

THE STUDY OF HOME MEDICATION

BEHAVIOR OF MOTHERS OF

PRESCHOOL CHILDREN

by

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CHAPTER I

Introduction

Self-care with over-the-counter medications is often the first line of defense against injury and illness. Consumers using over-the-counter remedies over a period of time come to gain confidence in the drugs and use them because of their convenience, economy, and effectiveness. A significant amount of home medication is supplementary to professional treatment, and a significant amount represents an alternative to professional care.

Independent drug purchasing takes place in a market that offers a selection of 100,000 to 500,000 separate over-the-counter drugs (Pratt, 1973). These drugs are often helpful in the treatment of simple, common conditions that can be self-diagnosed by the average person, and the drugs can be safely used when guidelines are provided and followed. Although there are sound reasons for self-directed use of over-the-counter drugs, professionals are concerned regarding the safety of self-directed use.

Due to availability of these drugs and an increasing orientation towards self-medication and self-care, there is a potential for misuse by parents administering medications to their children. Because there is scant information in the literature regarding the medication practices parents

utilize with their children and likewise the consequences of over-the-counter drugs use in children, the extent of the problem is not known. Based on this researcher's experience, a discrepancy exists between the medication practices parents employ with their children and what is regarded as safe practice by health professionals.

Aspirin and acetaminophen, both analgesics and antipyretics, are drugs that are often administered to children by parents who lack information about the effects of these drugs. This practice is potentially dangerous to children because mothers may be unaware of the symptoms of toxicity and possible consequences of drug overdose. In addition to the immediate physiological outcome, a more far reaching problem exists because of the indiscriminate use of these drugs. Patterns of drug ingestion and drug-taking behavior established in the home may shape future patterns of drug-taking behavior (Block & Goodman, 1978).

Aspirin and aspirin substitutes were chosen as the particular drugs of study because they represent a prototype of many drugs sold over the counter and are usually administered to children without the guidance of a health care professional. Hazards of self-medication with these drugs can result from carelessness, faulty lay diagnosis, and failure to use these drugs appropriately. The perception of these drugs as safe may lead to indiscriminate use.

This study explored the appropriate use of over-the-counter medications by mothers of pre-school children. The

study examined factors contributing to a mother's medication behavior with her pre-school child, and when and how the decision is made to use medication. This study may provide knowledge helpful to clinicians who are in a position to teach mothers how to safely medicate their pre-school children.

Review of the Literature

Conceptually, self-care embodies the full range of health care activities that individuals could conceivably perform if their full potential for self-care were realized. Implicit in the system of self-care are the knowledge and skills that are necessary to provide effective health care management for the individual, and for those whom the individual is responsible. The dimension of self-care that will be the focus in this research is self-medication.

Three factors are identified as playing a prominent role in influencing the individual's use of self-medication with over-the-counter drugs. These three interdependent factors are the health care system, the economic system and the social system.

The health care system influences self-medication practices in a variety of ways. Demands for services and escalating costs year after year have placed extreme burdens on the system (Knowles, 1977). New technologies have generated new demands on consumers and these demands are beyond the ability of the health care system to provide them. Harper (1977) asserts that if only 5% of the people using over-the-counter drugs abandoned them and went to a physician, patient caseloads

of physicians would double. Use of the health care system for common and frequently self-limiting problems would tax our resources and deny access to other more seriously ill people.

Self-medication for minor complaints serves the purpose of permitting persons to treat themselves, thus relieving them of the economic burden of being absent from work to visit a health care facility. It allows the individual to function when he might not otherwise be able to; for example, a headache or upset stomach if not treated might keep the individual home from work. Additionally, the treatment of minor illness or injury at home provides some relief for those people who may not have access to health care because of an economic barrier. Thus, treatment with over-the-counter drugs helps people avoid physician visits, and saves money for what are commonly self-limiting, easily remedied illnesses. As medical care costs increase, self-medication will continue to increase.

The social system is the third factor which is in part responsible for the promotion of self-medication as an adjunct to home health care. Pratt (1973) asserts the lay public is increasingly disenchanted with professional medicine resulting in greater self-reliance in treating common medical problems with home remedies. Along with this disenchantment is a parallel social movement advocating naturalistic health which is based on a philosophy of harmony with nature. This

philosophical movement renews and refocuses energy into home health care and self-management of common complaints.

Usually, herbs are used rather than "drugs" in the traditional sense. It is apparent that the pattern of self-medication will continue to increase especially as consumers become increasingly sophisticated in health care matters (Romano & Rosman, 1977). The role of the health care professional is to help the public become wise self-care managers and safe users of medications.

Self-medication in this study encompasses the mother's administration of over-the-counter drugs for herself and her children. In order to examine the problem of self-medication, the review of the literature will be presented under the following headings: the extent of self-medication, historical development of self-medication, factors contributing to use and misuse of self-medication, the extent of aspirin and acetaminophen use with pre-school children, and the potential hazards of self-medication.

The Extent of Self-Medication

The extent of self-medication is fairly constant nationally as measured by the amount of dollars spent annually. In 1977, the United States spent 120 billion dollars of the Gross National Product on medical care and an additional 8 billion dollars per year are spent on self-selected, nonprescription medicines bought over-the-counter for conditions that are self-diagnosed (Romano & Rosman, 1977).

Knapp and Knapp (1972) found that families were dealing with illness every four days on the average. In a panel study, it was shown that in a 210-day period, 273 households with children had 57.4 total illness days per household. In over 60% of the illnesses occurring in families, only over-the-counter drugs were used. White, Williams and Greenberg (1961) found that among those experiencing illness, 66% took care of it themselves without consulting a physician. Personal experience with certain drugs within the family tends to create a menu of suitable medications for certain symptoms.

In a survey of a randomly selected adult population, Bridges-Webb (1972) found that only 10.9% of the 340 people he interviewed reported taking no medication in the previous two weeks. Use of prescription and non-prescription drugs were included. Half the sample had taken more than one drug, and 6% had taken four or more. In one of the few studies on home administration of prescription and non-prescription drugs by parent to children, Bridges-Webb (1972) found that 32.3% of the children ranging in age from birth to 14 years had received one drug, 22.4% had received two, 8.6% three, and 1.7% four drugs, in the previous two weeks.

An example of a drug that is frequently purchased for self-medication in our society is aspirin, and it is included in many other common over-the-counter medications. In 1970, enough aspirin was sold in the United States to provide

every man, woman, and child with 225 tablets of 320 mgm. each. By any standard, this may be considered excessive (A Report by a Working Party, 1976). In addition to the amount of uncombined aspirin sold over the counter, aspirin is also contained in at least 43 internally ingested analgesics and in at least 15 cold and allergy preparations sold over the counter.

Historical Development of Self-Medication

Although society has been conditioned to expect that medicine may be needed to get through a normal day, the situation of self-medication with over-the-counter drugs has developed and evolved gradually. Historically, four phases can be distinguished (A Report by a Working Party, 1975). From the Renaissance until about 1870, professional medicine was expensive and only the wealthy used it. The working population depended on folk remedies, and later patent medicines.

From around 1870 until the European Industrial Revolution, people moved from the rural farms to the urban centers. With this population shift, urban dwellers lost touch with the old folk traditions, and the working public sought patent medicine substitutes for expensive professional care during this second phase. Simultaneously, patent medicines were being packaged and made available to the public on a wider scale. Patent medicines by the end of the 19th Century had become a substantial industry. There were a great many

charlatans and, perhaps, this may explain why physicians are cynical about home remedies today.

With the introduction of insurance companies, and greater availability of professional care, a third phase began. From about 1920 to 1950, boards of control were established by the government to challenge the promotion and widespread abuse of patent medicine.

The fourth phase began about 1960 with the realization and acceptance by professional groups that self-medication was likely to persist, and that there would always be a demand for freely purchasable medicine. During this period, government agencies tried to balance self-medication and self-treatment with professional care through safety labeling. For example, guidelines were furnished on the label specifying when consumers should see a physician, as in the case of persistent symptoms. Labels identifying ingredients contained in the medication, and direction for administration were required of manufacturers producing over-the-counter drugs.

Another phase seems to be evolving as professionals take an active role in preparing people to use over-the-counter medications appropriately. This practice of self-medication will persist because illness is a frequent part of the human condition. Recognition of the importance of lay education to help people use medications appropriately is a growing concern. As people assume more responsibility for personal health care, consumer education regarding drugs will become more necessary (Knowles, 1977).

Factors Contributing to Use and Misuse of Self-Medication

Factors that contribute to misuse or inappropriate use of self-medication with over-the-counter drugs can be grouped into three categories: 1) characteristics of the social and health care system; 2) characteristics of the drug itself; and 3) the characteristics of the person who uses or administers medication.

Two criteria often used to characterize drug abuse are the following: 1) using medication for the purpose of achieving a pharmacological effect that the medicine does not possess; and 2) using medication in a manner or in doses that create a risk out of proportion with its possible therapeutic benefits (A Report by a Working Party, 1975). Abuse carries certain connotations that this researcher wants to avoid. The term misuse will be used in place of abuse and the definitions will be restricted here. Misuse of a drug occurs when the consumer unknowingly uses one medication for the purpose of achieving a pharmacological effect that the drug does not possess, and/or uses it in a manner or in doses that create a risk out of proportion to its possible therapeutic benefits.

Characteristics of The Social and Health Care Systems

Misuse of over-the-counter drugs is influenced by the social and health care systems. Inadequate regulation of advertising through the media and package inserts presents the public with insufficient or inappropriate information

for proper drug use. Health care providers have failed to educate the public in differentiating facts from myth regarding the efficacy and usefulness of over-the-counter drugs. In addition, families may rely on the media rather than on health care providers to obtain information about medicines. Although we do not know if there are serious consequences from misuse, the potential does exist.

Advertising uses facts, exaggerations, truths and half-truths to sell products. Although the degree to which advertising of over-the-counter drugs contributes to drug misuse has not been documented, it is generally accepted that drug promotion through the media contributes to consumers' misconceptions regarding the need for drugs and their utility in treating illness at home. An example of when the media might influence parents to medicate their children is when their children have a fever. Schmitt (1980) relates in his research that the "evidence clearly shows that many parents are greatly concerned about fevers in their children." He suggests that this great concern causes parents to overreact and to medicate their children when it may not be necessary. Parents become worried because they have been conditioned through the media that fever could have serious consequences if untreated.

Because drug merchandising distorts or misrepresents the effects of analgesics and antipyretics, many people are unaware that the misuse of over-the-counter drugs can have serious consequences. Use of aspirin has no stigma attached to it,

and there is little public awareness of risk with its indiscriminate use. Advertisements are designed to encourage people to take the advice of "a friend" who seems to know and sympathize with the problem of the consumer. Advertising may reinforce values, attitudes, and behaviors that encourage the use of over-the-counter drugs.

The pharmaceutical business is highly competitive and drug merchandising is done not for the benefit of the consumer but for profit (Knowles, 1977). Because it is so competitive, the retailing of the companies' products may increase the public's dependency on drugs.

In a study by Smith, Triuax, Zuehlke, Lowinger & Nghiem (1972), these authors monitored a commercial network television channel in a large metropolitan area for health-related content. Seven and two-tenths of the programming contained health messages of which 70% of the information was judged inaccurate, misleading or both by a panel of experts. These commercials were found to be primarily profit motivated.

Children are also influenced early by mass media marketing. Through television and magazines, pharmaceutical companies aim messages directly at this age group. Advertisements promoting the use of medication for acne, menstrual cramps, tension, and other common problems are set to popular music on television which captures the childrens' attention and encourages them to use these drugs when experiencing minor discomfort. Television advertisements portray small children reciting how their mothers give them aspirin for fevers

which encourages children to ask for some relief in the form of medicine when they don't feel well. The subtle message conveyed by these advertisements is that the good mother who loves her children uses aspirin.

Lewis and Lewis (1974) in their study examined the influence of television on health beliefs and behaviors of children. Sixth and seventh grade students in two elementary schools were asked to complete questionnaires. These children were asked for their impressions regarding television programs dealing with health or illness. The children were to conclude from these programs whether they believed the message and if they or their parents used the advertised product. Eighty-five percent of the higher socio-economic students reported they recalled messages from commercials, while 93% of the lower socio-economic group recollected commercial messages. Of the various commercial products listed, 85% of the children used aspirin and vitamins as compared to 45% usage for all the other products listed. Commercial messages had the greatest credibility among the children of parents who used the substance in question. There were statistically significant associations between children's beliefs and use of the products by parents and their children. The frequency of use of advertised products was higher among children from lower socio-economic backgrounds.

Peterson, et al (1976), while not citing the age group of children they studied, report that many children learn

about drug taking from newspapers and television. In their study, several major television networks were monitored for drug commercials during a prescribed period. These authors found that all ads in general failed to fully and consistently instruct the viewer in the need for, use, and effects of the products. The findings do not establish a causal link between drug advertising and drug misuse but rather suggest that promotion of drugs on television tends to encourage favorable attitudes towards drug use in children. Television is recognized by educational groups as a potentially powerful influence on health habits. Responsibility to educate consumers accurately and effectively about health is an appropriate nursing function. During clinic visits, nurses have an opportunity to discuss the veracity of commercial messages heard and seen in the media. They are also in a position to influence parents' beliefs and attitudes regarding the needs for medication when their child is ill.

Pharmaceutical companies as part of the health care system make certain information on their drugs available to the lay public. This is usually contained in the package insert. A potential problem that could cause misunderstanding in the use of medication is due to the way drugs are presented to the public through packaging.

Fink (1976) found in his study of court decisions based on use and misuse of drugs, that the package insert is defined as the material prepared by the firm manufacturing

the product, and is based on an accumulation of data from studies, supported by the firm and by independent researchers. These studies have been reviewed by the Federal Drug Administration. The FDA can object to improper, incomplete or false claims, but has no responsibility for authorship of the insert. The burden for truthfulness and accuracy is borne by the manufacturer.

The package insert prepared by pharmaceutical companies is a statement of proper prescribing practices for a particular drug. Certain basic information must be incorporated into label instructions in order for the public who use the medicine to obtain the best effect. This information on over-the-counter drugs is currently made available to the public in an extremely haphazard way because of inconsistencies in labeling by manufacturers regarding uses, dosages, and side effects of similar drugs.

A glaring example of this exists with regard to pediatric dosages for many drugs such as aspirin and acetaminophen. In many cases, these particular drugs contain no dosage instructions for children under three years. No dosages are given on the label for children under two years. Instead, the consumer is directed to contact a physician. The reality of potential misuse can be seen when a mother attempts to administer medication to her child in the middle of the night and does not have adequate instruction to do so in a safe and effective manner.

Labels and inserts do not uniformly relay information on possible drug interactions. It is plausible that a child could unwittingly receive aspirin in a cough or cold remedy and also in combination form by liquid or tablet for fever. The older child may receive a cough or cold remedy containing aspirin and also be given chewing gum containing aspirin. The potential for harm is great and the repercussions have yet to be uncovered and documented. Knowles (1977) contends that the "propaganda" regarding health matters porported by the media has led to the public preoccupation with disease. Yet, the health care system is not responding by educating the public as to when and how over-the-counter drugs can be useful. It has been this researcher's experience that education regarding over-the-counter drugs is incorporated into the teaching plan for parents on an episodic basis. It needs to be systematically taught in anticipation of the inevitability of childhood illness. Since childhood illness is an expected event, it can further be postulated that parents will use aspirin or aspirin substitutes during these illnesses. Because of confusion in the way the drugs are presented to the public and because of the deficiencies in educating parents, they may not have the information to know the effects of the drugs or the available alternative measures they can employ in conjunction with medication or alone.

Characteristics of the Drug

Krupka and colleagues (1978) support the notion that individuals consider some drugs as good and others bad, without any rationale or scientific basis. Generally, the public believes that prescribed drugs are stronger and potentially more dangerous than over-the-counter drugs which are considered innocuous. Although there may be some basis for this belief, over-the-counter drugs used inappropriately can also be very dangerous. Because of this belief and casual use of certain freely purchased drugs, there may be dangers, especially to children, that remain unidentified.

Aspirin and aspirin substitutes are examples of drugs that many people view as safe. It is not known to what degree health care professionals share this belief with the lay public. Because health care providers may recommend use of aspirin and aspirin substitutes without providing information regarding safety precautions, misuse may be extensive. Schmitt (1980) asserts that parents emulate the physician or nurse when their children become ill. Nurses and doctors who respond to fever as though it were a crisis may give the parent a tacit message that this situation must be treated with medication. Routine temperature taking when children visit health clinics may also reinforce in the parents' mind the importance of detecting fever (Schmitt, 1980). These factors in conjunction with easily acquired antipyretic drugs create a situation in which parents might routinely medicate their child for a temperature elevation.

Over-the-counter medications offer cost affordability, convenience, and efficacy if used properly. They have become an acceptable part of the individual's way of dealing with illness. Past experience with a drug affects consumers' future use and faith in the product. If it has been efficacious in the past, parents would be more likely to repeat the use of the drug. In this way, certain remedies become integrated into the household for family use for particular symptomatology.

Characteristics of the Person Who Uses Self-Medication

Many personal factors such as age, home location, socio-economic status, and perceived health status influence the patterns of self-medication, but there has been little research done to sort out the variables contributing to appropriate versus inappropriate use.

In regard to the influence of home location on patterns of self-medication, a review of data presented in A Report by a Working Party (1976) suggests that the more urbanized the community, the greater the potential for self-medication. For example, the high incidence of symptoms and ready access to over-the-counter drugs may influence the extent of self-medication among urban dwellers. These authors report a 1960 study of women that found headache remedies were the major accepted drug for 94.8% of the women, with a tendency for younger women to accept self-medication more than older women.

This group (A Report by a Working Party, 1976) also cites a French Study that found the lowest income group in

the study purchased more home remedies than the average income group. There is no clear association between income at other levels and purchasing rates.

In the United States, data support that the low income person resorts to self-medication to avoid expenses of professional care, but that upper income persons tend to have more medicines in their homes. This is also supported by a study conducted by Knapp and Knapp (1972). Using a longitudinal panel design, these authors studied 275 households with children over a ten-month period. The ages of the children in the households were not specified. Elderly people were excluded from the sample because of their increased drug usage. The mean number of nonprescription drugs that people had in their homes during the study was 20.8 for the higher income group, and 11.5 for the lower income group. During the study, procurement of nonprescription drugs was slightly higher in the lower socio-economic class (38.5) as compared to the upper socio-economic class (33.9%). Thus, the financial status of the individual may influence his use of over-the-counter drugs.

Personal perception of illness may play a role in self-medication. Perception of symptoms of common illnesses affects whether the individual starts therapy immediately or whether the person takes a wait-and-see posture. Johnson, Pope, Campbell and Azevdo (1976) found no association between perceived health status and use of over-the-counter drugs in their survey of 2,603 clients of a prepaid medical plan in

Oregon. Their data suggest that the use or non-use of nonprescribed medicines is a function of how the person perceives the symptoms of illness, rather than if they view themselves in good health. Nonprescribed medications were used more often for symptoms described as "trivial" or "self-limiting".

During Knapp and Knapp's study (1972) of children and adults, 2,800 illnesses were reported. Sixty percent of these illnesses were treated with nonprescribed drugs only, and treatment was started in 75% of these incidents within four hours of symptom onset. Johnson, et al (1976) report that those who wait to contact a physician report taking over-the-counter drugs more frequently. It remains unclear if people utilize these home remedies primarily as alternatives to professional care or in conjunction with it. Some of the personal factors that may play a part in medication misuse are lack of knowledge of the drug and/or misinterpretation of how to use the drug appropriately. Presumably, better educated individuals should be more knowledgeable about medications and use them more judiciously. However, misuse of over-the-counter drugs from lack of knowledge about these products is widespread. Of 268 patients studied by Leary, Vessella and Yeau (1971), only 16.5% were considered to be informed of the name, precautions and side effects of over-the-counter drugs they were taking. The authors also found no correlation between the patient's knowledge of the drug and level of formal education. It has been demonstrated

that people who have the necessary information to give the drug may not interpret the information correctly. Romano and Rosman (1977) found in their survey on patient drug information that 62% of the respondents misunderstood the intent of the instructions. For example, "Take one (1) capsule every four hours," was interpreted as taking one dose of the medication every six to eight hours, either around the clock or not.

Data from these studies lead one to suspect that many children are likely to be medicated by adults who medicate themselves and who have too little information to dose themselves or their children properly. One of the medications most likely to be misused is aspirin since salicylates are the standard prototype for non-narcotic analgesics, antipyretics and anti-inflammatory drugs.

The Extent of Aspirin Use and Misuse with Pre-School Children

There is little documentation in the literature which focuses on the extent to which mothers use aspirin and aspirin substitutes for their children, although it is felt by most health care providers that this practice is widespread and many times inappropriate. However, based on information about situations in which parents are likely to give aspirin to their children, inferences about the extent of use and misuse may be drawn.

Many parents use these drugs for their young children, even in the absence of recommended dosages. One particular

time that they would be likely to administer the drug is after immunization with diphtheria, pertussis and tetanus vaccine (DPT). These immunizations are given to children at 2, 4, 6 and 18 months and at 4-5 years, as recommended by the American Academy of Pediatrics (1972). Parents would be likely to give aspirin or acetaminophen at other times for cold symptoms, irritability and fussiness.

Barkin and Pichero (1979) used a mailed questionnaire to survey parents regarding reaction rates to DPT immunizations. This study observed reaction rates of pediatric patients receiving DPT vaccine in accordance with the current American Academy of Pediatrics recommendations. This eight-month study monitored all children who received DPT vaccines in four private practices. The children were healthy at the time of immunization and were from diverse socio-economic backgrounds. When the children were immunized, the parents were given a questionnaire to be completed 48 hours later. The questionnaire elicited information regarding the highest temperature recorded, changes in behavior, and any local reactions at the injection site. The questionnaire also sought information on use of antipyretics, contact with the physician, and what symptoms caused the parents' greatest concern. There was no attempt to control antipyretic use nor did this study indicate if it was recommended. After 48 hours, parents completed the questionnaire. There was an 84.9% return rate of the questionnaire from participants, for a total of 1,232 questionnaires. Ninety-three percent of

these children had a reaction from their immunization. Fifty-three and six-tenths of the children had a febrile response of 100°F. or greater, 4.2% having a fever greater than 102°F. The greatest number of children experienced febrile reactions when they received their first booster immunization at 18 months. Temperature elevations were observed despite the use of antipyretics in 65.2% of all children. Local reactions occurred in all but 27.8% of the children, with 52.4% of the parents reporting redness of the injection site. Crying and irritability occurred in 81.8% of the children.

Analysis of the findings of this study raises the question of how dosage was established for the younger child and infant and the potential for subtherapeutic dosing for the preschool child. Appropriate dosages of antipyretics for children under two years are not included on the label of these drugs, and this age group shows very low rates of contact with the physician. Because of rapid growth and variability in weight among children of these age groups, standard doses cannot be given. Recommended doses are calculated according to the child's weight. The label merely instructs the user to contact the doctor for the correct dose for children under the age of two or three (depending on the product). This situation increases the likelihood of misuse. Telephone contacts with the physician's office averaged only 6.9% for all age groups, and parents of children six months old made the fewest contacts, namely

4.6%. It is not known if too much or too little medication was used.

Schmitt (1980) in his survey of 81 parents who brought their children to a pediatric clinic, investigated parents' misconceptions regarding fever. He found that 11% of these parents would administer antipyretic medications (aspirin or acetaminophen) to their children with a temperature as low as 98.6°F., 45% would administer medication with a temperature of 100°F., and 29% with a temperature of 101°F. This means that 85% of the sample would administer medication prior to the temperature reaching 102°F. Although this study does not address the route the temperature was taken or the age of the children involved, it supports the perceptions of many health care providers that parents have a poor understanding of normal body temperatures, what constitutes fever, and the appropriate treatment.

Although the extent of medication use for side effects from immunization is not known, it is thought by health care providers to be high. It has been this researcher's experience when questioning mothers regarding the administration of antipyretics, that they use them without assessing the need for them and without taking the child's temperature. If so, mothers are misdiagnosing the child's problem, possibly giving inappropriate doses and thus misusing the drug. Mothers may be using aspirin or aspirin substitutes for sedative effects when this is not an action of the drug.

Aspirin and aspirin substitutes can be legitimately used for relief of pain.

Schmitt's (1980) study on parents' misconceptions regarding fever asserts that health personnel are important teachers of parents. In his survey, 34% of the parents stated that they obtained their information regarding fever from what doctors and nurses said, 17% from what doctors and nurses did, 30% from friends or relatives, and 19% from reading. The group of parents who received their information from the physicians or nurses (51%) and those who received their information from friends, relatives, or books showed no significant difference in how often they gave inappropriate responses to previous questions regarding fever. Obviously, the adequacy of the information as to timeliness and method of delivery must be established so nursing intervention can be meaningful to parents.

Potential Hazards of Self-Medication With Aspirin and Acetaminophen

Two types of consequences can develop from inappropriate use of aspirin and/or acetaminophen self-medication; aspirin toxicity and the long-term consequence of potential for development of patterns of drug misuse. These problems of misuse are especially important in the pediatric age group.

Toxicity. Two types of toxicity are described in the literature regarding aspirin overdosage. Acute toxicity usually is the result of accidental ingestion and chronic toxicity is the result of faulty therapeutics.

The very young child is extremely sensitive to salicylate and its metabolic effects of acidosis. Faulty therapeutics are more responsible for aspirin deaths in the preschool child than accidental ingestion (Craig, Ferguson and Syme, 1966; Done, 1978). Substantial improvements have been made regarding accidental ingestion of children's aspirin, as a result of packaging changes and safety caps. By 1972 these changes had arrived at the market place and would seem to be responsible for the decrease in accidental ingestion. However, no type of packaging will prevent aspirin toxicity or mortality from faulty therapeutics.

There are no systematically collected and published data regarding the incidence of chronic salicylate poisoning in children. Done (1978) believes that most aspirin ingestion resulting in toxicity or fatality is caused by therapeutic overdose. The metabolic pathways for aspirin become quickly saturated even at low doses and therefore, the time required to eliminate a given fraction of a dose increases with increasing dosages. Further, if the dosing interval stays the same but the half-life increases, the resultant rise in the drug level may be sustained and may achieve higher concentration. This "pyramiding" of blood levels most likely contributes to therapeutic overdosing in children when inappropriate doses are administered or the drug is given too often (Done, 1978). This most likely occurs during home treatment when dosages and dosing intervals are not individualized.

Another problem with dosing is administering too little of the drug. Dosages given children over two years old are often sub-therapeutic. Because of the inadequate response produced by the sub-therapeutic dose, parents may double the dose or decrease the interval between dosages (Rosenberg, Simon, Raina & Sangkachand, 1977; Done, 1978). Rather than increasing the therapeutic efficacy, which is what parents think they are doing, they are increasing the hazard to the child through faulty therapeutics.

Tainter and Ferris (1969) reviewed aspirin poisonings and found that nearly 50% of the reported poisonings and 84% of the deaths involved children who had a febrile illness and were unintentionally poisoned over a period of a few days' treatment with aspirin. Children under the age of two years were most often involved in toxicity due to excessive dosage. One reason may be the lack of explicit dosage instructions for children on the medication label.

Rosenberg, et al (1977) documents that consumer groups as well as major manufacturers of children's aspirin have asked the Over-the-Counter (OTC) Analgesic Panel of the FDA to reconsider labeling of children's aspirin. These groups express the concern that dosages on the inserts may lead to double-dosing or overdosing if parents see no effective response from the recommended dose.

Done, Yaffee and Clayton (1979) conducted a poll of 50% of the practicing Fellows of the American Academy of Pediatrics

using mailed questionnaires to establish how they determine aspirin dosage for children. With a 40% rate of response (2,296 questionnaires), 92% indicated that the labeled dose for children's aspirin was sub-therapeutic, based on their clinical experience. Seventy-eight percent used age as the basis for determining dosage, while 21% used weight. Although instructions on aspirin containers are to give the drug every three hours, 78.4% of the doctors surveyed specified that they preferred a frequency of every four hours. This dosage interval would be most therapeutic because it allows for safe, steady-state levels of aspirin in the blood (Done, 1978).

Regardless of whether age, weight, or surface area is used, the recommended pediatric dosage exceeds that which is labeled on the container (Done, 1978; Done, et al, 1979). Because of the confusion in the labeling which results in administration of potentially inadequate dosages, double dosing is subtly encouraged as is frequent dosing. Both may result in toxicity.

In controlled studies by Done, et al (1979), to demonstrate aspirin efficacy, the clearly effective individual dose of aspirin for antipyresis in children was found to be in the range of 10-15 mgm per kilogram. Karch and Kerzner (1976) assert that there is no correlation between toxicity and blood salicylate levels. A child can have severe symptoms of toxicity and a relatively low blood level of salicylate.

To further compound the problem, the symptoms of aspirin toxicity resemble the illness that is being treated. Significant rise in body temperature, tachypnea, drowsiness, and agitation are the signs and symptoms of salicylism (Done, 1978; levy, 1978). Frequently, children are given aspirin when they are in a dehydrated state and may be acidotic which compromises their ability to excrete salicylate. Drug accumulation can result in further toxicity (Done, 1978).

It is becoming common practice to substitute acetaminophen for aspirin to avoid the toxicity of aspirin. However, scientific data that demonstrate the benefit of acetaminophen is lacking. It is not known whether acetaminophen is devoid of risk factors when given to sick children. Reasons for substitution of acetaminophen except in the case of allergy have not been substantiated adequately in the literature. Prior to 1973, suspicions of acetaminophen overdose were reported. Previously, the British had correlated overdoses of this drug with its increased availability to the public. In the United States, salicylates comprise 71% of the market sales as compared to acetaminophens which comprise 29% of the sales. American aspirin manufacturers are becoming increasingly alarmed at their loss of a share of the market sales. So economic motivations of the pharmaceutical companies may result in more enticing public advertisement campaigns and a proliferation of new acetaminophen products (Rumack,

1978). The consequences for the public may be one of confusion and inappropriate use of these drugs.

Rumack and Peterson (1978) cite a doubling in the incidence of acetaminophen overdoses between 1973 and 1975. With the heavy use of antipyretics among children under five years, there is legitimate concern about the incidence of overdose in this population. Baley (1980) asserts that there have been case reports of liver damage with short term use of excessive doses or with chronic use of therapeutic doses of acetaminophen. Although these episodes occurred in adults, the safety of acetaminophen is still questionable in the pediatric age group.

Establishment of Drug Taking Patterns

A long-range problem that is just now receiving some attention in the literature is that children may be modeling their over-the-counter drug behavior after their parents. Krupka et al (1978), in a survey of school children, found aspirin was the most frequently used drug by the children. It is remarkable that 39.4% of the 4th through 6th grade children in the sample had used aspirin during the previous week. Twenty-five percent of these children did so without parental knowledge. The rationale for use was to achieve tension relief, sedation, because they "felt a cold coming on", for headache and restlessness. Use of aspirin as a tension reliever, sedative or relaxant has no scientific basis. These children might be patterning their aspirin use

after their parents or erroneously expecting these specific benefits on the basis of advertisements.

Block and Goodman (1978) found a strong correlation (beyond the .001 level) between use of marijuana and use of over-the-counter drugs by adolescents. Rather than over-the-counter drug use being a function of illicit drug use, these authors felt that the adolescent might be simply following their parents' example in use of over-the-counter drugs. Perhaps, those children who see over-the-counter drug use as innocuous are more likely to use illicit drugs.

Busching and Bromley (1975) in a survey of 500 university students found that 90% of the students reported using more than two over-the-counter or prescription drugs in the previous two weeks prior to the survey. Aspirin was used by half of the respondents. These authors suggest that rather clear societal distinctions exist in practice and beliefs regarding medicinal and non-medicinal drug use. They found no relationship between over-the-counter drug use and use of non-medicinal drugs, and a very low association between non-medicinal drugs and prescription medicine. Busching and Bromley's data gave limited support that extensive use of medicine by parents may slightly increase the problem of their children using medicine for non-medicinal purposes. Although tentative, this research shows that there may be some correlation between future patterns of drug misuse by

children and parental use of medication. Initial evidence cited in these reports warrants further investigation.

Rationale for Study

The following important points derived from review of the literature are summarized below. This framework provides a rationale for investigating the medication practices of mothers of preschool children.

1. There is a noticeable trend in our society towards more self-reliance in treating medical problems, but there is little public awareness of risk through indiscriminate use of drugs.
2. Home medication behavior for the pediatric age group is influenced by the mother's attitudes towards medication in general and self-medication in particular.
3. Aspirin and aspirin substitutes are commonly used drugs in home medication of the pediatric age group. It is suspected that the drugs may be misused in this population due to the mother's lack of knowledge regarding when to use the drug and how to use the drug appropriately with her child.
4. Characteristics of the child's behavior during fever or perceived discomfort influence the mother's medication use of aspirin and aspirin substitutes.
5. Some of the factors that determine appropriate medication behavior are under the control of the individual and, therefore, amenable to change.

6. Health professionals have the responsibility to inform clients how to protect their health and possess the information needed by mothers for safe medication use.

If the factors that contribute to inappropriate use are discovered and are amenable to change, then nursing intervention may be planned to prevent misuse.

When aspirin or any drug is administered, the parent or caretaker needs to know how often to administer the medication, how much to administer, the drug's side effects, and when to check with a health care provider. This information enables the public to use the drug safely. The parent should also be informed as to the therapeutic effects of the drug that can be reasonably expected and within a specified time frame.

Summary

Self-medication as a facet of the self-care model is advocated by the nursing profession. Nurses are taught to help patients not only comply with treatment, but also to translate knowledge of medications into useful guidelines for the clients who use over-the-counter drugs. Nurses can help parents become more knowledgeable concerning the drugs they are taking and administering to their children. Nursing intervention may hopefully prevent toxicity and other consequences of drug misuse.

It is important to study aspirin and aspirin substitute misuse in view of the potential hazards involved. Medication

of children without adequate and consistent guidelines available to the public invites misuse. From a practical point of view, nurses need to learn how parents are obtaining information. The adequacy of the information as to timeliness and method of delivery must be established so that nursing intervention can be meaningful to the parents. Finding a more efficient way to help parents assess the need for medication may initiate a more responsible approach to over-the-counter medication use.

CHAPTER II

METHODS

Purpose of the Study

The purpose of this research was to explore mothers' use of aspirin and aspirin substitutes for their preschool children. Two major questions were investigated: 1) What is the extent of mothers' appropriate and inappropriate use of aspirin and aspirin substitutes in the preschool child? 2) What are the factors that influence mothers' use of aspirin and aspirin substitutes with their preschool children? Specifically, this study examined the relationships between 1) the mother's knowledge of the drug and whether she used the drug appropriately or inappropriately, 2) the mother's knowledge and use of alternative measures for fever and pain relief, 3) her patterns of analgesic use for herself, and 4) her source of information about the drug. In addition, demographic factors including education and affordability of health care were examined. These demographic factors described the clientele served by two diverse settings in which the study was conducted. Mothers from these two somewhat different settings were interviewed to obtain information about their use of aspirin and aspirin substitutes and the factors that affect their use.

Setting

The study was conducted in two ambulatory pediatric clinics in the Portland Metropolitan area. These clinics were chosen to obtain variation in socio-economic background of subjects and type of medical care. As suggested in the review of the literature, socio-economic status may influence self-medication.

The clinics in the two areas serve two distinct types of clientele--the more affluent client at the private clinic, and the lower income client at the public clinic. The private clinic is located in a suburb of Portland. This private clinic operates five days a week and provides services to middle income clients. Here, care is administered to children from infancy through 21 years. Health care is delivered by two pediatricians who see approximately 600 children per month. The pediatricians have total responsibility for patient care except for routine measurements and some counseling which is done by the registered nurses in the office.

The physician working in the private clinic reports that he gives oral instructions regarding the use of antipyretic and analgesic drugs at the time of the first immunization, along with a sample of acetaminophen to be used at home. After this initial planned teaching episode, further instruction regarding changes in appropriate dosages are given on

an episodic basis. No written dosage schedule is given to the client to determine dosage as the child grows.

The public clinic is located in Portland and is part of a hospital complex. This clinic is open five days a week and provides services to predominately lower socio-economic populations including Blacks, Indo-Chinese, American Indians, and Caucasians. No one is refused care because of inability to pay. Preventive care and treatment of minor illness is provided for children from birth through 18 years. This clinic is staffed by three Pediatric Nurse Practitioners with a full-time pediatrician available for consultation. Approximately 550 clients are treated in this clinic each month.

The public clinic personnel report that clients attending their clinic are given a written dosage schedule for common analgesics and antipyretics appropriate for the child's age (Appendix A). This information, along with oral instructions, is given mothers at the time of the first immunization. It is also reported by the clinic personnel that this information is recounted orally at subsequent visits as part of anticipatory guidance and health counseling.

Sample

Sample Characteristics and Methods of Selection

The following criteria were used to determine which mothers were included in the sample:

1. Mothers of pre-school children aged nine months through 48 months were included in the study. Children under nine months of age were excluded because mothers may be less confident about administering drugs and consult the physician more frequently. Children over four years of age were excluded because instructions are consistently available on the labels of analgesics for children four or more years old.
2. Only mothers who live with their children and who are the primary caretakers were admitted to the study.
3. Only mothers whose children were attending clinic for well child visits were included.
4. Only mothers whose primary language is English were included in the study.

A sample of 80 mothers was drawn from a list of clients who had prescheduled appointments at the clinic for well child care. The sample was obtained during a period of five consecutive days from each clinic. Approximately eight clients were interviewed each day utilizing the mothers who were listed first on the appointment schedule in each time slot. If these mothers were not eligible for participation or refused, the next name was drawn in that time slot. Neither of the clinics designated special days of the week for specific problems so the sampling occurred on consecutive clinic days. Data collection was completed at the public clinic and then at the private clinic.

Variables and Measurement

A pilot study was conducted by the researcher with three mothers meeting the sample criteria to pretest the Aspirin Administration Interview Guide which was developed by the researcher. This was done to determine comprehension of terminology, adequacy of content and feasibility of the interview procedure. Minor revisions were made based on the pilot study and the final questionnaire is included in Appendix B. Items on the questionnaire were organized for ease of obtaining information during the interview. However, the following sections are organized with respect to the variables of interest, and therefore, the items are not discussed sequentially.

Mothers' Use of Aspirin and/or Aspirin Substitutes

The dependent variables are the mothers' use or non-use of aspirin or aspirin substitutes with her child and the appropriateness of her use. Aspirin and acetaminophen were selected because of their availability to the consumer and because of their high use in the pediatric age group.

Through the mother's self report, medication behavior was classified as appropriate or inappropriate depending on her answers to a series of questions. These questions survey: a) conditions for which she administered aspirin or aspirin substitutes; b) the amount of medication she employed, and c) the frequency of medication administration.

The mother's report of the circumstances in which she administers aspirin or aspirin substitutes (Item 27) was used to determine the appropriateness of use. Using the medication for fever or analgesia was considered appropriate. If the mother correctly identified circumstances when she would administer the drug to her child--i.e., said "yes" for fever and "no" for the others, she received one point. If she gave an incorrect response, she received a zero. The "appropriateness" score was the sum of the responses to seven items and had a range from zero to seven. A score of seven indicated she knew the correct response for each item and this was the only score considered to indicate appropriate use; all other scores were indicative of inappropriate use.

The child's weight (Item 2), whether the mother uses aspirin or aspirin substitutes for her child (Item 3), the type that she used (Item 30), and the amount she employed (Item 31), were used to determine whether the mother administered the drug in appropriate amounts. Correct dosage was ascertained by comparing the dosage of the drug recommended for the weight of the child, with the amount the mother reported giving.

There is some controversy over whether age group or weight should be used as the basis for dosage. Done (1979) reported data that 10 to 15 mgm/kg of body weight is the dosage of aspirin deemed safe and effective by the bulk of pediatricians that he studied. Because age parameters might

not reflect the weight variability within each age group, weight was used to determine the accurate dose. Dosage categories allowed for some variability so that regardless of the method of instruction, the dose could be designated as accurate.

Inappropriate frequency of drug administration was determined by reported time intervals between doses (Item 32). The literature supported four-hour dosing schedules for both aspirin and acetaminophen. Inappropriate frequency was considered the repetition of the dose in less than four hours or waiting longer than four hours to administer the next dose. One point was assigned if the mother reported the correct interval and a zero score was assigned if she reported an incorrect dosage interval.

A summary of the scoring method use to identify the appropriate user is displayed in Table 1. Using these three dimensions of appropriate use of medication, the mother who was correct on all of the items was considered to be an appropriate user, while the mother who obtained less than a score of three was considered an inappropriate user.

Item 33 was used to establish what mothers actually do when they see no effect from the drug in one to two hours. It was suggested in the literature that the sub-therapeutic dosage incorporated in the labeling of children's analgesics and also promulgated by some health care professionals, encouraged parents to employ double dosages when they saw no

improvement after one dose. Therefore, doses below or above the recommended 10-15 mgm,/kg were considered inappropriate.

TABLE 1
CHARACTERISTICS OF APPROPRIATE USER AND SCORE ASSIGNED

Characteristics	Correct Responses	Score Assigned
1. Conditions for Administering Aspirin or Acetaminophen	Fever & Pain	1
2. Dosage of Medication	10-15 mgm/kg./dose	1
3. Frequency of Medication Administration	Every 4 Hours	<u>1</u>
Appropriate User =		3

The mother's decision on how long she would continue to medicate her child without contacting a health care provider was also explored (Item 34). This decision was considered important because most health care providers agree that medicating a child longer than three days is inappropriate without identifying the cause of the illness and substantiating the need for medication. This is the most serious cause of toxicity in the preschool child. Item 6 sought to establish if the mother had medicated her child in the last two weeks. This question was asked to compare the frequency of medication

administration in this age group to that documented in the literature.

Mothers may choose not to medicate their children with analgesics and antipyretics. This decision may be considered appropriate or inappropriate non-use of medication. Item 28 ascertained the conditions under which mothers would not use aspirin or aspirin substitutes. This item was included in order to acknowledge the point of view held by some mothers who avoid use of over-the-counter medication among ill children. Item 29 allowed mothers to relate what they would do instead of administering medication. Item 4 allowed the mother to explain her decision for not using aspirin or aspirin substitutes. Item 5 ascertained how the mother decided to use aspirin substitutes instead of aspirin.

Factors Relating to Use of Aspirin and Aspirin Substitutes

The independent variables selected for this study included:

- a) the mother's knowledge of aspirin and aspirin substitutes;
- b) the mother's source of information about aspirin or aspirin substitutes;
- c) the mother's knowledge of alternative measures;
- d) the mother's use of aspirin or aspirin substitutes for herself; and
- e) the mother's socio-economic status.

The mother's knowledge of aspirin and aspirin substitutes was studied to ascertain if her knowledge influenced the way in which she used these drugs with her children. The mother's

knowledge of drug action (Item 9), knowledge of side effects (Items 7 & 8), and knowledge of body temperature when she would actually administer the drug (Item 16) were used to measure the mother's knowledge of aspirin and acetaminophen. A separate scale was used for each of the three components that contributed to the appropriate knowledge score. Mothers were assigned a total knowledge score (maximum of three points, which was determined by combining the scores for these three components (one point for each factor)). Mothers who received zero to two points were considered to have low knowledge scores, while mothers who obtained a score of three were considered to have appropriate knowledge. The following section describes the scoring method for each of the three components.

Knowledge of the action of the drug was obtained by asking the mother to respond to nine items describing possible drug actions. Analgesia and antipyresis were the only correct items; the others were incorrect. If the mother correctly identified the effect, i.e., said "yes" for analgesia and antipyretic effects, and said "no" for the others, she received one point. If she gave an incorrect response, she received a zero. The knowledge scores for drug action was the sum of the responses to the nine items and has a range of zero to nine. A score of eight or nine was considered an acceptable score; a score of one was then assigned for this particular factor.

Mothers who knew at least one side effect were considered to have appropriate knowledge of side effects and these mothers received a score of one point. If they could not identify at least one side effect, they were given a score of zero. Correct responses regarding side effects for the drugs included rise in body temperature, rapid breathing, drowsiness, agitation, skin reaction, and gastrointestinal disturbances (vomiting and bleeding). Other side effects such as headache, dizziness, sweating, thirst and tinnitus were also considered correct responses.

The mother's knowledge of when to appropriately administer antipyretics with regard to body temperature was established by determining the route she used to assess her child's temperature (Item 14), and the corresponding temperature when she would actually administer medication. Correct responses were an oral temperature greater than 100°F., a rectal temperature greater than 101°F., or an axillary temperature greater than 99°F. One point was assigned for a correct response and zero points were assigned for an incorrect response. These three factors (knowledge of drug action, side effect, and body temperature) comprised the total knowledge score and are summarized in Table 2.

The mother's source of information about aspirin and aspirin substitutes (Items 1 and 19) was studied in order to learn if mothers who were appropriate users of medication obtained their information from professional sources.

TABLE 2

CHARACTERISTICS OF APPROPRIATE KNOWLEDGE AND SCORE ASSIGNED

Characteristics	Correct Responses	Score Assigned
1. Knows both actions of drug	Analgesia & Antipyrea	1
2. Knows one side effect	Able to state one side effect from list in text	1
3. Knows when to appropriately administer medication for fever	Body temp when fever present corresponds with route temperature taken	<u>1</u>
Appropriate Knowledge =		3

Health care providers may share the same perception as the public in viewing over-the-counter drugs as innocuous or safe, and therefore not important to discuss during clinic visits. This researcher felt it was important to discuss it during clinic visits. This researcher felt it was important to establish the source of the mother's medication information so that interventions can be planned. Item 18 was included to discover if anyone helped the mother to decide when to administer medication to her child and Item 19 was asked to determine where the mother got her information about the dosage she administered. This information was felt to be particularly important to establish in view

of the absence of labeled doses on the product specific for this age group. The method of instruction (oral or written) in which dosage instructions were relayed by health professionals was ascertained because the method of conveying the information may influence appropriate use (Item 30).

Alternative methods of treating pain or fever were also explored (Items 11 & 17). Mothers may not be aware that alternative means exist that can be used in conjunction with medication or without medication. If mothers lack knowledge of these alternatives, they must use medication as the first line of defense in home care inappropriately, or conversely, delay its use when medication is appropriate. The extent to which mothers use alternative measures needs to be discovered so that it can serve as a basis for planning nursing intervention.

Use of the thermometer was explored to assess whether mothers used this method to establish the presence of fever and the need for antipyretic drugs. Questions were asked to determine if mothers used thermometers as part of routine well baby care (Item 12), and if they used the thermometer in assessment of the child prior to the administration of medication (Item 13). Item 15 determines the temperature at which the mother reports fever to be present. This information is essential as part of the anticipatory guidance that should be included in the instructions for well baby care. How the mother assessed the child's need for aspirin or

aspirin substitutes when she perceived that the child was in pain was also studied. Item 10 was asked to evaluate the mother's responses to the child's cues that her child may not be feeling well.

The mother's use of aspirin and aspirin substitutes for herself was investigated to explore the relationship between the mother's use and the use for her child. It is documented in the review of the literature that the general public uses self-medication to a high degree and that children tend to model their behavior after their parents. There was no documentation of a relationship between a mother's self-medication with aspirin or aspirin substitutes and the degree to which the mother medicates her child. If the mother sees these drugs as safe and medicates herself frequently, then perhaps she would medicate her child similarly. A report of mother's own self-medication practices was obtained in Items 21 through 26. Item 21 established whether the mother used aspirin or aspirin substitutes for herself. Item 22 ascertained whether her reasons for medicating herself were appropriate. Acceptable responses indicated the drugs were used for analgesia or to reduce fever. Items 23 and 24 established the type of drug employed and dosage used. Item 25 assessed the time interval mothers waited between administering doses of aspirin or aspirin substitutes to themselves. Item 26 established the frequency of over-the-counter drug use, reported to be excessive in the literature.

The social status variables related to affordability of health care and education (Items 35 & 36) were asked because cost can be a barrier to adequate health care and may explain in part the increased incident of self-medication. Education, a function of social status, may affect the mother's knowledge of aspirin and aspirin substitutes used for her child and herself. Mothers were asked the ages of their children (Item 1) to assure correct placement in the study and to describe the situation of medication of preschoolers.

Items 37 and 38 were asked to ascertain if the mother had past experiences with child care. As suggested in Schmitt's study (1980), experience may influence one's knowledge and approach towards fever reduction. It was postulated by this researcher that the more experienced mother may be more appropriate in her use of aspirin and acetaminophen.

Data Collection Procedures

The directors of the two pediatric facilities were contacted to arrange permission to conduct the study on their premises. Clients meeting the previously stated criteria were admitted to the study if they agreed to participate after being informed about the study.

Nurses working at both clinic sites were informed by the interviewer that a study was being conducted at the clinic. The nurses were informed that the study involved assessment

of mothers' home medication behavior but details of the study were not revealed.

A master's prepared registered nurse with interviewing skills was trained by the researcher and conducted a face-to-face 30-minute interview with each mother. At both clinics the interviewing process took place prior to the child being seen by the health care provider. The interviews averaged 20 to 35 minutes each. At the private clinic, the interviews were conducted in the examining room, in contrast to the public clinic where the waiting room was used. Privacy was assured in both areas. The nurse conducting the interview wrote down pertinent information as she asked each question. The interviewer, who was dressed in a laboratory coat, obtained a formal consent from the subject prior to the interview (Appendix C). A structured interview guide titled The Aspirin Administration Interview Guide, containing 38 questions was developed by the researcher and used to elicit the information. The Aspirin Administration Interview Guide is included in Appendix B.

On completion of the interview, each mother was advised as to how to obtain proper dosage of aspirin and aspirin substitutes, indications for administration, and alternative means of controlling temperature elevation. Pain relief information was also given. This information was relayed by the interviewer orally and was also distributed to the

mothers in written form (Appendix D). Medical staff at both sites had approved the information given mothers who had participated in the study.

CHAPTER III

RESULTS

Data obtained from 80 mothers at a public and private clinic included knowledge and use of aspirin and aspirin substitutes for themselves and their preschool children. The results are presented under the following headings: description of the sample, the use of aspirin and aspirin substitutes, and factors related to use.

Description of the Sample

The sample consisted of mothers of preschool children whose mean age was 27 months. Two factors thought to affect mothers use of aspirin and aspirin substitutes with their children were previous experience with childhood illness and education. Eighty-five percent of these children were either the first or second child in the family. Mothers attending clinic with their third child comprised only 11.2% of the sample. Eighty-nine percent of the mothers described themselves as being moderately to very experienced with childhood illness. Mothers who were experienced with childhood illness were evenly distributed between the two clinics.

The mean level of education of mothers was 12.8 years with a range from 8 to 18 years. Mothers completing one or more years of education after high school comprised 47.3% of the sample.

Although income level was not requested specifically in the questionnaire, the question of insufficient money as a barrier to obtaining medical care was raised. The majority of the mothers (96.2%) felt that they had sufficient means to obtain medical care through either insurance or with their own funds.

There was very little difference in the characteristics of women attending the public clinic as compared to the private clinic. Both groups had comparable experience caring for children as indicated by the number of mothers who reported care of ill children. The private clinic has a somewhat higher percentage of women with education beyond high school, but both groups were well educated.

Table 3 displays the characteristics of the sample by clinic site. Mothers attending the private clinic with first and second children comprised 43.7% of the sample while mothers attending the public clinic with first or second children comprised 41.2% of the sample.

In analyzing the mothers' education by clinic site, it was found that 17 (23.3%) of the mothers attending the public clinic had not completed the twelfth grade compared with four of the mothers (4.9%) attending the private clinic. The majority of the clients sampled (n=27) at the private clinic that had completed high school also completed one to six years of post high school education, with one of the subjects responding that she had a total of 18 years of

TABLE 3
 CHILDCARE EXPERIENCE AND EDUCATIONAL
 CHARACTERISTICS OF MOTHERS
 ATTENDING TWO WELL BABY CLINICS

	Private Clinic (N=40)		Public Clinic (N=40)		Total	
	N	%	N	%	N	%
Mother's Experience with Child in Family (1st or 2nd Child)	35	43.7	33	41.2	68	85
Mother's Experience with Ill Children	35	43.7	36	45	71	88.5
Mothers Completion 1-8 Years Education After High School	37	33.6	11	13.7	38	47.5

education. Only 13.7% (n=11) of the mothers at the public clinic had received post high school education, including one mother who had received 15 years of education and one mother who had completed 16 years of education.

The Use of Aspirin and Aspirin Substitutes

Frequency of Use of Aspirin and Aspirin Substitutes

One question addressed by the study was the frequency with which mothers used aspirin or aspirin substitutes with their preschool children. Only two of the mothers (2.5%)

reported that they did not administer aspirin or aspirin substitutes to their children. Of the 97.5% who reported using aspirin and/or aspirin substitutes, 40% (n=32) report using both drugs with their children. The most frequently reported brands of aspirin and aspirin substitutes mothers utilized were Bayer Aspirin (26.2%), Infant Tylenol Drops (23.8%), and Tylenol Elixir (15%).

Mothers were asked who suggested their use of aspirin or aspirin substitutes the last time they administered it to their child. The majority of the sample (62.8%) decided themselves to administer the drug and 29.5% related that the doctor or nurse suggested the administration of the drug. It is interesting that no mother reported being influenced by other members of the family, friends or the media.

Of the mothers who administered aspirin or aspirin substitutes to their children, 46% had administered these drugs to their children two weeks prior to the study. This figure is considerably higher than the frequency of home medication use reported by Bridges-Webb (1972), where 30.2% of the well children he sampled had received at least one drug in the previous two weeks. The data for this study were collected in the springtime of the year from mothers whose children were at clinic for well baby visits. Perhaps seasonal variation for minor upper respiratory infections could account for the reported high use in this study.

Frequency of Appropriate vs. Inappropriate Use

The appropriate use of aspirin and aspirin substitutes was determined by three factors: 1) the correct reason for actually administering the drug; 2) the correct dose for the type of drug the mother specified she used, in combination with the weight of the child; and 3) the correct interval between doses.

Forty-six and five tenths percent of the mothers (n=44) administered incorrect doses of aspirin and aspirin substitutes to their children based on weight, while 43.5% used the correct dosage for their child.

The acceptable dosing interval for administration of aspirin or aspirin substitutes was four hours. Of the mothers sampled, 80% (n=65) chose four hours as the interval they allowed between doses when medicating their child regardless of the drug chosen. Another 20% would wait five or six hours between doses when medicating their child regardless of the drug chosen.

Although it was suggested in the literature review that mothers who saw that their children did not respond to medication within one to two hours might "double-up" on the next dosage, this was not reported by the sample. Eighty-one and three tenths percent (n=65) reported they would take other actions aside from repeated dosing. The most frequently reported response was to call the clinic. Waiting an additional two hours and repeating the same dosage, was reported by

13.7%, while only 2.5% of the sample would repeat the dosage in one or two hours.

Mothers appeared to be cautious in the amount of time they would allow to elapse before contacting a health care provider. When asked how long they would continue to medicate their child before calling a clinic, 66.2% (n=35) would wait one day, 16.2% would wait two days, and 7.5% would continue to medicate their child three or four days. Seven and five tenths responded that it would depend on the nature of the illness, the condition of the child or the height of the fever.

A scoring method described in Chapter II was devised to describe if the mother's rationale for administration of the drug to her child was appropriate. Fever and analgesia were considered to be correct responses. Table 4 displays the reasons mothers administer aspirin or aspirin substitutes to their preschool children.

These findings support reports in the literature that mothers frequently administer aspirin and acetaminophen to their children after immunizations and when fever is present. Teething is often an appropriate time to use these medications because of the discomfort the child may be experiencing. The most commonly reported inappropriate use of these drugs was when the "child may be getting a cold." This error may be due to confusion in advertising where aspirin and aspirin substitutes are often suggested as cold remedies. Mothers

TABLE 4
 NUMBER OF MOTHERS REPORTING THAT THEY ADMINISTER
 ASPIRIN OR ASPIRIN SUBSTITUTES TO PRESCHOOL CHILDREN
 FOR STATED REASONS

Reason	Administer Aspirin or Aspirin Substitutes Number of Mothers	%
When child has a fever	76	(95)
After baby shots	61	(76.3)
When child is teething	56	(70)
When child may be getting a cold	27	(33.7)
To quiet the child when fussy	8	(10)
When child coughs	3	(3.7)
Before going on a trip to relax	2	(2.5)

may have misconceptions regarding the preventative use of these drugs.

The average number of errors per mother was not calculated. Based on the three criteria used to establish appropriate use, 73% of the mothers were considered to be inappropriate users of medication with their preschool children, while 27% were considered appropriate users. The most common error was a serious one, administration of an incorrect dosage. This is important because is it amenable to change with patient teaching and better labeling.

TABLE 5

NUMBRS OF APPROPRIATE AND INAPPROPRIATE USERS OF ASPIRIN
AND ASPIRIN SUBSTITUTES BY THE TYPE OF CLINIC

Clinic	Appropriate User	Inappropriate User	Total
Private	11 (29.7%)	26 (70.3%)	37 (100%)
Public	6 (23.1%)	20 (76.9%)	27 (100%)

(*Missing data on 17 subjects; 14 from public clinics,
3 from private clinic.)

Missing Data occurred at both clinics because mothers could not report either the brand and/or the dosage they employed when they medicated their child. Mothers who were infrequent users might not recall this information. Two of the mothers were non-users of medication.

The mother's level of education did not seem to be a factor in determining whether or not she was an appropriate user of medication. Number of appropriate users were uniform throughout all grades with the greatest number (4) achieving 14 years of education. The majority of the inappropriate users (23.8%) completed grade 12 and four mothers had completed 18 years of education.

It was thought by this researcher that the mother's experience with childhood illness and her child's placement in the family might influence the mother's appropriate use. The findings do not suggest this. The majority of mothers who were inappropriate users of medication (63.5%) felt that they had moderate to a great deal of experience taking care of sick children, while 25.3% of the correct users reported the same experience level.

The majority of the appropriate users (n=15) and the inappropriate users (n=42) reported this child was the first or second child in the family. From these two factors it seems that the nurse should not assume that mothers who are experienced in care of children use medications appropriately.

Mothers also reported illness conditions when they would not use aspirin or acetaminophen with their children. None of the mothers would administer these drugs if the child had an upset stomach, if vomiting was present, or if the child had diarrhea. Only one mother reported that she would medicate her child if drowsiness was present and only two mothers reported that they would medicate their child if the child was eating or drinking little.

Factors Related to Use

Several factors are considered which might influence appropriateness of aspirin and aspirin substitute use. This study addresses the mother's knowledge of drug use action

and side effects, knowledge of comfort measures, mother's own use of aspirin and acetaminophen, and her source and method of information regarding the use of aspirin and aspirin substitutes as they affect appropriate use of aspirin and acetaminophen.

Mother's Knowledge of Aspirin and Aspirin Substitutes

Mothers' knowledge of aspirin and aspirin substitutes consisted of knowledge regarding the 1) desired effects of aspirin and aspirin substitutes; 2) side effects of the drugs; and 3) when to appropriately administer the drug for fever. The two questions regarding non-use of these drugs (Item 28 and 29) were eliminated from the analysis because the researcher decided that the responses were too ambiguous to be reliably interpreted.

All of the mothers knew that aspirin and acetaminophen had antipyretic actions and 91.2% of the combined sample know that the drugs had analgesic properties. However, many mothers incorrectly attributed other actions to the drugs. Forty-one percent of the subjects thought that the drugs had a sedative effect, 43.8% reported relief from tension as an action, 11.2% thought the drugs could help reduce coughs and congestion, and 53.7% felt the drugs were effective in reducing crying (from any cause), and 10% reported that the drugs help an upset stomach.

The majority of the mothers (n=57) did not believe there were any side effects to the drugs. Of the 23 (18.8%)

mothers who thought there were side effects, 12 mothers could name one side effect and six could name two side effects correctly. Five mothers felt there were side effects but were unable to name any side effect correctly. Mothers who knew at least one side effect were considered to have appropriate knowledge for this component.

Use of a thermometer at home for their assessment of their child's temperature was reported by 96% (n=77) of the mothers. Eighty-one percent (n=65) of these mothers report that they use the thermometer prior to giving their child aspirin or aspirin substitutes. Of these mothers who used the thermometers, 52.5% correctly interpreted when fever was present in relation to the route used to take the temperature. Seventy percent of the mothers in the total sample appropriately administered medication when these two factors were taken into consideration. Fifty-seven (71.2%) of the mothers who report taking their child's temperature before medicating them used the rectal route, 13 (16.2) used the oral route, and eight (10%) mothers used either axillary temperatures or forehead strips.

Mothers frequently administer aspirin and acetaminophen to their children for fever. Schmitt (1980) implies in his research that fever triggers certain reactions in parents who believe that fever must be treated. His suggestion that parents overreact to fever and medicate their children as a first action when it may not be necessary is supported by

this study. The mean temperature when mothers would actually administer medication regardless of route was 100.8°F. with a range from 96°F. to 104°F. Twenty-two of the mothers would not administer medications until the temperature was at least 102°F. regardless of site. Fifty-two and five tenths percent (n=42) of the 81.3% mothers who report using a thermometer to assess fever prior to administering medication were correct in their knowledge of interpreting when fever was present based on the route by which the temperature was taken. Forty-three and eight tenths percent (n=35) were incorrect in naming the appropriate temperature by the route mentioned. There does seem to be a meaningful discrepancy between when mothers think a fever is present and when they would actually administer medication.

The fact that many mothers are assessing their child for fever by using a thermometer is encouraging. It also indicates that teaching needs to incorporate the interpretation of temperature as it relates to thermometer use, in order to properly assess fever.

Knowledge of aspirin and acetaminophen effects, side effects, and appropriate drug administration were compiled for a total knowledge score. Only 9.3% of the subjects were considered to have adequate knowledge--that is, a correct response to all three knowledge questions. This result suggests drugs may be misused because the mothers' lack knowledge regarding when and how to use aspirin and acetaminophen

appropriately. The most frequent error was the belief that these drugs had no side effects.

The total knowledge scores showed little variation by clinic site. Only 10% (n=4) of the mothers attending the private clinic were considered to have appropriate knowledge, while 90% had inappropriate knowledge. Similarly, 8.6% of the mothers attending the public clinic had appropriate knowledge of medication, while 91.4% had inappropriate knowledge scores. There were five missing observations in the total sample which were all from the public clinic.

The results were further analyzed as to how many of the mothers with appropriate knowledge were also appropriate users of medication (Table 6). Only one mother was identified as having appropriate knowledge and also being an appropriate user of medication.

This researcher realizes that these results should be cautiously interpreted because of missing data that could confound the results and because of the stringent requirements employed to determine appropriate knowledge and use. Results are also reflective of the small numbers of mothers who had appropriate knowledge. However, it is clear that inappropriate knowledge did not always lead to inappropriate use, nor did adequate knowledge lead to appropriate use.

Knowledge of Alternative Measures

Mothers were asked what alternative measures they used when they felt their child had a fever. Most mothers could

TABLE 6

COMPARISON OF MOTHERS WHO WERE APPROPRIATE USERS OF
ASPIRIN AND/OR ACETAMINOPHEN AND HAD KNOWLEDGE OF THE DRUG(S)

	No. of Mothers Who Were Appropriate Users	No. of Mothers Who Were Inappropriate Users	Total
Numbers of Mothers who had Appropriate Knowledge	1	4	5
Numbers of Mothers who had Inappropriate Knowledge	16	42	58
	17	46	63*

(*Missing Data plus 2 Mothers who were non-users)

name eight alternative measures. It is curious that although two mothers in the sample reported not using aspirin or aspirin substitutes, 100% of the mothers reported that they would give their child aspirin or aspirin substitutes if their child had a fever. Perhaps when they reported that they did not use these drugs, the occasion had not arisen yet when they would have used them. Additionally, 100% of the mothers would keep their child indoors, restrict their child's activities and increase fluids if their child had a fever. Only 28.8% of the mothers would sponge their children with lukewarm water, while 21.2% of the mothers indicated they would use alcohol sponges to reduce fever. Thirty-nine

percent of the mothers would cool room air to reduce temperature. Clearly, alternative measures for treating fevers is an area for further patient teaching.

Mothers were asked a hypothetical question regarding the first action they would take if their child was in pain but had no fever; for example, after immunizations. Forty-five percent of the mothers reported their first action would be to medicate their child. Twenty-one percent would use comfort measures such as feeding and rocking or holding their child. Only 7.5% of the mothers chose warm compresses and 3.7% chose rubbing the site as their first actions, respectively. These data support that medicating the child is often a mother's first response to treating pain. While administering medication can be proper, it does imply mothers' frequent use of medication for this preschool age group.

Mothers, on the average, named 5.4 of the eight responses listed as cues their children give them when feeling ill. Mothers reported the child wanting to be held continuously (82.5%) and decreased appetite (81.3%) were the two most common indicators that prompted them to consider their child might be experiencing pain. It is this researcher's experience when probing for pain cues, that health professionals often ask questions about behaviors that mothers may not consider indicators of pain. For example, "Is your child crying continuously?" or "Does your child pull at his ear?" While 67.5% of the mothers use the ear pulling as an indication

of pain in their child, only 52.5% of the sample reported continuous crying as a discomfort cue.

Mothers' Own Use of Aspirin and Acetaminophen

Seventy-eight percent of the subjects reported that they use either aspirin and/or aspirin substitutes for themselves. The majority of these medication users were able to identify one correct action of the drugs. Seventy-two percent accurately reported these drugs would relieve headaches. However, 43% did not think they were effective for menstrual cramps, and 58.7% used them when they "felt a cold coming on." Seventy-four percent of the mothers who used aspirin and aspirin substitutes used the appropriate adult dose (two tablets), and 56.3% dosed themselves at the appropriate four-hour interval. Since adult dosages are more accurate on the label, this finding may be related to more appropriate use than dosage in children by the same person.

Only two mothers reported that they did not use aspirin or aspirin substitutes for themselves or for their children. It was postulated that mothers who were frequent users of medications would also be frequent administrators of aspirin and aspirin substitutes to their children. Frequent administrators were determined by use of the drugs for themselves and their children in the two weeks prior to the study. Thirty-four and four tenths percent of the entire sample had not administered aspirin or aspirin substitutes to their children in the last two weeks nor had mothers medicated

themselves. Twenty-three percent (n=14) of the mothers reported medicating themselves and their children in the past two weeks.

Type and Source of Information about Drugs

In part, this study addresses the type and method of delivery of instructions regarding dosage information for aspirin and aspirin substitutes administration to children. Table 7 summarizes the type of instructions mothers received. At the private clinic, 12 mothers reported receiving oral instructions, five written, and 19 mothers reported receiving both. At the public clinic, 22 mothers reported receiving oral instructions, nine written instructions, and three reported receiving both. There were ten missing observations which could be explained by the mothers being new to the clinic or not receiving any information.

The majority of mothers who were inappropriate users (32.1%) of medication related the information they obtained for dosage instructions was given orally, and 26.8% of the inappropriate users cite oral and written instructions combined for their dosing information. Mothers who were appropriate users of medication reported receiving their information either orally or both orally and in written form in the majority of cases regardless of clinic site.

The number of inappropriate users was fairly consistent at both clinics. Since the number of appropriate users was so small, it is difficult to establish if method of instruction

TABLE 7
 TYPE OF INSTRUCTION MOTHERS REPORT RECEIVING REGARDING
 DOSAGE INFORMATION FOR ASPIRIN AND ACETAMINOPHEN
 AT TWO CLINICS

Clinic	Written		Oral		Written and Oral		Totals	
	N	%	N	%	N	%	N	%
Private	5	7.1	12	17.2	19	27.1	36	51.4
Public	9	12.9	22	31.4	3	4.3	34	48.6
TOTAL	14	20	34	48.6	22	31.4	70	100

played an important part in influencing the appropriateness of use. Of the 16 mothers who were appropriate users, seven received oral instructions, three written, and six both written and oral instructions.

In the combined sample, 73.1% of the mothers reported that they got their information for dosage from the doctor or nurse at the clinic, while 17.9% reported that they got their dosage information from the container label. Mothers obtained their information for dosing in similar ways regardless of the clinic attended.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The purpose of this study was to describe medication practices mothers employ with their preschool children, and whether mothers had appropriate knowledge to administer the drugs safely and effectively. Factors that may contribute to use of these drugs were also examined.

The study subjects included 80 mothers attending either a private or public pediatric clinic with their preschool-aged child. The majority of mothers were high school graduates attending the clinic with their first or second child. Money was not perceived by mothers as a barrier to medical care.

Data were obtained via a structured interview with the mothers at the clinic sites by a trained nurse interviewer. Data pertaining to aspirin and acetaminophen use, factors relating to use, and socio-economic status were obtained using the "Aspirin Administration Interview Guide" developed by the researcher.

The administration of aspirin and aspirin substitutes by mother to their preschool children is a prevalent activity. Because only two mothers reported not using the drugs, it is difficult to speculate about factors influencing non-use. From the data, it seems part of the reason for frequent use in this age group may be professional advice which either

augments or encourages use. When mothers were asked who suggested aspirin or acetaminophen use the last time they administered the medication, 29% were influenced by the doctor or nurse at the clinic, while 62.8% made the decision themselves.

Friends and family were not cited as influential in determining use of these medications. This researcher had postulated that one of the primary influences on mother's drug administration behavior was media advertising. According to this sample, media was not reported to be influential by any of the subjects. It is still not clear what role the media plays in the mothers' use of aspirin and acetaminophen. Although mothers did not identify media influences as having a direct effect on their behavior, the effects may be so subtle and so interwoven with the health beliefs of the family, that each facet is difficult to extricate. Generally, it seems there are many sources of influence, some of which may not be identifiable.

In this research study, 73% of the mothers were identified as inappropriate users of medication. The most common error was administration of incorrect dosage based on the weight of the child. It is not known whether mothers tended to overdose or underdose their children. Several reasons for incorrect dosage administration can be proposed. It is known that weight or age or a combination of the two may be used as the basis for dosage, and that clinic sites differ

in dosage schedules. Each of the two clinic sites in this study uses different methods in the calculation of dosage. The private clinic uses weight as the criteria for dosage, while the public clinic utilizes the child's age. This type of inconsistency among health care providers most likely causes confusion among consumers. The container labels may also add to this confusion in that some labels specify dosage according to weight while others specify age. Consumers may think of acetaminophen and aspirin products as interchangeable especially since the adult doses of similar drugs are alike. It may also be that clinic personnel do not routinely instruct mothers regarding dosage change during clinic visits in spite of weight changes secondary to rapid growth in the preschool age group. It is also possible that the correct information given by clinic personnel was misinterpreted by the subjects as reported by Romano and Rosman (1977), who found that 62% of the respondents misunderstood the intent of instructions. It has been this researcher's experience that parents are often given hasty instructions as they leave the office. The parent is usually preoccupied with dressing the child or trying to control the child's behavior while the instructions are being given.

A likely reason for use of incorrect dosages is that mothers may not have recollected the exact brand of medication they reported using because they were infrequent users of medication. Since dosage schedules are unique for each

brand of medication, this may have caused some errors in what mothers thought they were reporting. It would seem advisable to teach mothers to use a consistent brand and include the dosage schedule for that brand when counseling clients. Since dosage schedules are not available for small children outside of clinic settings, perhaps a schedule similar to the one utilized at the public clinic would be useful to give to parents at the clinic visit. A dosage schedule utilizing weights instead of age would be helpful to mothers to alleviate the confusion regarding dosage and brands. The client should be taught to select a brand and then stay with that brand. Different brands and dosages could be selected as the child grows and different dosages are utilized. This should be included in the anticipatory guidance schedule of the well child visit.

It is interesting to note that some progress has been made in the area of children's dosage of acetaminophen since this research was undertaken. In Fall, 1981, McNeil Consumer Products Company (producers of Tylenol products), announced an improved dosage schedule for children's acetaminophen products consistent with the recommendations of the FDA Panel for OTC Internal Analgesic, Antipyretic, and Antirheumatic Products (Appendix E). This company has adopted the dosage schedule of 10-15 mgm/kg./dose. Unfortunately, the package label will continue to carry the warning to "consult a physician for use by children under two..." When this revised

dosage schedule is adopted, the problem of inadequate dosing may be partly solved.

Twenty percent of the mothers who used aspirin or acetaminophen reported utilization of a five-or six-hour dosing interval rather than the appropriate four-hour schedule. It is not clear how the appropriate dosing schedule is incorporated into guidelines received by mothers at either clinic. The instruction sheet (Appendix A) given mothers at the public clinic could have been misinterpreted. The instructions at the bottom of the sheet state "Give all doses every three to four hours or alternate aspirin and tylenol every two hours." The unsophisticated or inexperienced mother may think the brand Liquiprin is an aspirin product or does not understand the difference between the two drugs. This interpretation could result in overdose with either drug if medication is administered every two hours. The dosage interval needs to be clearly taught as well as the actual dose.

The educational level of the mothers did not seem to influence appropriate use of medication. More mothers considered to be inappropriate users of medication were high school graduates and had education beyond high school. Part of the explanation may be that these mothers feel they have the necessary information to appropriately dose their children and, therefore, do not ask the physician or nurse for further information. It is also possible that health care professionals

fail to mention dosage information to better educate mothers assuming them to be knowledgeable about these drugs.

The assumption that mothers are knowledgeable made by physicians and nurses could also influence the way these professionals distribute information to experienced mothers. Mothers' knowledge of aspirin and acetaminophen was equally poor at both clinics despite a slightly better educated group of mothers at the private clinic (23.3% of mothers attending the public clinic and 4.9% of those attending the private clinic did not complete high school). It was concluded that mothers who had appropriate knowledge did not necessarily demonstrate appropriate use nor did mothers demonstrating appropriate use necessarily have appropriate knowledge. This is supported by Leary et al (1971) in their study of patient knowledge and misuse of over-the-counter drugs. No association was found between the patient's level of formal education and the patient's knowledge of the drug. The relationship between knowledge and use is not straightforward and mandates further study to evaluate what type of teaching is needed to increase safe use.

The majority of the subjects who were considered to be inappropriate users (63.5%) reported feeling that they had moderate to a great deal of experience in caring for sick children. Perhaps mothers relied more on their own experience rather than what they read on labels and did not resort to calling the clinic for dosage information. Health care

providers may assume that experienced mothers know the information and in an effort to be expedient, fail to assess the knowledge level of experienced mothers.

Stringent guidelines were developed by the researcher to define mothers who had appropriate knowledge of aspirin and acetaminophen and to identify appropriate users of these medications. These parameters were chosen because the researcher felt safe users of medication should know the effects of the drug they were administering, the side effects, and when to appropriately administer the drugs. Additionally, users of medication should demonstrate that they administer the correct dosage at the correct interval and for the correct reasons.

It would seem from this investigator's perspective that these parameters are minimum standards that consumers should have prior to administering medication to themselves or to their children. Without this information, drug errors are likely to occur with serious consequences in this vulnerable preschool population. This information is now haphazardly incorporated into labeling instructions and package inserts. With the trend towards increased self-medication, there is likely to be a concomitant increase in drug misuse and toxicity.

Serious errors were found in knowledge of the drug's action. Forty-one percent of the mothers thought that aspirin and acetaminophen were effective as sedatives and

43% thought the drugs were useful as tension relievers. Although all of the subjects knew of the antipyretic action of the drugs and 91.2% knew of the analgesic properties, it is equally important that those administering medication know when the drugs are not indicated. This may be another area where nursing could intervene by instructing mothers when to use and when not to use these drugs. Further investigation of other reasons why mothers give drugs to their preschool children is needed.

The subjects demonstrated a considerable knowledge deficit in their ability to identify side effects of the drugs. The majority of the mothers (71.2%) did not believe there were any side effects. The ubiquitous perception of these drugs as safe may pervade even the health professional's belief system, and therefore contribute to inappropriate use because both consumer and health care professional fail to deal with this aspect of safe medication practice.

Further evaluation is necessary to delineate the relationship between knowledge and use of medication. In spite of high school education, mothers may need teaching on how to obtain information on drugs for safe use. For example, how to use available resources, and decreasing reluctance to call the clinic for dosage needs to be stressed. Consumers may not comprehend that these drugs can be unsafe or even lethal. Pharmaceutical corporations have an ethical and

legal responsibility to inform the public regarding instructions for safe drug use. One mechanism available to accomplish this is through the media. Health care providers are also exposed to the same sort of influence to some degree as their clients. They, too, have the responsibility to promote safe home medication practices. More studies are needed on the factors most influential in determining appropriate use and also on interventions nurses can utilize to increase appropriate and safe use among this population.

There was a discrepancy in the method of instruction for dosage information the clinic personnel reported giving and what mothers reported receiving. While the private clinic reported giving oral instructions only, 13.9% of the mothers attending the private clinic reported that they received both oral and written instructions. The public clinic reported giving oral and written instructions, yet only 8.8% of the mothers reported receiving both. All mothers attending both clinics reported that they received some type of instruction, yet most failed to display appropriate medication behavior. Several possibilities could account for these findings. Subjects were asked to recall information they may have received months before and they may not have remembered exactly what was told or given to them on that clinic visit. Mothers may have been new to the clinic and may not have reported what occurred at the clinic they were now attending. Mothers may have received written instructions but discarded

them rather than saving them for future reference and have since forgotten they received them.

Fever and pain were the primary reasons mothers cited for medicating children in this age group. Although 81% of the subjects reported that they used a thermometer to assess for fever prior to giving children aspirin or acetaminophen, only 5.25% correctly interpreted when fever was actually present.

Fever appears to be very frightening to parents and what they interpret as fever is treated aggressively with over-the-counter drugs such as aspirin and acetaminophen. Discomfort for the child with a fever does not usually begin until the temperature has reached 102° to 104°F., which is relatively common during acute childhood illnesses and following immunizations (Scmitt, 1980). On the other hand, parents may interpret the fussiness and irritability of the child as indicative of fever and medicate their child without discovering the cause or establishing if fever is really present. It may be that mothers believe that by using these drugs early in the illness that they may prevent fever from occurring.

The nurse can anticipate that mothers will need to learn to use the thermometer as an accurate means of detecting fever. The appropriate time for teaching may be at the first well child visit. Time should be allowed to review the use of the thermometer. Knowing how to read the thermometer and encouraging its use when mothers suspect there

might be a problem can help allay anxiety. Thermometer use will give mothers another means for judging illness aside from observation.

Some mothers often have no way of knowing when their young child is experiencing pain while other mothers may be very adept at recognizing subtle changes in the child's activity or behavior associated with illness. Children provide cues when experiencing discomfort. Parents can learn to interpret these cues and take action to reduce inflammation and provide comfort measures for the child. Perhaps comfort measures such as rocking or cool compresses would be more appropriate at these times either in conjunction with medication or used alone. Nurses can provide individualized anticipatory guidance for each family.

Alternative measures for reducing fever and relieving pain either alone or in conjunction with medication have been neglected in patient teaching and deserve attention. Patient teaching is aimed at teaching about medication but many misconceptions prevail regarding what other things mothers can do to reduce fever. For example, only 28.8% of the sample would sponge their children with lukewarm water for fever, when at certain temperatures health professionals know that this is almost mandatory to reduce fevers. Additionally, only 38.7% of the mothers would cool the room air.

Knowledge of alternatives is related to appropriate use of medication in several ways. For example, mothers with

adequate knowledge of alternatives might not employ drugs as a first line of defense for fever and pain. Mothers might use other means to reduce fever in conjunction with drugs or without drugs when temperature elevations are slight.

In addition to teaching mothers about alternative measures of treating fever and pain, ways to evaluate the efficacy of these methods need to be incorporated into the teaching plan. Perhaps mothers could be instructed to retake the temperature one hour after their intervention. This would also provide mothers with a logical progression of steps to take for treating minor illness in their preschool child. Instruction to increase the mother's ability to interpret the child's behavior could be incorporated into child care classes. Mothers who have not associated with small children may need help in exploring some of these elements of safe home health care of children.

This researcher postulated that mothers who were frequent users of aspirin and aspirin substitutes would tend to medicate their children more frequently. Using the criteria of administration of the drug in the previous two weeks to establish frequency, 23% of sample had used the drugs for themselves and their children in the previous two weeks. This figure seems relatively high in view of the strict criteria used to establish frequent use. It is not known what role parents' self-medication behavior has in influencing

children's future self-medication practices. This is an area for further research.

Self-medication is a significant component of the self-care model. Although the practice of self-medication may be influenced by health care professionals, this does not necessarily ensure appropriate use of medication. Lack of knowledge by the user regarding a particular drug's efficacy, side effects and dosage may contribute to inappropriate use of medication. Drugs that are frequently misused are aspirin and acetaminophen which are administered by mothers to their children as part of illness care at home. Self-care and self-medication are likely to increase, and the severity of misuse of these drugs among preschool children may be sustained. Many resources are available to the consumer to become a more appropriate user of medication. Clients can be taught how to acquire information about drugs using resources such as the library, local pharmacy, and acquiring home references. If the public was educated to view all drugs as potentially harmful substances, they might become more discriminate users.

Two principal conclusions to be drawn from this study support the suppositions of the researcher. Mothers of preschool children do not demonstrate that they have appropriate knowledge regarding aspirin and acetaminophen, nor do they demonstrate that they are appropriate users of these medications for their children. This study emphasizes the

need for primary health care providers to take a more active role in teaching their clients about over-the-counter medications. Anticipatory guidance should include teaching regarding all aspects of safe medication use.

Suggestions for Further Research and Implications for Practice

The findings and problems encountered during the course of this study suggest numerous possibilities for future investigation related to method of data collection. Because subjects were asked to recall what dosage of aspirin and acetaminophen they used, it was difficult to determine what actual dosage was administered in each situation. Mothers may have been reporting a dosage of aspirin or acetaminophen they used months before, so perhaps correlating that dosage with the weight on the clinic visit was a cause for error. It would be advisable for future researchers to develop another method of assessing appropriate dosage of these drugs. One way this can be accomplished is to include only mothers who administered medication to their children in the recent past, i.e., last two weeks, in the study.

The scope of this study did not allow for obtaining accurate health data on each child, and did not establish if mothers used aspirin and/or acetaminophen one time with their child or many times. Although data support that many mothers were inappropriate users of medication, the factors that directly affect use were not identified. For example, mothers may not have actually had the experience of febrile

illness with their child, but were reporting an isolated episode of illness where they may have used medication. Under these circumstances, it is difficult to assess if conditions were present that may have caused mothers to modify their behavior, and thus, be inappropriate users only for the episode they were reporting.

Since the current practice in both of these clinics is to distribute dosage information only, it would be helpful to study appropriate use in relation to mothers receiving information regarding actions and side effects of these drugs. Supplying additional information may improve mothers' appropriate use of the medications and may lead to more discriminate use.

Nurses in the pediatric clinic setting need to be aware of errors mothers frequently make. Pediatric Nurse Practitioners can interpret information regarding over-the-counter drugs for home use, and also provide specific instructions regarding home health care. The nurse practitioners should also assess the level of knowledge so that the type of guidance needed can be ascertained. For example, certain mothers may be identified as being unable to understand written instructions or unable to calculate the child's medication dosage from the instructions given. For these mothers, a practice session including a return demonstration may be appropriate before the mother leaves the clinic. Periodic review of dosages during period of rapid growth

which characterize the preschool population should be included.

A major function of the nurse practitioner is to assist the client in understanding physiological mechanisms that function during illness. The literature review supports the notion that the general population has a fear of fever, especially in children. The nurse practitioner is in a position to help parents understand the concept of fever and allay some of the anxiety and fear that surrounds this symptom.

It needs to be discovered why mothers use medication as a first action for treating fever and pain rather than utilizing alternative measures. In order to determine this, future research might evaluate the type of information parents receive in terms of guidance for fever and pain. In addition to dosage instructions, information about action, side effects, and dosage interval should be given. Based on this study, guidelines can be formulated for adequate instruction of mothers regarding use of aspirin and aspirin substitutes. Anticipatory guidance regarding fever and pain can be incorporated into standardized teaching plans given mothers at well baby clinics. Nurse practitioners need to emphasize that there are other supporting measures mothers can employ besides medication. For example, after immunizations, mothers should be encouraged to rub the injection site and apply compresses in addition to use of medication. Further,

adequate clinical time must be set aside for counseling of parents regarding these aspects of child care.

This study did not address the entire problem of self-medication but reasons to be concerned about home medication were elaborated. The recommendations suggested go beyond the implications for children and address the underlying problem of home medication with over-the-counter drugs in general.

The results of this study describe medication practices mothers utilize with their preschool children. Because of the small population included in one study, results cannot be generalized. Thus study serves as a basis for further research, and to document the need for anticipatory guidance regarding two commonly used over-the-counter medications as part of the well child visits.

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APPENDICES

APPENDIX A

Dosage Schedule

PUBLIC CLINIC DOSAGE SCHEDULE

ASPIRIN OR TYLENOL DOSES

"Rule of Thumb" = 60 mg. Per Year

Age	Tylenol		Tempera		Liquiprin	Baby Aspirin	Adult Aspirin or Tylenol
	DROPS	SYRUP	DROPS	SYRUP	DROPS	TABLETS	TABLETS
2 Mo.	.3		.3		.3		
4 Mo.	.3		.3		.3		
6 Mo.	.3		.3		.6		
9 Mo.	.6		.6		.9		
1 Year	.6	1/2 tsp	.6	1/2 tsp	1.25cc (1/2 Dropperful)	1	
15 Mo.	.6	1/2 tsp	.6	1/2 tsp	1.25cc (1/2 Dropperful)	1	
18 Mo.	.8	3/4 tsp	.8	3/4 tsp	2cc	1-1/2	
2 Year	1.2	1 tsp	1.2	1 tsp	2.5cc (1 Dropperful)	2	
3 Year	2.0	1-1/2 tsp	2.0	1-1/2 tsp	3.75cc (1-1/2 Dropperful)	3	
4 Year	2.5	2 tsp	2.5	2 tsp	5cc (2 Dropperfuls)	3	
5 Year		2-1/2 tsp		2-1/2 tsp	5cc (2 Dropperfuls)	4	1
6 Year		3 tsp		3 tsp		4	1
7 Year						5	1-1/2
8 Year						6	1-1/2
9 Year							2
10 Year							2
10 Year to Adult							2

Give All Doses Every 3 - 4 Hours or Alternate Aspirin and Tylenol Every 2 Hours

APPENDIX B

Aspirin Administration Interview Guide

mother code #

1 2

clinic #

3

Card #

1
4

ASPIRIN ADMINISTRATION INTERVIEW GUIDE

Introduction: My name is Suzanne Nelson and I am doing a study to learn more about what kind of home treatment mothers use during minor illness for their children. This interview will take approximately 30 minutes.

1. What is your child's birthdate: _____
2. How much does your child weigh today? _____
3. Do you give aspirin or aspirin substitutes to your child?
Yes(1) _____ No(0) _____ Both aspirin & aspirin substitutes _____

5 67 89

Interviewer: If yes on #3, skip to #5.

4. If you decided not to use aspirin or aspirin substitutes, can you tell me how you made that decision?

10

Interviewer: If no on item #3, now skip to item #7. Omit items #13 & #14.

5. If you use substitutes, how did you decide to use them?

11

6. Have you given your child aspirin or aspirin substitutes in the last two weeks?

Yes(1) _____ No(0) _____

12

Interviewer: This next set of questions are asked to elicit the mother's knowledge of a) the effects of aspirin and aspirin substitutes; b) her method of assessing the need for aspirin or aspirin substitutes, and c) alternative treatments.

7. Do you think that there are any undesirable effects of these medicines?

Yes(1) _____ No(0) _____

13

Interviewer: If no on item #7, skip to item #9.

8. What do you think two (2) undesirable effects are?

1. _____ 2. _____

14

Interviewer: Request the mother to answer yes or no for each item listed.
Read to mother: I am going to read you a list of effects for aspirin and aspirin substitutes. Please answer yes or no for each one.

9. Do you think aspirin and aspirin substitutes are effective in children to:

	Yes	No	
Help them to sleep	____(0)	____(1)	15
Relax from tension	____(0)	____(1)	16
Lower fever	____(1)	____(0)	17
Helps to reduce coughs and conjection	____(0)	____(1)	18
Relieve Pain	____(1)	____(0)	19
Reduce crying	____(0)	____(1)	20
Relieve constipation	____(0)	____(1)	21
Relieve diarrhea	____(0)	____(1)	22
Relieve upset stomach	____(0)	____(1)	23

Interviewer read to mother: Now I want to talk to you a little about pain. I will read a list of items and you answer yes or no for each item.

10. How do you decide if your child is in pain?

	Yes(1)	No(0)	
Crying continuously	_____	_____	24
Restless	_____	_____	25
Pulling at body part (i.e., ear)	_____	_____	26
Difficult to console	_____	_____	27
Decreased appetite	_____	_____	28
Refuses to sleep	_____	_____	29
Wants to be held continuously	_____	_____	30
Your child tells you he hurts	_____	_____	31

11. When your child has pain but no fever, for example, after a baby shot when the site is tender, what is most likely to be your first action?

32

Interviewer read to mother: Now, I'd like to ask you some questions about the way that you manage this child's illness at home.

12. Do you use a thermometer at home for your child?

Yes(1) _____ No(0) _____ Sometimes, but not usually(2) _____

33

Interviewer: If no on item #12, skip to item #15.

13. Do you usually take your child's temperature before giving aspirin or aspirin substitutes?

Yes(1) _____ No(0) _____

34

Interviewer: If no on item #13, skip item #14 and go on to item #15.

14. Where do you put the thermometer when you take your child's temperature?

Mouth(1) _____ Rectum(2) _____ Under Arm(3) _____

35

15. At what temperature do you consider fever present when taken by this route?

36

Interviewer: Skip item #16 if no on item #3.

16. At what temperature would you give aspirin or aspirin substitutes?

38 38 39 40

17. When you child has a fever do you:

	Yes	No	
Give lukewarm sponges or baths	_____ (1)	_____ (0)	41
Alcohol sponges	_____ (0)	_____ (1)	42
Alcohol and ice sponges	_____ (0)	_____ (1)	43
Undress child	_____ (1)	_____ (0)	44
Dress child warmer	_____ (0)	_____ (1)	45
Cool room air	_____ (1)	_____ (0)	46
Increase fluids	_____ (1)	_____ (0)	47
Restrict activities	_____ (1)	_____ (0)	48
Keep your child indoors	_____ (1)	_____ (0)	49
Give aspirin or aspirin substitutes	_____ (1)	_____ (0)	50

Interviewer: If no to item #3, skip items #18, 19, 20 and go to item #21.

18. The last time you gave aspirin or aspirin substitutes who suggested it?

_____ Prescribed by nurse or doctor
(1)

_____ Recommended by someone else
(2) (Family, neighbors, T.V.)

_____ Decided yourself
(3)

_____ Other
(4)

51

19. Where do you get your information for dosage?

 Doctor or nurse
(1)

 Friend
(2)

 Book or magazine
(3)

 Pharmacist
(4)

 Other
(5)

 Bottle
(6)

52

20. If you received your information from a clinic source was it:

 Told to you
(1)

 Given to you in written form
(2)

 No Information given
(9)

53

Interviewer: Read to mother. Now, I'm going to ask you about your own use of aspirin or aspirin substitutes.

21. Do you use aspirin or aspirin substitutes for yourself?

Yes, Aspirin(1) Yes, Aspirin Sub.(2)
Yes, Both (3) Neither(0)

54

Interviewer: If the answer to #21 is no, skip to item #27.

22. When you do take aspirin or aspirin substitutes yourself, is it for?

	Yes	No	
Relief of tension	<u> </u> (0)	<u> </u> (1)	<u> </u>
Headache	<u> </u> (1)	<u> </u> (0)	<u>55</u>
Menstrual cramps	<u> </u> (1)	<u> </u> (0)	<u>56</u>
Feeling a cold coming on	<u> </u> (0)	<u> </u> (1)	<u>57</u>
To help you sleep	<u> </u> (0)	<u> </u> (1)	<u>58</u>
For fever relief	<u> </u> (1)	<u> </u> (0)	<u>59</u>
For stomach pains	<u> </u> (0)	<u> </u> (1)	<u>60</u>
			<u>61</u>

23. Please specify brand or type of medication you use for yourself.

62

24. How many tablets do you take at each dose?

 1 tablet
(1)

 2 tablets
(2)

 3 tablets
(3)

 4 or more tablets
(4)

63

25. How many hours do you allow between doses for yourself?

 1 hour
(1)

 2 hours
(2)

 3 hours
(3)

 4 hours
(4)

 5 hours
(5)

64

26. Have you taken aspirin or aspirin substitutes in the last two weeks?

Yes(1)

No(0)

65

Interviewer: This next set of questions elicits conditions for which the mother administers aspirin or aspirin substitutes to her child, the amount she employs, and the frequency of administration. If no on item #3, skip #27.

Interviewer read to mother: This next set of questions deals with the way you might use aspirin or aspirin substitutes at home. Please answer yes or no as I read each item.

27. When do you give aspirin or aspirin substitutes to your child?

	Yes	No	
When child as a fever	<u> </u> (1)	<u> </u> (0)	
To quiet the child when fussy	<u> </u> (0)	<u> </u> (1)	<u>66</u>
Before going on a trip to relax	<u> </u> (0)	<u> </u> (1)	<u>67</u>
When teething	<u> </u> (1)	<u> </u> (0)	<u>68</u>
When the child may be getting a cold	<u> </u> (0)	<u> </u> (1)	<u>69</u>
When the child coughs	<u> </u> (0)	<u> </u> (1)	<u>70</u>
After baby shots	<u> </u> (1)	<u> </u> (0)	<u>71</u>
			<u>72</u>

28. Under what conditions would you not use aspirin if your child doesn't feel well?

	Yes	No	
Upset stomach or vomiting	____(0)	____(1)	73
Diarrhea	____(0)	____(1)	74
Drowsiness	____(0)	____(1)	75
Eating and/or drinking very little	____(0)	____(1)	76
29. What would you instead for the condition mentioned above? (specify)			77

Interviewer: If answer to item #3 is no, skip item #30, #31, #32, #33 and #34. Go to item #35.

30. What is the one (1) type of aspirin or aspirin substitute you use most often for your child?

- | | | | |
|--|------|----|----|
| ____ Bayer Children's Aspirin | (1) | 78 | 79 |
| ____ Certified Chewable Aspirin | (2) | | |
| ____ Children's Tylenol Chewable Tablets | (3) | | |
| ____ Crushed or whole adult tablets | (4) | | |
| ____ Infant Tylenol Drops | (5) | | |
| ____ Tempra Liquid | (6) | | |
| ____ Tempra Drops | (7) | | |
| ____ Liquinol | (8) | | |
| ____ Liquiprim | (9) | | |
| ____ St. Joseph's Aspirin | (10) | | |
| ____ Tylenol Children's Tablets | (11) | | |
| ____ Tylenol Elixir | (12) | | |
| ____ Other (specify) _____ | (13) | | |

mother code #

1 2

clinic #

3

Card #

2
4

Interviewer: For item #31, ask the mother the dose of medication that she uses. If she does not know the dose, prompt by reading all of the amounts.

31. How much aspirin or aspirin substitutes to you give your child each dose?

5 6

 .3 ml. (1/2 dropper)
(1)

 .6 ml. (1 dropper)
(2)

 .9 ml. (1-1/2 droppers)
(3)

 1.2 ml. (2 droppers)
(4)

 1/4-1/2 teaspoon
(5)

 1 teaspoon
(6)

 1/4 tablet
(7)

 1/2 tablet
(8)

 1 tablet
(9)

 2 tablets
(10)

 3 tablets
(11)

 4 tablets
(12)

 5 tablets or more
(13)

 Don't Know _____
(14)

32. How much time do you allow between doses of medicine when giving your child aspirin or aspirin substitutes? (check one)

7

 Less than an hour
(1)

 1 hour
(2)

 2 hours
(3)

 3 hours
(4)

 4 hours
(5)

 5 hours
(6)

 6 hours
(7)

 24 hours or more
(8)

 Other (specify) _____
(9)

Interviewer: Read the list of answers and ask mother to choose one answer for item 33.

33. If your child's fever has not reduced or you still feel your child's in pain within 1-2 hours after the last dose of medicine, what do you do?

8

 Repeat the dosage now
(1)

 Double the next schedule dose
(2)

 Add a little extra to the next schedule dose
(3)

 Wait an additional 2 hours and repeat the same dosage
(4)

 Other (specify) _____
(5)

34. How many days would you continue to give your child aspirin or aspirin substitutes before contacting a doctor or nurse?

 1 day
(1)

 2 days
(2)

 3 days
(3)

 4 days
(4)

 5 days
(5)

 6 days
(6)

 7 days
(7)

 Other (specify) _____
(8)

9

Interviewer: Read to mother. Now, I'd like to finish by asking you a few questions about yourself.

35. What is the last grade that you completed in your schooling

10 11

36. Do you have insurance or money that makes it easy for you to get medical care for your child?

12

Yes(1) _____

No(0) _____

37. How much experience have you had taking care of sick children on a scale of 1 to 5, with 1 being very little and 5 being very much?

13

38. What place is this child in your family?

14

First Child
(1)

Second child
(2)

Third child
(3)

Fourth child
(4)

Fifth or more
(5)

APPENDIX C

Consent Form For Human Research



UNIVERSITY OF OREGON
HEALTH SCIENCES CENTER

"An Investigation of Home Medication Practices Mothers Employ With Their Preschool Children" by Jo Suzanne Nelson, R.N., B.S.

INFORMED CONSENT FORM

I, _____
(First Name) (Middle Initial) (Last Name)
herewith agree to serve as a subject in the investigation, Home Medication Behavior by Jo Suzanne Nelson, R.N., under the supervision of Katherine Crabtree, R.N., M.S. The investigation aims at exploring the factors related to the use of aspirin and aspirin substitutes given to children by mothers.

It is my understanding that I will be asked to answer questions related to my use of medication with my child and for myself. All information that I give will be handled confidentially. Code numbers will be used to maintain anonymity of subjects. All data will be reported in aggregate form so that no person is identified with specific answers.

Suzanne Nelson, R.N., has offered to answer any questions I might have about my participation in this study (636-1837). Upon completion of this study, Suzanne Nelson will furnish information regarding home treatment.

I understand I am free to refuse to participate or withdraw from this study at any time without this decision otherwise affecting my medical treatment at the Emanuel Out-Patient Resident Clinic/Olson Memorial Clinic.

"It is not the policy of the Department of Health and Human Services, or any other agency funding the research project in which you are participating, to compensate or provide medical treatment for human subjects in the event the research results in physical injury. The University of Oregon Health Sciences Center, as an agency of the State, is covered by the State Liability Fund. If you suffer any injury from the research project, compensation would be

Informed Consent Form
Page Two

available to you only if you establish that the injury occurred through the fault of the Center, its officers or employees. If you have further questions, please call Dr. Michael Baird, M.D., at (503) 225-8014."

(Date)

(Subject's Signature)

(Witness' Signature)

APPENDIX D

Guidelines For Home Care

Guidelines For Home Care

What is fever?

Fever is a rise in body temperature. Fever in children is very common and does not automatically require medication.

A normal oral body temperature is 98.6°F. When taken under the arm in the armpit, the temperature is one degree lower (97.6°F.). When taken rectally it is one degree higher (99.6°F.). The body has a thermostat for the purpose of controlling fever and this generally keeps the body temperature below 106°F. Fevers in children can develop and rise rapidly.

What should you do if you think your child has a fever?

Take your child's temperature either orally (3 min.), rectally (3 min.), or under the arm (3 min.). It is not necessary to treat your child's fever with medication unless it is 101°F. orally, 102°F. rectally, or 100°F. underneath the arm. Lower fevers do not require medication and can be treated by other means such as:

1. Light-weight clothing.
2. Additional fluids, such as juices and water.

Popcycles are a good source of fluid for the older child.

3. Cooling room temperature.
4. Increasing the air circulation in the room.

The primary reason for treating fever is to help your child feel more comfortable. Harm from fever is very rare and usually occurs when fever is very high or high for a long period of time.

What should you do if your child needs medication?

1. Choosing the drug: Your doctor or nurse at the clinic will help you select either aspirin or an aspirin substitute. The specific dosage for your child is based on the age or weight of the child, and the dosage will be calculated for your child at the clinic. It is important to get the correct dosage because dosages for smaller children are not on the container label.

When should you call the doctor or clinic?

1. Any fever in a child under 6 months should be reported.
2. Any fever that persists longer than 24 hours without an obvious infection such as a cold, etc. should be reported.
3. Any fever that persists over 72 hours in any illness.
4. If the child appears ill, weak, irritable, is not taking fluids, feeds poorly, or has diarrhea, contact your doctor.

5. Contact your clinic if the child's fever does not respond to medication.

Remember, aspirin and aspirin substitutes are only to be used for fever and for pain.

APPENDIX E

Recommendations For Acetaminophen Products

McNEIL

McNEIL CONSUMER PRODUCTS COMPANY, CAMP HILL ROAD, FORT WASHINGTON, PA 19034. (215) 836-4500

Now you can give your pediatric patients even greater fever relief than before -- with new improved Children's TYLENOL® acetaminophen.


Available in Drops, Elixir, and Chewable Tablets, improved Children's TYLENOL provides increased dosage (equivalent to 10-15 mg/kg/dose)* --- with the same unmatched safety profile.

In brief, the changes are as follows:

- . Drops -- dropper recalibrated to 0.4 ml/0.8 ml from 0.3 ml/0.6 ml -- color changed to orange from red.
- . Elixir -- concentration of acetaminophen increased to 160 mg/5 ml from 120 mg/5 ml.
- . Drops, Elixir and Chewable Tablets -- dosage schedule improved.

We know that both you and your patients will benefit from these important improvements in Children's TYLENOL. Please see the enclosed file card for a complete description of product changes. A dosage card is also enclosed for use as an easy reference to our new improved dosage schedule.

Sincerely,


Harriet S. Frieze
Director
Professional Relations

*This dosage schedule is consistent with the recommendations of the FDA Panel for OTC Internal Analgesic, Antipyretic and Antirheumatic Products.

AN ABSTRACT OF THE THESIS OF
JO SUZANNE NELSON
FOR THE MASTER OF NURSING

Date Receiving this Degree: June 11, 1982

Title: THE STUDY OF HOME MEDICATION BEHAVIOR OF MOTHERS
OF PRESCHOOL CHILDREN

APPROVED:



_____, Associate
Professor, Thesis Advisor

The extent to which mothers administer aspirin and aspirin substitutes to their preschool children is unknown, but clinical observation suggest the use of these drugs is pervasive. Because of the potential toxicity of these drugs, this widespread use is a source of concern.

The purpose of this study was to explore the various factors that may influence the use of aspirin and aspirin substitutes by mothers of preschool children. A convenience sample of 80 mothers was obtained from two pediatric clinics serving a low socio-economic group and middle income group. Using a structured interview guide prepared by the researcher, each mother was interviewed about the use of aspirin and aspirin substitutes.

A discrepancy was found between medication practices mothers employ with their children and safe practice as defined by health care professionals. Only two mothers reported non-use of aspirin or aspirin substitutes with

their preschool children. The majority of the sample lacked knowledge of the drug's action, side effects and indications for use. Most mothers were found to be inappropriate users of medication because they administered incorrect dosages, gave the drugs for the wrong reasons or at inappropriate intervals. The most common error and the one most amenable to change through patient teaching was administration of an incorrect dosage. Only one mother in the entire sample was identified as having appropriate knowledge and also being an appropriate user of medication. Previous experience with childhood illness and level of education did not affect appropriate use of aspirin or acetaminophen. Inappropriate users of medication were evenly distributed between the two clinic sites.

Alternative measures mothers employed with their febrile children were also explored. All mothers reported that they would give their child aspirin or aspirin substitutes if they had a fever, but only 28.8% of the mothers would use sponging as an alternative measure for treating fever.

The results suggest a need for further instruction of mothers regarding recognition and treatment of fever via drugs and/or alternatives and the appropriate indications and dosages of aspirin and acetaminophen. Through anticipatory guidance, nurses can incorporate this information in well baby visits. This is especially important in view of the growing public interest in using self-medication as a significant component of the self-care model.