

Comparison of anxiety prevalence among based and offshore National Iranian Drilling Company staff's children in Ahvaz, 2013

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ABSTRACT

Background: Anxiety is one of the most common psychological issues among all age groups including children. The main role of parents has been known to support their children. Being far away from a source of support has been shown to be a potential trigger for childhood anxiety. Periodical jobs, including offshore work, are among the main reasons for absence of one of the parents. Therefore, this study aims to assess anxiety in children of National Iranian Drilling Company offshore staff. **Materials and Methods:** In this historical cohort study, 160 students including 80 boys and 80 girls were selected through convenient random sampling from the schools of National Iranian Drilling Company. Data were collected using Revised Children's Manifest Anxiety Inventory (by Reynolds and Richmond), consisting 37 items and a demographic questionnaire. The collected data were statistically analyzed by *t*-test and logistic regression tests through SPSS software. **Results:** The mean anxiety score was 12.80 among offshore staff's children and 11.67 among the children of the based staff. The ratio of manifest anxiety among the offshore workers' children was significantly more than the based ones'. **Conclusions:** Based on the findings, offshore fathers' job affects the anxiety of the children.

Key words: Anxiety, children, crude oil industry, Iran

INTRODUCTION

Children and adolescents are the most valuable treasure in each society. The family, as the first social unit, not only provides the children with their mental and physical needs but also plays a major role in prevention of children's mental diseases and behavioral problems.^[1-4] A quantitative

research, conducted on the role of a father in the family, especially in relation with children's mental health, revealed the importance of father-children relationship. The children who have a close relationship with their fathers have been reported to have a higher self-confidence, but those with less relationship are more prone to mental problems.^[5] Father locus control has been reported to be accompanied with the son's hyperactivity.^[6]

Frequency of social anxiety in children with a limitation in relationship with their father or deprivation from that has been reported more than the control.^[7,8] Mauthner *et al.*, in a study on 3-18-years old children of the fathers working on an offshore platform found that the frequency of their fathers' flights acted as a source of sorrow and anxiety for their children, especially when the fathers missed their children's special occasions such as a birthday, the first day of school, and other important events. In addition, these children were worried about the risk of working on the sea and the impact of their fathers' absenteeism on the family and their

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Access this article online

Quick Response Code:



Website:
www.jehp.net

DOI:
10.4103/2277-9531.157215

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This article may be cited as: Zargham-Boroujeni A, Shahba Z, Abedi H. Comparison of anxiety prevalence among based and offshore National Iranian Drilling Company staff's children in Ahvaz, 2013. *J Edu Health Promot* 2015;4:37.

mothers.^[9] This worry could be a source of anxiety for these children. Anxiety, existing somehow in everybody's life, is a common feeling and a sort of emotion, which is experienced by all people in many life stages.^[10,11] It is also counted as a component for development among the children, although it has been reported to be 4.6% in England (as the most prevalent mental disorder among the children).^[12] The common offshore work schedule consists of either two weeks work and two weeks rest or three weeks work and one week rest and forces the staff to work far from home. Duty of rising up the children is stressful for these workers' wives and the stress may be transferred to the children.^[13] The possible association between frequent father's absenteeism and the children's anxiety made a mental occupation for one of the researchers who was in close relationship with such a family. There was no study found in existing research sources to reveal the association between long-term offshore work and frequency of the staff's children's anxiety. The researcher designed the present study to detect such an association by testing the hypothesis of existing higher frequency of overt anxiety among the children of offshore staff, compared with based staff. The results of the present study can reveal the role of fathers' attendance by the children in prevention of children's anxiety disorder.

MATERIALS AND METHODS

As the children in the present study can be categorized into two groups of those exposed or not exposed to their fathers' frequent absenteeism due to their type of work, the type of fathers' work can be considered as a long-term constant exposure factor from the past till now, and the anxiety can be considered as its outcome. Therefore, the study is a historical cohort study. Study population comprised of offshore and based staffs' children residing in Ahvaz and studying in boys' or girls' Drilling Martyr schools, which are the schools specified for these children in Ghaem Complex with approximately 200 students in each school. To control the probable effect of gender, an equal number of students was selected from each gender through convenient sampling from the list of offshore and based staff (total of 160 subjects). Data were collected by a demographic characteristics questionnaire including age, gender, parents' education, and the type of father's work (offshore or based) as well as Revised Children's Manifest Anxiety Inventory. This scale was first designed by Reynolds and Richmond (1978) to assess the existence or absence of various symptoms related to anxiety.^[14] This revised scale includes 37 items of which 28 items measure anxiety and the rest (nine items) are a lie-detecting scale to evaluate subjects' dishonest responses. The subjects answered the items in the questionnaire with yes/no answers and each item is scored zero or one. Therefore, the scores range from 0 to 28 for anxiety items and from 0 to 9 for lie-detecting items. Lower scores show lower anxiety and lower scores in lie-detecting scale show more honesty of the subjects in their responses.^[15] In the present study, after deletion of the subjects whose lie-detecting scores were equal to six or more, 65 children (32 girls, 33 boys) of based and 64 (34 girls, 30 boys) of

offshore staff's children entered the final analysis. Reliability of the revised Children's Manifest Anxiety Inventory has been already established in various studies.^[14,16-19] With regard to its validity, the test–retest validity was reported for the male and female students of grades six, seven, and eight of a school in a one-week interval as $r = 0.88$ and in a five-week interval as $r = 0.77$.^[20] Taghavi and Alishahi (2003) in Iran established reliability and validity of this scale. They established its reliability through test–retest and split half methods and reported reliability of 0.67 and 0.66, respectively. The validity was calculated by two methods of discriminant validity and correlation of scales items with the total score of the scale. Independent *t*-test was conducted to investigate discriminant validity between two groups of the patients with anxiety and normal individuals, and showed that revised Children's Manifest Anxiety Inventory could discriminate the two groups ($P < 0.001$). The results also showed a proper correlation between all items of the scale with its total score.^[15] There were qualitative and quantitative data in the present study. Descriptive statistics (frequency distribution, mean, and SD) were used to describe subjects' characteristics, and analytical statistics (*t*-test, Chi-square, Fisher's exact test, and logistic regression) were adopted to investigate the difference in variables distribution in two groups and the association between fathers' offshore work and their children manifest anxiety through SPSS. In logistic regression model, the association between offshore fathers' work, as a risk factor for children's anxiety at the presence of other variables, was determined. It could somehow affect children's anxiety at the presence of other variables. Therefore, the variables such as fathers' type of job (offshore or based), parents' education (less or more than high school diploma), and children's gender and their age (less, equal, or more than mean age) were entered in the model.

This study has been approved ethically and scientifically by Islamic Azad University and conducted as master thesis of the 2nd author.

RESULTS

Investigation of the subjects' personal characteristics showed that mean ages of offshore and based staff's children were 9.83 (0.16) and 10.74 (0.12) years in 95% of confidence interval, respectively. Independent *t*-test showed a significant difference in the subjects' mean age between the groups. In order for investigation of the probable interference of subjects' age with the study results, the correlation of their age with anxiety score was estimated. Pearson's correlation coefficient showed no significant correlation between these two variables ($P = 0.08$, $r = -0.15$). The groups were investigated concerning other demographic characteristics. Fathers' education results showed that the highest relative frequency were 57.3% and 48.8% for the fathers with high school education in offshore and based groups, respectively. Meanwhile, there was no significant difference between subjects' fathers' education in offshore and based groups ($P > 0.40$, $\chi^2 = 4.02$).

Mothers' education results showed that the highest frequency were 67.6% and 60% for the mothers with high school diploma in offshore and based groups, respectively. Meanwhile, there was no significant difference in subjects' mothers' education between two groups ($P > 0.56$, $\chi^2 = 2.96$).

To calculate the odds ratio through logistic regression, first, confidence interval of 95% for mean students' anxiety was calculated to determine the cutoff point of anxiety score and its optimum was considered 13.23. Based on this, the children with manifest anxiety were determined in each group. Then, to investigate the association between staff's type of work and children's anxiety, crossover table, and Fisher's exact test were adopted [Table 1] that showed a significantly higher anxiety among offshore staff's children, compared with those of the based staff ($P = 0.03$). To define the association between offshore staff's work as a risk factor together with other variables (children's gender, age, and parents' education), and children's anxiety, the data were analyzed by multiple logistic regression test. The results of this test showed that the whole model was significant ($\chi^2 = 12.56$, $P < 0.03$). The variance of the dependent variable, which is stated by this model, was estimated based on two estimations: Cox Snell $R^2 = 0.09$ and Nagelkerke $R^2 = 0.13$ that showed that 9%–13% of variance in children's anxiety can be explained by this model. Hosmer and Lemeshow test was also not significant with $\chi^2 = 5.93$ and $P > 0.54$, which reveals the good fit of the model.

The results of the variables that were entered to the model are presented in Table 2. As presented in the table, the only factor that was not significant in this model was father's type of job that, with regard to adjusted odds ratio, equaled

2.14 and showed that the children of offshore staff were at a higher risk (by twofolds), compared with those of based staff.

DISCUSSION

The results of subjects' demographic characteristics in the studied groups revealed a difference between the two groups concerning age as the children of offshore staff had a lower mean age, compared with those of based staff.

No evidence was found in searching the data sources showing the association between age and children's anxiety except a study conducted in The Netherlands that showed adolescents' perception from their parental style was different between the primary school students and the adolescents and suggested the possibility of the effect of such a factor on the children's anxiety.^[21] Meanwhile, as the lower age of the children shortens their exposure to anxiety, the association between age and anxiety in all of the subjects was investigated by Pearson's correlation coefficient, which showed no significant association.

In addition, variable of age was entered to logistic regression as one of the manifest anxiety-related factors in two forms (higher or lower the mean age in all subjects) to detect its possible effect on the model. Possibility of the association of other variables that were entered to the model had been suggested in previous studies. Jenkins *et al.* (2009) reported low parents' education as a predisposing factor for children's mental disorder.^[22] Satipani (2013) reported that the adolescents with higher anxiety had mostly parents with lower education. The association between gender and anxiety has been reported in various studies.^[1,10,23] In Iran, mean score of girls' anxiety in 9- to 13-years old subjects was reported more than in boys.^[24] The main hypothesis of the study was that a higher number of offshore staff's children suffered from manifest anxiety, compared with based staff's. This hypothesis was simply tested by crossover table and Fisher's exact test that showed a significant difference in frequency distribution of anxiety among offshore and based staff's children. With regard to the possibility of various factors that were mentioned above as well as the observed effect of father's type of work as a risk factor for children's anxiety, the researcher used logistic regression model that showed offshore work increases children's anxiety by twofolds. Frequent long-term absenteeism of the fathers seems to have such an effect. Bogels *et al.*, in a review of existing sources, concluded that the role of the father in children's development is unique, important, and different from the mother's. Fathers not only play their own role in challenges, risk taking, and progression of independency and children's preparation for entering the world outside the family unit but also play a pivotal role in supporting the mother, the family, and the children in their childhood and adolescence periods. They concluded that lack of father's participation and encouragement of independency, and his cold communication predispose the children to develop signs of anxiety.^[17] The present study suggests that lack of father's

Table 1: Distribution of apparent anxiety in the subjects, based on their fathers' job location

	Job location N (%)		Statistical test
	Based	Offshore	
Apparent anxiety			
Normal	44 (67.7)	28 (43.8)	Fisher exact test, $P=0.03$
Anxiety	21 (32.3)	36 (56.2)	
Total	65 (100.0)	64 (100.0)	

Table 2: Variables in the equation of logistic regression model: Are offshore workers' children more prone to anxiety than the based workers' are?

Variables	B	SE	Adjusted odds ratio	95% CI	P
Job type (offshore work)	0.761	0.388	2.140	1.001-4.576	0.049
Father's education (university)	-0.287	0.396	0.751	0.346-1.630	0.468
Mother's education (university)	-0.192	0.461	0.825	0.335-2.035	0.677
Gender (female)	0.649	0.384	1.913	0.901-4.062	0.091
Age group (older than 10 years)	-0.577	0.391	0.562	0.261-1.209	0.140

SE=Standard error, CI=Confidence interval

constant attendance in the family predisposes the offshore staff's children to risk of anxiety through making a similar sense. Another element to be considered in our obtained results is the possibility of a higher anxiety among offshore workers and their spouses. Various studies have shown that offshore work can predispose the personnel and their spouses to stress and anxiety through feeling of loneliness, lack of emotional communications, dysfunction of the family unit, and the risk of frequent trips and flights to offshore platforms.^[13,25,26] Numerous studies suggested that this can lead to children's anxiety.^[1,27,28] Therefore, investigation of offshore workers' and their spouses' anxiety can be a subject for further studies.

CONCLUSION

Importance of research in recognition of the predisposing factors for children's anxiety is based on detection of such children at the first step. Based on our results, offshore staff's children are more predisposed to risk of anxiety; therefore, it is suggested to administrate appropriate interventions to increase their ability to cope with anxiety in their schools. Also, the companies hiring the offshore staff should have some strategies to reduce the effect of fathers' absenteeism. Facilitating the staff and their families with audiovisual systems to communicate conveniently and their training concerning the efficient methods of face-to-face communication during the staff's rest period may be effective in this regard. Training the teachers and school staff to detect the signs of anxiety in children and referring them to specialists to administrate efficient treatment interventions can be another helpful action.

ACKNOWLEDGMENT

The authors thank Mr Hamidreza Golpayegani, managing director, and Mr Farid Salehi, industrial psychologist of National Iranian Drilling Company, whose help and suggestions made conducting this research possible. Thanks also to Dr Davood Khorasani-Zavareh who suggested data analysis methods and presentation of the tables in this article.

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Source of Support: Nil, **Conflict of Interest:** None declared