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### Examination of Mothers' Over the Counter Medication Usage at Home According to Different Socioeconomic and Health Literacy Levels

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#### ABSTRACT

**Objective:** The purpose of this study was to examine mothers' OTC medication usage at home according to different socioeconomic and health literacy levels and the effecting factors. **Materials and Methods:** This cross-sectional descriptive study was carried out in three family health centers from different socioeconomic levels (low-middle-high) between September 2018 and February 2019. The sample of the study consisted of 300 mothers of 0–18-year-old children who met the research criteria. Data were collected through “Data Collection Form” and “Adult Health Literacy Scale”. **Results:** It was determined that mothers in low socioeconomic group had high level of OTC medication usage to their children at home. A significant relationship was found between the mean scores of mothers' health literacy and socioeconomic level ( $p<0.000$ ). The mean scores of mothers' health literacy in low socioeconomic group who used OTC medication to their children at home are lower than mothers who did not use OTC medication ( $p: 0.041$ ). It was determined that child's age ( $OR=1.01, p=0.045$ ), regular medication usage in mother ( $OR=2.11, p=0.014$ ) and reading the prospectus before giving medication to their child ( $OR=3.14, p=0.005$ ) effected to mothers' OTC medication usage at home. **Conclusion:** This study emphasized that low socioeconomic and health literacy levels may cause mothers' OTC medication usage to their children at home. OTC medication usage can be decreased with education programs that take into account the effecting factors to mothers' OTC medication usage and aim to increase health literacy levels.

**Keywords:** Over the Counter Medication, Health Literacy, Children, Mothers, Pediatric Nursing.

### Annelerin Evde Reçetesiz İlaç Kullanma Durumlarının Farklı Sosyoekonomik ve Sağlık Okuryazarlık Düzeylerine Göre İncelenmesi

#### ÖZ

**Amaç:** Bu çalışmanın amacı, farklı sosyoekonomik düzey ve sağlık okuryazarlık düzeyine göre annelerin çocuklarına evde reçetesiz ilaç kullanım durumunu ve etkileyen faktörleri incelemektir. **Gereç ve Yöntem:** Kesitsel tanımlayıcı desende olan bu araştırma farklı sosyoekonomik düzeyde yer alan (düşük-orta-yüksek) üç aile sağlığı merkezinde Eylül 2018- Şubat 2019 tarihlerinde yürütülmüştür. Araştırmanın örneklemini araştırma kriterlerine uygun olan 0-18 yaş grubu çocuğa sahip 300 anne oluşturmuştur. Veriler “Veri Toplama Formu” ve “Yetişkin Sağlık Okuryazarlığı Ölçeği” ile toplanmıştır. **Bulgular:** Düşük sosyoekonomik grubunda yer alan annelerin çocuklarına evde reçetesiz ilaç kullanma düzeylerinin yüksek olduğu belirlenmiştir. Annelerin sağlık okuryazarlık puan ortalamaları ile sosyoekonomik düzeyleri arasında anlamlı bir ilişki bulunmuştur ( $p<0.000$ ). Düşük sosyoekonomik grubunda yer alan, çocuklarına evde reçetesiz ilaç kullanan annelerin sağlık okuryazarlık puan ortalamaları, reçetesiz ilaç kullanmayan annelere göre daha düşüktür ( $p=0.041$ ). Çocuğun yaşının ( $OR=1.01, p=0.045$ ), annenin düzenli ilaç kullanma durumunun ( $OR=2.11, p=0.014$ ) ve çocuğa ilaç vermeden önce prospektüsü okuma durumunun ( $OR=3.14, p=0.005$ ) annelerin reçetesiz ilaç kullanımını etkilediği belirlendi. **Sonuç:** Bu araştırma düşük sosyoekonomik ve sağlık okuryazarlık düzeyinin annelerin çocuklarına evde reçetesiz ilaç kullanma durumuna yol açabileceğini vurgulamıştır. Annelerin reçetesiz ilaç kullanmasına etki eden faktörleri göz önünde bulunduran ve sağlık okuryazarlık düzeylerinin artırılmasını hedefleyen eğitim programları ile reçetesiz ilaç kullanımını azaltılabilir.

**Anahtar Kelimeler:** Reçetesiz İlaç, Sağlık Okuryazarlığı, Çocuklar, Anneler, Pediatri Hemşireliği.

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## INTRODUCTION

The prevalence of over-the-counter (OTC) medication usage is increasing in the world. Use of OTC medication to treat children is common behavior internationally among parents (Jensen et al., 2014). It was reported that prevalence of parental self-administration of OTC medication in children is ranging from 8% to 96% (Martín-Pérez et al., 2014; Mira et al., 2015; Trajanovska et al., 2010). In Turkey, parental self-administering of OTC medication in children is ranging from 42% to 66% (Akıcı et al., 2015; Cinar et al., 2014; Çınar & Mercan, 2020).

World Health Organization (World Health Organization, 1998) defined self medication as “the use of medicines by individual to treat self-recognized illness or symptoms”. Children generally receive OTC medication at home to treat fever, cough, upper respiratory tract infections and pain (Martín-Pérez et al., 2014; Trajanovska et al., 2010). Inappropriate using of OTC medication at home such as cold and cough product have emerged an important public health issue due to drug safety and efficacy (Hampton et al., 2013; Yust & Slattery, 2012). Mothers' administration of OTC medication to children at home lead to occur serious side effects in children (Martín-Pérez et al., 2014). It was stated that OTC fever and cough medication usage was too risky in children under two-year-olds, however parents used them to their children at home (Garbutt et al., 2010). Also, it is determined that half of medication administration errors at home are very harmful for children (Walsh et al., 2008). This leads that child are a particularly vulnerable groups in terms of health care due to their different physiological and communication characteristics (Lan et al., 2014; Martín-Pérez et al., 2014). For this reason, it is important to determine associated factors of mothers' administration of OTC to children at home (Jensen et al., 2014).

Mothers usually play a primary role in medication management at home. Therefore, children are dependent on mothers to receive proper and adequate medication administration (Boztepe et al., 2014). This situation gives the mothers responsibility to make the right decision about the concepts of health/disease. Rational use of medicine has been defined (World Health Organization, 1985) as “patients receive medications appropriate to their clinical needs, in doses that meet their individual requirements, for an adequate period of time, and at lowest cost to them and their community. The basic principles of rational use of medicine are to use the right medicine at the right time, in the right amount and in the right form. These requirements are closely related to the health literacy of individuals. OTC medication usage is incompatible with the principles rational use of medicine (Yılmaz & Kıl, 2018). The main problem in OTC medication usage which is expressed as irrational use of medicine, has been shown to be insufficient health information (Çınar & Mercan, 2020; World Health Organization, 1985). Health literacy appears to be a concept that will increase awareness of these principles in individuals. With the increase in health literacy, individuals also behave more rationally about medication use (Yılmaz & Kıl, 2018). Health literacy is an ability to obtain, process and understand the information

necessary to make appropriate health-related decisions (NNLM, 2020). There are studies stating that there is a relationship between the parents'

health literacy levels and the health outcomes of both themselves and their children (Agarwal et al., 2015; Yin et al., 2012). It is important to evaluate the health literacy level of the parents for using OTC medication at home that is based on their own health knowledge instead of receiving opinions from a doctor or healthcare professional about the selection of drugs (Yin et al., 2012). OTC medication administration may be more frequent in developing countries because they have overcrowded outpatient clinics and low health literacy of caregivers (Mehndiratta 2012). The low level of health literacy may cause the use of OTC medication at home, errors in administration of medication to children, the occurrence of undesirable side effects and the increase in the number of applications to the emergency service (Alqudah et al., 2019; Harris et al., 2017; Hietbrink et al., 2014; Yin et al., 2012).

There are studies on mothers' OTC medication usage to children at home in our country (Akıcı et al., 2015; Cinar et al., 2014; Çınar & Mercan, 2020). These studies focused on the frequency of OTC medication use before admission to the hospital (Akıcı et al., 2015), OTC medication usage in fever management (Cinar et al., 2014) or mothers' rational use of medicine (Çınar & Mercan, 2020). However, mothers' OTC medication usage according to different socioeconomic and health literacy levels and the effecting factors are not determined. Resulting from the gaps in knowledge described above, the purpose of the present study was to determine the mothers' OTC medication usage according to different socioeconomic and health literacy levels and the effecting factors.

This present study may guide nurses to understand the effecting factors for mothers' OTC medication use at home, provide nursing care to mothers towards their individual characteristics and prevent to inappropriate medication to children.

## MATERIALS AND METHODS

### Sample and settings

This descriptive and cross-sectional study was obtained from mothers of 0-18 years old children in three different socioeconomic groups. The study that shows the socioeconomic levels of the districts of Ankara Province Municipality, conducted by Turkish Statistics Institute (TUIK) was used to choose the sample (TUIK, 2017). Çankaya district was selected by simple random sampling method. A total of 4429 neighborhoods of this district are divided into three categories according to low-middle-high socioeconomic level. Family health centers in these three categories were numbered and one family health center from each region was included in the sample using the random sampling method. It was determined that Çankaya Number 6 Family Health Center as “high socio-economic level”, İncesu Family Health Center as “middle socio-economic level” and Çankaya Number 5 Family Health Center as “low socio-economic level”. The present study was carried out in three family health care centers from

different socioeconomic level between September 2018 and February 2019. The inclusion criteria were determined as being 1) mothers who have 0–18-year-old children, 2) mothers who can communicate in Turkish and 3) mothers who mothers who registered in related family health center. Equal number of mothers (n:100) were included in the sample from each three categories. Thus, the sample was composed of 300 mothers. Power analyses were performed using PASS (NCSS Corp. Released 2011. Power Analyzes Sample Size for Windows, Version 11.0. Utah, USA). The power was found to be 90% when sample size consisted of 100 mothers in the three socioeconomic groups at  $\alpha=0.05$  level.

#### **Data collection tools**

The data were collected through “Data Collection Form” and “Adult Health Literacy Scale”.

**Data collection form:** Data Collection Form consisted of mother’s age, education status, employment status, child’s age, having any chronic disease in child, regular medication usage in child and mother, OTC medication usage for their children, etc.

**Adult Health Literacy Scale:** Adult Health Literacy Scale (AHLs) was developed in 2014 by Sezer and Kadioğlu to evaluate the level of health literacy level. AHLs comprises 23 items that included 22 questions about an individual’s health information and medication usage, and one figure that determines the status of knowledge about places of organs in the body. In the scale, thirteen are yes-no, four are filling the blank, four are multiple-choice, and two are matching questions. The total score varies from 0 to 23. Higher scores reflect high health literacy level. The internal consistency of the scale was 0.77 and test-retest reliability coefficient was 0.87 (Sezer & Kadioğlu, 2014).

#### **Statistical analysis**

The data of the present study were analysed using IBM Statistical Package for the Social Sciences (SPSS) for Windows 21.0 package program. The compliance of the data to normal distribution was analysed using the Kolmogorov-Smirnov test. The data were distributed normally, parametric tests were applied. In the analysis of the descriptive data, numbers and percentages were used for the discrete data, while the continuous data were presented as mean±standard deviation. Independent t tests were used in two groups which had continuous variables and one-way analysis of variance (ANOVA) for more than two groups. Multinomial logistic regression analysis was used to determine the effecting factors for maternal OTC medication use. The statistical significance was accepted at  $p<0.05$ .

#### **Ethical approval**

Written consent and ethics committee approvals was obtained from Hacettepe University Non-Interventional

Clinical Research Ethics Committee (GO 18/125-25) and Ankara Provincial Health Directorate (75252626-604.02) to carry out the study. The mothers were informed about the aim of the present study, and written consent was obtained noting that they volunteered to participate in the present study. Data were collected by researcher (A.A) using the face-to-face interview technique. Data collection took approximately 30 minutes.

## **RESULTS**

Table 1 presents the distribution of some descriptive statistics of the study groups and mothers’ OTC medication usage. The mean age of the mothers in high socioeconomic group was 37.4 years, in middle socioeconomic group was 34 years and in low socioeconomic group was 34 years. The mean age of children in high socioeconomic group was 6.3 years, in middle socioeconomic group was 5.4 years and in low socioeconomic group was 7.6 years. It was determined that mothers’ OTC medication usage was higher in low socioeconomic group than other groups. Analgesic and antipyretic (such as parol and calpol) were commonly used as OTC medication by mothers. Regular medication usage in mother was high in low socioeconomic group, while regular medication usage in children was high in high and middle socioeconomic groups. The majority of mothers in low socioeconomic group explained that they decided to give medication to their child on self, while mothers in high socioeconomic group decided by taking doctor’s advice. The majority of mothers in low socioeconomic group expressed that they didn’t read medicine’s prospectus than other groups.

Table 2 presents distribution of the mean scores of mothers’ health literacy in three different socioeconomic groups. The mean score of mothers’ health literacy level in high socioeconomic group was  $18.15 \pm 2.80$ , in middle socioeconomic group was  $14.99 \pm 3.53$  and in low socioeconomic group was  $9.29 \pm 3.57$ . It was determined that as socioeconomic level decreased, the mothers’ mean scores of health literacy decreased. There was a significant relationship between the mean scores of mothers’ health literacy and socioeconomic level ( $p<0.000$ ).

Table 3 presents evaluation of the mean scores of health literacy according to mothers’ OTC medication usage in different socioeconomic levels. There was a statistically significant difference in terms of mothers’ OTC medication usage in mothers with low socioeconomic level. It was determined that mothers who were using OTC medication to children at home had lower health literacy mean scores than mothers not using OTC medication in low socioeconomic group ( $p=0.041$ ).

Table 1. Characteristics of the study groups and mothers' OTC medication usage.

	Socio-economic Groups					
	High Group 1		Middle Group 2		Low Group 3	
	n	%*	n	%*	n	%*
<b>Mother's age</b>						
18-28	12	19.4	24	38.7	26	41.9
29-39	50	32.7	53	34.6	50	32.7
40-50	32	42.7	23	30.6	20	26.8
51-60	6	60.0	-	0.0	4	40.0
<b>Education Status</b>						
Primary School	-	0.0	5	15.2	28	84.8
Secondary School	3	6.0	12	24.0	35	70.0
High School	41	45.0	35	38.5	15	16.5
University	56	44.4	48	38.1	22	17.5
<b>Employment</b>						
Employed	54	67.5	16	20.0	10	12.5
Unemployed	46	20.9	84	38.2	90	40.9
<b>Child's age</b>						
0-6	58	34.1	66	38.8	46	27.1
7-12	23	28.8	24	30.0	33	41.2
13-18	19	38.0	10	20.0	21	42.0
<b>Having any chronic disease in child</b>						
Yes	9	18.8	20	41.7	19	39.6
No	91	36.1	80	31.7	81	32.1
<b>Regular medication usage in child</b>						
Yes	23	35.9	24	37.5	17	26.6
No	77	32.6	76	32.2	83	35.2
<b>Regular medication usage in mother</b>						
Yes	29	29.0	30	30.0	41	41.0
No	71	35.5	70	35.0	59	29.5
<b>OTC medication usage for their children</b>						
Yes	65	32.8	57	28.8	76	38.4
No	35	34.3	43	42.2	24	23.5
<b>Type of OTC**</b>						
Analgesic	62	32.0	57	29.3	75	38.7
Antipyretic	29	22.7	31	24.2	68	53.1
Cold and flu	18	20.0	18	20.0	54	60.0
Stomach medicine	3	6.8	6	13.6	35	79.6
Antibiotic	-	0.0	1	4.2	23	95.8
<b>Decision making when to give medication to a child at home**</b>						
Taking doctor's advice	87	42.0	65	31.0	55	27.0
Deciding on self	43	23.0	65	34.0	82	43.0
Asking to friends and relatives	2	4.0	4	9.0	39	87.0
<b>Reading the prospectus before giving medication to their child</b>						
Yes	89	40.3	75	33.9	57	25.8
No	11	13.9	25	31.6	43	54.4

\* Line percentage

\*\*Multiple answers are marked.

The effecting factors to mothers' OTC medication usage (such as mother's age, education status, employment status, child's age, having any chronic disease in child, regular medication usage in child and mother, reading the prospectus before giving medication to their child,

decision making when to give medication to a child and the mean scores of mothers' health literacy) was examined with multinomial logistic regression analysis. Table 4 presents the effecting factors to mothers' OTC medication usage to children at home which are statistically significant

in multinomial logistic regression model. In the present study, child's age had a 1.01-fold increasing effect on the mothers' OTC medication usage to children at home. As the child's age increased, the level of mothers' OTC medication usage increased. Regular medication usage in

mother had a 2.11-fold and reading the prospectus before giving medication to their child had a 3.14-fold decreasing effect on the mothers' OTC medication usage to children at home.

**Table 2. The mean scores of mothers' health literacy in three different socioeconomic groups.**

Socio-economic groups	n	Mean	Standard deviation	95% Confidence Interval		p
				Lower limit	Upper limit	
High	100	18.15	2.80	17.59	18.70	0.000*
Middle	100	14.99	3.53	14.28	15.69	
Low	100	9.29	3.57	8.58	9.99	
Total	300	14.14	4.94	13.58	14.70	

\* p<0.05

**Table 3. Evaluation of the mean scores of health literacy according to mothers' OTC medication usage in different socioeconomic levels.**

Socioeconomic groups	Using OTC	n	Health Literacy		
			Mean	Standard deviation	p
High Group 1	Yes	65	18.21	2.76	0.752
	No	35	18.02	2.92	
Middle Group 2	Yes	57	14.77	3.86	0.480
	No	43	15.27	3.06	
Low Group 3	Yes	76	8.88	3.67	0.041*
	No	24	10.58	2.96	

\* p<0.05

**Table 4. Effecting factors to mothers' OTC medication usage.**

Effecting factors	OR (%95 Confidence Interval)	p
Child's age	1.01 (1.00-1.01)	0.045
Regular medication usage in mother	2.11 (1.16-3.85)	0.014
Reading the prospectus before giving medication to their child*	3.14 (1.41-6.99)	0.005

\* "Yes" category is taken as reference value.

## DISCUSSION

To our knowledge, this is the first study to document the manner in which mothers' OTC medication usage at home according to different socioeconomic and health literacy levels and the effecting factors in Turkey. The results of this descriptive cross-sectional study had revealed that mothers' OTC medication usage at home was higher in low socioeconomic group than other groups. There was a significant relationship the mean scores of mothers' health literacy and socioeconomic level. In low socioeconomic group, mothers who were using OTC medication to children at home had lower health literacy mean scores than mothers not using OTC medication. Also, child's age, regular medication usage in mother and reading the prospectus before giving medication to their child were effecting factors to mothers' OTC medication usage at home.

Although information on mothers' OTC medication usage to children is well-documented, this present study has brought some new information mothers' OTC medication usage to children at home according to socioeconomic and health literacy levels. It has been studied in the literature that parents who have a higher health literacy and/or education levels are more likely to use OTC medication for their children (Calamusa et al., 2012; Martín-Pérez et al., 2016). Moreover, it was found that parents in high and middle socioeconomic group tended to give OTC medication to their children more frequently than parents from lower group (Martín-Pérez et al., 2016). Unlike, in the present study, OTC medication usage to children at home was high in mothers who came from low socioeconomic level. Also, mothers in low socioeconomic group who have a lower health literacy use more OTC medication to children. This can be explained by the fact that the majority

of mothers in low socioeconomic group decided on self or asked to friends and relatives, didn't read medicine's prospectus when using OTC medication to children at home. These findings may lead to use more OTC medication to children than other socioeconomic groups. Mothers from low socioeconomic group are more likely to have low health literacy (Yin et al., 2013). An individual's level of health literacy plays a role in ability to understand medication information and decision on administration of medication. Individuals with limited health literacy can cause a limited ability to interact with hospital staff to ask their information needs and end up with more confident about OTC medication usage (Aoki & Inoue, 2017). For this reason, it is important to promote health literacy level of mothers in low socioeconomic group by health professionals.

The decision process of OTC medication usage at home depends not only on individual knowledge, but also on cultural and social factors (Calamusa et al., 2012). Parental use of OTC medication to children have described the relevance of demographic characteristics of the parents and the children (Trajanovska et al., 2010). When analyzing effecting factors of mothers' OTC medication usage to children at home, it was observed that child's age was an increasing effect on the mothers' OTC medication usage. In the present study, as the child's age increased, the level of mothers' OTC medication usage increased. There are studies in the literature indicating that mothers' administration of OTC medication are particularly high in older children (Bi et al., 2000; Martín-Pérez et al., 2016). Consistent with findings from previous studies, this finding could suggest that mothers are more confident in giving OTC medication to older children. Conversely, a study showed that mothers' OTC medication usage was particularly high in the young age of the children (Hämeen-Anttila et al., 2010). These findings indicate that nurses should deliver appropriate education to mothers for all childhood period.

In the literature, parental attitudes, behavior and experience with medication could effect their willingness to administer OTC medication to their children (Agarwal et al., 2015; Jensen et al., 2014; Siponen et al., 2013). A point in our results is that regular medication usage in mother is an decreasing factor for administration OTC medication to their children at home. Regular medication usage in mothers may cause increased medication compliance. Perhaps mothers' experiences for regular medication usage affects the use for her child more than her own health does. Such mothers may also be more aware of side effects of OTC medication. This may be due to fact that mothers have concern with OTC medication which may lead to dangerous deterioration in their children's condition. The present study shows that mothers' experiences may place an important point for not delivering OTC medication to children at home. In addition, mothers' medication usage are significantly affected by the health literacy that ensures the correct use of the medication (Yin et al., 2012). In this study, the importance of the concept of health literacy, which enables to identify health-related risk factors and

make conscious decisions in risky situations such as OTC medication usage, is emphasized once again.

Yin et al. (2013) indicated that using active ingredient information as part of decision making about OTC medication. Also, it was stated that reading and comprehend medication instruction prior to giving medication to children is a method used by parents (Anderson et al., 2013). In our study, in addition to the previous study, reading the prospectus before giving medication to their child has a decreasing effect to mothers' OTC medication usage. This can be explained by the fact that mothers may avoid to use OTC medication due to reading side, undesirable and unknown effects of medication or complications due to medication usage in children. They may not want to take risk and need for reassurance. These findings demonstrate the importance of addressing effecting factors to mothers' OTC medication usage. Nurses need to be aware of effecting factors when mothers use OTC medication to children at home and take measures towards them.

## CONCLUSION

This present study demonstrates the importance of educating mothers on the OTC medication in pediatric population and health literacy. This present study will help nurses understand the factors behind mothers' OTC medication usage to children at home. The continuous of administration of OTC medication to children at home in low socioeconomic group may have potential long term consequences for their children. Mothers need to be properly informed about the safety, use and characteristics of OTC medication. In order to reduce OTC medication usage to children at home and maintain children's safety, mothers' health literacy level should be improved. Nurses should take a more active role in promoting health literacy levels in community, monitoring inappropriate medication administration to children and improvement policies.

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## Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Author Contributions

**Plan, design:** AY, HB; **Materials and Methods:** AY, HB; **Data analysis and interpretation:** AY, HB; **Writing and corrections:** AY, HB.

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