Abstract

AIM: This study aimed to determine the nutrition, self-care skills, and health professional support of children with autism spectrum disorder.

METHOD: This is a descriptive and cross-sectional study. The parents of 82 children with autism spectrum disorder agreed to participate as part of a study group in 8 special education schools in 3 districts. The schools were selected on the basis of their levels of sociodemographic development. The data were collected and analysed between September 2016 and July 2017 using a two-section questionnaire developed after a literature review.

RESULTS: The majority of the parents (63.4%) had sufficient knowledge with regard to autism spectrum disorder, but the issues that were most lacking in terms of education were care, nutrition, and skills related to daily living (36.2%). The parents wanted to be educated on “nutrition problems,” and “activities of daily living.” The majority of the children lacked self-care skills (82.9%).

CONCLUSION: The most frequently observed nutrition problem in children with autism spectrum disorder was selective eating. In line with the literature, the majority of the children in this study were found to be unable to care for themselves. School nurses can provide support in terms of nutrition and self-care skills in these schools. School health education programmes for parents can be developed to allow for the more rapid and effective resolution of nutrition and self-care problems.

Keywords: Autism spectrum disorder, nutrition, school health services, self-care skills

Introduction

Autism spectrum disorder (ASD) is a developmental disability and neurological disorder that occurs in the first 3 years of life, resulting in a lack of communication skills and limited and repetitive behaviours with symptoms relating to a tendency to focus on specific areas of interest (American Psychiatric Association [APA], 2013). The estimated global prevalence of ASD is approximately 1% (Tseng et al., 2018).

Although the main deficiency in children with ASD normally concerns social interaction and behavioural issues, the majority of these children experience a higher incidence of nutritional problems than their healthy peers (Sharp et al., 2013), and many parents resort to seeking help from physicians (Mukaddes, 2013). It is stated that nutrition may play a role in the aetiology of ASD and that the treatment of the disorder may be improved by alleviating symptoms related to this (Berding & Donovan, 2016).

A good nutritional programme is extremely important in terms of physical, cognitive, and behavioural development in children with developmental retardation, owing to the importance of the digestive system and eating problems and elimination diets for therapeutic purposes (Bat, 2012).

Gastrointestinal problems are four times more common in children with ASD than in non-autism control groups (Mcelhanon et al., 2014). Gastrointestinal problems include constipation, diarrhoea, abdominal pain, nausea, vomiting, and reflux (Neuhaus et al., 2018). Children with ASD may have limited food intake of certain substances (intolerance and allergies to foods containing wheat, milk, or gluten) and may have difficulty in
receiving the necessary nutrients (Bandini et al., 2010). Dietary problems, such as nutritional selectivity, feeding with uniform foods, and low nutrient consumption, have been associated with gastrointestinal symptoms as well as nutritional deficiencies (Hsiao, 2013). Another important aspect of nutrition in children with ASD is that mealtimes are the hours when family members interact together. Problems, such as selective eating and food refusal, affect all the family members and make them tense at mealtimes (Bagatell et al., 2014). This situation leads to an increase in the level of stress in the family and the deterioration of the parent-child relationship, which can turn into a chronic problem that needs to be treated (Postorino et al., 2015). The nutritional problems of children with ASD also affect their anthropometric measurements. Parents of children with ASD also complain about their children’s irregular and unhealthy nutrition and problems in terms of controlling their children’s weight (Karacar, 2016).

In studies conducted in children with ASD aged 2–18 years old, these children had higher body mass index (BMI) values than those of control groups (Kummer et al., 2016); it was reported that the waist, hip, and upper middle arm circumferences were bigger for children in the group of 5–10-year-olds than for those in the control group (Samir & Patil, 2018). In his studies, Dağıdır (2018) found that the BMI values of 25% of autistic children were between 25 and 29.9 kg/m², which indicates that they were overweight.

The nutritional problems of children with ASD can reach a level that can affect their growth, development, and quality of life, resulting in the need for support from health professionals. Therefore, it is important that nutrition problems are considered seriously and that a professional provides the children with developmental support and helps to make eating a family interaction tool. In contrast, self-care skills play a significant role in maximising the independence of children with ASD. The acquisition of self-care skills increases the children’s capabilities and the families’ quality of life. Top (2009) have indicated that as these children get older, caring for them becomes more difficult, their parents’ social activities decrease owing to the children’s aggressive behaviours. Multidisciplinary treatments are known to be effective for children with ASD who have nutrition problems (Sharp et al., 2013). It is recommended that the team that provides these services includes professionals, such as a special education specialist, child and adolescent mental health specialist, paediatrician, nurse, speech and language therapist, audiologist, physical therapist, psychologist, social service specialist, dietitian, and family therapist (Christon & Myers, 2015). Nurses should be able to determine the needs of families within the scope of school health services for children with ASD who have nutritional problems.

The literature also recommends that families are encouraged to collaborate with nurses (Mccay et al., 2014; Özcan et al., 2013; Töret et al., 2014; Weiss et al., 2013), who are key individuals when ensuring coordination with other team members working with children with ASD and their families and when providing family-oriented care with a holistic approach. Family-oriented care leads to an increase in the children’s well-being through the participation of their families and professional teams (Kabasakal & Emiroğlu, 2018). This study aimed to determine the children’s nutritional problems and self-care needs at school, as well as their families’ relationships with health professionals.

Research Questions
1. Do children with ASD experience nutritional problems or need nutritional support at school?
2. Do children with ASD need self-care at school?
3. Do the parents of children with ASD cooperate with occupational and health professionals?

Method

Study Design
This study is a descriptive and cross-sectional study.

Sample
The study population included non-paid special education and application centres belonging to the Ministry of National Education in the Yenimahalle, Çankaya, and Altındağ districts of Ankara. These districts were selected on the basis of their levels of sociodemographic development. Socioeconomic factors are among the determinants of health as they affect access to health resources. Çankaya district is considered to be a developed region with a high literacy population rate, Yenimahalle district is a medium-developed region, and Altındağ is a relatively less developed region than the other districts (Yüceşahin & Tüysüz, 2011). All the special education schools that agreed to participate in the study were included in the study sample.

The 3 districts had a total of 11 government special education schools, and 8 of them agreed to participate in this study. From the schools, the parents of 82 children with ASD agreed to participate in the study.
Data Collection
The data were collected and analysed between September 2016 and July 2017 using a two-section questionnaire developed by the researchers after performing a literature review (Bandini et al., 2010; Bat, 2012; Girli et al., 2016; Jensen & Spannagel, 2011).

Data Collection Tools

A – Characteristics of the Child
The first section of the questionnaire included questions on each child’s age, gender, specific nutrition programme, selective eating and drinking habits, chewing and swallowing problems, and self-care skills, such as cutting one’s nails and dressing oneself.

B – Characteristics of the Family
The second section included questions on the parents’ sociodemographic data, whether they had other children with health problems, their information sources regarding ASD, and an assessment of their information about ASD.

Statistical Analysis
Statistical analyses were performed using the Statistical Package for Social Sciences version 23.0 software (SPSS Inc.; Chicago, IL, USA) program. Arithmetic means and standard deviations were calculated; an independent samples t-test, one-way analysis of variance test, and chi-square test were used for the numeric variables. The children’s age distribution was assessed using the Shapiro-Wilk normality test.

Ethical Considerations
Ethics approval was provided by the Hacettepe University non-invasive research ethical committee (GO- 15/451-04), and research permission was obtained from the Directorate of National Education foundation (E-4705675). Verbal consent was obtained from the administration of the schools where the research was conducted.

Results
The majority of the children with ASD included in the study were boys (85.4%) and were not able to self-care (82.9%). The majority (78.0%) also ate meals with their families, and nearly half of them (52.4%) were selective about the food they ate. 9.8% of them had reflux and 18.3% had chewing or swallowing problems. 20.7% of them had loss of appetite, 3.7% had diarrhea, 20.7% had constipation. More than half of the children ate between meals, 39.0% of them drank at least 6 glasses of water per day, and the majority of the parents (75.6%) did not cook specific meals for their children (Table 1).

| Table 1  | Characteristics of the Children (n = 82) |
|---------------------------------|--------------------------------------|
| **Age (years)**                 | Min–max 5–25 11.90 ± 4.02 |
| **Gender**                      |                                      |
| Girl                            | 12 14.6 |
| Boy                             | 70 85.4 |
| **Child has self-care skills**  |                                      |
| Yes                             | 14 17.1 |
| No                              | 68 82.9 |
| **Number of main meals**        | Min–max 2–7 3.3 ± 0.9 |
| **Number of snacks**            | Min–max 1–7 2.4 ± 1.2 |
| **Child has food selectivity**  |                                      |
| Yes                             | 43 52.4 |
| No                              | 39 47.6 |
| **Child has beverage selectivity** |                                      |
| Yes                             | 38 46.3 |
| No                              | 44 53.7 |
| **Child eats dinner with the family** |                                      |
| Yes                             | 64 78.0 |
| No                              | 18 22.0 |
| **Chewing–swallowing problems** |                                      |
| Yes                             | 15 18.3 |
| No                              | 67 81.7 |
| **Reflux problems**             |                                      |
| Yes                             | 8 9.8 |
| No                              | 74 90.2 |
| **Daily water consumption of the child** |                                      |
| Less than 2 cups                | 5 6.2 |
| 2–3 cups                        | 23 28.0 |
| 4–5 cups                        | 22 26.8 |
| 6 cups and more                 | 32 39.0 |
| **Loss of appetite**            |                                      |
| Yes                             | 17 20.7 |
| No                              | 65 79.3 |
| **Frequent diarrhoea**          |                                      |
| Yes                             | 3 3.7 |
| No                              | 79 96.3 |
| **Frequent constipation**       |                                      |
| Yes                             | 17 20.7 |
| No                              | 65 79.3 |
| **Child eats snacks**           |                                      |
| Yes                             | 57 69.5 |
| No                              | 25 30.5 |
| **Special cooking for the child** |                                      |
| Yes                             | 20 24.4 |
| No                              | 62 75.6 |

*Note. \( \bar{X} \pm SD \): Arithmetic Mean ± Standard Deviation*
A statistically significant difference was found between the quantity of water consumed daily and the children's age ($p < .05$); the quantity of water consumed increased as their age increased. In addition, a significant relationship was found between the children's lack of appetite and their age; children under the age of 12 years old were observed to have a greater lack of appetite (Table 2).

Table 2
Comparison of the Children’s Ages and Nutritional Characteristics ($n = 82$)

|                          | $X \pm SD$ | $t$  | $p$  |
|--------------------------|------------|------|------|
| Child has food selectivity |            |      |      |
| Yes                      | 11.77 ± 3.68 | −.317 | .752 |
| No                       | 12.05 ± 4.41 |      |      |
| Child has beverage selectivity |  |      |      |
| Yes                      | 11.03 ± 3.78 | −1.860 | .067 |
| No                       | 12.66 ± 4.12 |      |      |
| Child eats dinner with the family |  |      |      |
| Yes                      | 11.91 ± 3.91 | .016 | .987 |
| No                       | 11.89 ± 4.55 |      |      |
| Chewing–swallowing problems |  |      |      |
| Yes                      | 9.6 ± 2.92 | −2.533 | .013* |
| No                       | 12.42 ± 4.07 |      |      |
| Reflux problems           |            |      |      |
| Yes                      | 9.60 ± 3.78 | −.647 | .524 |
| No                       | 10.78 ± 3.69 |      |      |
| Loss of appetite          |            |      |      |
| Yes                      | 9.23 ± 3.63 | 3.246 | .002* |
| No                       | 12.60 ± 3.85 |      |      |
| Frequent diarrhea         |            |      |      |
| Yes                      | 11.33 ± 3.79 | −.248 | .805 |
| No                       | 11.92 ± 4.05 |      |      |
| Frequent constipation     |            |      |      |
| Yes                      | 10.35 ± 3.64 | −1.808 | .074 |
| No                       | 12.31 ± 4.05 |      |      |
| Child eats snacks         |            |      |      |
| Yes                      | 11.74 ± 3.68 | −.560 | .577 |
| No                       | 12.28 ± 4.78 |      |      |
| Special cooking for the child |  |      |      |
| Yes                      | 11.60 ± 3.07 | −.385 | .702 |
| No                       | 12.00 ± 4.30 |      |      |
| Daily water consumption of the child |  |      |      |
| Less than 2 cups          | 9.60 ± 3.78 | 3.484 | .020* |
| 2–3 cups                  | 10.78 ± 3.69 |      |      |
| 4–5 cups                  | 11.18 ± 3.92 |      |      |
| 6 cups and more           | 13.56 ± 3.92 |      |      |

Table 3
Characteristics of the Parents ($n = 82$)

|                          | Min–max | $X \pm SD$ |
|--------------------------|---------|------------|
| Age (years)              | 26–60   | 39.90 ± 7.99 |
| Mother                   | 62      | 75.6       |
| Father                   | 20      | 24.4       |
| Education                |         |            |
| Primary school or lower   | 6       | 7.4        |
| Secondary school         | 28      | 34.1       |
| High school              | 26      | 31.7       |
| University or higher     | 22      | 26.8       |
| Job                      |         |            |
| Officer                  | 14      | 17.1       |
| Worker                   | 9       | 11.0       |
| Self-employed            | 4       | 4.8        |
| Not working              | 55      | 67.1       |
| Health problems in other children |  |      |
| Yes                      | 5       | 6.1        |
| No                       | 77      | 93.9       |
| Presence of children who have mainstream education excluding the autistic children |  |      |
| Yes                      | 13      | 15.9       |
| No                       | 69      | 84.1       |
| Have sufficient knowledge about autism |  |      |
| Yes                      | 52      | 63.4       |
| No                       | 30      | 36.6       |
| Educational needs of the parents* |  |      |
| Adaptation to school life | 12      | 8.1        |
| Autism: Characteristics and treatment | 39      | 26.2       |
| Self-care, nutrition, and skills training in daily life activities | 54      | 36.2       |
| Disability rights        | 41      | 27.5       |
| Other                    | 3       | 2.0        |
| Assistance from school related to children’s education |  |      |
| Yes                      | 58      | 70.7       |
| No                       | 24      | 29.3       |
| Collaboration with professionals (doctor, nurse, psychologist, psychiatrist, teacher) |  |      |
| Yes                      | 35      | 42.7       |
| No                       | 47      | 57.3       |

Note: $X \pm SD$: Arithmetic Mean ± Standard Deviation

*more than one option ticked.
Table 4  
Comparison of Characteristics According to Parents’ Education

|                                    | Secondary school and lower | High school and higher | \( \chi^2 \) | \( p \) |
|------------------------------------|----------------------------|------------------------|--------------|--------|
| Sufficient information about the child’s disorder \((n = 82)\)   |                            |                        |              |        |
| Yes                                | 18                         | 52.9                   | 34           | 70.8   | 2.746  | .011*  |
| No                                 | 16                         | 47.1                   | 14           | 29.2   |         |        |
| Assistance from school related to the child’s education \((n = 82)\) |                            |                        |              |        |
| Yes                                | 23                         | 67.6                   | 35           | 72.9   | .267   | .630   |
| No                                 | 11                         | 32.4                   | 13           | 27.1   |         |        |
| Collaboration with professionals (doctor, psychologist, psychiatrist, teacher) \((n = 82)\) |                            |                        |              |        |
| Yes                                | 12                         | 35.3                   | 23           | 47.9   | 1.296  | .269   |
| No                                 | 22                         | 64.7                   | 25           | 52.1   |         |        |
| Child has self-care skills \((n = 82)\) |                            |                        |              |        |
| Yes                                | 7                          | 20.6                   | 7            | 14.6   | .507   | .557   |
| No                                 | 27                         | 79.4                   | 41           | 85.4   |         |        |
| Child has special nutrition programme \((n = 82)\) |                            |                        |              |        |
| Yes                                | 5                          | 14.7                   | 3            | 6.3    | 1.616  | .266   |
| No                                 | 29                         | 85.3                   | 45           | 93.8   |         |        |
| Child nutrition selectivity \((n = 82)\) |                            |                        |              |        |
| Yes                                | 14                         | 41.2                   | 29           | 60.4   | 2.954  | .117   |
| No                                 | 20                         | 58.8                   | 19           | 39.6   |         |        |
| Child beverage selectivity \((n = 82)\) |                            |                        |              |        |
| Yes                                | 16                         | 47.1                   | 22           | 45.8   | .012   | 1.000  |
| No                                 | 18                         | 52.9                   | 26           | 54.2   |         |        |
| Child eats with the family \((n = 82)\) |                            |                        |              |        |
| Yes                                | 24                         | 70.6                   | 40           | 83.3   | 1.887  | .187   |
| No                                 | 10                         | 29.4                   | 8            | 16.7   |         |        |
| Child eats snacks \((n = 82)\)      |                            |                        |              |        |
| Yes                                | 20                         | 58.8                   | 37           | 77.1   | 3.131  | .092   |
| No                                 | 14                         | 41.2                   | 11           | 22.9   |         |        |
| Parent makes special meals/diets for the child \((n = 82)\) |                            |                        |              |        |
| Yes                                | 8                          | 23.5                   | 12           | 25.0   | .023   | 1.000  |
| No                                 | 26                         | 76.5                   | 36           | 75.0   |         |        |
| Child’s nutrition at school \((n = 82)\) |                            |                        |              |        |
| Sufficient                         | 9                          | 26.5                   | 19           | 39.6   | 3.963  | .138   |
| Insufficient                       | 11                         | 32.4                   | 7            | 14.6   |         |        |
| Partially sufficient               | 14                         | 41.2                   | 22           | 45.8   |         |        |
| The need for support regarding the child’s nutrition at school \((n = 81)\) |                            |                        |              |        |
| Yes                                | 16                         | 48.5                   | 20           | 41.7   | .368   | .650   |
| No                                 | 17                         | 51.5                   | 28           | 58.3   |         |        |

*\( p < .05 \)
Table 5
Comparison of Characteristics of Parents by Age (n = 82)

| Health problem in other children | X±SD     | t     | p    |
|----------------------------------|---------|-------|------|
| Yes                             | 39.80 ± 6.72 | -0.029 | 0.977 |
| No                              | 39.91 ± 8.09 |       |      |

| Has sufficient information about the child’s disorder | X±SD     | t     | p    |
|-------------------------------------------------------|---------|-------|------|
| Yes                                                   | 39.79 ± 8.22 | -0.169 | 0.866 |
| No                                                    | 40.10 ± 7.69 |       |      |

| Assistance from school related to the child’s education | X±SD     | t     | p    |
|---------------------------------------------------------|---------|-------|------|
| Yes                                                     | 39.16 ± 8.07 | -1.323 | 0.189 |
| No                                                      | 41.71 ± 7.64 |       |      |

| Collaboration with professionals (doctor, psychologist, psychiatrist, teacher) | X±SD     | t     | p    |
|-------------------------------------------------------------------------------|---------|-------|------|
| Yes                                                                         | 36.17 ± 5.94 | -3.970 | 0.000* |
| No                                                                          | 42.69 ± 8.23 |       |      |

| Child has self-care skills at home | X±SD     | t     | p    |
|-----------------------------------|---------|-------|------|
| Yes                               | 34.86 ± 4.35 | -2.694 | 0.009* |
| No                                | 40.94 ± 8.19 |       |      |

| Child has special nutrition programme | X±SD     | t     | p    |
|--------------------------------------|---------|-------|------|
| Yes                                  | 36.75 ± 4.33 | -1.178 | 0.242 |
| No                                   | 40.24 ± 8.23 |       |      |

| Child has food selectivity | X±SD     | t     | p    |
|----------------------------|---------|-------|------|
| Yes                       | 39.86 ± 7.83 | -.050  | 0.961 |
| No                        | 39.95 ± 8.26 |       |      |

| Child has beverage selectivity | X±SD     | t     | p    |
|-------------------------------|---------|-------|------|
| Yes                           | 39.00 ± 6.95 | -.950  | 0.345 |
| No                            | 40.68 ± 8.79 |       |      |

| Child eats with the family | X±SD     | t     | p    |
|---------------------------|---------|-------|------|
| Yes                       | 40.38 ± 7.69 | 1.011  | 0.315 |
| No                        | 38.22 ± 8.99 |       |      |

| Child eats snacks | X±SD     | t     | p    |
|-------------------|---------|-------|------|
| Yes               | 40.70 ± 8.11 | 1.376  | 0.173 |
| No                | 38.08 ± 7.54 |       |      |

| Parent makes special meals/diets for the child | X±SD     | t     | p    |
|-------------------------------------------------|---------|-------|------|
| Yes                                             | 40.45 ± 9.42 | .351   | 0.727 |
| No                                              | 39.73 ± 7.55 |       |      |

| Child’s nutrition at school | X±SD     | t     | p    |
|----------------------------|---------|-------|------|
| Sufficient                 |         |       |      |
| Insufficient               | 1.090  | .385  |      |
| Partially sufficient       |         |       |      |

| The need for support regarding the child’s nutrition at school | X±SD     | t     | p    |
|----------------------------------------------------------------|---------|-------|------|
| Yes                                                             | 41.11 ± 9.15 | 1.090  | 0.279 |
| No                                                              | 39.18 ± 6.81 |       |      |

Note. X±SD: Arithmetic Mean±Standard deviation
*p < 0.05
related to daily living. In the “other” response to the question on the issues on which they wanted to be educated, they included “nutrition problems,” “adolescent education,” and “activities of daily living.” Nearly half of the participants (42.7%) answered “yes” to the question on whether they worked with occupational professionals (Table 3). Furthermore, 34.9% of the participants received support/help from their children’s classroom teachers, 21.8% from the schools’ special education teachers, 19.9% from the special education schools their children attended, 14.7% from school counselling services, and 10.3% from counselling and research centres. Moreover, 52.9% of the parents who had secondary education or lower stated that they had sufficient information about the diagnosis of their children; the ratio of sufficient information increases to 70.8% in parents with high school education or higher, but no statistically significant relationship was observed (p > .05) (Table 4).

Approximately half (47.9%) of the parents with high school education or higher cooperated with a professional in matters related to their children. This rate decreases to 35.3% in parents with secondary education or lower, but no statistically significant difference was identified (p > .05). In addition, 14.7% of the parents who had secondary education or lower and 6.3% of the parents who had high school education or higher had special nutrition programmes for their children. Moreover, 83.3% of parents with high school education or higher stated that their children ate a meal with the family, and 77.1% of them affirmed that their children had a snack. In both cases, the percentage of parents with high school education or higher was higher, but there were no significant differences (p > .05). Parents generally thought the need for support regarding the child’s nutrition at school, and 48.5% of the parents with secondary education or lower and 41.7% of the parents with high school education or higher agreed with this statement (Table 4).

Regarding their children’s nutrition during school hours, 43.9%, 34.1%, and 22.0% of the parents found it to be partially sufficient, sufficient, and insufficient, respectively.

The degree to which parents collaborate with occupational professionals on matters related to their children varied depending on the parents’ age (p < .05), and as their age increased, the amount of collaboration with professionals decreased. In this study, the children’s self-care skills varied according to the age of their parents, and as the age of their parents increased, the children’s ability to perform self-care skills decreased (p < .05) (Table 5).

Discussion

In this study, conducted to determine the nutritional problems of children with ASD, their self-care needs, and the cooperation of families with health professionals, 36.6% of the parents stated that they did not have sufficient information about autism. In other words, the parents of 1 in every 3 children diagnosed with ASD find that their knowledge regarding the diagnosis of their children is insufficient (Table 3). With regard to the elements that require education, the aspects that were found to be most lacking in terms of training were identified as being self-care, nutrition, and daily living activities (Table 3).

In line with the literature, the majority of the children in this study were found to be unable to care for themselves (Gorlin et al., 2016; Kim et al., 2016; Selimoğlu et al., 2013; Top, 2009). Providing children with ASD with self-care skills increases such children’s capacities and increases the quality of life of the children and their families. Top (2009) found that it was difficult to care for children with ASD as they grew up, that their parents’ social activities decreased owing to their children’s aggressive behaviour. Similarly, in this study, the ability of the children to acquire self-care skills varied according to the age of the parents and was observed to decrease as the age of the parents increased (Table 5). This finding suggests that as parents get older, it becomes more difficult for their children with ASD to obtain self-care abilities. It is important to promote self-care skills in these children.

Professionals undertaking the children’s treatment and care, and particularly the families of these children, have important duties in terms of helping the children acquire self-care skills, such as those related to nutrition, dressing and undressing themselves, personal hygiene, and going to the toilet. Helping the children acquire nutrition skills is extremely important in terms of them being able to feed themselves, gaining independence and respect in society, and having increased opportunities to be included in social life (Akarsu, 2014).
In this study, constipation, anorexia, and chewing and swallowing problems were found in 20.7%, 20.7%, and 18.3% of the children with ASD, respectively. Alp (2018) reported that the most common symptoms in children with autism were diarrhoea (64.3%), gas complaints (57.1%), abdominal pain (50.0%), and constipation (35.7%). Gastrointestinal disorders, such as functional constipation, diarrhoea, and gastroesophageal reflux, seen in ASD were reported to be related to problematic behaviours, such as nutrient selection, which children with autism often develop (Margolis et al., 2019). In fact, the particularity of nutrient selection, which is a factor in digestive system disorders in children with ASD, was determined as the most common feeding problem in children in this study (52.4%) (Table 1). Similarly, the literature also shows that the most significant nutritional problem observed in children is selective eating (Bandini et al., 2010; Bat, 2012; Emond et al., 2010; Field et al., 2003; Girli et al., 2016; Herndon et al., 2009; Kerwin et al., 2005; Lukens & Linscheid, 2008; Valicenti-McDermott et al., 2006; Vissoker et al., 2015; Zimmer et al., 2012). One of the most important factors in adequate and balanced nutrition is the attention to food variety. An adequate and balanced dietary intake of polyunsaturated fatty acids, antioxidants, vitamins, and minerals increases cognitive function (Demirçioğlu & Yabancı, 2003). Special diets and dietary supplements may be effective in reducing the gastrointestinal symptoms of autism (Campion et al., 2018). Moreover, in this study, 24.4% of the parents made special meals/diets for their children (Table 1).

The most important feature of children with autism is their adherence to routines and rituals. The children’s reactions to changes manifest themselves in nutrition as well. This situation causes the children to refuse to eat different foods and disrupts the growth and development process (Esteban-Figuerola et al., 2019). In this study, approximately one-quarter of the parents (22%) found that the food their children receive at school is inadequate. Bandini et al. (2017), in a study of 18 children with ASD, stated that children’s refusal of food declined over the years. It is noted that progression toward healthy nutrition in these children is achieved through early interventionist approaches. Accordingly, it is important that the children and their families are supported by intervention studies to ensure that the children are introduced to healthy foods and achieve diversity in terms of their nutrition. In this process, the needs of families should not be ignored. In the study by Alp (2018), positive development was achieved with nutrition education given to families with autistic children. In this study, it can be seen that parents need education regarding the diagnosis, nutrition, and self-care skills of their children (Table 3). It was found that more than half of the parents did not cooperate with professionals (Table 3). The degree to which the parents have sufficient information about their children’s diagnosis and cooperate with healthcare professionals differs according to the level of education and on whether they receive assistance from the schools.

Collaboration with healthcare professionals regarding child-related issues is stronger for parents with high school education or higher. These findings suggest that the socioeconomic characteristics of parents should be taken into consideration by health professionals. Again, as the age of the parent increases, the rate of cooperation with health professionals decreases (Table 5). As the life experiences of parents increase, the need for health resources may decrease. It is known that the cooperation of parents of children with special needs with professionals provides more information about the diagnosis, needs, and development of the children and facilitates their school lives (Humphrey et al., 2006).

In terms of the cooperation of health professionals with the parents of children with special needs, previous research has focused on the poor coordination between health services, hospital staff, and community services, as well as between health and education staff (Franks et al., 2015; Kolbe et al., 2015; Shimizu & Katsuda, 2015). Health professionals are quite important in terms of the education, counselling, and awareness activities intended for these children’s families and in the follow-up of the growth and development process starting from each child’s diagnosis. Health professionals can provide rapid and effective solutions to improve the quality of lives of families by regularly following up on the growth and development of these children, providing them with information about proper nutrition behaviours, and increasing self-care skills in relation to their daily living activities.

The success of education systems is possible with the implementation of teamwork involving physicians, nurses, dietitians, teachers, school administrators, parents, social care specialists, psychologists, and psychological counselling and guidance.
specialists. In this study, 42.7% of the parents stated that they were cooperating with a professional. Furthermore, three people stated that they were in cooperation with family health personnel, two people stated that they were in collaboration with psychologists, one person stated that he/she was in cooperation with psychiatrists, and none of them got support from nurses (Table 3). The role of nurses in universal school health services is important (Kabasakal, 2019). Nurses provide care, communication, and coordination in schools regarding children’s health statuses (Kruger et al., 2009; Maughan & Adams, 2011). The Turkish Nursing Regulations (2011) stipulate that school health nurses have roles and responsibilities as caregivers, supervisors, educators, and counsellors. Public health nurses, particularly those who work in schools, should be able to actively implement education, counselling, and support services in the form of self-care, health screening, parental education, and school staff and parental guidance, improving the quality of life of the children and providing healthy nutritional support.

Conclusion and Recommendations

According to the results of this research, parents need information about their children’s diagnosis. Parents need training in terms of providing their children with self-care and daily living activity skills. Parents should cooperate with health professionals during their children’s growth and development. In particular, public health nurses should be more active in fulfilling their training and counselling roles. The professional personnel responsible for providing access to health resources for these children in schools are school health nurses, who constitute a sub-branch of public health.

In future studies, pilots schools could be selected randomly from primary education schools to determine the roles of health professionals in the management of the nutrition and self-care problems of children with ASD. School nurses can provide support in terms of nutrition and self-care skills in these schools. In addition, education programmes can be developed for the parents of children with ASD to allow for the more rapid and effective resolution of nutrition and self-care problems. The effectiveness of the support provided by health professionals can be analysed by comparing the findings of such a study conducted in pilot schools with the findings of this study.

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Informed Consent: Written informed consent was obtained from the parents who agreed to take part in the study.

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