ISSN 2458-8865 E-ISSN 2459-1505
www.fppc.com.tr
Family Practice & Palliative Care

Research Article

The effect of long-term drug use on rational use of medicines in children with medical illness

Çocuklarda tıbbi hastalığa bağlı uzun süre ilaç kullanılmasının akılcı ilaç kullanımına etkisi

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Abstract

Introduction: This study was conducted to investigate the effect of long-term drug use due to medical diseases on rational drug use in children, using data obtained from parents. It is a cross-sectional study.

Methods: Among the 288 parents who applied to the pediatric outpatient clinics of Muğla Training and Research Hospital between January 1, 2022 and March 31, 2022; 144 people with children aged 0-12 who have a chronic disease and have been using regular medication for at least three months are included in the research group, 144 people who did not have a chronic disease and did not use medication constantly were determined as the control group. In addition to the form containing sociodemographic data and questions to evaluate rational drug use awareness, knowledge, attitudes and behaviors, the "Parental Attitude Scale For Rational Drug Use (PASRDU)" was answered through a face-to-face interview. Data analysis was conducted with SPSS 26 program with a confidence level of 95%. Parental Attitude Scale For Rational Drug Use scores showed normal distribution in both groups. Independent samples t-test was used to compare Parental Attitude Scale For Rational Drug Use scores according to groups, a chi-square test was used to compare the relationship between groups and categorical (grouped) variables, and a two-way ANOVA test was used to compare demographic characteristics and group variables according to Parental Attitude Scale For Rational Drug Use scores.

Results: Of the parents participating in the study, 67.71% were mothers and 32.29% were fathers. The average age was 34.88±6.44 years in the research group and 33.57±6.57 years in the control group. The rates of having chronically ill individuals at home and individuals constantly using medication at home are higher in the research group and are statistically significant. While the presence of leftover or spare medication at home was be similar in the research and control groups, the rate of using these medications when necessary was 45.8% in the research group and 56.3% in the control group. While 43.1% of those in the research group did not give over-the-counter medicine to their children, this rate was 16% in the control group. The control group uses over-the-counter vitamins twice as much as the research group. The most commonly used over-the-counter medication in the entire population is antipyretics with a rate of 44.79%. The scores of the research group in Parental Attitude Scale For Rational Drug Use and its subscales are higher than the control group and are statistically significant. The place of residence for the longest time, educational level, having too much medication at home, and using non-prescription medication statistically affect the scores. In addition, the duration of the disease of the children in the research group significantly affected the Parental Attitude Scale For Rational Drug Use total score and the Accurate and Conscious Use subscale, and the disease group significantly affected the Effective and Safe Use subscale score.

Conclusion: According to our research, long-term use of medication in children due to medical illness affects rational drug use. Accurate and current information is required in the preparation and use of drugs used in children due to the change in dosage and pharmaceutical form depending on age. In addition, herbal products and food supplements are also used during childhood. Therefore, the knowledge, attitudes and behaviors of healthcare professionals and parents affect children's health. As studies on rational drug use in different regions in our country increase, more detailed and separate planning can be made for drugs used in childhood while preparing education and policies for rational drug use.

Keywords: Attitude, Child, Chronic Disease, Parents

Öz

Giriş: Bu çalışma, ebeveynlerden elde edilen verilerle çocuklarda tıbbi hastalığa bağlı uzun süre ilaç kullanılmasının akılcı ilaç kullanımına etkisini araştırmak amacıyla yapılmıştır. Kesitsel bir çalışmadır.

Yöntem: Muğla Eğitim ve Araştırma Hastanesi çocuk polikliniklerine 1 Ocak 2022 - 31 Mart 2022 tarihleri arasında başvuran 288 ebeveynden, kronik hastalığı olan ve en az üç aydır düzenli ilaç kullanan 0-12 yaş arası çocuğu olan 144 kişi araştırma grubu, kronik hastalığı olmayan ve sürekli ilaç kullanmayan 144 kişi kontrol grubu olarak belirlenmiştir. Sosyodemografik veriler ile akılcı ilaç kullanımı farkındalığı, bilgi, tutum ve davranışlarını değerlendirmeye yönelik soruların yer aldığı formun yanında ''Akılcı İlaç Kullanımına Yönelik Ebeveyn Tutum Ölçeği (AİKYETÖ)'' yüz yüze görüşmeyle cevaplanmıştır. Veri analizi SPSS 26 programı ile %95 güven düzeyiyle çalışılmıştır. Akılcı İlaç Kullanımı Ebeveyn Tutumu puanları her iki grupta da normal dağılım göstermiştir Akılcı İlaç Kullanımına Yönelik Ebeveyn Tutum Ölçeği puanlarının gruplara göre karşılaştırılmasında bağımsız gruplar t testi, gruplar ile kategorik (gruplu) değişkenlerin ilişkisinde ki-kare testi, demografik özellikler ile grup değişkeninin Akılcı İlaç Kullanımına Yönelik Ebeveyn Tutum Ölçeği puanlarına göre karşılaştırılmasında iki yönlü ANOVA testi kullanılmıştır.

Bulgular: Çalışmaya katılan ebeveynlerin anne %67,71'i anne, %32,29'u baba olup yaş ortalaması araştırma grubunda 34,88±6,44 yıl iken kontrol grubunda 33,57±6,57 yıl olarak bulunmuştur. Evde kronik hastalıklı birey, evde sürekli ilaç kullanan birey bulunma oranları araştırma grubunda daha yüksek olup istatistiksel olarak anlamlıdır. Evde artmış ya da yedek olarak saklanan ilaç varlığı araştırma ve kontrol grubunda benzer bulunurken, bu ilaçları gerek görüldüğünde kullanılması araştırma grubunda %45,8 oranındayken, kontrol grubunda %56,3 olarak bulunmuştur. Araştırma grubundakilerin %43,1'i çocuklarına reçetesiz ilaç vermezken, kontrol grubunda bu oran %16 saptanmıştır. Kontrol grubu, araştırma grubuna göre 2 kat fazla reçetesiz vitamin kullanmaktadır. Tüm popülasyonda en çok kullanılan reçetesiz ilaç %44,79 oranıyla antipiretiklerdir.

Akılcı İlaç Kullanımına Yönelik Ebeveyn Tutum Ölçeği ve alt ölçeklerinde araştırma grubunun puanları kontrol grubuna göre yüksek olup istatistiksel olarak anlamlıdır. En uzun yaşanılan yer, eğitim durumu, evde fazla ilaç bulundurma, reçetesiz ilaç kullanma durumu puanları istatistiksel olarak etkilemektedir. Ayrıca araştırma grubundaki çocukların hastalık süresi Akılcı İlaç Kullanımına Yönelik Ebeveyn Tutum Ölçeği toplam puanını ve Doğru ve Bilinçli Kullanım alt boyutunu; hastalığının grubu ise Etkili ve Güvenli Kullanım alt ölçek puanını anlamlı derecede etkilemiştir.

Sonuç: Araştırmamıza göre çocuklarda tıbbi hastalığa bağlı uzun süre ilaç kullanılması akılcı ilaç kullanımını etkilemektedir. Çocuklarda kullanılan ilaçların yaşa göre dozunun değişmesi ve farmasötik şekli sebebiyle gerek hazırlanması gerekse kullanılmasında doğru ve güncel bilgiler gereklidir. Ayrıca bitkisel ürünler, takviye gıdalar da çocukluk döneminde kullanılmaktadır. Bu nedenle sağlık çalışanlarının ve ebeveynlerin bilgi, tutum ve davranışları çocukların sağlıklarını etkilemektedir. Ülkemizde farklı bölgelerde akılcı ilaç kullanımına yönelik yapılan çalışmalar arttıkça akılcı ilaç kullanımına yönelik eğitim ve politikalar hazırlanırken çocukluk döneminde kullanılan ilaçlar için daha detaylı ve ayrı planlamalar yapılabilir.

Anahtar kelimeler: Çocuk, Ebeveynler, Kronik hastalık, Tutum

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	https://doi.org/10.22391/fppc.1370127			

Key Points

1. Accurate and up-to-date information is needed in both preparation and use of drugs used in childhood, as the dosage varies according to age, and the pharmaceutical form is different from that in adults.
2. The knowledge, attitudes and behaviors of both healthcare professionals and parents regarding medications, herbal products and supplements used during childhood directly affect the health of children.
3. In our study, the presence of children using medication for a long time positively affected the PASRDU total score and subscale scores.

Introduction

Unlike adults, growth and development in children is an ongoing, dynamic process. As the growth and development of the child's body continues, the organs involved in drug metabolism also continue to grow and develop and their metabolic capacities change. As a result of research conducted considering the relationship between children's developmental processes and age, it has been revealed that children under the age of 12 can not access medicine on their own [1]. Therefore, parents have an important place in drug use in childhood. Because after the medicine is prescribed and supplied; Parents' attitudes towards preparing, using and storing drugs are one of the determining roles in the effectiveness of the treatment.

In the literature, studies evaluating Rational Drug Use (RDU) are generally aimed at the adult age group. Based on this situation, Çelebi and his colleagues developed the "Parental Attitude Scale towards Rational Drug Use" (PASRDU) [2]. This study was conducted to investigate the effect of long-term use of medication due to medical disease in children on RDU, with data obtained from parents who applied to Muğla Training and Research Hospital. We think that the data obtained from the study will contribute to the review of the factors affecting RDU in the child age group and to studies in this field.

Methods

The sample size of the study was determined using the Epiinfo 7.0 program with a 95% reliability level and an acceptable error rate of 0.05. Among the 288 parents of children aged 0-12 who applied to the pediatric outpatient clinics of Muğla Training and Research Hospital between January 1, 2022 and March 31, 2022, 144 persons with chronic diseases and regular medication use for at least 3 months were included in the research group. 144 persons with no chronic disease and no regular medication use were determined as the control group.

A form containing questions for sociodemographic data and questions to evaluate awareness, knowledge, attitudes and behaviors of rational drug use was prepared by reviewing the literature. Additionally "Parental Attitude Scale Towards Rational Drug Use (PASRDU)" was used which is a 5-point Likert type scale with a total of 40 items, 28 of which contain positive statements and 12 of which contain negative statements. The total score that can be obtained from the scale, which has two sub-dimensions, is between 40-200. As the score increases, the positive attitudes of parents towards rational drug use increase. The forms were filled out by face-to-face interview method.

Ethical Approval

Approval for this study was received from the Muğla University Clinical Research Ethics Committee with the decision number 24/IX on 24.11.2021.

Data Analysis

The data were analyzed by SPSS software (version 26.0, IBM Corp., Armonk, New York, USA) and was studied with a 95% confidence level. PASRDU scores showed normal distribution in both groups. In the study, independent groups t test was used to compare PASRDU scores according to groups, chi square test was used in the relationship between groups and categorical (grouped) variables, and two-way ANOVA test was used to compare demographic characteristics and group variables according to PASRDU scores.

Results

A total of 288 parents, minimum age 20 and maximum age 55, were voluntarily included in the study. Of the parents participating in the study, 195 were mothers (67.71%) and 93 were fathers (32.29%), and the average age was 34.88±6.44 years in the research group and 33.57±6.57 years in the control group. The average number of children aged 12 and under among all participants was found to be 1.53±0.62. The distribution of sociodemographic characteristics between groups is shown in Table 1 (Table 1).

Table 1. The distribution of sociodemographic characteristics between groups

		Control group n (%)	Research group n (%)	p
Interviewed Parent	Mother	100 (69.4)	95 (66)	1.529
	Father	44 (30.6)	49 (34)	
Longest lived place	City	53 (36.8)	35 (24.3)	
	Town	61 (42.4)	68 (47.2)	0.475
	Village	30 (20.8)	41 (28.5)	
Family type	Nuclear family	130 (90.3)	122 (84.7)	0.212
	Extended family	14 (9.7)	22 (15.3)	
Family Social Security	Yes	142 (98.6)	133 (92.4)	**0.023***
	No	2 (1.4)	11 (7.6)	
Socioeconomic Status of the Family	Income is less than expenses	41 (28.5)	37 (25.7)	
	Income equals expenses	94 (65.3)	98 (68.1)	0.866
	Income exceeds expenses	9 (6.2)	9 (6.2)	
Educational status of the parent	Primary education and below	26 (18.1)	34 (23.6)	
	Secondary education	58 (40.3)	62 (43.1)	0.282
	University	60 (41.6)	48 (33.3)	
Parent's Occupation	Housewife	64 (44.4)	76 (52.8)	
	Employee	18 (12.5)	19 (13.2)	
	Health employee	13 (9)	4 (2.8)	0.110
	Officer	15 (10.5)	16 (11.1)	
	Self-employment	3 (2.1)	7 (4.9)	
	Other	31 (21.5)	22 (15.2)	
Number of children aged 0-12	1	82 (56.9)	73 (50.7)	
	2	57 (39.6)	57 (39.6)	0.091
	3 and over	5 (3.5)	14 (9.7)	

** p<0.05 there is a significant difference, p>0.05 there is no significant difference*

When the questions asked about the disease and medication use of the parents were evaluated, 36 people (%12.5) out of all the participants had a chronic disease, while 61 people(%21.2) lived at home with a person with a chronic disease. 26.4% of the people in the research group and 16% of the people in the control group live at home with an individual with a chronic disease (p=0.031). While individuals in the research group mostly apply to university hospitals for drug treatment (43.1%), individuals in the control group mostly apply to state hospitals (48.6%). The rate of non-prescription drug use is higher in individuals in the control group. Non-prescription antibiotic use was found to be 1.04%. While 43.1% of the individuals in the research group did not give drugs to their children which are not prescribed, this rate was found to be 16% in the control group. The most commonly used drug group, which is not prescribed, is the antipyretic group, also known as antipyretics, with a rate of 44.79% (n:129).

The average age of the children participating in the study who have been using medication for more than 3 months due to a medical disease is 15.91±3.56 years, and the duration of the medical disease is 2.97±2.51 years (Table 2).

Table 2. Characteristics of children who had long-term use of medication

		Research group n(%)
Child age (5.91±3.56) /years	1 and below	21 (14.6)
	2-5	41 (28.5)
	6-10	62 (43.1)
	Over 10	20 (13.9)
Child's disease group	Brain and Nervous System	53 (36.8)
	Endocrine System	30 (20.8)
	Urinary System	24 (16.7)
	Respiratory system	13 (9)
	Mental Diseases	6 (4.2)
	Cardiovascular System	14 (9.7)
	Other	4 (2.8)
Duration of disease (2.97±2.51) /years	1 and below	48 (33.3)
	2-5	71 (49.3)
	Over 5	25 (17.4)
Duration of medicine use (2.77±2.42) /years	1 and below	54 (37.5)
	2-5	68 (47.2)
	Over 5	22 (15.3)
Drug type	Tablet	76 (52.8)
	Suspension	56 (38.9)
	Inhaler	5 (3.5)
	Other	7 (4.9)

Among all participants, the statement with the highest score from the parents was 'I keep the medicines in places where my child cannot reach', and the statement with the lowest agreement was; "If I have to give more than one medicine to my child, I will mix the medicines together."

Parents' Accurate and Conscious Use (ACU) score shows a statistically significant difference according to their educational status (p = 0.046). ACU score was higher in the research group. ACU score was highest in the research group parents who were university graduates (134.46 points) and lowest in the control group parents who were university graduates (124.52 points).

There is a statistically significant difference in terms of the PASRDU subgroups, ACU, Effective and Safe Use scores (ESU), and total PASRDU scores (Table 3). Scores were higher in all categories in the research group (Table 3).

Table 3. Comparison of parental attitude scale for rational drug use of scores by groups

	Control group	Research group	t	p
Accurate and Conscious Use	126.88±12.26	133.03±9.97	-4.668	**<0.001***
Effective and Safe Use	42.53±6.73	45.28±5.37	-3.834	**<0.001***
Parental Attitude Scale for Rational Drug Use	169.37±16.92	178.17±13.04	-4.946	**<0.001***

** p<0.05 there is a significant difference, p>0.05 there is no significant difference*; t-test

The PASRDU total score of parents whose children had brain and nervous system diseases is higher than other groups (Table 4). However, the type of disease did not create a statistically significant difference in the PASRDU total score (Table 5). While the ESU score was highest in children with the urinary system disease, it was lowest in children with endocrine system disease (Table 4). For other features, the difference was not significant for the ESU scores (Table 5).

Table 4. Descriptive statistics of PASRDU scores due to characteristics of children who had long-term use of medication

Child's disease group	Accurate and Conscious Use	Effective and Safe Use	Parental Attitude Scale for Rational Drug Use
Brain and Nervous System	133,75±10,13	46,11±5,78	179,87±13,84
Endocrine System	132,9±9,47	42,8±3,73	175,7±10,39
Urinary System	130,75±10,57	47,08±5,22	177,83±13,44
Respiratory system	130,69±9,26	46±6,49	176,69±13,32
Cardiovascular System	132,86±11,39	43,14±4,66	174,57±15,32

Table 5. Comparison of PASRDU scores according to groups regarding characteristics of children who had long-term use of medication

	Accurate and Conscious Use		Effective and Safe Use		Parental Attitude Scale for Rational Drug Use	
	F	p	F	p	F	p
Child age	1.288	**0.281**	1.525	**0.211**	1.670	**0.177**
Child's disease group	0.763	**0.578**	2.739	**0.022***	1.134	**0.346**
Duration of disease/years	4.140	**0.018***	1.113	**0.332**	3.981	**0.021***
Duration of medicine use /years	2.153	**0.120**	2.773	**0.066**	2.990	**0.054**
Drug type	0.097	**0.908**	1.790	**0.171**	0.577	**0.563**

** p<0.05 there is a significant difference, p>0.05 there is no significant difference;* two-way ANOVA test

Parents' ACU scores showed a statistically significant difference according to the duration of the disease (p = 0.018) (Table 5). For other characteristics, the difference for ACU scores were not statistically significant (Table 5). Parents' ESU scores showed a statistically significant difference according to the child's disease (p = 0.022). Parents' PASRDU scores showed a statistically significant difference according to the duration of the disease (p = 0.021). While the PASRDU scores were highest in those whose child's disease duration is 1 year or less, it was lowest in those whose child's disease duration is 5 years or more. For other characteristics, the difference was not significant for the PASRDU scores (Table 4).

Discussion

The scores of the research group on the Parental Attitude Scale towards Rational Drug Use and its subscales are higher than the control group and are statistically significant. In our study, it was found that families with children who had long-term use of medication have more positive knowledge and attitudes towards Rational Drug Use (RDU). It has been shown in studies that parental education level affects RDU [3]. In our study, parental education level creates a significant difference for the " Accurate and Conscious Use" subscale score. The level of Accurate and Conscious Use is highest in the research group parents who are university graduates, and lowest in the control group parents who are university graduates. Similar results were obtained in other studies [4-6]. Some studies have shown that educational status does not affect the RDU level [7].

A striking point in our study is that the rate of giving antibiotics to children without a prescription was found to be 1.04%. This rate is quite low compared to studies conducted in previous years. In a study conducted in our country in 2015, this rate was found to be 12.5%, and in a study conducted in 2013, it was found to be 8.1% [8,9]. In Tural Büyük E's study in 2021 and Kuloğlu's study in 2022, the rate of non-prescription antibiotic use is similar to our study [10,11]. We can think that the ban on the sale of antibiotics without a prescription has made a difference in this regard over the years.

The scores of the PASRDU and its subscales of parents whose children have been taking medication for more than 3 months due to a medical disease, which constitute the research group of our study, were found to be significantly higher than the control group. In the study conducted by Kuloğlu, it was found that parents whose children were sick had a higher mean PASRDU score (although there was no statistical difference) [11].

In the studies conducted by Çelebi and Yılmaz, having a child with a chronic disease did not cause a significant difference in terms of PASRDU total and subscales score [2,7]. The reason why our study showed different results from the literature may be due to the lower rate of having children with chronic diseases in other studies.

In our study, the "Effective and Safe Use" level was found to be highest in those whose children used medication due to a disease of the urinary system and was found to be lowest in those whose children used medication due to a disease of the endocrine system and was found to be statistically significant. While the PASRDU total score and "Accurate and Conscious Use" level were highest in those whose child had a disease duration of 1 year or less, it was lowest in those whose child was 5 years or more and was found to be statistically significant. We think that this study may contribute to future studies as it is the first study to investigate the effect of the system related to chronic disease and duration of drug use on PASRDU scores.

Limitations

The population of the research consists of parents who came to a single hospital. Since the hospital where the study was conducted did not have all pediatric subspecialty clinics at the time of the study or due to the choice of another hospital, it may not cover all parents in the province. The study was conducted during the pandemic period and volunteers participated in the study. The answers to the questions are based on information received from parents.

Conclusion

In our study, it was found that families with children who use medication for a long time have more positive knowledge and attitudes towards Rational Drug Use (RDU). This result may be due to families having more experience using medication; they are more likely to be informed by healthcare staff about their children's diseases, possible complications, drug side effects and medications used; parents are more susceptible to their children having an additional disease. The fact that the scores in the control group are not so low may be due to the fact that the study was not conducted in primary care but in a tertiary healthcare institution.

Since the dosage of drugs used in childhood varies depending on age and the pharmaceutical form is different from that in adults, accurate and current information is needed in both their preparation and use. In addition to medicines, herbal products and food supplements are also used during childhood. Therefore, the knowledge, attitudes and behaviors of both healthcare professionals and parents directly affect the health of children. Studies using PASRDU in our country are limited. As studies on this subject increase, more detailed planning can be made for setting education and policies for rational drug use.

Conflict of Interests: None

Author Contributions		Author Initials
SCD	Study Conception and Design	AÖ, NY,YT
AD	Acquisition of Data	AÖ
AID	Analysis and Interpretation of Data	AÖ, NY
DM	Drafting of Manuscript	AÖ, NY,YT
CR	Critical Revision	AÖ, NY,YT

Funding/Support: This study received no funding
Acknowledgements: I would like to thank to volunteers who took part in this study.
Previous publication: This study was presented at the 22nd International Eastern Mediterranean Family Medicine Congress (Hybrid Congress-Adana/Turkey) on May 11, 2023.

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