Epidemiology of emotional and psychological problems in Iranian children: Protocol of a cross-sectional study in Isfahan

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Background: The present study aimed at providing comprehensive epidemiological data about the prevalence of psychological and emotional problems in a representative sample of Iranian children and evaluates the major and common determinants of parents and family environment of these problems. **Materials and Methods:** The epidemiology of emotional and psychological problems in Iranian children is a cross-sectional study was conducted on 786 families and their 800 children during 2019–2021 in Isfahan, Iran. Personality traits, psychological health, marital satisfaction, individual's perceptions of his/her family and quality of life of parents were evaluated using Iranian-validated questionnaires. Various aspects of emotional, general, psychological, and sleep health as well as physical activity levels and nutritional habits of children also have been assessed using Iranian validated instruments. Data on sociodemographic characteristics representing parents and family status also have been collected. **Results:** The mean age of parents and children was 39.5 ± 5.5 and 10.20 ± 1.90 (years), respectively. The mean duration of marriage was 16.1 ± 5.1 years and majority of parents his or her wife were at bachelor degree while parents with other degrees of education were sufficiently available in our study. The participated children were nearly equally distributed in terms of gender. A large portion (81.9%) of questionnaires about children was filled by mothers. Majority of children (62.2%) were first birth order. **Conclusion:** The current study provides comprehensive data about various psychological, emotional, and educational problems of Iranian children and new insights about family environment and parental interrelationship as key risk factors for the aforementioned problems in which may have implications for both clinical and preventive psychological health to improve individual educational and treatment efficacy and problem-solving in problematic children.

Key words: Children, emotional health, family, nutrition, parents, personality traits, physical activity, psychological health, sleep quality

INTRODUCTION

Children comprised 42% of the world's population and about 90% of them live in less developed and middle-income countries.[1] Children in these countries are encountering increasingly with the risk of psychological disorders due to social and environmental conflicts.[2] Many children experience symptoms of mental disorders such as low self-esteem, depressive thoughts, anxiety, impulsive or maladaptive behaviors. Majority of these psychological problems start in childhood and adolescence and lasted till adulthood and significantly affect the well-being and physical and emotional promotion and impose huge burden on both children and their parents.[3]

The assessment of emotional and behavioral skills and characteristics that establish a sense of personal accomplishment; contribute to satisfying relationships

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with family members, peers, and adults; improve one's ability to deal with adversity and stress; and promote one's personal, social, and academic development.[3]

Psychological problems are generally classified into four major domains: Emotional disorders (such as anxiety, depression, mania, and bipolar affective disorder), behavioral disorders (mainly reflected by repetitive and persistent patterns of disruptive and violent behavior, in which these people do not consider the rights of others and social norms), hyperactivity disorders (specified by inattention, impulsivity, and hyperactivity), and others (such as autistic spectrum, tic, and eating disorders).[4]

The estimated pooled prevalence of psychological disorders over the world is 13.4% (95% confidence interval [CI]: 11.3–15.9). The estimated pooled prevalence of any anxiety disorder is 6.5% (CI 95% 4.7–9.1), any depressive disorder, 2.6% (CI 95% 1.7–3.9), attention-deficit hyperactivity disorder 3.4% (CI 95% 2.6–4.5), and any disruptive disorder is 5.7% (CI 95% 4.0–8.1).[5]

Among many factors affecting physical and mental health in children, healthy sleep plays a milestone role. Sufficient and high-quality sleep is associated with childhood physical development, promotion in behavior, emotional and cognitive function enhancements, and empowerment in school educational and behavioral assessment.

Sleep problems are common in all infancy, childhood age to adolescents in which these problems have tendency to increase with increasing age; nearly 10% of children aged 1–3 years have sleep problems, and 15%–30% of preschoolers have insufficient sleep. Furthermore, low sleep quality and disturbance are also prevalent among 20%–30% of children and adolescents.[6] School-age children's daytime cognitive function adversely affected by not only sleep disorders, but also by low sleep quality.[7]

A large body of international studies has consistently provided evidence about the effects of family environment on children's behavior and psychosocial functioning. Several types of environmental risk factors have been found to be associated with children's psychological health and emotional and intellectual developments, including specific family- and parenting factors. These comprehensive studies have found that parental psychopathology may be associated with increase in both internalizing and externalizing behavior problems in children.[8]

Family structure and conflicts such as marital conflict and disagreement are significant risk factors for occurring of mental disorders and they either directly or indirectly affect the mental health and socio-emotional outcomes in children.

Interparental conflicts have effects on children's mental health through parental emotional unavailability and poor parenting self-control, as well as through children's maladaptive coping behaviors and responses reflected in symptoms such as fears, feelings of rejection, and stress.[2]

Gathering data about children's psychological problems and related risk factors can provide important resources for care. Not many studies have been done about the association between family environment's risk factors and child psychological, emotional, and behavior problems in developing countries such as Iran. To the best of our knowledge, there is no comprehensive data about the prevalence of major psycho-emotional and sleep problems in Iranian school aged 6–12-years-old and particularly documentation on the parent and family levels determinants as well as child-specific characteristics. The present study aims at providing comprehensive epidemiological data about family and child determinants of child emotional and behavioral problems in a representative sample of Iranian children at the central region of the country. We followed the specific aim of the estimating the prevalence of wide varieties of psycho-emotional problems in Iranian children and assessment of their major and common parental and familial environment determinants.

MATERIALS AND METHODS

Study design and participants
The epidemiology of emotional and psychological problems in Iranian children study is a cross-sectional conducted on children aged 6–12-year-old in Isfahan, Iran during 2019–2021. Children aged 6–12, without confirmed chronic physical and mental disease and living with both parents have been included in the study. Sample selection was done using multistage random cluster sampling. Isfahan has 6 general educational departments covering subeducational departments located geographically over the different area of city. We considered six general departments as first-stage clusters and randomly selected three among them (second-stage clusters) and from each selected department we selected 2 schools randomly as third-stage clusters and in each selected school we randomly selected one class (fourth-stage clusters) from preschool grad (6-year-old children) to 6th grad (12-year-old children) and distributed the questionnaires among all children of selected classes. The sample size was calculated to estimate the majority of common psychological and emotional problems in Iranian children. Considering type one error rate 0.05 and prevalence rate for aforementioned problems totally equal to 0.3[9] with marginal error 0.05 for estimating prevalence in our study population in Isfahan as well as design effect for cluster sampling as 1.2, the required sample size was estimated to be 1000.

We planned to recruit 1000 sample in our study and finally, 850 questionnaires were returned and finally, 800 questionnaires with complete data were considered for data analysis. Both children and parents' specific questionnaires have been considered in our study and due to we used parent form of children's questionnaires, we asked parents to fill the questionnaires for their children. A written informed consent which is explained the study objectives signed by parents has been obtained from participants. The ethics committee of the National Institute for Medical research Development (NIMAD) (Ethics code: IR. NIMAD. REC.1397.462) approved the current study.

Study instruments
Parents questionnaires
Psychological distress
The Persian version of the general health questionnaire (GHQ)-12 was used to evaluate psychological distress. It includes 12 questions, each with a four-point Likert. The possible score for GHQ-12 would be 0–12, and higher scores indicate higher levels of psychological distress. GHQ score more than 4 was considered psychological distress based on the mean value of GHQ in the Iranian population. Cronbach's alpha coefficient was obtained to be 0.87 indicating satisfactory internal consistency. Correlation was calculated between global quality of life (QOL) scores with GHQ-12 resulted a significant negative correlation (r = −0.56, $P < 0.0001$) proving convergent validity.[10]

Personality traits
In order to evaluate the personality traits, we used the five-factor model (NEO-FFI) as a comprehensive instrument. It contains five domains Neuroticism (N); Extraversion (E); Openness (O); Agreeableness (A) and Conscientiousness (C. Each domain includes 12 items, and respondents express their sense on how much they agree or disagree with each sentence (0 = strongly disagree and 4 = strongly agree). The Persian version of NEO-FFI showed good validity and reliability. The Cronbach's alpha coefficient was calculated for neuroticism, extraversion, openness, agreeableness, and conscientiousness, as 0.86, 0.73, 0.56, 0.68, and 0.87, respectively.[11]

Depression, anxiety, and stress
The Depression Anxiety Stress Scale (DASS)-21 as a brief version of 42-item DASS has been constructed to examine the three domains of depression, anxiety, and stress, each domain contains seven items. The Cronbach's alpha coefficient was calculated for anxiety (0.79), stress (0.91), and depression (0.93). The intra-cluster correlation coefficient on evaluating test-retest reliability was calculated ranged from 0.740 to 0.881 for the total scale and its three dimensions. The results of the confirmatory factor analysis approved the construct validity.[12]

Quality of life
The World Health Organization's Quality Of Life (QOL) (WHOQOL-BREF) questionnaire has 26 items. Each has a 5-point Likert scale in which 1 and 5 indicate the lowest negative and positive perceptions. The total score for WHOQOL-BREF ranged from 26 to 130. The first and the second item assess the QOL and generally health condition satisfaction, respectively. The other 24 questions are dived into 4 subscales including psychological (6 items), social (3 items), environmental (8 items), and physical domain (7 items). All subscales except social relationships (alpha = 0.55) showed acceptable internal consistency and test-retest reliability (Cronbach's alpha and intra-class correlation >0.7). The convergent validity of instrument also has been approved.[13]

Marital satisfaction
We used the Revised Dyadic Adjustment Scale (RDAS) comprised 14 items commonly is applied to examine the marital quality. It comprises three subscales: consensus (6 items), satisfaction (4 items), and cohesion (4 items). All items have 6-point Likert scale ranging from 0 to 5, except for item 11 with a 5-point Likert scale ranging from 0 to 4. The total score can range from 0 to 69, with higher scores indicating more marital quality. The Iranian version of the questionnaire showed good reliability and validity, and the obtained Cronbach's alpha for RDAS total was α =0.847, for consensus was 0.801, for satisfaction was 0.844, and for cohesion was 0.664).[14]

Individual's perceptions of his/her family
Family Assessment Device (FAD) is a 60-item with seven subscales including problem-solving (6 items), communication (7 items), roles (9 items), affective responsiveness (8 items), affective involvement (8 items), behavior control (9 items), and general functioning (13 items). Each question was rated in a 4-point Likert scale as strongly disagree to strongly agree with scoring format 1–4. In Iran, Zadeh Mohammadi and Malek Khosravi based on a study among 494 subjects evaluated the internal consistency, and a Cronbach's alpha was obtained to be 0.82 for total scale, and the alpha of the subscales ranged from 0.66 to 0.73. Furthermore, the obtained value of intraclass correlation coefficient (ICC) for the test-retest reliability of the total instrument and its domains ranged 0.57–0.80. Furthermore, Yousefi's at 2012, obtained a cut-off point 3.43 in which if an individual's performance exceeds 3.43, it has dysfunction. In this questionnaire, lower scores signify better performance.[15,16]

Children questionnaires
Child behavior checklist
The Child Behavior Checklist (CBCL) is applied commonly in children aged from 4 to 18-year-old with the aim of collect

data about clinical, epidemiological, and investigation use in child psychopathology. The tool has two sections. The first section examines the competence of the child in the social academic, family, and use of free time areas. The second section based on 118 items that go from 0 (almost never) to 2 (almost always) assess the behavioral and emotional problems in children. The tool is divided into factors called «anxious-depressed problems», «withdrawal-depressed», «somatic complaints», «social problems», «thought problems», «attention problems», «rule breaking behavior» and «aggressive behavior». It also contains two main subscales of «internalizing problems» and «externalizing problems». The «total problem» scale score is made by summing up all the items. Most CBCL scales showed good reliability and convergent validity through examining the association between different CBCL domains scores and developmental and family background variables. Internal consistencies evaluated based on Cronbach alpha coefficient calculated based on the parents' response was reported for CBCL domains as anxious/depressed (α =0.84), withdrawn/depressed (α =0.80), somatic complaints (α =0.78), social problems (α =0.82), thought problems (α =0.78), attention problems (α =0.86), rule-breaking behavior (α =0.85), and aggressive behavior (α =0.94). Good values also were reported for internalizing (α =0.90) and externalizing (α =0.94) behaviors, as well as for the total problems score (α =0.97). Furthermore, internal consistency for the social competence scales was also appropriate: academic activities (α =0.82), social (α =0.93), behavior at school (α =0.90), and total competence (α =0.91). The results of confirmatory factor analysis for assessing construct validity resulted high goodness of fit indices.[17,18]

Children's quality of life assessment

CHQ-PF-28 items have four, five, or six response options, the items are summed up (some recoded/recalibrated) and transformed into a 0 (worst possible score) to 100 (best possible score) scale. "Physical" and "psychosocial" CHQ summary scores, which are resulted from a factor analytical model based on distributing among a sample of the US child population, were calculated in a manner similar to the construction of the summary scores in the SF-36; summary scores of 50 indicate the mean in the US reference population children; 10 points above/below 50 reflect one standard deviation difference in either direction. Psychometric properties of CHQ in a sample of Iranian in a sample of 200 children aged 5–18 years showed acceptable internal consistency based on Cronbach's alpha 0.68–0.85 and test-retest reliability assessed by ICC: 0.566–0.721. Confirmatory factor analysis also showed good construct validity.[19]

Children's sleep health assessment

The Children's Sleep Habits Questionnaire (CSHQ) is a screening tool for 4–12-year-old for evaluating children's

sleep problems. It has 48 items evaluating the sleep behaviors at night and throughout the day in children also it includes four write-in questions on the bedtime, total time of child sleeps each day (nighttime sleep and naps), the time duration between child wakes up at night and returns to sleep, and the time of wakes up in the morning at the day for a child. The CSHQ has five factors (dimensions): Bedtime, sleep behavior, waking during the night, morning waking, and daytime sleepiness. The CSHQ occasionally by using 33 of the 48 items constructs a different eight subscales consisting of bedtime resistance (6 items), sleep onset delay (1 item), sleep durations (3 items), sleep anxiety (4 items), night waking (3 items), parasomnias (7 items), sleep-disordered breathing (3 items), and daytime sleepiness (8 items). In Iran, its psychometric properties have been evaluated on 300 parents of primary school children aged 7–12 years in Kashan city, and the Cronbach's alpha coefficient was obtained to be 0.80 for the total sample. A positive correlation between CSHQ and Bears instrument ranged from 0.4 to 0.86 and for divergent validity it was 0.006–0.66. Factor analysis showed eight factors.[20]

Physical activity

The Youth Activity Profile (YAP) is a 15-item tool. The YAP was applicable in children aged 4–12 on evaluating the physical activity and sedentary behavior in youth during 7 days in their previous week. The YAP includes three sections: (1) Activity at School, (2) Activity Out-of-School, and (3) Sedentary Habits. Activity in 5 specific perspectives of the day including going from home to school and from school to home, as well as activity during the time of education in school, lunch, and recess have been evaluated as items in the at-school section. Activity before school, activity right after-school, activity during the evening, and activity in each weekend day (Thursday and Friday) are considered as items in the Out-of-School. Time devoting to watching TV, playing video games, using the computer, using a cellphone along with an overall sedentary time item consists of Sedentary Habits.[21]

Nutrients intake and nutritional habits

Food Frequency Questionnaire (FFQs) consists of a list of food items for which the participants are requested to response on how often they eat each item per day, week, or month. We selected 120 items commonly used by children aged 6–12 years from a validated 168-item FFQ in Iran.

Dietary data were collected monthly by means of twelve 24 h dietary recalls (24 hDR). Subjects completed two, 168-item semi-quantitative FFQ. Convergent validity evaluated by correlation between mean energy-adjusted overall nutrient intake obtained from 24 hDR to FFQ. The criterion validity coefficients assessed by correlation

between the intakes estimated from questionnaire and plasma biomarkers and urinary sodium (Na) and Potassium (K).[22]

Nutritional habits such as frequency and duration of three daily meals, snack and amount of water consumption as well as the frequency of healthy and unhealthy food groups consumption were also asked from parents of participated children.

Socio-demographic variables

The age, gender, birth rank, age of entrance to garden school and who was responsible for careening during 1st 2 years of life, and time spending to TV watch, playing video game or using tablet or mobile (in hours per day) were gathered from children.

From parents the following data have been collected: age of both parents, educational levels for both parents, maraging duration, number of children, sleep duration, and some other variables about economic status such as income, the status hose ownership, having car, tablet or computer, having second job.

Statistical analysis
Plans for future statistical analysis

For comparing continuous variables across categories of categorical variables we will use independent samples *t*-test, analysis of variance, analysis of covariance (for adjusting possible confounders), or counterpart nonparametric tests. For comparing simultaneous continuous variables, we use multivariate analysis of variance and multivariate analysis of covariance. Bivariate association between continuous variables will be assessed by Person or Spearman correlations and multiple correlation will be followed by multiple and multivariate linear regression. The bivariate association of categorical data will be assessed using Chi-squared tests and multivariable association by using different logistic regression models (binary, multinomial, and ordinal logistic models). All above difference and association analyses will be followed by specific models for family correlated data, such as marginal and random or mixed effects models when they are appropriate. Some other advanced statistical methods and models such as latent class analysis, structural equation models, and machine learning approaches will be intended to be used for data analysis.

RESULTS

Basic characteristics of parents and children

The mean age of parents and children participated in our study was 39.5 ± 5.5 and 10.20 ± 1.90, respectively. The mean duration of marriage was 16.1 ± 5.1 years and majority of parents and their wife were at bachelor degree while we

have parents in others degree of education sufficiently. Our study children sample was nearly equally distributed based on gender. A large portion (81.9%) of children questionnaires were filled out by mothers. Majority of children who participated in our study were first birth order (62.2%). About 18% and 39% of children reported meal pattern regularity and fast-food consumption daily/weekly, respectively. More details about the basic variables of children and their parents presented in Table 1.

The brief profile of main study variables for children and parents

Table 2 presents the main characteristics of parents and children. Parents' main characteristics measured in our study are included personality traits, psychological disorders, QOL, and family climate and parents' relationship have been presented in Table 2. Among personality traits the conscientiousness and neuroticism had the highest and lowest mean scores. Among psychological disorders, stress showed the highest mean score, and social domain of QOL had the highest mean score compared to others domains. Role and affective involvement domains of FAD had the highest and lowest mean scores. The mean total score of the CBCL questionnaire was 33.24 ± 20.41 and aggressive behavior followed by anxious-depressed problems showed the highest mean scores. Among CHQ domains general behavior, general health, and self-esteem showed the highest and family cohesion showed the lowest mean scores. Among the different aspects of health in sleep of children; bedtime resistance and sleep anxiety showed the highest and lowest mean scores, respectively. The school physical activity and sedentary time showed higher mean scores among physical activity domains.

DISCUSSION

A child's health development particularly mental and emotional depends on their parents' status and family structure. The mental health of parents and children is associated closely. In the current study, we intended to publish a protocol paper of a study on evaluating the mental, emotional, general, and sleep health of children aged 6–12-year-old comprehensively in association with their psychological characteristics of parents and family environment in a sample of Iranian children in the central region of Iran.

Parents are the first source of obtaining information about the problems of their children and adolescents. Parents and family members are most often the primary caretakers of children and the family structure characteristics such as household family structure, resources available to families, and traumatic events, stress, or strain in the family can affect the psychological health of children.

Table 1: Children and parent basic socio demographic variables

Children/parents			
Children		**Parents**	
Variables	Mean±SD/frequency (%)	Variables	Mean±SD/frequency (%)
Age (year)	10.2±1.9	Age (year) (%)	39.5±5.5
Age at entrance to kindergarten (year)	4.6±1.2	Marriage duration	16.1±5.4
Birth rank		Education (father or mother respondent to child questionnaire)	
Mean birth rank	1.5±0.7	Less than diploma	47 (6.3)
1	457 (62.2)	Diploma (12 years formal education)	257 (34.2)
2	218 (29.6)	Bachelor of Science	325 (43.2)
3	47 (6.4)	Master of Science	92 (12.2)
≥4	12 (1.7)	Ph.D	31 (4.1)
Gender		Wife education	
Boy	397 (49.9)	Less than diploma	104 (14.1)
		Diploma	230 (31.2)
Girl	398 (50.1)	Bachelor of Science	265 (35.9)
		Master of Science	77 (10.4)
		Ph.D	62 (8.4)
TV watching (h)	2.6±1.5	Gender	
		Male	136 (18.1)
Social media time spent (hours)	1.5±1.04	Female	614 (81.9)
Meal's regularity		Number of child	
Never	19 (2.4)	Boy	1.29±0.65
Always	299 (38.3)	Girl	1.27±0.49
Fast food consumption	Never	103 (13.4)	Socioeconomic status score	12.1±2.9
Every day/weekly	145 (18.7)		

Continuous and categorical data are reported as mean±SD and frequency (%). SD=Standard deviation

The meaning of the structure of the family is the number of adults in the home, their interrelationship and relationship with their children. The children are socialized first at their family. The health and well-being of the family play important role in both children's physical and psychological health.[23]

Many studies have shown that an unhealthy psychological status in family life created by parental psychopathology, bodily syndromes, family conflicts such as marital disagreement, as well as impaired parenting may affect children's mental health and psychosocial development in both aspects of internalizing and externalizing.

The current study provides comprehensive data about various psychological, emotional, and educational problems of Iranian children and new insights about family environment and parental interrelationship as key risk factors for the aforementioned problems in children which may have implications for both clinical and preventive psychological health to improve individual educational and treatment efficacy and problem-solving in problematic children. Accordingly, these data are crucial for clinicians when they try to understand or assist children with internalizing or externalizing behavior problems. It is expected studies such as our research might increase clinicians' knowledge of family factors' affecting child behaviors. Other important determinants such as genetic and biological factors may also be associated with children's emotional and psychological behaviors, accordingly further future longitudinal studies on determinants of children's emotional, behavioral, and psychological may provide insight into cause-and-effect associations. In addition, other environmental risk factors such as family status in the social context not included in the current study should be evaluated.

Conflicts of interest
There are no conflicts of interest.

Table 2: Mean scores of main study variables collected on parents and children

Children		Parents	
Variables	Mean±SD	Variables	Mean±SD
CBCL domains		**Psychological distress**	11.97±3.98
Anxious-depressed problems	5.70±3.71		
Withdrawal-depressed	2.76±2.03		
Somatic complaints	2.69±2.88		
Social problems	3.59±2.82		
Thought problems	2.47±2.51	**Personality trait**	
		Neuroticism	20.41±7.91
Attention problems	4.03±3.21	Extraversion	28.66±6.88
Rule breaking behavior	2.86±2.81	Openness	24.31±5.38
Aggressive behavior	6.21±5.18	Agreeableness	32.44±6.02
Other problems	3.47±2.21	Conscientiousness	36.11±6.79
Internalizing problems	11.14±7.09		
Externalizing problems	9.07±7.39		
Total problems score	33.24±20.41		
Children health Questionnaire		**Psychological disorders**	
Physical functioning	4.34±1.58		
Role function-emotional/behavioral	3.61±0.74	Depression	4.79±4.59
Role function-physical	3.77±0.77	Anxiety	4.21±4.11
Bodily pain	4.13±0.85	Stress	7.55±4.81
General behavior	15.90±2.79		
Mental health	12.02±2.33		
Self esteem	13.35±2.96		
General health	15.342.98		
Parental-emotional	7.46±2.35		
Parental-time	6.92±1.39		
Family activities	8.21±1.73		
Family cohesion	3.59±1.00		
Change in health	3.99±0.99		
Children sleep health questionnaire		**QOL**	
Bedtime resistance	8.97±2.83	Total	69.69±18.73
Sleep onset delay	1.59±0.78	Physical	67.43±16.49
Sleep duration	4.14±1.49	Mental	63.91±17.08
Sleep anxiety	2.54±0.85	Environmental	62.45±15.15
Night waking	3.63±1.11	Social	67.76±18.29
Parasomnias	8.00±1.85		
Sleep disordered Breathing	3.49±1.05		
Daytime sleepiness	10.50±2.92		
Physical activity		**Family assessment device**	
Activity at school	1.37±0.78	Roles	2.03±0.42
		Communication	1.85±0.0.42
Activity out of school	1.82±0.89	Affective responsiveness	1.99±0.37
		Affective involvement	1.57±0.54
Sedentary time	1.45±0.50	Behavior control	1.98±0.34
		Problem-solving	1.87±0.44
		General function	1.84±0.40
		Revised Dyadic Adjustment Scale	46.81±12.08

Continuous and categorical data are reported as mean±SD. SD=Standard deviation; QOL=Quality of life

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