

Qualitative Study to Determine Stressors Influencing Dietary and Physical Activity Behaviors of Overweight and Obese Adolescents in Iran

Abstract

Introduction: Childhood obesity has become a global endemic public health problem. Emotional distress has been proposed to be a strong mediator of unhealthy lifestyle behaviors among youth. The aim of this study was to explore the sources and role of stress on developing unhealthy lifestyle practices pertaining to diet and physical activity among overweight and obese adolescents. **Methods:** This qualitative study was conducted in 2016–2017 in two large cities of Iran, Mashhad and Isfahan. Fifty-two overweight and obese adolescents were selected through purposeful sampling. In-depth semi-structured interviews and focus group discussions were conducted to obtain perceptions and experiences regarding underlying factors of obesity and the sources and role of stress in inducing unhealthy lifestyle. Ten parents were also interviewed. Data were analyzed using conventional content analysis with MAXQDA software. Study rigor was verified using criteria proposed by Lincoln and Guba. **Results:** After analyzing the data, two main categories which triggered emotional overeating and physical inactivity among adolescents were: “school originated stress” and “family originated stress.” Three subcategories of school originated stress were “Too much homework,” “Frequent exams” and “Priority for studying at both school and home” and family originated stress subcategories were “Parental destructive conflicts,” “Divorce” and “Socio-familial issues.” **Conclusions:** Our findings highlighted the sources and role of stress in emerging unhealthy lifestyle practices including emotional overeating and physical inactivity among adolescents which could lead to weight gain. Therefore, to improve lifestyle behaviors of students and prevent childhood obesity, addressing school, and family stressors is a crucial subject.

Keywords: Adolescent, emotional eating, obesity, physical activity, qualitative research

Introduction

Childhood obesity has become a global endemic public health problem. It has been recently indicated that the prevalence of overweight and obesity among children and adolescents has dramatically increased during the last three decades (1980–2013) in industrial as well as developing countries.^[1] In Iran, it is recently estimated that about 16% of children and adolescents are overweight and obese.^[2] Overweight and obesity during childhood could contribute to several clinical and psychological short- and long-term negative health consequences include hypertension, type 2 diabetes mellitus, hypercholesterolemia, stroke, hepatic steatosis, arthritis, depression, discrimination, low self-esteem, peer rejection, and stigmatization.^[3] However, previous programs fail to prevent obesity in early life,^[4,5] which might be due to the challenges of working among

children and adolescents, lack of attention to mediating behavioral variables and focusing on conventional approaches to prevent childhood obesity.^[6]

Unhealthy eating habits and physical inactivity are considered as the main factors that lead to childhood obesity.^[3] A growing body of evidence indicated that stress, particularly chronic stress causes overeating and decrease physical activity in both adults and children,^[7-9] which both could lead to weight gain. It is suggested that chronic stress may contribute to a greater preference for energy and nutrient-dense foods, especially sugary and fatty foods.^[8] Thus, determining the main would be necessary barriers and facilitators of pursuing unhealthy or healthy lifestyle during stress conditions. Although several quantitative studies have been conducted to investigate the relationship between stress, eating behavior and obesity, the focus of the most of these studies was to detect the

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underlying physiologic etiology of unhealthy behaviors such as overeating in individuals.^[10-12] The perceptions of emotional eating and physical activity behaviors have been poorly investigated in particular age groups, especially in children and adolescents.^[12] It is generally accepted that dietary and physical activity behaviors of children and adolescents persist into adulthood.^[13,14] Therefore, to improve lifestyle behaviors during childhood, more studies are needed to explore why and how stress can result in unhealthy nutritional and physical activity behaviors among children and adolescents. Adolescents faced with high levels of stress caused by several stressors including high expectations in academic or other performances, parental and peer pressure, conflict with family members, financial problems, grade transitions, pubertal changes that all could result in behavioral, psychological, and emotional problems.^[15-17] High rate of psychological disorders such as depression and anxiety,^[18] as well as indulgence in unhealthy dietary habits and sedentary behaviors reported in adolescents,^[19] might be related to the presence of a high level of stress among them. In spite of research from Western countries, there is limited research in Iran to evaluate determinants of childhood obesity, especially the sources and role of stress on the dietary and physical activity behaviors of youth. Given the different sociocultural contexts of Iranian families, differences in infrastructure, policies, economics, and the physical and social environment in Iran, it seems that more studies, especially comprehensive qualitative studies will be required in this field.

The aim of the present study was to explore existing stressors and their role in emerging emotional eating and physical inactivity behaviors among overweight and obese adolescents using a qualitative approach, which would be indispensable toward designing and implementing interventional studies for childhood obesity prevention.

Methods

Research design and setting

This qualitative study, using content analysis approach, is a part of a large protocol of a qualitative study to investigate the perceptions and experiences of Iranian adolescents from obesity, during 2016–2017, in two metropolises of Iran, Mashhad in North-east, and Isfahan in the center of the country. Research population for this study was the overweight and obese adolescent students who were studied in the middle or high schools of the city center and border site of the city. Parents of overweight and obese adolescent students also participated in the study.

Sample size and sampling methods

As is common in qualitative studies,^[20] there is no statistical formula to calculate sample size in the current study. Due to the subjective nature of sample size in qualitative studies, the sample size might be different in

the various studies depending on required information, participants' availability, willing to share their ideas and opinions.^[21,22] It is important to investigate a wide range of experiences and sampling must continue until data saturation is reached.^[21,22] In the current study, we used purposive sampling with maximum variability (in terms of age and socioeconomic status). According to the inclusion criteria, the participants were selected from those who demonstrated good communication ability and were interested and willing to share their ideas and opinions and provide the best information on the intended phenomenon. Until data saturation was reached, this sampling procedure was continued. Data saturation was achieved when no new information was obtained from the new samples and more sampling just resulted in gathering repetitive data collected earlier.

Recruitment of the participants

Since Iranian families have almost a similar social and cultural background, we started sampling from Mashhad, then, to achieve saturation of ideas sampling was continued in another big city of Iran, Isfahan, which is located in the center of the country. Participants were chosen from schools of these cities. At first, to obtain views across a range of socioeconomic backgrounds, based on information of city councils, we divided these two cities into three demographically diverse regions; high-, middle-, and low-socioeconomic status. Then, from each region, we selected some schools at random. In each school, overweight and obese students whose had body mass index (BMI) $\geq 85^{\text{th}}$ percentile based on the WHO 2007 table,^[23] and were between 12 and 18 years of age were selected to participate in the study. Parents (father or mother) of overweight and obese students were also invited to come to schools and participate in the study. The exclusion criteria were consuming drugs associated with gaining weight such as nerve drugs and corticosteroids and having any metabolic diseases such as endocrine disorders and diabetes.

Data collection

Data were collected from parents and some of adolescents through in-depth and semi-structured interviews. In addition, four focus group discussions were held to obtain perceptions and experiences regarding underlying factors of overweight/obesity and the role of stress in inducing unhealthy lifestyles related to diet and physical activity. To allow participants to openly share their perceptions and experiences, all interviews were collected in a private room of the schools by the main researcher. To permit subjects to fully explain their own opinions, perceptions, and experiences, open-ended questions were utilized for interview/discussion, the methods which are widely used in qualitative studies providing in-depth and flexible interviews. To begin the interviews/discussions, students were asked to explain their own feelings, perceptions,

and experiences on overweight and obesity, factors which cause and influence these conditions, factors associated with unhealthy eating and physical activity behaviors, and facilitators and barriers of these behaviors. In particular, students were asked to explain about the existing stressors in their life and the role of these factors on their lifestyle and weight. Based on the responses of the participants and with focus on the main topics, the subsequent questions were asked. Parents also were asked similar questions, at first, they explained about their opinions about overweight and obesity, and then they clarified the underlying factors that contributed to the weight gain in their children. Furthermore, they were requested to explain the role of stress in changing dietary and physical activity behaviors of their children, and whether they blamed themselves on this issues or not. During each interview, participants were asked to explain more about important issues related to the study aims.

Each individual interview lasted between 30 and 90 min, and some participants were interviewed more than once. The focus group interviews also lasted between 60 and 150 min. During each interview, based on the symbolic interaction approach, nonverbal signals were written in notes by the main researcher. In the focus group discussions, along with the main researcher, two trained researchers assisted in writing notes about the nonverbal signals and helped in monitoring the sessions. All the interviews were audiotaped and subsequently transcribed verbatim. Written notes were incorporated into the text, and after reviewing several times and rechecking for their accuracy, data were analyzed simultaneously.

Data analysis

The conventional content analysis was used to analyze data through MAXQDA software (version, 2010). At first, the transcribed interviews were reviewed and read precisely line-by-line for several times to specify the main concepts and reduce data to codes. In this regard, the text was divided into meaningful units, which consisted of a group of words related to the same meaning. The process of data reduction continued with labeling meaning units with codes. The extracted codes were classified, and code comparison was conducted based on the codes similarities and differences. After data analysis, 290 codes emerged related to the impact of adolescent friendships on unhealthy eating behaviors that after reviewing the similarities and merging of the codes, they were reduced to 76 codes and categories developed. After linking the underlying meanings of categories using inductive analysis, themes emerged. After careful study and analysis of the text of each interview, the next interview was planned.

Trustworthiness of data

Study rigor was confirmed by four criteria, namely credibility, dependability, confirmability, and transferability

proposed by Lincoln and Guba.^[24] In this regard, to achieve a deep understanding of the phenomenon interviews, as well as, all process of data interpretation were reviewed several times considering enough time to provoke the underlying meaning of participants' experiences. Then, the codes and emergent themes were reviewed by some experts in qualitative studies to evaluate the analysis method and provide feedback on its validity. In the third step, a summary of the results of data analyzing was returned to interviewee, and they were requested to assess if the authors' interpretation matched with their explanation regarding their perception and experiences. Finally, to permit the external supervisor and other researcher's auditability and to perform the authors' method of the research in future studies, all stages of the study and all the decisions made from the beginning to the end were documented.

Ethical considerations

This study was approved by the Ethics Committee of Mashhad University of Medical Sciences (ethics code: IR. MUMS. FM. REC.1395.419). All of the students and their parents were asked to fill informed consent, and they were assured about the right to resigning during the study, being anonymity and confidentiality of information. Before each interview and its audiotaping explicit permission was acquired from the study participants. After the study, researchers conducted three nutritional, educational sessions for the students and their parents to inform them about healthy eating habits and physical activity behaviors.

Results

Sociodemographic characteristics

A total of 52 adolescents with mean age 14.6 ± 0.9 years, comprised 27 (52%) boys and 25 (48%) girls as well as 10 parents (nine mothers and one father) mean age 41 ± 4.4 years participated in this study. The mean BMI of adolescents and the parents who participated in this study was 27.7 ± 3.1 and 26.7 ± 3.9 , respectively. Overall, in-depth interviews were carried out for all parents and 20 adolescents. In addition, four focus group discussions were held in which 32 adolescents took part (each group comprised of 8 participants). Two main categories entitled "*school originated stress*" and "*family originated stress*" and six subcategories emerged based on the participant states about their perceptions and experiences about life stressor and its relationship with unhealthy dietary and physical activity behaviors [Table 1].

School originated stress

School and its related activities are expressed as the main source of stress of the adolescents. Both students and parents believed that stress caused by the school is one the most powerful agents to cause unhealthy lifestyle practice among adolescents. In this regard, three major subcategories were identified.

Table 1: Emerged main and subcategories related to stressors which triggers unhealthy behaviors among overweight and obese adolescents

Main categories	Subcategories
School originated stress	Too much homework Frequent examinations Priority for studying at both school and home
Family originated stress	Parental destructive conflicts Divorce Socio-familial issues

Too much homework

Many students recognized that too much homework and also too hard homework as main reasons of their unhealthy eating habits and physical inactivity, which even may result in becoming a fat person. High amounts of homework and study time outside of the school were introduced as an intense stressor for students, which exposed them to the high pressure and propelled them toward emotional overeating and also reduced their time for being physically active and doing exercise. The following sentences were stated by most of the students repeatedly:

“Studying is time consuming and stressful. Sometimes I studying hard, however, I don’t learn, which increase my stress. This makes me overeat. Sometimes I had to eat food fast as a high amounts of homework, then I was not satisfied. When I’m stress or nervous, I like to eat sweet and delicious things” (Participant N.8, 14-year-old boy).

“Two years ago, I’ve been much thinner than I was now. Because my study got harder and my stress increased, I ate more and became fat” (Participant N.15, 13-year-old girl).

“The more the study the less activity. I feel that I become paralyzed because of stress of my homework and study. I’ve been swimming for professional this summer, but now I cannot go any further because of my homework and study that consumed all of my times. Stress made me overweight. In stressful situation, I’m getting fat even if I drink water” (Participant N.15, 13-year-old girl).

Frequent exams

Participants expressed that frequent exams in school are another source of stress. Weekly, monthly, midterm, and final term examinations, as well as entrance exams of some schools and universities and concerns about the results of these examinations, could lead to elevating stress among students. One of the mothers said:

“To enter a high rank high school, my daughter had an entrance exam last year. She was studied hard but was not accepted. After that, she got a lot of stress” (Participant N.55, 42-year-old mother).

Indeed, from the perspective of adolescents participated in this study, eating high amounts of foods, particularly

unhealthy foods are a way to cope and also forget the imposed stress. *“I had an exam today and I did not study for it. I got stress and I ate every things that I found”* (Participant N.24, 15-year-old boy).

“Whenever I get nervous, for example, because of difficult exams, I’m eating a lot of foods to feel calmness” (Participant N.16, 14-year-old girl).

“I had some stress in some cases. For example, when I thought that I would get a weak score in my exam, or before getting my list of final term scores. One of the factors that made me forget my stress was eating! Stress is one the factor that made me obese” (Participant N.5, 16-year-old boy).

Similarly, in point of view of the study attendance, one the barrier to be a physically active adolescent was concerns about exams. A participant said: *“The exams stress causes obesity. For example, since I was in the exam season, I only studied hard and I did not exercise in these 2 weeks”* (Participant N.10, 14-year-old boy).

“Priority for studying at both school and home”

Another emerging subcategory was about teachers and other school authorities’ behaviors with students in school. Most of the time, students were under the pressure of the teachers to study hard and get high scores and ranks in the examinations. Being under pressure of school authorities and in a competitive situation (e.g., for entrance to the high rank schools or universities) could contribute to increase stress of students. Sometimes, this pressure accompanied with teacher threat that made condition worsen of the youth. Adolescents expressed that overeating would be uncontrollable action to deal with this situation. The statements of some participants are as following: *“The pressure of some teachers, we have to eat some chocolate, if we want to be enable to continue listening in their classes”* (Participant N.37, 15-year-old girl).

“Some of the teachers said you must read a lot for the exams. It might be difficult. With the stress that they’ve brought, with the same stress flow, they made us a gluttonous person” (Participant N.7, 13-year-old boy).

“When I was in fifth grade, my teacher, threatened me if you did not study hard. then, I got stress and eat a lot of foods and became fat” (Participant N.2, 14-year-old boy).

At home also, studying and conducting schoolwork were a priority for students and parents. Hence, being under the high pressure of both parents and teacher and also the higher importance of studying than other activities such as exercise for the students too, may cause to pay attention only to study achievements even if result in give up healthy behaviors. One of the mothers said:

“Studying is a priority for my child, because of studying, she cannot go to exercise, while she likes to go to exercise.”

Sometimes I even paid the club fee, but because of studying, she did not go to the club. Due to having several exams, she always studying hard in her room” (Participant N.63, 37-year-old mother).

Family originated stress

According to the attendees declaration, another main source of stressor in life of adolescents is related to family functioning. Some adolescents who participated in the study believed that several family issues, particularly destructive parental conflicts induced high levels of stress among them and made them a nervous, depressed, and anxious person. Interestingly, parents themselves confessed to their deleterious role in providing unpleasant and stressful conditions for their child. On this point, three subcategories were identified:

Parental destructive conflicts

Negative conflicts of parents are stress causing issue on the lengthy list of family problems. Although parental conflict is unavoidable, as attendance of this study stated, repetitious, and destructive arguments of father and mother could link to children’s behavioral and emotional difficulties. One of the participant mothers said:

“I and her father always have arguments. I endured a lot of pressure. Her father is jobless and always sitting at home. My husband and I have a lot of problems with each other” (Participant N.53, 38-year-old mother).

Parental conflicts result in several psychological and behavioral problems for their children, particularly make them stressful and nervous which would result in overeating and physical inactivity. *“My daughter became nervous and depressed. Everything that she find, she eat. Always sitting at home. She doesn’t have any activity” (Participant N.53, 38-year-old mother).*

Another mother said: *“Sometimes, for a small matter, her father and I struggled with each other. For this, my daughter became nervous and most of the time ate her nails. Even she fight with her peer in the school. The reason for her overeating and obesity is just her nervousness” (Participant N.55, 42-year-old mother).*

Divorce

A second item in the family stress category, which usually occurs subsequent to parental destructive conflicts, is divorce or other separation. Based on the study participant’s perception and experiences, family issues, particularly father and mother dispute and parental divorce can deeply affect the children and adolescent feelings, elevate their worry and anxious and make them stressful, nervous, and more likely to become emotionally distraught. Emerging false appetite and hunger during this stressful condition leads to emotional eating in children of divorce. In addition, these children tend to be more aloof

and lonely and have less interest in exercising. One of the participants said:

“When I was a kid, my parents took care of me well. I was fit. But then the situation of my family was not good. Struggle, reconciliation, and so on. When my father and mother separated, I got nervous, then I became fat. Because I’m nervous, I overeat.” Or she stated “Before my parents’ divorce, I worked eight years in martial arts. After divorce, I gave up and I did not exercise at all, so, I got so fat.”

Socio-familial issues

Socio-familial problems are another emerging stressors on the lengthy list of family problems. Growing up in a dysfunctional family, on which both or one of the parent causes several problems for his/her family. In fact, in points of view of the study attendance, in a troubled family system, parents are spending less time parenting, even sometimes giving up parenting. In this situation, children feel unsafe and insecure and experience emotional insecurity. According to the perceptions and experiences of the study participants, when one of the parents indulges in an antisocial behavior or commits a crime or becomes an addict, then this causes multifarious problems, especially psychological complications for his/her spouse. In this condition, due to very high and complex problems such as parental incarceration, parents play a neglectful parenting style and are unable to implement their parental tasks and duties. The study participants expressed the following statements:

“My husband is an addict, immoral, irritable and bad tempered person He always nag us. He made us (I and my children) nervous and anxious. In this condition, we don’t think about exercise. I myself and my daughter are stressed out and depressed, we eat a lot.” (Participant N.55, 42-year-old mother).

“Some years ago, his father was a prisoner for 3 years! My daughter was lean to fourth grade fifth grade, (before his father incarceration), but after that, once upon a time, she became fat. I wondered why she grew so high. I think, it was due to the nervousness” (Participant N.62, 48-year-old mother).

Discussion

This study explored the role of stress in developing unhealthy lifestyle practices of overweight and obese adolescents. Based on the declaration of both adolescents and parents, two major sources of stress that emerged were *“school originated stress”* and *“family originated stress,”* which both led to overeating and physical inactivity followed by gaining weight among youth. Almost all of the adolescents worried about school tasks, examinations, and pressures from the teachers. Indeed, because of the fact *“too much to do,”* which becomes a common phenomenon among school students in many countries, at both inside

and outside of the school, youth suffer from high levels of stress. As previously indicated, this situation, in addition to increased psychological distress, decreased attention, and reduced concentration that impinges on decision-making skills of students which all could enhance their nervousness and anxiety.^[25] On the other hand, a very stressful condition at home, not only had negative impact on the emotional health of adolescents at home but also it deleteriously affected their psychological and behavioral practices at school and in the community. Taken together, it seems that this destructive situation at both school and home works like a defective cycle that causes several affective and behavioral difficulties in adolescents' life. Accordingly, the negative effects of school stressors including high volume of schoolwork, frequent examinations, threatening behavior of the teachers, and priority of studies on the emotional health of students and providing a stressful situation are well documented.^[26-28] Similarly, the association between family issues such as parental conflicts, divorce, and living in a dysfunctional family and emotional and behavioral problems of children and adolescents has been previously confirmed.^[29,30] Indeed, strong family and positive parenting practices are considered as the most powerful ways to reduce adolescent problem behaviors.^[30]

One of the most important findings of the current study was that during psychoemotional distress particularly stressful situations, adolescents tend to follow unhealthy eating behaviors and overeating. These results indicated that emotional eating is triggered by emotional problems, primarily by the stressors. We are aware that very limited qualitative evidence exists to explore dietary eating habits of adolescents during unpleasant emotional situations. It seems that during stressful conditions, youth unconsciously consume large amounts of foods. In this regard, one possible explanation is that in response to the stress, physiologically, appetite and desire to intake of foods particularly unhealthy foods such as sugary and fatty foods dramatically increased which might lead to uncontrolled overeating. Another possible explanation, on the other hand, is that emotional overeating of palatable and delicious foods even in the absence of hunger is a way to cope and deal with negative emotional challenges among children and adolescents; sometimes, it may contribute to forget the stressors temporarily. In line with our finding, results of a recent qualitative study conducted with the aim of the exploring perceptions of emotional eating behavior among college students (mean age: 19.6) showed the in male and female students, stress and unpleasant feelings such as anxiety were the main triggers of emotional eating.^[12] In a cross-sectional study, Nguyen-Michel *et al.* found that emotional eating is associated with frequent intake of high calorie fatty and sugary foods in adolescent boys and girls.^[31] The potential physiologic mechanisms of emotional eating were previously investigated that showed in response to the stress, a neural stress response network was

activated, and simultaneously cognitive control of feelings is dysregulated. In addition, secretion of food motivator hormone increased by stress which elevating food intake and weight gain.^[11] In a previous study, it has been shown that compared with college students who had a lower emotional eating score, BMI was higher among students with the higher emotional eating score.^[32] Considering the fact that likelihood that an obese adolescent becomes an obese adult is 80%,^[33] hence, to prevent weight gain in youth, understanding the meaning of emotional eating may be crucial.

Another noteworthy result of the present study was that emotional issues mainly stress caused physical inactivity in adolescents. To the best of our knowledge, very few studies have explored the effects of emotional problems on youth physical activity. Considering our finding, it should be mentioned that school stressors include too much homework, frequent examinations, teachers threatening behavior, and priority of studies may attract all of the efforts of the students both inside and outside of the school. Therefore, in the stressful conditions emerging at the school, students preferred to allocate most of their time to studies and conduct mainly schoolwork, and they were unable to manage their time and appropriate use of leisure time while it is earlier proposed that regular physical activity could enhance student academic performance.^[34] Another source of stressor which led to lower physical activities among the study participants was family. In this respect, it is worth nothing that as it mentioned above, existing several stressors in the family environment causes several psychological problems for both parents and children such as depression, anxiety, and nervousness. In this situation, parents neglected their tasks such as supporting their children for exercising and providing appropriate opportunities for physical activity of children in their free time. Adolescents themselves, due to the high volume of schoolwork, suffer from psychological distress and lack of family support compounds the problem. Although the positive effect of exercise on stress management is well documented, the effect of stress on physical activity has been poorly investigated. However, a recent review article found that generally, the experience of stress impairs efforts to be physically active in individuals.^[7] Similarly, negative effect of stress-related psychological problems such as depression on physical activity was previously revealed.^[35] Furthermore, parental support is considered as a substantial factor in developing physical activity among children and adolescents,^[36] which may confirm our results.

Although parents and overweight and obese adolescents with different socioeconomic backgrounds, ages, sex, and academic grades from the city center and border site of the city participated in this study, which provide a high variety in sampling, some limitations of this study should be considered. Dissatisfaction of some of the participants with a recording of interviews caused them to be unwilling to

participate thus prolonging the process of data collection. To overcome this problem, the researchers explained and reassured participants the confidentiality of the interviews. Another limitation of our study is that we did not triangulate the results with quantitative methods.

Conclusions

Our findings highlighted the role of affective issues particularly stress in emerging unhealthy lifestyle practices including emotional overeating and physical inactivity among adolescents which could lead to weight gain. Several existing stressors in the school and family environment were chief triggers of emotional eating and sedentary behaviors in the study participants. Therefore, to improve lifestyle behaviors of students and prevent childhood obesity, addressing school and family stressors is a crucial subject. These findings indicated that childhood obesity is caused multifactorial etiology, and for its prevention, treatment and management, a multidisciplinary approach is needed. Finally, our findings provide a deep insight of challenging with prevention and treatment of childhood obesity which could be useful in designing effective childhood obesity preventive interventional programs in future.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients 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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