Prevalence of psychiatric disorders among 4 to 14 year age group children in slums of Thiruvananthapuram Corporation

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ABSTRACT

Introduction: Failure of early identification and timely intervention of psychological disorders adversely affect the development of child to healthy adult. This study was done to estimate the prevalence of psychiatric disorders among 4-14 years age group children in urban slums as well as to find out the socio-demographic factors associated with it. Methods: A cross-sectional study with cluster sampling technique was conducted in urban slums of Thiruvananthapuram Corporation among 1029 participants. For the estimation of prevalence, CPMS was used and the socio-demographic factors were obtained using pretested interviewer-administered semi-structured questionnaire. Data were analysed using proportion with 95% CI, Chi-square, odds ratio and logistic regression. Results: Prevalence of childhood psychiatric disorders was 11.5% [95%CI (9.51-13.49)] and it was significantly associated with age (P =0.000), birth order (P =0.008), birth weight (P =0.033), siblings number (P =0.004) school performance (P =0.000), peer status (P =0.12), peer relation (P =0.000), disease status (P =0.000), maternal education (P =0.006), paternal education (P =0.000), maternal occupation (P =0.000) and paternal occupation (P =0.005), marital disharmony (P =0.000), history of alcohol intake (P =0.000) and frequency of drinking (P =0.000). By logistic regression, poor performance [odds ratio 12.79 (7.09–23.07)], disease status [odds ratio 4.83 (2.83–8.27)], problem in adjustment with peer [odds ratio 12.3 (1.97–77.55)], history of daily intake of alcohol in fathers [odds ratio 3.15 (1.87–5.29)] and offspring of unskilled mothers [odds ratio 2.07 (1.32–3.27)] constitute the predictors for these disorders. Conclusion: This study findings highlight prevalence and the association of childhood and adolescence psychiatric disorders with several socio-demographic factors, which needs consideration while planning for implementation of mental health programme in the community.

Keywords: Childhood psychiatric disorders, CPMS, predictors, prevalence, urban slums

Introduction

Child and adolescent mental health is the capacity to achieve and maintain optimal psychological functioning and well-being. It is directly related to the level reached and competence achieved in psychological and social functioning. Child and adolescent mental health includes a sense of identity and self-worth; sound family and peer relationships; an ability to be productive and to learn; and a capacity to use developmental challenges and cultural resources to maximize development. Good mental health in childhood is a prerequisite for optimal psychological development, productive social relationships, effective learning, and an ability to care for self, good physical health and effective economic participation as adults. The future of our country depends on the mental health and strength of our young people. However, many children have mental health problems.
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psychological dysfunction is one of the leading causes of disability in childhood and adolescence. Behavioural and emotional problems of children and adolescents often cause distress to parents, teachers, medical professionals and society at large. Childhood and adolescence being development phases; it is difficult to draw clear boundaries between phenomena that are the part of normal and others abnormal. Hence very often majority of mental health problems are not identified and they remain untreated.

it is well recognized that childhood is the most important period in human life. The transformation of the human infant from a totally dependent state to a fully independent adult takes as long as 15–20 years, which is the longest time taken by any biological species. The infant not only grow in size but also in the complexity at functions that it attains. in terms of prevalence rates of psychiatric disorders and their clinical presentation, Indian children seem to be no different from children in the rest of the world. failure of early identification and timely intervention of psychological disorders adversely affect the development of child into healthy adult. Early identification of these problems enables effective psychological intervention, and helps the individual to emerge with a definite health identity. So the primary care physicians have an important role in early identification of these disorders.

A variety of factors determine the prevalence, onset and course of mental and behavioural disorders. These include social and economic factors, demographic factors such as sex and age, serious threats such as conflicts and disasters, the presence of major physical diseases, and the family environment. Urbanization brings deleterious consequences for mental health, through the factors such as overcrowding, polluted environment, dependence on cash economy, high level of violence and reduced social support. Urban area slums are the severely affected area. This study was done to estimate the prevalence of psychiatric disorders among 4 to 14 years age group children in slums of Thiruvananthapuram Corporation as well as to find out the socio-demographic factors associated with psychiatric disorders.

Materials and Methods

We had done a cross-sectional study among 4 to 14 age group children of urban slum of Thiruvananthapuram Corporation. The sample size was calculated using the formula \( 4pq/l^2 \). Prevalence (16.5%) for estimating sample size was taken from Rahi et al. study. Sample size was obtained at 506 and it was multiplied by 2 for the design effect. The desired sample size was 1012. Cluster sampling technique was used to select the sample. 30 clusters were selected from 104 slums; each cluster contained 34 children in the age group of 4 to 14. Sampling interval was obtained by dividing total no population by no of clusters \( (46626/30 = 1554) \). We had collected the study participants socio-demographic and other details by a pretested interviewer-administered semi-structured Proforma and psychopathology by Childhood psychopathology measurement schedule (CPMS). The informant for the study was either parent or guardian.

The data of Individual characteristics collected were Age, sex, birth order, sibling number, birth weight, school performance, peer status, relationship with peer and disease status. Family characteristics we studied were income, type of family, family size, overcrowding, maternal occupation, paternal occupation, parental separation, looking after the child, history of alcohol intake in the father, frequency of drinking, marital disharmony, bringing up behaviour. Overcrowding was assessed by no of persons/living room. Infants in family are not taken into account. Children below 10 years of age are considered as half unit.

Childhood psychopathology measurement schedule

Psychopathology in children was most extensively studied all over the world using CBCL (child behaviour checklist) developed by Achenkack and edelbrock. Indian adaptation of CBCL is known as childhood psychopathology measurement schedule (CPMS), developed and standardized by Malhotra et al. It is a parent-reported schedule consist 74 problems item. CPMS has 8 subscales, low intelligence and behaviour problems, conduct disorders, depression, anxiety, psychotic symptoms, somatization, special symptoms and physical illness and emotional problems. Each question is directed to the parent regarding child’s behaviour during the past one year. Answers were scored two-point scale 0 if that particular behaviour is not present and 1 if present. Those children who scored 10 or more considered positive for psychiatric disorders and those who scoring <10 were normal. Scale has 82% sensitivity and 87% specificity.

Ethical consideration

Before starting the study, approval was obtained from research committee and ethical committee of medical college Thiruvananthapuram. Informed written consent was obtained from each informant and assurance were given to them that confidentiality would be maintained in all aspects, pertaining to the study.

Data analysis

It was done using Microsoft Excel and SPSS software version 16, for the prevalence estimation proportion with 95% CI was done and for associated factors, Chi-square, odds ratio and logistic regression were done.

Results

In this study, 1029 study participants (4-14 age group children) were analysed from 30 Clusters.

In Table 1 depicts socio-demographic distribution of study participants. It was found that among the 1029 study participants
52.8% were females. The 400 (38.8%) study participants were in the age group of 7 to 10 years as well as 80.75% were Hindus. The majority (67.2%) were living in the Nuclear family.

Table 2 depicts the prevalence of psychiatric disorder with 95% confidence interval. In this study prevalence of childhood psychiatric disorders is 11.5% with 95% CI (9.51‑13.49), i.e., among 1029 study participants 118 have the symptoms of childhood psychiatric disorder.

As Per Table 3, the Prevalence of childhood psychiatric disorders were significantly associated with age ($P = 0.000$), birth order ($P = 0.008$), birth weight ($P = 0.033$), siblings number ($P = .001$), school performance (0.000), peer status (0.012), peer relation (0.000) and physical morbidity (0.000). Age above 10 years [odds ratio 2.56 (1.72‑3.81)], Poor performance in school [odds ratio 20.98 (12.25‑35.95)], strained peer relation [odds ratio 20.11 (3.8 to 104.66)] and physical morbidity [odds ratio 6.46 (4.1 to 10.18)] were found as major risk factors.

Table 4 shows the association of childhood psychiatric disorders with family characteristics. Prevalence of childhood psychiatric disorders were seen to be significantly associated with maternal education ($P = 0.006$), paternal education ($P = 0.000$), maternal occupation ($P = .000$) and paternal occupation ($P = .005$). Prevalence of childhood psychiatric disorders were seen to be significantly associated with parental separation ($P = .000$), the person is looking after the child ($P = .000$), marital disharmony ($P = .000$), history of alcohol intake ($P = .000$) and frequency of drinking ($P = .000$). No significant associations were found between childhood psychiatric disorders and type of family, family size, overcrowding, income, maternal age at delivery, paternal age at delivery, bringing up behaviour.

As per Table 4, parental separation, looking after the child by single parent or grandparents, mothers with or below primary level education, fathers not enrolled in school, mothers doing unskilled work, fathers doing unskilled work, Marital disharmony, history of alcohol intake in fathers, daily drinking fathers, poor performers are the risk factors for the development of childhood and adolescent psychiatric disorders.

This Table 5 shows regression analysis of statistically significant variables. Offspring of daily drinking fathers were having 3.15 (1.87‑5.29) times more chance for developing childhood psychiatric disorders.

Poor school performers were having 12.79 (7.09‑23.07) times more chance for developing childhood psychiatric disorders. If the child was suffering from chronic physical illness like asthma, epilepsy, there were 4.8 (2.83‑8.27) times more chance for developing childhood and adolescent psychiatric disorders. If the child was having adjustment problem with peer 12.3 (1.97‑77.55) times more chance, for developing childhood psychiatric disorders. If the mother is an unskilled worker, there are 2 times (1.32‑3.27) more chance for developing childhood psychiatric disorders in the offspring.

## Discussion

There were wide variations, in the prevalence of psychological disorders among children and adolescents reported in different studies from India in the past. Reasons for this wide variation include differences in the diagnostic criteria differences in the instruments used and differences in the population studied.[11] The meta-analysis of epidemiological studies done on child and adolescent psychiatric disorders from India showed a prevalence rate of 6.46% (95% confidence interval 6.08‑6.88%).[12] As per WHO, it is estimated that 1 in 7 (14%) 10-19 year-olds experience mental health conditions.[13]

There were studies that reported comparable prevalence of childhood psychiatric disorders. A study by ICMR[14] (2001) showed the prevalence to be 13.4% in the age group of 0-16 years. In their study initial screening for various psychiatric disorders using different instruments like DISC-P, CBA and CBCL revealed that 24.5% of the total number of children required detailed evaluation for psychiatric disorders. Srinath et al.[15] from Bangalore reported a prevalence of 12% in the age group 4–16 years. Rahi et al.[16] in a study conducted in an urban slum area in Maharashtra reported a prevalence of 16.5% in children in the 4–14-year age group. Another study conducted on School children, aged 4–11 years, in the city of Chandigarh using Childhood Psychopathology Measurement Schedule and

### Table 1: Socio-demographic distribution of study participants

| Variable        | Frequency distribution (%) |
|-----------------|-----------------------------|
| Age             |                             |
| 4-6 years       | 382 (37.1)                  |
| 7-10 years      | 400 (38.8)                  |
| Above 10 years  | 247 (24.1)                  |
| Sex             |                             |
| Male            | 486 (47.2)                  |
| Female          | 543 (52.8)                  |
| Religion        |                             |
| Hindu           | 831 (80.75)                 |
| Christian       | 96 (9.32)                   |
| Muslim          | 102 (9.93)                  |
| Family type     |                             |
| Joint family    | 338 (32.8)                  |
| Nuclear family  | 691 (67.2)                  |
| Family income rupees |                   |
| <1000           | 917 (89.1)                  |
| 1001-2000       | 100 (9.7)                   |
| Above 2000      | 12 (1.2)                    |

### Table 2: Prevalence of childhood psychopathology among study participants

| Childhood psychopathology | Frequency (%) |
|---------------------------|---------------|
| Present                   | 118 (11.5)    |
| Normal                    | 911 (88.5)    |
| Total                      | 1029 (100)    |
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Clinical assessment reported prevalence of 6.33%, Rahi et al. also used the same age group as this study which is the age group recommended in the CPMS tool. The prevalence obtained in this study is comparable with other studies. But the prevalence obtained in this study is more than that reported in a study done in Calicut, which is 9.4%. We expected higher prevalence in urban slum but Srinath et al. from Bangalore found out that there were no significant differences among prevalence rates in urban middle class, slums and rural areas. COVID-19 pandemic has raised the concern of mental health of children and adolescents and according to a study done in Japan showed, the number of schoolchildren with severe emotional/behavioural problems have increased. Another study done in China revealed a prevalence of behavioural problem among school-going children was 10.3%.

In this study childhood and adolescence mental health problems were found to increase with age as evidenced by higher score in the CPMS. The difference was statistically significant. Other studies in the past have also reported comparable findings. Rahi et al. showed prevalence of psychopathological disorders were highest in children aged 7-10 years, Mallothra et al. found that rates of psychiatric disorders were highest in middle childhood, with a peak at 6–8 years of age, but in this study higher risk was found after 10 years. Adolescence is a period of intense psychological turmoil, are highly vulnerable to emotional and psychological disorders. So, the higher prevalence of psychological disorders is not unexpected.

More cases were found in those born after second order and this association was statistically significant. Third and higher birth order children were not getting enough attention in family. They are at more risk for psychiatric disorders. Rahi et al. reported a higher prevalence in the first-born child. This study showed a higher prevalence of psychiatric disorders among children, who had no sibling and where the no of sibling exceeds two. It indicates that for a sound mental status two children for a couple were needed. Another finding obtained in this study shows that low birth weight babies are having more risk for developing psychiatric disorders. Rahi et al. also noted similar observation. However, it is also documented that favourable social and environmental factors are predictive of catch-up growth in cognitive and behavioural development in low-birth-weight infants.

In this study parental education was found to be significantly associated with childhood and adolescence psychiatric disorders. Prevalence was highest, in offsprings of mothers not enrolled in school and those with education up to or below primary

| Variable                      | Psychopathology present (%) | Psychopathology absent (%) | Unadjusted odds ratio with 95% CI | P from Chi-square test |
|-------------------------------|-----------------------------|---------------------------|----------------------------------|------------------------|
| Age                           |                             |                           |                                  |                        |
| Above 10 years                | 49 (19.8)                   | 198 (80.2)                | 2.56 (1.72-3.81)                 | 0.000*                 |
| Up to 10 years                | 69 (8.8)                    | 713 (91.2)                |                                  |                        |
| Sex                           |                             |                           |                                  |                        |
| Male                          | 63 (12.9)                   | 423 (87.03)               | 1.32 (0.9-1.94)                  | 0.154                  |
| Female                        | 55 (10.1)                   | 488 (89.87)               |                                  |                        |
| Religion                      |                             |                           |                                  |                        |
| Muslim                        | 15 (14.7)                   | 87 (85.3)                 | 1.379 (0.76-2.47)                | 0.28                   |
| Others                        | 103 (11.1)                  | 824 (88.9)                |                                  |                        |
| Low birth weight              |                             |                           |                                  |                        |
| Below 2.5 kg                  | 49 (14.5)                   | 289 (85.5)                | 1.52 (1.03-4.03)                 | 0.03*                  |
| 2.5 kg or above               | 69 (9.98)                   | 622 (90.02)               |                                  |                        |
| Birth order                   |                             |                           |                                  |                        |
| More than two                 | 18 (21.4)                   | 66 (78.6)                 | 2.3 (1.32-4.03)                  | 0.033*                 |
| Up to two                     | 100 (10.6)                  | 845 (89.4)                |                                  |                        |
| Sibling number                |                             |                           |                                  |                        |
| No sibling or more than one   | 51 (15.88)                  | 270 (84.12)               | 1.95 (1.29-2.94)                 | 0.001*                 |
| Single sibling                | 67 (9.5)                    | 641 (90.5)                |                                  |                        |
| School performance            |                             |                           |                                  |                        |
| Poor                          | 45 (63.4)                   | 26 (36.6)                 | 20.98 (12.25-35.95)              | 0.000*                 |
| Good                          | 55 (8.1)                    | 623 (91.9)                |                                  |                        |
| Peer status                   |                             |                           |                                  |                        |
| Present                       | 96 (13.04)                  | 640 (86.96)               | 1.84 (1.13-3)                    | 0.012*                 |
| Absent                        | 22 (7.5)                    | 271 (92.5)                |                                  |                        |
| Peer relation                 |                             |                           |                                  |                        |
| Strained                      | 6 (85.7)                    | 1 (14.3)                  | 20.11 (3.8-104.66)               | 0.000*                 |
| Good                          | 90 (12.34)                  | 639 (87.66)               |                                  |                        |
| Physical morbidity            |                             |                           |                                  |                        |
| Present                       | 40 (37.4)                   | 67 (62.6)                 | 6.46 (4.1-10.18)                 | 0.0000*                |
| Absent                        | 78 (8.45)                   | 844 (91.55)               |                                  |                        |

*P<0.05 indicates there is significant difference between both groups.
education. Highest prevalence was seen in the offspring of fathers not enrolled in school. Rahi et al. also reported a similar finding. Educated parents will help the children to tackle life stresses in a better way and so they will be having better-coping strategies.

Another finding in this study is the significant association of occupational status of parents and childhood psychiatric disorders. Children of Unskilled workers were at higher risk for developing childhood and adolescence psychiatric disorders. The reason may be due to maternal deprivation in terms of care and attention for the children. Housewives and unemployed mothers get more time to give attention to their children. Skilled and office going mothers have more money enabling them to send their children to good schools with better amenities.

Table 4: Association between family characteristics and childhood psychiatric disorders

| Variables                      | Psychopathology present (%) | Psychopathology absent (%) | Unadjusted odds ratio | P from Chi-square test |
|-------------------------------|-----------------------------|---------------------------|-----------------------|------------------------|
| Family type                   |                             |                           |                       |                        |
| Joint family                  | 43 (12.7)                   | 295 (87.3)                | 1.19 (0.8-1.78)       | 0.377                  |
| Nuclear family                | 75 (10.8)                   | 616 (89.1)                |                       |                        |
| Family size                   |                             |                           |                       |                        |
| Above 4                       | 58 (12.3)                   | 413 (87.7)                | 1.16 (0.79-1.71)      | 0.433                  |
| Up to 4                       | 60 (10.8)                   | 498 (89.2)                |                       |                        |
| Family income                 |                             |                           |                       |                        |
| Up to 1000                    | 105 (11.45)                 | 812 (88.54)               | 0.98 (0.54-1.81)      | 0.96                   |
| More than 1000                | 13 (11.6)                   | 99 (88.39)                |                       |                        |
| Mothers education             |                             |                           |                       |                        |
| Up to primary                 | 41 (17.22)                  | 197 (82.78)               | 1.93 (1.28-2.9)       | 0.0001*                |
| Above primary                 | 77 (9.7)                    | 714 (90.3)                |                       |                        |
| Father's education            |                             |                           |                       |                        |
| Up to primary                 | 54 (16.95)                  | 288 (83.05)               | 3.24 (1.57-6.99)      | 0.001*                 |
| Above primary                 | 64 (9.3)                    | 623 (90.1)                |                       |                        |
| Mother's occupation           |                             |                           |                       |                        |
| Unskilled                     | 58 (17.5)                   | 274 (82.5)                | 2.25 (1.5-3.3)        | 0.000*                 |
| House wife or other job       | 60 (7.9)                    | 697 (92.1)                |                       |                        |
| Father's occupation           |                             |                           |                       |                        |
| Unskilled                     | 89 (12.2)                   | 639 (87.8)                | 3.24 (1.5-6.69)       | 0.001*                 |
| Others                        | 29 (9.6)                    | 272 (90.4)                |                       |                        |
| Maternal age at delivery      |                             |                           |                       |                        |
| Up to 24 years                | 92 (10.81)                  | 759 (89.19)               | 0.709 (0.44-1.13)     | 0.14                   |
| Above 24 years                | 26 (14.6)                   | 152 (85.39)               |                       |                        |
| Paternal age at delivery      |                             |                           |                       |                        |
| Up to 24 years                | 38 (12.1)                   | 276 (87.9)                | 1.09 (0.72-1.64)      | 0.67                   |
| Above 24 years                | 80 (11.2)                   | 635 (88.8)                |                       |                        |
| Marital disharmony            |                             |                           |                       |                        |
| Present                       | 30 (29.1)                   | 73 (70.9)                 | 3.91 (2.42-6.31)      | 0.0000*                |
| Absent                        | 78 (8.8)                    | 812 (91.2)                |                       |                        |
| Parental separation           |                             |                           |                       |                        |
| Present                       | 22 (33.3)                   | 44 (66.6)                 | 4.5 (2.59-7.85)       | 0.000*                 |
| Absent                        | 96 (10)                     | 867 (90)                  |                       |                        |
| Looking up child              |                             |                           |                       |                        |
| Single parent or grandparent  | 23 (31.99)                  | 49 (68.1)                 | 4.26 (2.48-7.3)       | 0.000*                 |
| Parents                       | 95 (10)                     | 862 (90)                  |                       |                        |
| Bringing up behaviour         |                             |                           |                       |                        |
| Strict                        | 43 (13.39)                  | 278 (86.6)                | 1.35 (0.87-1.94)      | 0.191                  |
| Not strict                    | 75 (10.59)                  | 633 (89.4)                |                       |                        |
| History of alcoholism         |                             |                           |                       |                        |
| Yes                           | 74 (15.8)                   | 394 (84.2)                | 2.21 (1.48-3.27)      | 0.000*                 |
| No                            | 36 (6.8)                    | 491 (93.2)                |                       |                        |
| Frequency of alcoholism       |                             |                           |                       |                        |
| Daily                         | 37 (26.8)                   | 101 (73.2)                | 3.66 (2.35-5.69)      | 0.000*                 |
| Not daily                     | 38 (16.5)                   | 192 (83.5)                |                       |                        |
| Overcrowding                  |                             |                           |                       |                        |
| Present                       | 83 (11.8)                   | 621 (88.2)                | 1.10 (0.73-1.68)      | 0.633                  |
| Absent                        | 35 (10.8)                   | 290 (89.2)                |                       |                        |

*P<0.05: there is significant difference between both groups


Present study shows a significant association between prevalence of childhood psychiatric disorders and parental separation, Rahi et al. study supports this. Parental separation experience may cause persistent defects in the ability to form relationships and intellectual functioning of the child may get impaired. Parental separation leads to deprivation, ages between 6 months to 5 years has been considered as the most vulnerable group where disruption of attachments with parents is of great significance.

Fathers who consume alcohol on a daily basis constitute a strong risk factor for the development of childhood psychiatric disorders. A significant association was found between these factors and childhood psychiatric disorders. Alcohol abuse by the father may have multidimensional effect such as inadequate attention to the child, parental conflicts etc., and moreover, the child may consider it as a socially approved habit, Reich and colleagues found a significant correlation between the frequency of internalizing and disruptive-behaviour disorders in offspring, and the number of alcoholic parents.

In this study these two variables result in high risk for development of childhood and adolescence psychiatric disorders. Poor school performance and problems in adjustment with peers are well-established correlates of psychological problems in children and adolescents.

There was significant association, between chronic physical illnesses in the child (like bronchial asthma etc.) and psychological disorders. This is in agreement with previous reports. Malhi et al., Rajesh et al. reported a higher prevalence of behavioural problems in asthmatic children. A child with chronic physical illnesses has low self-esteem and also there is more chance for negative self-image. Also, they are very much conscious about their social image. All these factors contribute to psychological morbidity. It is suggested that all children with chronic physical diseases should be evaluated for psychological and emotional disorders. Taking care of these aspects should be part of the management of children with chronic illnesses.

**Conclusion**

Prevalence of childhood psychiatric disorders in this study was 11.5% with 95% CI (9.51-13.49), i.e., among 1029 study participants 118 had the symptoms of childhood psychopathology. So Psychological evaluation and counselling should be made the major part of school health programme. Primary care level physicians and other health care workers, have an important role in this. They are the ones, who are doing school health programmes and they were able to easily identify these children and do counselling as well as prompt referral. Early identification, intervention and treatment help them to lead a normal life. As per this study the predictors for childhood psychiatric disorders were poor performance in school, disease status of the child, problems in adjustment with peers, history of daily intake of alcohol in fathers and offspring of unskilled mothers. Children having diseases like asthma, epilepsy should get special care and close monitoring, from the primary care institutions and they can offer counselling sessions against alcoholism to the parents. Those children with poor performance in academic activities as well as problems in adjustment with peers should also get special attention.

**Limitations**

This study used only one screening tool; no clinical diagnostic criteria were used.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) and parent or guardian has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients and parent or guardian understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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