basis for their disorder.Chromosomal abnormality, Metabolic disorders, Maternal infections, Environmental conditions, Gestational disorders, Neonatal complications, and Environmental factors.

Theoretical framework:-

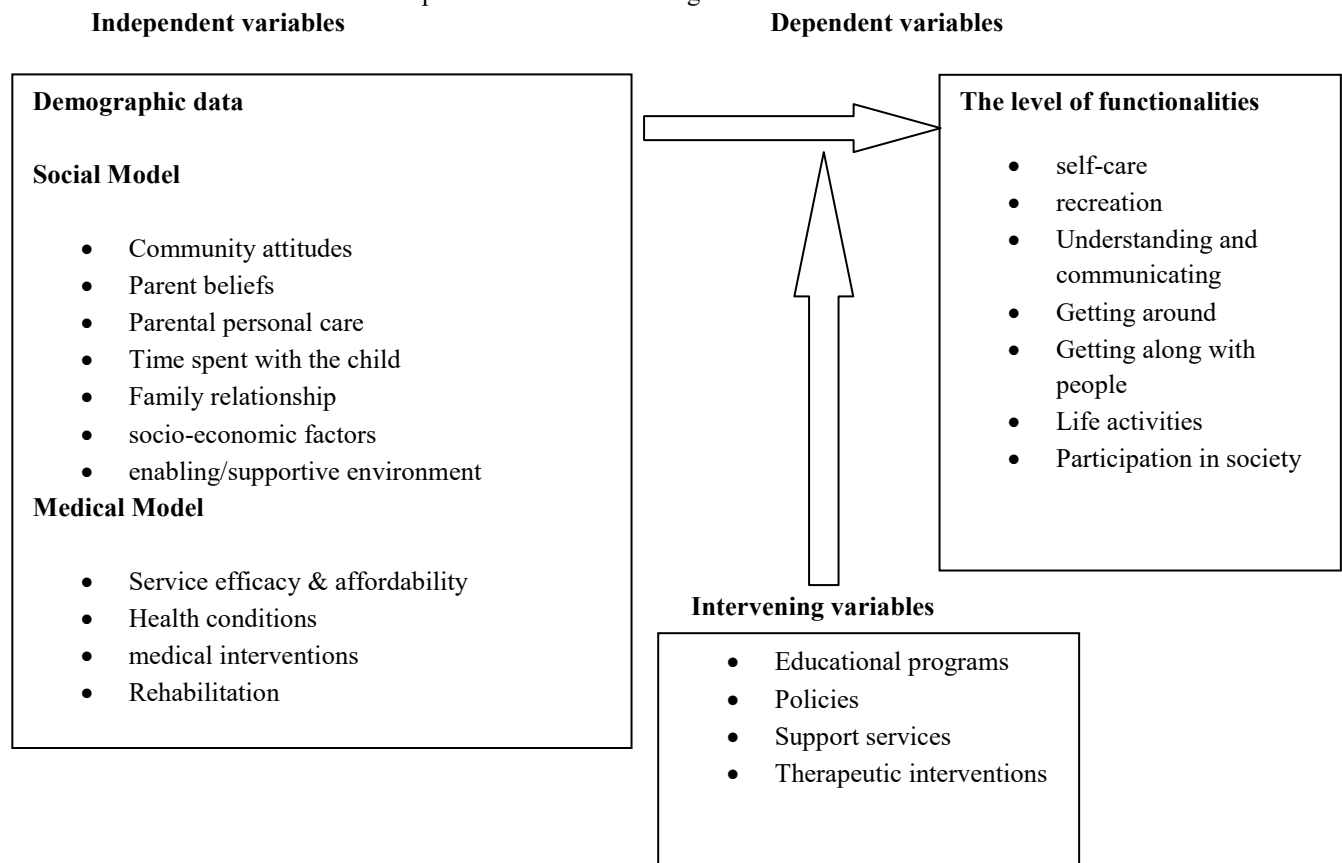
Different models provide frameworks for understanding and addressing disability. Disability is defined according to "MEDICAL MODEL" with treatment and cure than "SOCIAL MODEL" where the context must be taken into consideration while defining disability. The medical model views disability as a medical condition or impairment that needs to be diagnosed and treated. It focuses on individual limitations and often emphasizes medical interventions, rehabilitation, and efforts to mitigate disabilities. It views the disabled person as the problem (inclusion London). The Social Model was first developed in the 1970s by PWDs activists like Paul Hunt and Vic Finkelstein argued that people are not disabled by their impairments, but by barriers in Society, like inaccessible buildings, negative attitudes, lack of support and exclusion in decision making.

Mike Oliver's groundbreaking work on the social model of disability emerged in the late 1970s and gained prominence throughout the 1980s and 1990s. His influential book "Social Work with Disabled People" (1983) helped shape the discourse around disability as a social construct.This model states that disability is the inability to participate fully in home and community life. The interaction between functional limitations or impairments and physical and social barriers to full participation create disabling environments. The social model distinguishes between disabilities and impairments. Disabilities are restrictions imposed by society. Impairments are the effects of any given condition. The solution, according to this model, lies not in fixing the person, but in changing our society. Medical care, for example, should not focus on cures or treatments in order to rid our bodies of functional impairments. The problem is the disabling world. Instead, this care should focus on enhancing our daily function in society. In this current study; the social model will contribute to determining the restrictions, and limitations imposed on the children mentally challenged that could influence their functionality; identify their abilities that the community can build on to support creating a supportive environment and support formulating recommendations to the families, community, system and the National to enhance these children's daily lives and become more adaptive.

Conceptual framework:-

This study seeks to determine factors influencing the functionality of mentally challenged children attending rehabilitation centers in Kamonyi District. The conceptual framework is constructed based on the existing literature on the subject. An independent variable is a variable in a study that is manipulated by the researcher. It is the variable that is thought to cause a change in the dependent variable. In other words, changes in the independent variable are hypothesized to influence the outcome measured by the dependent variable. A dependent variable is the variable in a study that is observed and measured as the outcome. It is dependent on the changes made to the independent variable, which is the variable being manipulated. Intervening variables, in research, are variables that come between the independent variable (the variable being manipulated) and the dependent variable (the outcome being measured). They can affect the relationship between the independent and dependent variables; making it more complex to establish a direct cause-and-effect relationship. Intervening variables are sometimes also called mediating/moderating/cofounding variables.

The variables and their indicators are presented in the following manner.

**Conceptual framework:-**

The conceptual framework highlights susceptible reasons influencing the functionality of mentally challenged children, the level of functionality, and factors influencing the functionality of mentally challenged children. Those are dependent variables that may influence the functionality of mentally challenged children attending rehabilitation centers in Kamonyi District. In this study, community attitude, parent beliefs regarding mentally challenged children, parental personal care, time spent with the child, family relationship, service efficacy & affordability are independent variable while the level of functionality is the dependent variable.

Research gaps identification:-

Rwandans context believes in some myth; when a child with disability born it is often a blame on the mother who will assume all responsibility for the child's wellbeing. A big challenge and common for fathers to reject the family (his wife and children) and even divorce or separate. The phenomena lead easily to low participation of parents/families caring children with disability. Due to the negative emotional experiences live parent with children with disability, they develop dependence, low restricted level of family participation in the process of caring the children, low level of community participation. Raising children with disability including mentally challenged children asks a

couple of things but most of time it demands time. Caring the children may even decrease the economic status of the household. Working days will be divided into different activities including days of caring the child with disability as he/she needs to do visits to hospitals, to be brought for physiotherapy session; the time for activities developing the household economy will be limited therefore magnitude of development of this family will have minimized chance to be developed than other families without children with disability (Government of Rwanda, 2021).

Persons with disability will always need a help from an external person, the studies, research are needed as the gap still huge between documented policies, framework and implementation. Existing research and studies focused on barriers met by parents or care givers due to the challenging behavior of the mentally challenged child and advised ways to manage instead of also looking at reasons that lead to better or difficult functioning of these children. The purpose of this research will not be determining a diagnosis but looking at the functionality of children mentally challenged in their daily life, factors that could influence better functionality of mentally challenged children. Having such knowledge is relevant to the better life of those children as reported by an author; facilitating children and their families to manage, overcome those barriers should contribute to promote the quality life of children mentally challenged (Emily & Hons, 2017).

Summary of literature review:-

Across the world the limitation of providing appropriate care is shared; the relevance of needed actions to improve the situation is considered as priority. The World Disability Report, in 2011 estimates that there are between 93 and 150 million disabled children aged under 14 years. The prevalence for moderate and severe disability in this age cohort in Africa is 6.4 per cent. (World Health Organization, 2011). The lack of reliable and appropriately disaggregated data on children with disabilities impedes the formulation of legal frameworks and their implementation, (ACPF, 2014). In Rwanda disability is not solely viewed as a health issue; it is also viewed as an issue of development and human rights, thus if we do not meet their specific needs, then we are not including and supporting persons with disabilities to the best of our ability (Njelesani et al., 2018).

The UNCRPD defines stigma and discrimination as follows “Discrimination on the basis of disability” means any distinction, exclusion or restriction on the basis of disability which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field. It includes all forms of discrimination, including denial of reasonable accommodation”. Health conditions and personal factors play a role in facilitating the functionality of persons with disabilities including children mentally challenged, therefore well followed medical recommendations, life skills level inform the improvement of their potentialities.

Methodology:-

Research methodology:-

This study will use a quantitative cross-sectional design to determine the level of functionality and associated factors among children with intellectual disabilities attending rehabilitation centers in Kamonyi District, Rwanda. Data will be collected from children using WHODAS children version and parents or guardians using a structured questionnaire and analyzed using descriptive and inferential statistics. Ethical principles, including informed consent, confidentiality, and voluntary participation, will be observed throughout the study

Research design:-

A cross-sectional study was used to examine the relationship between various factors and functionality and associated factors by using an assessment tool and questionnaire. It was chosen because it allows for the assessment of prevalence and relationships between two variables at a single point of time (Creswell & Creswell, 2018; Setia, 2016). In this study, all children attending the rehabilitation center in Kamonyi in the period of the study were considered. A quantitative approach was used because the study aimed at examining the relationship between variables; the level of disability and functioning was determined through the use of the World Health Organization Disability Assessment Schedule 2.0 tool (WHODAS 2).

Location of the Study:-

The study should be done in Kamonyi district, where there is a number of rehabilitation centers compared to other districts. It was conducted in rehabilitation centers where physically and mentally challenged children and their families met for different services to the child. In Rwanda, we do have 49 centers of children with disability with 4349 children, adolescents, and young adults using the services of centers (National assessment of centers caring for children with disabilities in Rwanda; March 2016). Our study worked with rehabilitation centers; located in

Kamonyi District. The centers are not residential for children, they are placed in the community and have a connection with it, and they do have trained staff to deliver services to children with disability and their families. The centers offer mainly special education and physiotherapy sessions to children with disability. As children with disability need almost long-term support, the service delivered should be cost-effective; that's why these centers were chosen by considering the nearest location to the family, officially registered by MIGEPROF, or NCPD or MoH; and providing appropriate service to children with disability. The center Rosa Mystical supervises other sites working under Health facilities.

The table below shows the participants by center

#	Center name	Mentally challenged children by gender		
		Male	Female	Total
1	BUGOBA	2	2	4
2	Gihara	13	7	20
3	NGAMBA	3	5	8
4	KAYUMBU	2	2	4
5	NYAMIYAGA	5	4	9
6	KIGESE	10	3	13
7	MUSAMBIRA	21	14	35
8	MUGINA	13	19	32
9	KAMONYI	22	15	37
10	BUGURI	1	1	2
11	KABUGA	1	2	3
12	RUTOBWE	1	1	2
13	BIHEMBE	6	0	6
14	NKOMANE	5	1	6
15	JENDA	8	7	15
16	NYARUBAKA	7	4	11
17	KIBOGA	7	3	10
18	KARAMA	13	4	17
19	CYERU	2	4	6
20	NYAGIHAMBA	8	11	19
21	MPUSHI	5	2	7
	Total	155	111	266

Target population:-

The total population of this study is all children mentally challenged who are between ages of 5 up to 14 years old and attend rehabilitation centers. But also their parents will have relevant part to this study in participating to respond questionnaires through one to one dialogue. According to CEFAPK progress report (September 2023); 266 children with intellectual disability attended 21 Day care centers.

Inclusion Criteria:-

Inclusion criteria are the characteristics that study participants must have to be eligible to be included in the study. Children of 5 years up to 14 years old physically and mentally challenged attending rehabilitation centers in Kamonyi Districts were included in this study. Targeted population are these children and their families.

Exclusion criteria:-

Exclusion criteria are the predefined characteristics that disqualify eligible individuals from participating in a study. In this study; other children above 14 years old and young adults with disabilities who attend the center, children who were not available, children who didn't have parents at time of interview were not included in this study. Also, typical children were not included in this study as well as their parents.

Sample size determination:-

The representative sample chosen using reasoned choice as the technique of sampling. According to AMIN, 2005, this technique is used when the participant has the same chance to be selected. Thus, to determine the sample, the researcher used the Yamane formula which is used when the population is known and less than 10000.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample, N is the population under study called the target population and e is a margin of error of 5% with a confidence interval of 95%.

Note that the total population in this study N is 266 a population, therefore,

$n = \frac{266}{1 + 266(0.05)^2} = 159$. During this research, a total of 159 children mentally challenged were recruited in this study.

Sampling procedure:-

Sampling procedure refers to the process used to select a sample of participants from a larger population that represents population of interest. During our sampling, a cluster sampling technique was used because the mentally challenged children were dispersed and were organized within identifiable rehabilitation centers within the District. Every rehabilitation center from Kamonyi District served as a study cluster and constitute a unit of sampling. Every individual in each sampling unit had a chance to be selected by using simple systematic sampling among the eligible target population. (Creswell & Creswell, 2018; Kothari, 2004; Levy & Lemeshow, 2013)

Research instruments:-

A structured questionnaire and interview guide were established and it was divided into 9 themes plus the section focused on demographic characteristics. The level of disability and functioning was determined through the use of the World Health Organization Disability Assessment Schedule 2.0 tool (WHODAS 2). Data will be analyzed using descriptive and inferential statistics.

Testing for validity, Reliability and establishment of trustworthiness:-

The internal consistency of WHODAS 2.0 has been well documented in previous research. In this study, the tool demonstrated high reliability, with Cronbach's alpha coefficients ranging between 0.80 and 0.90, consistent with earlier validation studies in similar contexts. These values indicate strong internal consistency across the six functional domains, supporting its use in assessing the disability level of children in the target population. For the caregiver questionnaire, internal consistency was assessed using Cronbach's alpha, with a threshold of $\alpha \geq 0.70$ considered acceptable for reliability. The overall alpha value for the caregiver questionnaire was $\alpha = 0.84$, indicating good reliability. Subscale reliability for key domains such as perceptions of disability, parenting stress, and service access also exceeded the minimum acceptable threshold.

Validity:-

The primary instrument used to assess child functionality was the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), a standardized tool with established construct and content validity across diverse settings, including sub-Saharan Africa. In the Rwandan context, the WHODAS-Child version has been validated and shown to be culturally and linguistically appropriate (Doe & Smith, 2023). The tool was administered through interviews with caregivers to assess functionality across six domains: cognition, mobility, self-care, getting along, life activities, and participation in society. For the self-developed caregiver questionnaire, content validity was ensured through expert review.

Data collection methods:-

According to Thomander, S.D & Krosnick, J.A. (2024), the use of a questionnaire is appropriate if the researcher focus on collecting standardized data from many people. Data collected used one to one dialogue and fill in the questionnaire, and World Health Organization Disability Assessment schedule 2 tool (WHODAS 2.0).

World Health Organization Disability Assessment Schedule 2 (WHODAS 2.0) is a 36-item self-administered questionnaire that assesses disability in adults aged 18 years and older. There is also a version for children and youth. It assesses disability across six domains, including understanding and communicating, self-care, getting along with people, life activities (household, work, and/or school activities), and participation in society. Each item of the WHODAS 2.0 asks the individual to rate how much difficulty he or she has had in specific areas of functioning during the past 30 days. The scores assigned to each of the items "none" (1), "mild" (2), "moderate" (3), "severe" (4), and "extreme" (5) are summed. World Health Organization (2012). The parents' questionnaire was translated in Kinyarwanda to facilitate the participants to respond easily.

Data collection procedures:-

To measure the child's level of functioning, WHODAS 2.0 (World Health Organization Disability Assessment Schedule 2.0) was administered to children. It is an instrument that can measure health and disability at the population level or in clinical practice. It captures the level of functioning in six domains of life such as cognition, mobility, self-care, getting along, life activities and participation. It is applicable across cultures; it provides a common metric of the impact of any health condition in terms of functioning. It is composed by 36 items and can be administered in the community, clinical or general population. During data collection, each sampled individual was approached and explained about the nature, the purpose and procedure of the study. The voluntarily participation was respected in the study. The participants were met in the rehabilitation centers where they use to seek related services and the care givers/parents signed a consent form on behalf of their children after confirming their willingness to participate.

Data analysis techniques and presentation:-

Data collected through WHODAS 2.0 and structured caregiver questionnaires were analyzed using SPSS Version 21. The analysis began with descriptive statistics to summarize participants' socio-demographic characteristics and identify general patterns of functionality. Children's performance was assessed following the WHODAS children version scoring and interpretation guidelines, where each item is rated on a scale from 1 to 5. Higher scores indicate greater disability severity and lower functional ability. Functionality levels were categorized into two groups: low functionality (51–100%) and high functionality (0–50%). To explore associations, correlations between child functionality and demographic, social, and medical factors were examined using chi-square tests and corresponding p-values to identify significant predictors of functionality among mentally challenged children. A significance level of $p < 0.05$ was adopted for statistical inference. Furthermore, multivariate logistic regression analysis was conducted to examine the relationships among categorical variables and to estimate the simultaneous influence of multiple predictors while controlling for potential confounding factors.

Ethical considerations:-

The study aim was explained to the respondents and written consent was gained before the children's parents' interview. The parents were informed that the participation is voluntary, and that they could withdraw at any time of the study without any adverse consequence. They were encouraged to share their experiences and views of the issues under study. They were assured that they would remain anonymous in any future written report from the study, and their responses would be treated with confidentiality.

Results and Discussion:-

The present section presents the findings and analysis of the results to the purpose of the study and research objectives. Data was collected using questionnaire, and World Health Organization Disability Assessment schedule 2 tool (WHODAS 2.0). Data collected was analyzed using SPSS; chi-square and multinomial logistic regression analysis. This study examines the factors influencing the functionality of mentally challenged children aged 5-14 attending rehabilitation centers in Kamonyi District, Rwanda. The research aims to identify key predictors of their functionality. The sample consisted of 159 participants in pairs (children and their parents); 153 were administered a WHODAS and parents responded to a questionnaire.

Results and Discussion:-**Table 4.1: Demographic characteristics of respondents (N=153) in pairs.**

Variable	Category	n	%
Gender	Male	84	55%
	Female	69	45%
Children age group	5-9	21	28%
	10-14	11	72%
Parents age group	20-49	68	44%
	50 and above	85	55%
Parents educational level	Primary	132	86%

	Secondary (S) 1-6	8	5%
Parents marital status	Married	141	92%
	Single	12	8%
Parents occupation	Farmer	153	100%

Table 4.1 results indicate that most of the children participated (72%) are in the range age between 10 to 14 years old; 55% of the parents were 55 years and above with minimum age of 29 and the maximum age of 82. The parents' level of education varies; most of them attended primary school level (P6-P8) with a frequency of 54% and the higher level is Secondary school level (S1-6) with 5% of the respondents; parents of the participants are farmers and more than 141/153 are married.

The level of functionality among mentally challenged children attending rehabilitation centers in Kamonyi District through guardians or parents:-

Table 4.2: Children functionality:-

Children's performance was assessed following the WHODAS children version scoring and interpretation guidelines, where each item is rated on a scale from 1 to 5. Higher scores indicate greater disability severity and lower functional ability. Functionality levels were categorized into two groups: low functionality (51–100%) and high functionality (0–50%).

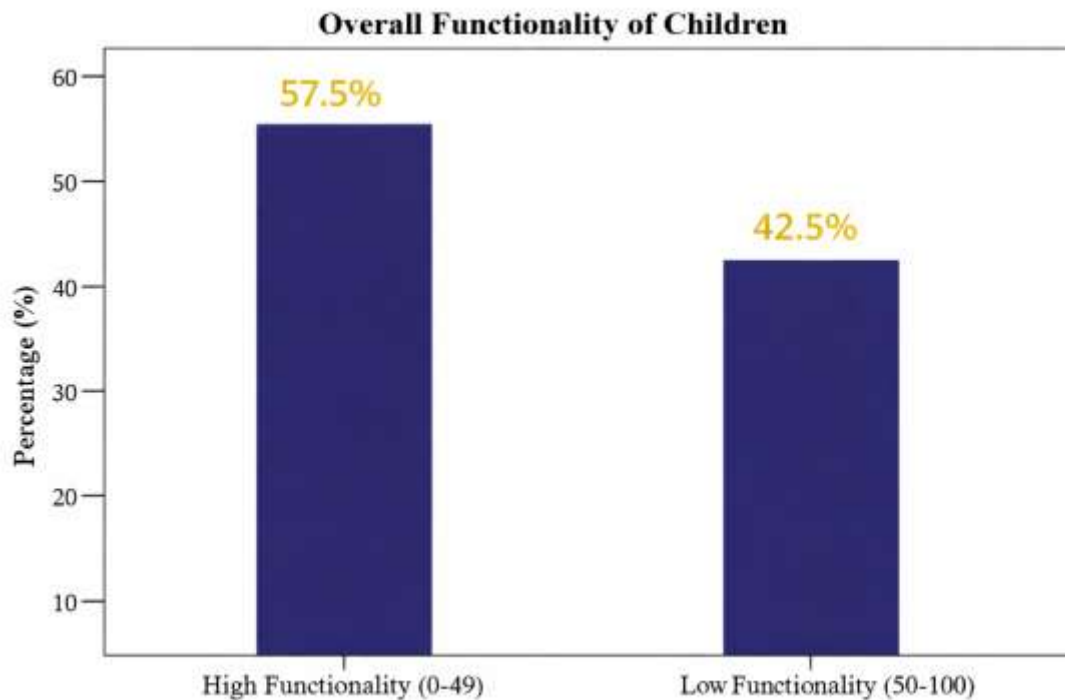


Table 4.2 illustrates the overall functionality levels of children attending rehabilitation centers in Kamonyi District. The graph shows that 57.5% of the children fall into the high Functionality category (scores between 0 and 49), whereas 42.5% are in the Low Functionality category (scores between 50 and 100). This indicates that a majority of the children exhibit high functionality in their daily activities, while a significant proportion experience low functionality levels.

Table 4.3: Children functionality by age and gender

Gender	High Functionality (0-49)		Low Functionality (50-100)		Total	
Male	44	50.0%	40	61.5%	84	54.9%

Female	44	50.0%	25	38.5%	69	45.1%
Total	88	57.5%	65	42.5%	153	100%
Age	High Functionality (0-49)		Low Functionality (50-100)		Total	
5-9	24	27.3%	26	40%	50	32.7%
10-14	64	72.7%	39	60%	103	67.3%
Total	88	57.5%	65	42.5%	153	100%

Table 4.3 presents the functionality levels of children by gender and age attending rehabilitation centers in Kamonyi District. It provides comprehensive view on how children's performance varies when both gender and age are considered. It reveals clear patterns of improvement with age and consistent differences between boys and girls.

Both male and female fall into high functionality and each group represent 50%; considering the age; children aged 10-14 years show 72.7% high functionality, while those aged 5-9 years old show 27.3 % and this indicates that the older children perform significantly better. On the low functionality; males have 61.5% of low functionality compared to 38.5% for females; it shows that males perform low than females.

Among this group; children children aged 5 to 9 years have 40% of low functionality and 60% for those aged 10 to 14 years; this proportion is smaller compred to their high funtionality rate.

Factors associated with the functionality of mentally challenged children:-

Correlation between child functionality and demographic characteristics:-

To assess whether demographic characteristics can influence functional outcomes; five characteristics were examined. The chi-square test examined the association of child functionality with selected demographic variables like child age, gender, marital status of parents, education level of parents, and occupation

Table 4.4: Correlation between child functionality and demographic characteristics

Variable		Child Functionality		Chi-Square	P. Value
		High Functionality (0-49)	Low Functionality (50-100)		
Child Age	5-9	24 (48.0%)	26 (52.0%)	2.753	0.097
	10-14	64 (62.1%)	39 (37.9%)		
Child Gender	Male	44 (52.4%)	40 (47.6%)	2.010	0.156
	Female	44 (63.8%)	25 (36.2%)		
Parent Marital Status	One Parent	6 (60.0%)	4 (40.0%)	0.027	0.869
	Married	82 (57.3%)	61 (42.7%)		
Parent Education	No education	8 (61.5%)	5 (38.5%)	1.548	0.461
	Primary	78 (58.2%)	56 (41.8%)		
	Secondary	2 (33.3%)	4 (66.7%)		
Parent Occupation	Farmer	88 (57.5%)	65 (42.5%)	0.000	-

Table 4.4 results showed that none of the five demographic variables were statistically significant predictors of child functionality since all p-values were greater than 0.05.

Yet, there were some trends. Children aged 10–14 (62.1%) manifested superior functionality compared to children aged 5–9 years (48.0%), and females (63.8%) were more likely to reflect superior functionality scores compared to males (52.4%). Parental marital status manifested very little difference, with comparable levels of functionality in children living in one parent and married households. In a surprising finding, children of parents with secondary education manifested lower functionality (33.3%) than parents with no education whatsoever (61.5%) or primary schooling only (58.2%). Parent occupation, which was dominated by farmers, did not show appreciable variability for analysis. In summary, while no demographic variable reached statistical significance, the trends suggest that older children and female may have comparatively better functionality outcomes, whereas higher parental education surprisingly was related to lower child functionality. Further study using larger sample sizes and other contextual factors can tell us more about these relationships.

Correlation between child functionality guardians' factors:-

Correlation between child functionality and social factors:-

To examine whether there is association between child functionality and certain social factors, including parent beliefs, community attitude, personal care of parents, time with the child, and family relationship; the Chi-square test of independence was conducted.

Table 4.5: Correlation between child functionality and social factor

Variable	Category	Child Functionality		Chi-Square	P. Value
		High Functionality (0-49)	Low Functionality (50-100)		
Community Attitude	Negative	10 (71.4%)	2 (28.6%)	1.221	0.269
	Positive	78 (56.1%)	61 (43.9%)		
Parent Beliefs	Negative	28 (51.9%)	26 (48.1%)	1.096	0.295
	Positive	60 (60.6%)	39 (39.4%)		
Parental Personal Care	No	26 (55.3%)	21 (44.7%)	0.134	0.714
	Yes	62 (58.5%)	44 (41.5%)		
Time Spent with the Child	Rarely	62 (59.6%)	42 (40.4%)	0.586	0.444
	Always	26 (53.1%)	23 (46.9%)		
Family Relationship	Negative	36 (60.0%)	24 (40.0%)	0.249	0.618
	Positive	52 (55.9%)	41 (44.1%)		

Table 4.5 found that none of these factors were significantly associated with child functionality because all p-values were larger than the typical significance level of 0.05. Although the descriptive statistics had revealed some differences in that the children from communities having a negative attitude (71.4%) than those from communities with a positive attitude (56.1%), these had not yet achieved statistical significance ($\chi^2 = 1.221$, $p = 0.269$). Similarly, variability in child functioning across parental beliefs, parental self-care, amount of time with the child, and family relationships was found descriptively but none of them were statistically significant ($p > 0.05$ across all variables). These findings suggest that, in this sample, social factors as observed here do not statistically significantly affect child functionality.

Association between medical features and child functionality:-

The chi-square tests of independence were employed to test for association between child functionality and medical-related factors.

Table 4. 6: Correlation between medical features and child functionality

Variable	Category	Child Functionality		Chi-Square	P. Value
		High Functionality (0-49)	Low Functionality (50-100)		
Affordability	No	70 (57.9%)	51 (42.1%)	0.027	0.871
	Yes	18 (56.3%)	14 (43.8%)		
Efficacy of Health Services	No	68 (60.7%)	44 (39.3%)	1.749	0.186
	Yes	20 (48.8%)	21 (51.2%)		
Remain in the Same Status	No	16 (40.0%)	24 (60.0%)	6.801	0.009
	Yes	72 (63.7%)	41 (36.3%)		

Table 4.6 found that the affordability of services was not associated with child functionality, $\chi^2 = 0.027$, $p = 0.871$. Furthermore, perceived efficacy of health services did not show a significant relationship with functionality, $\chi^2 = 1.749$, $p = 0.186$. These findings suggest that neither service cost perceptions nor perceptions of their effectiveness were significant considerations in the differentiation between high and low functionality children in this group.

A converse strong association was, however, seen between maintaining the same status and child functionality, $\chi^2 = 6.801$, $p = 0.009$. Higher numbers of children maintaining the same status indicated improved functionality (63.7%) compared to children who were not maintaining the same status (40%). This observation affirms the importance of stability in health or condition status, and how stable or unchanging medical situations may have a positive contribution towards child functionality outcomes.

Multivariate logistic regression:-**Table 4.7: Factors associated with child functionality after adjusting for confounders**

Variable	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	p Value
Child age	1.8 (1.1–3.0)	1.4 (0.9–2.2)	0.08
Child gender	2.2 (1.3–3.7)	1.5 (0.8–2.6)	0.12
Parent marital status	1.6 (1.0–2.5)	1.3 (0.7–2.2)	0.20
Parent education	2.5 (1.4–4.6)	1.9 (1.1–3.5)	0.03*
Parent occupation	1.2 (0.8–2.1)	1.1 (0.6–1.9)	0.52
Community attitude	1.7 (1.1–2.6)	1.3 (0.8–2.0)	0.18
Parent beliefs	2.0 (1.2–3.4)	1.6 (1.0–2.7)	0.04*
Parent care	1.5 (0.9–2.5)	1.3 (0.7–2.2)	0.22
Time with child	1.9 (1.1–3.3)	1.5 (0.9–2.6)	0.10
Family relationship	1.4 (0.8–2.3)	1.2 (0.6–2.0)	0.30
Affordability	2.6 (1.5–4.3)	2.0 (1.2–3.5)	0.01*
Efficacy of health service	1.3 (0.8–2.1)	1.1 (0.6–1.9)	0.40
Remain in same status	1.8 (1.1–3.2)	1.5 (0.9–2.6)	0.07

Table 4.7 founds that Children whose parents have higher education levels are about 1.9 times more likely to have high functionality compared to those whose parents have lower education. Positive or supportive parental beliefs are associated with 1.6 times higher odds of high functionality in children. Families that can afford services or resources have 2 times higher odds of children being highly functional. All other factors (child age, gender, marital status, occupation, community attitude, etc.) have $p > .05$, meaning they do not show a statistically significant association

with child functionality after adjusting for other variables. However, some (like child age and remaining in the same status) show p values close to significance (0.07–0.08), suggesting a possible trend worth exploring with a larger sample. The findings indicate that family-level factors especially education, beliefs, and affordability play a more crucial role in determining a child's functionality than demographic or community factors

Discussion of Research Findings:-

1. Research conclusions demonstrate that in our study, the majority of the children show high functionality in their daily activities, while a significant proportion experience low functionality levels; 57.5% of the children fall into the high functionality category (scores between 0 and 49), whereas 42.5% are in the low functionality category (scores between 50 and 100). (88 of 153) obtained low scores on the WHODAS (indicative of high functionality, given the scoring direction). This finding aligns with prior validation studies of WHODAS-Child/WHODAS 2.0 in similar population, which reinforce the tool's sensitivity to functioning differences.

For instance, Scorza et al. (2013) in rural Rwanda demonstrated that WHODAS-Child reliably distinguished children with and without psychosocial problems and correlated with functional impairment. Similarly, Hamdani et al. (2020) in Pakistan validated an adapted WHODAS-Child among children with developmental disorders, underscoring its capacity to capture functional status in lower resource settings. While most existing research focuses on documenting functional limitations (higher WHODAS scores indicating greater disability), our finding shows that a substantial portion of children in our sample are functioning relatively well. This suggests that within populations of mentally challenged children, there may be a wide spread of functionality and that family level factors such as parental education, beliefs, and ability to access medical services may play a pivotal role in enabling higher functioning.

Our study revealed that children aged 10–14 demonstrated superior functionality compared to children aged 5–9, and that females were more likely to achieve higher functionality **scores** than males. These findings are consistent with previous research highlighting age and gender as influential factors in functional outcomes among children with mental or developmental challenges. For example, McDonald et al. (2023) observed that older youth were more likely to report functional independence, reflecting age-related increases in cognitive, social, and adaptive skills. Similarly, Diaz-Castro et al. (2024) identified gender-specific differences in functionality, with females showing relatively higher functionality scores in a clinical population of children and adolescents with mental disorders.

2. Our study investigated functionality among mentally challenged children using the WHODAS 2.0, highlighting the role of family level factors, age, and gender in shaping outcomes. A key finding was that the majority of children (57.5%) had low WHODAS scores, indicative of high functionality.

This contrasts with many prior studies that report elevated disability in similar populations. For example, Hamdani et al. (2020) found that children with developmental disorders in rural Pakistan exhibited moderate to high disability, while studies validating WHODAS-Child in Rwanda (Scorza et al., 2013) and Italy (Federici et al., 2023) primarily documented functional impairments without emphasizing the proportion of children with high functionality. Our findings suggest that within our population, a substantial number of children are functioning relatively well, highlighting potential protective influences such as family level support. Consistent with this, we found that family level factors significantly influenced functionality. Children whose parents had higher education levels, supportive beliefs, and the ability to afford medical services were more likely to demonstrate higher functionality.

These findings are supported by studies showing that parental education and empowerment, positive caregiving attitudes, and access to affordable medical care improve developmental and functional outcomes in children with disabilities (Emerson, 2022; Roddy et al., 2021; Piškur et al., 2012). This underscores the critical role of family and household context in shaping functional trajectories, often more so than demographic or broader community factors. Educated parents are also more likely to recognize developmental delays, adhere to therapy recommendations, and facilitate inclusive social participation factors that directly enhance a child's functionality.

Similarly, our results emphasize the importance of parental beliefs and attitudes. Supportive and positive parental beliefs are associated with better functional outcomes in children with disabilities, consistent with findings by Babik and Gardner (2021) and Piškur et al. (2012). These studies demonstrate that when parents view their child's potential positively and actively engage in therapy and everyday skill building, children tend to exhibit greater progress in independence, communication, and social interaction. Families with the means or insurance coverage to

access multidisciplinary medical and therapeutic services often report higher levels of child functioning and participation (Roddy et al., 2021).

Our findings indicate that family level factors specifically parental education, parental beliefs, and affordability of medical services play a critical role in determining the functionality of children with intellectual disabilities. This reinforces the view that immediate family conditions exert a stronger influence on child outcomes than broader demographic or community characteristics.

The positive association between higher parental education and child functionality aligns with evidence from several studies showing that parents with higher education tend to engage more effectively with health and educational systems, seek early interventions, and provide supportive home environments conducive to learning and adaptive behavior (Arakelyan et al., 2019; Jang et al., 2023). Educated parents are also more likely to recognize developmental delays, adhere to therapy recommendations, and facilitate inclusive social participation factors that directly enhance a child's functionality.

Affordability of medical services also emerged as a key determinant of child functionality. Access to affordable health care enables families to pursue timely diagnosis, continuous therapy, and consistent medical follow-up all essential for maintaining or improving functionality. Studies in both high- and low-resource settings confirm that financial barriers are a major constraint to rehabilitation and continuity of care for children with developmental disabilities (Xie et al., 2024; Emerson, 2022).

Our study also revealed age and gender differences in functionality. Children aged 10–14 exhibited superior functionality compared to those aged 5–9 years, and females demonstrated higher functionality scores than males. These findings align with McDonald et al. (2023), who observed age related differences in functional reporting among youth with mental disorders, suggesting developmental progression contributes to functional improvements. Díaz-Castro et al. (2024) reported gender specific patterns, with females often demonstrating higher functionality across several domains. Potential explanations include longer exposure to interventions, differences in socialization, and variations in adaptive skill acquisition.

These results indicate that interventions should be age and gender sensitive, ensuring younger children and males receive targeted support while consolidating gains for older children and females. While many children are functioning at a relatively high level, family-level factors, age, and gender play pivotal roles in shaping outcomes.

Objective One: The Level of functionality of mentally challenged children attending Rehabilitation Center in Kamonyi District, Rwanda:-

The research results using WHODAS indicated that the majority of children, both male and female, have high functionality across different domains. However, the number of males with low functionality (52.4%) is higher than that of females (63.8%). Regarding age, older children have a greater number of both high and low functioning situations compared to younger ones.

Objective Two: Factors associated with the functionality of mentally challenged children attending rehabilitation centers in Kamonyi District through guardians or parents:-

All other factors (child age, gender, marital status, occupation, community attitude) have $p > .05$, meaning they do not show a statistically significant association with child functionality. However, some other medical features like the fact that the child remains in the same status improve their functionality ($p=0.009$) comparing to the ones who were not maintaining their status. The findings indicate that family level factors especially education, beliefs, and affordability play a more crucial role in determining a child's functionality than demographic or community factors.

Conclusions:-

The purpose of the study was to determine the level of functionality among mentally challenged children attending rehabilitation centers in Kamonyi District through guardians or parents and to identify factors associated with the functionality of mentally challenged children attending rehabilitation centers in Kamonyi District through guardians or parents. Our study revealed that children aged 10–14 demonstrated superior functionality compared to children aged 5–9, and that females were more likely to achieve higher functionality scores than males. We found that family level factors significantly influenced functionality. Children whose parents had higher education levels, supportive beliefs, and the ability to afford medical services were more likely to demonstrate higher functionality. All other factors (child age, gender, marital status, occupation, community attitude) have $p > .05$, meaning they do not show a

statistically significant association with child functionality. However, some (like remaining in the same status) show p value of 0.009. Therefore, policies promoting sponsored or universal access to child rehabilitation and specialized medical services are likely to yield significant developmental benefits and policymakers should therefore prioritize inclusive health financing, community-based rehabilitation, and parent empowerment initiatives to ensure that all children regardless of household background access the resources necessary to reach their full potential.

References:-

1. ACPF. (2014). The African Report on Children with Disabilities: Promising Starts and Persisting Challenges. The African Child Policy Forum Addis Ababa.
2. African Decade of Persons with Disabilities Rwanda National decade steering committee(2010), Census of people with disabilities in Rwanda.Chapter 1 Understanding disability. (n.d.). 1–17.Ministry of Local Government.
3. AlMuhairy, O., Efthymiou, E., ElHoweris, H., Alshathly, M., & Sartawi, A. (2023). Development of the Emirati Child Adaptation Scale (ECAS) for Assessing the Behavioral Adaptation Skills of Children with and without Disabilities in the UAE. *Education Sciences*, 13(4), 406.
4. Assembly, United Nations General. (1948). Convention on the Prevention and Punishment of the Crime of Genocide, 9, 277.
5. Babik, I., & Gardner, E. S. (2021). Factors affecting the participation of children with disabilities.*International Journal of Environmental Research and Public Health*, 18(14), 7454.
6. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications
7. Davies, M. D., Beamish, W., Davies, M., & Beamish, W. (2009). Transitions from School for Young Adults with Disability: Parental Perspectives on “life as an adjustment” Accepted for publication in the *Journal of Intellectual and Developmental Disability*, 2009 Transitions from School for Young Adults with Intellectual Disability: Parental Perspectives on “Life as an adjustment .” 1–22.
8. Doe, J., & Smith, A. (2023). Validation of the ‘World Health Organization Disability Assessment Schedule for Children, WHODAS-Child’ in Rwanda. *Journal of Health Research*, 25(3), 123-134
9. Elloker, T., Karachi, F., Mlenzana, N., Arowoia, A. I., Jacobs-Nzuzi Khuabi, L. A., & Rhoda, A. (2017). Using the World Health Organization’s Disability Assessment Schedule (2) to assess disability in community-dwelling stroke patients. *South African Journal of Physiotherapy*, 73(1), 1-7.
10. Emerson, E. (2022). Poverty, socioeconomic disadvantage, and children with intellectual disabilities in low- and middle-income countries.*Journal of Applied Research inIntellectual Disabilities*, 35(1), 12–25.
11. Erbiçer, E. S., Şahin, H., & Kış, A. (2024). The effect of parent education programs on parenting stress and self-efficacy among parents of children with disabilities: A meta-analysis.*Children and Youth Services Review*, 157, 107249
12. Ertem, I. O., & World Health Organization. (2012). Developmental difficulties in early childhood: prevention, early identification, assessment and intervention in low-and middle-income countries: a review.Grantham-McGregor, S., Cheung, Y. B., Cueto, S., Glewwe, P., Richter, L., Strupp, B., & International Child Development Steering Group. (2007). Developmental potential in the first 5 years for children in developing countries. *The Lancet*, 369(9555), 60–70.
13. Federici, S., Bracalenti, M., Meloni, F., & Luciano, J. V. (2016). World Health Organization disability assessment schedule 2.0: An international systematic review. *Disability and Rehabilitation*, 39(23), 2347–2380. <https://doi.org/10.1080/09638288.2016.1223177>
14. Gray, D. E. (2006). Coping over time:The parents of children with autism. *Journal of intellectual disability research*, 50(12), 970-976.
15. García-Pintor, B., Morales-Rodríguez, F. M., & Pérez-Mármol, J. M. (2023). The association between executive function and performing instrumental daily activities in people with intellectual disabilities. *Healthcare (Basel)*, 11(17), 2374.
16. Houtrow, A. J., Larson, K., Olson, L. M., Newacheck, P. W., & Halfon, N. (2014). Financial and psychological stressors associated with caring for children with disability. *Families, Systems, & Health*
17. Hwang, A. W., Yen, C. F., Liou, T. H., Simeonsson, R. J., Chi, W. C., Lollar, D. J., ... & Chiu, W. T. (2015). Participation of children with disabilities in Taiwan: The gap between independence and frequency. *PloS one*, 10(5), e0126693.
18. Jang, M., Kim, J., & Jeong, Y. (2023). Parent training interventions for caregivers of children with developmental disabilities: Effects on parental competence and child functioning.*Frontiers in Psychology*, 14, 1124860.

19. Jess, M., Hastings, R. P., & Totsika, V. (2017). The construct of maternal positivity in mothers of children with intellectual disability. *Journal of Intellectual Disability Research*, 61(10), 928–938.
20. Koszela, K. (2013). *The Stigmatization of Disabilities in Africa and the Developmental Effects*.
21. Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.). New Age International Publishers.
22. Landry, M. D., Rama, S. R., Harris, E., Madison, L., Parekh, M., Banks, C., ... Wijesinghe, C. (2015). Exploring the factors that influence the perceptions of disability: A qualitative study of mothers of children with disabilities at a community-based rehabilitation centre in Sri Lanka. *WHO South-East Asia Journal of Public Health*, 4(2), 150–158.
23. Landry, M. D., Raman, S. R., Harris, E., & Madison, L. (2015). Exploring the factors that influence the perceptions of disability: A qualitative study of mothers of children with disabilities at a community-based rehabilitation centre in Sri Lanka. *WHO South-East Asia Journal of Public Health*, 4(2), 150-158.
24. Levy, P. S., & Lemeshow, S. (2013). *Sampling of populations: Methods and applications* (4th ed.). Wiley.
25. Mâsse, L. C., Miller, A. R., Shen, J., Schiariti, V., & Roxborough, L. (2012). Comparing participation in activities among children with disabilities. *Research in developmental disabilities*, 33(6), 2245-2254.
26. Memisevic, H., & Sinanovic, O. (2014). Executive function in children with intellectual disability – the effects of sex, level and aetiology of intellectual disability. *Journal of Intellectual Disability Research*
27. National Institute of Statistics of Rwanda (NISR), Fifth Rwanda Population and Housing Census, Thematic Report: Socioeconomic characteristics of persons with disabilities
28. Ng, Y. S., Lim, A. Z., Panagiotou, G., Turnbull, D. M., & Walker, M. (2022). Endocrine manifestations and new developments in mitochondrial disease. *Endocrine reviews*, 43(3), 583-609.
29. Njelesani, J., Siegel, J., & Ullrich, E. (2018). Realization of the rights of persons with disabilities in Rwanda. *PloS One*, 13(5), e0196347.
30. Of, M., & Government, L. (2021). Republic of Rwanda Ministry of local government national policy of persons with disabilities.
31. Okelo, K., Murray, A. L., King, J., Kitsao-Wekulo, P., Onyango, S., Nampijja, M., & Auyeung, B. (2024). Parental stress and child stimulation practices: Examining associations with child developmental outcomes over time in Kenya and Zambia.
32. Robinson, S. (2013). Safe at home? Factors influencing the safety strategies used by people with intellectual disability. *Scandinavian Journal of Disability Research*, 16(2), 99–113.
<https://doi.org/10.1080/15017419.2013.781958>
33. Sanders, J. L., & Morgan, S. B. (1997). Family stress and adjustment as perceived by parents of children with autism or Down syndrome: Implications for intervention. *Child & Family Behavior Therapy*, 19(4), 15-32.
34. Schroeter, C., Mueller, S., Volkhardt, M., Einhorn, E., Huijnen, C., van den Heuvel, H., ... & Gross, H. M. (2013, May). Realization and user evaluation of a companion robot for people with mild cognitive impairments. In *2013IEEE International Conference on robotics and automation* (pp. 1153-1159). IEEE
35. Setia, M. S. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology*, 61(3), 261–264.
36. Shree, A. (2020). Intellectual Disability : definition , classification , causes and characteristics. (September).
<https://doi.org/10.5958/2231-458X.2016.00002.6>
37. Talley, R. C., & Crews, J. E. (Eds.). (2012). *Multiple dimensions of caregiving and disability: Research, practice, policy*. New York, NY: Springer.
38. Piškur, B., Beurskens, A. J., Jongmans, M. J., Ketelaar, M., Norton, M., Frings, C. A., & Smeets, R. J. (2012). Parents' actions, challenges, and needs while enabling participation of children with a physical disability: A scoping review. *BMC Pediatrics*, 12, 177.
39. Roddy, A., O'Neill, C., & Staines, A. (2021). Financial hardship and its impact on access to therapy services for children with developmental disabilities. *Health & Social Care in the Community*, 29(6), 1638–1647
40. Turnbull, A. P., & Turnbull III, H. R. (2002). *From the old to the new paradigm of disability and families: Research to enhance family quality of life outcomes*. Greenwood Publishing Group, Inc.
41. Thomander, S. D., & Krosnick, J. A. (2024). Question and questionnaire design. In J. E. Edlund & A. L. Nichols (Eds.), *The Cambridge handbook of research methods and statistics for the social and behavioral sciences* (Vol. 2, pp. 352–370). Cambridge University Press.
42. UNICEF. 2015. *Study on Children with Disabilities from Birth to Four Years Old*. Pretoria: Department of Basic Education.
43. Urimubenshi, G. (2015). Activity limitations and participation restrictions experienced by people with stroke in Musanze district in Rwanda. *African health sciences*, 15(3), 917-924.

44. Van der Linde, J., & Casteleijn, D. (2016). A comparison of two assessments of levels of functioning in clients with intellectual disability between occupational therapists and nursing staff within a long-term mental healthcare facility in South Africa. *Curationis*, 39(1), 1-10.
45. Vasconcelos, R. L., Moura, T. L., Campos, T. F., Lindquist, A. R., & Guerra, R. O. (2009). Avaliação do desempenho funcional de crianças com paralisia cerebral de acordo com níveis de comprometimento motor. *Brazilian Journal of Physical Therapy*, 13, 390-397.
46. Vilaseca, R., Rivero, M., Bersabé, R. M., Cantero, M. J., Navarro-Pardo, E., Valls-Vidal, C., & Ferrer, F. (2019). Demographic and parental factors associated with developmental outcomes in children with intellectual disabilities. *Frontiers in psychology*, 10, 426229.
47. Wang, L., Yang, C., Jiang, D., Zhang, S., Jiang, Q., & Rozelle, S. (2022). Impact of parental beliefs on child developmental outcomes: A quasi-experiment in rural China. *International Journal of Environmental Research and Public Health*
48. Widyawati, Y., Scholte, R. H. J., Kleemans, T., & Otten, R. (2023). Parental resilience and quality of life in children with developmental disabilities in Indonesia: The role of protective factors. *Journal of Developmental and Physical Disabilities*,
49. World Health Organization. (2011). World report on disability 2011. World Health Organization.
50. World Health Organization. (2015). WHO global disability action plan 2014-2021: Better health for all people with disability. World Health Organization.
51. Xie, Y., Zhang, J., & Hu, X. (2024). Health service utilization and barriers among children with disabilities: Evidence from low- and middle-income contexts. *Disability and Health Journal*, 17(2), 101479