



Compare the Intelligence quotient, creativity and moods in 4 to 6 year-old children born by caesarean section and Normal vaginal delivery

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A B S T R A C T

This study aimed to compare the Intelligence quotient, creativity and moods in 4 to 6 year-old children born by caesarean section and vaginal delivery. The type of research is applied, and the method is descriptive retrospective (causal-comparative). The sample size is 50 children 4 to 6 years old in Iran (25 children born by cesarean section and of 25 children born normal), who were selected by purposive sampling method. Data were collected By Children Color Raven intelligence questionnaires (Anastasi, 1379), Torrance creative thinking Form B (1966) and the mood of Cloninger (1997) test (PTSTCI) and for analyze of data using multivariate analysis of variance (MANOVA). Results showed that there is no significant difference between Intelligence quotient in children born normal vaginal delivery and caesarean section ($P > 0.05$). But There is significant difference between mood of children born normal vaginal delivery and caesarean section ($P < 0.05$) and there is significant difference between creativity of children born normal vaginal delivery and caesarean section ($P < 0.05$). This means that children born by normal vaginal delivery have more creativity and positive mood than children born to C-sections. Since intelligence is a multifactorial cause and many factors involved in the increase or decrease its, so do not be counted the only reason for increase or decrease of labor. Of course, these findings cannot be used a tool to promote cesarean section, because the results showed that the method of delivery has an impact on children's creativity and mood.

Keywords: Intelligence Quotient, Creativity, Mood, Cesarean Section.

INTRODUCTION

Cesarean section(C/S) is one of the methods in new present century. Normal vaginal delivery (NVD) is recognized as the best method of delivery in most cases, but unfortunately cesarean rates was increased(Berhan & Haileamlak, 2016; Moraitis et al., 2015; Sobhy et al., 2019). Prevalence of C/S in Iran is 54% that there are huge differences between Iran and most countries in the world. The World Health Organization has declared 10% to 15%. And this increase of C/S will not decrease mortality of mothers and neonate, but also a C/S leads to increased maternal mortality is 2 to 4 times(Haas, Morgan, Contreras, & Enders, 2018; Jafari-Shobeiri et al., 2015).

One of the determinants of adjustment in childhood is the child's intelligence. Intelligence is a hypothetical construct that effect on our behavioral. Conventional IQ tests measured the

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actually the same behavioral effects, like the verbal or nonverbal (Flensburg-Madsen & Mortensen, 2015).

Contemplations Guildford (1960, 1950) led to psychologists and researchers in addition attention to IQ test and academic achievement, attention to creativity that is neglect (Gómez-Sánchez, Cañete, Rodero, Baeza, & González, 2004).

The mood is childhood emotional problems that its determinants the risk of future psychiatric problems (Montagner et al., 2016). Mood is a term used to describe individual differences in cognitive skills and habits. The center of mood is in the amygdala, hypothalamus, striatum and other parts of the limbic system (Cloninger, 1999).

The factors that is affecting to the mood, Environment (Lundquist, Kjellberg, & Holmberg, 2002), stress (Anastopoulos, Guevremont, Shelton, & DuPaul, 1992; Martyn-Nemeth, Penckofer, Gulanick, Velsor-Friedrich, & Bryant, 2009), reaction and behavior of the mother (Cooke, Kochendorfer, Stuart-Parrigon, Koehn, & Kerns, 2018), gender, social class, cultural and ethical factors (Salamanca-Buentello, 2018), some factors such as weight at birth (Orchinik, 2015), and genetic factors (Etain, Milhiet, Bellivier, & Leboyer, 2011), is affected to mood. However the mood caused by hereditary or environmental factors, its can effect on social adjustment (Kessler, Kendler, Heath, Neale, & Eaves, 1992), aggressive behavior and cognitive problems (Blok, Fukkink, Gebhardt, & Leseman, 2005).

Cesarean section rate In Iran, three times more than the global statistic (Organization, 2010; Yazdizadeh et al., 2011), and the prevalence of C/S is more than 41% that considered of countries to be at risk of cesarean section. On the other hand, studies show that only 15 percent of births are cesarean require therapeutic intervention by C/S. According to the high prevalence rate of cesarean section, its multiple complications and similar small studies in the country and especially in Bandar Abbas, the present study examined the question whether is there difference the Intelligence quotient, creativity and mood between children 4 to 6 years born by C/S and NVD?

METHODOLOGY

This study is applied type, and the method is descriptive retrospective (causal-comparative). The statistical population is all children 4 to 6 years old. In this study, sampling method is purposive sampling method, and the sample size was 50 children. To collect of data was used field study and three questionnaires; Raven's intelligence test, Torrance creative thinking and mood (PTSTCI).

Raven's intelligence test: This free cultural test was used for children 3 to 10 years, which is measure the IQ scores. Reliability of Verbal and practical intelligence tests and re-test are "between" 40% to 50% (Cotton et al., 2005). Cronbach's alpha reliability coefficient reported 0.79.

Creative Thinking Test Form B Torrance: The test consists of 12 question and divided three test series "verbal" visual "and" audio ". That named Creative thinking with verbal, creative

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thinking visual and creative thinking audio. The reliability of this tool by Kashani-Vahid, Afrooz, Shokoohi-Yekta, Kharrazi, and Ghobari (2017), on students is 0.80. In the present study, Cronbach's alpha reliability was 0.97.

Preschool Temperament and Character Inventory: The scale has 74 items. Each item is only one of the seven dimensions mood; these factors are as follows: cooperativeness (CO), harm avoidance (HA), Novelty seeking (NS), Reward dependence (RD), persistence (P), self-directed (SD), self-transcendence (ST). AliAkbari Dehkordi et al. (2012), correlation of subscale with each other and total scale is "between" 41% to 71%, that indicating good internal validity, and test-retest reliability reported, 89%. It was obtained Cronbach's reliability 0.86.

First stage for selecting the topic theoretical information is using a library. In the second stage were obtained the necessary permissions to collect research data. . Then the third stage were selected children from kindergarten Bandar Abbas by non-probability purposive sampling, 50 (each n = 25). In the fourth stage questionnaire Raven intelligence, creativity Torrance Form B was carried out. And in the fifth stage mood questionnaire was conducted by the mothers of children under study. Also for the Ethical principle only children were study whose parents were satisfied with their research, and in the sixth stage result of the questionnaire survey and statistical analysis was done by SPSS-20 software.

For data analysis were used, descriptive statistics (mean, standard deviation, etc.) and inferential statistics using multivariate analysis of variance. The data obtained were analyzed by SPSS software.

RESULTS

Distribution of the study groups according to sex is presented in Table 1.

Table 1. Distribution of study groups according to sex

Sex	Number, Percentage	C/S	NVD	Total
Female	Number	15	16	31
	Percent of group	51.6%	48.4%	100%
	Percent of the total sample	30%	32%	62%
Male	Number	10	9	19
	Percent	47.4%	52.6%	100%
	Percent of the total sample	20%	18%	38%
Total	Number	25	25	50
	Percent	50%	50%	100%

Mean, standard deviation, age of groups are separately in Table 2.

Table 2. The mean, standard deviation and age between C/S and NVD

Group	N	Statistical index	age
C/S	25	mean	5.24
		SD	0.98
NVD	25	mean	5.61
		SD	1.02
Total	50	mean	5.42
		SD	1.12

Table 3. Frequency of IQ, creativity and mood between C/S and NVD

group	Statistical index	IQ	Creativity	Mood
C/S	mean	96	93.68	106.08
	SD	7.9	10.59	8.11
NVD	Mean	96.72	101.44	117.92
	SD	6.47	11.83	22.41
Total	mean	96.36	97.56	112
	SD	7.15	11.78	17.72

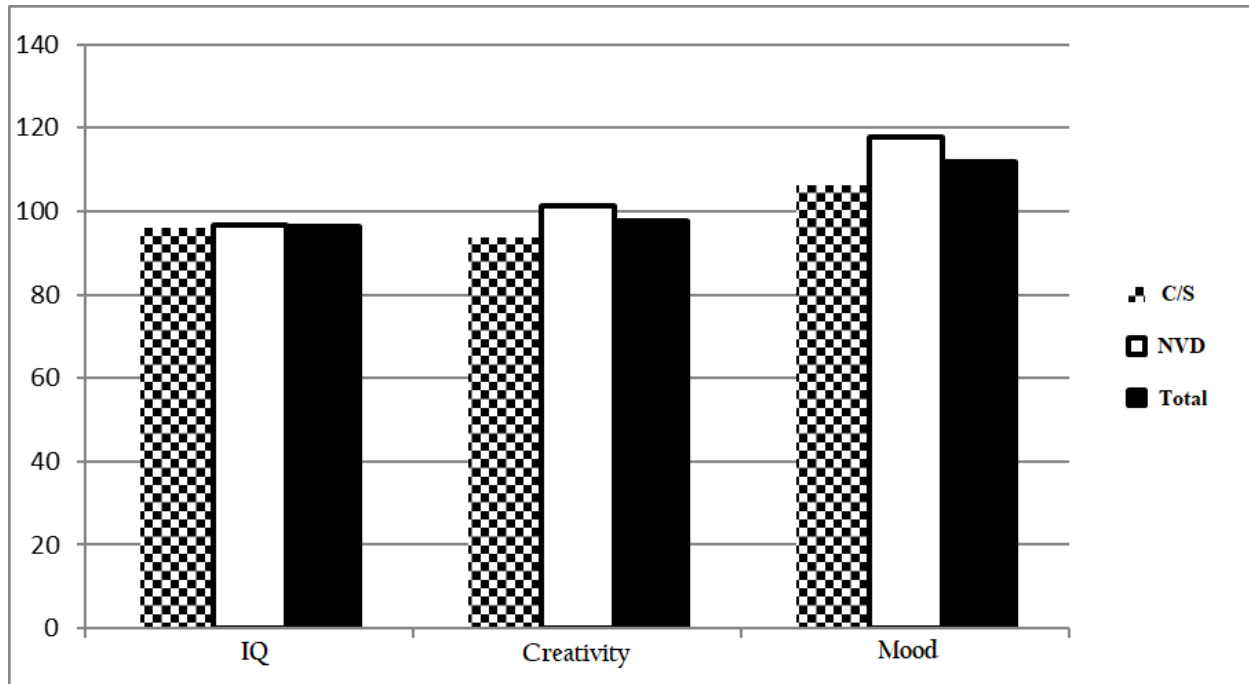


Figure 1. Show the distribution of mean IQ, creativity and mood between NVD and C/S

The reliability of questionnaire and also check the normality of the variables are presented in Table 4.

Table 4. The normality of variables and reliability assessment questionnaires related to these variables

Variable	The Cronbach's alpha	statistic Z Kolmogorov - Smirnov	values of K-S
IQ	0.79	0.69	0.200
Creativity	0.97	0.99	0.267
Mood	0.86	0.94	0.220

To investigate this hypothesis was used multivariate analysis of variance (MANOVA). To examine the hypothesis of equal variances for observance assumption variables used Levene's test that results is presented in Table 1.

Table 5. The results in the assumption Levin equality of variances variables in two groups

Variable	F	DF1	DF2	Sig
IQ	0.802	1	48	0.375
creativity	0.802	1	48	0.644
Mood	0.563	1	48	0.454

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Table 6. Results of multivariate analysis of variance in children born with C/S and NVD

Variable	Test	Value	F	hypothesis DF	error DF	Sig	Squared Eta
groups	Pillai's Trace	0.196	3.73	1	48	0.017	0.196
	Wilks' Lambda	0.804	3.73	1	48	0.017	0.196
	Hotelling's Trace	0.244	3.73	1	48	0.017	0.196
	Roy's Largest Root	0.244	3.73	1	48	0.017	0.196

As seen in Table 6, all tests indicate that significant levels between the groups in at least one of the dependent variables (IQ, creativity and mood).

Table 7. The influence IQ scores between creativity and mood in children born by C/S and NVD

Dependent variable	Source change	Sum of squares	DF	Mean Square	F	Significant	Squared Eta
Creativity	Group	752.72	1	752.72	5.96	0.018	0.111
	Error	6055.6	48	126.15			
IQ	Group	6.48	1	6.48	0.124	0.726	0.003
	Error	2505.04	48	52.18			
Mood	Group	1752.32	1	1752.32	6.167	0.017	0.114
	Error	13639.68	48	284.16			
Total	Creativity	482706	50				
	IQ	466774	50				
	Mood	642592	50				

CONCLUSION

The main purpose of this study is comparison IQ, creativity and mood of children 4 to 6 years old that borne by normal vaginal delivery and Caesarean section. Results showed that there is no significant difference between Intelligence quotient in children born normal vaginal delivery and caesarean section ($P > 0.05$). But There is significant difference between mood of children born normal vaginal delivery and caesarean section ($P < 0.05$) and there is significant difference between creativity of children born normal vaginal delivery and caesarean section ($P < 0.05$). This means that children born by normal vaginal delivery have more creativity and positive mood than children born to C-sections. This means that children born by caesarean section creativity and mood lower than normal children. And the most common cause of this problem and complications can be found in type of delivery for mothers and neonate.

Since intelligence is a multifactorial cause and many factors involved in the increase or decrease its, so do not be counted the only reason for increase or decrease of labor. Of course, these findings cannot be used a tool to promote cesarean section, because the results showed that the method of delivery has an impact on children's creativity and mood.

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