

Original Article

Comparison of intelligent development (IQ & EQ) of children with cleft lip and palate

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ABSTRACT

Background: Attention to the issue of intelligence and its promotion in children with cleft lip and cleft palate (CL and CP) is necessary to reduce their injuries in life. This study aimed to determine the intelligence quotient (IQ) and emotional intelligence (EQ) in children with CL and CP in comparison to healthy children.

Materials and Methods: In this descriptive study, 140 children, including 70 children with CL and CP, were selected from the Children treated in Craniofacial and Cleft Research Center, Spearman correlation, ANOVA and 70 healthy children were selected from the Pediatric Dentistry Department of Isfahan University, in the age range of 5–9 years. After obtaining the consent of the children's parents, the Raven IQ questionnaire and the Mayer and Salovey EQ questionnaire were given to the children. Data were analyzed by the Pearson correlation coefficient tests ($\alpha = 0.05$).

Results: EQ score in healthy children was significantly higher than in children with CL and CP ($P < 0.001$). The percentage of IQ cognitive intelligence in healthy children and children with CL and CP was not significantly different ($P = 0.641$). In healthy children, no significant relationship was observed between cognitive intelligence IQ and EQ ($r = 0.018$, $P = 0.882$). However, among children with CL and CP, there was a significant inverse relationship between cognitive intelligence IQ and EQ ($P < 0.001$, $r = -0.526$).

Conclusion: CL and CP have no effect on IQ in children, but it does affect EQ.

Key Words: Cleft lip, cleft palate, emotional intelligence, intellectual disability

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INTRODUCTION

Cleft lip and cleft palate (CL and CP) is one of the most common congenital malformations. Although these abnormalities are mostly genetic, about 20% of them are due to environmental and teratogenic factors in the fetus that are potentially preventable. Isolated or nonsyndromic clefts are divided into two separate

categories according to the origin of embryology and genetic studies; the first group involves the primary palate during the fetal period and causes cleft lip with or without cleft palate (CL \pm CP). The second group involves the secondary palate during the fetal period and causes CP. CL and CP with a frequency of 1/700 live births; one of these abnormalities is that it causes

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many problems in nutrition (especially in the period of deciduous teeth), speech, beauty, and dental row as well as permanent psychological effects in people.^[1]

Intelligence quotient (IQ) is a number with an average of 100 and a standard deviation of 15. IQ is a ratio that is multiplied by the division of intellectual age by calendar (chronologic age) age. Therefore, in the classification and division of intelligence, on average, about 70% of people have moderate intelligence, 12% have above-average intelligence, 2% are very intelligent, and 1% are selected people.^[2,3]

Emotional intelligence (EQ) is used as a form of social intelligence that includes the ability to control the feelings and emotions of oneself and others and the ability to distinguish between them and use this information as a guide for thought and action. EQ is considered to be the intelligent use of emotions that can help people make appropriate life decisions.^[4-6]

IQ and EQ are not conflicting capabilities. Rather, it can be said that they are distinct. Everyone has a combination of intelligence and emotions. People with high IQ and low EQ (or low IQ and high EQ) are relatively rare despite some examples. There is a slight correlation between IQ and EQ, although to the extent that it is clear that they are in two realms and are essentially independent.^[7]

In the study of Chen *et al.*,^[8] children with CL and CP are affected by many factors in various periods, including deformities, nutritional pathologies, diseases, and social-psychological factors. Hoek *et al.*,^[9] in the study of psychosocial adjustment in children with CL and CP, concluded that the psychosocial health of children with CL and CP is not different from children without this complication, but children with CL and CP have more learning difficulties.

MATERIALS AND METHODS

In this descriptive study (ethic code: IR.IAU.KHUISF.REC.1398.212), 140 children, including 70 children with CL and CP, were selected from Children treated in Craniofacial and Cleft Research Center, and 70 healthy children were selected from the Pediatric Dentistry Department of Isfahan University, in the age range of 5–9 years. The parents of these healthy children were asked about the necessity of not having CP and lip in their other children. After obtaining the consent of the children's parents, the Raven IQ questionnaire and the Mayer and Salovey EQ

questionnaire were given to the children. Children in two groups with equal numbers, healthy children and children with CL and CP, were evaluated.

Meyer *et al.*'s standard EQ questionnaire includes 33 self-description sentences with five options, completely disagree, somewhat disagree, neither disagree nor agree, somewhat agree, and completely agree. The validity and reliability of the questionnaire were evaluated and confirmed in previous research based on Cronbach's alpha test; the reliability of the questionnaire was estimated to be over 70%.^[5,10]

The Raven IQ Questionnaire is a standard questionnaire for measuring children's IQ. The validity of this questionnaire has been measured in previous research, and the numerical value of the correlation coefficient has been obtained as 0.73 and also the reliability of the questionnaire has been evaluated as 0.91 and desirable.^[11]

After the children answered the questions of the questionnaires, based on the scoring expressed in Mayer *et al.*'s^[5] questionnaire, a score between 33 and 55, the level of EQ, was low A score between 56 and 112 is a moderate level of EQ, and a score above 112 is a high level of EQ.

The age range of Raven's general intelligence varies from 9 to 18 years. The individual's general intelligence will grow to adulthood. The Raven questionnaire is graded by the Raven Key, and questions with correct answers scored, and questions with incorrect answers received zero marks. Then, the scores were summarized, and according to Table 1, the grades were determined based on age, and the intelligence level was calculated.

The obtained data were analyzed by the Pearson correlation, Spearman correlation, ANOVA, and SPSS 22 software (SPSS Inc., Chicago, IL, USA), and the significance level was considered 0.05.

RESULTS

In the study of the level of EQ, all children (100%) of the two groups with CL and CP and healthy had high EQ.

In the study of the mean score of EQ between two groups of healthy children with CL and CP, the EQ score in healthy children was significantly higher than in children with CL and CP [$P < 0.001$, Table 2].

In assessing the level of cognitive intelligence IQ, among children with CL and CP, 6 (8.6%) children were lower than average, and 64 (94.4%) children were moderate. However, the level of IQ was observed in all healthy children at a moderate level.

There was no significant difference between the two groups of healthy children, CL and CP IQ in the percentage of IQ in healthy children and children with CL and CP ($P = 0.641$) [Table 3].

Based on the results of calculating the Spearman correlation coefficient, no significant relationship was observed between cognitive intelligence IQ and EQ in healthy children ($P = 0.882$, $r = 0.018$). However, among children with CL and CP, there was a significant inverse relationship between cognitive intelligence IQ and EQ ($P < 0.001$, $r = -0.526$). As the child had more IQ cognitive intelligence, his EQ was lower [Table 4].

DISCUSSION

According to studies on personality, intelligence, academic aptitude, and social and economic issues in people with CL and CP, they all agreed on one issue that people with CL and CP in terms of intelligence and parameters expressed slightly different from healthy people. Children with CL and CP have a wide range of emotional, social, and low self-esteem problems from birth, which affect the child's mental function, and children with CL and CP are more anxious, have lower self-esteem, and have behavioral problems. Most children have autism, severe learning disabilities, and anxiety, and are prone to autism.^[12,13]

In the study of Richman *et al.*,^[14] it was stated that children with CL and CP are significantly more isolated than uncomplicated children due to a lack of proper treatment by parents and teachers. They stated that children with CL and CP have lower levels of social relationships due to separation from other children due to the deficiency which can greatly affect the child's perception. They also stated that there was no significant difference between the IQ of children with CL and CP compared to healthy children.

According to the results of the present study in the study of EQ with CL and CP compared to healthy children, healthy children had a higher level of EQ than CL and CP children.

EQ based on Mayer *et al.*'s^[5] definition includes the ability to control the feelings and emotions of the

Table 1: Distribution of scores by age groups in percentage rating

Percentage rating	Calendar age in semesters								
	5.5	6	6.5	7	7.5	8	8.5	9	9.5
126, 127	21	23	24	25	26	28	30	31	32
121	19	21	22	23	24	26	28	29	30
111	15	17	18	20	22	24	25	25	27
100	12	14	16	18	19	21	22	23	24
89	10	12	13	15	16	18	19	20	21
79	9	10	11	12	14	15	16	17	18
73, 74	8	9	10	11	12	13	14	15	16

Table 2: The mean of emotional intelligence scores in the two groups of children

Group	n	Mean±SD	Maximum	Minimum
Cleft palate and lip	70	119.37±4.31	129	113
Healthy	70	134.49±6.94	144	122

SD: Standard deviation

Table 3: The mean of intelligence quotient scores in two groups of children

Group	n	Mean±SD	Maximum	Minimum	P
Cleft palate and lip	70	43.90±14.48	65	20	0.641
Healthy	70	42.33±4.67	48.33	36.67	

SD: Standard deviation

Table 4: The relationship between emotional intelligence and intelligence quotient scores in two groups of children

Group	EQ			
	Variable	n	The correlation coefficient	P
Cleft palate and lip	IQ	70	-0.526	<0.001
Healthy	IQ	70	0.018	0.882

EQ: Emotional intelligence; IQ: Intelligence quotient

individual and others and the ability to distinguish between them and use this information as a guide for thought and action. According to Meyer *et al.*'s^[5] definition, it can be said that the behavior of others is very important in children's EQ. Children who are ridiculed in communities such as school, home, and friends will inevitably find no other way but to escape into isolation. For this reason, these factors are important in reducing the IQ of children.^[4] In another form, the child involuntarily activates his or her subconscious by being isolated and excluded from society. For this reason, the possibility of high EQ in children with physical and mental disabilities can be higher than in healthy children.

In the study of the cognitive intelligence of healthy children and children with CL and CP in the present study, the level of cognitive intelligence of healthy children was assessed at a moderate level. However, it was reported in children with CL and CP at both moderate and below-average levels.

In examining the relationship between EQ and cognitive intelligence in the two groups, no significant relationship was observed between EQ and cognitive intelligence in healthy children; however, a significant relationship between EQ and cognitive intelligence was observed in children with CL and CP. Therefore, it can be said that by increasing the level of cognitive intelligence in children, the level of EQ decreases. In other words, EQ and cognitive intelligence are opposite to each other in children with CP and lips.

In Chapman's study,^[15] patients with CL and CP have difficulty speaking and cannot communicate with their peers; hence, these children are isolated, which creates a lot of psychological and mental stress in the child. It is endangered and thus affects the EQ and cognitive intelligence of the child.

Chen *et al.*^[8] concluded that children with CL and CP are affected by many factors in different periods, including deformities, nutritional pathologies, diseases, and social-psychological factors. Therefore, it is very important to take care of these children before the age of 5 to prevent diseases and psychological and social problems, as well as to improve their nutrition.

Ghorbanzadeh *et al.*,^[16] in their study, showed that the mental health of children with CL and CP is moderate, which is consistent with the results of other studies,^[17-19] which together showed in their studies that the health-related quality of life of people with CL and CP is low. Therefore, according to the results of these studies and the present study, it can be said that when the quality of life and mental health of the child are moderate or low, it can affect the IQ and EQ of the child.

One of the limitations of the study is the lack of cooperation of some parents in preparing children to complete the questionnaire information and the inability of some children to complete the questionnaire information. Since no research has been done on the simultaneous study of EQ and IQ in CL and CP children in Iran and the world, it is suggested that more research be conducted on the same subject so that the results can be generalized and accurate conclusions.

CONCLUSION

CL and CP have no effect on IQ in children, but it does affect EQ.

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Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or nonfinancial in this article.

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