

Analytic-Comparative Study of Biological, Cognitive, Psychological, and Social Characteristics of Parents with more than One Exceptional Child and Parents with Normal Children in Urban and Rural Regions of Mazandaran Province

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ABSTRACT

This study aims for investigating the biological, cognitive, emotional and sociocultural characteristics of the parents with more than one disabled child and the parents of normal children in the urban and rural regions of Mazandaran province.

Purpose: The research purpose is to account for the relationships between the major variables in disability etiology with regard to the biological, cognitive, emotional, and Sociocultural characteristics of parents in order to take a step for the prevention of disability, the reduction of its consequences on disabled individuals, their families, and the society, the reduction of its incidence probability and recurrence in the family, and finally to enhance the mental health of the parents and family members.

Method: The research draws on a causal-comparative method. The statistical population consists of the parents with more than one disabled child (with mental, physical, and sensory-motor impairments) as well as the parents with more than one normal child in the urban and rural regions of Mazandaran province. The studied sample consists of 302 parents among which 151 parents have more than one disabled child and 151 parents have more than one normal child. The data collection instrument includes the biological, mental, social characteristics questionnaire of parents with exceptional children. The study consists of five three-variable questions. In order to analyze the data, the linear logarithm model with the method of hierarchical removal was used.

Findings: The findings indicate that there are significant relationships between the mental, physical, sensory-motor impairments of children and mother's age during pregnancy; mother's general health, drug consumption during pregnancy; mother's addiction, mother's level of knowledge about the factors of disability; mother's level of awareness about the methods for preventing exceptional children's birth; parents' manner of marriage; parents' marital status. Generally, this study shows that there is a relationship between the biological, cognitive, emotional, and social characteristics of parents and group membership.

Key words: Biological, cognitive, mental, social characteristics; Exceptional children

INTRODUCTION

Today, with the fast growing of world population, despite specific and general attempts to reduce the rate of exceptional children's birth, especially the groups bearing the disabled-specific limitation, we are still encountered with a great deal of such children, mental retarded, hearing impaired, visually impaired, maladapted, physical-motor disabled. Such children impose numerous psychological, social, and economic problems on their families and society from their birth through their growth and adulthood until their death. Further, such individuals inevitably force their families to live with them and bear their problems. Based on the estimation of the World Health Organization (WTO, 2004), the global frequency of exceptional children and teenagers is around 500 million individuals that, in the future, is growing with the increase in the olds' population in the world's age structure (Afrooz, 2005).

Halahan and Kafman (2003) believe that exceptional children are those who need special psychological-training services and enough support so that they can utilize their total human talent. They need to receive such services for they are different from most children in one or more traits. They may either be mental retarded, learning disabled, emotionally conflicted, physical disabled, speech and language disordered, hearing impaired, visually impaired, or gifted.

There is no doubt that the birth and living of a disabled child in every family can be like an unpleasant and

challenging incidence that causes tension, disillusionment, and frustration. There is a lot of evidence that indicate the parents of disabled children are more likely susceptible to social, economic, and emotional problems that are predominantly restricting, destructive, and pervasive (Hestings, 2002; Khamis, 2007). In the absence of attention to the society's culture, such a situation provides the requisites for the decrease in families' mental health and the increase in their challenges and problems (Shin et al, 2006). In this situation, all family members as well as family's function will be damaged (Hersing et al, 2006).

The presence of a disabled child therefore has different effects and consequences, which should be prevented by providing the etiology of disability and fundamental measures. Further, the ground for the enhancement of the society's mental health should be prepared through educational interventions and on time rehabilitation.

With respect to the family's importance and its full-scale effects on the growth and development of children as well as its impressionability from the possible damages to children, the understanding of the effective factors for the etiology of mental and social damages of disabled individuals' families is an important matter for the prevention and ultimately provision of support for these individuals and their families in our country. In this research therefore by considering the findings and results of many studies regarding disabled children's mothers and families, we intended to compare the biological, psychological, and social characteristics of the parents with more than one exceptional child in the urban and rural regions of Mazandaran province with the characteristics of normal children's parents to take a step towards preventing disability and reducing its further effects on the disabled, their families and the society as well.

RESEARCH METHOD

Population, Sample, and Sampling Method

The statistical population of the research consists of all of the parents with more than one exceptional child (mental retardation, physical-motor disability) and the parents with more than one normal child in the urban and rural regions of Mazandaran Province. The study sample includes 302 parents among which 151 parents had more than one exceptional child and 151 parents had more than one normal child. The study has five three-variable questions. In order to analyze the data, the linear logarithm model was used based on the hierarchical rejection method.

Research Instrument

In order to collect the necessary data for the study, the questionnaire of biological, cognitive, psychological, and social characteristics was utilized. The questionnaire's reliability was calculated 0.902 using Cronbach's alpha.

Findings

Question 1: Is there a relationship between parents' living place and mother's age during pregnancy on the one hand and group membership on the other hand?

In order to analyze the data, firstly the three-way contingency table with three variables - group membership (with two exceptional and normal levels), parents' living place (with two urban and rural levels), and mother's age during pregnancy (with four levels of less than 20 years, 20-30 years, 31-40 years, and more than 40 years) - was drawn. Then the data were analyzed using the linear logarithm model. The obtained results are provided in the following table.

Table 1: Summary of hierarchy rejection of analysis steps to reach the final model

Step	Model	d.f.	G ²	P	Rejected sentence	Δ d.f.	ΔG ²	ΔP
1	(GH) (GA) (LA)	3	5.771	0.123	GA	1	0.10	0.919
2	(LA) (GA)	4	5.781	0.216	LA	3	0.650	0.885
3	(GA) (L)	7	6.431	490	(GA)	3	35.094	0.000
					(L)	1	11.209	0.000

Note: G = group membership, A = mother's age during pregnancy, L = Parents' living place

The data in Table 1 indicate that the linear logarithm model could reach the best fitting in the third step and came up with a two-way interaction as well as a significant main effect. Therefore, the results show there is a correlation between the mother's age during pregnancy and group membership ($p = 0.000$, $G^2 = 35.094$). Moreover, the other main effect - parents' living place - was also significant ($P = 0.001$, $G^2 = 11.209$). As a result, we can conclude that the mother's age during pregnancy is a determining factor for the child's disability. Such an interaction is more intense in rural regions than cities. The results of frequencies' contingency and observed percentages related to the final model are provided in table 2.

Table 2: Contingency of frequencies and observed percentages for two-way interaction related to final model

Group membership	Mother's age during pregnancy			
	< 20	20 - 30	30 - 40	>40
Exceptional	28 (9.3%)	38 (12.6%)	49 (1.3%)	36 (11.9%)
Normal	13 (4.4%)	69 (22.8%)	55 (17.9%)	14 (4.7%)

The data in the above table show that about nine percent of disabled children's mothers were younger than 20 years old during pregnancy and about 12% of such mothers were older than 40 years old. On the other hand, such figures for normal children's mothers were 4.4 percent and 4.7 percent respectively. Accordingly, the age of less than 20 years and more than 40 years can be an important factor for the incidence of mental, physical, sensory, and motor impairments.

Question 2: Is there a relationship between mother's general health and drug consumption on the one hand and group membership on the other hand?

In order to analyze the data, firstly the three-way contingency table with three variables - group membership (with two exceptional and normal levels), general health (with two healthy and ill levels), and drug consumption during pregnancy (with two yes and no levels) - was drawn. Then the linear logarithm model was utilized to analyze the data.

Table 3: Summary of hierarchy rejection of analysis steps to reach the final model

Step	Model	d.f.	G ²	P	Rejected sentence	Δ d.f.	ΔG ²	ΔP
1	(GH) (GD) (DH)	1	0.124	0.725	(GD)	1	3.910	0.048
					(GH)	1	18.410	0.000
					(DH)	1	30.271	0.000

Note: G = group membership, A = Drug consumption during pregnancy, L = Mother's general health

The data in the above table suggest that the linear logarithm model reached the best processed model in the second step and came up with three significant two-way interactions. Based on these results, we can conclude that there is a significant correlation between mother's general health and group membership (P = 0.000, G² = 18.410). Further, there is a correlation between mother's general health and consumption of drugs during pregnancy, and drug consumption during pregnancy is significantly related to group membership (P = 0.048, G² = 3.910). As a result, we can conclude that mother's general health and consumption of drugs during pregnancy are the determining factors for the exceptionality (disability) of children.

Table 4: Contingency of frequencies and observed percentages for two-way interaction related to final model

Group membership	Mother's general health		Drug consumption during pregnancy	
	Healthy	Ill	Yes	No
Exceptional	16 (38.4%)	34 (11.6%)	61 (17%)	100 (33%)
Normal	142 (47%)	9 (3%)	23 (7.6%)	128 (44.4%)

The data in Table 4 indicate that about 12% of exceptional children's mothers were ill during their pregnancy; however, this amount for normal children's mothers was only 3%. Therefore, mother's illness during pregnancy can be an important factor in the birth of exceptional (disabled) children. In addition, the table's data regarding drug consumption indicate that 1% of the exceptional group's mothers consumed drugs during their pregnancy, yet such amount for normal children's mothers was only 8%. Such a difference is significant and we can suggest that drug consumption during pregnancy can be a factor for the birth of exceptional children.

Question 3: Is there a relationship between mother's addiction and knowledge of effective factors for exceptional children's birth on the one hand and group membership on the other hand?

In order to analyze the data, firstly the three-way contingency table with three variables - group membership (with two exceptional and normal levels), mother's addiction (with two yes and no levels), and knowledge of effective factors for exceptional children's birth (with three high, moderate, and low levels) - was drawn. The results of conducting the model are provided in the following tables.

Table 5: Summary of hierarchy rejection of analysis steps to reach the final model

Step	Model	d.f.	G ²	P	Rejected sentence	Δ d.f.	ΔG ²	ΔP
1	(GA)(GK)(AK)	2	2.568	0.277	(AK)	2	2.459	.0292
					(GA)	1	18.764	0.000
2	(GA)(GK)	4	5.027	0.285	(GK)	2	137.268	0.000

Note: G = group membership, A = Mother's addiction, K = Knowledge of effective factors for exceptional children's birth

The data in the above table indicate that the linear logarithm model reached the best fitting in the second step, and two two-way interactions were produced. Therefore, we can conclude that there is a relationship between mother's addiction and group membership ($P = 0.000$, $G^2 = 18.764$). In addition, there is a significant relationship between the amount of parents' knowledge of the effective factors for exceptional children's birth and group membership ($P = 0.000$, $G^2 = 137.268$). Therefore, according to the observed and anticipated frequencies, we can conclude that mother's addiction and mother's lack of knowledge are among the effective factors for the birth of exceptional (disabled) children.

Table 6: Contingency of frequencies and observed percentages for two-way interaction related to final model

Group membership	Mother's addiction		Parents' knowledge of effective factors for exceptional children's birth		
	Yes	No	High	Moderate	Low and uninformed
Exceptional	33 (11%)	118 (39.1%)	15 (5%)	16 (5.3%)	120 (39.8%)
Normal	8 (2.7%)	143 (47.3%)	99 (32.8%)	26 (8.6%)	26 (8.6%)

The data in Table 6 indicate that about 11% of exceptional children's mothers were addicted while such amount for normal children's mothers was 2.7%. Also, about 40% of exceptional children's mothers had a low level of or no knowledge of the effective factors for exceptional children's birth. We can conclude that lack of knowledge is one of the important factors for the birth of exceptional children.

Question 4: Is there a relationship between mother's education and mother's awareness of the methods for preventing exceptional children's birth on the one hand and group membership on the other hand?

In order to analyze the data, firstly the three-way contingency table with three variables - group membership (with two exceptional and normal levels), mother's education (with four illiterate, primary, high-school certificate, and undergraduate certificate), and mother awareness of the methods for preventing exceptional children's birth (with three high, moderate, and low levels) - was drawn. The results obtained from the conduction of the linear logarithm model are provided in the following tables.

Table 7: Summary of hierarchy rejection of analysis steps to reach the final model

Step	Model	d.f.	G ²	P	Rejected sentence	Δ d.f.	ΔG ²	ΔP
1	(GE)(GA)(EA)	6	3.679	0.720	(EA)	6	9.111	0.167
2	(GE)(GA)	12	12.790	0.385	(GE)	3	62.486	0.000
					(GA)	2	144.606	0.000

Note: G = group membership, E = Mother's education, A = Parents' awareness of methods for preventing exceptional children's birth

The data in the above table indicate that the linear logarithm model reached the best model in the second step by rejecting the interaction between mother's education and parent's awareness of the prevention methods and produced a significant two-way interaction. Based on such results, we can conclude that there is a correlation between mother's education and group membership ($P = 0.000$, $G^2 = 62.486$). Also, there is a significant relationship - correlation - between mother's awareness of the methods for preventing exceptional children's birth and group membership ($P = 0.000$, $G^2 = 144.606$).

Therefore, with regard to the observed and anticipated frequencies, we can suggest that mother's education and mother's awareness of methods for preventing exceptional children's birth are among the determining factors for exceptional (disabled) children birth.

Table 8: Contingency of frequencies and observed percentages for two-way interaction related to final model

Group membership	Mother's education				Mother's awareness of prevention methods		
	Illiterate	Primary	High school	Undergraduate	High	Moderate	Low and no awareness
Exceptional	57 (1.8%)	57 (19%)	32 (10.5%)	5 (1.7%)	13 (4.4%)	15 (5%)	123 (40.8%)
Normal	11 (3.7%)	54 (18%)	53 (17.5%)	33 (1.9%)	100 (33%)	22 (8%)	27 (7.9%)

The table shows that 19% of mother's with more than one exceptional child were illiterate and 19% of them had primary school education. Further, 40.8% of such mothers held a low level of knowledge or no knowledge regarding the methods for preventing exceptional children's birth. Accordingly, the results suggest that mother's level of education and her knowledge about the prevention methods are related to mental, physical, and sensory-motor impairments.

Question 5: is there a relationship between parents' manner of marriage and their marital status on the one hand and group membership on the other hand?

In order to analyze the data, firstly the three-way contingency table with three variables - group membership (with two exceptional and normal levels), parents' manner of marriage (with three personal desire, advice of elder relatives, and forced levels), and parents' marital status when the child was born (with four levels of normal, divorce, polygamy, separation) - was drawn. Then the data was analyzed using the linear

logarithm model and the following first-order results were obtained.

Table 9: Summary of hierarchy rejection of analysis steps to reach the final model

Step	Model	d.f.	G ²	P	Rejected sentence	Δ d.f.	ΔG ²	ΔP
1	(GM)(GS)(MS)	2	37.020	0.000	(MS)	6	10.986	0.089
2	(GM)(GS)	12	13.646	0.324	(GM)	2	45.019	0.000
	(GS)					3	16.502	0.001

Note: G = group membership, M = Manner of parents' marriage, S = Parents' marital status

The data in Table 9 indicate that the linear logarithm model could reach the best model in the second step by rejecting the interaction between parents' marital status and the manner of their marriage and produce a two-way interaction. Thus, the results suggest that there is a significant correlation between parents' manner of marriage and group membership (P = 0.000, G² = 45.019). Further, the interactive effect between parents' marital status and group membership was meaningful (P = 0.001, G² = 16.502). Therefore, we can claim that the unsuitable marital status and the forced marriage are the determining factors for exceptionality of their children.

Table 10: Summary of hierarchy rejection of analysis steps to reach the final model

Group membership	Manner of marriage			Marital status			
	Personal desire	Advice	Forced	Normal	Divorce	Polygamy	Separation
Exceptional	34 (11.3%)	78 (25.9%)	39 (12.9%)	105 (34.8%)	20 (6.6%)	13 (4.4%)	19 (5.3%)
Normal	80 (27.5%)	64 (21.2%)	7 (2.2%)	133 (44%)	8 (2.6%)	5 (1.6%)	5 (1.7%)

The data in Table 10 indicate that about 57% of exceptional children's mothers married based on the advice of elder relatives or force. This figure for normal children's mothers is 23.4%. Therefore, manner of marriage - elders' advice or forcefully - is a factor for the birth of exceptional children.

Conclusion

Regarding the first question, the findings suggest that there is a correlation between mother's age during pregnancy and group membership. In other words, the more the mother's age is at the level of higher than 40 years, the possibility of mental, physical, sensory-motor impairments rises. Such results are consistent with the studies of Goldman (2005), Richenberg (2006), Vijayalaxmi and Asa (2009), Veingsakhone (2010), Afroz (2005). The results indicate that the best age of pregnancy for mothers is 20-30. As mothers pass this range more, the risk of embryo's disability and death intensifies. As younger mothers are not physically and psychologically ready to accept the responsibilities of maternity, they often cause the conflict in children's growth. Further, because of insufficient development of the reproductive system and womb, the possible harsh deliveries increase the possibility of children's mental, sensory-motor, and psychological impairments. Pregnancy in elder ages also increases the risk of disability due to health problems such as blood pressure, diabetes, as well as the increase in the risk of genetic mutations.

Regarding the second question, the findings of our study suggest that there is a relationship between mother's general health as well as drug consumption during pregnancy and group membership. It means that mother's illness and consuming drugs during pregnancy increases the possibility of mental, physical, sensory-motor impairments in children.

These results are consistent with the studies of Durkin et al (2000), Afroz (2005), Mehr Mohammadi (2011) and show that the amount of suffering from different diseases in mothers with more than one exceptional child during pregnancy is more than mothers with normal children. Insufficient nutrition, consumption of sedatives, and various diseases during pregnancy such as Toxoplasmosis, Rubella, Syphilis, etc. and mother's emotional and psychological problems during pregnancy are among the reasons of unpleasant conditions' incidence of pregnancy period, which are effective on newborn children's growth.

The observed frequencies about drug consumption during pregnancy indicate that the variation of frequencies is significant. Thus, we can conclude that mother's consumption of drugs during pregnancy can be a significant factor for the birth of disabled children. Such results are consistent with the studies of Waters (2003), Bonheidi (2005), Nurgard (2005), and Mehr Mohammadi (2011). The results of these studies suggest that the mothers who gave birth to exceptional children consumed more chemical drugs than the mothers of normal children. The consumption of some fertility drugs such as Clomid also causes the birth of low-weight and premature infants, multiple birth, embryonic death, Anencephaly, and Down syndrome (Afroz, 2009).

Regarding the third question, our study's findings came to this result that there is a significant relationship between mother's addiction and group membership as well as between parents' knowledge of the effective factors for exceptional children's birth and group membership. In other words, mother's addiction and the level of knowledge about the effective factors can intensify the incidence of physical, mental and motor impairments.

These results are consistent with the studies of Beda et al (2002), Dreick et al (2005), Mahafi et al (2010),

Adegbay *et al* (2010), Merrill *et al* (2011), Afrooz (2005), Mehr Mohammadi (2011); they indicate that drug addiction roles as a damaging factor regarding general health, loss of hearing and vision, weakening of brain cells' performance as well as hurting the embryo. There is a relationship between drug addiction and physical, mental and motor impairments. The harmful substances derived from drug misuse make changes in mother's blood, and such changes are transferred to the embryo through placenta and negatively affect their nervous and cardiac systems and interrupt their growth.

The observed frequencies regarding the knowledge about the effective factors for exceptional children's birth show that about 40% of mothers with more than one exceptional child were insufficiently aware or even unaware of such factors.

The results of Bashir and Hanid (2000), Madadi (2001), Williams (2008), Matin *et al* (2008), Veingsakhone (2010), Jafari *et al* (2010), Lee and Lim (2010), and Afrooz (2005) suggest that there is an inverse relationship between the level of parents' knowledge of disability factors and the incidence of disability. In other words, the higher the level of parents' knowledge about such factors, the lower the possibility of disability incidence will be. Accordingly, the findings of our study are consistent with the aforementioned studies and indicate that parents' lack of knowledge about the effective factors for exceptional children's birth is a major factor for the birth of such children.

The insufficient knowledge of parents about these factors is among the important factors in the etiology of disabilities. Enhancing the awareness and skills of mothers before and during pregnancy results in the increase in their confidence and knowledge about pregnancy in short term, and the reduction of the effects leading to low-weight, disability and their consequences in long term.

Regarding the fourth question, our findings suggest that there is a significant correlation between mother's education and parents' level of awareness about the methods for preventing exceptional children's birth on the one hand and group membership on the other hand. In other words, the higher education background of mothers and the higher awareness of parents about the prevention methods reduce the incidence of physical, mental, and sensory-motor impairments.

The observed frequencies regarding parents' awareness of the prevention methods show that about 41% of mothers who gave birth to exceptional children had a low level of knowledge or even no knowledge about such methods. These results are consistent with the studies of Madadi (2001), Williams (2008), Matin *et al* (2008), Veingsakhone (2010), Jafari *et al* (2010), Lee and Lim (2010), and Afrooz *et al* (2005). They suggest point out that the awareness of exceptional children's parents about the methods for preventing the birth of such children is lower than the awareness of normal children's parents, especially the parents with kinship marriages or mothers who are at the risky ages of pregnancy.

Pre-pregnancy prevention, which is called preliminary prevention, is primary for the reduction of disability incidence cases; i.e. for the prevention from the factors considered before semen coagulation. In the preliminary prevention, the focus is mainly on the prevention from disease incidence, deficiencies and disabilities. There are three important approaches in the preliminary preventions: 1) Encouraging parents to avoid pregnancy after the birth of a disabled child, 2) Avoiding risky manners of pregnancy like pregnancy at higher ages, and 3) Understanding the factors of teratogen such as drugs, disease of pregnancy period, rays etc., which are effective through genetic advisories and enhancement of parents awareness about the prevention methods.

The observed frequencies regarding mother's education show that about 19% of mothers with more than one exceptional child were illiterate. The studies of Lim *et al* (2010), Veingsakhone *et al* (2011) indicated that the children of mothers who do not hold the necessary knowledge, exercise and observance during their pregnancy are exposed to the danger of mental and physical impairments.

Generally, the educated women take advantage from more appropriate age for marriage and pregnancy. This group of women considers the family planning issues, give birth to fewer children, and observe the pregnancy intervals more accurate. Insufficient education is related to the lack of knowledge about procreation and pregnancy observances. Lack of mothers' awareness about disability and its prevention is often due to their illiteracy and facilities deprivation.

Regarding the fifth question, the study's findings came up with the result that there is a significant relationship between the manner of marriage and parents' marital status on the one hand and group membership on the other hand. In other words, the marriages based on force of advice and parents' divorce or separation intensify the incidence of physical, mental, and sensory-motor impairments.

The observed frequencies regarding the manner of marriage indicate that about 39% of parents with more than one exceptional child just married because of force, intervention, or advice.

These results are consistent with the studies of Gleizvolga (2004), Narimani and Amani (2007), Gharekhani (2008), Mehr Mohammadi (2010) and point out that the parents who married without personal desire had a more vulnerable relationship during pregnancy.

The observed frequencies regarding the marital status of parents during pregnancy indicate that about 16% of the exceptional group's parents had an unsuitable marital status such as divorce, separation, and polygamy. However, this figure is about 6% for the parents of the normal group. Such a variation is statistically significant.

These results are consistent with the studies of Thomas (1996), Lowtone (1998), Nosrati (2006), Rezaee et al (2006), Hejazi (2009), and Mehr Mohammadi (2011) and point out that divorce, separation, or polygamy is higher in exceptional children's parents than normal children's. Therefore, we can suggest that there is a relationship between marriage satisfaction and physical, mental, sensory-motor impairments.

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