

Relationship between the General Health of Mothers and the Anxiety of School-Age Children

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Abstract

Background

Health is influenced by different factors, the most important of which in the family environment is mothers. This study aimed to determine the anxiety levels of school-age children and their relationship with the general health of mothers in the city of Dezful, Iran.

Materials and Methods

In this descriptive-analytical study, 623 children aged 9- to 12-year-old studying in the fourth to sixth grades and their mothers were selected from the schools of the city of Dezful, Iran. The data collecting tools was a test battery including a demographic questionnaire, the School Anxiety Scale (SAS) designed by Philips, and the General Health Questionnaire (GHQ). The obtained data were analyzed using SPSS version 16.0 software.

Results

In this study, of 623 participants, 226 (36.3%) students were female and 397 (63.7%) students were male. The results demonstrated that the anxiety of school-age children were without 37.2% anxiety, 48.8% normal anxiety and 14% severe anxiety. The general health of mothers were 46.1% normal healthy, 45.4% partial healthy, 8% on the eve of the disease, and 0.5% unhealthy.

It showed there was a significant positive correlation between general health of mothers and anxiety score of children ($P < 0.001$, $r = 0.245$). Moreover, the children's anxiety scores were associated with all the dimensions of the mother GHQ.

Conclusion

There was a significant relationship between the health of mothers and their children's anxiety level. Thus, it is recommended to utilize strategies including conducting training programs and providing counseling for such children and their families in schools and health centers.

Key Words: Anxiety, Children, General Health, Mothers.

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1- INTRODUCTION

Anxiety seems to be one of the most common childhood disorders (1). The prevalence of anxiety over the life course has been estimated to be about 29% and the average age of its onset is 11 years old (2). Studies conducted on the prevalence of this disorder have shown various statistics, so that in some of the studies conducted in a part of South Africa and Denmark, the statistics of the prevalence of anxiety in children have been reported to be 7% to 15% (1–4). The prevalence of anxiety during the lifetime has been estimated to be about 29% and the average age of its onset is 11 years (7). Studies have shown various statistics about the prevalence of this disorder. The statistics of the prevalence of anxiety in children has been reported as 7% and in some studies up to 15% (4, 6). Furthermore, in some other studies it has been reported that about 10 to 20 percent of the children encounter one of the diagnostic criteria for anxiety disorder to the extent that it disrupts their normal life and daily activities (2, 5, 6).

There are many factors involved in the development of children's emotional and psychological characteristics, including heredity and environment. One of the most influential factors is the role of mothers since a mother is the first person with whom the child is communicating most of the time, so she is considered as the base for the child's health and illness (7, 8). According to Riahi et al. (2003), the interactions between a mother and her child can lead to the emotional attachment which makes the child seek comfort from the presence of the mother. Such interactions between a mother and her child provide the child with an investment of the emotional security which can build the foundations of child's future relationships with others and with the parents (8).

A child who cannot feel comfortable and safe within the family and cannot find his or her desired activities will indeed be in turmoil (9,10). There are several types of anxiety; one type of anxiety is school anxiety, which is one of the major problems of the students. School anxiety is an unpleasant emotional state associated with distress and distract and occurring due to situational factors and different characteristics; its main cause is the fear of failure and the lack of confidence (11). School anxiety includes separation anxiety, social anxiety, and test anxiety. It is the feeling of tension and psychological pressures experienced by students while attending school. The most common symptoms include disturbing thoughts and behaviors being observed both when students remind of their school attendance and when they refuse to go to school (12).

There is some evidence that the parents' behavior, especially mothers', can increase the level of anxiety in the children (13). Moreover, it is reported that changes made to the family including the death of a parent, divorce, and the birth of a new sibling are among the common causes of anxiety in children (14). One of the important family factors is the parents' aggressive behavior, especially mothers', which can disrupt the child's sense of security and be a cause of stress and crisis leading to anxiety in the child. Anxiety prevents the child from doing the age-appropriate activities and participating in school assignments (15).

Several longitudinal studies confirm that children's fears and phobias will prolong during adulthood and possibly be deteriorating. It is estimated that the persistent maladaptive fears can be observed in 3 to 8 percent of children. Fear and anxiety can entail negative consequences leading to physiological and behavioral symptoms in children including changes in behavior, being capricious, mood changes, refusing to go to school,

sleep disruption, irritability, poor concentration, fatigue, and complaining of the stomach pain and headache (15–17). Anxiety is a common problem among school-age children. Moreover, nurses have different roles in the areas of both community health and especially schools health services. Therefore, having made communicative interactions between mothers and their children and having known more about the influential factors including the effects of maternal factors and transferring this knowledge to families, health centers, and schools, nurses can contribute greatly to the reduction and treatment of anxiety disorders in children (4,18).

Teymuri et al.' study (2010) conducted in the city of Torbat-e Jam in Iran showed that the parents' stress is a key issue in creating behavioral and emotional problems in children (16). In a study done by Riahi et al. (2012) in Ahvaz, it is concluded that due to the high correlation between children's behavioral problems and mothers' mental disorders, it is necessary to adopt appropriate measures in order to reduce the impact of mothers' mental problems on their children (8).

Accordingly, it is importance to identify both the factors affecting children's anxiety including the health of mothers and their effects on children from different psychological, physical, and social dimensions. Furthermore, due to the fact that there is no study on the association between the health of mothers and the anxiety of their school-age children, especially in the city of Dezful, the present study aimed to determine any possible relationship between the health of mothers and the anxiety level of their school-age children. The results of the current study can be considered as an effective strategy to get a better control of the anxiety in such children through recognizing the factors affecting children's anxiety, including the health of mothers.

2- MATERIALS AND METHODS

2-1. the Design and Population of the Study

In this descriptive-analytical study, 623 male and female children (9-12 years old) studying in the fourth to sixth grades in the governmental and non-governmental primary schools of the city of Dezful, Khuzestan province- Iran, and their mothers were selected, using a multistage random sampling method. For this purpose, 185 elementary schools in Dezful were classified into two groups of boys' and girls' schools. Then, based on the cluster sampling method, 18 schools (i.e., 9 boys' schools and 9 girls' schools) were selected out of 185 schools. Of these schools, all the classes of the fourth, fifth, and sixth grades were selected and by using systematic random sampling, one-third of students of each class together with their mothers were chosen as the sample of the present study. To determine the sample size, the following formula was used:

$$n = \frac{z_{1-\frac{\alpha}{2}}^2 p(1-p)}{d^2}$$

Where, $\alpha = 0.05$ and based on the previous similar studies p and d were $p = 0.1$ (10) and $d = 0.03$. Based on the formula and the mentioned values, the initial sample size was calculated to be 384. According to the multistage cluster sampling design, the applied design effect was 1.62; the final sample size consisted of 623 mothers and 623 children.

2-2. Data Collection Tools

In the present study, the General Health Questionnaire (GHQ) designed by Goldberg and Hillier (19) to assess the health of mothers and the School Anxiety Scale (SAS) designed by Philips (20) to assess the anxiety level of the school-age children were used.

The GHQ with 28 questions consisted of 4 subscales: somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression (20). In this questionnaire, the items 1 to 7 were related to somatic symptoms, the items 8 to 14 were related to anxiety and insomnia, the items 15 to 21 were related to social dysfunction, and the items 22 to 28 were related to severe depression. The answer possibilities provided for each item had a 4-point Likert scale type (i.e., ranging from *not at all* to *much more than usual*) specifying the amount of discomfort. Its scoring was from 0 to 3. Every person's score in each of the subscales ranges from 0 to 21. Scores ranging from 0 to 7 represent an individual's terrible condition. Scores ranging from 7 to 14 show an individual is on the eve of the disease.

A score ranging from 14 to 21 is responsive of an individual's healthy condition. The overall score of each individual is the sum of the four subscales. Thus, an individual's total score will range from zero to 84 and the cut-off point is 21; the higher individual's score shows the better his/her health status. (7). The School Anxiety Scale (SAS) was designed by Philips (1978) so as to quantify students' school anxiety. This questionnaire consisted of 74 questions and measured four scales in students including: fear of assertiveness and self-expression, test anxiety, lack of confidence in dealing with others and meeting their expectations, and physiological responses related to individuals' low tolerance towards stress (21, 22). Bahman et al. (23) in a study entitled "Reliability Estimation, Validation, and Standardization of the Test Anxiety Scale" reduced the number of questions to 52.

Thus, the questionnaire being applied in the current study was the abridged form of Philips' SAS containing 52 questions with three possible answers of "*Yes, Sometimes, or No*". Accordingly, students received 3

points for every *Yes* response, 2 points for *Sometimes*, and 1 point for *No*, and the total score was obtained through the sum of the points. Range of score was between 52 and 156. The cut-off point of anxiety was 52, so scores more than it demonstrated greater anxiety.

2-3. Research Methodology

After the formal authorization was obtained from the Ethics Committee and the Research Deputy of Ahvaz Jundishapur University of Medical Sciences, the purpose of the research was explained to the participants. Then, the verbal informed consent from children and the written informed consent from their parents on their participation in the study were received. The sample size was calculated based on the family relationship formula and the inclusive criteria were specified for mothers including the consent to participate in the study, residence in the city of Dezful, not having mental retardation, being literate, and being able to speak Persian. The inclusive criteria specified for children included the minimum age of 9 years and the maximum age of 12 years, having a mother, and living with the mother. The exclusion criterion was the incompleteness of the questionnaires. The samples were chosen by using a multistage random sampling method. Moreover, the GHQ with 28 questions to assess the health of mothers and the SAS designed by Philips were used.

2-4. Statistical Methods for the Analysis of the Results

First, the variables under the study were described using descriptive statistics such as frequency tables, figures, and numerical indicators. Then, the mean values of the groups were compared using an independent sample t-test and a one-way ANOVA test. The Tukey's post hoc test was used for pair-wise comparisons. The Pearson's correlation coefficient was used

to analyze the relationship between quantitative variables. The significance level of tests was assumed to be less than 0.05. The data analysis was performed using SPSS version 22.0 software.

2-5. Ethical Considerations

To ensure ethical baselines, the approval of the relevant authorities was obtained before carrying out the study and the survey was confirmed with the ethical code of IR.Ajums.Rec.1394.194 in the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences. The children and their mothers were assured that their information would remain confidential. The participants were also assured that they could liberally leave the survey at any stage.

3- RESULTS

Among the four groups of mothers and fathers of these children (under 25 years, 25-35 years, 35-45 years, and older than 45 years), the majority of mothers (i.e., 324 women or 52%) were in the age group of 25 to 35 years and the majority of fathers (i.e., 406 men or 65.2%) were in the age group of 35-45 years. Also, the majority (i.e., 256 cases or 41.1%) of students were in the age group of 11-12 years (**Table.1**). After the collected data were analyzed, the following findings were obtained. Out of total 623 students, 304 (48.8%) students had moderate anxiety and 87 (14%) students had severe anxiety (**Table.2**).

As it is shown in **Table.1**, with an increase in the age of mothers and fathers, the mean of anxiety scores of the children is decreased. The findings revealed that most of the students (i.e., 397 cases or 63.7%) were male. The mean of the male students' anxiety scores was slightly more than that the female students' anxiety scores (**Table.1**) (**Figure.1**). Also, grade, among the fourth, fifth, and sixth grades of students, the fourth-grade level had the

most frequency of anxiety (i.e., 286 or 45.9%). The mean of the anxiety scores of children in the fifth grade was more than other that of other grades (95 ± 22), the mean of total of students' anxiety was 94.30. Most of the students (i.e., 273 or 43.8%) lived with one sibling. The mean score of anxiety was less (88.67 ± 14.42) in those students living in large families (**Table.1**). Moreover, it can be inferred from the above table that the majority of the students (i.e., 273 or 43.8%) lived with one sibling. The above table demonstrates that the mean score of anxiety was less (88.67 ± 14.42) in those students living in large families (**Table.1**).

To scrutinize the relationship between the mean score of children's anxiety and their gender, the result of the t- test showed that there was no significant relationship between these two variables ($P = 0.172$) (**Figure.1**). To find out the relationship between the mean score of children's anxiety and their educational level, a one-way ANOVA was used; there was not a significant difference in the anxiety scores of all the educational levels ($P=0.55$). Moreover, a one-way ANOVA was used to observe the relationship between the mean score of children's anxiety and the number of children in a family; it was concluded that there was a significant relationship between these two variables ($P=0.002$). To determine the relationship between the anxiety scores of children and the general health dimensions' score of their mothers, the Pearson correlation coefficient test was applied. It was revealed there was a weak but significant positive correlation (**Table.3**).

This means that with an increase in the general health of the mothers, the children's anxiety score increases, on the average. Furthermore, the results demonstrated that the anxiety scores in the male students (95.2) was slightly more than those of the female students; there was no statistically significant relationship

between these two variables (P=0.172). Finding was revealed that the more the general health scores of the mothers are, the higher the children's anxiety scores are

(P <0.001). Therefore, mothers having health disorders directly affect the increase of children's anxiety scores (**Table.2**).

Table1: Anxiety of children in term of demographic variables and its relationship

	Variables	Frequency	Mean ± standard deviation	P-value
Anxiety of children scores	Mothers' age			<0.001
	Under 25 years	14	112.4 ± 16.9	
	25-35 years	324	95.6 ± 21.7	
	35-45 years	258	92.8 ± 20.6	
	Older than 45 years	27	82.4 ± 18.9	
	Fathers' age			<0.01
	25-35 years	63	98.8 ± 22.7	
	35-45 years	406	95 ± 21.4	
	Older than 45 years	154	90.5 ± 20.1	
	Gender			>0.172
	Female	226	92.80 ± 19.90	
	Male	397	95.16 ± 22.20	
	Number of children			<0.002
	Single child	128	100.89 ± 22.54	
	Two children	273	93.33 ± 21.64	
	Three children	160	92.26 ± 20.08	
Four children	35	91.46 ± 21.81		
More than four children	27	88.67 ± 14.42		

Table-2: The frequency and percent of anxiety in students participating

Variable	Students' Level of Anxiety (Scores)	Number (percent)
Anxiety level of children	Normal anxiety (52-85)	232 (37.2)
	Moderate anxiety (85-120)	304 (48.8)
	Severe anxiety (120 or above)	87 (14)
Total		623 (100)

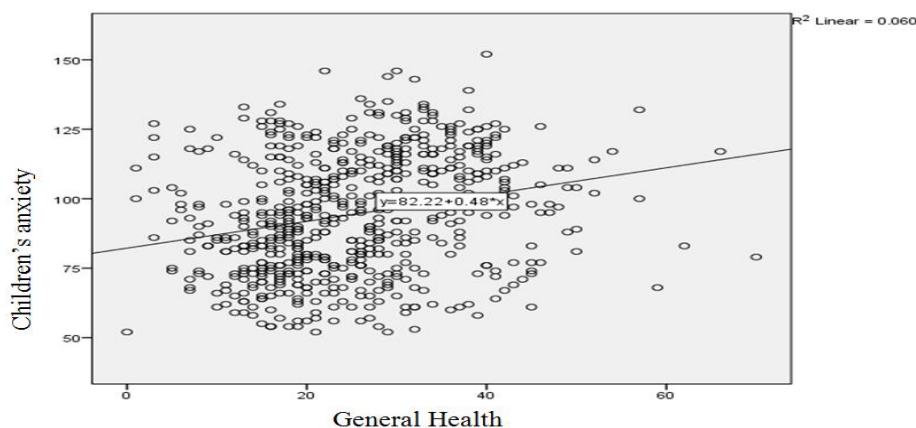


Fig.1: The correlation between the children's Anxiety scores and maternal General Health scores.

Table-3: The correlation between anxiety of children and history of hereditary disease and maternal general health scores

Dimensions of maternal general health	Anxiety scores of children	P-value
Physical scores of general health	r= 0.163	<0.001
Anxiety scores of general health	r= 0.178	<0.001
Social scores of general health	r= 0.105	<0.001
Depression scores of general health	r= 0.306	<0.001
Total of general health	r= 0.245	<0.001

4- DISCUSSION

From the total number of 623 children under study, it was reported that the majority had normal anxiety scores. In this regard, in the study conducted by Arefnia et al. (2013), it was demonstrated that the majority of students enjoyed normal anxiety level; thus, their study is in line with the present study (24). However, in other study, more than half of the students had severe anxiety level, so this is not consistent with the results of the present study (23). The reason for this difference may be the sample size and other factors influencing anxiety in every region. Factors having an effect on anxiety include genetic factors, physiological and biological factors such as abnormally low activity or over activity of hormones, lack of some of the vitamins and amino acids, environmental and family factors, and pressures imposed on the child in the school setting. Additionally, schematic factors, social learning, and certainly the companionship of anxious people can lead to anxiety in children (23).

The findings of the present study indicated that the male students were partially more anxious than the female ones, but there were no significant differences between the children's anxiety score in terms of gender. In the study done by Bahman et al. (2014), no significant differences were found between the anxiety scores of children and their gender (23). The results of this study are consistent with those of

the current study. On the contrary, the studies by Bahare Ziar et al. (2010) and Arifnia et al. (2013) demonstrated that females were more anxious than males (24,25). It might be due to the diverse physiological (i.e., mental and emotional) status of females compared to that of males and also due to the fact that usually anxiety disorders are more common in females because of their vulnerable characteristics (7). There was no significant difference between the mean score of children's anxiety and their level of education. Heidari et al. (2006) in a study found that there was no statistically significant difference between the mean score of children's anxiety and their level of education in the city of Sari, Iran (17).

But in the study conducted by Bahareh Ziar et al. (2016), Iran, comparing three levels of education, they revealed that the anxiety level was higher in the higher educational levels and there was a statistically significant difference in the three educational levels that could be due to the abovementioned reasons (25). Additionally, the majority of mothers were healthy and relatively healthy. Health is influenced by many factors including heredity, environment, and lifestyle. The interaction amongst these three factors can enhance or diminish the health risk (7). Environmental factors surrounding individuals and the society and government can affect individuals.

The most important factor in the family environment is a mother (13). On the psychosomatic dimension, based on the GHQ, most mothers were healthy and very few of them presented psychosomatic complaints. The psychosomatic dimension means keeping the body in good conditions through proper nutrition, regular exercise, avoiding harmful habits, and being aware of basic decisions on health. On the social function dimension, based on the GHQ, the majority of mothers were on the verge of getting sick (i.e., social dysfunction). The social dimension of health means the social welfare which can be defined as individuals' inner compatibility and their compatibility with others, community members (26).

The social welfare can be achieved, when there are positive and pleasant communications and interactions with others and when individuals are convenient and friendly with others during family, academic, occupational, and recreational activities (13). On the depression dimension, the majority of mothers, based on the GHQ, got the lowest scores (i.e., the highest frequency in the range of being healthy). Apparently, it is more difficult to assess the mental health than the psychosomatic health; in this dimension, not only is not having mental illness measured, but the power of adaptation to environmental conditions and providing an appropriate response to the problems and events in life constitute an important aspect of the mental health, too. Depression is one of the most common problems in today's society. Depressed mothers are deprived of personal and social confrontations including positive feelings towards themselves and others, and cannot communicate effectively with themselves and other people. People might suffer from depression at least once in their lifetime (4, 11, 14). There is a relationship between the children's anxiety scores and the mothers' social function

dimension of the general health; this means that mothers whose scores showed their social dysfunction had children with high anxiety scores. The social dimension of health can be studied from two aspects. On the one hand, individuals' healthy relationships in the community, family, and school and business environments can be achieved, when individuals enjoy positive and pleasing communications and interactions with others. Moreover, it is attainable, when individuals are intimate and be comfortable with others during family, academic, occupational, and recreational activities. On the other hand, individuals' healthy relationships can be achieved through the overall health of the community health aspect which can be calculated by using health indicators (4, 11, 14). In this regard, in the study carried out by Kimyai et al. (2010), no statistically significant relationship was observed between the symptoms of social dysfunction of the parents and those of the children with mental disorders (29).

Living conditions of individuals can make a difference in the reports of studies. Those mothers whose scores indicated depression disorder had children with high anxiety level. In this regard, the studies by Kimyai et al. (2010) and Salehi et al. (2005) showed a statistically significant relationship between the symptoms of major depression in parents and children with mental disorders (29, 30). Mothers whose scores indicated health disorders had children with high anxiety level. In Karimi et al.' (2005) (31) studies, it was declared there was a statistically significant relationship between mothers' mental health problems and children's anxiety; indeed, the children of mothers with mental disorders had higher anxiety scores (8, 29, 31).

4-1. Limitations of the study

In the present study, to identify students with school anxiety, only a questionnaire was used and no clinical interview was

carried out. Some of the children were not living with their mothers, so the author had to exclude some of the questionnaires of children without mothers. Thus, it is recommended to use other methods such as the structured diagnostic interview in the future studies for screening and identifying students with school anxiety. To do this, the results of the study might not be affected by the questionnaire sensitivity towards the incorrect identification of students with school anxiety. In addition, it is recommended to do further studies with a larger sample size so as to enjoy a better identification of factors affecting anxiety.

5- CONCLUSION

The current study demonstrated that the school-age children had mild to moderate anxiety levels. Moreover, it was revealed that the anxiety scores were higher in males, children who were single child, children who had a family history of hereditary disease, and children who experienced corporal punishment at home. The results also showed that the majority of mothers were healthy and the children's anxiety scores were associated with various aspects of mothers' health; any health disorders in mothers also increased children's anxiety scores, on the average.

It is recommended that in addition to exploring unidentified factors through which parents can influence the anxiety of children, some programs including training, counseling, and psychotherapy ones regarding social and psychological disorders should be held in schools and health centers. Furthermore, it is worth mentioning that some treatment protocols needed to control somatic disorders of such children and their families should be arranged in schools and health centers.

6- CONFLICT OF INTEREST: None.

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