Review Article

Understanding the Impacts and Interventions of Fetal Alcohol Spectrum Disorders (FASD): A Comprehensive Review

Saptak Chatterjee, Sobhanjan Bhunia, Jeenatara Begum, Tamalika Chakraborty*
Guru Nanak Institute of Pharmaceutical Science and Technology,157/F, Nilgunj Road, Sodepur, Kolkata-700114, Westbengal, India.
***Corresponding author's E-mail:** tamalika.chakraborty@gnipst.ac.in

Received: 15-11-2024; **Revised:** 26-01-2025; **Accepted:** 10-02-2025; **Published online:** 20-02-2025.

ABSTRACT

Fetal Alcohol Spectrum Disorder FASD refers to a spectrum of physical, cognitive, and behavioral deficits caused by alcohol exposure during pregnancy. The study investigates FASD's worldwide prevalence and its related health, societal, and economic impacts. It delves into the varied manifestations of FASD, such as facial features, growth issues, and neurodevelopmental problems. The research explores the mechanisms behind fetal damage due to alcohol and addresses the difficulties in diagnosing FASD across age groups. Additionally, it analyzes current preventive measures, including public awareness campaigns and targeted programs for high-risk groups. The review also evaluates various treatment methods, covering medical, educational, and psychosocial approaches, and their effectiveness in enhancing outcomes for those with FASD. Lastly, it pinpoints gaps in existing research and suggests future areas of study to improve the understanding, prevention, and management of FASD. This extensive analysis aims to educate healthcare professionals, policymakers, and researchers about FASD's complexities and guide the creation of more effective strategies to tackle this preventable condition.

Keywords: Alcohol Spectrum, FASD, Abnormalities, Clinical Manifestations, Disabilities, Disorder.

INTRODUCTION

Fetal Alcohol Spectrum Disorders (FASD) represent a range of physical, behavioral, and cognitive impairments that can occur in individuals exposed to alcohol during prenatal development. [1] This comprehensive review aims to explore the multifaceted impacts of FASD and evaluate the effectiveness of various interventions designed to address these challenges. [2] FASD is a significant public health concern, affecting an estimated 1-5% of children in the United States and up to 10% in some high-risk populations globally. [3] The consequences of prenatal alcohol exposure can be lifelong and far-reaching, impacting not only the affected individuals but also their families and communities. Understanding the full spectrum of FASD-related issues is crucial for developing targeted prevention strategies and effective treatment approaches. This review will examine the current state of knowledge regarding FASD, including its prevalence, diagnostic criteria, and associated neurodevelopmental outcomes. [4] We will delve into the biological mechanisms underlying alcohol-induced fetal damage and explore the various factors that may influence the severity of FASD manifestations. Additionally, we will assess the social, educational, and economic implications of FASD across the lifespan. A significant portion of this review will focus on evaluating existing interventions for individuals with FASD. [5] These interventions span a wide range of approaches, including pharmacological treatments, behavioral therapies, educational support programs, and family-based interventions. [6] By critically analyzing the efficacy of these interventions, we aim to identify best practices and areas for future research and development. [6,7] Furthermore, this review will address the challenges in FASD prevention and highlight successful public health initiatives aimed at reducing prenatal alcohol exposure. We will also discuss the ethical considerations surrounding FASD, including issues of stigma, access to care, and societal responsibilities. By synthesizing the latest research and clinical findings, this comprehensive review seeks to provide a thorough understanding of FASD's impacts and interventions. Our goal is to inform healthcare professionals, policymakers, educators, and researchers, ultimately contributing to improved outcomes for individuals affected by FASD and their families.

Defining Fetal Alcohol Spectrum Disorder (FASD): A Complex Web of Consequences:

FASD is not one disease but a wide spectrum of effects on the development of the brain, physical growth, and behavior disorder but rather a comprehensive term encompassing a spectrum of conditions resulting from prenatal alcohol exposure. [8] The severity and manifestation of FASD can vary widely, with individuals affected to different degrees. At the core of this disorder lies the exposure of the developing fetus to alcohol, which interferes with normal fetal development. [9] The umbrella entails diagnosis of 'Fetal Alcohol Spectrum Disorder', Situations that can occur such as Fetal Alcohol Syndrome (FAS), Partial Fetal Alcohol Syndrome (FAS) as well as Alcohol-Related Neurodevelopmental Disorder (ARND) are samples of numerous prenatal alcohol effects. [10] Disorder ARND and Alcohol-Related Birth Defects (ARBD) each of these conditions presents distinct challenges and characteristics, contributing this includes managing the implications of FASD.

FASD incidence in the United States has long been estimated by the Institute of Medicine (1996) to range between 0. 5 and 2. 0 incidents per 1000 live births; it is however likely that this is an under report. [11] Attributing the real prevalence has been a huge challenge because kids with FASDs fall under the category of ADHD, ODD, and CD, or the neurodevelopmental impairments are ignored and an educational or medical diagnosis is not made. Following an accurate prevalence for FAS is very difficult as it requires the use of epidemiologic techniques that are often expensive and are called active case ascertainment. Ethanol use was introduced in South Africa and when this method was applied, the result revealed that the FAS prevalence was from 65 to 74 per 1,000 live births. An active case ascertainment study in Italy identified a prevalence of FAS of 3. 7 to 7. This is a prevalence low of 4 per 1,000 live births the same as a pilot active case ascertainment study in a small town Western city in the United States. [12] Occurrence of FASD in the full spectrum of the disorder is higher estimated to be 1% in US live births, 2- 4% in Italy, and 7-9% in South Africa. [13,14] NIAAA is also determining the prevalence of FASD at various international sites, as well as environmental correlates of the risk or development of FASD. [15]

EPIDEMIOLOGY:

Alcohol use during pregnancy:

No safe level of PAE has been established and international guidelines advise against any amount or type of alcohol use during pregnancy. Nevertheless, ~10% of pregnant women worldwide consume alcohol. [16,17] The highest prevalence of alcohol use during pregnancy is in the WHO European Region consistent with the prevalence of heavy alcohol use, heavy episodic drinking, and alcohol use disorders in this region. In 40% of the 162 countries evaluated, >25% of women who consumed any alcohol during pregnancy drank at 'binge' levels (defined as ≥4 US standard drinks containing 14 g of pure alcohol per drink on a single occasion). Binge drinking, which increases the risk of FASD, is common in early pregnancy and before pregnancy recognition. [18] Alcohol use during pregnancy is higher in certain subpopulations, including some Indigenous populations in Australia (55%), South Africa (37%), and Canada (60%), often in the context of disadvantage, violence, and ongoing traumatic effects of colonization.[19,20]

FASD prevalence:

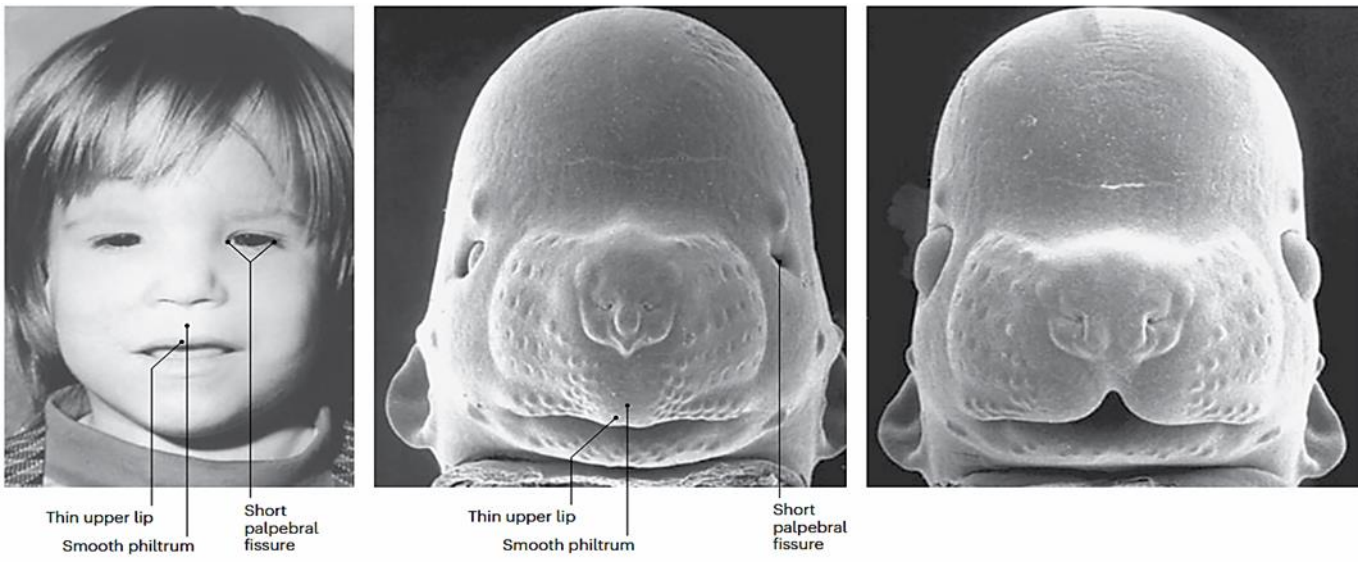
It is not possible to determine exactly how many people have FASDs. Several methods have been used to estimate the number of people in the population who live with FASDs. FASDs comprise several diagnoses linked with the unborn child's revelation to alcohol during pregnancy. That is to say that when many physical and developmental abnormalities are present the most involved diagnosis is FAS (see Facts about FASDs). CDC studies that have used medical and other information have assisted in determining that one infant with FAS for every 1,000 live births in some parts of the country. In the most up-to-date CDC research on medical documents and other information, 3 of every 1,000 children between the ages of 7 and 9 were verified to have FASD. [21] Higher estimates of FAS—between 6 and 9 out of 1,000 children—are reported in studies that use in-person assessments of school-aged children in several American neighborhoods. Few estimates exist for the entire spectrum of FASDs. Based on the National Institutes of Health-funded community, experts predict that the complete range of FASDs in the United States and some Western European countries may number as high as 1 to 5 per 100 school children (or 1% to 5% of the population). [22]

MECHANISMS/ PATHOPHYSIOLOGY:

Alcohol rapidly equilibrates between the maternal and fetal compartments and is eliminated primarily through maternal metabolism. As previously mentioned, no safe level of PAE has been established. Several developmentally important molecular targets of alcohol, including the L1 neural cell adhesion molecule and GABAA receptors, are disrupted at blood alcohol concentrations attained after one or two US standard drinks. [23,24] Hence, repeated exposure to low levels of alcohol or a single exposure at critical periods in gestation could affect development. Indeed, drinking ≤20 g of alcohol per occasion (≤1.5 US standard drinks) or ≤70 g of alcohol per week (≤5 US standard drinks) was associated with mild facial dysmorphology (determined via 3D facial imaging) microstructural brain abnormalities, and externalizing behaviors such as aggression and violation of social norms.[25]

Timing and quantity of PAE during gestation:

The effects of PAE vary according to the quantity, frequency, duration, pattern, and timing of exposure. Periconceptional alcohol exposure can adversely affect fetal development and predispose to disease in later life. [26,27] PAE at different stages of organogenesis has distinct developmental consequences. PAE during first-trimester organogenesis may cause brain, craniofacial, skeletal, and internal organ dysmorphology. [28] In mice, PAE during gastrulation (equivalent to the third week postfertilization in humans, when an embryo transforms from a bilaminar disc to a multilayered structure comprising the three primary germ layers: ectoderm, mesoderm, and endoderm) reproduces the sentinel craniofacial abnormalities of FAS: thin upper lip, smooth philtrum and short palpebral fissures (Fig. 1). The brain is vulnerable to PAE throughout pregnancy. PAE after 8 weeks of gestation affects neurogenesis, differentiation of neural precursor cells, neuronal migration, pathfinding, synaptogenesis, and axon myelination. [29,30] but does not cause sentinel craniofacial dysmorphology or major organ defects. Thus, PAE after major organogenesis may result in a FASD phenotype with neurodevelopmental disorder but without physical alterations, making diagnosis difficult. Nutritional deficiency during pregnancy may potentiate the effects of PAE on developmental outcomes, and maternal alcohol intake may further reduce the availability of developmentally important nutrients. [31]



a. Child with FAS **b**. Prenatally ethanol-exposed mouse fetus **c**. Control mouse fetus

Figure 1: Prenatal alcohol exposure during gastrulation in mice reproduces the facial phenotype of FAS.

PAE's effects on the fetus and embryo brain growth:

Brain development:

As previously mentioned, PAE can affect brain development. A retrospective examination of 149 brains from individuals with PAE who died between birth and adulthood identified gross abnormalities in brain development causing microcephaly (a smaller than normal head for age and sex using population-based normative data, often associated with a smaller than normal brain (micrencephaly) in 20.8%. This study found isolated hydrocephalus in 4.0% of individuals with PAE, corpus callosum defects in 4.0%, prenatal ischaemic lesions in 3.4%, minor subarachnoid heterotopias (the presence of normal tissue at an abnormal location, such as an ectopic cluster of neurons within the white matter, often due to abnormal neuronal migration during early brain development) in 2.7%, holoprosencephaly (whereby the embryonic forebrain fails to develop into two discrete hemispheres, often affecting midline brain and craniofacial structures) in 0.7% and lissencephaly (smoothness of the brain surface due to impaired development of cerebral gyri) in 0.7%. [32] Hence, macroscopic neuropathology is not present in most individuals with FASD, microscopic neuropathology likely underlies many of the associated cognitive and behavioral abnormalities of this disorder. Studies in non-human primates show that first-trimester equivalent alcohol exposure reduces brainstem and cerebellar volume and disrupts various white matter tracts, including one connecting the putamen and primary sensory cortex. [33]

Brain structure:

Relatively few macroscopic brain lesions have been identified in clinical neuroimaging studies of children with FASD. [33] Blind evaluation of clinical MRI studies by neuroradiologists identified clinically significant abnormalities in 3% of individuals with PAE or FASD and in 1% of typically developing controls. [34] Four of 61 patients with FAS had heterotopias. By contrast, quantitative research imaging studies in groups of children with PAE and FASD have revealed region-specific increases or decreases in grey matter thickness, microstructural white matter abnormalities, and neuronal and glial migration defects, Volume reduction is disproportionate in the cerebrum, cerebellum, caudate, putamen, basal ganglia, thalamus, and hippocampus after accounting for overall reductions in brain volume. Age-dependent decreases in cortical gyrification are also observed and the corpus callosum can be hypoplastic, posteriorly displaced, or in rare cases, absent. [35] Moreover, studies using diffusion tensor imaging reveal reduced integrity of large white matter tracts, including in the corpus callosum, cerebellar peduncles, cingulum, and longitudinal fasciculi. [36,37,38] Hypoplasia of the corpus callosum in children with FASD is associated with impaired inter-hemispheric transfer of information and unavailable to many children worldwide. Often, children present first to family physicians, pediatricians, and psychologists who lack sufficient expertise to confidently diagnose FASD.[39]

Placental effects

A retrospective autopsy study reported placental abnormalities in 68% of individuals with PAE or FASD. PAE in humans decreases placental weight, epigenetic marks, vasculature and metabolism. [40] PAE during the first 60 of 168 days of gestation in rhesus macaques caused diminished placental perfusion and ischaemic placental injury from middle to late gestation RNA sequencing analysis revealed activation of inflammatory and extracellular matrix responses. Rats with PAE demonstrate reduced nitric oxide-mediated uterine artery relaxation,

potentially contributing to dysregulation of uterine blood flow and intrauterine. [41]

SYMPTOMS OF FASD: A MULTIFACETED PORTRAIT OF CHALLENGES

Recognizing the symptoms of FASD is pivotal for early identification and intervention. The spectrum of impairments associated with FASD can affect various aspects of a person's life cycle including physical, cognitive, and behavioral domains.

Physical Features:

FASD often manifests with distinct physical characteristics and that is the worst of them all – Fetal Alcohol Syndrome. (FAS), is marked by facial abnormalities, growth deficiencies, and central nervous system impairments. [42,43] Individuals with FAS should be able to display a smooth philtrum, thin upper lip, and small eye openings, creating a recognizable facial phenotype. [44] Growth retardation and abnormalities in organ development may also be at hand emphasizing the ubiquitous nature of prenatal alcohol exposure on physical development.

Cognitive Impairments:

The cognitive repercussions of FASD are profound and multifaceted. Individuals affected by FASD may experience difficulties in memory, attention, and executive functions. Learning disabilities, poor academic performance, and challenges in problem-solving and decision-making are common. These cognitive impairments significantly impact educational and vocational pursuits, requiring tailored support and accommodations. [45,46]

Behavioral Challenges:

Behavioral issues are a hallmark of FASD, encompassing a spectrum of difficulties that individuals may encounter in their social and emotional lives. Impulsivity, hyperactivity, and poor impulse control are prevalent, often leading to challenges. In interpersonal relationships and social integration. Individuals with FASD may struggle with adapting to social norms, understanding, social issues, and managing emotions, posing additional hurdles in various life contexts. [47]

Sensory Processing Difficulties:

Many individuals with FASD experience sensory processing difficulties, amplifying their challenges in navigating the sensory-rich world around them. Hypersensitivity or hyposensitivity to sensory stimuli, such as touch, sound, or light, can contribute to heightened stress and difficulties in daily activities. [48]

Mental Health Issues:

FASD is frequently associated with an increased risk of mental disorders including anxiety disorders, depressive disorders, and attention-deficit/hyperactivity disorder (ADHD). [49] The interplay between cognitive impairments and mental health challenges further complicates the overall well-being of individuals affected by FASD, necessitating, a comprehensive approach to intervention and support. [50]

RISK FACTORS OF FASD:

Maternal Risk Factors

Alcohol Consumption Patterns:

Mothers who engage in binge drinking are at significantly higher risk of having children with FASD. Binge drinking during pregnancy has been linked to severe outcomes, including fetal alcohol syndrome (FAS). [51] Continuous alcohol consumption throughout pregnancy increases the likelihood of FASD. Studies indicate that the risk escalates with the amount and frequency of alcohol consumed, particularly in the first trimester. [52]

Demographic and Health Characteristics:

A higher Body Mass Index (BMI) among mothers is associated with an increased risk for FASD. Younger mothers and those with higher gravidity (number of pregnancies) are more likely to have children with FASD. Conditions such as depression and a history of trauma can predispose mothers to higher alcohol consumption during pregnancy. [53]

Socioeconomic Factors:

Lower formal education attainment is correlated with higher rates of alcohol use during pregnancy. Unmarried mothers tend to report higher alcohol consumption compared to their married counterparts. [54]

Family History:

A family history of alcohol problems significantly increases the likelihood of a child being diagnosed with FASD, making it a critical risk factor. [55]

Paternal Risk Factors

Paternal drinking before and during pregnancy has been shown to influence the risk of FASD. However, its direct impact is less significant compared to maternal drinking when controlled for maternal behaviors. [56]

Environmental and Social Influences

***Social Isolation and Violence*:**

Mothers experiencing social isolation or intimate partner violence are at greater risk for substance use during pregnancy, which can lead to FASD. [57]

***Prenatal Care*:**

Inadequate prenatal care or reluctance from healthcare providers to discuss alcohol use can exacerbate risks associated with FASD. [58]

***Economic Stressors*:**

Living in poverty is linked to higher rates of alcohol consumption during pregnancy, contributing to increased risks for FASD. [59]

EARLY DIAGNOSIS INTERVENTION OF FASD:

Fetal Alcohol Spectrum Disorders (FASD) result from prenatal alcohol exposure and encompass a range of neurodevelopmental impairments. [1] Early diagnosis and intervention are crucial for improving outcomes for affected individuals. This overview discusses the

importance of early diagnosis, the challenges faced in identifying FASD, and effective intervention strategies. [60]

Importance of Early Diagnosis

Improved Health Outcomes:

Early diagnosis of FASD, particularly before the age of six, is linked to significantly better health outcomes. It can reduce the risk of adverse effects in adolescence and adulthood, such as behavioral issues, academic difficulties, and social problems by 2–4 times. [61]

Multidisciplinary Approach:

A comprehensive diagnosis typically requires a multidisciplinary team (MDT) that includes pediatricians, psychologists, occupational therapists, and other specialists. [62] This collaborative approach ensures thorough assessment across various domains such as physical features, neurodevelopmental function, and prenatal alcohol exposure (PAE). [63]

Standardized Diagnostic Criteria:

The establishment of clear diagnostic guidelines enhances the consistency and accuracy of FASD diagnoses. For instance, the Australian Guide to the Diagnosis of FASD provides standardized criteria for early identification and management. [64]

Intervention Strategies:

Early Interventions:

Implementing interventions focused on self-regulation and attentional control has shown promise in improving outcomes for children with FASD. Programs designed for young children can enhance cognitive skills, social functioning, and overall behavioral outcomes. [65]

Family Support Services:

Providing support not only to affected children but also to their families is essential. Early interventions can help mitigate stress within families and improve relationships among siblings. [66]

Educational Strategies:

Tailored educational programs that incorporate behavioral therapies have been effective in promoting adaptive skills among children with FASD. These programs can include strategies for enhancing communication skills and executive functioning. [67]

Preventing prenatal drinking Strategies:

According to a 2016 report, it was approximated that 10% of pregnant people reported alcohol and the proportion of participants who had used each of them in the last month about 40% of those individuals also reported other substance use. Yet, only 10% of all individuals need treatment. In addition, inconsistent messages about drinking during pregnancy can be confusing and minimize the perceived Threat To prevent prenatal drinking, public health messaging. [68] Now focuses on all women of childbearing age who may be unhealthy drinkers. This strategy has been adopted for two reasons, Firstly, preconception drinking is a strong risk factor for prenatal drinking. Secondly, Fifty percent of pregnancies – the International Conference on Breastfeeding and Maternal and Child Health are unintended, which means that many women do not realize they are pregnant until after the critical early development period. [69]

MULTIDISCIPLINARY APPROACHES OF FASD:

Importance of Collaboration among Healthcare Providers, Educators, and Families:

A multidisciplinary approach is crucial in addressing the complexities of Fetal Alcohol Spectrum Disorders (FASD). Collaboration among healthcare providers, educators, and families ensures a holistic understanding of each individual's needs. Healthcare professionals, including pediatricians, psychologists, and occupational therapists, bring specialized knowledge about diagnosis and treatment options. Educators play a vital role in implementing individualized education plans (IEPs) that cater to the learning styles and challenges of students with FASD. [67] Families provide essential insights into the child's history, behavior, and home environment, facilitating tailored support strategies. This collaborative framework enhances communication, fosters a unified approach to intervention, and improves outcomes for individuals with FASD. [70]

***Case Studies Demonstrating Successful Interventions*:**

Several case studies highlight the effectiveness of multidisciplinary interventions for individuals with FASD. For example, one case involved a child diagnosed with FASD who received coordinated support from a team comprising a special education teacher, a speech therapist, and a psychologist. This team developed a customized educational plan that included speech therapy sessions, social skills training, and behavioral management strategies. As a result, the child showed significant improvements in communication skills, classroom behavior, and peer relationships. Another case focused on a young adult with FASD transitioning to independent living. A multidisciplinary team, including a case manager, a vocational counselor, and a mental health therapist, collaborated to create a support system that included job training, therapy, and life skills coaching. This comprehensive approach not only helped the individual secure stable employment but also fostered greater independence and improved mental health. [71,72]

Policy Recommendations for Integrated Care:

Funding for Multidisciplinary teams allocates resources to support the formation of multidisciplinary teams in schools and healthcare settings, ensuring access to diverse expertise for individuals with FASD. Implement training programs for educators and healthcare providers focused on the unique needs of individuals with FASD, emphasizing the importance of early identification and intervention. Family support services develop policies that provide families with access to support services, resources, and

educational materials to empower them in advocating for their children's needs. Invest in research to evaluate the effectiveness of multidisciplinary approaches and collect data on long-term outcomes for individuals with FASD. Promote awareness campaigns that educate the public about FASD, its impacts, and the importance of early intervention, fostering a supportive environment for affected families. [73,74]

PREVENTION AND AWARENESS OF FASD

Public health initiatives aimed at reducing FASD:

Effective public health initiatives play a vital role in preventing Fetal Alcohol Spectrum Disorders (FASD). These initiatives often include awareness campaigns that disseminate information about the risks associated with alcohol consumption during pregnancy. Health departments and organizations collaborate to create resources, such as brochures, online materials, and community workshops, aimed at educating the public about FASD. Screening programs can also be implemented to identify at-risk populations, enabling early intervention and support for those who may be struggling with alcohol use. Moreover, integrating FASD prevention into broader substance abuse prevention efforts can amplify outreach and impact. [69,75]

Strategies for Educating Expectant Mothers and Communities:

Education is crucial in preventing FASD. Strategies for educating expectant mothers and their communities. Prenatal education programs offer comprehensive prenatal classes that highlight the dangers of alcohol consumption during pregnancy and promote healthy behaviors. Training healthcare professionals to communicate effectively with expectant mothers about the risks of alcohol use, ensuring they have the knowledge and tools to provide supportive guidance. Organizing workshops that involve community leaders and organizations to discuss FASD, its impacts, and prevention strategies, creating a support network for families. Utilizing social media platforms to reach a broader audience, sharing personal stories, facts about FASD, and information about local resources and support. Partnering with organizations focused on maternal health, addiction recovery, and child welfare to create comprehensive educational campaigns that target diverse populations. [76]

MANAGEMENT OF FASD:

The complex pathophysiology of FASD emphasizes the need for thorough, individualized assessment and treatment. Treatment plans should be culturally appropriate, consider the family and community context, and be developed in partnership with families and individuals with lived experience of FASD.

Behaviour support:

Several large-scale randomized controlled trials (RCTs) support specific developmental and psychological interventions for FASD in children but few high-quality studies have been conducted in adolescents and adults Positive behavior support is supported by positive results from RCTs and underpins three interventions for FASD: GoFAR the Math Interactive Learning Experience (MILE) and the Families Moving Forward program. Positive behavior support strengthens skills that enhance success and satisfaction in social, academic, work, and community settings while proactively preventing problem behaviors; maintaining family involvement is an important element.[77,78]

Self-regulation and executive function:

Most children with FASD have significant problems with executive function and self-regulation. The ALERT program, a 12-week manualized approach using sensory integration and cognitive behavioral strategies, aims to help children regulate their behavior and address sensory challenges in a home environment but is less effective when delivered in schools. [79]

Social skills:

Interventions to improve social connections in children with FASD include the Children's Friendship Training (CFT) and the Families on Track program. CFT involves 12 weeks of social and friendship skill training for children with FASD and their parents; it improves social skills and decreases problem behaviors in children with FASD. Similarly, the Families on Track program increases emotional regulation and self-esteem and decreases anxiety and disruptive behavior. However, interventions such as CFT and Families on Track are not widely available, and barriers to their use include the need to adapt to cultural context. International partnerships and sharing of expertise may increase accessibility to these interventions. [80]

Pharmacological interventions:

Pharmacological interventions for FASD are widely used and include medications, such as cognitive enhancers, to treat core impairments and medications to treat comorbidities, including ADHD, anxiety, and arousal or sleep disorders. Large RCTs evaluating their effectiveness in FASD are urgently needed. [81]

FUTURE RESEARCH AND CLINICAL PRACTICE:

While majority of studies reported in this review had positive effects on the children's outcomes and were rated as satisfactory for the parents, no studies were identified that used siblings for support. Future studies could seek to add a sibling component in their family-focused interventions to explore the resources and needs they can provide. Future research should also implement standardized reporting for the success of interventions to assess the comparability and reliability of the findings. Most authors reported on certain demographics but not all, and several used a range of assessments, making it difficult to identify significant differences across studies. Moreover, very few studies reported on parental satisfaction and stress, which are important factors when addressing family-focused interventions. Interventions. The use of

longitudinal designs would be beneficial in seeing the progress across the intervention. By continuing to focus on family-based interventions, both the children and their caregivers will be equipped with a greater ability to manage their daily interactions, leading to a greater quality of life.

CONCLUSION

The purpose of the present review was to better understand the impact of family-focused interventions for families with children diagnosed with FASD. We identified 21 relevant articles with studies showing decreased child problematic behaviour and parent stress. Parents also reported an increase in knowledge about FASD. However, there were inconsistencies with different measures used across different studies which made summarizing the results challenging. More research is needed to investigate the benefit of family-focused interventions. Policymakers, educators, and clinicians can use the existing information to adapt and implement programs supporting caregivers and their children with FASD.

Source of Support: The author(s) received no financial support for the research, authorship, and/or publication of this article

Conflict of Interest: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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