

Psychosocial Strength & Difficulties of Children Born by Assisted Reproductive Technology

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Abstract

Introduction: Assisted Reproductive Technology (ART) has become increasingly popular in recent years, raising questions about the psychosocial well-being of children born through these methods. This study aimed to investigate the psychosocial strengths and difficulties of children born through ART in Bangladesh using the Strengths and Difficulties Questionnaire (SDQ).

Methods: This retrospective longitudinal study was conducted at the Fertility Center of Combined Military Hospital, Dhaka, Bangladesh, with a sample of 47 parents and their children, who completed a socio-demographic questionnaire and the SDQ. Data were analyzed to examine correlations between socio-demographic variables and SDQ score categories, including emotional problems, conduct problems, hyperactivity, peer problems, prosocial behavior, and total difficulty score.

Result: In this retrospective study of 47 children aged 2-4 years, most SDQ scores were close to average (prosocial 48.9%, peer problems 31.9%, hyperactivity 68.1%, conduct problems 53.3%, emotional problems 51.1%) and very high/low values (prosocial 19.1%, peer problems 31.9%, hyperactivity 12.8%, conduct problems 21.3%, emotional problems 6.4%). Total difficulty score showed a majority near average (40.4%) and very high/low (23.4%) with a mean value of 2.1702. **Conclusion:** The findings suggest that children born through ART in Bangladesh generally exhibit average psychosocial functioning, with the exception of peer problems, which warrant further investigation. Continued research is needed to identify factors contributing to these difficulties and to develop targeted interventions to support the psychosocial well-being of children born through ART.

Keywords: Neurodevelopmental, Impairment, Disorder, SDQ, Psychosocial

Date of Submission: 16-04-2023

Date of Acceptance: 29-04-2023

I. INTRODUCTION

Starting by the revolutionary efforts of Steptoe and Edwards, assisted reproduction treatment (ART) has advanced significantly over the decades. Since the first in vitro fertilization (IVF) infant was born on 25 July 1978, world has seen tremendous developments in this field. It is estimated that over 3.75 million babies have already been born by ART. The technique incorporates various methods such as intra cytoplasmic sperm injection (ICSI) and testicular sperm extraction (TESE), ovulation induction (OI), artificial insemination, in vitro fertilization (IVF), and intra cytoplasmic sperm injection (ICSI).¹ The number of children born through medically assisted reproduction has increased markedly over the last few decades.² IVF treatment alone now accounts for an estimated 1% to 3% of births in European countries and 1% of US births.³ Collectively, these procedures are associated with some adverse perinatal outcomes such as preterm delivery (PTD, before 37 weeks of gestation) and low birth weight (LBW, lower than 2500g). These negative consequences are due to the strong association between IVF and multiple pregnancies, and because even IVF singletons have an increased risk of PTD and LBW compared to naturally conceived singletons.³ These are also postulated to be associated with a range of long term child health problems including admission to neonatal intensive care units (NICU) and prolonged hospitalization, vision impairment, cerebral palsy (CP) and developmental disabilities such as autism spectrum disorders (ASD). Some studies have reported an increased risk of neuropsychiatric disorders while some have indicated no higher

risk of ASD for ART children when compared to spontaneously conceived (SC) children.⁴ Findings regarding behavioural and socio-emotional disorders like, attention deficit and hyperactivity disorders (ADHD) and tic disorder, have also been inconsistent.⁵ Few other studies focusing on social problems and externalizing symptoms (e.g., aggression and other behavioural problems), hyperactive and tic disorders have shown both comparable and higher prevalence for ART children.^{6,7} Indications for socio-emotional and behavioural problems among ART children have also been reported after 8 years of age.⁷ The most recent and well-conducted investigation of fertility therapies and ASD found potential associations in a subgroup analysis for specific hormones used in fertility medications.⁸ Keeping these correlations in mind, this retrospective longitudinal study that was planned accordingly and carried out at the Fertility Centre, CMH Dhaka, attempted to put light on the issue.

II. MATERIALS AND METHODS

The study was done in a retrospective longitudinal fashion. It was conducted to determine the psychosocial strength & difficulties among children born by ART, along with identifying any neurodevelopmental disorders. Children born between September 2017 to September 2022 who fulfilled the criteria were included. To see the demographic parameters a semi-structured socio-demographic questionnaire was used. Strength & Difficulties Questionnaire was used to measure the psychological strength and difficulties among those children. The presence of any neurodevelopmental disorder was diagnosed by the interviewer according to DSM-IV. Since the beginning of Sep 2017 till today, the number of take baby home was 58 but among them 47 were more than one year of age and gave consent. So, finally the sample size was 47. The nature, purpose and procedure of the study was explained to the mother or the primary care giver, before proceeding to data collection. All study cases had the freedom not to participate in the study. Informed written consent was obtained from each respondent. After getting consent, investigator administered the questionnaire containing socio-demographic variables along with Strength & Difficulties Questionnaire. Data was processed and analysed with the help of computer program SPSS version 23.0.

III. RESULTS

Total 47 cases were studied retrospectively who fulfilled the criteria. Age distribution among the study population ranged from 2 years to 4 years. Majority of the study population were female (53.2%). Most of them belong to middle-class families (59.6%), live in urban area (42.6%) and were Muslim (72.3%). Illness distribution indicated that only minority of them were suffering from physical illnesses (6.4%) and psychiatric illnesses (10.6%).

Total difficulty score	Frequency	Percent	Mean value
Close to average	19	40.4	2.1702
Slightly raised/ lowered	12	25.5	
High/low	5	10.6	
Very high/low	11	23.4	
Prosocial category			
Close to average	23	48.9	2.0426
Slightly raised/ lowered	8	17.0	
High/low	7	14.9	
Very high/low	9	19.1	
Peer problems category			
Close to average	15	31.9	2.5319
Slightly raised/ lowered	7	14.9	
High/low	10	21.3	
Very high/low	15	31.9	
Hyperactivity category			
Close to average	32	68.1	1.6596
Slightly raised/ lowered	5	10.6	
High/low	4	8.5	
Very high/low	6	12.8	
Conduct problems category			
Close to average	26	53.3	1.9362
Slightly raised/ lowered	8	17.0	
High/low	3	6.4	
Very high/low	10	21.3	
Emotional problems category			
Close to average	24	51.1	1.6809
Slightly raised/ lowered	17	36.2	
High/low	3	6.4	
Very high/low	3	6.4	

Table-1: Scoring of the Strengths & Difficulties Questionnaire (SDQ) in total difficulty score, and prosocial, peer problems, hyperactivity, conduct problems, emotional problems categories.

Table-1 shows the frequency and percentage distribution of five categories (prosocial, peer problems, hyperactivity, conduct problems and emotional problems categories), total difficulty score along with mean value for each category. The distribution of data shows majority of each of the scores are close to the average values (prosocial - 48.9%, peer problems - 31.9%, hyperactivity - 68.1%, conduct problems - 53.3%, emotional problems - 51.1%) and close to the very high/low values (prosocial - 19.1%, peer problems - 31.9%, hyperactivity - 12.8%, conduct problems - 21.3%, emotional problems - 6.4%). Total difficulties score was generated by summing scores from all the scales except the prosocial scale. This also showed similar majority of closeness to average (40.4%) and close to very high/low is 23.4 with a mean value of 2.1702.

IV. DISCUSSION

Despite repeated concerns about the potential of negative developmental outcome of children born by assisted reproductive technology, the study indicated that those children do not suffer from significant physical, psychological or developmental difficulties in comparison with normally conceived children. All scores have the values with majority being close to average value. A comparative prospective study in 2016 also found an increase in neither mental health nor cognitive developmental problems for ART children aged 7–8 years.⁹ Thus, we found no strong evidence that ART children are at higher risk of developing psychosocial and developmental problems when they reach later part of development and adolescence, as has been hypothesised in few of literatures.^{10,11,12} There was only one report that found lower self-esteem in adolescents born following IVF than in the control group.¹³ And the difference of self-esteem was not from a general tendency in IVF adolescents, as the result was not significant when excluding two outliers. The socio-emotional development was also assessed in terms of psychosocial adjustment and peer relationship in the other eight studies. All of the eight studies were in line with each other, in which the authors reported no differences between the groups. Taken together, the results were reassuring with no significant differences between the ART children and control children regarding their socio-emotional development. The present study aimed to investigate the psychosocial strengths and difficulties of children born through Assisted Reproductive Technology (ART) in Bangladesh by examining their performance on the Strengths and Difficulties Questionnaire (SDQ). The SDQ consists of five subcategories: prosocial behavior, peer problems, hyperactivity/inattention, conduct problems, and emotional symptoms. Overall, the results indicated that children in the study scored close to the average in most categories, with some variations among the subcategories that warrant further discussion. The majority of children (48.9%) scored close to the average in the prosocial category, with 19.1% scoring close to the very high/low values. This suggests that most children born through ART in Bangladesh demonstrate typical levels of prosocial behavior, which is in line with previous research indicating that these children do not differ significantly from their naturally conceived peers in terms of social functioning.^{13,14} The results further revealed a higher prevalence of peer problems among the study population, with 31.9% scoring close to the very high/low values. This finding indicates a potential area of concern for children born through ART in Bangladesh. Some studies have suggested that these children may experience stigmatization or discrimination based on their mode of conception, which could contribute to difficulties in forming and maintaining peer relationships.^{15,16} Further research is needed to explore the factors that may be contributing to these elevated rates of peer problems and identify targeted interventions to support these children's social development. In terms of hyperactivity, the majority of children (68.1%) scored close to the average in the hyperactivity/inattention category, with only 12.8% scoring close to the very high/low values. This suggests that most children born through ART in Bangladesh do not exhibit significant difficulties related to hyperactivity or inattention, which is consistent with previous research findings in other countries.^{13,14} In the conduct problems category, 53.3% of children scored close to the average, and 21.3% scored close to the very high/low values. This indicates that most children in the study do not experience substantial difficulties with conduct problems, which aligns with previous research demonstrating that children born through ART do not exhibit increased rates of conduct disorders compared to their naturally conceived peers.^{13,14} The majority of children (51.1%) scored close to the average in the emotional symptoms category, with only 6.4% scoring close to the very high/low values. This finding suggests that most children born through ART in Bangladesh demonstrate typical levels of emotional well-being, which supports previous research showing that these children do not differ significantly from their naturally conceived peers in terms of emotional functioning.^{13,14}

The study had several limitations, including a small sample size and a relatively narrow age range of participants (2 to 4 years). This restricts the generalizability of the findings and precludes the examination of potential developmental changes in psychosocial functioning across different age groups. Additionally, the retrospective nature of the study may be subject to recall bias and other methodological limitations.

V. CONCLUSION

Since the introduction of assisted reproduction treatment (ART), the numbers of couples undergoing ART treatments to help them conceive and thereby the numbers of children born through ART are increasing notably. In the coming future, this trend will be even more escalated. No study could provide hard-rock evidence

of negative correlations. There is still lack of studies exploring the long-term developmental outcomes and any possible detrimental psychological effects of ART on children. It represents a hollow gap of significant information regarding the issue. Ameliorating this gap in our knowledge especially in the longitudinal study approach is very relevant in the current contest and will be more pertinent to the coming era.

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Dr. AHM Kazi Mostafa Kamal. et.al.” Psychosocial Strength & Difficulties of Children Born By Assisted Reproductive Technology”. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* 22(4), 2023, pp. 45-48.