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The prevalence of psychiatric disorders among 3–4 year olds in an urban sample in Bangladesh

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ABSTRACT

Preschool period is the most important stage of life when major development occurs that lays the foundation of later life. Nearly similar ranges of psychiatric disorders start during preschool age and they continue to childhood and adolescence. Early intervention can reduce risks of adverse psychosocial outcome and longitudinal continuity of disorders. Detailed assessment of psychiatric disorders among this population is increasingly of high importance. Present study was aimed to determine the prevalence of psychiatric disorders among 3−4 year olds and to find out possible baseline correlates. This was a quantitative, cross-sectional and descriptive study carried out from March to May 2018 in 160 random urban community samples of Dhaka city. Of these, 86 were boys and 74 were girls. Household Questionnaire and validated parent version of Bangla Strengths and Difficulties Questionnaire (SDQ) for screening psychopathology had been applied to the consented parents or caregivers of the respondents. Mean age of the subjects was 3.63 ± 0.49 years. Overall, predictive prevalence of psychiatric disorder was 11.9 %. Among them, 4.4 % was emotional disorder, 5.6 % was conduct disorder and 1.9 % was hyperactivity. Prevalence of predictive psychiatric disorders was roughly similar in 3 and 4 years age. Girls had an excess of emotional disorder and boys had more behavioral disorder. Comorbidity was found at a higher rate with significant overlapping among the broad types of psychiatric disorders. This study supports the other findings of psychiatric disorders among the preschool children that would ultimately help in applying suitable screening procedures and subsequent management of psychiatric conditions.

1. Introduction

Preschool period is the crucial stage of life when major development happens that creates the foundation and direction of later life. The developing capacity from birth to six is crucial to experience, regulate, and express emotions; to form close relationships; and to explore the environment and learn — all in the context of family, community, and cultural expectations for young children. The many emotional and behavioral problems start during preschool age and they continue to prevail in further developmental stages (Pandina et al., 2007). Therefore, it is now recognized that very young children can experience significant emotional and behavioral problems similar to the latter period. Identifying children at risk of behavioral and emotional disorders in this age group stands to receive the greatest benefit from early intervention and prevention. (Qi and Kaiser, 2003; Stormont, 2002; Duncan et al., 1994). If these are undiagnosed and untreated early on, there is high risk of serious psychiatric disorders, poor social skills and educational problems for these children in future (Duncan et al., 1994; Stormont, 2002; Mendez et al., 2003). Thus, interests are gradually increasing on early childhood mental health to know the mental health status of this population.

A significant number of epidemiological studies have been carried out on psychopathology among children and adolescents across the globe including Bangladesh. Overall, the most representative prevalence of psychiatric disorders among this population is ranged from 10 to 20% (Bird, 1996; Shaffer et al., 1996; Roberts et al., 1998; Hackett and Hackett, 1999; Meltzer et al., 2003; Mullick and Goodman, 2005; Malhotra and Patra, 2014; Shen et al., 2018). Variation of prevalence rate is mainly due to differences of study design, age range, sampling technique, defining cases, informants, assessment methods and measures, and cross-cultural influence. A good number of studies have also been done about the mental health problems of preschool children and reported prevalence of psychiatric disorders in this population is 7–21 % (Richman et al., 1976; Roberts et al., 1998; Erol et al., 2005; Egger and Angold, 2006; Kristensen et al., 2010; Sim et al., 2013; Theunissen et al., 2015; Crone et al., 2016; Wiggins et al., 2018). Overall prevalence rate

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of psychiatric disorders among preschool children are similar to older children (Lavigne et al., 1996; Costello et al., 1999; Egger and Angold, 2006; Brauner and Stephens, 2006; Kristensen et al., 2014). Though a few studies used structured psychopathological measures, the majority of these studies used screening instruments. The literature is more consistent about gender differences during preschool period that excess of psychiatric problems among boys (Campbell, 1995; Baillargeon et al., 2007). The major parents' correlates were found as young maternal age, low level of parental education, mother's ill health, father absence; child correlates included impaired activity level, timidity, persistence, and low IQ, birth order, chronic illness; and socio-environmental correlates were traumatic early childhood experience, family conflicts, large family size, lack of social support, ethnicity, minority status, male sex, low socio-economic status(Larson et al., 1988; Thompson et al., 1996; Huaqing and Kaiser, 2003; Anselmi et al., 2004; Spencer et al., 2005; Egger and Angold, 2006; Slopen et al., 2010; Lawson and Mace, 2010; Gleason et al., 2011; Kristensen et al., 2014; Santos et al., 2016). Most of these studies are carried out in developed and few developing countries. In a survey of leading psychiatry journals, it has been found that though over 90 % of the world's infants are born in low and middle-income countries (LMIC) countries, and these countries bear a disproportionate burden in terms of health and social problems, 94 % of articles surveyed were written from Europe or North America (Tomlinson and Swartz, 2003). This imbalance of knowledge more or less remains same in the course of time that is clearly reflected in a follow-up reviewing articles published between 2002 and 2012, only 2.3 % of articles published in 11 years included data from LMIC (Tomlinson et al., 2014). Therefore, efforts must be made to bridge the gap. Up to date, such study among preschool children in Bangladesh has not yet been reported. Therefore, this study was aimed to determine the prevalence, types of psychiatric disorders among 3−4 year olds and to find out possible socio-demographic and related variables associated with their appearance.

2. Materials and methods

This was a cross-sectional study carried out among 3−4 year old children in a large middle socio-economic class residential urban area of Dhaka city. Children between the age of 3 and 4 years were obtained through a two-stage ascertainment program. In the first stage, a stratified random sample of three kindergartens schools (preschool in nature) was selected from the list of preschools held by a local social authority. The chosen schools conducted a learning programme for preschool children. All the randomly chosen schools agreed to participate. In the second stage, children of 3−4 year old were randomly selected from class registers. The children sampled in this way were likely to be a fairly representative sample of this neighbourhood. However, as kindergartens school is not part of the national curriculum, these schools were private and not free. Therefore, the area contained some housing where many children did not attend such preschool–children from these families will have been systematically under-sampled by our school-based ascertainment strategy. Parents were visited at home. Informed consent was obtained from the parents and all agreed to take part in the study.

Household Questionnaire, a structured questionnaire included socio-demographic and related baseline variables, was designed by the researchers. Validated Bangla Strengths and Difficulties Questionnaire –SDQ (Mullick and Goodman, 2001) was used for measuring emotional and behavioral problems. SDQ is a screening measure of psychopathology. It has several versions of multisource informants (parents, teachers, self). The SDQ consists of 25 attributes some of them are positive and some are negative. These 25 items are divided between 5 scales: (1) emotional symptoms (5 items), (2) conduct problems (5 items), (3) hyperactivity/inattention (5 items), (4) peer relationship problems (5 items), and (5) prosocial behavior (5 items). (1) to (4) added together to generate a total difficulties score (based on 20 items). A brief impact supplement asks whether the respondent thinks that he/she has a problem, and if so, inquires further about overall distress, social impairment, burden and chronicity (Goodman, 1999). The informant version of the SDQ can be completed in about five minutes by parents or teachers of children aged 4–17 (Goodman, 1997). SDQ originally developed of 4–17 years. Subsequently, a preschool version (2–4 years) was developed for teachers and parents. Both the original SDQ in English as well as Bangla SDQ have been shown to be of acceptable reliability and validity (Goodman et al., 1998, 2000a; Goodman et al., 2000b; Mullick and Goodman, 2001, 2005; Nielsen et al., 2019).

One hundred and seventy five 3−4 year children of either sex were included in this study between March and May 2018. There were no exclusion criteria. Household Questionnaire and Bangla Strengths and Difficulties Questionnaire (SDQ) were given to the parents. The questionnaire was read out when the respondent did not have adequate literacy skills. Teachers or educators completed the teacher SDQs. Subjects were considered as screen positive when they were found 'probable' psychiatric cases from SDQ cut-offs algorithm.

In total, 175 subjects were assessed. Of these, 15 of these subjects were excluded from the analyses reported here either because it was not possible to get teacher as well as parent SDQs, or because missing answers to some questions made it impossible to generate all scores. Therefore, the sample consists of the remaining 160 subjects (91 % participation rate). The resulting databases were thus cleaned, corrected, converted and imported into SPSS version 25 for further analyses.

3. Results

Socio-demographic characteristics and related variables of the 162 subjects revealed that their age ranged from 3 and 4 years with a mean of 3.63(SD = 0.49) years. The majority of the subjects were of 4 years age which was 61 % and the rest were of 3 years age which was 39 %. There were 86 boys and 74 girls and the boy-girl ratio was 1:0.86. Almost all the subjects were urban dwellers (93 %). Majorities (93 %) of the subjects were Muslims, 5.6 % were Hindus, and the rest 1.3 % were Christians. Most of the subjects (70 %) were from middle income families and low and high income families were 23 % and 7% respectively. Most of the families were nuclear type (79 %) and joint families were 21 %. Ninety-eight percent primary caregivers were mothers. Almost all of the parents were literates (96 %). Predominant occupation of the fathers was service (66 %) and that for mothers were housewives (76 %). In terms of learning grade of the subjects, play and nursery levels were 55 % and 45 % respectively. Considering preschool attendance, 89 % were regular. Irregular and occasional attendances were 9.4 % and 1.3 %. Regarding basic physical health status, the mean height of the subjects was 109 ± 10 cm and that for weight was 17 ± 4.2 kg.

The prevalence of predictive psychiatric disorders in the subjects were assessed on the basis of combined multiinformant SDQ cut-offs that is presented in Fig. 1. It shows that the prevalence of any psychiatric

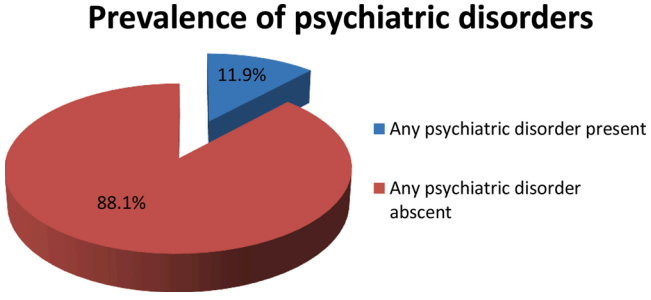

Fig. 1. Predictive prevalence of psychiatric disorders according to multi-informant SDQs.

disorders among the studied population was found 11.9 %. Of these, emotional disorder was 4.4 %, conduct disorder was found 5.6 % and hyperactivity was found 1.9 % (Fig. 2).

Table 1 shows the predictive types of psychiatric disorders by age. Any psychiatric disorder in 3-year and 4-year olds were found 11.3 % and 12.2 % respectively. The difference was not significant. Among the 3-year olds, emotional and conduct disorders were found 4.8 % for each, and 1.6 % had hyperactivity. In contrast, 4.1 % had emotional disorder 6.1 % had conduct disorder and 2.0 % had hyperactivity in 4-year olds. All the types of predictive psychiatric disorders were higher among 4-year olds but there were no significant differences for overall prevalence and the types of psychiatric disorders between the two age groups.

Table 2 shows the prevalence of predictive psychiatric disorder by sex. Prevalence of psychiatric disorder was found 14.0 % among boys and 9.5 % among girls. This difference was not significant (p = 0.38). According to broad types, excess of behavioral disorder (combining conduct disorder and hyperactivity) was found among boys (boy 11.7 % vs. girl 2.7 %) and higher rate of emotional disorder was found among girls (boy 2.3 % vs. girl 6.8 %). This difference for emotional disorder just failed to reach the significance (p = 0.17) but that of behavioural disorder was significant (p = 0.03).

Fig. 3 shows the comorbidity among psychiatric disorders assessed from combined multiinformant SDQs. It revealed that all broad types of disorders had a good number of comorbidities by overlapping each other. In order to increased number of frequency, emotional disorder (4.4 %) had 1.3 % comorbid conduct disorder followed by hyperactivity (0.6 %). Conduct disorder (5.6 %) had increased comorbidity with hyperactivity (1.9 %) followed by emotional disorder (1.3 %). Hyperactivity (1.9 %) had equal frequency of comorbid conduct disorder (1.9 %) followed by emotional disorder (0.6 %).

Table 3 shows the correlation coefficient of combined multi-informant SDQs total difficulties and subscales scores of subjects. It revealed that total difficulties score and higher emotional, conduct and hyperactivity subscale scores were correlated each other at moderate to high level (r = .50to r =.85). Higher peer problem subscale score was positively correlated with total difficulties score at moderate level (r =.59).Lower prosocial scale score was moderately negatively correlated with total difficulties score and hyperactivity subscale score at low level (r = -.42 and r = -.38).

Other socio-demographic and relevant variables like family type, socio-economic status, parental education, preschool learning grade, preschool attendance, weight and height of the children variables were not significantly associated with the psychiatric disorders.

Table 1
Predictive types of psychiatric disorders by age.

Disorder	3-year old N = 62 (%)	4-year old N = 98 (%)	Total N = 160 (%)	p value
Emotional disorder	3 (4.8)	4 (4.1)	7 (4.4)	0.81
Conduct disorder	3 (4.8)	6 (6.1)	9 (5.6)	0.73
Hyperactivity	1 (1.6)	2 (2.0)	3 (1.9)	0.85
Any psychiatric disorder	7 (11.3)	12 (12.2)	19 (11.9)	0.88

Table 2
Predictive types of psychiatric disorder by sex.

Disorders	Boy N = 86(%)	Girl N = 74(%)	Total N = 160(%)	p value
Emotional disorder	2 (2.3)	5 (6.8)	7 (4.4)	0.17
Conduct disorder	7 (8.2)	2(2.7)	9 (5.6)	0.13
Hyperactivity	3 (3.5)	0(0.0)	3 (1.9)	0.10
Any psychiatric disorder	12 (14.0)	7 (9.5)	19 (11.9)	0.38

4. Discussion

This study was conducted to screen out the prevalence rate of psychiatric disorder in 3–4 year olds of an urban community sample in Dhaka city. Out of 160 subjects, overall prevalence of predictive psychiatric disorders was found 12 %. The result compares closely with the SDQ-based prevalence rates of 13 % for Norwegian 3–4 year olds (Wichstrom et al., 2012) 13.8 % for Netherlands 3-4 year olds (Theunissen et al., 2013) found 14 % for Norwegian 3–4 year olds (Crone et al., 2016) and 12.4 % for American 3–4 year olds (Fallucco et al., 2017). Our prevalence finding is also fairly comparable with the similar findings in developing countries. 11.9 % in Turkish 2–3 year olds (Erol et al., 2005) 13.7 % in Hong Kong (Leung et al., 2005), 19.2 % in Sri Lanka (Samarakkody et al., 2012). However any comparison of the prevalence of psychiatric problems is hindered by a number of factors mainly use of varying methods, measures and ascertainment techniques (Rescorla et al., 2011). The prevalence rate found in the present study reflects that a significant proportion of preschool children in Bangladesh have psychiatric problems which are similar across culture. At the same time it indicates that the rate of preschool mental health problems is roughly the same as that of older children and adolescents as found in other studies in Bangladesh (Mullick and Goodman, 2001, 2005; Rabbani et al., 2009). In the first community based study among 5–10 year olds, prevalence of psychiatric disorders was found 15 % (Mullick and

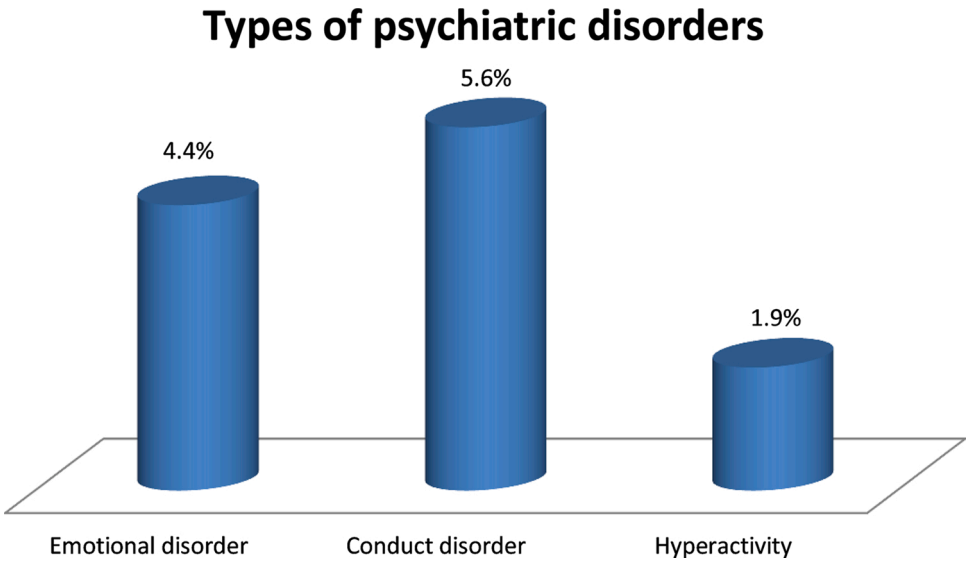

Fig. 2. Predictive types of psychiatric disorders among the respondents.

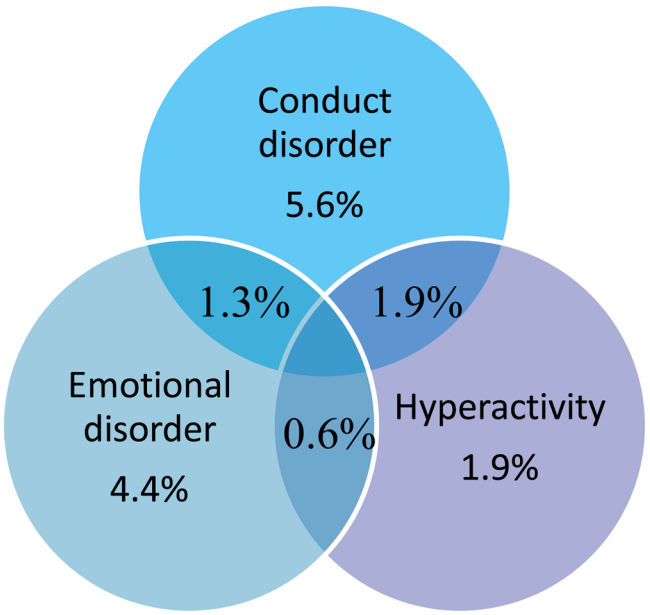

Fig. 3. Comorbidity of emotional, conduct and hyperactivity.

Goodman, 2005). Another community survey showed psychiatric morbidity among 5–17 year olds was 18 %. (Rabbani et al., 2009). Large-scale studies using structured assessment measures suitable for generating exact diagnoses can confirm our prevalence estimate. Nevertheless, the result reflects that nearly these proportions of preschool children are in substantial distress and impairment including detrimental effects on their development and their problems will be affecting family members, peers and educators. These preschool psychiatric problems will have substantial long-term costs including childhood and adolescent continuity and a higher rate of adult psychiatric problems and thereby impaired quality of life.

In the present study, predictive emotional disorder was found 4.4 %. In representative community based studies among 3–4 year olds, 5% (Rescorla et al., 2011) and 3.8 % (Shala and Dhamo, 2013) emotional disorder was reported that simulate with the finding of our study. Overall prevalence rates of 5–12 % emotional disorder were found in community based studies among preschool children (Egger and Angold, 2006; Shala and Dhamo, 2011). We found 5.6 % prevalence of predictive conduct disorder that is consistent with the 4% prevalence of oppositional defiant disorder (Earls, 1982) and 4.6 % prevalence of conduct disorder (Keenan et al., 1997). The rate of behavioral disorder ranged 5–14 % among preschool children found in different community based studies (Egger and Angold, 2006). We found 1.8 % prevalence of hyperactivity. This result is highly consistent with the 2% prevalence of other studies in the Western countries (Earls, 1980; Lavigne et al., 1996).

In this study, prevalence of predictive psychiatric disorder in 3-year old children was found 11.3 % that simulates with the prevalence rate of 11 % in USA (Earls, 1980); 11.1 % in Canada (Larson et al., 1988); 10 % in UK (Stallard, 1993), 13.2 % in Netherlands (Thompson et al., 1996) and 10.5 % in Finland (Sourander, 2001) among this age group. In our study, this prevalence rate for 4-year olds was found 12.2 %. Similar prevalence rate of 13.7 % in Hong Kong (Leung et al., 2005), 13 % in Norway (Wichstrom et al., 2012) in USA (Wiggins et al., 2018) were reported in 4-year olds.

During preschool period, excess of psychiatric problems among boys was found in many studies (Campbell, 1995; Baillargeon et al., 2007). In the current study, prevalence of psychiatric disorder among boys was found higher than the girls (14.0 % vs. 9.5 %) though this difference just failed to reach significance. This was in line with other studies (Richman et al., 1975; Campbell, 1995; Keiley et al., 2000). In majority of the studies, the rates of preschool emotional and behavioral disorders were roughly equal or some excess of behavioral disorder (Earls, 1980; Richman et al., 1982; Lavigne et al., 1996; Keenan et al., 1997; Egger and Angold, 2006; Rescorla et al., 2011) and sex difference were not marked as in older children (Keenan et al., 1997).These reports support our findings. However in broad types, we found that behavioural disorder was significantly excess among boys (boy 11.7 % vs. girl 2.7 %) and though not significant, emotional disorder was found higher among girls (boy 2.3 % vs. girl 6.8 %). This finding is consistent with the overall findings of a good number of studies (Gleason et al., 2011; Shala and Dhamo, 2013; Pourhossein et al., 2015). Prevalence of externalizing disorder was found 4.4 % among boys and 1.5 % among girls and that of externalizing disorder was found 3.2 % among boys and 4.6 % among girls in 2–5 year old community samples in Kosovo (Shala and Dhamo, 2011).

Comorbidity between broad types of behavioural and emotional disorders in preschool children was reported in many studies (Lavigne et al., 1996; Keenan et al., 1997). In the Keenan study, a quarter of children with emotional disorder also met the criteria of behavioural disorder, with the same proportion of behavioral disorder having emotional disorder. In Lavigne and colleagues' study, 25 % of the preschool children with a psychiatric disorder had comorbid behavioural disorder and emotional disorder. In our study, more or less similar rates of comorbidities were found in all the broad types of psychiatric disorders by overlapping each other. Emotional disorder (Total 4.4 %) had 1.9 % behavioural disorder. On the other hand, behavioural disorder (Total 6.5 %) had comorbid emotional disorder (1.3 %). Hyperactivity had an equal rate of comorbid conduct disorder. Comorbidity seems to be a central feature of psychiatric disorders in preschoolers, as it is in older children and adults that reflect problems in multiple functional systems. Longitudinal community studies of preschoolers including onset, course, and etiology are required to document rates of comorbidity and for better understanding of this issue.

In our study, SDQ total difficulties score and emotional, conduct and hyperactivity subscales scores were correlated to each other at moderate to high level. High peer problem subscale score was moderately correlated with total difficulties score. Low prosocial scale score was correlated with total difficulties score moderately and with high hyperactivity subscale score at low level. All these associations indicate that increased psychiatric problems are related with increased social difficulties. It is also indicative of complex psychopathology and supportive of comorbidity in general as well as relation of psychiatric problems with social difficulties. In a Danish National Survey, high peer problem and low prosocial scores were associated with psychiatric problems related subscale scores found in SDQ prosocial behavior analyses of normative

Table 3
Correlation coefficients between scores of scale and subscales of combined multi-informant SDQs.

Scale and subscale	Total difficulties	Emotional	Conduct	Hyperactivity	Peer Problem	Prosocial
Total difficulties	1					
Emotional	.50	1				
Conduct	.71	.28	1			
Hyperactivity	.85	.26	.49	1		
Peer problem	.59	.28	.35	.29	1	
Prosocial	−0.42	−.20	−.29	−.38	−.33	1

children population (Kristensen et al., 2014). In a pediatric clinic based study in Dhaka, peer problem was found among 20 % of the subjects and conversely about half of the subjects with psychiatric disorder had peer problems. Low prosocial behavior was found in 9% of the subjects with psychiatric disorders and significantly high with hyperactivity (Mallik and Radwan, 2018). Significant association among subscale scores in our study may be due to social impairment of the affected children. Further explorations are needed on this issue to relate social difficulties with psychiatric disorders among preschool children.

In the current study, we did not find significant correlates of psychiatric disorders among the subjects except broad types of disorders with gender. Two representative studies also found no significant association of variables with the prevalence of psychiatric disorders. (Richman et al., 1975; Lavigne et al., 1996).Yet lack of association of variables in our study might be due to low number of samples, urban participants, and middle socio-economic status of the families. Further, we examined a few baseline variables in this initial explorative study. Large-scale studies with representative samples and inclusions of many relevant variables only can answer about the actual correlates of psychiatric problems in the preschool population in Bangladesh.

The findings of the study should be viewed in the light of a number of limitations. Community samples derived from preschool institutions, relatively small sample size and involving only urban community children mainly coming from middle-income families may not be representative of that population. Only a screening tool was used that may effect on measuring actual psychopathology. Thus, generalization of the findings of the study is limited. However, the results have strong predictive value as we used a culturally adopted and validated screening tool. Subsequent multi-centered studies with a large number of subjects from all strata, using structured measures of psychiatric diagnostic interview are required to confirm the findings of the study.

Despite these limitations, this study is the first to explore the prevalence of psychiatric disorders among this age group in Bangladesh having a good methodological foundation. Our results support the findings of similar types of previous studies. The findings certainly provide baseline data in this aspect for service development and subsequent research in this area. As toddlers are in developmental stages of all dimensions, special attention must be provided to them. There is utmost need to increase the professional's ability to prevent, diagnose, and treat mental health problems in the earliest years. For this purpose, DC: 0-5TM Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood is most useful. DC: 0–5 is empirically derived and clinically meaningful with foundations in infant and early childhood mental health (Zeanah et al., 2016). This developmentally appropriate, relationship-based, and contextually driven approach to diagnosis has been widely used in both clinical practice and potential research. The Special Section on Infancy and Early Childhood (IEC) of the Psychodynamic Diagnostic Manual (PDM) (Gordon, 2010) is similarly effective. The PDM provides better definitions of the quality of primary relationships (child and caregivers), emphasizing the evaluation of family systems and their characteristic relational patterns, including attention to attachment patterns and their possible relationship to psychopathology and normative development in the context of interdisciplinary integration for diagnosis and clinical formulation. Conducting cross-cultural adaptation and validation of these type of instruments is also a relevant issue. There should be provision of early childhood mental health services for screening, identification and management. Building awareness at all levels of society, training parents and workforce are other tasks as part of broader preventive and intervention measures. Further broad based and in-depth research need to be carried out to address the issue. Therefore, it requires adequate attention from mental health services authorities and policy makers.

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Declaration of Competing Interest

The authors report no declarations of interest.

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