Effects of Sociodemographic and Attitudinal Factors on Mother-Initiated Medication Behavior for Children

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DESPITE THE MULTIPLICITY of nonprescription drugs available in the United States—estimates range from 100,000 to 500,000 proprietary products (*1–3*); the magnitude of annual expenditures by the population for such products—estimated at $3 billion (*4,5*); and the many millions of dollars spent each year to persuade people to use such drugs for minor health problems, few studies have been made of the use of over-the-counter (OTC) medications (in the absence of professional recommendations) to try to prevent or relieve illness. In view of the likely importance of information about people's self-initiated medication treatment and exposure to nonprescription medicines—for example, to policymakers, to health care providers planning effective medical care interventions, and to behavioral scientists attempting to understand and modify health-related behaviors—it is surprising that data are scarce concerning the nature, extent, and determinants of self-medication (*6–11*).

The need for such knowledge is particularly acute with regard to mothers' medication behaviors initiated on behalf of their children. In any pediatric medical setting one hears many anecdotes about unusual remedies employed by parents and about the untoward outcomes of parental ministrations to ward off or cure real or imagined conditions in their children. However, no systematic evidence is available concerning the kinds of remedies generally employed, for what conditions, and by what "kinds" (sociodemographically and psychosocially) of parents.

Only a few investigations have specifically addressed parent-initiated medication use for children; two were conducted in the United Kingdom (*6,7*) and a third in Monroe County, N.Y. (*8*). In a British study (*6*), parents reported that during the 4–week period before interview approximately two-thirds of the children had taken nonprescribed medicines and 18 percent had taken prescribed medicines. Perhaps the most detailed study of use of medication for children is a survey of British households conducted by Dunnell and Cartwright. (*7*). During the 2–week recall period before interview, 55 percent of the children had taken medication, 48 percent had received nonprescribed medication, and 20 percent had received prescribed medication. Finally, in a community survey by Haggerty and Roghmann (*8*), although 40 percent of the children

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studied had ingested some type of medication, for approximately 25 percent of the sample the treatment had been introduced by their mothers or other responsible family members.

In summary, data from these studies yield similar findings with regard to (*a*) the proportion of children undergoing such therapy, with relative increases for the different recall periods employed by the researchers (22 percent of the children received medication selected by parents during a 24-hour period (*8*), 28 percent during a 2-week period (*7*), and 66 percent during a 4-week period (*6*)) and (*b*) the types of drugs most frequently used by parents (vitamins, pain relievers, cough and cold medicines, and skin ointments and antiseptics). Moreover, findings concerning the relationship between use of parent-initiated medication and physician consultation are mixed. In the two studies conducted in England (*6,7*), parent-initiated treatment was found to supplement taking the child to a physician; when the number of reported illnesses was held constant, a positive correlation was seen between medical consultations and number of nonprescribed medications taken by children. However, research undertaken in the United States (*8*) seems to indicate that the use of nonprescription medications functions as an alternative to obtaining medical care for the child. In any event, all of these studies of parent-selected treatments focused on randomly selected variables rather than employing a systematic conceptual approach to identifying various social or psychological forces that might influence these decision-making processes.

The major objectives of our research were (*a*) to describe mothers' independent decisions to use available treatments (that is, OTC medications, leftover prescription medicines, and home remedies) in attempting to deal with health problems they believe their children have and (*b*) to attempt to better understand the mother-initiated medication behavior process by exploring its associations with mothers' sociodemographic characteristics and their opinions or perceptions regarding their children's health, the efficacy and safety of OTC and prescription drugs, and sources of information and advice about medications.

Methods

Subjects and data collection. The study was conducted in three pediatric ambulatory care clinics located in (*a*) a large teaching hospital on the east coast, (*b*) a teaching hospital in a medium-size city in the Midwest, and (*c*) a large group practice in a major Midwest city. These locations were selected to assure major among-site differences in the sociodemographic characteristics of the respondents.

Mothers whose children were experiencing health problems were not included, since the existence of these conditions and their concomitant treatment might bias the reporting of usual mother-initiated medication behavior. Lower and upper age limits for the children were set at 6 months and 12 years, respectively, because (*a*) in children younger than 6 months symp-

toms of illness are relatively infrequent, and we wished to capitalize on situations where the mother would have had many opportunities to engage in treating her child, (*b*) in general, mothers may be relatively less willing to risk making decisions about medications and other treatment for their very young children, and (*c*) children over age 12 may participate more extensively in decisions about their care when ill, and such involvement would confound interpretation of the data.

During a 6-month period, stratified, systematic random samples of 100 mothers of children 6 months to 12 years old who presented for well child visits at each of the 3 study clinics were interviewed (total of 300 mothers). Each interview, lasting about 30 minutes, concerned mothers' use of medications and medical appliances for their children, their beliefs, worries, and motives related to their children's health, and their opinions about different kinds of medicines. Each respondent was directed to answer all questions in terms of the child scheduled for the well child visit (the "index child"). Family sociodemographic data also were obtained.

Sampling fractions to permit stratification were calculated and used to reflect differences in the total volume of well child visits per month at each site and the proportion of children in each age stratum identified for study—6–11 months, 1–4 years, 5–9 years, and 10–12 years. For 2 sites, the east coast teaching hospital and the Midwest teaching hospital, all 200 eligible subjects participated in the study. At the Midwest group practice, 5 subjects refused to participate, necessitating the selection of 105 mothers to obtain 100 respondents (a total response rate of 98 percent).

Measurement of dependent variables. To measure "types of medications kept in the house for use when the child becomes ill," 2 questions were used: the first was open ended, and the second listed 15 categories or "types" of medications (the latter permitted questioning the mother about categories not previously volunteered). Scores were summed for each mother across the 2 questions and ranged from 0 to 15. "Medical appliances kept in the house for use when the child becomes ill" was assessed by each mother's selection from a list of 7 medical appliances; scores ranged from 0 to 7. We prepared both lists in consultation with experts in pediatrics to ensure coverage of the types of medications and medical appliances likely to be used in mother-initiated treatment.

Measurement of independent variables. Independent variables included mothers' concerns about their children's health and medication-related attitudes. Many of the opinion statements employed were adapted from previous studies of mothers' perceptions of their children's vulnerability to illness (in general, and with regard to each of 12 acute pediatric health problems), orientations toward medical information and medical care, and subjective estimates of ability to control life events through personal actions (*12,13*). Health problems included in the list paralleled the types of medications and appliances enumerated in the dependent variables. To reflect medication-related attitudes, we constructed statements to measure mothers' beliefs about efficacy and safety of prescription and OTC medications, propensity toward self-medication, and usefulness of sources of information about OTCs. Respondents indicated their levels of agreement or disagreement with these statements along a 5-point Likert-type scale from "strongly agree" to "strongly disagree." Estimates of children's "vulnerability" to each health problem were tapped by mothers' responses along a 7-point unidimensional scale from "no chance will get it" to "almost certain to get it."

"Sociodemographic characteristics" measured included mother's age, race, number of children, education, and total annual family income. Mothers' ages ranged from 17 to 55; the number of children ranged from 1 to 7. Of the 300 mothers, 175 (58 percent) were white, and 125 (42 percent) were nonwhite. Mothers' education (highest grade completed) ranged from sixth grade to graduate school. Total family income was reported in 8 response categories, from 1 (under $5,000) to 8 ($30,000 or more).

Index of socioeconomic status. An index of socioeconomic status (SES) was constructed for each mother based on two variables, education and total annual family income. Calculation of the SES index required two steps for both variables. First, education was categorized into 3 levels (11th grade or less, 12th grade, and beyond high school), and total income was categorized into 4 levels (under $7,999, $8,000–$14,999, $15,000–$19,999, and $20,000 or more). Second, each mother was assigned a composite SES score (1 = low, 2 = middle, 3 = high) based on position in the combined variable matrix; this procedure resulted in a stronger weighting of education in relation to income.

Analysis techniques. Chi-squares of percentages on medications and medical appliances were used to test for study site differences in possession of individual and total numbers of medications and appliances. Mean response on perceived vulnerability of the child to health problems were evaluated relative to study site by computation of 1-way analyses of variance (*F*

Table 1. Sociodemographic characteristics of mothers interviewed at three study sites

Sociodemographic characteristics	East coast teaching hospital	Midwest teaching hospital	Midwest group practice
Average age (years)	26.0	29.4	32.6
	Percent		
Nonwhite	99.0	23.3	2.9
Family income:			
Less than $8,000	43.8	20.2	2.1
$8,000–$14,999	25.9	25.3	4.3
$15,000–$19,999	15.7	19.2	18.1
$20,000 or more	14.6	35.3	75.5
Education:			
Less than high school	51.0	7.1	0.0
High school	39.0	18.2	17.8
More than high school	10.0	74.7	82.2
Number of children:			
1	38.4	35.0	24.5
2	29.3	38.0	50.0
3	15.2	19.0	17.6
4 or more	17.1	8.0	7.9

ratio); this technique also was used to test mean responses to attitude questions by socioeconomic status. Correlations (gammas) were obtained between health- and medication-related attitudes of mothers and numbers of various medications and appliances possessed.

Results

Some differences in sociodemographic characteristics of mothers interviewed at each study site are shown in table 1. Almost all respondents at the east coast teaching hospital were black; at the Midwest teaching hospital, 23 percent were nonwhite (70 percent of these were black); and at the Midwest group practice, only about 3 percent were nonwhite.

In all the tables, findings for each study site are arranged in order of increasing income and education of mother to illustrate more clearly the influences of these factors on mother-initiated medication behavior. As shown in table 1, 44 percent of the mothers at the east coast hospital, 20 percent at the Midwest hospital, and only 12 percent at the group practice were in the income category "less than $8,000." Similarly, although more than half of the respondents at the east coast hospital had less than a full high school education, only 7 percent of those at the Midwest hospital did not hold a high school degree; however, at the group practice site, all the mothers were high school graduates—in fact, a large majority of these mothers reported 1 or more years of formal education beyond high school. Based on findings for family income and education of mothers, a socioeconomic status categorization for each site identified the east coast hospital site as a low SES clinic, the Midwest hospital as a middle SES clinic, and the group practice as a high SES clinic. Finally, approximately 75 percent of the mothers at the Midwest hospital and the group practice had 1 to 2 children, compared to 68 percent at the east coast hospital. At the east coast site, the mothers were twice as likely as mothers at the other 2 sites to have 4 or more children (17 percent at the east coast hospital as opposed to 8 percent each at the Midwest hospital and the group practice).

A comparison of the sites (table 2) shows that

Table 2. Percentage of mothers who keep each medication in house for when child becomes ill, by study site

Medications	East coast teaching hospital	Midwest teaching hospital	Midwest group practice	Significance of χ^2 $P < .05$
Antacids	28.7	31.0	45.1	S
Vitamins	61.6	71.0	84.0	S
Cold remedies	51.5	40.0	58.2	S
Constipation remedies	66.7	29.5	22.0	S
Fever remedies	99.0	94.0	100.0	NS
Pain remedies	16.3	24.2	42.0	S
Diarrhea remedies	45.5	36.0	28.3	S
Cough remedies	83.8	53.0	79.2	S
Sneeze or allergy remedies	27.3	22.0	37.6	S
Weight control	7.1	1.0	2.0	S
Remedies for infected cuts or bruises (including antibiotic ointments)	24.3	48.5	87.3	S
Remedies for skin problems (for example, rash or athlete's foot)	40.0	34.3	66.3	S
Sleep inducers	3.0	4.0	6.9	NS
Tension reducers	2.0	6.1	5.9	NS

NOTE: S indicates significant; NS indicates not significant.

mothers at the group practice were most likely to possess the medication in 8 of the 14 categories listed; however, this was true for only 4 types of medication at the east coast site (constipation, diarrhea, cough, and weight remedies), and only once for the mothers at the clinic whose SES was between the extremes (that is, mothers at the Midwest hospital, who led slightly in possession of "tension reducers"). It is also apparent that with increasing levels of education and income, possession of antacids, vitamins, pain remedies, and remedies for infected cuts or bruises increases, but use of medications for constipation, diarrhea, and weight control decreases. For some medications, the relationship of SES to use was significant but curvilinear (that is, higher levels of use were observed in the lowest and highest SES clinics); this was true for remedies for colds, coughs, sneezing or allergies, and skin problems (for example, a rash or athlete's foot).

Overall, mothers at higher income and education levels were relatively more likely to possess for their children medications such as antacids, vitamins, antibiotic ointments, and remedies for pain, allergy, and skin conditions. With relatively lower SES, mothers were more likely to have medications for constipation, diarrhea, cough, and weight reduction. (Several of our pediatric consultants noted that some mothers occasionally used OTC weight reduction medications for their children, and therefore we included this category in our interview. Our assumption is that mothers who keep such medications on hand do so because they have used them previously to help their children lose weight.) Almost all of the mothers stocked medicines for reducing fever, but few used medications for inducing sleep or for reducing tension. In only 3 instances (vitamins, fever remedies, and cough medicine) did more than 50 percent of the mothers at all the study sites indicate possession of the medications.

Table 3. Percentage of mothers who keep each medical appliance in house for when child becomes ill, by study site

Medical appliance	East coast teaching hospital	Midwest teaching hospital	Midwest group practice	Significance of χ^2 $P < .05$
Fever thermometer	84.0	93.0	100.0	S
Vaporizer	55.0	64.0	80.2	S
Scale	43.0	47.0	88.1	S
Heating pad	32.0	51.0	69.3	S
Enema bag	27.0	18.0	14.9	S
Ice bag	33.3	18.2	12.7	S

NOTE: S indicates significant.

Table 3 applies the same approach to presentation of study findings concerning mothers' use of various medical appliances. Here, the SES trends are especially clear; likelihood of ownership of a fever thermometer, vaporizer, bathroom scale, and heating pad increased with increased income and education. However, mothers at the lower SES site (east coast hospital) were more likely to own an enema bag (paralleling their much higher possession of constipation remedies, reported earlier) and to own an ice bag. Of the six appliances listed, a majority of mothers at the group practice owned four; that figure declined to three at the Midwest hospital, and to two at the east coast clinic.

In attempting to account for mothers' differential possession of various types of medication for their

Table 4. Mean scores, standard deviations, and 1-way analysis of variance of mothers' perceived vulnerability of child to selected health problems, by study site

Health problem	East coast teaching hospital			Midwest teaching hospital			Midwest group practice			F ratio	Rank concordance with "have medication in house"
	Score	SD	Rank	Score	SD	Rank	Score	SD	Rank		
Diarrhea	2.68	1.99	1	2.53	1.53	2	2.56	1.58	3	.21	No
Constipation	2.94	1.39	1	2.57	1.39	2	2.20	1.65	3	[1] 2.69	Yes
Cough for 2 days	4.62	1.95	1	3.50	1.69	3	4.37	1.67	2	[1] 11.50	Yes
Scratch on arm or leg (infection)	5.23	2.09	3	5.44	2.07	2	5.78	1.42	1	2.07	Yes
Mild skin rash	3.09	2.31	2	2.69	1.90	3	3.37	1.87	1	[1] 4.04	Yes
Fever of 101°	3.58	2.24	2	3.48	1.84	3	4.08	1.68	1	[1] 3.07	Yes
Trouble getting to sleep	2.37	2.31	3	2.78	2.03	2	3.18	1.91	1	[1] 2.81	Yes
Pain:											
Toothache	2.16	1.90	3	2.29	1.99	2	2.50	2.05	1	.77	Yes
Belly pain	3.10	2.10	3	2.54	1.61	2	3.44	1.71	1	[1] 5.94	No
Sore throat	3.67	2.04	3	3.73	1.62	2	4.12	1.60	1	2.06	Yes

[1] Significant at $< .05$.

NOTE: The higher the mean score the more vulnerable the mother perceives her child to be to the health problem. Ranks represent the ordering (from table 2) of the study sites in relative percentages of mothers who keep the relevant medication in house for when child gets sick; 1 = highest percentage.

Table 5. Percentage of mothers keeping different numbers of medications and medical appliances in house for when child becomes ill, by study site

Quantity categories	East coast teaching hospital	Midwest teaching hospital	Midwest group practice
Different medications: [1]			
0–3	14.0	22.0	7.6
4–8	66.0	68.0	64.8
9–15	20.0	10.0	27.6
Different appliances: [2]			
0–2	37.0	28.0	9.5
3–4	42.0	52.0	49.5
5–7	21.0	20.0	41.0

[1] $P < .05$ by χ^2.
[2] $P < .01$ by χ^2.

children, we explored the concept of "vulnerability to illness," a variable found in most models of health-related decision making (*14*). Mothers were asked to estimate, on a 7-point scale (from 1 = no chance, to 7 = almost certain), the chance that their child might experience each of 10 health conditions. We hypothesized that increased levels of perceived vulnerability to a condition would be related to increased likelihood of keeping medicines handy for that condition.

Findings relevant to testing that hypothesis appear in table 4, which presents mean "perceived vulnerability" scores for each health problem along with each study site's ranking (relative to the other sites) with regard to extent of mothers' possession of medication for that particular condition (data from table 2), and results of the 1-way analysis of variance by site. The last column in table 4 shows agreement between ordering for perceived vulnerability and ordering for possession of medication for that condition.

As was the case with possession of medications, mothers at the three study sites differed with respect to their estimates of their children's vulnerability to particular health problems. Thus, respondents at the lower end of the SES spectrum (east coast hospital) expressed the most concern about diarrhea, constipation, and a cough for 2 days, while mothers at higher SES levels saw their children as more susceptible to fever, scratches and skin rashes, problems with sleeping, and pain of various kinds (indeed, mothers at the group practice provided the highest vulnerability scores in 7 of the 10 conditions presented, as contrasted with 3 of 10 for mothers at the east coast hospital.) One-way analyses of variance yield statistically significant differences across study sites for 6 of the 10 health problems, including 2 of the primary concerns of the east coast hospital mothers (constipation and cough for 2 days) and 4 of the primary concerns of the group practice mothers (mild skin rash, fever of 101°, trouble getting to sleep, and belly pain). Perhaps most important, however, was the concordance between rankings of level of perceived vulnerability and possession of medication for that condition: perfect concordance was obtained in 8 of the 10 cases, suggesting that some portion of mother-initiated medication behavior is indeed related to the mothers' perceptions about their children's susceptibility to different health threats.

In addition to specific categories of mother-initiated medication behavior, we examined variation in the number of different medications mothers reported keeping for their children. The data in table 5 show significant differences by study site for both numbers of medications and numbers of appliances. Although the middle-range quantity categories were most common across all clinics, in the highest categories (9–15

Table 6. Correlations (gammas) between number of different medications and medical appliances kept in house and mothers' perceptions of children's vulnerability to various health problems

Health problem	Number of medications	Significance $P < .05$	Number of appliances	Significance $P < .05$
Sore throat	.161	S	.182	S
Throwing up	.154	S	.040	NS
Diarrhea	.256	S	.062	NS
Scratch or cut (infection)	.026	NS	.110	NS
Sneezing (allergy)	.176	S	.057	NS
Constipation	.217	S	.144	S
Mild skin rash	.316	S	.191	S
Cough for 2 days	.233	S	.044	NS
Fever of 101°	.164	S	.117	S
Sleep problems	.180	S	.081	NS
Toothache	.191	S	.110	NS
Belly pain	.202	S	.206	S

NOTE: S indicates significant; NS indicates not significant.

Table 7. Correlations (gammas) between number of different medications and medical appliances kept in house and various health-related attitudes of mothers

Attitude statement	Number of medications	Significance $P < .05$	Number of appliances	Significance $P < .05$
Family is very often troubled by sickness	.197	S	.046	NS
I try to keep lots of medicines at home in case (child) needs them	.200	S	.046	NS
Events usually take their own course no matter what you do	.165	S	.220	S
I usually trust my own opinions about (child's) health more than a MD's	.247	S	.271	S
You have to use your own judgment in deciding how much of a MD's advice to follow	.285	S	.157	S
I have been very satisfied with prescription medicines I've given (child)	—.207	S	—.036	NS
I can be less careful when I give (child) an OTC medicine than prescription medicine	.198	S	.160	S
I sometimes give (child) OTCs in addition to those prescribed by MD for a problem	.197	S	.006	NS
When I get sick, I try things at home for a few days before seeing MD	.199	S	.102	NS
When I get sick, an OTC medicine often works just as well as prescription medicine	.171	S	.005	NS

NOTE: S indicates significant; NS indicates not significant; OTC indicates over the counter.

for medications, 5–7 for appliances) the mothers in the group practice reported substantially higher percentages, suggesting that affluence probably accounts for much of the ability to possess the greatest variety of remedies.

Since mothers' perceptions of their children's potential vulnerability to illnesses were related to possession of medications and appliances on a category-by-category, site-by-site basis, it seemed worthwhile to examine correlations between perceived susceptibility to each problem and total numbers of different medications and appliances across all study locations. The results reported in table 6 indicate that, with the exception of "scratch or cut," each perceived vulnerability item was significantly correlated with the number of different medications kept on hand for the child; however, similar correlations relating perceptions and number of appliances were statistically significant in only 5 of the 12 conditions listed (sore throat, constipation, rash, fever, and belly pain).

We also looked for possible relationships between mothers' medication-related attitudes and the number of medications and medical appliances kept at home for their children. These correlations, presented in table 7, were all significant for numbers of different medications (the strongest associations related to the mother's faith in her ability to decide what therapy her child requires when ill); however, only 4 of the 10 attitude items were significantly associated with ownership of medical appliances (the strongest correlation again being in the area of reliance on personal judgment). In general, the mother who keeps more kinds of medications available for her child views her family as often troubled by sickness and states that she tries to keep lots of medications at home in case her child gets sick. She is somewhat fatalistic, tends to trust her opinions about her child's health more than the opinions of the physician, and is less satisfied than her peers with prescription medicines she has given to her child in the past. The higher-medication mother also feels that she can afford to be less careful when giving OTC medications to her child than she has to be when she gives the child prescription medicines, and sometimes she adds OTCs to the course of therapy prescribed by the doctor. Finally, when the mother herself is ill, she is relatively more likely to try things on her own for a few days to see if she can avoid a physician visit and feels that for herself OTCs are just as good as prescription medicines.

Findings presented to this point have highlighted links between mothers' SES and study clinic site; between clinic site and mothers' possession of different medications for their children; and between medication use and a variety of attitudes. We also explored possible relationships between mothers' medication-related attitudes and SES. The relevant data from 1-way analysis of variance by SES for mean attitude scores are presented in table 8. To produce a more sensitive

and precise assessment of SES, the 3-category index of SES employed was based on a combination of mothers' reports of total family income and the highest grade she had completed in school. (It should be noted that the lower the mean score, the greater the degree of agreement with the attitude statement.)

Mothers with relatively lower SES are more likely to exhibit a fatalistic attitude toward life events (that is, a tendency toward external locus of control), to perceive their children as susceptible to frequent illnesses, particularly of the kinds "that doctors can't do much for," and to worry about their children getting sick. While, surprisingly, these mothers believe that most of their children's illnesses cannot be treated successfully with OTCs, they nonetheless try to keep a large supply of medications at home in case they (or their children) need them and include leftover prescription medicines in their supply. Also associated with reduced levels of education and income is a more skeptical attitude toward physicians. Although the 1-way analysis of variance produces a significant SES effect for only one of the attitude statements, these mothers tend to rely more heavily on their own judgments about their children's health and the treatments they might require and are less hesitant to add OTCs to the medications prescribed by the physician for the child.

Finally, lower SES mothers are generally less concerned about giving their children OTC (as opposed to prescription) medicines, viewing OTCs as less likely to cause the children to experience side effects, and they more frequently consult druggists for advice concerning the selection of OTCs for their children. In addition, these mothers believe that they do not learn much about OTCs by reading the medications' labels and are less likely to realize that some medicines decline in strength after long periods.

Discussion

These analyses indicate that income and education levels are related to which types or categories of medications and medical appliances mothers keep available to treat various health problems of their children.

Table 8. Mean scores, standard deviations, and 1-way analysis of variance of mothers' responses to attitude statements, by socioeconomic status

Attitude statement	Socioeconomic status						F ratio
	Low		Middle		High		
	Score	SD	Score	SD	Score	SD	
Events usually take their own course no matter what you do	2.53	1.54	2.96	1.36	3.67	1.26	[1] 15.40
(Child) gets sick fairly often	3.34	1.59	3.93	1.36	4.25	1.10	[1] 10.04
(Child) gets kind of illnesses MDs can't do much for	3.80	1.56	3.84	1.36	4.22	1.15	[1] 3.43
I worry that (child) will get sick	2.44	1.36	2.96	1.52	3.46	1.38	[1] 11.44
Most of (child's) illnesses can be taken care of with OTCs	3.70	1.44	3.26	1.36	2.98	1.35	[1] 5.57
I try to keep lots of medicines at home in case (child) needs them	3.18	1.70	3.92	1.32	4.58	1.17	[1] 8.83
I try to keep lots of medicines at home in case I need them	3.61	1.52	4.06	1.28	4.24	1.06	[1] 5.22
I save leftover prescription medicines in case someone in family gets same problem	3.05	1.07	4.17	1.38	4.24	1.26	[1] 8.35
I usually trust my own opinions about (child's) health more than a MD's	3.51	1.59	3.58	1.41	3.80	1.11	1.64
You have to use your own judgment in deciding how much of a MD's advice to follow	2.89	1.56	2.96	1.38	3.29	1.42	.81
I sometimes give (child) OTCs in addition to those prescribed by the MD	3.66	1.55	4.14	1.26	4.42	1.09	[1] 7.54
I often ask druggist what OTC medicines I should give (child) for a problem	3.04	1.67	3.40	1.53	3.66	1.39	[1] 3.63
I'm more worried when I give (child) prescription medicine than OTC medicine	3.91	1.35	3.98	1.33	4.26	1.02	2.50
(Child) less likely to get side effects from OTCs than from prescription medicines	3.25	1.53	3.59	1.41	3.73	1.05	[1] 2.85
I don't learn much about OTC medicines from reading the information on the label	2.09	1.75	3.06	1.43	3.12	1.43	[1] 7.87
Some medicines lose strength after a long time	1.89	1.33	1.80	1.28	1.34	0.70	[1] 8.95

[1] Significant at $< .05$.
NOTE: The lower the score, the greater the mother's agreement with the statement.

Mothers with higher levels of income and education were more likely to have antacids, vitamins, antibiotic ointments, and remedies for pain, allergy, and skin problems available for their children, while those with lower income and less education more frequently reported possession of constipation, diarrhea, and cough remedies, as well as medicines for weight control. A similar variation by income and education level was observed for medical appliances; higher income and education were associated with ownership of fever thermometers, vaporizers, bathroom scales, and heating pads, while lower SES mothers were more likely to have enema bags and ice bags available for their children. With regard to the quantity of medications and appliances kept in the home for the children, SES appears to influence how many remedies (and especially how many medical appliances) will be purchased. In multiple regression, the principal component of SES that accounted for number of medications was education while the principal component of SES that accounted for number of appliances was income.

Findings from this project are generally consistent with those of the few studies that have focused on the types of medications most frequently employed in parent-initiated treatments for children (*6,8*), including the relationship observed between income and education levels and the number of nonprescribed medications used (*6*). However, our findings provide additional and unique information in demonstrating the relationships between mothers' attitudes concerning both their children's health and medications and various aspects of mother-initiated medication behavior.

Mothers' perceptions of their children's potential susceptibility to various health problems were shown to be related to possessing what they believe are relevant remedies for those problems (as well as to keeping a greater number of different medications on hand for their children). Specific attitudes held by mothers about medications also contribute to explaining the quantity of remedies kept available for their children if they become ill. The strongest associations show that the mother who keeps a greater number of various medications on hand relies more on her own judgment concerning therapies for her child and trusts her own opinions about her child's health more than those of the physician. In addition, she expresses dissatisfaction with her experience in administering prescribed medications to her child and tends to keep a lot of medications at home in case her child gets sick. Other belief dimensions found to be significantly associated with possession of a greater number of medications include the mother's perceiving her family as being more frequently troubled by sickness, regarding OTCs as requiring less care than prescribed medications in administration to the child, feeling less able to control events by personal intervention, and relying on self-care and OTCs to manage her own illnesses. Finally, mothers' medication-related attitudes were highly correlated with SES.

The clinical implications of the present research can be viewed in terms of the need for health professionals to become more aware of the medications their pediatric patients may be ingesting as a result of mother-initiated therapies. Clearly, mothers in different SES groups are concerned about the health problems their children might have and are more or less likely to use various types of nonprescribed treatment before (or instead of) seeking medical assistance. The data also provide some useful information for explaining variations in mother-initiated medication behavior, in the form of relationships between medication-related attitudes and the type and extent of use of OTCs.

In view of our results, we recommend that pediatricians and other health care providers consider the substantial and disparate use of medications by mothers without medical advice so that these matters might be routinely reviewed with each mother. It would be appropriate to elicit the types of medications the mother keeps on hand for her child and the conditions for which they are used. The findings from such a mother-initiated medication history would guide the clinician in deciding the content of an educational intervention that provides special advice concerning the use and misuse of such medications. In addition to assessment of possession and use of medications, the mother's attitudes concerning her child's health and use of medications might be addressed formally, with questions paralleling the dimensions employed in this investigation. The practitioner should also consider the influence of SES on medication-related attitudes and behaviors when questioning the mother about types and extent of her self-initiated medication behavior.

Although the present research may have confirmed long-held suspicions of clinicians concerning mothers' use of medications for children in the absence of medical advice, it should be noted that a qualitative assessment of mother-initiated medication use is not provided by the study. Consequently, no determination can be made of whether the therapies undertaken are helpful or harmful to the children or of the effect of sociodemographic and attitudinal factors on the quality of mother-initiated medication treatments. We hope that the results of this study will provide a basis for (and stimulus to) further research directed toward determining the extent of appropriate and inappropriate mother-initiated medication use.

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SYNOPSIS

MAIMAN LOIS A. (School of Medicine and Dentistry, University of Rochester), BECKER, MARSHALL H., CUMMINGS, K. MICHAEL, DRACHMAN, ROBERT H., and O'CONNOR, PATRICIA A.: *Effects of sociodemographic and attitudinal factors on mother-initiated medication behavior for children. Public Health Reports, Vol. 97, March–April 1982, pp. 140–149.*

Little is known about the therapies that people initiate for their health problems, and the available research on self-medication has focused primarily on adult populations. Only a few studies have specifically addressed mothers' independent use of medications for their children, and none has described such behavior in depth (for example, relating such behaviors to specific mother-perceived symptoms and conditions in the child or attempting to provide an explanation for mothers' decisions in these situations).

A stratified systematic random sample of 100 mothers of children between 6 months and 12 years old was obtained at each of 3 pediatric ambulatory care clinics. Mothers were interviewed about their use of medications for their children, their concerns about their children's health, and their medication-related attitudes. The study results suggest that income and education are related to the types of medications and medical appliances mothers keep to treat the various health problems of their children. Mothers' perceptions of their children's potential susceptibility to health problems are related to possession of what they believe are relevant remedies for those problems (as well as to keeping a greater variety of medications on hand). Socioeconomic status appears to be one determinant of the number of different remedies (and especially the number of different medical appliances) that are purchased. Certain attitudes held by mothers about medications also play a role in explaining how great a variety of remedies are kept available for children in the event that they become ill, and these medication-related attitudes are highly correlated with socioeconomic status.