

**EFFECTIVENESS OF PARENT-MEDIATED
BEHAVIOURAL INTERVENTION FOR
AGGRESSION IN CHILDREN WITH AUTISM
SPECTRUM DISORDER IN LAGOS NIGERIA**

By

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**A PROJECT SUBMITTED TO THE CENTRE FOR CHILD AND
ADOLESCENT MENTAL HEALTH, IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF MASTER OF
SCIENCE OF THE UNIVERSITY OF IBADAN**

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DECLARATION

This project is submitted in partial fulfilment of the requirements for the Degree of Master of Science of the University of Ibadan.

I hereby declare that this study is my original work and it has not been submitted elsewhere for a degree, diploma or fellowship.

Mashudat Abiola BELLO-MOJEED

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SUPERVISOR'S CERTIFICATION

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DEDICATION

This work is dedicated to all the beautiful mothers of children with autism spectrum disorders who face unique challenges in the context of caring for their affected children.

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I thank the Almighty God who gave me life, inspiration, valour and strength to commence and complete this project in the field of a special and unique need, Child and Adolescent Mental Health.

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KEY TO ABBREVIATIONS

ABA	Applied Behaviour Analysis
ABC	Antecedent Behaviour Consequency
APP	Aggression towards a person or property
ASIQ	Aggression and Self Injurious Questionnaire
ANCOVA	Analysis of Covariance
APA	American Psychiatric Association
ASD	Autism Spectrum Disorders
BI	Burden Interview
CDC	Centre for Disease Control
CI	Confidence Interval
DSM V	Diagnostic and Statistical Manual of Mental Disorder Version V
FBA	Functional Behaviour Analysis/Assessment
FNPHY	Federal Neuro-Psychiatric Hospital, Yaba
GHQ	General Health Questionnaire
KBMAQ	Knowledge on Behavioural Management of Aggression Questionnaire
LMIC	Low- and Middle-Income Countries
mhGAP	Mental Health Gap Action Programme
mHealth	Mobile health
RIT	Reciprocal Imitation Training
SIB	Self Injurious Behaviour
SMS	Short Message Service

ABSTRACT

Background: Autism Spectrum Disorders (ASD) is a disabling and lifelong neuro-developmental disorder identified as an important cause of global burden of disease in children. Research findings indicate aggression to be common in ASD. Aggression in ASD impacts negatively on the mental health of both the affected child and the family caregiver. Though research has shown effective behavioural interventions exist and can be delivered by parents of children with ASD, there is no published research on the feasibility and implementation of such an intervention in Nigeria.

Objective: This study aimed to assess the feasibility and effectiveness of parent-mediated behavioural intervention for aggressive behaviour in children with ASD. A comparison of the pre and post maternal knowledge on behavioural intervention for aggression and the effect of intervention on the level of stress of the mothers were also examined.

Methodology: In a quasi-experimental study, twenty (20) mothers of and their children with diagnosis of ASD were recruited from a developmental clinic of a Child and Adolescent Mental Health Service Unit. Diagnosis of ASD was based on Diagnostic and Statistical Manual (DSM-V) criteria. Instruments used for data collection were socio-demographic questionnaire, Aggression and Self Injury Questionnaire (ASIQ), the 12-item General Health Questionnaire (GHQ-12), Burden Interview (BI), Knowledge on Behavioural Management of Aggression Questionnaire (KBMAQ) and Client Satisfaction Questionnaire. Mothers received a weekly group session for a duration of 5 weeks. Intervention Manual was used for training. Responses to the questionnaire were scored on a scale. Rater of aggression outcome measure was blinded to the objective of the study. Assessments were conducted on outcome measures at baseline and after intervention.

Results: Age of children with ASD ranged from 3-17 years with a mean age of 10.7 ± 4.6 . The age range of mothers was 32-52 years with a mean age of 42.8 ± 6.4 . Score on aggression towards a person or property category of ASIQ ranged from 1-10 with a mean of 4.3 ± 2.5 . Score on the self injurious category of ASIQ ranged from 0-5 with a mean of 2.8 ± 1.8 . Score on the knowledge instrument ranged from 3-12 with a mean score of 7.9 ± 2.6 . GHQ-12 score ranged from 0-7 with a mean of 3.0 ± 2.3 .

Significance of differences in the mean scores of the outcome measures were determined with paired t-tests. Compared to pre-intervention Aggression towards a person or property (APP) item mean score of 4.3 ± 2.4 and APP total mean score of 36.0 ± 20.2 , showed a statistically significant reduction post intervention with mean scores of 3.9 ± 2.5 ($p=0.008$) and 29.1 ± 18.2 ($p<0.001$) respectively. There was a statistically significant increase in the mothers knowledge on behavioural management of aggression from a pre-intervention mean score of 7.9 ± 2.6 to a post-intervention mean score of 11.8 ± 0.4 ($p<0.001$). Pre-intervention GHQ-12 mean score of 3.0 ± 2.2 and BI Score of 26.5 ± 14.1 decreased significantly to mean scores of 1.6 ± 1.5 ($p<0.001$) and 24.5 ± 13.4 ($p=0.009$), respectively. Post-intervention knowledge score was negatively correlated with post-intervention aggression outcome measures, GHQ-12, and BI but results were not statistically significant ($p>0.05$). Overall, 25.0% of mothers were mostly and 75.0% very satisfied with the intervention programme.

Conclusions: Parent-mediated behavioural intervention is a feasible and promising treatment for aggression in ASD and improved maternal mental well-being in Nigeria. The role of mothers as active partners with formal care providers in the management of children with ASD is emphasised. Behavioural intervention in the context of parent education should be an integral component in scaling up services for children with ASD in Nigeria.

Key words: ASD, aggressive behaviour, functional behaviour analysis/ behavioural intervention, parent education, maternal stress, burden, caregiver

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WORD COUNT

S/N	Title	Word count	(Permitted Word Range)
1	Abstract	560	500-700
2	Introduction	1,209	1,000-5,000
3	Literature review	3,951	3,000-4,000
4	Methodology	2,097	2,000-3,300
5	Results	1,019	1,000-2,000
6	Discussion	2,239	2,500-3,5000
7	Total	11,075	10,000-15,000

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CHAPTER ONE

INTRODUCTION

1.1 Background

Children with Autism Spectrum disorder (ASD) and their families are saddled with diverse and varying forms of challenges. Autism Spectrum Disorder (ASD) is a group of complex neurodevelopmental disorders that afflict a child in early childhood (APA, 2013). The spectrum disorder comprises a group of heterogeneous disorders with features ranging from mild to severe clusters of symptoms. ASD is characterised by a persistent deficit in social interaction, social communication, and a restricted, repetitive pattern of behaviour, interest or activities (APA, 2013). Its occurrence has been reported to affect individuals in all parts of the world, at all socio-economic level, with a male to female ratio of about 4 to 1 (Fombonne, 1999; Yeargin-Allsopp et al., 2003).

Though once considered to be a rare childhood disorder, recent studies have shown a consistent increase in the prevalence of ASD. The prevalence of ASD has been reported to have increased from 0.4 per 1,000 in the 1970s to the current estimate of up to 20 per 1,000 children (Yeargin-Allsop et al., 2003; Chakrabarti & Fombonne, 2005; CDC, 2007). Since 1985, there has been a reported increase in the prevalence rate of autism from countries such as the United Kingdom (UK), the United States of America (USA), and Sweden (Yeargin-Allsop et al., 2003; Chakrabarti & Fombonne, 2005; CDC, 2012). In addition to the findings being a reflection of a possible increase in the prevalence, it could be due to increased awareness, improved recognition or detection of symptoms/impairments and a broadening definition of the spectrum disorder (Yeargin-Allsop et al., 2003).

Impairments in ASD affect virtually all aspects of functioning principally related to the central nervous system (CNS) with a wide range of characteristic features ranging in severity from mild to severe (APA, 2013). In addition to the qualitative deficit in social and communication skills, behavioural problems such as aggression has been documented to be common in ASD with a rate about 35.8% to 94.3% (Farmer, 2011; Bello-Mojeed, 2009). The presence of aggressive behaviour in ASD could impact negatively on the complexity of the disorder, the child, the family and the society as a whole (Luisseli et al, 2000). Aggression could serve as a major threat to the safety of the affected child, safety of others, limited life opportunities, risk of institutionalization and a potent obstacle to treatment of core symptoms of ASD. Affected children are socially rejected, stigmatised, at risk of abuse and retaliation from peer, staff and family members (Luiselli et al., 2000).

The impact of aggressive behaviour has been observed to be serious not only on the affected child but also the maternal caregiver who bears the brunt of psychosocial stress of caregiving (Koegel, 2000; Bromley et al., 2002; Tomanik et al., 2004; Bello-Mojeed et al., 2010; Bello-Mojeed et al., 2013a) and are, paradoxically, important tools in the delivery of intervention for children with ASD (Koegel, 2000; Reichow et al., 2013, Bello-Mojeed and Bakare, 2013). Involvement of mothers in intervention for their children with ASD has a potential benefit of improved child outcome, reducing associated maternal/family stress, improving caregiving skill including identification of possible functions of the aggression (Howlin, 1987; Koegel et al., 1996; Dawson, 1997; Jocelyn et al., 1998; Smith 2000).

Functions reported from research as possible explanation for occurrence of aggressive behaviour in ASD include a need for attention, protest against unwanted events and access to tangible items (Derby et al., 1992; Iwata et al., 1994; Wacker et al., 1998). Although

pharmacological and non-pharmacological approaches are intervention options for aggression in ASD, behavioural intervention has been documented to be the main mode of therapy (Matson et al., 2011). In the absence of appropriate treatment such as behavioural intervention, aggressive behaviour in ASD persists into adulthood with associated developmental and lifelong consequences.

Research studies have observed that as behaviour is influenced by contingencies in the environment, it is similarly sensitive to alteration in such environmental contingencies (Matson et al., 2011). Effective behavioural intervention offers important opportunity for improvement for both child and carer (Drew et al., 2002; Koegel and Schreibman, 1996; Koegel et al., 1982). This study aims to assess the effectiveness of parent mediated behavioural intervention for aggression in children with ASD in a clinical population in Lagos, Nigeria.

1.2 Justification

Autism Spectrum Disorder has been identified among leading mental health-related causes of the global burden of disease with lifelong effects on affected children. Over the past four decades, there has been a consistent increase in the reported prevalence of autism worldwide. The rate of ASD has increased from 0.4 per 1,000 in the 1970's to the current estimate of about 20 per 1,000 (Yeargin-Allsop et al., 2003; Charkrabarti and Fombonne, 2005; CDC, 2007; CDC, 2012). With increasing number of children living with ASD, family caregivers in Nigeria, especially mothers face myriads of challenges and stress associated with the disabling and lifelong impairments of the spectrum disorder (Bello-Mojeed, 2009; Bello-Mojeed et al., 2013a).

Symptoms of ASD include qualitative impairment in social and communication skills. In addition to core features of ASD, challenging behaviours such as aggression are common in the spectrum disorder (Koegel, 2000; Bello-Mojeed et al., 2010). While interventions in ASD include pharmacological and non-pharmacological methods including behavioural intervention, non-pharmacological intervention is the main treatment approach (Matson et al., 2011; Koegel and Schreibman, 1996). Pharmacological therapies such as anti-psychotics, the main treatment option for management of aggression in Nigerian children with ASD, can have intolerable debilitating side effects while behavioural therapy is relatively safe and cost effective (Matson et al., 2011). A growing number of research studies in the treatment of ASD have suggested benefit of behavioural intervention for aggression in ASD (Drew et al., 2002; Koegel and Schreibman, 1996; Koegel et al., 1982).

Given the high prevalence of aggression in ASD, its consequences on treatment of core symptoms of ASD and its negative impact on the affected child, caregiver and the physical environment, it is important that appropriate intervention be put in place to identify and address this behavioural problem. Parents, especially mothers, have been identified as important to play key role in the treatment of their children with ASD. While parent-mediated interventions for aggression in ASD have potential benefit for improved outcome in both the affected child and the family/parents, there is virtually no published data on the feasibility and effectiveness of FBA for children with ASD in Nigeria.

1.3 AIM AND OBJECTIVES

1.3.1 Aim

The aim of this study is to assess the effectiveness of parent-mediated behavioural intervention for aggression in children with autism spectrum disorders (ASD) in Lagos, Nigeria

1.3.2 Specific Objectives

The specific objectives of this study are:

1. To evaluate the effectiveness of behavioural intervention for aggressive behaviour in children with ASD
2. To assess the level of knowledge of mothers of children with ASD on the content of the intervention pre- and post-intervention
3. To determine the effect of the intervention on the level of stress and mental health of mothers

1.3.3 Null Hypotheses

1. There will be no difference in the level of aggression pre- and post-intervention.
2. There will be no difference in parental knowledge on behavioural management of aggression in ASD pre- and post-intervention.
3. There will be no difference in the level of stress and mental health of the mothers pre- and post-intervention

CHAPTER TWO

LITERATURE REVIEW

2.1 Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is a group of complex neurodevelopmental disorders that afflicts a child in early childhood. It is characterised by a persistent deficit in social interaction, social communication, and a restricted, repetitive pattern of behaviour, interest or activities (APA, 2013). The presentation/features/symptoms of the disorder vary in severity depending on the child's age, intellectual and language ability (APA, 2013; Bryson, 1996; Lord and Paul, 1997).

Spectrum of symptoms in ASD range from mild to severe and are often accompanied by abnormalities in cognition, learning and sensory processes. Impairment in "social skills", from which the term autism is derived, include difficulties in social-emotional reciprocity, non-verbal communication and interpersonal relationship while restricted repetitive pattern of behaviour include motor stereotypies (e.g. hand flapping), repetitive use of objects (spinning), resistance to change, restricted and fixated pattern of interest.

2.2 Prevalence of Autism Spectrum Disorder

Once considered rare, previous studies have consistently shown an increase in the prevalence of ASDs (Yeargin-Allsop et al., 2003; Merrick et al., 2004; Charkrabarti & Fombonne, 2005; CDC, 2007; Newschaffer et al., 2007). Prevalence of ASDs has been reported to have increased from 0.4 per 1,000 in the 1970s to the current estimate of up to 20 per 1,000 (CDC, 2012).

Although there are variations in the reported prevalence estimates of autism, research findings have documented a consistent increase in the prevalence of the spectrum disorders. Prevalence studies in the last 3 decades have evoked a widespread public concern about the number of children with autism. Studies conducted before 1985 reported prevalence rates of ASD was in the range of 0.4-0.5 per 1,000 among children below the age of 18 years (Lottner, 1966; Rutter, 2005). However, since 1985, studies have reported higher rates of autism, ranging from 0.7-1.0 per 1,000 for children with autistic disorder with estimates of 1.5-2.5 per 10,000 higher for ASD (Gillberg and Wing, 1999). Recent research and reviews have reported an estimate of about 6-20 per 1,000 for ASD (Newschaffer et al., 2007; CDC, 2007; Chakrabarti and Fombonne, 2005; Chakrabarti and Fombonne, 2001).

In a study carried out by Gillberg et al. (1999), to determine rates of autism in Swedish urban subjects born between 1977 and 1994, it was reported that prevalence rate of ASD was about 5.3 per 1,000. This finding is comparable to the report of another prevalence study by Chakrabarti and Fombonne (2001) conducted to determine the prevalence of pervasive developmental disorders among 15,500 preschool children in Staffordshire, England. Chakrabarti and Fombonne (2001) reported a higher prevalence rate of 6.2 per 1,000 for ASD in their study population. Similarly, Fombonne et al. (2006), in an attempt to link the current increase in the observed prevalence estimate to Measles-Mumps-Rubella (MMR) vaccine and the vaccine preservative called thimerosal, Fombonne et al (2006), surveyed a cohort of 27,749 children born between 1987 and 1998 in Canada to evaluate the prevalence trend in ASD rates. The study found prevalence rates of 6.4 per 1,000 for ASD with a report of no association between the MMR vaccination and exposure to thimerosal.

In another population based multisite surveillance study carried out to monitor ASD prevalence in the United States, children aged 8 yrs were identified in 14 areas of the United

States as having ASD through screening and record extraction at the various sites. The investigators reported that the prevalence of ASD in children aged 8 years was estimated to be 6.7 per 1,000 children (CDC, 2007). The most recent report from Autism and Developmental Disabilities and National Survey of children's health show that the prevalence of parent-reported ASD among children aged 6 to 17 years increased from 12 per 1,000 in the year 2007 to 20 per 1,000 in 2011 to 2012. These results support previous research findings that ASD was more common than previously thought.

The observed variations in prevalence rates of ASD could be accounted for by the variation in the ages of the children screened, the use of small sample size by earlier studies, differences in the diagnostic criteria between studies, and the study locations involved. Methodological design such as initial screening in some surveys could also account for the possible exclusion of some high functioning cases in earlier studies. An increased awareness in the general population and broadening definition of the spectrum disorder could also contribute to the recent observed increase in the prevalence rate.

The upsurge in the prevalence of ASDs could partly account for why some researchers refer to the occurrence of the spectrum of disorders as an epidemic of public health concern. Despite the seriousness of this problem, available data on prevalence of these disorders are mainly from developed countries while epidemiological data on prevalence of ASD in African countries including Nigeria is scarce (Bakare and Munir, 2011; Bello-Mojeed et al., 2013b). Dearth of epidemiological information on ASD in African children, such as in Nigeria, could partly account for the earlier assumption that ASD is rare in the continent (Lotter, 1978; Sanua, 1984). The ongoing 'rise' in the prevalence of ASD points to a need for further research studies on the associated impairments, its impact and effective interventions for affected individuals and their family.

2.3 Impairments in Autism Spectrum Disorder

Symptoms of ASD include significant impairments in major areas of functioning. A child with ASD exhibits a persistent deficit of specific skills in areas of functioning as evident by delays in developmental milestones. A number of developmental milestone tagged “red flags” have been suggested to be indicative of ASD in children. Such developmental “red flags” include poor eye contact, reduced social responsiveness, reduced responsive smiling, diminished babbling and poor language development. Symptoms of ASD are present during infancy, usually before the age of 3 years.

Impairments in ASD affect multiple contexts of the child’s functioning. The symptoms occur in a spectrum ranging from mild to severe. One of the qualitative impairment is social skill deficit. Social skill impairment is a primary feature of the spectrum disorder. A lack of normal attention to social stimuli, such as faces, voices and emotional expression, has been hypothesized to deprive an affected child from social information input in the first year of life, thereby, disrupting normal social and behavioural development (Mundy and Neal, 2001). Impairment of social skills include avoidance of or poor eye-to-eye contact, poor facial expression, aloofness and failure to develop relationships, impaired use of gestures to regulate interaction, lack of social or emotional reciprocity, and impaired understanding of other people’s motives or perspectives. Social attention impairments, especially joint attention skills, have been documented to impede language/communication development (Mundy et al., 1990; Tomasello and Farrier, 1986).

Social Communication skills impairment represents a major deficit in ASD. Acquisition and development of language are often delayed in children with ASD. It has been documented that about a third to a half of individuals with autism fail to develop sufficient speech required for their daily communication needs (Bryson, 1996; Lord and Paul, 1997). Affected

children may fail to develop speech or develop limited speech. They could have significant difficulty in initiating and sustaining a conversation. Language pattern in children with ASD include verbatim repetition of words or phrases (echolalia), pronoun reversal and unusual prosody. Children with autism often interpret words or sentences literally and rely on syntax when deciphering meaning of sentences (Paul et al., 1988).

The third key feature of ASD is a persistent deficit of behaviour, interest or activities. Children with autism tend to show little or no interest in people around them, may lack typical social behaviour, prefer to play alone and demonstrate preoccupation with one or more stereotyped and restricted patterns of interest. They are usually engaged in repetitive activities such as arranging objects in meaningless patterns, or staring at rotating objects. Some engage in repetitive stereotypic body movements such as hand flapping, snapping their fingers, to and fro rocking, and spinning. Sometimes these movements may be harmful, such as head banging and biting of the wrists (Campbell et al., 1990; Turner, 1999). They prefer specific or familiar routines and tend to resist change. Children with autism frequently become upset at any attempt to stop or make changes in their surrounding and sometimes exhibit aggression.

2.4 Aggressive Behaviour in Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is a disorder of heterogenous behavioural symptoms.

Behavioural symptoms in autism include aggression, self-injurious behaviour, stereotypy.

There is no psychiatric diagnosis for “aggressive behaviour” in autism. Prevalence of aggression estimated from research ranges from 35.8% to 94.3% (Farmer, 2011). It tends to occur in more frequently in males than females, individuals with co-existing conditions such as intellectual disability, sensory impairments, language disorders, poor coping skills and poor problem solving skills (APA, 2013).

Often, the term “aggression” is used to refer to a wide range of features such as physical assaults on peer, family members, staff, and individuals in the environment. Aggression refers to a wide range of behavioural expressions such as tantrum, hitting, kicking, throwing, butting, threatening and destructiveness. It could also be a symptom of varying psychiatric diagnoses such as oppositional defiant disorder, conduct disorders. Of the constituent behavioural symptoms of ASD, aggression has been associated with serious negative impact (Luiselli et al., 2000). Individuals with ASD and aggressive behaviour are liable to retaliation from peer, could be socially rejected, stigmatised and poorly integrated into the community. Presence of aggression in ASD could also lead to removal from home environment or be institutionalization due to concern for safety of others (Le Cavalier et al., 2006).

The topography of aggressive behaviour refers to its form, frequency, intensity, latency and duration. Factors influencing topography of aggression in individuals with ASD include functioning level, cognitive, biological and medical contributors (Lecavalier, 2006; Langstrom et al., 2009). High functioning individuals in the spectrum disorder have propensity to argue, threaten, be destructive and manifest instrumental aggression while those on the low functioning end of the spectrum presents with reactive and impulsive aggression and rarely threaten or show instrumental aggression (Lecavalier, 2006; Langstrom et al., 2009). Frequency, intensity, latency and duration of aggressive behaviour are also influenced by biological or bio-psychosocial factors such as constipation and anxiety respectively. While aggression could be exhibited in individuals with ASD with a prolongation in bowel movement interval, those with anxiety disorder could manifest the behaviour when there is exacerbation of the disorder. Research findings have shown that challenging behaviour including aggression can be sensitive to environmental factors (Lovas and Simmons, 1969).

Invariably, aggressive behaviour may increase or reduce in accordance with application of reinforcement. A topography based methodology was evident in operant conditioning mode of treatment aimed at behaviour reduction implementation strategies. In some cases, differential reinforcement of alternative behaviour is put in place in an attempt to reduce aggressive behaviour. Research findings have suggested that topography of a given behaviour may not adequately reflect the complexity of the aetiology and assessment of the disorder (Matson and Nebel-Schwalm). In addition to topography, researchers have emphasised a need to pay attention to function of aggressive behaviour in children with ASD (Matson et al., 2011).

2.5 Functions of Aggression in Autism Spectrum Disorder

Various factors have been suggested to play a role in the occurrence of aggressive behaviour in ASD. Some of the functions identified from literatures to be associated with aggression in ASD include a need for help or attention, escape from event and to protest against unwanted event or activities (Derby et al., 1992; Iwata et al., 1994; Wacker et al., 1998). Eliciting presence of such factors suggest such behaviour serve important communicative function. Assessment for function of aggression could utilize behavioural approach such as “Functional Behaviour Analysis (FBA)” to determine the triggers and maintaining factors of such problem behaviour.

Functional assessment of the relationship between behaviour and environmental event could be carried out to determine functions or maintaining factors of aggression including positive reinforcement such as attention or access to tangibles, negative reinforcement such as escape, and automatic reinforcement through physical contact. Often, functional assessment could aid identification of precipitating factors of aggression such as hunger, thirst, sleep problem and discomfort.

The observation from studies that aggression may lead to social attention, pacification with tangible and physical engagement suggest that such problem behaviour can be reinforced in the natural environment (Matson et al., 2011). In an extensive analysis on evidence of environmental causes of challenging behaviour in ASD, Matson et al. (2011) demonstrated that causes of challenging behaviour may be operant or environmentally related. In the review by Matson et al (2011), about 94% of the reviewed studies identified a clear function(s) for the problem behaviour and reported that attention was the most commonly identified cause of aggressive behaviour. Identifying the function of problem behaviour and environmental determinants is vital for effective behavioural intervention/treatment to modify the problem behaviour.

2.6 Treatment of Aggression in children with Autism Spectrum Disorder

Treatment options for children with Autism Spectrum Disorder could be categorized into pharmacological and non-pharmacological treatment methods. Pharmacological treatment refers to the use of medication/drugs for challenging behaviours such as aggression and co-existing psychiatric or medical condition. Although drug treatment has a role in the control of challenging behaviour and co-existing medical condition, it is not the primary treatment method for core impairments in ASD (Rogers, 1998; Reichow et al., 2013). There is ample of evidence to support benefit of non-drug treatment such as psychosocial and educational intervention in minimising core features of autism.

The non-pharmacological treatments of ASD include behavioural, educational, social skill training (e.g. socialization, play and music therapy), speech, language and behavioural treatment options (Reichow et al., 2013; Bello-Mojed and Bakare, 2013; Rogers, 1998). The aim of non-pharmacological intervention in ASD is targeted at minimising core features of ASD such as social skill deficit, communication skill deficit and behavioural impairments.

All interventions share the same goal of improving quality of life of affected children. The long term goal of intervention, observed, suggested from research findings, is to help an individual with aggressive behaviour is to help the affected individual substitute the aggressive act with a socially accepted and appropriate behaviour. Given that onset of ASD presentation is usually prior to the age of 3 years, early intervention is vital for optimal outcome.

Various hypotheses have been propounded for aggression in ASD. The iceberg hypothesis of aggression in ASD uses the iceberg phenomenon to illustrate the concept of behavioural manifestation of aggression in the spectrum disorder. The observable aggression, such as hitting kicking and throwing things, is viewed as being above the surface of the water. The function is conceptualized as a part of the core deficit in ASD located below the surface of the water; which could be inability or difficulty to communicate. Also, there is another hypothesis that suggests the affected individuals manifest aggression as mode of initiating or maintaining interaction possibly because the child does not know how to play with other children. Following identification of function of aggression, an appropriate intervention can be developed to help modify or substitute the maladaptive aggressive behaviour with a more acceptable one.

Over 90% of children and adolescent in need of effective treatment for ASD live in Low and Middle Income Countries (LMIC), including Nigeria, where they are exposed to multiple challenges of extreme poverty, hardship and out-of-pocket cost for health care services (Reichow et al., 2013; Bello-Mojeed and Bakare, 2013; Omigbodun, 2004). In addition to difficult situations in LMIC and in contrast to the global reports of increasing prevalence of children with ASD, there is a serious shortage of specialist, especially in LMIC, to deliver the

available evidence-based effective treatment for children with ASD (Reichow et al., 2013; Bello-Mojeed and Bakare, 2013).

2.7 Parent-mediated Behavioural Intervention for children with Autism Spectrum Disorder

In addition to coping with the stress of handling the social and communicative impairments, parents, especially mothers have to cope with challenging behavioural impairments which is common in affected child. Invariably, mothers of such children spend more time in caregiving than mothers of normal children or children with other disabilities. Parents are considered to be essential elements that can be taught to change the contingencies required to reinforce an appropriate behaviour (Corcoran, 2000). Studies have documented that parental involvement in behavioural training is positively related to positive changes in parents' behaviour, a reduction in the child's problem behaviour, and the development of adaptive behaviour in the child.

An important assumption of parent mediated behavioural training for children with autism is that behaviour exhibited by a child is learnt and maintained through a contingency often present within the environment or family context. Behavioural interventions in ASD are designed to encourage appropriate behaviour and forestall or discourage maladaptive behaviour. Some of the earlier behavioural intervention utilised home-based applied behavioural analytic approaches whereby they involve parent in the intervention but such interventions were primarily delivered by trained therapist (McEachin, 1993). Other approaches have educational component with environmental structuring through communication routine, visual cueing and individual task (Lord, 1994). Although behavioural intervention programmes may differ in design and content, they all have basic principle. The training could be provided on individual or group basis.

Behavioural interventions for children with ASD have included a wide range of approach with a current trend to involve parents in the treatment. Behavioural interventions with a significant focus on parents as mediator are designed to train parents as non-specialist treatment providers for the management of impairments or deficits in their children with diagnosis of ASD. Though the emphasis is on the parent, findings from previous studies show that parent-mediated intervention takes place in partnership with a teacher or a professional.

Though training programmes vary in design and content, the basic principle appears to be similar and could be provided on individual or group basis. Some behavioural approaches for management of children with ASD utilizes applied behaviour analysis in intensive home based programmes that involve parents but delivered mainly by the trained therapists. Educational framework with emphasis on class environment structuring is incorporated into some intervention programmes. Other studies emphasise creation of naturalistic environment that provide communication opportunity, enhance social interaction motivation and pro-social behaviour prompts. Studies on this subject are mainly from the developed countries and involved children in preschool years.

In a randomized controlled trial, Jocelyn et al (1998) evaluated a parent-implemented intervention training program for children with autism in community day-care centers. Thirty-five (35) preschool children (age range 24 – 72 months) with a DSM III-R diagnosis of autism or pervasive developmental disorder were randomized to an experimental Autism preschool program (APP) (n = 16) or control group (Community Day Care standard services) (n = 19). All assessments in their study were made by professionals blind to the group intervention and pre and post measures were used within intervention duration of 12 weeks. The results of the study showed that behavioural intervention was significantly superior to day care alone with greater gains in language abilities, significant increases in caregivers'

knowledge about autism, greater perception of control on the part of mothers, and greater parent satisfaction in the intervention group.

Using a combination of parent and teacher training model, Ingersoll and Dvortcsak (2006) carried out a parent-mediated training intervention for parents of children with ASD in a classroom setting in Oregon, United States. Their intervention was based on the principle of applied behaviour analysis and conducted for a period of 9 weeks. Training curriculum was used for group sessions which were conducted by the teacher and the researcher. Outcome measure was by assessment of an increase in parent knowledge on the intervention technique and parent satisfaction survey. Although both parents and teachers reported benefit of the program and felt it added to the education quality of children with ASD, a major limitation of this study is a failure to measure child outcome.

In another parent-mediated intervention study for children with ASD, Ingersoll and Gergans (2006) assessed the effectiveness of parent-implemented Reciprocal Imitation Training (RIT) for children with ASD. Three children with ASD and their mothers participated in the training program conducted in a clinic setting. After an initial baseline, mothers were taught to implement the training technique in their home after the intervention and 1 month follow-up. The results of the study showed parents to have increased their use of intervention strategies in the clinic setting and their home. The findings support the consistent findings that parents can be effectively used as therapist in the behavioural management of children with ASD.

2.8 Behavioural Intervention for Aggression in children with Autism Spectrum Disorder

Behavioural Intervention for aggression refers to the use of evidence-based principle and procedures stemming from Applied Behaviour Analysis (ABA) to reduce problem behaviour including aggression. A number of studies have utilised different types of behavioural intervention in the management of aggression in ASD. Forms of behavioural intervention reported to be effective for aggressive behaviour in ASD include Functional Behavioural Assessment (FBA), Antecedent-based Interventions derived from functional assessment, Reinforcement-based behavioural interventions from functional assessment, Non-function based behavioural intervention, Early and Intensive Behavioural Intervention and behavioural intervention within mixed treatment packages. In addition to topography of aggressive behaviour, function of problem behaviour has been demonstrated to be of value in designing intervention for aggression in individuals with ASD.

Functional behaviour assessment (FBA) is a scientific process that helps to determine causal factor for problem behaviour such as aggression. Three main areas of FBA are direct, indirect and experimental methods. Direct method includes direct observation or descriptive analysis and incorporates antecedent-behaviour-consequences (ABC) analyses while indirect method utilizes the use of interviews, questionnaire, checklists and rating scales. Experimental method, also known as experimental functional analysis, involves a systematic manipulation of environmental events to test behavioural hypotheses. In functional analysis, the experimenter often reinforces and the problem behaviour of the affected individuals by presenting a specific reinforce for a particular condition.

The use and effectiveness of functional behaviour analysis for aggressive behaviour have been highlighted in research studies. According to Fox and Meindl (2007), intervention for

aggression should identify the precursor/antecedents of the problem behaviour and a formal functional behaviour analysis should be carried out. These steps are vital as an alteration in aggression antecedents may eliminate aggressive behaviour and influences treatment programme design. Functional analysis has been demonstrated to impact on clinician's ability to manage aggression in ASD through identification and manipulation of environmental events.

2.9 Effectiveness of Behavioural Intervention for Aggression in children with Autism Spectrum Disorder

Most studies on behavioural intervention for aggression in ASD were conducted in the developed countries. In contrast to the developed countries, late diagnosis and poor knowledge about ASD are common findings from most African countries including Nigeria, despite parental concern about features suggestive of ASD in their affected children (Bello-Mojeed, 2009; Bello-Mojeed et al., 2013a).

Functional Communication Training (FCT) and differential reinforcement (DR) have demonstrated a substantial support in the treatment of aggression in ASD (Matson et al., 2008). Braithwaite and Richdale (2000) implemented a functional behaviour analysis for treatment of challenging behaviour in children with autism. The behavioural intervention involved identification of function of aggression using a structured interview with analysis of antecedents, behaviour and consequences. The outcome of the intervention shows a significant reduction in the level of aggression. Similarly, DeLeon et al. (2000) and Athens and Volmer (2010) used experimental functional analysis and reinforcement based strategies

to assess controlling variables of aggression. These studies demonstrated significant reduction in the aggressive behaviour in children with autism.

Research studies on behavioural intervention for children with ASD have evolved from clinician based to inclusion of parental training. Parents have been identified as significant collaborators in ASD intervention service delivery. Training parents as therapist in ASD intervention process has been linked with positive child and parent outcome. Parents of children with ASD are crucial in the design and implementation of appropriate and effective behavioural intervention for their affected children.

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CHAPTER THREE

METHODOLOGY

3.1 Study Location

The study was carried out at the Child and Adolescent Mental Health Service Unit of Federal Neuro-Psychiatric Hospital, Yaba (FNPHY).

3.1.1 Federal Neuro-Psychiatric Hospital, Yaba

The Federal Neuro-Psychiatric Hospital (FNPH), Yaba was established in 1907. It is located in the centre of Yaba metropolis within the Lagos Mainland Local Government Area. It is the only Psychiatric Hospital in Lagos; there are psychiatric departments and units in teaching and general hospitals in Lagos State. FNPH, Yaba is among the few Psychiatric Hospitals in Nigeria that have a separate child and adolescent unit. This unit is called the Child and Adolescent Mental Health Service Unit.

The Child and Adolescent Mental Health Service Unit commenced services in May 1999 and is managed by three consultant psychiatrists. Other members of staff at the centre include resident doctors, nurses, psychologists, educational therapists, speech and language therapist, occupational therapist, physiotherapists, social workers and record officers. Children who attend the clinic are below the age of 18 years. Activities in the clinic include emergency services, outpatient clinic and consultant ward rounds which involve all the multidisciplinary professionals in the unit. A clinic holds from 8 a.m. to 4 p.m. on all the five working days of the week, and an average of about 10 children with ASD are seen in this clinic per month. Although other multidisciplinary team members attend to children with ASD at the Centre, the use of drug is the mainstay of treatment for such children at the Centre. Children with

ASD in this clinic come from all parts of the country and reveal diversity in terms of ethnic representation and socio-economic status.

3.2 Study Design

The study design is quasi experimental (pre-post intervention) study without a control group.

3.3 Study Population

The study population comprised children with a diagnosis of autism spectrum disorder and their respective mothers. The children and mothers recruited were those attending clinic at the Child and Adolescent Mental Health Service Unit.

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion criteria

The inclusion criteria for the child were as follows:

- i. A diagnosis of ASD based on DSM-V criteria
- ii. Presence of aggressive behavior
- iii. Age below 18 years

The inclusion criteria for the mothers were as follows:

- Age 18 years and above
- Mothers had the child with ASD residing with them
- Mother being the child's primary care-giver from birth

3.4.2 Exclusion criterion

The exclusion criterion was:

- Refusal of the mothers to give informed consent

3.5 Sample Size Determination

The required sample size for the study was calculated using the formula:

$$n = 2F(\sigma/d)^2$$

Where:

n = is the minimum sample for the group,

F = 7.85

7.85 is a factor based on 80% power and 0.05% level of significance (Wade, 1997)

σ = is the standard deviation for aggression

d = is the difference expected to be found between the pre and post-intervention level of aggression.

Assuming that the behavioural intervention will result in one standard deviation reduction in aggression pre and post-intervention, then, the sample size will be

$$n = 2 \times 7.85 \times (1/1)^2 = 2F(\sigma/d)^2$$

$$n = 2 \times 7.85 \times (1/1)^2$$

$$n = 16$$

The sample size was increased to 20 to account for potential loss to follow up or attrition in the course of intervention. A total of 20 participants were studied.

3.6 Sampling Technique

Purposive Sampling method was used to recruit study participants. Mothers of all children with ASD and aggressive behaviour, who met the inclusion criteria and gave informed consent, were recruited into the study.

3.7 Study Instruments

The instruments used for the study included the following:

1. **Socio-demographic questionnaire:** This is the first instrument used for data collection (Appendices I & II). The socio-demographic questionnaire comprised questions used to collect information on participants' socio-demographic details such as age, gender, marital status and level of education.
2. **Aggression and Self Injurious Questionnaire (ASIQ):** The second instrument for data collection is Aggression and Self Injurious Questionnaire (ASIQ) (Appendix III). This questionnaire was adapted by Ani from Hyman et al (2002) and Rojahn et al (2001). The questionnaire has two sections. The first section has 12 items that assess aggressive behaviour against a person or property. The second Section has 10 items that measure self-injurious behaviours. Each item is scored on four domains or scales: a five-point frequency scale (never = 0, monthly = 1, weekly = 2, daily = 3, and two or more times daily = 4), a four-point severity scale (0 = No problem, 1 = Slight problem, 2 = Moderate problem, and 3 = Severe problem), a five-point duration scale (1 = less than 1 minute, 2 = less than 5 minutes, 3 = less than 15 minutes, 4 = less than 1 hour, and 5 = 1 hour or more), and finally a five-point need for physical restraint scale (0 = Never, 1 = At least once a month, 2 = At least once a week, 3 = At least once a day, and 4 = At least once an hour while awake). On this instrument, total

score was obtained for each item by summation of scores on the frequency, severity, intensity and physical restraint domains. This instrument was used to assess level of aggression in children with ASD at baseline and post-intervention

3. **General Health Questionnaire-12 (GHQ-12):** The third instrument was the General Health Questionnaire-12 (Appendix IV). It was used to assess for psychological stress/mental health of the mothers pre and post intervention. The GHQ (Goldberg, 1972) contains 12 questions with answer options as follows: “Better than usual”, “Same as usual”, “Worse than usual”, and “Much worse than usual”. The scoring of the GHQ 12 used in this study is the 0-0-1-1. The cut off point for psychological distress used in this study was at a score of 3 points as suggested by Gureje and Obikoya (1990). Mothers with a GHQ 12 score of 2 or below were categorised as having no psychological distress while those with a score of 3 and above were deemed to have psychological distress. This instrument has been validated for use with report of good psychometric properties in Nigeria (Gureje and Obikoya, 1990). It had been translated into Yoruba and used in the country (Gureje and Obikoya, 1990). Both the English and the Yoruba versions were used in this study.
4. **Burden Instrument:** The fourth instrument used in this study was the Burden Interview (Appendix V). The instrument is a self-administered 22-item questionnaire (Zarit et al, 1980) which assesses how a person feels when taking care of another person. There are five-item responses which range from 0 to 4 and are scored as, “0=never”, “1=rarely”, “2=sometimes”, “3=quite frequently”, “4=nearly always”. The rating of the sum of points gives the severity of the burden experienced by the caregiver. A point of between 0-20 mean little burden, 21-40 points mild to moderate burden, 41-60 points moderate to severe burden, and 61-88 severe burden. This instrument has been used and found to be adequate for Nigerian subjects (Bello-Mojeed, 2009; Bello-Mojeed et al., 2013a). It was used in this study to assess for burden on the mothers pre and post intervention.

5. **Knowledge on Behavioural Management of Aggression Questionnaire**

(KBMAQ): The knowledge Questionnaire (Appendix VI) was designed by the researcher and the supervisor. It is a 12-item instrument. Each question was scored on a scale of “true”, “false” and “don’t know”. One (1) mark was given for a “true” response (correct answer) and a zero for a “false” or “don’t know” option. The possible maximum score on the instrument is 12. The Questionnaire was used to assess the knowledge of the mothers on the content of the intervention pre and post-intervention.

6. **Client Satisfaction Questionnaire:** The Client Questionnaire (Appendix VII) consisted 8 questions modified from Client Questionnaire (Atkinson and Greenfield, 2004). Each question is scored on a likert scale of 1 – 4 with a total score ranging from 8 - 32. The instrument has been used successfully in Nigeria (Bella-Awusah, 2014). This instrument was administered to mothers to assess their satisfaction with the therapy post-intervention.

3.8 **Ethical Considerations**

Ethical Review Board approval: The study was approved by the Ethical and Research Committee of the Federal Neuro-Psychiatric Hospital, Yaba, Lagos.

Voluntariness: Informed consent was obtained from all the mothers after explaining the aim and objectives of the study to them. Informed consent of father of the child was also obtained; either directly from those father that accompanied their wives to the clinic or

indirectly through telephone method. Assent was obtained from children with ASD who had meaningful speech and above average intelligence.

Confidentiality: Information obtained from study participants bore no name and were kept confidential. Each participant had codes as identifier.

Beneficence to participants: Behavioural intervention aimed at reducing aggressive behaviour by substituting the aggression for a more adaptive behaviour. The mother will have better care-giving skills and possible reduced stress level. Psycho-education and any other indicated psychological therapy was offered to mothers with psychological stress

Non-maleficence: The study involved a non-invasive method of sample collection which poses no more than a minimal risk to the participants.

3.9 The Intervention

Behavioural Intervention Manual for Aggression in ASD draws on previous works including Durand and Crimmins (1988) and Iwata and Dozier (2008). It was delivered by the researcher. The intervention was delivered on a group basis as this is more cost-effective in a Low and Middle Income Country (LMIC) such as Nigeria.

The intervention used comprised five (5) sessions (Figure I). Each session consisted interactive lecture, group discussion and problem solving. The first session involved introduction on concepts such as ASD, associated impairments and aggression in ASD.

Second session was designed to explain the basic principles of Functional Behaviour Analysis (FBA) for aggression in ASD and identification of triggers for aggression. The third session focussed on the principle of contingency management such as use of reward to encourage more adaptive behaviours and non-physical consequences to reduce aggression.

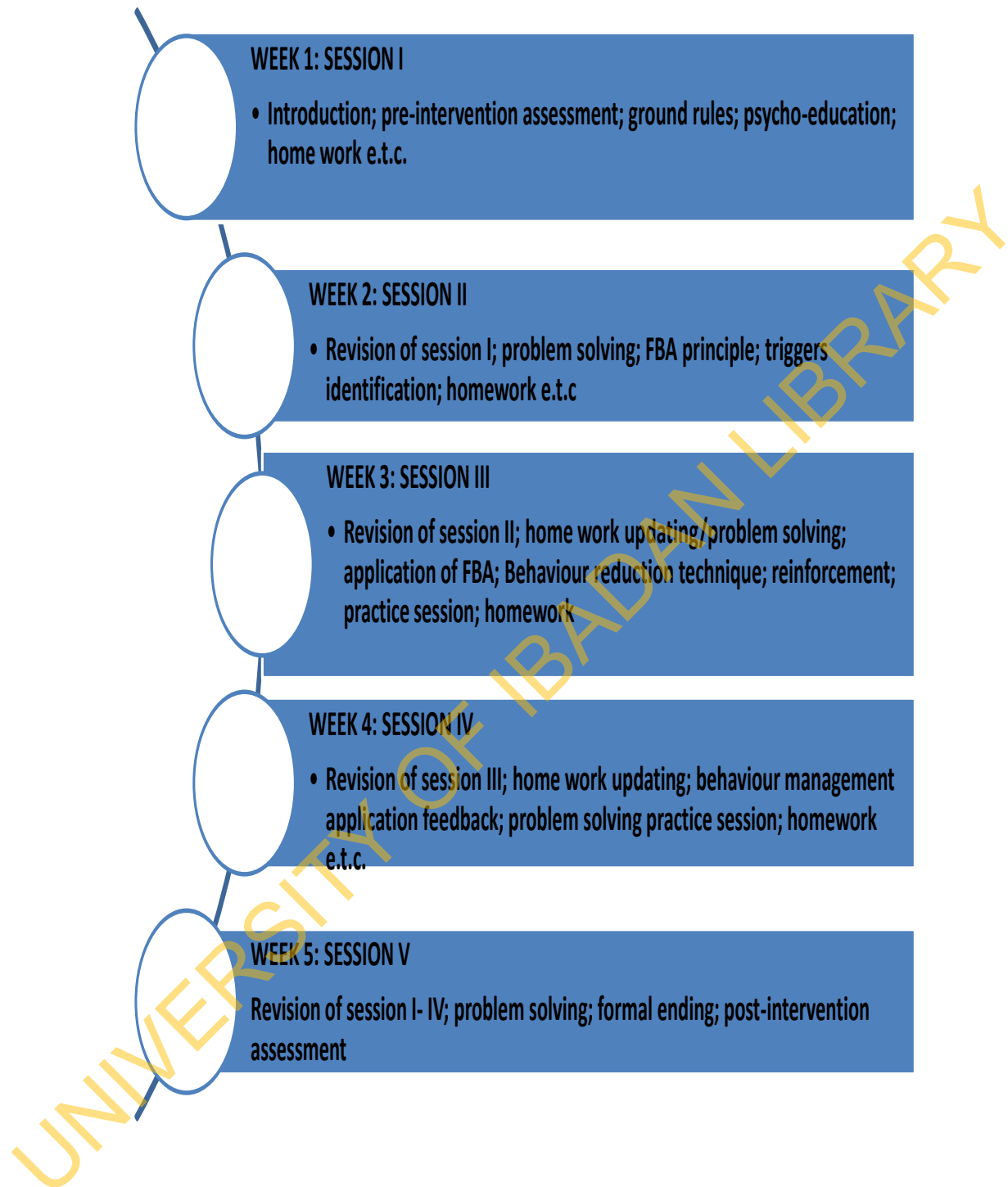
The fourth session was a further extension/reinforcement of the issues covered in the second

and third sessions. This helped to embed the concepts and address practical issues arising from the mother's use of the strategies with their children. The fifth session was a review of the four previous sessions.

Figure 1

An Overview of Behavioural Intervention Sessions

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3.10 Study Procedure

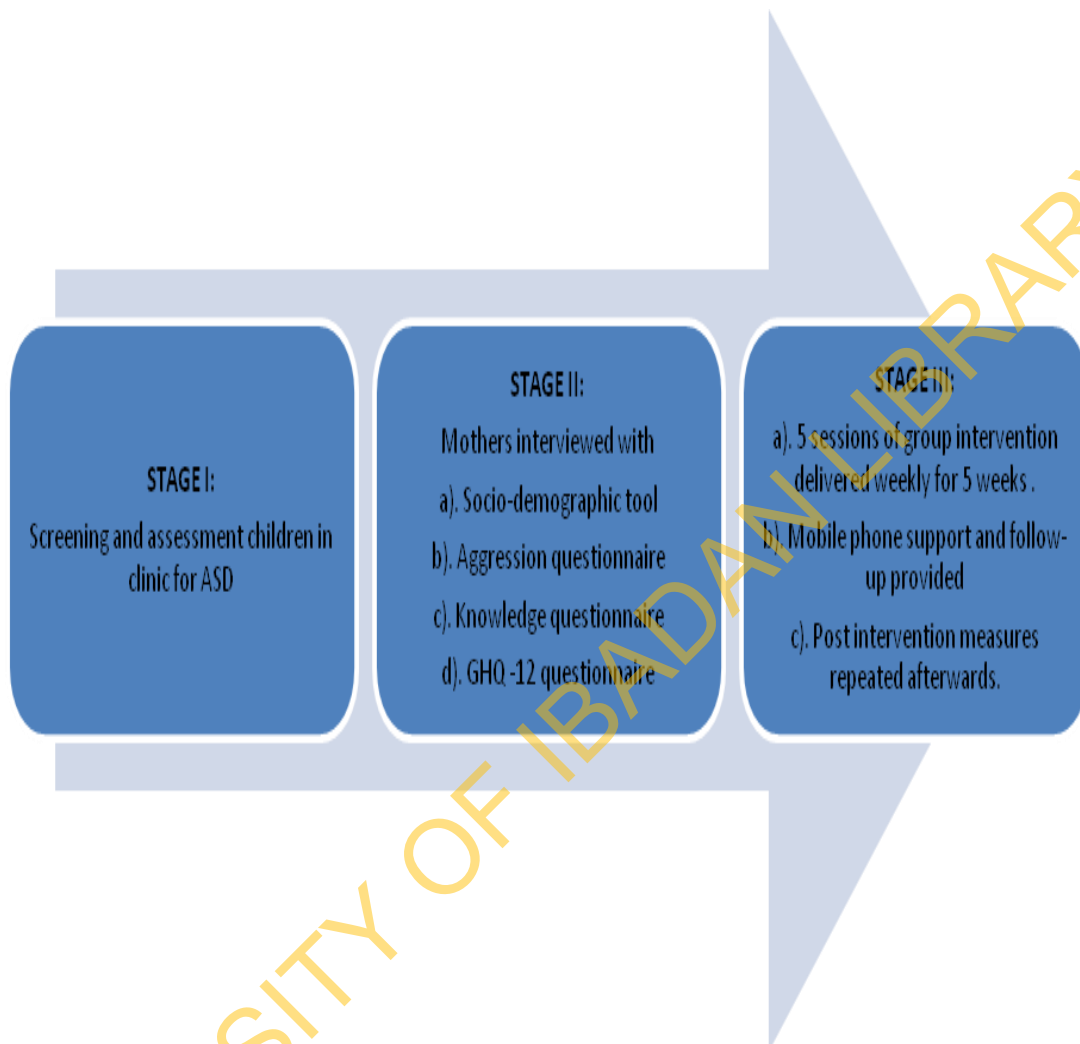
The study procedure was in three (3) stages. The first stage involved making or confirming a diagnosis of Autism Spectrum Disorder. Firstly, the researcher, a consultant at the Child and

Adolescent Mental Health Service Unit, carried out a psychiatric assessment on every child with a previous diagnosis of ASD and any new patients suspected to have the disorder. The clinical psychiatric diagnosis of ASD was based on DSM-V criteria.

Secondly, the mothers of children with ASD, who met the inclusion criteria, were interviewed individually in separate consulting rooms. The socio-demographic questionnaire, Aggression Questionnaire and Knowledge Questionnaire were administered to the mothers by a trained interviewer who was blind to the study hypotheses. Subjects who were unable to communicate in English language were interviewed in Yoruba language. The instruments were translated from English into Yoruba Language to facilitate easy comprehension by participants who were unable to communicate in English Language.

In the third stage, the intervention designed by the researcher and the supervisors were carried out. The intervention, comprising a total of 5 sessions, was delivered as a weekly group sessions, with 10 mothers in each group. In between sessions, mothers were communicated with via telephone calls and Short Message Service (SMS) to assist with problem-solving and remind them of date of next intervention session. Post intervention assessments were conducted at 5 weeks after the first session. The same study instruments used for the baseline assessment were utilized for post-intervention assessment and the scores recorded for comparison. The post-intervention measures were administered by the same trained interviewer who was still blind to the study hypothesis.

Figure 2
Summary of Study Procedure



3.10 Expected Outcome

Expected primary outcome: The expected primary outcome is a reduction in the score on aggression post- behavioural intervention

Expected Secondary Outcomes: Expected secondary outcomes include:

- i. A improvement in the level of knowledge of mothers on behavioural management strategies for aggression in ASD
- ii. A reduction in the level of maternal stress post-intervention

3.11 Data Analysis and Management

Data collected pre- and post-intervention were analysed with Statistical Package for Social Sciences software version 21. Socio-demographic variables, aggressive behaviour topography, outcome measure scores, were presented using frequency tables and proportions calculated. Means and standard deviations were calculated for ASIQ, KBMAQ, GHQ-12, and BI. Paired t-test was used to determine the difference between the pre- and post-intervention scores and Chi-square for aggressive behaviour distribution according to gender. Pearson correlation was used to explore association between post-intervention knowledge score and post-intervention score on the outcome measures (ASIQ, GHQ-12 and BI). The level of significance was set at $p < 0.05$.

CHAPTER FOUR

RESULTS

A total of 20 mothers of children with diagnosis of Autism Spectrum Disorder (ASD) participated in this study. All the children with ASD had aggressive behaviour.

4.1 Socio-demographic characteristics of the children

Table 1 shows the socio-demographic characteristics of the children with ASD. Their ages ranged from 3-17 years with a mean age of 10.7 ± 4.6 . More than a half of the children (70.0%) were 12 years or younger. There was a male preponderance (65.0%) as presented in Table 1. Fifty-five percent (55.0%) of the children were in special schools that were non-specific for autism treatment while about a third (30.0%) of them were out of school (Table 1).

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Table 1**Socio-demographic characteristics of children with ASD****N=20**

Variable	Frequency (n)	Percentage (%)
Age group (years)		
≤6	4	20.0
7-12	10	50.0
≥13	6	30.0
Gender		
Male	13	65.0
Female	7	35.0
Education		
Special school	11	55.0
Out of school	6	30.0
Mainstream school	3	15.0
Birth order		
First child	8	40.0
Middle child	5	25.0
Last child	7	35.0

4.2 Socio-demographic characteristics of the mothers

The socio-demographic characteristics of mothers of children with ASD are shown on Table 2. Their age range was 32-52 years with a mean age of 42.8 ± 6.4 . The majority of the mothers (60.0%) were above the age of 40 years. Eighty-five percent (85.0%) of them were currently married, had a minimum 12 years formal education. Three-quarter of the mothers (75.0%) were Christians.

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Table 2**Socio-demographic characteristics of mothers of children with ASD****N=20**

Variable	Frequency (n)	Percentage (%)
Age group (years)		
≤40	8	40.0
41-50	8	40.0
≥51	4	20.0
Marital status		
Currently married	17	85.0
Separated/divorced	2	10.0
Widowed	1	5.0
Family setting		
Monogamous	15	75.0
Polygamous	5	25.0
Education		
6 years of formal education	3	15.0
12 years of formal education	5	25.0
Tertiary education	12	60.0
Religion		
Christianity	15	75.0
Islam	5	25.0
Tribe		
Yoruba	12	60.0
Igbo	8	40.0

4.3 Scores of the baseline outcome measures

4.3.1 Aggressive behaviour in ASD

4.3.1.1 Topography of aggressive behaviour in ASD

Using the Aggression and Self Injury Questionnaire (ASIQ), at baseline, the score on the occurrence of target aggressive behaviour towards a person or property (APP) category of ASIQ ranged from 1 - 10 with a mean of 4.25 ± 2.45 . On the self-injurious behaviour category of ASIQ, obtained score ranged from 0 - 5 with a mean of 2.75 ± 1.77 .

Tables 3 and 4 show the frequency distribution of mothers' responses to items on the Aggression and Self Injury Questionnaire (ASIQ). Of the measured 12 items on aggressive behaviour towards a person or property (APP) category of ASIQ, destructiveness had the highest rate of 65.0%, followed by hitting and pulling with a rate of 55.0%. Head butting had a lowest proportion of 5.0% (Table 3).

Of the 10 items measured on the Self Injurious Behaviour (SIB) category of ASIQ, self-hitting with hand was the most occurring at a rate of 50.0%, followed by self-biting (45.0%). Self-poking had the lowest proportion of 5.0% (Table 4).

Table 3
Frequency Distribution of Responses to Items on the Aggression and Self Injury
Questionnaire (ASIQ): Aggression towards a Person or Property (APP)
N=20

Variable	Frequency (n)	Percentage (%)
Hitting		
Present	11	55.0
Absent	9	45.0
Kicking		
Present	5	25.0
Absent	15	75.0
Pushing		
Present	8	40.0
Absent	12	60.0
Biting		
Present	7	35.0
Absent	13	65.0
Pulling		
Present	11	55.0
Absent	9	45.0
Scratching		
Present	7	35.0
Absent	13	65.0
Pinching		
Present	5	25.0
Absent	15	75.0
Spitting		
Present	4	20.0
Absent	16	80.0
Head butting		
Present	1	5.0
Absent	19	95.0
Throws object		
Present	3	15.0
Absent	17	85.0
Abusive		
Present	2	10.0
Absent	18	90.0
Destructive		
Present	13	65.0
Absent	7	35.0

Table 4
Frequency Distribution of Responses to Items on the Aggression and Self Injury
Questionnaire (ASIQ): Self Injurious Behaviour (SIB)

N=20

Variable	Frequency (n)	Percentage (%)
Self-biting		
Present	9	45.0
Absent	11	55.0
Head bang		
Present	5	25.0
Absent	15	75.0
Self-hitting(hand)		
Present	10	50.0
Absent	10	50.0
Self-hitting(object)		
Present	4	20.0
Absent	16	80.0
Self-Scratching		
Present	7	35.0
Absent	13	65.0
Self-pinching		
Present	4	20.0
Absent	16	80.0
Pica		
Present	7	35.0
Absent	13	65.0
Nail pulling		
Present	1	5.0
Absent	19	95.0
Self-poking		
Present	1	5.0
Absent	19	95.0
Self-hair pulling		
Present	2	10.0
Absent	18	90.0

4.3.1.2 Distribution of aggressive behaviour in ASD according to gender

The distribution of the aggressive behaviour according to gender was described in Tables 5 and 6. Using bivariate analysis, of the items measured, only pinching showed a statistically significant gender difference whereby 57.1% of females pinched compared to 7.7% in males (Table 5).

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Table 5
Frequency Distribution of Responses to Items on the Aggression and Self Injury Questionnaire (ASIQ):
Aggression towards a Person or Property according to gender
N=20

Variable	Males	Females	Total	P-value
	Frequency (%)	Frequency (%)	Frequency (%)	
Hitting				
Present	7(53.8)	4(57.1)	11(55.0)	p=1.000
Absent	6(46.2)	3(42.9)	9(45.0)	
Kicking				
Present	3(23.1)	2(28.6)	5(25.0)	p=1.000
Absent	10(76.9)	5(71.4)	15(75.0)	
Pushing				
Present	5(38.5)	3(42.9)	8(40.0)	p=1.000
Absent	8(61.5)	4(57.1)	12(60.0)	
Biting				
Present	5(38.5)	2(28.6)	7(35.0)	p=1.000
Absent	8(61.5)	5(71.4)	13(65.0)	
Pulling				
Present	8(61.5)	3(42.9)	11(55.0)	p=0.642
Absent	5(38.5)	4(57.1)	9(45.0)	
Scratching				
Present	4(30.8)	3(42.9)	7(35.0)	p=0.651
Absent	9(69.2)	4(57.1)	13(65.0)	
Pinching				
Present	1(7.7)	4(57.1)	5(25.0)	p=0.031*
Absent	12(92.3)	3(42.9)	15(75.0)	
Spitting				
Present	2(15.4)	2(28.6)	4(20.0)	p=0.587
Absent	11(84.6)	5(71.4)	16(80.0)	
Head butting				
Present	0(0.0)	1(14.3)	1(5.0)	p=0.350
Absent	13(100.0)	6(85.7)	19(95.0)	
Throws object				
Present	3(23.1)	0(0.0)	3(15.0)	p=0.521
Absent	10(76.9)	7(100.0)	17(85.0)	
Abusive				
Present	0(0.0)	2(28.6)	2(10.0)	p=0.111
Absent	13(100.0)	5(71.4)	18(90.0)	
Destroys				
Present	7(53.8)	6(85.7)	13(65.0)	p=0.329
Absent	6(46.2)	1(14.3)	7(35.0)	

Significant at $p < 0.05$

Table 6
Frequency Distribution of Responses to Items on the Aggression and Self Injury
Questionnaire (ASIQ): Self Injurious Behaviour (SIB) according to Gender
N=20

Variable	Males	Females	Total	P-value
Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	
Self-biting				
Present	5(38.5)	4(57.1)	9(45.0)	p=0.642
Absent	8(61.5)	3(42.9)	11(55.0)	
Head bang				
Present	3(23.1)	2(28.6)	5(25.0)	p=1.000
Absent	10(76.9)	5(71.4)	15(75.0)	
Self-hitting(hand)				
Present	7(53.8)	3(42.9)	10(50.0)	p=1.000
Absent	6(46.2)	4(57.1)	10(50.0)	
Self-hitting(object)				
Present	3(23.1)	1(14.3)	4(20.0)	p=1.000
Absent	10(76.9)	6(85.7)	16(80.0)	
Self-Scratching				
Present	4(30.8)	3(42.9)	7(35.0)	p=0.651
Absent	9(69.2)	4(57.1)	13(65.0)	
Self-pinching				
Present	2(15.4)	2(28.6)	4(20.0)	p=0.587
Absent	11(84.6)	5(71.4)	16(80.0)	
Pica				
Present	3(23.1)	4(57.1)	7(35.0)	p=0.174
Absent	10(76.9)	3(42.9)	13(65.0)	
Nail pulling				
Present	0(0.0)	1(14.3)	1(5.0)	p=0.350
Absent	13(100.0)	6(85.7)	19(95.0)	
Self-poking				
Present	0(0.0)	1(14.3)	1(5.0)	p=0.350
Absent	13(100.0)	6(85.7)	19(95.0)	
Self-hair pulling				
Present	0(0.0)	2(28.6)	2(10.0)	p=0.521
Absent	13(100.0)	5(71.4)	18(90.0)	

4.3.2 Baseline knowledge of mothers on behavioural management of aggression in ASD

Table 7 shows proportion of mothers with endorsement of correct options on the Knowledge on Behavioural Management of Aggression Questionnaire (KBMAQ). At baseline, score on the KBMAQ ranged from 3 to 12 with a mean score of 7.9 ± 2.6 . For the knowledge item question 5 “A child’s favourite activities or toys can be used to encourage them to behave more positively”, the least proportion of correct responses (30.0%) was obtained but highest (100.0%) on item question 12 “Praising a child for doing well can be a good way to encourage the child to behave better” (100.0%) as shown in Table 7.

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Table 7
Baseline Knowledge of mothers on behavioural Management of Aggression
in Children
N=20

KBMAQ Items	Statements on Behavioural Management of Aggression in Children with ASD	Frequency (n) of Correct Options	Percentage (%)
1	Children with difficult behaviours can also have some positive attributes or strengths	12	60.0
2	Once a child has difficult behaviour, it is not possible to make it better	16	80.0
3	Behaviours usually have a purpose or reason	15	75.0
4	The frequency of a child's difficult behaviour can be reduced by giving the child a reward when he/she behaves well	13	65.0
5	For a child who is unable to explain things, the purpose of a challenging behaviour can be identified by examining what he/she was doing before the behaviour	6	30.0
6	A child's favourite activities or toys can be used to encourage them to behave more positively	12	60.0
7	Understanding how a challenging behaviour ends can help to identify how to prevent it in future	8	40.0
8	Non physical punishment such as removing something a child likes if they behave badly can be used to reduce his/her challenging behaviour	13	65.0
9	Beating or slapping a child with difficult behaviour is a positive way to reduce the child's behaviour	9	45.0
10	It is possible for a child's problem behaviour to occur only at certain times, places or towards certain persons	8	40.0
11	Parents of children with difficult behaviour may feel better if they can say positive things about the child	19	95.0
12	Praising a child for doing well can be a good way to encourage the child to behave better	20	100.0

4.3.3 Level of stress in mothers of children with ASD

4.3.3.1 Baseline GHQ-12 Score of the mothers

At baseline, the GHQ 12 score of the mothers ranged from 0-7 with a Mean of 3.0 ± 2.3 . On the GHQ 12 instrument, 60.0% of the mothers scored 3 points and above (classified as having psychological distress) (Table 8).

Table 8

Baseline GHQ 12 Score of mothers of children with ASD

N=20		
GHQ 12 Scores	Frequency (n)	Percentage (%)
No psychological distress (<3)	8	40.0
Psychological distress (≥ 3)	12	60.0

4.3.3.2 Baseline Burden Score of the Mothers

At baseline, the Burden Interview score for the mothers ranged from 0-57 with a mean of 26.5 ± 14.1 . A half of the mothers (50.0%) had mild to moderate burden with a score of 21 – 40 as presented in Table 9.

Table 9

Baseline Burden scores of mothers of children with ASD

N=20

Burden Scores	Frequency (n)	Percentage (%)
0 – 20 (Little burden)	8	40.0
21-40 (Mild to Moderate burden)	10	50.0
41-60 (Moderate to Severe burden)	2	10.0

4.4 Outcome Measures

4.4.1 Effect of behavioural intervention on aggressive behaviour in children with ASD

Tables 10 and 11 show results of the paired t-test used to test for the differences in the mean scores on the ASIQ pre- and post behavioural intervention. Compared to pre-intervention mean scores on aggression towards a person or property (APP) category of ASIQ, there was a statistically significant reduction in the post intervention mean scores on all the domains of the APP category of the instrument (Table 10).

On the self-injurious behaviour (SIB) category of ASIQ and as presented in Table 11, except on the SIB item domain, a statistically significant decrease was also shown in the post-intervention SIB mean scores as compared to pre-intervention scores (Table 11).

Table 10

**Differences between pre and post intervention outcome measures for
aggression towards a person or property in children with ASD**

N=20

Variable	Pre-intervention	Post-intervention	Mean difference (SD)	t	p
	Mean (SD)	Mean (SD)			
APP Item Total	4.25 (2.44)	3.85 (2.46)	0.40 (0.59)	2.990	0.008*
APP Frequency	11.95 (8.00)	9.75 (7.45)	2.20 (4.02)	2.447	0.024*
APP Severity	7.60 (4.71)	6.30 (3.90)	1.300 (2.25)	2.584	0.018*
APP Duration	8.00 (4.82)	6.55 (4.41)	1.45 (2.139)	3.031	0.007*
APP Restraint	7.80 (5.63)	6.30 (4.87)	1.50 (1.64)	4.094	0.001*
APP Total Score	36.00 (20.18)	29.10 (18.22)	6.90 (6.46)	4.774	<0.001*

Significant at p < 0.05

Table 11**Differences between pre and post intervention outcome measures for self-injurious behaviour (SIB) in children with ASD**

N=20

Variable	Pre-intervention	Post-intervention	Mean difference (SD)	t	p
	Mean (SD)	Mean (SD)			
SIB Item Total	2.75 (1.77)	2.65 (1.79)	0.10 (0.31)	1.453	0.163
SIB Frequency	9.45 (5.93)	8.30 (5.46)	1.15 (1.46)	3.520	0.002*
SIB Severity	6.35 (4.42)	5.55 (4.19)	0.80 (1.24)	2.886	0.009*
SIB Duration	6.85 (5.88)	6.20 (5.57)	0.65 (1.27)	2.292	0.033*
SIB Restraint	7.45 (5.19)	6.65 (4.90)	0.80 (1.15)	3.107	0.006*
SIB Total Score	31.05 (20.64)	27.35 (18.84)	3.70 (6.25)	2.647	0.016*

Significant at $p < 0.05$

4.5 Effect of intervention on knowledge of mothers on behavioural management of aggression in ASD

Following intervention, level of knowledge remained at same level on item 12 of the knowledge instrument, with a maximum possible score of 12, but showed an increase on the other 11 items of the instrument as documented in Table 12. Compared with pre-intervention level, four of the knowledge questionnaire items (Items 5, 7, 9 and 10) had more than an increase rate of 50.0% in the level of knowledge post-intervention (Figure 3).

Paired t-test was used to compare pre- and post-intervention knowledge score of mothers on management of aggressive behaviour in children with ASD. As presented in Table 13, there was a statistically significant increase in the post-intervention knowledge mean score of mothers on behavioural management of aggression in their children with ASD ($p < 0.001$).

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Table 12
Pre- and post-intervention knowledge of mothers on behavioural management of
aggression in ASD
N=20

KBMA Q Items	Statements on Behavioural Management of Aggression in Children	Pre-Intervention	Post-Intervention
		Frequency of correct option(Percentage) n(%)	Frequency of correct option(Percentage) n(%)
1	Children with difficult behaviours can also have some positive attributes or strengths	12(60.0)	20(100.0)
2	Once a child has difficult behaviour, it is not possible to make it better	16(80.0)	20(100.0)
3	Behaviours usually have a purpose or reason	15(75.0)	20(100.0)
4	The frequency of a child's difficult behaviour can be reduced by giving the child a reward when he/she behaves well	13(65.0)	20(100.0)
5	For a child who is unable to explain things, the purpose of a challenging behaviour can be identified by examining what he/she was doing before the behaviour	6(30.0)	20(100.0)
6	A child's favourite activities or toys can be used to encourage them to behave more positively	12(60.0)	20(100.0)
7	Understanding how a challenging behaviour ends can help to identify how to prevent it in future	8(40.0)	20(100.0)
8	Non physical punishment such as removing something a child likes if they behave badly can be used to reduce his/her challenging behaviour	13(65.0)	20(100.0)
9	Beating or slapping a child with difficult behaviour is a positive way to reduce the child's behaviour	9(45.0)	16(80.0)
10	It is possible for a child's problem behaviour to occur only at certain times, places or towards certain persons	8(40.0)	19(95.0)
11	Parents of children with difficult behaviour may feel better if they can say positive things about the child	19(95.0)	20(100.0)
12	Praising a child for doing well can be a good way to encourage the child to behave better	20(100.0)	20(100.0)

Table 13

Differences in the pre and post intervention mean scores on knowledge of mothers on behavioural management of aggression in ASD

N=20

Variable	Pre-intervention	Post-intervention	Mean difference (SD)	t	p
	Mean (SD)	Mean (SD)			
Knowledge	7.90 (2.57)	11.80 (0.41)	1.40 (1.19)	5.272	<0.001*

Significant at $p < 0.05$

4.6 Effect of behavioural intervention on maternal stress

Table 14 illustrates a significant reduction from a pre-intervention rate of 60% to a proportion of 30% for maternal psychological stress post behavioural intervention.

Comparison between the pre and post-Intervention Mean GHQ 12 and Burden Interview scores of the mothers are illustrated in Table 15. As shown in Table 15, there is a statistically significant decrease in the post-intervention Mean GHQ 12 ($p < 0.001$) and Burden Interview Score ($p = 0.009$) of the mothers when compared with the pre-intervention mean score.

Table 14

Pre and post intervention GHQ-12 scores of Mothers

N=20

GHQ-12 Scores	Pre-intervention	Post-intervention
	n (%)	n (%)
No psychological distress (<3)	8 (40.0)	14 (70.0)
Psychological distress (≥3)	12 (60.0)	6 (30.0)

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Table 15

Differences between pre and post intervention mean scores of maternal stress measures

N=20

Items	Pre-intervention	Post-intervention	Mean difference (SD)	t	p
	Mean (SD)	Mean (SD)			
GHQ-12	3.00 (2.248)	1.60 (1.54)	2.05 (3.15)	5.272	<0.001*
Burden Interview	26.50 (14.10)	24.45 (13.44)	1.15 (1.46)	2.907	0.009*

Significant at $p < 0.05$

4.7 Correlation

Pearson correlation was done between post-intervention knowledge score and post-intervention aggression scores (ASIQ) and other significant outcome measures (GHQ 12 and Burden Interview). All the categories of post-intervention aggression scores, except on restraint category, were negatively correlated with post intervention knowledge scores, but p values were not statistically significant (Tables 16 & 17). Negative correlation was also observed between post-intervention knowledge score and GHQ-12 and Burden Interview score (Table 18).

Table 16

Correlation between post-intervention knowledge in Mothers and post-aggression scores in children with ASD

Variable	Correlation Coefficient	p value
APP Item Total	-0.188	0.427
APP Frequency	-0.172	0.468
APP Severity	-0.092	0.700
APP Restraint	0.058	0.808
APP Duration	-0.052	0.826
APP Total	-0.089	0.710

Table 17

Correlation between post intervention knowledge in Mothers and self injurious behaviour score in Children with ASD

Variable	Correlation Coefficient	p value
SIB Frequency	0.098	0.682
SIB Severity	0.147	0.538
SIB Restraint	0.058	0.808
SIB Duration	0.111	0.643
SIB Total	0.125	0.599

Table 18

Correlation between post intervention Maternal knowledge and maternal stress score

Variable	Correlation Coefficient	p value
GHQ 12	-0.134	0.574
Burden	-0.088	0.713

4.8 Client satisfaction with intervention

The score on the Client Satisfaction instrument ranged from 21 – 32 with a mean score of 28.24±3.11.

Two-third (40%) of the study participants (mothers) rated the intervention programme as good while 60% rated it as excellent. Forty percent (40%) “somewhat” received the desired help while 60% definitely received the desired help. The majority of mothers endorsed that the programme helped them cope better with their problem either a little (15%) or a lot (85%) and met either most (15%) or almost all their needs (85%).

With the help received, 20% were mostly satisfied while 80% were very satisfied; 100% would recommend the programme to a friend with stress or similar health problem. Overall, 25% and 75% were mostly and very satisfied, respectively, with the programme. All participants (100%) endorsed coming back to the programme if in need of help again.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

Aggressive behaviour has been consistently documented to be common in ASD with associated disabling consequences in affected children and their family caregivers (Bello-Mojeed et al., 2013a; Farmer, 2011; Bello-Mojeed, 2009; Bromley et al., 2002; Tomanik et al., 2004). Research evidence, mostly from developed countries, has shown that effective behavioural interventions exist and can be delivered by parents of children with challenging behaviour such as aggression (Braithwaite and Richdale, 2000; Gergan, 2006; Athens and Vollmer, 2010; Jocelyn et al., 1998). This study is a quasi-experimental pre-post trial, without a control group, of the effectiveness of parent-mediated behavioural intervention for aggressive behaviour in children with ASD. The study made a comparison of the pre and post maternal knowledge on behavioural intervention for aggression and examined the effect of intervention on the level of stress on the mothers.

The majority of children with ASD recruited into this study were 13 years and below. This is similar to the findings of other studies carried out in developmental clinics in Nigeria (Bello-Mojeed et al., 2013a; Aina et al., 2008). A recent study carried out in this environment in the same setting reported that the majority of children were also 13 years and below. This observation is a reflection of the age at diagnosis of the disorder usually in the pre-adolescent period.

An important observation from the study is that about a third of the children were out of school and all those in special schools were in such settings that were non-specialized for the specific need of children with ASD. This is a possible pointer to the peculiar barriers

encountered in accessing appropriate educational placement for Nigerian children with ASD. Omigbodun (2004), in a study conducted at a child psychiatric clinic in Ibadan found that 27.6% of the children were out of school due to lack of suitable schools to meet their educational needs and children with autism were significantly associated with this problem. Another possible explanation is that lack of skills to tackle the aggression and disabilities associated with this ASD may prevent mainstream schools from attending to the educational needs of children with the disorder.

5.1.1 Baseline outcome measures

The score on the Aggression and Self injury Questionnaire used in this study was found to be higher on the aggression towards a person or property compared with aggression towards self (Self Injurious Behaviour). Aggression towards a person or property score ranged from 1- 10 with a mean of 4.3 ± 2.5 while that of self injurious behaviour was 0 - 5 with a mean score of 2.75 ± 1.77 .

Target aggressive behaviours towards a person or property identified in children with ASD in this study include destructiveness, hitting, pulling, throwing object, head butting, biting, scratching and spitting. The topography of the target behaviour identified in this study is similar to those described in previous studies (Athens and Volmer, 2010; Braithwaite and Richdale, 2000; DeLeon et al., 2000; Tincani et al., 1999). This observation supports the universality phenomenon in the manifestation of the symptoms of ASD (Fombonne, 2002; Bakare and Munir, 2011; Bello-Mojeed et al., 2013b).

5.1.2 Effectiveness of FBA on aggressive behaviour in ASD

Examining the effect of behavioural intervention on aggression in children with ASD, mean scores on the aggression instrument was found to be significantly lower in the post

intervention phase than the baseline. This observation of a reduced aggression or challenging behaviour is consistent with previous research findings of a significant reduction/improvement in the outcome behavioural measure. In a Canadian study conducted in a community Day-care centre, Jocelyn et al. (1998) taught 35 parents, in a 12-week treatment intervention period, how to use functional analysis to understand challenging behaviour in children with DSM diagnosis of ASD and develop treatment strategies for changing such behaviour. In contrast to the current study, their study, though a randomised control trial, made no mention of use of a treatment manual. Similar to our study, Jocelyn et al. (1998) found a significant improvement in post test behavioural measures.

The effect of functional behaviour analysis in the treatment of aggression has been reported from previous research work. Using reinforcement, antecedent-based techniques and environmental manipulations, Butler and Luselli (2007) demonstrated a reduction in aggression to near zero level among children with autism aged 1 – 13 years. Similarly, Frea et al (2001) reported an immediate and rapid reduction in aggression in children with autism and intellectual disability through the use of Picture Exchange Communication System (PECS) while Mueller et al (2001) observed a decrease in aggressive behaviour in children with ASD by active antecedent manipulation of reinforcers.

Braithwaite and Richdale (2000) and Athens and Vollmer (2010) also implemented reinforcement-based strategies in a behavioural intervention for aggressive behaviour. All the studies documented a significant reduction in the rate of aggressive behaviour post intervention. The findings could be a reflection of the importance of identification of functions of and manipulation of antecedents in the treatment of aggression in children with ASD.

Although the duration of intervention in this study is comparatively shorter, the findings of significant treatment effect from this study support the benefits of behavioural intervention in the management of aggression in children with ASD. The outcome of this research also validates the feasibility and applicability of non-specialist behavioural interventions for children with ASD in poor resource settings including Nigeria.

5.1.3 Knowledge of mothers on behavioural management of aggression

Post-intervention, a significantly higher level of maternal knowledge on behavioural management of aggressive behaviour in children with ASD was observed in mothers of affected children than the knowledge documented pre-intervention. An important observation is in the areas of highest increase in knowledge. The increase in knowledge was observed to be highest in the knowledge items that explore antecedents of aggression, consequences of aggression, physical punishment as erroneous positive reinforcers, and relationship of aggression to Time, setting and person. This finding is not surprising given that awareness of functional behaviour analysis is very low among carers in the country prior to the implementation of this study. Another possible explanation for the much improved knowledge of FBA following the intervention could be a pre-existing low level of knowledge of ASD in Nigeria (Bello-Mojeed et al., 2013b; Bakare and Munir, 2011). Unfortunately, ASD is a serious condition that Nigerian parents and carers struggle with due to poor knowledge and awareness of the disorder and how to address the associated challenges.

The finding of a significantly higher level parental knowledge on behavioural management of aggression is consistent with earlier research findings on parent education training. With respect to behavioural training programme on autism conducted for childcare workers and mothers of children with ASD, Jocelyn et al. (1998) reported a statistically significant increase in knowledge of the ASD in mothers of children with the disorder.

In another training program for parents of children with ASD, Ingersoll and Dvortcsak (2006) conducted six group sessions over a period of 9 weeks. The pre- and post-assessment knowledge was observed to increase from 29% to 75%. The positive change in knowledge emphasises the feasibility of training mothers as important non-specialist to step up intervention to meet the needs of the ever increasing number of affected children with the disorders. This is an important step in improving outcomes for intervention in ASD as parents are considered essential component of successful treatment programme for children with ASD.

5.1.4 Stress in mothers of children with ASD

This study found a significantly high level of psychological distress (60%) among mothers of children with ASD. Sixty percent (60%) prevalence of maternal psychological distress in this study is similar to the 59% reported, by both Bromley et al. (2002) and Baker-Ericzén et al. (2005), in mothers of children with autism. It is also comparable to the rate 65% and 66.7% reported by Bello-Mojeed et al. (2013) in Nigeria and Tomanik et al. (2004) in the United States of America respectively. Differences in methodological design could account for the slight observed variations. The observed high psychological distress and burden in mothers in all the studies could be as a result of having to cope with the extra demands of caring for a child with a diagnosis of ASD and aggressive behaviour. The emotional reaction of having to cope with a child with ASD and aggression could be a daunting experience for the mother.

An important finding in this study is a significantly decrease in post-intervention level of psychological distress compared to the baseline score. A significant reduction from a rate of 60% at baseline to 30% after behavioural intervention was found in this study with mean scores of 3.0 ± 2.24 to 1.60 ± 1.54 respectively. Similar to this observation, Jocelyn et al. (1998) found a significant improvement in post-test behavioural measures. The significant reduction could be due to attainment of better skill necessary to tackle challenging behaviour with a reciprocal improved maternal mental well being. This finding has clinical implications in targeting mothers of children with ASD in intervention programmes. The mental health needs of children with autism can not be met adequately in absence of optimal attention given to that of the mothers.

Only a few documented studies examined the relationship between post intervention knowledge of ASD and outcome measures on aggression score and other outcome parameters. This makes direct comparison difficult. In this study improved knowledge of behavioural intervention was found to correlate with lower maternal stress (GHQ 12), reduced frequency of aggressive behaviour. However, the correlations were not statistically significant. This could be an example of Type II error arising from the relatively small sample size. It is however encouraging to note that the correlations are in the hypothesised directions. The findings suggest that as mothers gained more understanding of their children's aggressive behaviour and the strategies to address them, they may have become more hopeful that there is now a potential solution; hence they felt less stressed.

5.1.5 Satisfaction with intervention

The results of the satisfaction survey with respect to the intervention programme of this study show that mothers were strongly satisfied with the programme. Overall, mothers gave

positive satisfaction ratings for the training programme. This finding is similar to the report of good parental satisfaction in the survey by Ingersoll and Dvortcsak (2006) following parent education training for mothers of children with ASD in a school setting.

5.1.6 Limitations

There are few limitations to this study. The design of this study was a quasi-experimental pre-post trial without a control group; hence, it is not feasible to compare findings with another group. This means that alternate explanations for the improvements in outcome measures cannot be ruled out.

The small sample size of the study made it difficult to generalize the findings to the general population of children with ASD and aggression. It may also explain why the correlation between knowledge of the intervention and outcome measures were in the hypothesised direction but not statistically significant. Also, the mothers' responses on behalf of the child may have been associated with some recall bias.

The duration of the intervention was short and this makes it difficult to evaluate the long term outcome of the intervention; the time limitation was necessitated by the duration of the MSc Programme. Despite the time limitation, a treatment effect was observed but we are unable to assess how sustained it might be.

5.2 Conclusions

This study showed that aggressive behaviours are frequent in Nigerian children with ASD and can manifest in multiple topographies. Aggressive behaviour was significantly reduced with Functional Behaviour Therapy (FBA) delivered by non-behavioural specialist over a

relatively short period (5 sessions). This suggests that antecedent-based behavioural interventions such as FBA shows some promise as an effective treatment option for reducing aggressive behaviour in Nigerian children with ASD.

The observation from this research found that parents of children with ASD could be trained to deliver effective behavioural intervention for their affected children, indicating that parents can learn skills necessary to deliver treatment in ASD. This is important in scaling up services and has implication for improving access to care and optimising outcomes for children with ASD and their family caregivers.

Mothers of Nigerian children with ASD experience a high level of psychological distress. Behavioural interventions aimed at reducing aggressive behaviour could have a reciprocal effect on mental health of mothers of children with ASD. Hence, strategies aimed at reducing challenging behaviour such as aggression in ASD can be used as important tool for improving mental health of family caregivers such as mothers of affected children. E-health is an important strategy in the feasibility and achievement of the goal. Targeting mothers of children with ASD will go a long way in scaling up services for children with ASD and reducing the burden of care on the family caregivers. This study also emphasised the benefits of parent-mediated behavioural interventions in children with ASD and aggression.

5.3 Recommendations

The following recommendations are made:

1. Screening of mothers of children with ASD for psychological distress and parallel parent educational training program should be incorporated into the management of children with ASD.
2. Functional behavioural intervention is an important intervention that should be incorporated into management of aggression in children with ASD and aggression.
3. Parent educational intervention programmes to reduce the burden of care in ASD should be implemented early.
4. Further studies are required with a larger sample size and a control group research should include home-based behavioural interventions.
5. Parent education training, especially in a naturalistic environment, should be an integral component of behavioural intervention programmes.

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APPENDICES

APPENDIX I

SOCIO-DEMOGRAPHIC QUESTIONNAIRE FOR THE CHILD

1. Age of the child (in years) []
2. Date of birth of the child (in years) _____
2. Gender _____ Male [] Female []
3. Educational level _____
4. What is the position of the child among his/her siblings children []
5. Age of child at first contact with the Clinic (years) []
7. Age when first diagnosed with autism (years) []

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APPENDIX II

SOCIO-DEMOGRAPHIC QUESTIONNAIRE FOR THE MOTHER

1. How old are you []
2. What is your date of birth (Day/Month/Year)?
3. Where do you live (Address of present abode)_____
4. Do you practise any religion? No [], Yes [],
5. Please write down the exact place you attend for worship_____
- (a) Islam (b)Orthodox Christian (c)Pentecostal Christian (d) Traditional religion (e)Other
6. Marital Status__ Single [], Married [], Separated [], Divorced [], Widowed []
7. If married, what is your age (in years) at marriage []
8. Type of family _____ Monogamous [], Polygamous []
9. Educational level, please specify
7. You Employment status Unemployed [], Employed []
10. Your Occupation
11. Your Monthly income
12. If employed, what is the effect of caring for this child on your work, please specify_____
13. Educational level of your husband, please specify _____

14. Employment status of your husband Unemployed [], Employed []

15. Occupation of your husband

16. Monthly income of your husband

17. No of your children [Please specify]

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APPENDIX III

Aggression and self-injury questionnaire (adapted by Dr C Ani from Hyman et al 2002 and Rojahn et al 2001)

INSTRUCTION

Interviewer please read the instructions below before administering Pages 2 and 3 of this questionnaire.

This questionnaire has two sections. The first Section has 12 items that assess aggressive behaviour against a person or property. The second Section has 10 items that measure self injurious behaviours.

Aggressive or destructive behaviours are abusive, deliberate attacks against other individuals or property. Self injurious behaviours refer to actions of a patient which can cause damage to his/her own body.

The behaviours in the questionnaire have to have occurred at least once during the past one month to be endorsed and scored.

Each item is scored on four scales: a five-point frequency scale (never = 0, monthly = 1, weekly = 2, daily = 3, and two or more times daily = 4), a four-point severity scale (0 = No problem, 1 = Slight problem, 2 = Moderate problem, and 3 = Severe problem), a five-point duration scale (1 = less than 1 minute, 2 = less than 5 minutes, 3 = less than 15 minutes, 4 = less than 1 hour, and 5 = 1 hour or more), and finally a five-point need for physical restraint scale (0 = Never, 1 = At least once a month, 2 = At least once a week, 3 = At least once a day, and 4 = At least once an hour while awake)

The rating for "Need for Physical Restraint" refers to the need for a carer or some other adult to make physical contact with the patient such as blocking, taking objects from the patient or temporarily holding their arms or other parts of their body as a result of the patient's aggressive and or self injurious behaviour.

Aggression against a person or property

Types of challenging Behaviour (Aggressive episodes against a person or property)	Ever occurred in the past 1 month. (No = 0) (Yes = 1)	Frequency 0 = Never 1 = Monthly 2 = Weekly 3 = Once daily 4 = Two or more times daily	Severity of the most challenging episode 0 = No problem 1 = Slight problem 2 = Moderate problem 3 = Severe problem	Duration of the longest episode 1 = less than 1 minute 2 = less than 5 minutes 3 = less than 15 minutes 4 = less than 1 hour 5 = 1 hour or more	Need for physical restraint for any of the episodes 0 = Never 1 = At least once a month 2 = At least once a week 3 = At least once a day 4 = At least once an hour while awake
Hitting, punching, slapping					
Kicking					
Pushing					
Biting					
Pulling, Grabbing					
Scratching					
Pinching					
Spitting					
Head butting					
Throws object at a person					
Verbally threatening or abusive					
Destroys or damages property					

Self injurious behaviour

Types of challenging Behaviour (Self injurious behaviour)	Ever occurred in the past 1 month. (No = 0) (Yes = 1)	Frequency 0 = Never 1 = Monthly 2 = Weekly 3 = Once daily 4 = Two or more times dally	Severity of the most challenging episode 0 = No problem 1 = Slight problem 2 = Moderate problem 3 = Severe problem	Duration of the longest episode 1 = less than 1 minute 2 = less than 5 minutes 3 = less than 15 minutes 4 = less than 1 hour 5 = 1 hour or more	Need for physical restraint for any of the episodes 0 = Never 1 = At least once a month 2 = At least once a week 3 = At least once a day 4 = At least once an hour while awake
Self-biting					
Head banging against objects					
Self –hitting with hand					
Self hitting with an object					
Self scratching					
Self pinching					
Pica					
Nail pulling					
Self poking with finger					
Self hair pulling					

APPENDIX IV

GENERAL HEALTH QUESTIONNAIRE-12 (GHQ-12)

Recently, have you.....

	Not at all	Not more than usual	Rather more than usual	Much more than usual
1. Lost much sleep over worry				
2. Felt constantly under strain				
3. Felt you could not overcome your difficulties				
4. Been feeling unhappy and depressed				
5. Been losing confidence in yourself				
6. Been thinking of yourself as a worthless person				
	Very well	Same	Rather less than usual	Much less than usual
7. Been able to concentrate on whatever you are doing				
8. felt that you are playing a useful part in things				
9. Been able to face up to your problems				
10. Felt capable of making decisions				
11. Been able to enjoy your day to day activities				
12. Been feeling reasonably happy, all things considered				

APPENDIX V

BURDEN INTERVIEW

	Never	Rarely	Sometimes	Quite frequently	Nearly always
<p>1. Do you feel that your child asks for more help than he/she needs?</p> <p>2. Do you feel that because of the time you spend with your child that you don't have enough time for yourself?</p> <p>3. Do you feel stressed between caring for your child and trying to meet other responsibilities for your family or work?</p> <p>4. Do you feel embarrassed over your relative's behavior?</p> <p>5. Do you feel angry when you are around your child?</p> <p>6. Do you feel that your child currently affects your relationships with other family members or friends in a negative way?</p> <p>7. Are you afraid what the future holds for your child?</p> <p>8. Do you feel your child is dependent on you?</p> <p>9. Do you feel strained when you are around this child?</p> <p>10. Do you feel your health has suffered because of your involvement with your child?</p> <p>11. Do you feel that you don't have as much privacy as you would like because of your child?</p> <p>12. Do you feel that your social life has suffered because you are caring for your child?</p> <p>13. Do you feel uncomfortable about having friends over because of your child?</p> <p>14. Do you feel that your child seems to expect you to take care of him/her as if you were the</p>					

<p>only one he/she could depend on?</p> <p>15. Do you feel that you don't have enough money to take care of your child in addition to the rest of your expenses?</p> <p>16. Do you feel that you will be unable to take care of your child much longer?</p> <p>17. Do you feel you have lost control of your life since your child's illness?</p> <p>18. Do you wish you could leave the care of your child to someone else?</p> <p>19. Do you feel uncertain about what to do about your child?</p> <p>20. Do you feel you should be doing more for your child?</p> <p>21. Do you feel you could do a better job in caring for your child?</p> <p>22. Overall, how burdened do you feel in caring for your child</p>					
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APPENDIX VI

Knowledge on Challenging Behaviour Management Questionnaire (KCBM)

SN	QUESTIONS	TRUE	FALSE	DON'T KNOW
1	Children with difficult behaviours can also have some positive attributes or strengths			
2	Once a child has difficult behaviour, it is not possible to make it better.			
3	Behaviours usually have a purpose or reason			
4	The frequency of a child's difficult behaviour can be reduced by giving the child a reward when he/she behaves well			
5	For a child who is unable to explain things, the purpose of a challenging behaviour can be identified by examining what he/she was doing before the behaviour			
6	A child's favourite activities or toys can be used to encourage them to behave more positively			
7	Understanding how a challenging behaviour ends can help to identify how to prevent it in future			
8	Non physical punishment such as removing something a child likes if they behave badly can be used to reduce his/her challenging behaviour			
9	Beating or slapping a child with difficult behavior is a positive way to reduce the child's behavior			

10	It is possible for a child's problem behaviour to occur only at certain times, places or towards certain persons			
11	Parents of children with difficult behaviour may feel better if they can say positive things about the child			
12	Praising a child for doing well can be a good way to encourage the child to behave better			

APPENDIX VII

LIFE SILLS PROGRAMME SATISFACTION QUESTIONNAIRE

1. How would you rate the programme?

_____ 4 _____ 3 _____ 2 _____ 1

Excellent

Good

Fair

Poor

2. Did you get the kind of help you wanted?

_____ 1 _____ 2 _____ 3 _____ 4 _____

Not at all

Not really

Yes somehow

Yes definitely

3. To what extent did the programme meet your needs?

_____ 4 _____ 3 _____ 2 _____ 1 _____

Met almost all my needs Met most of my needs Met only a few Met none of my needs

4. If a friend had stress problems, would you recommend the programme to him/her?

_____ 1 _____ 2 _____ 3 _____ 4 _____

Definitely not No, probably not Yes Probably Yes definitely

5. How satisfied are you with the help you received

_____ 1 _____ 2 _____ 3 _____ 4 _____

Very dissatisfied quite dissatisfied Mostly satisfied very Satisfied

6. Has the programme helped you to cope better with your problems

_____ 4 _____ 3 _____ 2 _____ 1 _____ Yes a lot

Yes a little No it didn't really help No things even got worse

7. Overall, how satisfied are you with the programme

_____ 4 _____ 3 _____ 2 _____ 1 _____

Very satisfied Mostly satisfied Not very satisfied Very dissatisfied

8. If you were to need help again, would you come back to the programme

_____ 1 _____ 2 _____ 3 _____ 4 _____

No definitely not No probably not Yes probably Yes definitely

What I liked best about the programme is

What I didn't like about the programme is

The topic(s)/aspect(s) that I like best are

The topic(s) that I didn't really like are

My suggestions to improve the programme are:

APPENDIX VIII

BEHAVIOURAL INTERVENTION MANUAL FOR AGGRESSION IN ASD

Brief group-based intervention for parents of children with autism and aggressive behaviours in Nigeria

Treatment protocol

By

Dr Cornelius Ani

This is a protocol for the delivery of a Brief group-based Intervention for parents of children with autism and challenging/ aggressive behaviour over 5 sessions. The protocol draws on previous works including Durand and Crimmins (1988) and Iwata and Dozier (2008).

The main aim of this intervention is to decrease aggressive / challenging behaviour. The typical interventions for autism and challenging behaviour were subjected to various changes in order to adapt it for use with Nigerian parents. The following changes were made:

- (1) Group format was chosen as limited resources in developing countries like Nigeria make this format more accessible to more young people.
- (2) The number of sessions was limited to 5 as more frequent sessions are not affordable in a low income country like Nigeria.

- (3) The language and examples were simplified and adapted to Nigerian context and further translated to the local Yoruba Language.
- (4) Due to a high prevalence of religious coping, religious components were incorporated as appropriate in the psycho-education session.

BACKGROUND

Functional behavioural assessment (FBA) is a reliable method of describing behaviour in a way to better understand it and those factors influencing it. The purpose of the FBA is to determine which factors maintain a challenging behaviour. FBA and contingency-based behaviour management have been shown to be effective for the management of aggressive and challenging behaviour in children with autism and or learning disabilities. Most studies of FBA in children with autism have been conducted in developed countries. Given the low resource contexts and socio-cultural differences of Low and Middle Income Countries (LMICs) such as Nigeria, it is uncertain if standard strategies based on FBA would be feasible and effective in these settings. Some areas that require further exploration include how well the concept of FBA translates into local vernacular, the optimum number of sessions that can produce demonstrable efficacy and how viable that number of sessions would be in low income settings, the minimum level of therapist's expertise required, and the minimum components of a FBA package that could be effective in low income settings.

FBA is based on the understanding that human behaviours serve a "function". Thus identifying the function of challenging behaviours provides opportunity to modify the triggers or contingencies maintaining the behaviours – thereby reducing the index behaviours.

The process includes

- (a) Specifying the behaviour in a reliable and precise manner.
- (b) Identify possible causes of the behaviour which generally include (i) positive reinforcement or events, which are objects or sensory stimuli that, when they immediately follow a behaviour, result in an increase in rate of the behaviour (ii) negative reinforcement, which are stimuli or events (e.g., demands, tasks) that, when removed immediately after a challenging behaviour, increase the rate of the index behaviour.

Information gathered from functional analysis may allow prediction of the circumstances under which the problem behaviour is likely to occur and alter them in a way to decrease the likelihood of the index behaviour occurring again.

The main advantage of FBA is its ability to systematically and logically identify the cause and effect relationships between problem behaviours and their triggers and maintaining factors.

However, FBA is relatively complex, time consuming and requires expertise to design and implement. It may also be difficult to apply if the problem behaviours are uncommon and have multimodal aetiology.

The interventions in this programme are divided into five sessions. The first session offers an understanding of autism and co-morbid challenging/aggressive behaviour. The second session focuses on understanding the principles of FBA. The session will also be used to support the participants to carry out in-session FBA aimed at identifying (a) one or more specific and modifiable trigger or maintaining factors. Third session will be used to carry out in-session design of strategies to modify the triggers and maintaining factors identified in session two. Participants will be encouraged to start applying the strategies at home immediately following the session. The fourth session will focus on reinforcing the application of the strategies and trouble-shooting any practical challenges interfering with the application. The fifth session will review and reinforce the key messages from the preceding sessions.

RATIONALE FOR CHOICE OF SESSION CONTENTS

The main goals of this programme are to produce a FBA-based intervention that is effective as well as feasible in a low income setting. Thus the package has been deliberately designed to be brief, group-based, and deliverable by a professional with non-specialist expertise in FBA. The choice of content is determined by the above considerations.

The first session focuses on psycho-education because improving the parents understanding of autism is important for de-mystifying the condition, depersonalising their suffering and giving them hope of possibility of improving their children's behaviour and their own agency in achieving this. This session will also introduce the meaning and rationale for FBA. We thought this is an important component to use to introduce the programme as psycho-education alone has been shown to help parents of children with autism.

The second session expands further on the principle of FBA and goes on to help parents to start identifying potential triggers and maintaining contingences for their child's aggressive behaviour. This session will be based on group interview with parents using pointers adapted from Durand and (1988) and Iwata and Dozier (2008).

The goal will be to identify which of the main antecedent and consequence events in the environment are linked to challenging behaviour for each child. The group interview will cover:

- (a) What events or physical conditions are occurring before the behaviour that appears to predict its occurrence?
- (b) What events/situations occurring just before the behaviour appear to predict its non-occurrence?
- (c) What consequences appear to maintain the behaviour?
- (d) What adaptive/appropriate behaviours might produce the same consequences as the problem behaviour

Functional Assessment Interview will be used to develop hypotheses or summary statements about the possible antecedents, and the contingent consequences related to the occurrence of aggressive behaviour. It involves the following tasks:

- i. Identify the target (problem) behaviour.
- ii. Obtain information on the behaviour history.
- iii. Identify the consequences of the target behaviour.
- iv. Identify the replacement (more acceptable and adaptive) behaviour.
- v. Identify the consequences of the replacement behaviour.
- vi. Identify antecedents for both target and replacement behaviour.

The Functional Assessment Interview has the advantage of simplicity and efficiency as it is quicker and less complex than comparable methods such as direct observation. However, because the data consist solely of verbal report from a parent, the accuracy and reliability cannot be verified (Sturmey, 1994).

At the end of the second session, the parents (with the help of the therapist) are expected to have identified one or more modifiable triggers or maintaining factors or contingencies that could be the basis of

Session four is devoted to reinforcing the application of the Functional Behaviour Plan. It is not uncommon for parents to have encountered some difficulties at the early stages of the application of the programme. Session four offers the parents opportunity to share both success and challenges. The therapist will help the parents to trouble-shoot any difficulties and encourage them to persist with the programme.

The parents will be contacted by phone 3-4 days later to provide more support and to problem solve any more difficulties that may have arisen.

The fifth session will be used to review the whole programme and to obtain the first post intervention measurements.

The sessions will be 1-2 weeks apart.

A description of each session is provided later.

Instructions for therapists

Please use this manual as a guide. It presents the key areas you should focus on during It provides principles that will serve as guides for the difficulties and interventions the parents are encouraged to work on in sessions. However, encourage the parents do work with specific difficulties relating to their own child and to bring these to the sessions.

The sessions are usually 60-120 minutes long. The manual sometimes suggests specific time intervals for each activity. Try and adhere to these times to avoid the session over-running or having to miss out sections. At the end of each session, the parents are given a “practice” which they should be encouraged to practice before the next session. These “practices” are essential as they help the parents translate what they have learnt in each session into practice at home.

Materials required

- (a) A memo pad for each parent with their and their child's name on the front
- (b) Pens
- (c) A flip chart
- (d) Marker pens
- (e) Soft drinks, water and biscuits
- (f) A room that can sit 20 parents that is quiet and private

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SESSION 1

(a) Introduction and ground rules

Start the first session with an introduction of yourself and each group member and set ground rules for the sessions.

INTRODUCTION

Introduce yourself and ask each group member to introduce themselves with first name only. Make the introduction non-threatening by avoiding people having to say things they may be embarrassed about. It may be sufficient for them to simply say their name.

To reduce parent's inhibition, and to help them relax, tell them you are going to sing a welcome song and you would like them to clap along or even join in the song.

Find a popular local uplifting song acceptable to both Christians and Muslims that you have practised. Start it and encourage the parents to join. After the song, clap for the parents and say how well they can sing or clap.

Time = 5 minutes

GROUND RULES FOR SESSIONS

Time = 5 minutes

1. Please be punctual by arriving on time.
2. Come every week. Each session builds on the previous week. It is therefore essential for every session to be attended in order to gain the full benefit of the programme.

4. Do the “practice”. You will find the sessions more helpful by practising what you learn in these sessions at home. The programme is designed to make a practical difference to your children’s behaviour but this can only happen if the ideas discussed in sessions are practiced at home.
5. What you talk about in session is **confidential**. However, it’s ok if you want to share what you have learnt with other people if you want but don’t mention the names of other parents or their children or anything they said in the sessions.
6. Try to be as honest as possible, and express yourself just as you are and how you experience the challenges of supporting your child
7. There will be regular breaks and refreshments

Ask the parents to add more rules if they wish.

(b) Psycho-education, building strength and hope

Although you have explained to each parent the reason for inviting them to the programme, they may have forgotten or no longer sure what the programme is about. So this is an opportunity to help the parents understand why, what and how the programme will run.

Parents may have had autism explained to them at the time of diagnosis but no longer remember what this means. They may not be aware that autism is common and may not have met other parents whose children have autism. So they may feel alone with their child. The parents may have lost hope and unaware that it is possible for their child’s behaviour to improve and what they can do to help such improvement. Parents may develop a better sense of relief and hope if we provide explanation to help them to have a more realistic understanding of these issues and by sharing experiences with other.

PURPOSE OF SESSION 1

1. See similarities between the behaviours of the children of parents in the programme
2. Learn that challenging behaviour can improve
3. Learn that to encourage themselves through positive self talk.

Time: 35 minutes

Say:

You were invited to take part in this programme because you have a child who has a condition called autism and they also sometimes behave in a way that can make you worry that they may injure someone or themselves.

This part of the meeting is intended to help us understand more about autism and the strengths and challenges that our children may have.

Although we are here to discuss challenges, it is important for us to also look for and acknowledge, the other strengths that our children may have.

Say,

Think of your child without focusing on the challenges they present (we are also going to talk about those later). But for now, try and identify one or more things that are good about them. It does not matter how big or small the thing may be, try and identify at least one good thing”.

Acknowledge that it may not be easy for some parents to think of something positive about their child who is showing challenging behaviour but encourage every parent to try hard with this exercise and identify at least one thing that is positive. Write the comments down on the flip chart against the child’s name. If a parent is unable to identify a specific strength in their child, expand the search to include strengths or positive attributes held by other persons in relation to the child (e.g. the child is loved by parents or siblings or grandparents or by God etc)

At the end of this exercise, transfer the qualities identified from the flip chart into each parent’s book and write it in a way to be used as positive self talk (e.g. “Although Biodun has autism and can sometimes behave in a challenging way, he is a lovely boy”).

Say

What we say to (or about) ourselves and our children has a powerful effect on us and our children. For example, if we think only of all the challenges our child has, we may feel down and upset and may start making negative comments about ourselves such as “I am not good

at looking after my child” or about our child such as “my child’s behaviour will never get better”. If we say negative things about ourselves often, we may start believing the negative statements and start behaving in a way to make the negative statement to come true (self fulfilling prophecy). Fortunately, the opposite is also true, that is, if we say positive things about ourselves and our child, we can make ourselves feel more positive and help our child’s behaviour to become more positive.

Now go on to discuss some of the challenges associated with autism. Explain that the group will now look at some of the challenges associated with autism and how the programme can be used to help some of the problems.

Ask group members to identify which behaviours their child shows that are different from other children they know who do not have autism (e.g. siblings cousins etc). Then discuss the similarities and use the behaviours to explain autism.

This would help group members realise their children’s symptoms are similar and not unique to them. It is also to explain autism in this experiential way that theoretically. Note that most if not all of the parents would have mentioned aggression when they discussed their child’s behaviour (because they were selected due to having a child with aggressive behaviour).

Say: *autism affects 1 in 100 children – so the group members are not the only persons with a child with autism. The condition is associated with challenging behaviours such as those already identified by the group. Challenging behaviour such as aggression can be a very difficult and unpleasant experience for parents and carers but there is **a lot that can be done to help make it better**. This programme is specifically designed to help parents prevent and manage aggressive behaviour in their children. Say that however bad the child’s behaviour may be, it is possible for it to get better.*

Remind *the parents how important what we say to ourselves can be. Say that however difficult their child’s behaviour may be, you would like them to make another “positive confession” about their situation. Ensure each participant makes at least one positive comment about their situation. Explain that however difficult things are, if we look closely in ALL other aspects of our life, they may find something to encourage themselves with (even if it is the fact they are alive, or have other healthy children etc)*

Encourage them to choose a positive comment from their own experience or take one from a proverb or Quran or Bible e.g. "I trust in God, my child's behaviour will get better", "once there is life, there is hope"

Add the positive comment to their book to make a total of two or more positive self talk (one from earlier in the session).

ENDING SESSION 1

KEY MESSAGES FROM SESSION 1

- 1. Read** the key messages aloud and check every group member understands them.
- 2. Ask** the group if they have any questions or comments.
- 3. Check** that every group member has two or more suggested self talk for them.

Key messages

1. They are not alone.
2. They and their child have strengths despite their child's challenging behaviour.
3. What we say to ourselves can affect how we feel about ourselves and our child. So encourage them to repeat the two or more positive self talk about their child and about themselves written in their book.
4. This programme can help to make their child's behaviour better. The techniques will start to be introduced from the next session.

PRACTICE

Say: *I would like to talk about the importance of practicing the skills you learn in the group. Some of you may be thinking: "what do you mean by practice?" Practice means doing brief activities on your own outside of the group.*

You can think of the skills you learn here as tools to use in your everyday life to improve your child's behaviour. By trying out your new skills at home while you are still coming here, you can report back to the group and let us know what worked for you and what didn't work. Then we can come up with ways to make them work better.

This treatment will be successful for you if you learn skills for managing your child's behaviour and feel confident using these skills regularly at home. You will need to practice because if you don't practice the skills, you won't learn them.

Each session's practice will consist of one or more things that everybody in the group will do before the next meeting.

Practice for Session 1

Repeat your two or more positive statements about your child and yourself every day. Try and add new positive statements before the next meeting.

Remember to bring your memo pad to the next meeting.

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SESSION TWO

Understanding how to identify triggers for challenging behaviour using FUNCTIONAL BEHAVIOUR ANALYSIS

This session helps participants to understand the principles of Functional Behaviour Analysis. It explains the idea that human behaviours have a “function”. That the “function” of a challenging behaviour can be identified in a systematic way that can help to reduce the need for the behaviour. During this session, the parents will be helped to analyse their child’s challenging behaviour to identify the possible “functions” and how these can be altered.

PURPOSE OF SESSION 2

- Understand the principle that challenging behaviours have a function.
- To identify the function and maintaining factors of their child’s challenging behaviour by exploring the antecedents and consequences of the behaviour.
- To devise a simple behaviour management plan based on the above analyses.

Instructions to therapist:

Start by checking how parents found the practice task after Session 1 and trouble shoot any problems identified.

Start session 2 by ensuring each parent has their memo pad with their child’s name on it. Show parents who can write how to enter the answers to the questions below in the paper. Get an assistant to help the parents who do not know how to write to enter the answers for them.

Ask the questions below and for each parent who answers “YES” to a question, add more details on the line corresponding to the question..

The aim is for all parents to be able to identify at least one trigger and or maintain factor for the child's aggressive behaviour than could be used at the end to formulate a functional behaviour plan.

The triggers/antecedents explored include locations, times, persons present, physiological (e.g. pain), demands etc. You will also explore possible functions of the behaviour including escape from a demand, attention, tangible gains or avoidance of tangible consequences.

Say

In the first session, we explained that there are techniques for identifying the reasons why a child with autism may have challenging behaviour and use this information to make the behaviour better.

Say

Human behaviours serve a purpose or function for the person. In people with autism and learning difficulty, it may be difficult for them to tell us what the purpose of the behaviour is. However, there is a special technique that can help us work out the reasons for the behaviour. This information can help us find ways to make the behaviour less likely to occur.

Say,

The technique starts by finding out as much information as possible about the things going on before the challenging behaviour starts. We call this "Antecedents". The next step is to find out how the behaviour usually ends. We call this "Consequence". So by exploring the "Antecedents", the actual "Behaviour", and the "Consequences", we can help to identify the reasons why the behaviour starts and what keeps it going. We call this technique ABC (using the first letter in the names).

Say

We are now going to put this in action for each parent. This involves asking everyone together a number of questions. Please answer as it applies to your child. Please think carefully and ask questions if this is not clear. This part of the session is like the foundation. So we need to make sure we do it properly in order for the next stage to be successful.

Describe the situations in which the challenging behaviour is **most** likely to occur in terms of.

Days/times _____

Location / Places _____

Persons Present at the time: _____

Activity the child is doing _____

What happens just before the challenging behaviour occurs? _____

Describe the situations in which the behaviour is **least** likely to occur:

Days/times _____

Location / Places _____

Persons Present: _____

Activity the child is doing _____

Explore possible triggers in more details

Ask

The following questions and check that every parent has taken time to think about it and provide an answer. If the initial answer is “YES”, ask the parent to provide more details to clarify the full circumstance. For example, if the parent answers “yes” to whether the behaviour results in the child getting more of what he wants, get more details of the thing the child gets that he wants. Some of the questions are asked twice in different ways. This is deliberate to help parents who may not understand the question when asked in one style.

Could the behaviour be the result of any form of discomfort (e.g. response to pain)?

Could the behaviour be a sign of lack of a basic need? (e.g. Thirst, hunger, lack of rest, etc.)

Could the behaviour be a side effect of medication?

Could the behaviour be the result of a medical condition? (e.g. Seizures)

Are there any circumstances in which the behaviour is more likely to occur?

Are there any circumstances in which the behaviour is less likely to occur?

Does the behaviour occur whenever you stop attending to the child?

Does the child seem to do this behaviour to upset or annoy you when you are not paying attention to her/him (e.g., sitting in a separate room, interacting with another child) as if he seems to do this behaviour to get you to spend more time with her/him?

Does this behaviour ever occur to get a toy, food, or drink?

Does the behaviour occur when you take away a favourite toy or food or drink?

Does this behaviour stop occurring shortly after you give the child a toy or food or drink?

Does this behaviour seem to occur when the child has been told that they can't do something they wanted to do?

Does it occur at certain times of the day?

Does the behaviour occur only with certain people?

Does this behaviour occur following request to him to perform a difficult task?

Does the behaviour occur when request is made for him to do something?

Could the behaviour be related to any problem with your child not being able to communicate his needs?

Could the behaviour be related to wanting to do things but he can't?

Is the behaviour related to any particular activities?

Is the behaviour in response to upsetting situations (e.g. being ignored, being asked to do something, too much noise, too many people in the room, too much lighting/darkness, change in routine, moving from one activity to another, being given food he does not like, being made to wear clothes he dislikes etc?)

Possible consequences

Does the behaviour allow the child to gain something? (e.g. Does he get to do what he prefers/wants?)

Does the behaviour allow the child to avoid, or escape from an upsetting situation? (e.g. what he does not want to do, social interaction, pain etc)

Does the behaviour provide self-stimulation? (e.g. does it happen more when he is bored)

Does the behaviour occur as a result of his favourite activity being stopped?

Are there some alternative behaviours that could be strengthened as replacements for the child's challenging behaviours. If so, please suggest them below.

Possible replacement behaviours

1. _____
2. _____
3. _____
4. _____

Things the child prefers or likes to do

List things that appear to be your child's preferences that might be used therefore as rewards to encourage more appropriate behaviour.

1. People they like to spend time with _____
2. Activities they like (toys, games, TV) _____
3. Food, snacks and drinks they like _____

At the end of the above discussions, help each parent to complete the following

1. The Challenging BEHAVIOUR (e.g. tantrums, aggression, non-engagement, non-compliance):
2. SETTING / PLACE (e.g. time, location, transition) where it happens most:
3. ANTECEDENT (e.g. hunger, pain, demands made on him to do something or stop an activity):
4. CONSEQUENCES (e.g. end of activity, he gets attention):

5. **FUNCTION** (e.g. 1. Gain something: 2. Avoid something/escape: 3. Increase/decrease stimulation):

Now help the parents to write a **Statement of Function (SOF)**, which communicates the function of the behaviour and provides information relevant to making effective intervention decisions. The SOF should include (a) the target behaviour of concern, (b) the identified antecedent(s), any person identified from the analysis who appears to be influencing the behaviour positively or negatively, (d) the function(s) of the behaviour, (e) preferences that could be used as reinforcers/rewards, and (e) any other additional information that may help understanding the statement.

ENDING SESSION 2

1. Say: *Today we've discussed how to analyse your child's behaviour to identify the possible reasons that make it to occur and keep them going. We have summarised the results for your child (see Statement of Function). The next step is to use this information to find a way to start helping you to reduce the challenging behaviour he shows.*

2. Read the key messages aloud.

3. Ask group members if they have any questions or comments.

KEY MESSAGE

Behaviour can be analysed to identify the reasons behind it by looking at the Antecedents (what happens before the challenging behaviour starts) and the Consequences (how it ended).

PRACTICE

Read the Statement of Function arrived at for your child everyday and check if it feels accurate for your child or if something important has been missed out

Continue to make positive comments about your child and yourself at least once daily. Remember to keep trying to add more positive comments.

Remember to bring your memo pad to the next meeting.

Say *We encourage you to do these home practices. They are an important part of the programme. You are here in the meeting for only a short time, and eventually you will have completed the entire program. Once you have completed the programme, these strategies will help you continue to help your child. Therefore, it is really important that you continue to do each Practice task before the next meeting*

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SESSION 3

Putting into practice strategies to reduce aggressive behaviours

PURPOSE OF SESSION 3

Use the Functional Behaviour Plan produced in Session 2 to create a simple behaviour management plan.

Instructions to therapist:

Start by checking how parents found the Practice Tasks after Session 2 and trouble shoot any problems identified. Check if they feel that the Functional behaviour Plan shows a good match with their experience of their child's aggressive behaviour. Clarify any problems.

Start session 3 by ensuring each parent has their memo pad with their child's name on it, which has the functional behaviour plan developed in the last session.

BEHAVIOR REDUCTION METHODS

Procedures are selected based on the assessment of the controlling variables. Treatment includes manipulation of antecedents as well as consequences

The three Goals to Reduce Challenging Behaviour are:

1. Eliminate the Behaviour's establishing operation through removing or modifying the triggers
2. Terminating the Behaviour's reinforcing contingency by modifying the consequence
3. Replace the Behaviour with an alternative Response

The above goals can be achieved using the recommendations below

If the problem behaviour is a function of ATTENTION or THINGS

1. Give lots of extra attention or the desired thing (if appropriate) to prevent the behaviour
2. Teach / encourage the child to ask for attention or the desired thing and give attention or the object when he asks (i.e. when he uses the replacement behaviour).

If the problem behaviour is a function of ESCAPE or AVOIDING DEMANDS

1. Reduce the motivation to escape by reducing demands, and by giving choices.
3. TEACH the child a communication behaviour of asking for a break or choice to replace the problem behaviour. Give a break and or choice whenever the child asks at first (i.e. reinforce the replacement behaviour).

INTERVENTIONS BASED UPON FUNCTION OF THE BEHAVIOR

Interventions for Behaviours Maintained by SOCIAL POSITIVE REINFORCEMENT

Differential Reinforcement of more positive behaviour s: e.g. give a positive reinforcer (i.e. reward) if challenging behaviour has not occurred for a period of time. Choose a reward from the list of activities the child enjoys as previously documented in Session 2.

Differential reinforcement of alternative behaviour: e.g. teach the child to get your attention or other positive things through a more appropriate behaviour. This frequently takes the form of teaching the child to ask or request attention or activities without misbehaving to get it. Reward the child anytime they use the more positive alternative behaviour

Interventions for Behaviours Maintained by NEGATIVE REINFORCEMENT (ESCAPE/AVOIDANCE)

Extinction Through Prevention of Escape: this is the most effective technique to decrease escape/avoidance motivated behaviour because it removes the reinforcer, which is to avoid a task. It is also the most difficult to implement because it sometimes requires physically stopping the child from leaving or avoiding the task.

Development of Appropriate Escape Behaviour. This is a technique designed to teach a child to request his reinforcer (e.g. politely refuse a demand) more appropriately instead of becoming aggressive.

Interventions for Behaviours Maintained by AUTOMATIC POSITIVE REINFORCEMENT

Reinforcement of Alternative Self-Stimulatory Responses: this procedure requires that a child whose aggression is maintained by lack of opportunity for self stimulatory activity may be allowed to engage in self stimulation e.g. walking around, shouting, running, but only at certain times when it is safer and less disruptive at home.

Sensory Extinction: Removal or attenuation of the sensory reinforcer maintaining the behaviour (e.g. stop giving him games that make him more aggressive).

At the end of Session 3, all the parents should have been helped to advance their Statement of Function to a Behaviour management plan (BMP).

The BMP for each child should state specific strategies to (a) modify the identified antecedent(s), (b) alter the function(s) of the behaviour, (c) rewards for displaying less aggressive behaviour and rewards for more cooperative behaviour, (d) non physical consequences for aggressive behaviour.

ENDING SESSION 3

Read the key messages aloud.

Say: *Congratulations! You have completed three sessions. You are working hard to learn how to reduce your child's challenging behaviour. We have two more sessions to go.*

KEY MESSAGES

We can reduce challenging behaviours by reducing / modifying the situations that make the behaviours more likely to occur or the things the child is trying to achieve with the behaviour, and by rewarding the child for being less aggressive and using more cooperative behaviour.

PRACTICE

Practice the strategies in your BMP every day. “Flash-call” the therapist if you are having trouble putting the strategies into practice at home. The therapist will call you back and discuss how to resolve the problem.

Remind yourself that you are not alone and you are doing this for the benefit of your child.

SESSION FOUR

Feedback on initial application of Behaviour Management Plan and troubleshooting of difficulties encountered.

PURPOSE

For each parent to share with the group their experiences of applying the functional behaviour plan developed in session 3 and to address difficulties encountered in doing so.

Introduction to session 4

Explain to the parents that starting a new intervention at home is not easy. It involves doing things differently for both the parent, the child and other members of the family. Therefore, it is quite normal to encounter some initial problems and this should not be a discouragement.

Say to them that one of the most famous scientist in the world ever (Albert Einstein) said that *“the only person who has never made a mistake is someone who has not tried something new”*. So it is ok if they found the initial practice difficult and if they made some mistakes. The purpose of this session is to provide opportunity to discuss what has gone well and help resolve the situations that have not gone as well as hoped.

Find out privately as the parents arrive how they found the start of the programme at home. Start the feedback with parents who have achieved some success with the plan. This will encourage other parents who may have it harder to see that success is achievable.

Then move onto the parents who found it difficult and discuss what the problem was and how to resolve it. Encourage parents who were more successful to share and support those who were less successful.

Ensure that every parent had a chance to discuss their experience and address any problems they encountered.

Repeat as much of the materials in Session 3 as required to ensure that every parent leave the current session more confident about applying their BMP at home.

ENDING SESSION 4

Read the key messages aloud.

KEY MESSAGES

It is not unusual to encounter a few problems when starting a new programme such as this. However, it gets easier with practice.

PRACTICE

More practice of the strategies in your BMP every day. “Flash-call” the therapist if you are having trouble putting the strategies into practice at home. The therapist will call you back and discuss how to resolve the problem.

The therapist will phone any parent who requires extra help during the week.

SESSION FIVE

Review

Review the key messages from each session and check that everyone has been able to continue to do the PRACTICE topics for each week. Do more trouble shooting of any problems still arising from the implementation.

Do a formal ending, obtain the first post intervention measures and allow parents to say their good byes.

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APPENDIX IX

CONSENT FORM

The purpose and procedure of the study titled “effectiveness of parent-mediated behavioural intervention for aggression in children with Autism Spectrum Disorder in Lagos” have been explained to me by the investigator. I was also informed that this study shall make use of questionnaire and that behavioural intervention for aggression, in my child with Autism Spectrum Disorder, shall be mediated by me after my participation in training sessions. I confirmed that these explanations are clear to me. I have also been assured of absolute anonymity and confidentiality with respect to any information volunteered by me in the course of participating in this study.

I have enough information about the purpose, risks, and benefits of this study to affirm that I want to participate in the programme. I understand that I may choose not to participate or freely withdraw at any time without prejudice or effect on treatment of my child in this hospital. I hereby accept to participate in this study. I shall provide sincere and honest answers to the questions to ensure the success of the study.

Signature/Thumbprint of subject

Date: -----

Witness Signature/Thumbprint

Date: -----

APPENDIX X

YORUBA VERSION OF THE QUESTIONNAIRE

IWE IBEERE LEDE YORUBA

YORUBA VERSION OF SOCIO-DEMOGRAPHIC QUESTIONNAIRE

Gbogbo ohun ti a beere ni inu iwe yii wa fun eko lasan ni. A ko ni fi ida re han si eniken tabi je ki eniken mo wipe o kopa ninu ayewo yii. A dupe.

ASOMO KINNI

IBEERE NIPA OMO RE

ASOMO KINNI

IBEERE NIPA OMO RE

1. Odun melo ni ojo ori omo re yii? -----
2. Ojo won ni ojo ibi omo re yii gan an (Ojo/Osu/Odun)
3. Okunrin ni tabi obinrin? (i) Okunrin (ii) Obinrin
4. Irufe ile iwe wo lo n lo -----
5. Ipo keloo ni omo yi wa laarin awon omo ti e bi? -----
6. Odun melo ni ojo ori re ni igba ti e koko mu u wa si ile iwosan ti o ti ngba itoju lowolowo bayii
7. Odun melo ni ojo ori re ni igba ti e se akiyesi aisan yii lara re? -----

ASOMO KEJI

IBEERE NIPA ARA RE (IYA)

IBEERE NIPA ARA RE (IYA)

1. Odun melo ni ojo ori yin? -----

2. Ojo won ni ojo ibi re (Ojo/Osu/Odun)

3. Ibo ni agbegbe ibi ti e n gbe -----

4. Se en se Iru esin kan-kan bii?

(i) Beeko (ii) Beeni

5. Iru esin wo ni e n se?

(i) Musulumi (ii) Onigbagbo (iii) Esin abalaye (iii)Awon esin miran (ko
eyi sile)

6. Ko ibi ti o ti ma a n j'osin -----

7. Eto igbeyawo -----

(i) N ko ni oko (omidan) (ii) Mo ni oko lowolowo bayii (abileko)

(iii) Oko mi ti ko mi sile (oniyapa) (iv) Oko mi ti ku (opo)

8. Ti o ba ni oko, omo odun melo ni yin ni igba ti o fe oko? -----

9. Iru ebi -----

(i) Oniyawo kan (ii) Oniyawo meji tabi ju bee lo

10. Iwe meloo ni o kaa?-----

11. N je eni ise lowo bayii?

(i) N ko ni ise lowo (ii) Mo ni ise lowo

12. Ti e ba ni ise, iru ise wo ni e n se

13. Eelo ni e n gba l'osu?

14. Ipa ti sise itoju omo yii ko ninu ise re

15. N je oko re lo si ile iwe? -----

16. Eelo ni oko re n gba l'osu?

17. Omo odun meloo ni yin nigba ti e bi omo yii?

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ASOMO KETA

(A) Ihuwasi ipanle si enia tabi dukia

Orisirisi ihuwasi ipanle (Isesi ibinu si enia tabi dukia)	Se o ti sele l'aarin osu kan seyin (Iro = 0) (Ooto = 1)	Iye igba 0 =Ko sele ri 1 =Osoosu 2=Osoose 3 = Igba kan l'ojumo 4 = Igba meji tabi meta l'ojumo	Idibaje to sele nigba to buru ju 0 = Kos i idibaje 1 = Idibaje die 2 = Idibaje to po 3 = Idibaje to buru	Iye igba ihuwasi ti o pe ju 1 = ko to iseju kan 2 = ko to iseju marun 3 = ko to iseju meedogun 4 = ko to wakati kan 5 = Wakati kan tabi ju bee lo	Nilo agbara lati mu enia nitori ihuwasi 0 = Ko sele ri 1 = leekan larin osu kan 2 = leekan larin ose kan 3 leekan lojumo 4 = leekan larin wakati ti enia naa ko ba sun
Lilu, igbalese, Igbati					
Ita ni ipa					
Titi					
Igeje					
Fifa, didimu					
Hiha enia lara					
Ijaleekana					
Itutosi					
Isenigbo					
Siso nnkan lu enia					
Bibu enia					
Biba nnkan je					

(B) Ihuwasi ti o le fa isera enia lese

Orisirisi Ihuwasi ti o le fa isera enia lese	Se o ti sele l'aarin osu kan seyin (Iro = 0) (Ooto = 1)	Iye igba 0 =Ko sele ri 1 =Osoosu 2=Osoose 3 = Igba kan l'ojumo 4 = Igba meji tabi meta l'ojumo	Idibaje to sele nigba to buru ju 0 = Kos i idibaje 1 = Idibaje die 2 = Idibaje to po 3 = Idibaje to buru	Iye igba ihuwasi ti o pe ju 1 = ko to iseju kan 2 = ko to iseju marun 3 = ko to iseju meedogun 4 = ko to wakati kan 5 = Wakati kan tabi ju bee lo	Nilo agbara lati mu enia nitori ihuwasi 0 = Ko sele ri 1 = leekan larin osu kan 2 = leekan larin ose kan 3 leekan lojumo 4 = leekan larin wakati ti enia naa ko ba sun
Gigera eni je					
Fifori gba nkan					
Fifowo gba ara eni					
Fifi nkan gba ara eni					
Yiya ara eni leekana					
Jija ara eni					
Jije nkan ajeji					
Fifa eekana ara eni yo					
Fifi owo yo oju					
Fifa irun ara eni					

ASOMO KERIN

YORUBA VERSION OF GHQ-12

N je awon nkan wonyin sele sin yin lai pe yii.....

	Rara o	Kopo ju ti tele lo	O po ju ti tele lo	O po gan ju ti tele lo
1. O n se yin bi wipe orun yin ko to nitori idamu okan				
2. O n se yin bi wipe ara yin ko fi ara ro ni gbogbo igba.				
3. O n se yin bi wipe e ko le bori awon idiwo ti e ba ni				
4. E n ri wipe inu yin ko dun ati wipe eni irewesi okan				
5. E nri wipe e ko ni igbekele ninu ara yin				
6. N ro wipe e ko ja mo nkankan				
	Poju ti tele lo	O ri ibii ti tele	O dinku si ti tele	O dinku gan si ti tele
7. E n le fi okan si ohunkohun ti e ba n se				
8. E n ri wipe e n ko ipa ti o wulo ninu ohun ti o n lo layika yin				
9. E n le koju awon isoro ti e ba ni				
10. e n ri wipe e le se ipinu lori awon nkan ti e fe se				
11. E n ri wipe e le gbadun ati se ojuse oojo yin				
12. Inu yin n dun ti e ba wo bi gbogbo nkan se wa				

ASOMO KARUN

YORUBA VERSION OF BURDEN INTERVIEW

	Rara	Nigba kankan	Nigba miran	Ni gbogbo igba	O fere je nigbogbo igba
1. N je omo re yii maa n beere fun iranlowo ju bi o ti se ye lo?					
2. N je o dabi wipe asiko ti o n lo fun itoju omo re yii poju ti ko si je ki o raye gbo tara re?					
3. N je o rorun bii lati se itoju omo re (yii) lai si idiwo fun ise ile tabi ise miran?					
4. N je ihuwasi omo re yii ko maa tio loju bii?					
5. N je inu re maa n baje nigba ti o ba wa pelu omo yii.					
6. N je o dabi wipe ajosepo ti o dan moran ko fi bee si laarin ire ati awon ebi ati ore nitori omo re yii?					
7. N je bi ojo ola omo re yii yoo se ri je ohun ti o n kan e lominu?					
8. N je o ri wipe ire ni omo re yii gbe oju le?					
9. Se ara maa n ni e ti o ba wa pelu omo re yii?					
10. N je omo re yii ko ti se ipalara fun alaafia ti o ye ki o ni?					
11. N je o dabi wipe o ko ni asiri ikoko bi o ti fe nitori omo re yii?					
12. N je o dabi wipe sise itoju omo re yii ko gba e laye lati se faaji to bi o se ye?					
13. N je ohun inira ko ni fun e lati gba ore lalejo nitori omo re yii?					
14. N je omo re yii maa n fe ki o je iwo nikan sa ni yoo maa se itoju re, gege bi eni ti o ni igbekele ninu re ti o ni igekele ninu re?					
15. N je o dabi wipe o ko ni anito owo lati fi se itoju omo re yii ati awon bukata ti o ye?					
16. N je o dabi wipe o ko ni ni agbara to lati fi toju omo re yii bi o baya?					
17. N je igbesi aye re si ri bi o ti wa tele lati igba ti aisan omo re yii ti bere?					
18. N je o ni erongba lati yonda omo re yii fun elomiran lati ba e se itoju re?					
19. N je o ri wipe o ko ni imo amodaju lori ohun ti o ye lati se fun omo re yii?					
20. N je o dabi wipe itoju ti o nse fun omo re yii ye ki o ju bi o					

ti n se e yii lo?					
21. N je o ri wipe o ye ki o se ise ti o dara ju eyi ti o n se lowo bayii lo lati toju omo re yii?					
22. Lakotan, awon isoro wo ni o n dojuko e lati toju omo re yii?					

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ASOMO KEFA

Ibẹere ifihan imo lori itoju ihuwasi lile tabi ipanle

Nomba	AWON IBEERE	OOTO	IRO	MI O MO
1	Awon omode ti o ni iwa lile tun le ni isesi ti o dara nigba miran			
2	O soro lati je ki omo ti o ni iwa lile je omo daradara			
3	Ihuwasi saba maa n ni idi			
4	O sese lati din ihuwasi ti ko dara omode ku ti a ba fun ni ebun nigba ti o ba se ohun daradara			
5	A le mo idi ti omode ti o ban hu iwa buruku ti ko le se alaye fi n se bee ti a ba n so awon nnkan ti o nse ki o to ma n wu iwa bee			
6	A le lo awon nnkan ifisere tabi oun ti omode feran lati je ki o ma huwa ti o dara			
7	A le mo bi a se le dekun ihuwasi ti ko dara ti a ba mo bi iwa naa se maa n pari			
8	A le fi ijeniya ti o yato si lilu bii ki a gba nnkan ti o feran lati fi din ku u iwa buruku ninu omode			
9	Nina tabi igbaleti je ona ti a fi je ki omode dekun ihuwasi ipanle ti ko dara			
10	O seese ki omode ma huwa ti ko dara ni igba kan, awon ibi kan tabi si awon enia kan			
11	Inu obi awon omo onijogbon le dun ti awon enia ba le so nnkan to dara nipa omo won			
12	Yinyin omo ti o ba se daradara le je ki omo fe ma fe se dara dara si			

ASOMO KEJE

TO N FI ITELORUN OLUKOKA HAN

1. Bawo ni eto naa se kese jari loju re si ?

_____ 4 _____ 3 _____ 2 _____ 1

O dara gan an o dara o dara die ko dara.

2. Nje o ri iru iranwo ti o fe gba?

_____ 1 _____ 2 _____ 3 _____ 4

Ko ri bee rara ko daju beeni, nigbakuugba beeni, dajudaju

3. Ba wo ni eto yii se ba aini re pade to?

_____ 4 _____ 3 _____ 2 _____ 1

O fere ba won pade O ba opolopo pade Oba die pade Ko ba okankan pade

4. Ti Ore re ba ni iru awon isoro yii, se waa gba a ni moran nipa eto yii?

_____ 1 _____ 2 _____ 3 _____ 4

Ko dami loju Ko jo bee Boya Dajudaju

5. Bawo ni iranwo ti o rigba se te o lorun si ?

_____ 1 _____ 2 _____ 3 _____ 4

Ko te mi lorun rara Ko temi lorun tan O temi lorun pupo O temi lorun gan an

6. Se eto yii ti ran o lowo lati koju awon isoro re daadaa?.

_____ 4 _____ 3 _____ 2 _____ 1

Bee ni, lopolopo Bee ni, niwonba Rara, ko daju Rara, nnkan tun buru si ni

7. Lakotan, bawo ni eto yii se te o lorun si?

_____ 4 _____ 3 _____ 2 _____ 1

O te mi lorun gan an O te mi lorun pupo Ko te mi lorun tan Ko te mi lorun rara

8. Ti o ba se wipe o tun nilo iranlowo sii, se waa pada wa fun eto naa?

_____1_____2_____3_____4

Rara, ko dami loju ko jo

Boya Dajudaju

Ohun ti mo feran ju nipa eto yii ni

To ba se pe mo le se ayipada awon nnkan die nipa eto naa, maa se bee

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