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Original article

# Factors Predicting Self-Efficacy And Health Literacy In Mothers Of Children With Autism

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**Abstract**

This is the first study to examine the factors predicting self- efficacy and health literacy in mothers of children with Autism Spectrum Disorder (ASD). This study aimed to identify the factors that predict parental self-efficacy and health literacy among mothers of children with ASD. This cross-sectional study aimed to identify the factors predicting health literacy (HL) and parental self-efficacy among mothers of children with Autism Spectrum Disorder (ASD). Data were collected from 229 mothers using a Child and Parent Descriptive Form, the Health Literacy Scale, and the Parental Competence Scale. Statistical analyses, including Mann-Whitney U, Kruskal-Wallis H tests, and multiple linear regression, were performed using SPSS version 25. The variables of the educational level of the mother, income level, mother's weight, smoking, chronic disease in the mother, quality of life, level of difficulty in accessing health, perception of health, degree of ASD, and health literacy significantly predicted parental competence. On the other hand, the variables of the mother's age, education level of the mother, family type, level of difficulty in access to health services, level of quality of life, perception of health, and parental self-efficacy significantly predicted health literacy. Parental competence was correlated with a 0.480-point increase in health literacy. There was a positive relationship between parental self-efficacy and health literacy. It is recommended that multidisciplinary interventions that strengthen parental self-efficacy and increase health literacy be implemented to protect and improve the health of children with ASD.

**Keywords:** ASD, Child, Health Literacy, Parental Competence, Parental Self-Sufficiency

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## INTRODUCTION

ASD is a pervasive neurodevelopmental disorder characterized by repetitive, stereotyped behaviors that result in restricted social relationships (Noyan Erbaş et al., 2021; Zeidan et al., 2022). This neurodevelopmental disorder involves difficulties in social interaction, emotional confusion, and deficits in initiating and maintaining verbal and nonverbal communication with others (Ilias et al., 2022). There are more than two million children diagnosed with ASD, representing 1% of the total population (Y. Chen et al., 2022). ASD can be diagnosed at 12-24 months when its characteristic symptoms can be distinguished from other developmental disorders (Zeidan et al., 2022). Children with ASD who are diagnosed in early childhood and who have cognitive limitations are dependent on their parents in terms of being able to benefit from social, educational, and health services and to make decisions. Therefore, parents are critical to the care, treatment, and rehabilitation of children with ASD (do Vale Costa e Silva et al., 2022; Lindly et al., 2022).

Parents of children with ASD face many challenges, including difficulties with the diagnostic process, finding appropriate treatment and education, and managing symptoms and behaviors. These parents may not have the opportunity to focus on their own self-care needs and daily activities (Mathew et al., 2019; Mohammadi et al., 2018). In addition, the heavy financial burden, discrimination, and social stigma increase parents' stress levels (Mohammadi et al., 2018). It has been reported that the stress experienced by families of children with ASD in many areas of life disrupts family functioning (Shalihin et al., 2023), and that parents of children with ASD experience more stress and family disharmony than parents of children with other developmental disorders (Kishimoto et al., 2023). Family dysfunction is associated with negative effects on the physical and mental health (Y. Chen et al., 2022; Shalihin et al., 2023) and quality of life (Feng et al., 2022; Mathew et al., 2019) of family members. However, there are also parents with low-stress levels who, despite many challenges, maintain an optimistic outlook, take advantage of educational opportunities and the support available, and adapt to their children's situations (Mohammadi et al., 2018). The ability to manage the care and education of a child with ASD is a result of having a sense of self-efficacy that enables such parents to obtain information from the appropriate sources (Arellano et al., 2019).

Bandura (1997) defined self-efficacy as "the belief that an individual has the skills and abilities necessary to perform a task". Parental self-efficacy is a basic dimension of efficacy and refers to the degree of self-confidence parents feel in solving problems related to their children (do Vale Costa e Silva et al., 2022). It is important to strengthen parental self-efficacy due to the complexity of parenting tasks for parents of children with ASD (Arellano et al., 2019). It has been found that parental self-efficacy influences many factors in parents of children with ASD (Mohammadi et al., 2019); as self-efficacy increases, parents' quality of life increases, they assume more responsibility for their children (Lee et al., 2018), they receive more social support (Feng et al., 2022), they are able to choose the appropriate type of education for their children, they have a higher degree of motivation to solve

problems, they contribute to the child's treatment (Y. Chen et al., 2022), and their children's success increases in both academic and psychosocial areas (Jones & Prinz, 2005). Parental self-efficacy is also important for children with ASD in terms of early recognition of symptoms and the child's ability to benefit from health services. Parents of children with ASD represent a critical subgroup of the population, as they are responsible for the health and well-being of their children (Buhr & Tannen, 2020). Parental self-efficacy is associated with health literacy (HL), which can be defined as the motivation and competence to access, understand, evaluate, and apply information to protect and improve health (Liu et al., 2020; Pawellek et al., 2023). Parental HL is influenced by social and cultural factors and affects overall health (Zaidman et al., 2023). In Türkiye, 42.2% of adults are reported to have inadequate and problematic HL (Kerkez & Şahin, 2023). Limited parental HL may lead to poor child health outcomes, such as decreased medication compliance in children with ASD, increased hospitalizations, and missed school days (Lindly et al., 2022). A number of studies have predicted the relationship between parental self-efficacy and HL (Lee et al., 2018), but they have not been conducted with parents of children with ASD. Parents of children with ASD are at risk for low self-efficacy due to autism-specific symptoms, impaired family functioning, and the increased responsibilities they face (Noyan Erbaş et al., 2021). Given that children with ASD have increased healthcare needs and are at risk for poor health outcomes (Buhr & Tannen, 2020), it is crucial to assess parental self-efficacy and HL.

Traditionally, mothers are the primary caregivers of children with ASD (Mathew et al., 2019). Therefore, this study was conducted to determine the factors that predict parental self-efficacy and HL among mothers of children with ASD. It was thought that the results of the study could guide the development of strategic interventions targeting parents at the international level to protect and improve the health of children with ASD.

**Study Questions**

- What are the parent self-efficacy and HL scale scores of mothers of children with ASD?
- Is there a statistically significant difference between the sociodemographic characteristics of mothers of children with ASD and parental self-efficacy and HL?
- Are the sociodemographic characteristics and HL of mothers with children with ASD predictors of parental self-efficacy?
- Are the sociodemographic characteristics and parental self-efficacy of mothers with children with ASD predictors of HL?

## MATERIAL AND METHODS

### Population and Sample of the Study

The study was conducted with a cross-sectional design to determine the factors predicting parental self-efficacy and HL in mothers of children with ASD. The population of the study was the mothers of 300 children with ASD who were studying in special education and rehabilitation centers in a provincial center in the Black Sea region of Türkiye in the 2022-2023 academic year. No sampling was used in the study. The sample consisted of 229 mothers who agreed to participate in the study and met the inclusion criteria.

### Inclusion and Exclusion Criteria of the Study

Parents who had children between the ages of eighteen years and under with ASD, who could speak and understand Turkish, who did not have communication problems, and who volunteered to participate in the study were included in the study. Parents who did not have a child diagnosed with ASD, who were between the ages of eighteen years and under who had communication problems, and who did not agree to participate in the study were excluded from the study.

### Data Collection Tools

Child and Parent Identification Form: This was developed by researchers after reviewing the relevant literature (Buhr & Tannen, 2020; Y. Chen et al., 2022; Lindly et al., 2022). It consisted of 29 questions about the sociodemographic characteristics of the family, the diagnosis of autism, and the treatment process.

Health Literacy Scale (HLS): The Health Literacy Scale was developed by Toçi et al. (2013), and its Turkish validity and reliability study was conducted by Aras et al. (Aras & Bayık Temel, 2017). The 25-item scale consists of four subscales, including access, comprehension, evaluation, and application. Scores ranging from 25-125 can be obtained from the scale. As the score obtained from the scale increases, the individual's HL level increases. The original Cronbach's alpha value of the scale was .92. In this study, the Cronbach's alpha value of the scale was determined to be 0.95.

Parental Competence Scale: The Turkish validity and reliability of this scale, which was developed by Mohammadi (2020) to determine the level of parental efficacy in parents of children with ASD (Mohammadi et al., 2020), was conducted by Vural et al. (2021). The PCS consists of 14 items on a five-point Likert scale. The PCS has two subscales and yields scores ranging from 25 to 100; parental competence increases as the score rises. The original Cronbach’s alpha value of the scale was .95. In this study, the Cronbach's alpha value of the scale was 0.88.

### Data Collection

Mothers who were accompanying their children in the special education and rehabilitation centers were informed about the study and invited to participate. Those who volunteered to take part, who met the inclusion criteria and who signed the informed parental consent form, were given the data collection tools and asked to complete them.

### Data Analysis

Data were analyzed using the SPSS 25.0 package program. The Shapiro-Wilk W-test, histogram, and Q-Q graph were used for normality tests. Frequencies and percentages were calculated for categorical variables, and mean and standard deviations were calculated for normally distributed characteristics. Because the data were not normally distributed, the Mann-Whitney U-test and the Kruskal-Wallis H-test were used as nonparametric tests. The predictive level of parental self-efficacy and health literacy was analyzed by linear regression analysis. The results were evaluated with a 95% confidence interval and a significance level of $p<0.05$.

### Ethical Considerations

Before starting the study, ethics committee approval was obtained from the Social and Human Sciences Research Ethics Committee (dated 07.11.2022 and numbered 226338), and institutional permission was received from the schools where the study was conducted. Permission to use the scales was obtained from their authors. In addition, written and verbal consent was obtained from the parents participating in the study.

## RESULTS

According to the results of the study, 38.4% of the mothers had a primary-school education, and 71.2% were unemployed, while 29.3% of the fathers had a high-school education, and 88.2% were employed. It was found that 54.6% of the parents' income was equal to their expenses, 79.5% had a nuclear family, 68.6% had two-three children, 44.5% had a child diagnosed with autism between the ages of seven and twelve, 66.8% had a child diagnosed with ASD between the ages of zero and three, 48% had mild ASD, 64.2% were in special education between the ages of one and five, and the relationships of 63.8% of them with other children were affected after being diagnosed with ASD. It was found that 34.1% of the parents smoked cigarettes, 10% consumed alcohol, 51.1% perceived their health as "good", 46.3% had "moderate" access to health services, 48% rated their quality of life as "moderate", 75.5% had no chronic diseases, 54.1% did not take any medication, 36.7% had only visited the emergency room between zero and three times in their lifetimes, and 45% had never been hospitalized (Table 1).

Among the parents who participated in the study, those whose children were between the ages of four and six (p=0.007), who were non-smokers (p=0.037) (Table 2), and who evaluated their quality of life as "poor" (p=0.003) (Table 3) had higher median total scores on the parental self-efficacy scale.

It was found that mothers with a primary-school education (p=0.002), those who defined their health (p<0.001) and quality of life (p=0.002) as "poor", those who rated their access to health services as "difficult" (p<0.001) (Table 2) and those who had a large family (p=0.042) (Table 3) had higher median scores in the "access subscale" of the HLS.

It was found that mothers with a high-school level of education (p=0.016), those who rated their access to health services as "difficult" (p=0.008) (Table 2), and those who had a large family (p=0.033) (Table 3) had higher mean total scores on the "understanding subscale" of the HLS.

It was observed that those who defined their quality of life as "poor" (p=0.008), those who evaluated their access to health services as "easy" (p=0.014), those who had a large family (p=0.028), and those whose relationship with their other children was affected after the diagnosis of ASD (p=0.021) had higher median scores in the "evaluation subscale" of the HLS.

It was found that those who defined their health as "poor" (p=0.028), those who rated their access to health services as "difficult" (p<0.001), those who defined their quality of life as "poor" (p=0.002) (Table 2), those who had a large family (p=0.025), and those whose relationship with other children was affected after the diagnosis of ASD (p=0.029) had higher median total scores on the "implementation subscale" of the HLS.

It was observed that the median HLS total score was higher in parents who had a high-school level of educational (p=0.028), who defined their health (p=0.004) and quality of life (p=0.002) as "poor", who rated their access to health services as "difficult" (p<0.001) (Table 2), who had a large family (p=0.012), and whose relationship with their other children was affected after the diagnosis of ASD (p=0.022).

The “Model 1” created from the results of the multiple linear regression with the variables of educational level of mother, income level, mother's weight, smoking consumption, chronic disease in the mother, level of quality of life, level of difficulty in accessing health, perception of health, degree of ASD, and HLS significantly predicted and explained 22% of the Parental Self-Efficacy (F=3.549, p<0.001) (Table 4). As for the direction of the regression effects, income less than expenses, mother's weight, mother's smoking, and mother's chronic disease negative β weights and, thus, were negatively related to parental self-efficacy (Table 4). A single unit increase in the income less than expenses, mother's weight, mother's smoking, and mother's chronic disease is associated with a decrease of 3.099, 0.051, 1.191, and 2.622 points in the parental self-efficacy score, respectively (Table 4). As for the direction of the regression effects, defining the quality of life as "moderate", having great difficulty in accessing health services, and HLS positive β weights and, thus, were positively related to parental self-

efficacy (Table 4). A single unit increase in the defining the quality of life as "moderate", having great difficulty in accessing health services, and HLS is associated with a increase of 2.526, 3.138, and 0.089 points in the Parental Self-Efficacy Score, respectively (Table 4).

The “Model 2” created from the results of the multiple linear regression with the variables of mother's age, education level of mother, family type, level of difficulty in access to health services, level of quality of life, perception of health, and parental self-efficacy significantly predicted and explained 21% of the HLS ($F=4.458$, $p<0.001$) (Table 5). As for the direction of the regression effects, perception of health status as “poor” and parental self-efficacy positive β weights and, thus, were positively related to HLS (Table 5). A single unit increase in the perception of health status as “poor” was correlated with a 10.794 point increase in the HLS. On the other hand, parental self-efficacy was correlated with a 0.480 point increase in HLS (Table 5).

## DISCUSSION

This study showed that parental self-efficacy and health literacy in mothers of children with Autism Spectrum Disorder are significantly influenced by sociodemographic characteristics, health status, quality of life, and access to health services. Economic difficulties, smoking, chronic disease, and higher body weight negatively affected parental self-efficacy, while better health literacy and perceived quality of life contributed positively. Health literacy was also associated with maternal education, family structure, perceived health, access to health services, and parental self-efficacy. The positive relationship between parental self-efficacy and health literacy highlights the importance of integrated, family-centered interventions aimed at improving both competencies. Strengthening health literacy through accessible and supportive health services may enhance parental self-efficacy and contribute to better outcomes for children with ASD.

Parents of children with ASD face many challenges in life. These difficulties are often caused by the child's symptoms and challenging behaviors. Parents experience intense stress in the face of these challenges, are unable to meet their individual needs and, as a result, family dynamics are negatively affected (García-López et al., 2016). Parents with high parental self-efficacy are more patient with their children's challenging behaviors, more successful at problem-solving, more sensitive to their children's health needs, and more likely to have a positive outlook on life. However, this information is based on studies of parents with healthy children (Arellano et al., 2019; Lee et al., 2018; Noyan Erbaş et al., 2021). This study is the first to identify factors that predict parental self-efficacy and HL among mothers of children with ASD.

The educational level of parents is a crucial factor affecting critical thinking and problem-solving skills. If parents are well educated, able to analyze the situation, take responsibility for their children and communicate effectively, then this may affect their HL (Kıraç & Öztürk, 2020). In this study, it was found that mothers with higher educational levels had higher HLS scores (Table 2). This finding is

consistent with the results of studies showing a positive correlation between HL and mothers' educational level (Lastrucci et al., 2019; Pawellek et al., 2023; Stormacq et al., 2019). Although there is a strong, positive correlation between HL and educational level in the literature, it has been emphasized that there are individuals with limited HL at every educational level, and that HL cannot be fully understood only by questioning the educational level (Stormacq et al., 2019). In support of this interpretation, it was found in the present study that mothers with a primary-school education level had higher HLS "access sub-dimension" scores (Table 2). There are both similar (Lee et al., 2018) and contradictory (Lastrucci et al., 2019; Lee et al., 2018) results to this finding in the literature. This difference may be because the studies were not conducted with mothers with children with ASD or because different educational opportunities outside of school had led to differences in knowledge and skill acquisition.

Low socioeconomic levels mean that parents need to make more efforts to meet the daily needs of their family. Being in such a situation provides fewer opportunities for parents to improve their parenting skills (Mathew et al., 2019). For parents of children with ASD, the relationship between socioeconomic conditions and parenting skills may be more complex. In this study, a one-unit decrease in income was associated with a threefold decrease in parental self-efficacy (Table 4). It is important to note that socioeconomic status may be associated with ASD symptoms and functioning in children with ASD. In fact, poverty has been reported to increase behavioral problems and intellectual disability associated with ASD in these children (Lastrucci et al., 2019; Mathew et al., 2019). This can be interpreted as a result of poverty delaying the point at which children are diagnosed with ASD and increasing the behavioral problems they manifest. Children's challenging behaviors make it difficult to parent effectively and reduce parental self-efficacy (Jones & Prinz, 2005). Self-efficacy, which is a fundamental dimension of competence, is defined as the parents' confidence in their ability to raise their children and manage their children's care and education (Jones & Prinz, 2005). Difficult economic conditions may limit the parents' development of effective parenting skills. However, parental self-efficacy among parents of children with ASD is complex and not well described in the literature.

Interestingly, although the literature suggests that socioeconomic factors and access to health services are the most important predictors of HL (Lee et al., 2018; Stormacq et al., 2019; Zaidman et al., 2023) , mothers who found it “difficult” to access health services were found to have higher HLS subscale and total scores in this study (Table 2). In a study of caregivers of children with special needs, HL was reported to be associated with parental concern about the child's condition and perception of the child's health as good or poor (Keim-Malpass et al., 2015). HL may have increased as a result of mothers' efforts to meet the health needs of the child with ASD and to reduce any negative experiences. In addition, it should be considered that although physical access to health services may be difficult, access to information is now easier with technological developments. A study conducted with parents of children with ASD reported that parents with an optimistic perspective made intensive efforts to obtain

the educational and health services that their children needed (Joosten & Safe, 2014). In support of this, in the present study, difficult access to health services was associated with an increase in parental self-efficacy (Table 4). The limited number of studies on this topic limits our comparison of the relationship with the results of the present study.

Social support is the provision of physical, emotional, and informational support that meet an individual's needs and are considered part of their social network. It has been reported to be an important factor in health outcomes in families with children with ASD (Feng et al., 2022). In the present study, it was found that those with an extended family type had higher HLS sub-dimension and total scores (Table 2). Living with a grandmother is a protective factor in the transfer of knowledge and experience as well as in supporting the care of the child (Feng et al., 2022) and also increases family quality of life and maternal competence (Mohammadi et al., 2020). There is a positive correlation between parental social support and HLS (Lee et al., 2018). Receiving social support seems to be important to reduce the caregiving burden of these families, increase their well-being, and ensure parental self-efficacy.

A person's positive beliefs about their ability to control a chronic condition or negative life events determine their perception of individual health and quality of life. Quality of life is a multidimensional concept that includes an individual's living conditions, cultural norms, and physical, mental, and social well-being (Sawyer et al., 2019). Conditions such as stress and insomnia can negatively affect an individual's perception of individual health and quality of life, even temporarily (Lawrence et al., 2021). This study found that mothers who perceived their health and quality of life to be "poor" had higher HLS subscale and total scores. A one unit increase in the perception of "poor" health was associated with a ten-fold increase in the HLS score (Table 5). The results of the study are consistent with the literature (Halatçı et al., 2020), which reported that mothers who perceived their health to be "poor" had higher HLS scores. However, it is common knowledge in the literature that parents with high HL also tend to have better subjective health and quality of life (Buhr & Tannen, 2020; Mathew et al., 2019; Pawellek et al., 2023). This may have resulted from the variables related to different parenting skills influencing the relationship between perceived health and quality of life of the mothers in the present study and HL. In the present study, mothers who rated their quality of life as "poor" had higher parenting self-efficacy scores (Table 2). This surprising result suggests that having a child with special needs may be associated with increased parental self-efficacy due to the need for parents to improve themselves while caring for their child. High levels of stress in mothers of children with ASD may lead them to develop negative perceptions of health and quality of life. However, due to the nature of ASD, both the child's challenging behaviors and their increased health needs may have contributed to the need for mothers to develop their own HL and self-efficacy. In the present study, the HLS sub-dimension and total scores were found to be higher for mothers whose relationships with other children were affected after the diagnosis of ASD (Table 2). This was predicted as a result of the mothers trying to cope with the consequences of ASD to maintain family functioning. In addition, the mandatory use of health

services to meet the health needs of a child with ASD may have increased mothers' parenting skills and health awareness.

The presence of chronic stress in mothers of children with special needs has been associated with cardiovascular disease, diabetes, and several types of cancer (Cohn et al., 2020). In addition, it has been reported that mothers of children with ASD are constantly striving to maintain family routines, which negatively affects maternal health (McAuliffe et al., 2019). Parents with chronic illnesses may be less able to adapt to family routines and be less supportive of their children (C. Y. C. Chen & Panebianco, 2020). In this study, there was a negative relationship between maternal chronic illness and parental self-efficacy (Table 4). The physical, social, and psychological effects of chronic illness on parents (C. Y. C. Chen & Panebianco, 2020) may limit mothers' development of parenting skills. Mothers of children with ASD and chronic illness may need more social support to meet their children's needs.

Parents are responsible not only for their health but also for the health and well-being of their children. Children with ASD are not able to seek solutions to their own health needs and to benefit from health services. Therefore, parental HL is critical in protecting and promoting the health of children with ASD (Buhr & Tannen, 2020). Although the relationship between HL and child health outcomes is clear in the literature (Lastrucci et al., 2019; Lindly et al., 2022; Liu et al., 2020), the mechanisms linking the two are not yet known (Lee et al., 2018). One study suggested that self-awareness is an important component of HL, affecting the ability to consciously evaluate health and take responsibility for improving it (Liu et al., 2020). In the present study, an increase in parental self-efficacy was associated with an increase in HL (Table 4-5). It has been reported that HL affects self-efficacy, that self-efficacy affects health outcomes (Osborn et al., 2011), that parental self-efficacy mediates the relationship between HL and child health outcomes, and that there is a strong relationship between HL and parental self-efficacy (Lee et al., 2018). These results support the findings of the present study. However, these studies were not conducted with parents of children with autism. Most research on HL and self-efficacy has been conducted primarily with adult populations or general pediatric populations, and a significant portion has been conducted with children with asthma (Lindly et al., 2022). Therefore, future studies conducted with parents of children with special needs will contribute to a better association of the variables involved.

**Limitations of the Study**

The strength of the study is that it is the first study to predict the relationship between parental self-efficacy and HL in mothers with children with ASD. The study has some limitations regarding the interpretation of the findings and inferences. First, the study data were collected from a single center. In addition, the study was conducted with one of the parents, rather than both. Therefore, the findings of the study may not be generalizable to other populations and regions. The study was cross-sectional.

Therefore, longitudinal studies are needed in order to make causal inferences. The limited literature limited the ability to compare the results of the present study to others.

**Conclusion and Recommendations**

As a result of this study, which was conducted to determine the factors predicting the parental self-efficacy and HL of mothers with children with ASD, the child's age, mother's smoking, and poor quality of life were related to parental self-efficacy, while the mother's level of education, poor health and quality of life, difficulty in accessing health services, extended family structure and autism affecting other relationships were related to HL. A low economic level, weight, smoking, chronic diseases, and HL were predictors of parental self-efficacy. Poor maternal health and parental self-efficacy were predictors of HL. The fact that this is the first study to examine the relationship between these two concepts will pave a way for future studies on this topic. It is recommended that multidisciplinary interventions that strengthen parental self-efficacy and increase HL be implemented to protect and improve the health of children with autism. Further cross-sectional and longitudinal studies are recommended in order to plan the interventions necessary for this.

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**Table 1.** Sociodemographic Characteristics

| **Feature** | | **n** | **%** |
|---|---|---|---|
| Mother's educational status | Primary school | 88 | 38.4 |
| | Middle school | 43 | 18.8 |
| | High school | 54 | 23.6 |
| | University | 44 | 19.2 |
| Father's educational status | Primary school | 60 | 26.2 |
| | Middle school | 37 | 16.2 |
| | High school | 67 | 29.3 |
| | University | 65 | 28.4 |
| Mother's employment status | Unemployed | 163 | 71.2 |
| | Working | 66 | 28.8 |
| Father's employment status | Unemployed | 27 | 11.8 |
| | Working | 202 | 88.2 |
| Income status | Income is less than expenses | 81 | 35.4 |
| | Income equals expenses | 125 | 54.6 |
| | Income exceeds expenses | 23 | 10.0 |
| Family structure | Nuclear family | 182 | 79.5 |
| | Extended family | 39 | 17.0 |
| | Broken family | 8 | 3.5 |
| Number of children | One | 51 | 22.3 |
| | 2-3 | 157 | 68.6 |
| | More than 3 | 21 | 9.2 |
| Child's age | 0-3 | 17 | 7.4 |
| | 4-6 | 67 | 29.3 |
| | 7-12 | 102 | 44.5 |
| | 13-18 | 43 | 18.8 |
| Time to get a diagnosis | 0-3 | 153 | 66.8 |
| | 4-6 | 71 | 31.0 |
| | 7-12 | 5 | 2.2 |
| Degree of autism | Mild | 110 | 48.0 |
| | Middle | 77 | 33.6 |
| | Heavy | 42 | 18.3 |
| Duration of child's special education | 1-5 years | 147 | 64.2 |
| | 6-10 years | 67 | 29.3 |
| | 11-15 years | 15 | 6.65 |
| Impact on relationships with other children after diagnosis | Yes | 83 | 36.2 |
| | No | 146 | 63.8 |
| Parental smoking | Yes | 78 | 34.1 |
| | No | 151 | 65.9 |
| Parental alcohol use | Yes | 23 | 10.0 |
| | No | 206 | 90.0 |
| Perceived health | Good | 117 | 51.1 |
| | Middle | 97 | 42.4 |
| | Bad | 15 | 6.6 |
| Access to health services | Difficult | 26 | 11.4 |
| | Middle | 106 | 46.3 |
| | Easy | 97 | 42.4 |
| Rated quality of life | Good | 95 | 41.5 |
| | Middle | 110 | 48.0 |

| | | | |
|---|---|---|---|
| | Bad | 24 | 10.5 |
| Parent's chronic illness | Yes | 56 | 24.5 |
| | No | 173 | 75.5 |
| Parental medical drug use | Yes | 105 | 45.9 |
| | No | 124 | 54.1 |
| Number of visits to the emergency department | None | 54 | 23.6 |
| | 1-3 times | 84 | 36.7 |
| | 4-5 times | 30 | 13.1 |
| | 6 and above | 61 | 26.6 |
| Number of hospitalizations | None | 103 | 45.0 |
| | 1 -3 times | one hundred | 43.7 |
| | 4-5 times | 19 | 8.3 |
| | 6 and above | 7 | 3.1 |
| | X± sd | Min-Max | |
| Parental Competence Total Score | 21.63 ± 6.85 | 14-46 | |
| Health Literacy Total Score | 40.20 ± 17.57 | 25-110 | |
| Access subscale | 8.25 ± 3.98 | 5-23 | |
| Understanding subscale | 11.65 ± 6.14 | 7-34 | |
| Evaluation subscale | 12.50 ± 5.93 | 8-37 | |
| Implementation subscale | 7.78 ± 3.47 | 5-23 | |

**Table 2.** Comparison of Scale Scores According to Demographic Characteristics

| | PCS* | HLS* | | | | |
|---|---|---|---|---|---|---|
| | | Access | Understanding | Evaluation | Implementation | Total |
| Child's age | | | | | | |
| 0-3 | 17 (14 - 31) | 6 (5 - 16) | 8 (7 - 26) | 9 (8 - 26) | 6 (5 - 15) | 36 (25 - 71) |
| 4-6 | 22 (14 - 46) | 7 (5 - 23) | 9 (7 - 34) | 11 (8 - 36) | 6 (5 - 23) | 33 (25 - 110) |
| 7-12 | 20 (14 - 43) | 7 (5 - 21) | 9 (7 - 31) | 10 (8 - 37) | 6 (5 - 17) | 33 (25 - 102) |
| 13-18 | 18 (14 - 45) | 6 (5 - 19) | 9 (7 - 31) | 10 (8 - 30) | 7 (5 - 17) | 34 (25 - 91) |
| Test Statistics | KW=12.036 p=0.007 | KW=0.699 P=0.873 | KW=2.013 p=0.570 | KW=0.311 p=0.958 | KW=0.145 p=0.986 | KW=0.350 p=0.950 |
| Mother's education level | | | | | | |
| Primary school | 20 (14 - 45) | 8 (5 - 23) | 9.5 (7 - 34) | 11 (8 - 36) | 7 (5 - 23) | 35.5 (25 - 110) |
| Middle school | 20 (14 - 46) | 7 (5 - 16) | 9 (7 - 29) | 10 (8 - 26) | 6 (5 - 16) | 34 (25 - 84) |
| High school | 21.5 (14 - 43) | 7 (5 - 17) | 10 (7 - 30) | 11 (8 - 30) | 7 (5 - 18) | 36 (25 - 90) |
| University | 21 (14 - 43) | 5 (5 - 19) | 7.5 (7 - 31) | 9 (8 - 37) | 6 (5 - 15) | 30 (25 - 102) |
| Test Statistics | KW=1.763 p=0.623 | KW=15.027 p=0.002 | KW=10.274 p=0.016 | KW=7.707 p=0.052 | KW=5.880 p=0.118 | KW=9.071 p=0.028 |
| Mother's employment status | | | | | | |
| working | 19.5 (14 - 43) | 6 (5 - 19) | 9 (7 - 31) | 9 (8 - 37) | 7 (5 - 17) | 33.5 (25 - 102) |
| Not working | 21 (14 - 46) | 7 (5 - 23) | 9 (7 - 34) | 11 (8 - 36) | 6 (5 - 23) | 34 (25 - 110) |
| Test Statistics | Z=5.502 p=0.785 | Z=6.089 p=0.105 | Z=5.584 p=0.645 | Z=6.189 p=0.068 | Z=5.156 p=0.614 | Z=5.854 p=0.294 |
| Smoking | | | | | | |
| Yes | 19 (14 - 42) | 7 (5 - 19) | 10 (7 - 30) | 9.5 (8 - 31) | 7 (5 - 23) | 34 (25 - 101) |
| No | 21 (14 - 46) | 7 (5 - 23) | 9 (7 - 34) | 11 (8 - 37) | 6 (5 - 18) | 33 (25 - 110) |
| Test Statistics | Z=6.879 p=0.037 | Z=5.873 p=0.973 | Z=5.788 p=0.829 | Z=6.398 p=0.273 | Z=5.409 p=0.299 | Z=5.719 p=0.720 |
| Alcohol use | | | | | | |
| Yes | 23 (14 - 40) | 6 (5 - 23) | 9 (7 - 34) | 11 (8 - 36) | 7 (5 - 17) | 36 (26 - 110) |
| No | 20 (14 - 46) | 7 (5 - 21) | 9 (7 - 31) | 10 (8 - 37) | 6 (5 - 23) | 34 (25 - 102) |
| Test Statistics | Z=2.166 p=0.500 | Z=2.390 p=0.941 | Z=2.223 p=0.621 | Z=1.916 p=0.125 | Z=1.891 p=0.103 | Z=2.056 p=0.299 |
| Perceived health | | | | | | |
| Good | 20 (14 - 35) | 6 (5 - 17) | 9 (7 - 30) | 10 (8 - 30) | 6 (5 - 17) | 32 (25 - 90) |
| Middle | 20 (14 - 46) | 9 (5 - 23) | 9 (7 - 34) | 11 (8 - 37) | 7 (5 - 17) | 36 (25 - 110) |
| Bad | 24 (15 - 42) | 12 (5 - 21) | 14 (7 - 30) | 14 (8 - 31) | 9 (5 - 23) | 46 (25 - 101) |
| Test Statistics | KW=3.364 p=0.186 | KW=22.521 p=0.000 | KW=5.257 p=0.072 | KW=5.424 p=0.066 | | KW=10.811 p=0.004 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Access to health services | | | | | KW=7.181 p=0.028 | |
| Hard[a] | 24.5 (14 - 46) | 9 (5 - 19) | 11 (7 - 28) | 11 (8 - 31) | 11 (5 - 18) | 41.5 (25 - 91) |
| Medium [b] | 20 (14 - 43) | 8 (5 - 21) | 10 (7 - 31) | 11 (8 - 37) | 6 (5 - 23) | 35 (25 - 102) |
| Easy [c] | 20 (14 - 40) | 5 (5 - 23) | 8 (7 - 34) | 9 (8 - 36) | 6 (5 - 17) | 32 (25 - 110) |
| Test Statistics | KW=5.659 p=0.059 | KW=20.111 p=0.000 | KW=9.613 p=0.008 | KW=8.542 p=0.014 c>b, c>a | KW=24.005 p=0.000 | KW=17.437 p=0.000 |
| Rated quality of life | | | | | | |
| Good | 18 (14 - 45) | 5 (5 - 23) | 8 (7 - 34) | 9 (8 - 36) | 6 (5 - 17) | 32 (25 - 110) |
| Middle | 20.5 (14 - 46) | 7 (5 - 21) | 9.5 (7 - 31) | 11 (8 - 37) | 6 (5 - 18) | 35 (25 - 102) |
| Bad | 25.5 (15 - 38) | 9.5 (5 - 21) | 13 (7 - 30) | 13.5 (8 - 31) | 9 (5 - 23) | 47 (25 - 101) |
| Test Statistics | KW=11.713 p=0.003 | KW=12.688 p=0.002 | KW=3.353 p=0.187 | KW=9.687 p=0.008 | KW=12.604 p=0.002 | KW=12.891 p=0.002 |
| Chronic disease | | | | | | |
| There is | 22 (14 - 45) | 7 (5 - 19) | 9 (7 - 30) | 9.5 (8 - 30) | 7 (5 - 23) | 35 (25 - 101) |
| None | 20 (14 - 46) | 7 (5 - 23) | 9 (7 - 34) | 10 (8 - 37) | 6 (5 - 18) | 33 (25 - 110) |
| Test Statistics | Z=4.127 p=0.095 | Z=4.633 p=0.613 | Z=4.834 p=0.981 | Z=4.659 p=0.662 | Z=4.417 p=0.309 | Z=4.599 p=0.570 |
| Continuous drug use | | | | | | |
| There is | 21 (14 - 46) | 7 (5 - 19) | 8 (7 - 30) | 9 (8 - 30) | 7 (5 - 23) | 33 (25 - 101) |
| None | 20 (14 - 43) | 7 (5 - 23) | 9.5 (7 - 34) | 11 (8 - 37) | 6 (5 - 17) | 34.5 (25 - 110) |
| Test Statistics | Z=5.744 p=0.124 | Z=6.856 p=0.473 | Z=7.004 p=0.312 | Z=6.840 p=0.499 | Z=5.933 p=0.235 | Z=6.874 p=0.465 |

Z: Mann -Whitney U test, KW = Kruskal Wallis H test , p≤0.05, * Med ( Min-Max )

**Table 3.** Comparison of Scale Scores of Family and Child Characteristics

| | EYÖ* | SOÖ* | | | | |
|---|---|---|---|---|---|---|
| | | Access | Understanding | Evaluation | APPLICATION | Total |
| Income status | | | | | | |
| Income is less than expenses | 19 (14 - 46) | 7 (5 - 19) | 9 (7 - 30) | 11 (8 - 30) | 7 (5 - 23) | 34 (25-101) |
| Income equals expenses | 21 (14 - 45) | 6 (5 - 23) | 9 (7 - 34) | 10 (8 - 36) | 6 (5 - 18) | 33 (25-110) |
| Income exceeds expenses | 19 (14 - 43) | 7 (5 - 19) | 9 (7 - 31) | 10 (8 - 37) | 6 (5 - 15) | 35 (25-102) |
| Test Statistics | KW=5.728 p=0.057 | KW=0.624 p=0.732 | KW=0.257 p=0.879 | KW=0.203 p=0.904 | KW=0.161 p=0.922 | KW=0.776 p=0.678 |
| Family structure | | | | | | |
| Nuclear family | 20 (14 - 46) | 6.5 (5 - 23) | 9 (7 - 34) | 10 (8 - 37) | 6 (5 - 23) | 33 (25-110) |
| Extended family | 23 (14 - 42) | 8 (5 - 21) | 12 (7 - 30) | 13 (8 - 30) | 8 (5 - 18) | 41 (25-91) |
| Broken family | 20 (14 - 27) | 7.5 (5 - 14) | 8.5 (7 - 16) | 10 (8 - 18) | 6.5 (5 - 15) | 32 (25-58) |
| Test Statistics | KW=4.660 p=0.097 | KW=6.327 p=0.042 | KW=6.836 p=0.033 | KW=7.138 p=0.028 | KW=7.382 p=0.025 | KW=8.912 p=0.012 |
| Number of children | | | | | | |
| One | 20 (14 - 45) | 5 (5 - 16) | 10 (7 - 24) | 10 (8 - 28) | 6 (5 - 18) | 33 (25-84) |
| 2-3 | 20 (14 - 46) | 7 (5 - 21) | 9 (7 - 31) | 10 (8 - 31) | 6 (5 - 23) | 33 (25-101) |
| More than 3 | 20 (15 - 43) | 9 (5 - 23) | 11 (7 - 34) | 12 (8 - 37) | 7 (5 - 17) | 38 (25-110) |
| Test Statistics | KW=1.309 p=0.520 | KW=5.211 p=0.074 | KW=2.470 p=0.291 | KW=1.934 p=0.380 | KW=1.359 p=0.507 | KW=3.783 p=0.151 |
| Time to get a diagnosis | | | | | | |
| 0-3 years old | 20 (14 - 46) | 7 (5 - 23) | 9 (7 - 34) | 10 (8 - 37) | 6 (5 - 23) | 34 (25-110) |
| 4-6 years old | 20 (14 - 42) | 6 (5 - 19) | 10 (7 - 31) | 10 (8 - 29) | 6 (5 - 18) | 33 (25-91) |
| 7-12 years old | 17 (14 - 45) | 7 (5 - 13) | 9 (7 - 18) | 11 (8 - 22) | 5 (5 - 14) | 32 (25-67) |
| Test Statistics | KW=0.514 p=0.774 | KW=0.405 p=0.817 | KW=1.061 p=0.588 | KW=0.049 p=0.976 | KW=0.586 p=0.746 | KW=0.087 p=0.958 |
| Degree of autism | | | | | | |
| Mild | 21 (14 - 46) | 7 (5 - 19) | 9 (7 - 31) | 10 (8 - 31) | 6 (5 - 23) | 33 (25-101) |
| Middle | 20 (14 - 33) | 7 (5 - 21) | 9 (7 - 27) | 10 (8 - 28) | 7 (5 - 17) | 35 (25-31) |
| Heavy | 18 (14 - 45) | 7 (5 - 23) | 9 (7 - 34) | 10 (8 - 37) | 7 (5 - 17) | 36(25-110) |
| Test Statistics | KW=1.534 p=0.464 | KW=0.440 p=0.802 | KW=0.026 p=0.987 | KW=0.010 p=0.995 | KW=0.943 p=0.943 | KW=0.310 p=0.856 |
| Duration of child's special education | | | | | | |
| 1-5 years | 21 (14-46) | 7 (5-23) | 9 (7-34) | 10 (8-36) | 6 (5-23) | 33 (25-110) |
| 6-10 years | 20 (14-43) | 7 (5-21) | 9 (7-31) | 10 (8-37) | 7 (5-17) | 35 (25-102) |
| 11-15 years | 17 (14-30) | 5 (5-19) | 7 (7-22) | 11 (8-23) | 8 (5-12) | 34 (25-76) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Test Statistics | KW=2.735 p=0.255 | KW=1.672 p=0.434 | KW=2.552 p=0.279 | KW=0.685 p=0.710 | KW=1.101 p=0.577 | KW=0.052 p=0.974 |
| Affecting your relationship with another child after diagnosis | | | | | | |
| Yes | 21 (14 - 35) | 7 (5 - 23) | 10 (7 - 34) | 11 (8 - 36) | 7 (5 - 23) | 36 (25 - 110) |
| No | 20 (14 - 46) | 6 (5 - 19) | 9 (7 - 31) | 10 (8 - 37) | 6 (5 - 18) | 33 (25 - 102) |
| Test Statistics | Z=5.133 p=0.054 | Z=5.301 p=0.104 | Z=5.457 p=0.202 | Z=4.974 p=0.021 | Z=5.034 p=0.029 | Z=4.957 p=0.022 |

Z: Mann -Whitney U test, KW = Kruskal Wallis H test , p≤0.05, * Med ( Min-Max )

**Table 4.** The Level of Explanation of Some Demographic Characteristics and Health Literacy on Parental Self-Efficacy

| Model 1: Parental Self-Efficacy | B. | 95% CI for B | | SE B | β | t | p |
|---|---|---|---|---|---|---|---|
| | | Lower bound | Upper bound | | | | |
| Constant | 26,055 | 20,004 | 32,107 | 3,070 | | 8,487 | 0.000 |
| Primary school graduate mothers | -1.244 | -3.622 | 1,134 | 1,206 | -0.089 | -1.031 | 0.304 |
| High school graduate mothers | 0.367 | -2.253 | 2,986 | 1,329 | 0.023 | 0.276 | 0.783 |
| University graduate mothers | 0.201 | -2.595 | 2,998 | 1,419 | 0.012 | 0.142 | 0.887 |
| Income is less than expenses | -3.099 | -4.987 | -1.211 | 0.958 | -0.217 | -3.235 | 0.001 |
| Income exceeds expenses | -1.119 | -3.982 | 1,745 | 1,453 | -0.049 | -0.770 | 0.442 |
| Mother's weight | -0.051 | -0.092 | -0.010 | 0.021 | -0.161 | -2.454 | 0.015 |
| Cigarette consumption | -1.191 | -2.135 | -0.246 | 0.479 | -0.154 | -2.486 | 0.014 |
| Chronic disease in the mother | -2.622 | -4.656 | -0.589 | 1,032 | -0.165 | -2.542 | 0.012 |
| Quality of life is medium | 2,526 | 0.612 | 4,439 | 0.971 | 0.185 | 2,602 | 0.010 |
| Quality of life is poor | 2,649 | -0.647 | 5,946 | 1,672 | 0.119 | 1,584 | 0.115 |
| Those who have great difficulty in accessing health | 3,138 | 0.260 | 6,016 | 1,460 | 0.146 | 2,149 | 0.033 |
| Those who do not have difficulty accessing health | 0.331 | -1.518 | 2,180 | 0.938 | 0.024 | 0.353 | 0.724 |
| Health perception is moderate | -0.227 | -2.127 | 1,673 | 0.964 | -0.016 | -0.236 | 0.814 |
| Perception of health is poor | 0.509 | -3.149 | 4,168 | 1,856 | 0.018 | 0.274 | 0.784 |
| Mild degree of autism | 0.651 | -1.704 | 3,006 | 1,195 | 0.048 | 0.545 | 0.586 |
| Autism degree is moderate | -0.225 | -2.661 | 2,211 | 1,236 | -0.016 | -0.182 | 0.855 |
| Health literacy total | 0.089 | 0.038 | 0.140 | 0.026 | 0.229 | 3,451 | 0.001 |
| Durbin - Watson=2.088, F = 3.549, p=0.000, $R^2$ = 0.222, Δ $R^2$ =0.160 | | | | | | | |

**Table 5.** The Level of Explanation of Health Literacy by Some Demographic Characteristics and Parental Self-Efficacy

| Model 2: Health Literacy | B. | 95% CI for B | | SE B | β | t | p |
|---|---|---|---|---|---|---|---|
| | | Lower bound | Upper bound | | | | |
| Constant | 30,715 | 10,908 | 50,523 | 10,049 | | 3,056 | 0.003 |
| Age | -0.263 | -0.609 | 0.083 | 0.176 | -0.097 | -1.498 | 0.136 |
| Primary school graduate mothers | 5,136 | -1.076 | 11,348 | 3,152 | 0.142 | 1,630 | 0.105 |
| High school graduate mothers | 2,500 | -4.092 | 9,093 | 3,345 | 0.061 | 0.747 | 0.456 |
| University graduate mothers | -1.963 | -9.120 | 5,195 | 3,631 | -0.044 | -0.540 | 0.589 |
| Extended family structure | 10,452 | -2.139 | 23,044 | 6,388 | 0.224 | 1,636 | 0.103 |
| Nuclear family structure | 4,838 | -6.922 | 16,598 | 5,966 | 0.111 | 0.811 | 0.418 |
| Those who have little difficulty in accessing health | 4,471 | -0.210 | 9,152 | 2,375 | 0.127 | 1,883 | 0.061 |
| Those who have great difficulty in accessing health | 7,291 | -0.505 | 15,086 | 3,955 | 0.132 | 1,843 | 0.067 |
| Those with medium quality of life | -4.792 | -12,586 | 3,001 | 3,954 | -0.137 | -1.212 | 0.227 |
| Those with good quality of life | -4.464 | -12,724 | 3,797 | 4,191 | -0.125 | -1.065 | 0.288 |
| Perception of health as average | 3,981 | -0.820 | 8,783 | 2,436 | 0.112 | 1,634 | 0.104 |
| Perception of poor health | 10,794 | 1,643 | 19,946 | 4,643 | 0.152 | 2,325 | 0.021 |
| Parental competence total | 0.480 | 0.156 | 0.803 | 0.164 | 0.187 | 2,924 | 0.004 |
| Durbin - Watson=1.316, F=4.458, p=0.000, $R^2$ = 0.212, Δ $R^2$ =0.165 | | | | | | | |