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Parental self-medication and associated factors in children: a cross-sectional study in Turkey

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Abstract

Objective This study was conducted to evaluate the parental self-medication (SM) practices in children and associated factors in Adana, Turkey.

Methods A web-based cross-sectional survey was carried out among the parents between December 2020 and April 2021. This study was conducted according to the 'Checklist for Reporting Results of Internet E-Surveys (CHERRIES)' guidelines. A one-page survey included details about sociodemographic characteristics (gender, age, profession, education of parents and others) sources of information, questions related to parental SM practices for their children (SM practices, common illnesses, drugs used as SM practices and drug-related information) and the reasons behind SM practices were disseminated via social media networks (Instagram, WhatsApp and Facebook) to eligible participants. Online sample size calculator was used, and snow-ball sampling was employed during the study. The final automatic responses from Google Forms were retrieved as 'Excel datasheet' and then cleaned, coded and imported into the SPSS statistical tool (v.25.0).

Key findings This study included a total of 370 participants (response rate of 95.4%). Parental SM practices were revealed to be more (n = 234; 63.5%) prevalent. The most frequent problems for parents who follow SM practices were fever (39.5%; n = 146) and abdominal pain (23.8%; n = 88). The most commonly used class of drugs was antipyretics followed by analgesics and antibiotics. The main reasons for SM practices were personal experience in treating children (n = 186; 50.3%) and high consultation charges (n = 72; 19.5%). Mother working status and parental educational level were two main factors found to be statistically associated with SM practices ($P < 0.05$).

Conclusions The prevalence of parental SM practices was high. There is an urgent need for the parental educational program, the development of national policies about rational medicine usage and durable actions to discourage SM practices.

Keywords: self-medication; parents; prescription; children; paediatric; Turkey

Introduction

Self-medication (SM) is the act of self or following the advice of another person without consulting a physician.[1] SM is a widespread practice that continues to be a huge public health concern around the world.[2–4] In developing countries, the reported prevalence of SM ranges from 12.7 to 95%.[5] SM is a hazardous practice and leads to an incorrect diagnosis, inappropriate drug selection, interactions, resistance, adverse reactions, dependency, abuse problems, wastage of medical resources and higher economic burdens.[6–8]

SM practice in children is a major source of concern around the globe due to their greater vulnerability to drugs.[1, 2, 9] It is reported that the majority of parents prefer to cure their children's common illnesses such as fever, cough/cold and diarrhoea without contacting a physician in both developed and developing countries.[4, 9, 10] Generally, the first line of defence against childhood illnesses is the use of non-prescribed drugs.[2] Moreover, the use of over-the-counter (OTC) medications, purchasing drugs by repurposing a previous prescription, taking medicine on the suggestion of a friend/relative or consuming leftover medicines already on hand at home.[2, 6, 9, 11] SM practices related to analgesics and antibiotics were the most common forms reported in prior studies.[12, 13] The use of SM is commonly linked to a variety of factors such as attitudes, beliefs, gender, age, socioeconomic status, educational level, working status and cultural issues as highlighted in previous studies.[4, 11, 14, 15]

Turkey, like many other countries, has a big problem with SM practices.[16, 17] According to a prior study, unnecessary drug use places a significant burden on Turkey's economy.[12]

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OTC medicines can be obtained without a prescription from local pharmacies.[16] It is also documented that OTC medicines have had increased sales in recent years, owing primarily due to increased public awareness about health and pharmaceutical companies' promotion. However, only 3% of all brands correspond to OTC medicines registered in Turkey.[18] Moreover, several medicines approved in Turkey as prescription-only medicines are also dispensed in Turkish community pharmacies without a prior medical prescription.[18, 19] According to the 'Turkey rational drug use, national action plan' medicines such as antibiotics and narcotic analgesics must be dispensed with a prescription in Turkey.[20] These medications are not available without a prescription, but many doctors prescribe them on demand. These drugs are given to patients by their physicians, who keep them at home for later use. In addition, many drugs, including antibiotics are also available without a prescription on a variety of illegal websites throughout the globe.[1]

SM in children is an unsafe practice and is responsible for hospitalization, morbidity and mortality.[7, 12] According to previously published studies parents do not have sufficient and appropriate knowledge about drug use in children.[1, 2, 4, 9, 21] Medicines are mostly administered by parents to children, and they play a critical and crucial part in the use of curative medicines.[1, 11, 22] According to the Turkstat organization the child population, which includes the 0–17 age group constituted 27.2% of Turkey's population in 2020.[23] Previous literature also documented the use of SM among university students,[12] general patients[17] and community pharmacists [19] in Turkey. However, no studies on the use of SM in children by parents in our study setting (Adana region) or Turkey were found in the literature search. It is necessary to investigate parental SM in children to provide current information about such practices in Turkey. Therefore, this study was carried out to evaluate the parental SM practices and associated factors in children in Adana, Turkey.

Methods

Study design and population

A web-based cross-sectional survey was conducted among the parents in Adana, Turkey. Adana is a very old city situated on the bank of Seyhan River. It is the fifth biggest city in Turkey with a population of 1 248 988.[24] Approval for this study was taken from the 'Ethical Review Board of University' with reference to meeting no: 105/6-12-2020 (Supplementary file 1). This study was carried out as per the Helsinki Declaration. This study was conducted between December 2020 and April 2021. Participants who had children between 1 month and 17 years of age and currently living in Adana, Turkey were included in this study. While participants without a child, non-consented and with missing data were excluded.

Sample size calculation and sampling technique

An online sample size calculator [25] was used to determine sample size calculation for an online survey.[26, 27] For the estimation of a sample, the population of Adana was 1 248 988, and a 50% response distribution was assumed with a 5% margin of error and a 95% confidence level. The obtained minimum sample size was 385 for this study.

Study procedure and data collection

We conducted this study according to the 'Checklist for Reporting Results of Internet E-Surveys (CHERRIES)' guidelines.[28] Based on a literature review, a survey questionnaire was designed for this study.[1, 11, 22] Two qualified and experienced researchers (who spoke Turkish as well as English and whose native or inborn language was Turkish) translated the questionnaire by direct translation method from the source (English) to the target (Turkish: Turkey's official language).[27, 29] Both researchers were also aware of the questionnaire's aims and objectives. The questions' appropriateness, validity, consistency and adequacy were also examined by three academic researchers. Using Google forms (https://www.google.com/forms/about/), a questionnaire was created. An open survey link was sent out electronically via email and social media platforms (Instagram, Facebook and WhatsApp) to all eligible participants.

In this study, the snowball sampling approach was utilized to choose the sample, which was done through the usage of

Table 1 Characteristics of the participants (n = 370)

Characteristics	Number (n)	Percentage (%)
Parental gender (sex)		
Male (father)	88	23.8
Female (mother)	282	76.2
Mother age (years)		
Less than 20	1	0.3
21–30	62	16.8
31–40	133	35.9
More than 40	174	47
Father age (years)		
Less than 20	0	0
21–30	31	8.4
31–40	117	31.6
More than 40	222	60
Mother working status		
Working (job)	208	56.2
Non-working (housewife)	162	43.8
Father working status		
Working (job)	340	91.9
Non-working (jobless)	30	8.1
Parental education level		
Primary school	28	7.6
Secondary school	28	7.6
High school	118	31.9
University	196	52.9
Number of children		
1	182	49.2
2	151	40.8
3	35	9.5
4	2	0.5
More than 4	0	0
Children age (years)		
Less than 1 year	27	7.3
1–6	104	28.1
7–12	122	33
13–17	117	31.6
Total	370	100

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networks and to achieve maximum sample size.[27, 30] The authors' social networks were utilized. The authors' friends were invited to participate in the study, and the friends were also asked to share or distribute the questionnaire to their friends via their social media networks. The link was non-editable after submission and to submit another response by the same account was also unable. These steps were performed to prevent duplicate entries from the same user. We analysed only completed questionnaires and removed participants with incomplete data. The data were obtained online in this study because a community-based face-to-face sampling survey was difficult during the coronavirus disease 2019 (COVID-19) period, and to avoid the COVID-19 spread through contact. A pilot study (n = 30) was also conducted in the same population. The goal of the pilot study was to evaluate the clarity and applicability of the study tool, as well as to identify any problems that might arise during data collection. During this pilot study, the time required for the participants to complete the questionnaire form was also calculated. The study's results were satisfactory, and minor changes were made. After the pilot, the reliability coefficient (Cronbach alpha value: 0.752) was calculated. The final study sample did not include the pilot sample.

Final study instrument

The final modified one-page questionnaire includes a concise summary related to the context, purpose, methods, anonymity and confidentiality, as well as details about the questionnaire completion. Informed consent was received from all the participants. Respondents had to reply with a 'yes or no question' to confirm their consent to participate. After the consent, the participants were directed to two more mandatory questions regarding their current place of living (Adana) and having at least one child. After the selection of the 'Yes' response option for both compulsory questions, eligible parents were instructed to complete the questionnaire. The final questionnaire consisted of 20 open- and closed-ended questions divided into four sections. The first part contained eight sociodemographic variables questions such as parental gender, ages, working status, education, number of children and age of children. The second part consisted of one multiple-choice question regarding the main source of information for drug use. The third part contained 10 questions related to parental SM practices for their children. The responses were collected with yes/no and multiple-choice questions. The last section contained multiple-choice questions related to the reason behind SM practices. The complete details regarding the final questionnaires in English and Turkish languages are included separately (Supplementary file 2).

Data management and statistical analysis

The final automatic responses from Google Forms were retrieved as 'Excel datasheet' and then cleaned, coded and imported into the Statistical Package for the Social Sciences (SPSS: Chicago, IL, USA, Version 25.0). Categorical variables (parental gender, age, working status, education, number and age of children) were calculated as frequencies and percentages. The chi-square test was used to assess the statistically significant differences between independent variables and dependent variables (SM practice: yes or no). A P-value of less than 0.05 was measured as statistically significant.

Results

The questionnaire was completed by 388 participants (n = 18; 4.6% of the respondents were excluded due to missing information) with a response rate of 95.4%. Finally, 370 (n = 370) parents were included in this study. Most of the parents were females (76.2%) and had ages greater than 40 years. More than half (52.9%) of the parents had university-level education and the majority (90%) had one or two children. Further details are listed in Table 1.

In the current study, doctors (53.2%) followed by pharmacists (27.3%), Internet (16.5%), Friends/relatives/neighbours (1.9%) and nurses (1.1%) were the main source of information regarding drug use (Figure 1).

SM practices

In our study, the prevalence of parental SM practices was 63.5%. Fever (39.5%) and abdominal pain (23.8%) were the most common problem for parents using SM practices. The frequently used class of drugs as SM was antipyretic (39.5%) followed by analgesics (23.8%), antibiotics (10%) and antitussives (7.6%). The majority of the participants go to the hospital (n = 200; 54%) or consult a family doctor (n = 154; 41.6%) in case of SM treatment failure, while a limited proportion of the respondents consult community pharmacists (3.5%). Most of the parents reported that they kept unused drugs in-home (n = 287; 77.6%), read the instructions before use (n = 353; 95.4%), had knowledge about drug storage (n = 351; 94.9%) and check the expiry date of drugs

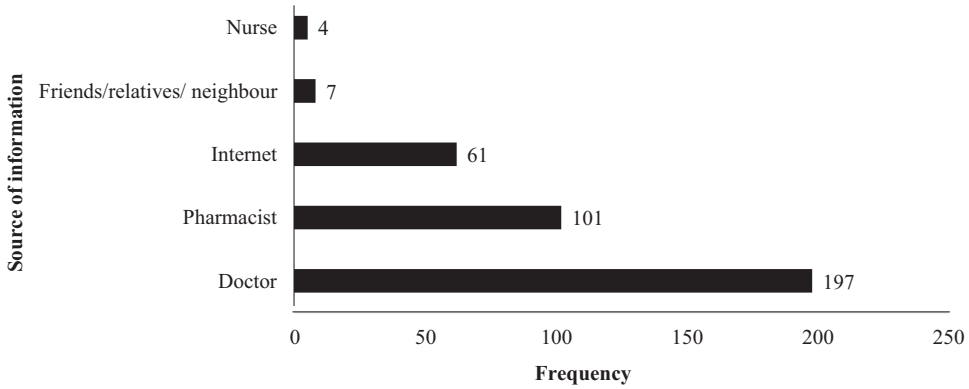


Figure 1 Source of information for drug use (n = 370).

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Table 2 Parental self-medication (SM) practices for their children (*n* = 370)

Questions	Number	Frequency
SM practices for children		
Yes	235	63.5
No	135	36.5
SM practices for the clinical problem (drug class)		
Fever (Antipyretic)	146	39.5
Abdominal pain (Analgesics)	88	23.8
Skin infection (Antibiotics)	37	10
Cough (Antitussives)	28	7.6
Flu/cold (Antihistamine)	22	5.9
Vomiting (Antiemetics)	20	5.4
Diarrhoea (Antidiarrheal)	17	4.6
Constipation (Laxative)	9	2.4
Loss of appetite (Appetite stimulants)	3	0.8
Encountered any side effects during SM?		
Yes	28	7.6
No	342	92.4
Preferred action was taken in case of SM failure?		
Go to hospital	200	54
Consult family doctor	154	41.6
Consult community pharmacist	13	3.5
Seek advice from friends/relatives/ neighbour	3	0.8
Used a higher amount of drug than recommended by the doctor?		
Yes	8	2.2
No	362	97.8
Kept any unused medicine at home?		
Yes	287	77.6
No	83	22.4
Read the instructions for use before using the medicine?		
Yes	353	95.4
No	17	4.6
Knowledge about the drug storage conditions?		
Yes	351	94.9
No	19	5.1
Checking the expiry date of the drug before use?		
Yes	362	97.8
No	8	2.2
Recommended SM practices to others?		
Yes	121	32.7
No	249	67.3
Reasons for parental SM practices for children		
Personal experience in treating my children	186	50.3%
High consultation fees	72	19.5%
Too long waiting time in the clinic	53	14.3%
Easily obtainable drugs	40	10.8%
The health centre is too far away	19	5.1%

(*n* = 362; 97.8%). Additionally, 32.7% of the participants recommended SM practices to others (Table 2).

Reasons for SM practices

The main reasons for SM practices were parents' own experience in treating children (50.3%), high consultation fees (19.5%) and too long waiting time in the clinic (14.3%) (Table 2).

Factors associated with SM practices

In our study, there was a statistically significant difference in mother working status and educational level between SM users and non-user ($P < 0.05$). The proportion of mothers' who SM their children was lower among non-working (40%) than working (60%); $P = 0.031$. Similarly, respondents with primary education had lower SM practices (4.7%) than other

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Table 3 Participant's characteristics and SM use (n = 370)

Variable	SM practices		Total	*P-value
	Yes n (%)	No n (%)		
Parental gender (sex)				0.526
Male	53 (22.6)	35	88 (23.8)	
Female	182 (77.5)	100	282 (76.2)	
Mother age				0.642
Less than 20	1 (0.4)	0 (0)	1 (0.3)	
21–30	36 (15.3)	26 (19.3)	62 (16.8)	
31–40	84 (35.7)	49 (36.3)	133 (35.9)	
More than 40	114 (48.5)	60 (44.4)	174 (47)	
Father age				0.568
Less than 20	0 (0)	0 (0)	0 (0)	
21–30	17 (7.2)	14 (10.4)	31 (8.4)	
31–40	76 (32.3)	41 (30.4)	117 (31.6)	
More than 40	142 (60.4)	80 (59.2)	222 (60)	
Mother working status				*0.034
Working (Job)	141 (60)	67 (49.6)	208 (56.2)	
Non-working (housewives)	94 (40)	68 (50.4)	162 (43.8)	
Father working status				0.695
Working	217 (92.3)	123 (91.1)	340 (91.9)	
Non-working	18 (7.7)	12 (8.9)	30 (8.1)	
Parental education level				*0.031
Primary school	11 (4.7)	17 (12.6)	28 (7.6)	
Secondary school	16 (6.8)	12 (8.9)	28 (7.6)	
High school	81 (34.5)	37 (27.4)	118 (31.9)	
University	127 (54)	69 (51.1)	196 (52.9)	
Number of children				0.204
1	106 (45.1)	76 (56.3)	182 (49.2)	
2	104 (44.3)	47 (34.8)	151 (40.8)	
3	24 (10.2)	11 (8.2)	35 (9.5)	
4	1 (0.4)	1 (0.7)	2 (0.5)	
More than 4	0 (0)	0 (0)	0 (0)	
Children age				0.325
Less than 1 year	15 (6.4)	12 (8.9)	27 (7.3)	
1–6	65 (27.6)	39 (28.9)	104 (28.1)	
7–12	83 (35.3)	39 (28.9)	122 (33)	
13–17	72 (30.6)	45 (33.3)	117 (31.6)	

SM, self-medication.
*P-value = chi-square test.

educational levels and showed a statistically significant difference (P = 0.031). However, no statistically significant difference in SM practices was found by participants' gender, parental ages, father's working status, number and ages of children (P > 0.05) (Table 3).

Logistic regression analysis was applied to find factors that affected the parenteral SM practices score. The results showed that the mother's working status and parental education level were independent predictors (P < 0.05) towards SM practices in children (Table 4).

Discussion

This study evaluated the parental SM practices and associated factors in the Turkish community. The current study is the first report on parental SM practices in the Adana region of Turkey. According to the findings of this study, a higher prevalence of SM practices was reported by parents in their children without medical advice from healthcare professionals. A similar finding was also reported in Brazilian[31] and Nigerian[32] studies. A lower prevalence of SM practices rate was observed in Pakistan,[33] China[34] and Jordan.[35] A higher prevalence value of SM practices for children as compared with our study was reported in Romania,[11] Turkey,[1] Ethiopia,[5] Palestine[36] and Egypt.[37] SM practices are a major concern in children due to their more vulnerability to the negative consequences of improper use of drugs.[11] Non-prescription and inappropriate usage is also linked to a higher risk of side effects as well as a considerable financial cost.[37] The differences in the reported prevalence rate as compared with prior studies can

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Table 4 Logistic regression analysis to find factors affecting overall SM practices

Variable	*β*	Standard error	**P*-value
Parental gender (sex)	.144	.275	.599
Mother age			.895
Less than 20	−20.561	40192.970	1.00
21–30	.316	.303	.296
31–40	0.82	.241	.733
More than 40	21.845	40192.970	1.00
Father age			.571
Less than 20	0	0	–
21–30	.380	.387	.327
31–40	−.043	.239	.856
More than 40	−.574	.140	.576
Mother working status			**.039**
Working (job)	−.324	.159	.042
Non-working (housewives)	−420	.218	0.53
Father working status			.433
Working	−.162	.389	.677
Non-working	−405	.373	.277
Parental education level			**.006**
Primary school	1.045	.415	.012
Secondary school	.194	.276	.482
High school	−1.125	.467	.016
University	.322	.410	.432
Number of children	−.310	.183	.090
Children age			.705
Less than 1 year	.161	.377	.669
1–6	−0.202	.294	.491
7–12	0.59	.290	.839
13–17	−.529	.219	.591

SM practices (Yes/No) was dependent variable, *β*, beta coefficients; bold values shown significant factors.

be described by variations in study methods, cultural factors, healthcare services costs, populations, study design and sample size.[4]

The main common illnesses that led to SM in the current study were fever and abdominal pain. Recent studies conducted in Congo[22] and South-Western Nigeria[2] also reported that fever was the most common problem for which study participants sought SM. Ethiopian study indicated that abdominal pain, cough and diarrhoea were the most common types of ailments among study respondents.[5] A Tanzanian study revealed that cough and fever were the most frequent complaints in which parents used SM practices.[38] In this study, the most frequently three employed drug classes for SM were antipyretics, analgesics and antibiotics. This result was supported by previously published studies in Eritrea,[14] Egypt[37] and Tunis.[39] A study conducted by Tarciuc *et al.*[11] observed that analgesics, anti-tussives and anti-diarrheals were the most frequently used SM drug classes. Another study reported that anti-malarials, antipyretics/analgesics and antibiotics were commonly employed as SM.[22] Such practices are responsible for harmful effects on health and the economy.[6–8]

In our study, antibiotic SM practices were also reported. These findings are consistent with similar previously published studies.[14, 37, 38] According to a recent Turkish study, >30% of the participants had self-medicated with antibiotics without a valid prescription.[40] The improper SM of antibiotics in children is a serious issue and is responsible for adverse drug reactions and resistance development.[41] Proper educational intervention regarding antibiotics for parents is also needed.[42] The possible reason behind the use of these medications could be owing to the study participants' confidence in identifying signs and symptoms or prior drug experience, or it could be due to the easy availability.

In this study, the majority of the participants had good practices regarding reading drug instructions before use, drug storage and checking the drug expiry date. Comparable findings were also reported by Shafie *et al.*[5] and indicated that most of the participants had a habit of drug expiry date checking. However, a study conducted by Katumbo *et al.*[22] indicated that most of the parents did not check the expiry date of medicines before use. Moreover, a considerable proportion of the respondents recommended SM to others for their children. Such practices are responsible for the raised safety concern. There is a critical need for improved physician-parent communication and educational programs.[9, 11, 22] Such interventions may be useful in preventing the negative effects of inappropriate medication use.

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In the current study, the main reasons for SM practices were parents' own experience followed by high consultation fees. Similar results were described by Araia *et al.*[14] and revealed that more than half of the participants indicated a prior own experience as the main reason for SM practices. Difficulty in accessibility to medicines, high cost of medical care and high consultation fees were the most frequent reasons for SM in previously conducted studies in Turkey,[1] Congo[22] and Sudan,[9] respectively. SM practices based on personal experience treating the same ill condition may result in misdiagnosis, which may lead to incorrect treatment and subsequent health problems.[7, 34]

In our study, the mother working status and parental education have a significant association between SM users and non-user. A similar finding was reported in a study conducted in Eritrea which showed that mothers who had any kind of job were more likely to use SM as compared with housewives.[14] This could be explained by the fact that working mothers may have less time but more income than housewives. Similarly, an Italian study observed that SM was strongly influenced by parental educational level.[4] Furthermore, different studies found that the prevalence of SM was higher in highly educated parents.[11, 15] However, contrary findings were also reported in previously published studies.[1, 5, 37] The variation in SM practice among studies could be attributed to the difference in the demographic characteristics of participants.

Strength and Limitations

The strength of the current study is the new information on parenteral SM practices in the Adana region of Turkey, based on suitable sample size and valid methodology. This provides important data for the health authorities and policymakers to take appropriate control measures concerning SM practices in children. The study also provides baseline data for researchers to further investigate the associated factors of SM practices in various healthcare settings and special populations. The current study had some limitations. It was an online survey in which responses depend primarily on honesty and are affected by recall ability, and there could be a chance of bias. This study utilized a sample of parents from one Turkish region and therefore, the findings cannot be generalized.

Conclusion

This study adds new information about the current practice of parental SM in children. The prevalence of parental SM practices was high. Fever and abdominal pain were the most common health problems treated by parents without doctor consultation. Antipyretics, analgesics and antibiotics were the most frequent drug classes. A prior own experience and high medical consultation fees were the main reason for SM practices. There is an urgent need for a parental educational program about the consequences of SM practices. Additionally, the development of national policies about medication access and durable actions is crucial to discourage the medications sold without a prescription. Further multicentre studies are also needed to assess SM practices and associated factors in different populations and healthcare settings.

Supplementary Material

Supplementary data are available at *Journal of Pharmaceutical Health Services Research* online.

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Nil.

Author Contributions

Study concept and design—Y.K. and Z.K.; literature search—Y.K., Z.K., E.Ö. and E.S.G.Ö.; analysis and interpretation of data—Y.K., Z.K., A.B.A. and T.E.; drafting of the manuscript—Y.K., Z.K. and A.P.; critical revision of the manuscript for important intellectual content—Y.K., Z.K., F.U.K. and H.R. All authors approved the version to be submitted and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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None.

Conflict of Interest

The authors declare no conflict of interest.

Ethical Approval

This study was approved by the 'Ethical Review Board of Cukurova University, Adana, Turkey' (Meeting No: 105, Date: December 6, 2020, Supplementary file 1).

Data Sharing/Availability Statement

Data are available on request. The data underlying this article will be shared on reasonable request to the corresponding author.

References

1. Sen Tunc E, Aksoy E, Arslan HN et al. Evaluation of parents' knowledge, attitudes, and practices regarding self-medication for their children's dental problems during the COVID-19 pandemic: a cross-sectional survey. *BMC Oral Health* 2021; 21: 98–104. https://doi.org/10.1186/s12903-021-01466-7
2. Okunola OA. Patterns of self-medication practices by caregivers to under-five children in south-western Nigeria. *Child Care Pract* 2020; 4: 1–11. https://doi.org/10.1080/13575279.2020.1845121
3. Al-Ghamdi S, Alfauri TM, Alharbi MA et al. Current self-medication practices in the Kingdom of Saudi Arabia: an observational study. *Pan Afr Med J* 2020; 37: 51–66. https://doi.org/10.11604/pamj.2020.37.51.24098
4. Garofalo L, Di Giuseppe G, Angelillo IF. Self-medication practices among parents in Italy. *Biomed Res Int* 2015; 2015: 1–8. https://doi.org/10.1155/2015/580650
5. Shafie M, Eyasu M, Muzeyin K et al. Prevalence and determinants of self-medication practice among selected households in Addis Ababa community. *PLoS One* 2018; 13: e0194122. https://doi.org/10.1371/journal.pone.0194122
6. Eticha T, Mesfin Kalkidan., Mesfin K. Self-medication practices in Mekelle, Ethiopia. *PLoS One* 2014; 9: e97464. https://doi.org/10.1371/journal.pone.0097464
7. Ruiz ME. Risks of self-medication practices. *Curr Drug Saf* 2010; 5: 315–23. https://doi.org/10.2174/157488610792245966
8. Subashini N, Udayanga L. Demographic, socio-economic and other associated risk factors for self-medication behaviour among

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university students of Sri Lanka: a cross sectional study. *BMC Public Health* 2020; 20: 613–626. https://doi.org/10.1186/s12889-020-08622-8
9. Eldalo1 AS, Tarig MH, El-Hadiyah, Yousif MA. Sudanese parents' knowledge, attitudes and practice about self-medication to their children: qualitative study. *Saudi J Health Sci* 2013; 2: 103–7. https://doi.org/10.4103/2278-0521.117914
10. Lee D, Balasubramaniam K, Ali H. Drug utilization studies: their transferability between industrialized and developing countries. *WHO Reg Publ Eur Ser* 1993; 45: 193–218.
11. Tarciuc P, Stanescu AMA, Diaconu CC et al. Patterns and factors associated with self-medication among the pediatric population in Romania. *Medicina (Kaunas)* 2020; 56: 312–23. https://doi.org/10.3390/medicina56060312
12. Okyay RA, Erdoğan A. Self-medication practices and rational drug use habits among university students: a cross-sectional study from Kahramanmaraş, Turkey. *PeerJ* 2017; 5: e3990. https://doi.org/10.7717/peerj.3990
13. Gül S, Öztürk DB, Yılmaz MS et al. Evaluation of public knowledge and attitudes regarding self medication with antibiotics in Ankara. *Turk Hij Den Biyol Derg* 2014; 71: 107–12.
14. Araia ZZ, Gebregziabher NK, Mesfun AB. Self medication practice and associated factors among students of Asmara College of Health Sciences, Eritrea: a cross sectional study. *J Pharm Policy Pract* 2019; 12: 3–12. https://doi.org/10.1186/s40545-019-0165-2
15. Du Y, Knopf H. Self-medication among children and adolescents in Germany: results of the National Health Survey for Children and Adolescents (KiGGS). *Br J Clin Pharmacol*. 2009; 68: 599–608. https://doi.org/10.1111/j.1365-2125.2009.03477.x.
16. Cavaco AM, Sozen-Sahne B, Ulutas-Deniz E et al. Self-medication and non-prescription drug counseling: illustrating profession uncertainty within Turkish pharmacy practice. *Res Social Adm Pharm* 2018; 14: 718–26. https://doi.org/10.1016/j.sapharm.2017.09.006
17. Nayir T, Okyay RA, Yesilyurt H et al. Assessment of rational use of drugs and self-medication in Turkey: a pilot study from Elazıg and its suburbs. *Pak J Pharm Sci* 2016; 29: 1429–35.
18. Apikoglu-Rabus S, Clark PM, Izzettin FV. Turkish pharmacists' counseling practices and attitudes regarding emergency contraceptive pills. *Int J Clin Pharm* 2012; 34: 579–86. https://doi.org/10.1007/s11096-012-9647-x
19. Sancar M, Tezcan E, Okuyan B et al. Assessment of the attitude of community pharmacists and pharmacy technicians towards diarrhea: a simulated patient study in Turkey. *Trop J Pharm Res* 2015; 14: 1509509–1,515. https://doi.org/10.4314/tjpr.v14i8.26
20. Gaygısız Ü, Lajunen T, Gaygısız E. Community use of antibiotics in Turkey: the role of knowledge, beliefs, attitudes, and health anxiety. *Antibiotics (Basel)* 2021; 10: 1171. https://doi.org/10.3390/antibiotics10101171.
21. Ebeigbe JA, Emedike CM. Parents' awareness and perception of children's eye diseases in Nigeria. *J Optom* 2017; 10: 104–10. https://doi.org/10.1016/j.optom.2016.06.001
22. Katumbo AM, Tshiningi TS, Sinanduku JS et al. The practice of self-medication in children by their mothers in Lubumbashi, Democratic Republic of Congo. *J Adv Pediatr Child Health*. 2020; 3: 27–31.
23. Turkstat. Statistics on Child. 2020. Available from: https://data.tuik.gov.tr/Bulten/Index?p=Statistics-on-Child-2020-37228. (12 March 2022, date last accessed)
24. Wordometer. Main Cities by Population in Turkey. Adana. 2020. Available from: https://www.worldometers.info/world-population/turkey-population/ (12 March 2022, date last accessed).
25. Raosoft. Sample size calculator. Available from: http://www.raosoft.com/samplesize.html. (13 March 2022, date last accessed)
26. Karataş Y, Khan Z, Bilen C et al. Traditional and complementary medicine use and beliefs during COVID-19 outbreak: a cross-sectional survey among the general population in Turkey. *Adv Integr Med* 2021; 8: 261–6. https://doi.org/10.1016/j.aimed.2021.09.002
27. Hadi H, Ihsan Awadh A, Zamli M et al. Insight of Malaysian users of cosmetic regarding cosmetovigilance. *Cosmetics* 2020; 7: 45. https://doi.org/10.3390/cosmetics7020045
28. Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *J Med Internet Res* 2004; 6: e34–6. https://doi.org/10.2196/jmir.6.3.e34
29. Maneesriwongul W, Dixon JK. Instrument translation process: a methods review. *J Adv Nurs* 2004;48(2):175–86. https://doi.org/10.1111/j.1365-2648.2004.03185.x
30. Kumar, R. *Research Methodology: A Step-by-Step Guide for Beginners*; SAGE Publications: London, UK, 2011.
31. Bertoldi AD, Camargo AL, Silveira MP et al. Self-medication among adolescents aged 18 years: the 1993 Pelotas (Brazil) birth cohort study. *J Adolesc Health* 2014; 55: 175–81. https://doi.org/10.1016/j.jadohealth.2014.02.010
32. Oshikoya KA, Senbanjo IO, Njokanma OF. Self-medication for infants with colic in Lagos, Nigeria. *BMC Pediatr* 2009; 9: 9–16. https://doi.org/10.1186/1471-2431-9-9
33. Bham SQ, Saeed F, Shah MA. Knowledge, attitude and practice of mothers on acute respiratory infection in children under five years. *Pak J Med Sci* 2016; 32: 1557–61. https://doi.org/10.12669/pjms.326.10788
34. Lei X, Jiang H, Liu C et al. Self-medication practice and associated factors among residents in Wuhan, China. *Int J Environ Res Public Health* 2018; 15: 68–75. https://doi.org/10.3390/ijerph15010068
35. Yousef AM, Al-Bakri AG, Bustanji Y et al. Self-medication patterns in Amman, Jordan. *Pharm World Sci* 2008; 30: 24–30. https://doi.org/10.1007/s11096-007-9135-x
36. Al-Ramahi R. Patterns and attitudes of self-medication practices and possible role of community pharmacists in Palestine. *Int J Clin Pharmacol Ther* 2013; 51: 562–7. https://doi.org/10.5414/CP201814
37. Zeid W, Hamed M, Mansour N et al. Prevalence and associated risk factors of self-medication among patients attending El-Mahsama family practice center, Ismailia, Egypt. *Bull Natl Res Cent* 2020; 44: 92–7. https://doi.org/10.1186/s42269-020-00351-7
38. Simon B, Kazaura M. Prevalence and factors associated with parents self-medicating under-fives with antibiotics in Bagamoyo District Council, Tanzania: a cross-sectional study. *Patient Prefer Adherence* 2020; 14: 1445–53. https://doi.org/10.2147/PPA.S263517
39. Jemaa FC, Khaldi A, Bessioud L et al. Self-medication in children at the District of Tunis (Tunisia): focus on antibiotic self medication. *Pediatric Res* 2010; 68: 645–9.
40. Gaygısız U, Lajunen T, Gaygısız E. Community use of antibiotics in Turkey: the role of knowledge, beliefs, attitudes, and health anxiety. *Antibiotics* 2021; 10: 1171. https://doi.org/10.3390/antibiotics10101171
41. Karataş Y, Khan Z. Antibiotic usage in the pediatric population: the need for effective role of parents and prescribers. *Güncel Pediatri* 2021; 19: 135–40.
42. Mijovi´c B, A´cimovi´c J, Đakovi´c Devi´c J et al. Knowledge, attitudes and practices of parents and pediatricians regarding antibiotic use among children: differences in relation to the level of education of the parents in the Republic of Srpska Bosnia and Herzegovina. *Antibiotics* 2022; 11: 1325. https://doi.org/10.3390/antibiotics11101325

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