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Role of Parental Attitudes Towards Rational Drug Use in Predicting Fever Management Practices

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Abstract

BACKGROUND/AIMS: This study was conducted in a descriptive cross-sectional type to investigate the prediction of parental attitudes toward rational drug use on fever management practices.

MATERIALS AND METHODS: The study was conducted between March and May 2019 with 150 parents whose children were receiving treatment at the pediatric units. The study data were collected using a Parental Data Form, the Parental Attitude Scale Toward Rational Drug Use (PASTRDU), and the Parent Fever Management Scale (PFMS). Percentage calculations, mean scores, Pearson's correlation analysis, linear regression analysis, and multiple correlation analysis were employed for data analysis.

RESULTS: Three models were formed according to the relationship between variables in multiple regression analysis. According to the models developed, the PFMS was found to increase as the overall score and sub-dimension scores of the PASTRDU increased ($p<0.001$).

CONCLUSION: It is thought that parents who develop positive attitudes toward rational drug use and manage their child's fever appropriately will experience less anxiety, their quality of life will improve, their self-confidence in child care will increase, and their satisfaction with the care that they receive from health professionals will increase.

Keywords: Parents, drug, attitude, fever

INTRODUCTION

Rational drug use reduces social and financial burdens and prevent biopsychosocial damages stemming from the misuse of drugs in society.[1,2] The most common misapplications when parents administer drugs to their children involve the application of excessive or inadequate doses, incorrect adjustment of time intervals, improper storage conditions, the combination of the drug with other drugs and substances, and premature quitting of the normal course.[3,4] The concept of rational drug use in children has become even more important because of height, weight, and body surface area differences by the developmental period of the child. The responsibilities of the pediatric nurse regarding rational drug applications include providing parental education and making necessary observations on the side effects of drugs. The nurse should first interrogate the current knowledge of parents and then inform them about the indications, doses, correct time, and points to be considered.[5] Due to the physiological and developmental characteristics of children, the likelihood of harm caused by drug errors in children is three times higher than that in adults.[6,7] According to the reports in the literature about common misapplications about drug use, parents use antipyretics without prescription, they do not apply drugs in appropriate doses, they have difficulty giving drugs to their children, they give drugs one after another in the case of multiple drug prescription, they give the drug when the child wakes up if it is sleeping, they keep using the drug until the child has recovered, they stop using the drug in the case of side effect development, and they quit the normal course of the drug when the child has vomited.[8-11] Therefore, it is important to increase

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parental knowledge regarding rational drug use in the management of fever, which is an important symptom in children.

One of the symptoms of many diseases in children, fever, is a condition that requires rapid intervention and is critical in terms of possible complications. 20-30% of pediatric emergency department visits are reported to be due to reasons related to high fever.[12,13] Although the treatment of fever cases in children is easy, irrational, improper, and untimely interventions can lead to undesirable consequences.[13,14] The lack of adequate knowledge about fever and its treatment in parents and the low educational level of the parents are reported as factors affecting the approach to the child with fever.[15,16] Studies report that parents' fear of fever decreases and wrong interventions are prevented when healthcare workers train parents on the definition of fever, its causes, symptoms of high fever, home care of the child with fever, primary home interventions, and correct time to visit a health institution.[14,17,18] One of the most effective ways to lower fever in children is to use antipyretic drugs. Parents should take care not to overdose when administering antipyretic drugs to their children. This can be achieved by raising the rational drug use attitudes of parents.[18,19]

Providing health education to parents on the importance and necessity of fever management in children can help reduce fever-related complications.[16] Informing parents about rational drug use and fever management will ensure adopting the right approach for the child with fever. In addition, when parents become knowledgeable about unnecessary and incorrect drug use, negative practices for lowering a high fever will be prevented.[20] In the literature, rational drug use and fever management in children have been studied as separate variables.[6-8,11,14,15] On the other hand, no studies have investigated the effects of rational drug use attitudes of parents on fever management practices. Therefore, studies investigating the prediction of the Parental Attitude Scale Toward Rational Drug Use (PASTRDU) on the Parent Fever Management Scale (PFMS) are needed.

MATERIALS AND METHODS

Aim

This study used a descriptive cross-sectional design and was conducted to investigate the prediction of PASTRDU on PFMS.

Population and Sample

The study was planned to be conducted between March and May 2019 with the parents of children treated at the pediatric surgery, pediatric emergency clinic, and children's examination-infection clinic of children's hospital. The sampling required for the study was calculated using GPOWER 3.1 statistical analysis software based on a 0.05 significance level, 80% power, and 0.15 effect size (medium effect size). As a result, the sample size required for regression analysis was determined to be 68 subjects. Considering the likelihood of a 10% drop, the sample size was 75 subjects. The study was conducted between March and May 2019 with 150 parents whose children were receiving treatment at the pediatric units of a university hospital. Participants in this study included parents whose children were admitted to the university hospital pediatric unit, and the parents were over 18 years of age and willing to participate in the study.

Data Collection Tools

Data collection tools included a Parental Data Form, PASTRDU, and PFMS.

Parental Data Form

The form consists of 12 questions. The first three items ask about the sociodemographic characteristics of the parents (age, gender, and educational status), and the rest include questions for determining parents' knowledge about the body temperature of their children.

The Parental Attitude Scale Toward Rational Drug Use

The scale developed by Çelebi and Çelebioğlu[21] consists of 40 items. It has two sub-dimensions: Suitable and Rational Use (29 items) and Effective and Safe Use (11 items). It is a five-point Likert-type scale, and each item is scored from 1 to 5. Increased scores obtained from the scale indicate increased positive parental attitudes towards rational drug use. Cronbach's alpha co-efficient for the overall scale is 0.887. In addition, Cronbach's alpha co-efficients for the Suitable and Rational Use and Effective and Safe Use sub-dimensions are 0.894 and 0.771, respectively. Item-total correlation values are 0.32-0.61.[21] Cronbach's alpha value of the scale in this study was determined as 0.954.

The Parent Fever Management Scale

This 8-item scale was developed by Walsh et al.[22], and its validity and reliability studies were conducted by the same authors. A validity and reliability study of the Turkish version of the scale was performed by Cinar et al.[23]. It is a five-point Likert-type scale, in which each item is scored between 1=never, 2=rarely, 3=sometimes, 4= often, and 5=always. The minimum and maximum scores that can be obtained from the scale range from 8 to 40 points. Increased scores obtained from the scale indicate increased parent fever management practices. Cronbach's alpha coefficient of the overall scale is 0.79.[23] Cronbach's alpha value of the scale in this study was determined as 0.855.

Data Collection

For this study, the researchers collected data during daily visits to the clinic and interviews with parents who met the criteria. The researchers asked the parents to complete the data collection forms in the clinic's single patient rooms. Before beginning the research, the participants were informed about the objective of the study, and the parents who agreed to participate in the research were included in the research. The researchers obtained both written and oral consent from the parents. The data collection forms were filled out by the parents in approximately 10 min. One family did not want to participate in the study because they thought that their child might be adversely affected. The participation rate was 99.5%.

Ethical Considerations

This study was approved by the Institutional Review Board of the University (approval number: 4709GOA-2019/10-04). Institutional permissions were obtained to carry out the study. In addition, written and verbal consent of the parents were obtained by meeting them face-to-face and informing them about the aim of the study.

Statistical Analysis

Mean and percentage calculations were employed in the descriptive data analyzes. The Shapiro-Wilks test was used to determine if the

dataset was well-modeled by a normal distribution. The relationship between PASTRDU and PFMS was analyzed using Pearson's correlation analysis. The extent to which PASTRDU predicts PFMS was analyzed using linear regression analysis. VIF and tolerance analysis were employed to determine whether there was multicollinearity between PASTRDU and PFMS. A VIF value <10, a tolerance value <0.02, and a condition index value <15, which are independent variables, were included in the regression analysis. The significance level was set at 0.05.

RESULTS

The mean age of the parents who participated in the study was 34.25±7.50. 78% of them were femalesand 52% were high school graduates. The average number of children was 2.10±1.22. 52% of the participants were found to learn fever-management related issues from healthcare workers and 51% were determined to follow their child's body temperature with a thermometer. 56.7% of the parents stated that they considered 38 °C and over as fever, 50% measured their child's body temperature from the child's armpit, 43.3% took the child to a health institution before giving antipyretic medication to the child, and 51.2% used antipyretics to lower the child's fever and gave a lukewarm bath to the child. In addition, 58.7% of the parents stated that their physician decided the dose of the antipyretics. On the other hand, 75.3% of the respondents were found to not use non-prescription medication for their child. There was a statistically significant relationship between PFMS and the gender of the parents. There was a statistically significant relationship between PFMS and PASTRDU according to the educational background of parents ($p<0.05$). There was no statistically significant relationship between PASTRDU and the gender of the parents ($p>0.05$) (Table 1).

The evaluation of the prediction of sociodemographic characteristics of the parents on their PFMS in the multiple regression analysis indicated that age, gender, education level, and the number of children affected PFMS by 14.1%. All factors except for the number of children were found to significantly affect PFMS ($p<0.05$). The analysis of the prediction of parents' socio-demographic characteristics on their PASTRDU indicated that age, gender, education level, and the number of children affected PASTRDU use by 18.7%. All factors except for the number of children and gender were found to significantly affect PASTRDU ($p<0.05$). The number of children and female gender positively affects PASTRDU (Table 2).

A moderate, positive, and highly significant relationship was found between PASTRDU and PFMS ($p<0.01$). In addition, a moderate, positive, and highly significant relationship was found between PFMS and the suitable and rational use sub-dimension of PASTRDU and a moderate, positive, and highly significant relationship was found between PFMS and the effective and safe use sub-dimension of PASTRDU ($p<0.01$) (Table 3).

Table 1. Rational drug use attitudes and fever management status according to parents' gender and education

		Parental attitudes towards rational drug use			Fever management practices		
		Mean ± SD	Z	p	Mean ± SD	Z	p
Gender	Female, (n=117)	193.21±1.47	1,236	0.216	39.76±0.22	2,251	0.024
	Male, (n=33)	190.06±2.93			37.78±0.68		
Educational status	Before high school, (n=31)	183.83±3.85	3,253	0.001	37.96±0.65	2,328	0.020
	High school and after, (n=119)	194.78±1.25			39.14±0.23		

SD: Standard deviation.

Table 2. Predicting parents' socio-demographic characteristics on their attitudes toward rational drug use and fever management practices

Parents' socio-demographic characteristics	Fever management practices	Attitudes towards rational drug use
	β	β
Age	0.207*	0.353*
Gender	0.201*	0.075
Educational status	0.210*	0.217*
Number of children	0.022	0.058
R	**0.376**	**0.432**
R^2	**0.141**	**0.187**
F	**5,973**	**8,334**
DW** (1.5-2.5)	**2,201**	**1,908**

*p<0.05, **Durbin-Watson.

Table 3. Relationship between parental attitudes towards rational drug use and fever management practices

	1	2	3	4
1. Parent Fever Management Scale (PFMS)	1			
2. Parental Attitude Scale for Rational Drug Use (PASTRDU)	0.641*	1		
3. PASTRDU suitable and rational use sub-dimensions	0.647*	0.951*	1	
4. PASTRDU effective and safe use sub-dimensions	0.497*	0.868*	0.672*	1

*p<0.01 level significant.

Three models were created according to the relationship between variables in the multiple regression analysis. Each of the subdimensions of PASTRDU was specified as a separate model. In the last model, the prediction of the total score of PASTRDU on PFMS was determined. Accordingly, as the total score obtained from the PASTRDU increased, positive attitudes toward PASTRDU increased. On the other hand, as the total score obtained from the PFMS increased, the PFMS were determined to increase. In the first model, the Suitable and Rational Use sub-dimension of PASTRDU was found to affect 41.8% of PFMS, whereas the increase in suitable and rational use augmented PFMS by 0.647 (β=0.647). In the second model, the Effective and Safe Use sub-dimension of PASTRDU was determined to affect 24.7% of PFMS, whereas the increase in effective and safe use increased PFMS by 0.497 (β=0.497). In the third model, PASTRDU together with suitable/rational use and effective/safe use subdimensions was found to influence PFMS by 41.1%, whereas PASTRDU was determined to affect PFMS by 0.641 (β=0.641). All factors were found to statistically significantly affect PFMS ($p<0.05$) (Table 4).

DISCUSSION

This study investigated the prediction of parents' socio-demographic characteristics on PASTRDU and PFMS. In this study, it was determined that the educational status of the parents affected rational drug use and fever management, and that parental gender affected fever management. The education level of parents is important when accessing information about PFMS and PASTRDU. Parents with high levels of education are eager to access and apply knowledge about fever management and rational drug use.[15,24,25] In addition, parents can recognize fever-lowering practices with low reliability. Parents who have a high level of education understand the importance of the fact that using non-prescription drugs and can pose risks for their children. As the age of parents increases, their knowledge and experience about child care increases, so they can manage fever properly and develop positive attitudes toward rational drug use. In addition, mothers play a greater role in fever management practices because of their primary role in child care compared with fathers.[15,24,25] As most parents who participated in our study were female (78%) and had a high school education (52%), they are thought to have better fever management skills. In addition, since the parents participating in our study had 2 children on average, the number of children was thought to not have an effect on increasing PFMS and their PASTRDU. The literature supports the finding of this study that age, gender, and education level of the parents increased their PFMS.[15,16,23-25]

The findings show the prediction of PASTRDU on their PFMS. In this study, three models were formed by considering the correlations between the variables. The relationships investigated in these models were as follows: the relationship between the means of the total scores obtained from the suitable and rational use sub-dimension of PASTRDU and PFMS in Model 1; the relationship between the means of the total scores obtained from the effective and safe use sub-dimension of PASTRDU and PFMS in Model 2; and the relationship between the means of the total scores obtained from PASTRDU and PFMS in Model 3.

Model 1 showed that as the scores obtained from the suitable and rational use sub-dimension of PASTRDU increased, PFMS increased. The timely and right-dose administration of antipyretics is critical for reducing a child's fever or keeping it under control. Although it is easy to control fever in children, irrational, improper, and untimely practices may lead to negative consequences.[16] Information given by nurses to parents will create positive results in increasing the correct and rational practices of parents. The content of parent training by nurses should include the definition of fever, its symptoms, home care, first aid, and criteria for taking the child to a health institution. In addition, information about antipyretics to be administered provides support for parents regarding suitable and rational drug use. In case of fever in the child, the parent developing positive attitudes towards rational drug use can refer to suitable practices, administer antipyretics properly, reduce their fear of fever, and reduce misapplications. Knowing the suitable drug approach and time to visit a health institution is thought to increase fever management practices in mothers who exhibit suitable and rational drug use attitudes. The literature supports the finding in Model 1.[4-7]

Model 2 indicated that as the scores obtained from the effective and safe use sub-dimension of PASTRDU increased, PFMS increased. Because of the physiological properties of children, effective and safe drug use is critical in eliminating the possibility of improper drug use in children.[24] Parents who exhibit negative attitudes towards effective and safe drug use are observed to use antipyretics at excessive or inadequate doses, to give drugs one after another in the case of multiple drug prescriptions, to store drugs under inappropriate conditions, to not administer the drug during sleep time, and to quit the normal course of the drug when the child has vomited or a side effect has developed.[26] Such mismanagement adversely affects parents' fever management practices. Parents who develop positive attitudes towards effective and safe drug use are reported to not use non-prescription antipyretics in the case of fever in their child, to obtain information about the use of antipyretics from health professionals, and to know the side effects of

Table 4. Predicting parental attitudes towards rational drug use on fever management practices

	Fever management practices		
	Model 1	Model 2	Model 3
	β	β	β
Parental attitudes towards rational drug use	0.647*	0.497*	0.641*
R	0.647	0.497	0.641
R^2	0.418	0.247	0.411
F	106,504	48,657	103,422
p	0.001	0.001	0.001
DW** (1.5-2.5)	2,369	2,129	2,299

*P<0.01 level significant, **Durbin-Watson.

these drugs. Therefore, increasing parental knowledge about rational drug use is of significance in the management of fever, an important symptom in children. Thus, the fever management practices of parents who have a high level of discriminating skill for improper practices and wrong drug use and who are aware of the importance of safe drug use are thought to increase. The literature supports the finding of Model 2.[12,23,27]

Model 3 revealed that as the total scores obtained from the PASTRDU increased, the PFMS increased. Providing parent education on rational drug use and making necessary observations about the side effects of drugs are among the responsibilities of nurses. Parental education on the indications of antipyretics, their doses, correct application time, and points of attention is important. It is possible to reduce fever-bound complications through education on both antipyretic use and other applications in fever management.[24,26,28] Parental education on rational drug use and antipyretics allows parents to appropriately approach child fever. Parents who develop positive attitudes toward rational drug use are observed to be successful in fever management. In addition, inappropriate and wrong drug use by parents who are aware of how to lower fever is actually prevented. Due to the high educational status received from health professionals, parents are thought to develop attitudes toward rational drug use, manage their child's fever appropriately, and have a high level of healthcare satisfaction. The literature supports the finding in model 3.[12,23,24,28]

Study Limitations

Despite the many study strengths, it is limited by the use of a convenience sample, which may affect the generalizability of the study.

CONCLUSION

Positive attitudes of parents towards rational drug use were determined to affect fever management practices. In this study, PFMS was found to increase as the overall score and sub-dimension scores of PASTRDU increased. In addition, it was determined that some sociodemographic characteristics of nurses, such as gender and educational status, affected the average scores of rational drug use and fever management. Pediatric nurses have a great deal of responsibility for parental education. Therefore, it is thought that the sociodemographic characteristics and rational drug attitudes of nurses should be considered while increasing the knowledge and skills of nurses regarding fever management.

Nurses who have significant roles in rational drug use and fever management education should be aware of their responsibilities and update their knowledge regularly regarding the matter in question. In in-service training programs given to pediatric nurses, providing information particularly about rational drug use and the responsibilities of nurses and performing regular revisions of this information will contribute to parental education carried out by nurses and prevent many problems related to patient safety.

MAIN POINTS

- The fever management practices of the parents increased as the overall score and sub-dimension scores of the parental attitude scale towards rational drug use increased.
- Positive attitudes of parents towards rational drug use were determined to affect fever management practices.
- Providing health education to parents on the importance and necessity of fever management in children can help reduce fever-related complications.

ETHICS

Ethics Committee Approval: This study was approved by the Institutional Review Board of the University (approval number: 4709GOA-2019/10-04).

Informed Consent: In addition, written and verbal consent of the parents were obtained by meeting them face-to-face and informing them about the aim of the study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: A.A.K., Design: A.A.K., Supervision: A.A.K., Materials: A.A.K., Data Collection and/or Processing: A.A.K., İ.B., D.A., İ.Ç., Analysis and/or Interpretation: A.A.K., M.B., Literature Search: A.A.K., İ.B., D.A., İ.Ç., Writing: A.A.K., İ.B., Critical Review: A.A.K., D.A., M.B.

DISCLOSURES

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