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The Influence of Attitudes, Beliefs, and Socioeconomic Status on Caregivers' Decision-making about OTC Medications Cough and Cold Medications in Preschool Children.

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## Problem Statement

The use of over-the-counter (OTC) medication is an essential part of health care in the United States. Kogan, Pappas, Yu, and Kotelchuck (1994) reported that nearly \$2 billion per year is spent on cold remedies alone, and an estimated 70% of illnesses are treated with OTC medications. The use of OTC medications for children is a particularly important topic as early research found that OTC medications may be used in lieu of obtaining medical care (Maiman, Becker, Cummings, Drachman, & O'Connor, 1982). Kogan et al. (1994) reported that in a 30 day period 53.7% of all 3 year old children were given some type of OTC medications. When the types of medications received by the children were studied, it was found that Tylenol was given 66.7% of the time, cough and cold medications (CCM) 66.7%, and other pain relievers 6.9%. The reported percentages are greater than 100% because many children received two or more OTC medications in the 30 day period (Kogan et al., 1994).

Factors affecting the mother's or caretaker's decision to medicate a child can include attitudes and beliefs regarding children's health, sociodemographic characteristics, and the effectiveness of the medications (Maiman, Becker, & Katlic, 1986). Kogan et al. (1994) and Maiman et al. (1986) found that the use of OTC medication in children is directly related to the educational level and socioeconomic status (SES) of the mother. The researchers concluded that the higher the SES and educational level of the mother the more OTC medications the children were likely to receive.

Clearly, OTC medications are an important element in the health care of today's preschool children. Kogan et al. (1994) stated, "The high prevalence of use has occurred despite the dearth of scientific proof for the effectiveness of certain classes of OTC medications and the risk associated with improper use" (p. 1025). Smith and Feldman (1993)

found only two published clinical trials addressing the efficacy of OTC cough and cold medications in preschool-age children. The studies found no beneficial effects from the medications. Furthermore, Smith and Feldman pointed out “that OTC cold medications are a frequent cause of unintentional ingestion in preschool-age children” (p. 2262). The caregiver’s behavior and beliefs coupled with little education about medication use put children at risk for misuse of OTC cough and cold medications.

Advance practice nurses are in key positions to educate parents in the risks and benefits of OTC cough and cold medications. Many factors play a role in decision-making for parents, studying how SES, sociodemographic status, and attitudes and beliefs about health and vulnerability can influence parents may assist practitioners to ensure safe medical recommendations for the preschool-age child. The decision to medicate a young child who has a cough or cold with OTC medications is critical. Advance practice nurses need to understand the decision-making process of parents when medicating children. This will aid the advance practice nurse in educating parents in issues such as the efficacy of the medication, safety regarding the dosage, side effects, and attractiveness of the medication. Preventing misuse begins through understanding current use, parental education about the OTC cough and cold medication in use, prescribing influences of the pediatric medical community, and how valuable parents feel medication is for their preschool-age child.

To date, few investigators have pursued studies of OTC medications except for those who have explored the caregiver’s attitude and beliefs regarding the use of these medications in children. The purposes of this study are (a) to what extent does SES, educational level, age, sex, caregiver type, and attitudes and beliefs influence caregiver’s decision-making to home-manage with OTC cough and cold medication vs. seeking professional care; and (b) to

explore caregiver's attitudes and beliefs concerning health, vulnerability, and perceived effectiveness of OTC cough and cold medications for preschool-age children.

### Review of Literature

The literature review begins with an examination of the Health-Belief Model as it applies to mothers' medication behavior in their preschool-age children. Next, studies are presented where researchers determined the SES and sociodemographic status of the mother's/parents', also attitudes and beliefs regarding health and vulnerability of their children, and finally presented are studies of safety and overall effectiveness of OTC cough and cold medications.

#### Health Belief Model

Rosenstock (1974) developed the model and described an individual's willingness to take recommended health action as dependent on their perception of four areas. Davidhizer (1983) stated, "The health-belief model relates psychological theories of decision making (which attempt to explain action in a choice situation) to an individual's decision about alternative health behavior" (p. 468). Susceptibility, severity, benefits or efficacy, and barriers are the areas but a cue-to-action or stimulus is also needed (Davidhizer, 1983).

Susceptibility and severity. Perceived susceptibility is defined as "the subjective risks of contracting a condition" (Rosenstock, 1974a, p.3), in other words, how likely it is a person will contract the illness. Perceived severity refers to "the consequences which may result from contracting the illness" (Davidhizer, 1983, p. 469). This perception may vary from person to person and is based on the emotional arousal the illness raises for that person and the perceived difficulties the illness can create. According to Rosenstock, susceptibility and severity have a strong cognitive component and are at least partly dependent on knowledge.

Mothers' views on susceptibility and severity of the illness' their young children contract affect their medicating behaviors. A strong emotional element is involved both in with dealing with a child and in the perception of the illness. This is a subjective feeling of risk.

Modifying factors and "cues to action." Modifying factors in the model include "demographic variables (age, sex, race, ethnicity, etc.), sociopsychological variables (personality, social class, peer and reference group pressure, etc.) and structural variables (knowledge about the disease, prior contact with the disease, etc.)" (Davidhizer, 1983, p, 468). These modifying factors can affect the perception of susceptibility and severity based on beliefs about certain illnesses. Together with the perception of susceptibility, severity, and "cues to action" these factors establish the perceived threat to the individual. "Cues to action" can range from media exposure, advice from others, reminders from health professionals, illness in the family, to printed articles (Rosenstock, 1974a).

A mother's belief about the health and illness of her children impacts her health related practices. Her perception of the child's susceptibility influences whether she medicates immediately or observes the progression of the illness. Her willingness to involve health professionals or at what point to involve them could be directed by her determination of the severity of the illness.

Likelihood of action - benefits and barriers. The final component of the model combines all other components described thus far and estimates the likelihood of action. This decision is determined by the mother's weighing the perceived benefits of the action against the perceived barriers to the action. Evaluating the potential benefits of efficacy of taking a health action includes whether or not the action will prevent or reduce the susceptibility and severity of the illness (Davidhizer, 1983). In this case the mother may carefully deliberate

several courses of action before deciding which one is the most effective for the child. Then she addresses the barriers to the health action which can include cost, availability, convenience, pain involved, or fear. Again, modifying factors can influence how a mother views the benefits as well as the barriers (Davidhizer, 1983). After the mother considers all of the aspects likelihood of her taking a health action or what that health action should be is established.

#### Socioeconomic Status/Sociodemographic Status

Several researchers have studied a family's SES and sociodemographic factors and their relationship to OTC medication administration behaviors of mothers for their young children. Maiman, Becker, Cummings, Drachman, and O'Connor (1982) explored sociodemographic characteristics, relating them to mothers' perceptions of their children's health. Findings from a stratified sample of 300 mothers presenting their children for well-child checks in three different sites were compared. In a later study, Maiman, Becker, and Katlic (1986) measured SES and sociodemographic influences of a stratified randomized sample of 500 mothers from two sample sites. In both studies, the researchers operationalized the Health Belief Model in the construction of their measurement tools. The two groups of researchers concluded that a mother's SES and education level correlated directly to her medicating behaviors.

Maiman et al. (1982) and Maiman et al. (1986) also found that with an increase in educational levels and SES, mothers not only kept more OTC medications in the home available for use in their children, but the children were reported to have received more of these medications than those mothers' with of lower education and SES. In the 1982 study, Maiman et al. discovered that mothers' with lower SES were more likely to keep medications for diarrhea, constipation, and weight reduction on hand than mothers' with a higher SES.

Mothers' with higher educational level and higher SES kept medications for children such as antacids, vitamins, antibiotic ointments, and remedies for pain, allergies and skin conditions. The mother's with lower SES were not as concerned about giving OTC medications and felt their children were less likely to experience side effects of the medications. They also relied heavily on their own judgments concerning their child's health and tended to be less hesitant to add OTC medications to a treatment prescribed by a physician.

The findings of Kogan et al.'s (1994) study supports the two previous studies in that mothers with higher SES and education were more likely to give their children OTC medications while they were ill. The investigators examined maternal characteristics related to the use of OTC medications in preschool-age children. They used a representative U.S. national sample from the 1991 Longitudinal Follow-up to the 1988 National Maternal and Infant Health Survey (NMIHS) conducted by the center of Health Statistics. In addition, of the 8,145 mothers interviewed, more than half of them kept seven or more different categories of OTC medications available for their children. The researchers measured insurance status and usual source of medical care. No difference was found in the use of OTC medications in children receiving either private health coverage or government funded care. However, the researchers commented that lack of health insurance tended to show a greater likelihood to use OTC medications perhaps as a substitute for formal health care. All three of these studies contain published statistics regarding the effects of race and either number of children in family or birth order of the index child. These variables tended to affect mothers' attitudes and beliefs concerning health and vulnerability.

The limiting factors of the three studies varied. Maiman et al. (1982) suggested that they did not measure the therapeutic outcomes of the medications in children and "...the effect of



sociodemographic and attitudinal factors on the quality of mother-initiated medication treatments” (p. 148). They went on to recommend that further research is needed for determining appropriate use and misuse in treatment initiated by mothers. In the 1986 study, Maiman et al. reported that they found it difficult to correlate perceived health problems of children with specific medications and whether SES variations occurred with problem-specific evaluations. The authors encouraged health care providers to take a more active role in education and in providing routine counseling for mothers regarding OTC medication use.

Kogan et al. (1994) also pointed out their study’s limitation was that data collected by mothers’ self-report could lead to misclassification of medications. “The study examined co-occurrence of OTC medication usage and illness prevalence in the 30 days. It did not examine the precise reasons the OTC medication was given” (p. 1030). They recommended more research regarding OTC medication use. In all three studies the authors suggested additional research variables for examination such as therapeutic outcomes, classifications of medications, reasons for medication to be given, and misuse and appropriate use of OTC medications.

In summary, SES and sociodemographic factors have been found to have an impact on the medicating practices of mothers. The studies showed that with higher educational and income levels a greater likelihood to possess and administer OTC medications exists. A lesser concern for giving OTC and the lack of interest regarding side effects were associated with lower SES and educational levels. Kogan et al. (1994) reported that more than half of their respondents possessed seven or more OTC medications. They found that type of insurance was not a factor but having no insurance may have been a reason for increased usage. They also related attitudes and beliefs to medicating practices.

### Attitudes and Beliefs Regarding Health and Vulnerability

The concept of attitudes and beliefs of mothers toward illness' in their children has been explored by several researchers (Maiman et al. 1982, Maiman et al. 1986, and Hutton et al. 1991). In Maiman et al. (1986) mothers responded to two questions based on a list of potential children's health problems. The two questions asked mothers to evaluate "perceived vulnerability" and "perceived efficacy of OTC medications". The findings were significantly correlated with the dependent variables, the strongest associations being how well mothers believed OTC medications worked for children. Through the "benefits of OTCs" and "propensity to initiate medication" indicators, the authors found that mothers who "...keep and use more medications are significantly more likely to feel OTCs are beneficial in the treatment of their children's and their own illnesses" (p. 45). Maiman et al. (1986) also found that a mother's perception that her family is often troubled by illness rather than her own experience with illness, affects the "frequency of health problem" indicator, significantly relating to OTC medication possession and use. The authors found that mothers who keep more medication on hand were more likely to consider OTC medication as sufficient in treating their child's health problems. These mothers were found to be predisposed to begin using OTC medications for themselves and their children, and they tended to view the child as more vulnerable to health problems and the family more likely to be ill.

Maiman et al.'s (1982) study of sociodemographic and attitudinal factors found that perceived vulnerability and possession of medication were related to mothers' medicating behavior and her perception of her child's susceptibility to health problems. They found that keeping greater amounts on hand at home was strongly correlated with the mother's "faith" in her ability to decide how to treat her child when he or she becomes ill. This finding supports

the finding that mothers who possess more medication tend to trust their opinion about their child's health before the opinion of the physician. Findings also supported that this type of mother had less concern for careful attention when administering OTC medications, and frequently added OTC medications to a course of therapy prescribed by a physician. An interesting finding from this study was that mothers with lower SES tended to consult pharmacists more often concerning the selection of OTC medication for their children.

Using an experimental design, Hutton et al. (1991) investigated parent's beliefs regarding the need for treatment for an upper respiratory infection (URI), the effectiveness of an antihistamine-decongestant combination for relief of symptoms in children with a common cold and the association of relief at 48 hours (parental assessment) and whether the medication was desired and received. The study sample included parents who reported that their children 6 months to 5 years old had symptoms of the common cold. The sample was recruited at the pediatric walk-in clinic and pediatric primary care clinic at Johns Hopkins Hospital during the winter months between November 1983 and November 1986. The subjects were predominantly Black, with low SES, and lived in the inner city. Subjects selected for the study were randomly assigned to a placebo, drug, or no medication group. Data were gathered by questionnaires and interviews followed by an examination of the child by a practitioner who was unrelated to the study. Follow up phone interviews were accomplished at 48 hours after treatment.

The researchers found that "approximately two thirds of the study parents believed their children needed medicine for cold symptoms" (p. 128). Concerning the parents' perception of effectiveness of the medication, 64% of the study sample among all three groups considered their child better at 48 hours according to parental report. Nine symptoms were

measured by a standardized change in severity for each symptom. "There was little variation in the amount of change ... underscoring the similarity of the three groups. Combining the placebo and no-treatment groups did not change the results" (p. 128). The results tended to show somewhat of an interaction between the desire of the parents for medication and their assessment of relative improvement in the drug vs. placebo groups. "Among parents who wanted medicine, placebo treatment was rated as providing more improvement than drug; among those who did not want medication, drug produced more improvement than placebo" (p. 129).

According to the authors, a strong predictor of the degree to which symptoms were changed was the initial parental assessment of the need for medication. Improvement was reported higher for the children whose parents requested medication. For the questions involving side effects of the drug or placebo, few side effects were reported. Seventeen subjects from each of the two groups (drug and placebo) reported the benefits to the medication, most often improvement in nasal symptoms. Hutton et al. (1991) concluded, "Drug was no more effective for symptom improvement than placebo and was not even a good placebo, receiving the drug was no more effective than receiving no medication at all" (p. 130).

In summary, findings from both Maiman et al.'s (1982) study and Maiman et al.'s (1986) study supported the perception of greater vulnerability was indicated by having more OTC medications on hand. Maiman et al. (1986) demonstrated that perception of susceptibility impacted the amount of OTC medications available in the home and the data supported the mother's belief in her ability to treat her child. Maiman et al. (1982) found mothers to be more likely to medicate if they had greater amounts of OTC medication on hand. Hutton et

al. (1991) reported no difference in drug and placebo groups, yet parents believed their children needed medication for the common cold. Among the three studies, the theoretical underpinnings involved the health belief model directly. Severity, susceptibility, and benefits were addressed.

#### Effectiveness of OTC Cough and Cold Medications

The belief in helping a child overcome symptoms to become well again drives parents to use OTC cough and cold medications. Several researchers have explored the effectiveness, safety, dangers, and prescribing influences regarding OTC medication use in young children. Actual effectiveness vs. perceived effectiveness on the part of the parent varies considerably and safety becomes a major issue.

The problem of the effectiveness of OTC cough and cold medications in relieving cold symptoms in children was the focus of Smith and Feldman's (1993) critical review of clinical trails between 1950 and 1991. Inclusion criteria for the literature search covered Medical Subject Headings such as common cold, cough, therapeutic use, drug therapy, drug combinations, expectorants, anti-cholinergic agents, and OTC medications. In the review, 109 papers were received during the literature search. Fifty-one papers remained for the review after the validity assessment, English language requirement, and inclusion dates was met. Those papers were reviewed by one or the other of the authors. Of the 51 papers, only four studies had taken into account the pharmacological treatment of colds in children. All four studies met the above criteria for review and had validity scores of greater than 70%.

Authors of two of the studies explored the treatment of colds in preschool-age children (Sakchainanont et al., 1990 & Hutton, 1991). One found no benefit in using an antihistamine unless the child had copious amounts of nasal drainage (Sakchainanont et al., 1990). In the

other study, Hutton et al. (1991) found the use of an antihistamine-decongestant combination to result in no clinical improvement over 48 hours. Both studies used a treatment and a placebo group and Hutton et al. also used a no treatment group. Gadowski and Horton (1992), regarding the above studies, concluded that "...although CCMs may be effective in adults, no controlled trials in children younger than 5 years of age have been done that would permit a similar conclusion regarding the efficacy of CCMs in young children" (p. 775). Smith and Feldman (1993) reasoned that there are many potential problems associated with the use of OTC cough and cold medications in young children. They went on to point out to date, there was no evidence of effectiveness, and until "well-designed scientific studies" prove they are effective, OTC cough and cold medications should not be used.

Potential problems. The potential problems Smith and Feldman referred to are serious for this population. These problems include accidental/unintentional ingestions through unclear dosing guides on the labels, the appeal to children by color and taste, and the inability of the parents to recognize the adverse or negative side effects. Litovitz and Manoguerra (1992) co-authored a report based on data from the American Association of Poison Control Centers (AAPCC) on pediatric poisoning exposure incidents. They found, through a analysis of all reported exposures (toxic and nontoxic) over a 5 year period (1985-1989) that 670,000 reports involved OTC medications of either analgesic agents, cough/cold preparations, or gastrointestinal preparations in children under 6 years of age. Although serious morbidity for ingestions is low, frequently children require gastric lavage, charcoal, and several hours of emergency room observation (Smith & Feldman, 1993).

Smith and Feldman (1993) also determined that although side effects listed on the package may be mild, such as irritability or sleepiness, more serious side effects may occur

such as visual hallucinations or psychosis. They continued by discussing the extensive cost of the medication (especially if there are many medications in the home) vs. the lack of evidence regarding effectiveness. Another factor to consider is that child-resistant closures do not mean the product is "child-proof" (Litovitz & Manoguerra, 1992). Many medications are attractive to children due to their colorful labeling, the color of the product, to its tastefulness (Smith & Feldman, 1993). This attractiveness may cause accidental exposures and overdoses. Gadowski and Horton (1992) pointed out that extensive advertising and marketing may have decreased the common understanding of the potential for CCM toxicity, if these products are not used as prescribed. The authors explained that irritability or fussiness may not seem a significant side effect superficially, but unexplained irritability in young infants may lead to invasive procedures such as lumbar puncture. Many times there isn't a clear clinical picture of toxicity in the young infant or child.

Prescribing practices. Often OTC cough and cold medications are not prescribed by a health care provider but selected by the parent for the child. Sometimes the parent consults a health care provider and obtains a prescription for the medication. Gadowski and Rubin (1993), explored the reasons physicians prescribed these medications for young children. Their survey was sent to pediatricians on a mailing list of the Maryland Chapter of the American Academy of Pediatrics. The survey included demographic questions and presented a scenario involving a 12-month-old child with a URI. Respondents were asked to answer questions about how they would clinically manage the problem. The authors found that frequency of reported recommendation for OTC cough and cold medication increased with the age of the child. Fifteen percent of the physicians said they would recommend cough and cold medication "usually" or "sometimes" for a child < 6 months old, but 61% indicated

they would “usually” or “sometimes” recommend OTC cough and cold medication for children 13 - 24 months old. Finally, for children 36 months or older, 80% said they would recommend OTC cough and cold medication.

Many reasons were given by these physicians for recommending or prescribing these medications. The most common child-related reason was “difficulty sleeping” and “the most common parent-related reasons were that the parent was kept awake , or requested or insisted on a CCM” (p. 648). The authors concluded that “parental expectations, attitudes, and beliefs appear to influence pediatrician recommendations or prescriptions of CCMs for young children” (p. 649). Gadowski and Rubin suggested that SES and sociodemographic factors as well as perception of susceptibility to illness and beliefs regarding efficacy of OTC medications are important parental determinants of OTC cough and cold medication use in children. Parental pressure and expectations combined with the physicians’ “need to do something medical” increases the usage of these medications in the young population.

Review of these studies provides insight into the effectiveness or ineffectiveness of OTC cough and cold medication in young children. No study provided empirical evidence of the effectiveness of their use in the child under 5 years old. Many researchers also discussed the hazards and potential problems related to the usage of these medications. These included accidental or unintentional ingestion, incorrect dosing, and inability to recognize side effects leading to unnecessary invasive procedures. Gadowski and Horton (1992) commented on the impact of advertising and marketing, and Smith and Feldman (1993) pointed out that the attractiveness of the packaging, color of the product, and taste may lead to accidental exposures. Gadowski and Rubin (1993) went on to explore physician prescribing practices for OTC cough and cold medication. Their results showed an inclination for physicians to



prescribe OTC cough and cold medications as the child became older and that parental attitudes, beliefs, and pressure played a role in how often physicians prescribed or recommended these medications.

### Summary

The theoretical basis for most of the studies reviewed is the Health Belief Model. Therefore, the results of these studies can be related to components of this model. In exploring the dimension of susceptibility and severity, it was found that mothers with a heightened perception of their child being susceptible or perceiving a severe illness increased the use of OTC medications in their children (Maiman et al., 1982; Maiman et al., 1986). Results also revealed that if the child was perceived as more vulnerable by the mother the likelihood of the child's receiving OTC medication was greater. The amount of OTC medication kept "on hand" at home was strongly associated with the mother's "faith" in her ability to treat the child successfully. Maiman et al. (1982) presented a strong association between perceived vulnerability and possession of OTC medications. Medicating behavior was related to the mother's perception of the child's susceptibility to health problems. Hutton et al. (1991) supported that the perception of susceptibility in many parents was related to their belief that their children needed OTC medication for the common cold. Their results were interesting in that the parents self-reported that OTC medications worked even their child was given a placebo.

The next dimension of the Health Belief Model is modifying factors and "cue to action", which provides a framework for SES and sociodemographic data. Maiman et al. (1982) and Maiman et al. (1986) reported that higher SES and educational levels showed increased possession and propensity to use OTC medication in children. Gadowski and Horton (1992)

concluded that advertising and marketing had an impact on the lack of parental concern for side effects. Another modifying factor or "cue to action" was the physician's recommendation for using the medications. Additional "cues to action" included the mother's perception of severity of the illness as well as parental lack of sleep. Fatigue could precipitate the parent's insistence for medications.

Finally, in relation to the benefits and barriers or likelihood of action, Kogan et al. (1994) established that insurance status (type of insurance utilized) had no bearing on the use of OTC medications in children. Smith and Feldman (1992) and Hutton et al. (1991) concluded that there was no evidence of efficacy of OTC cough and cold medications in children under 5 years of age. But, clearly parents in these studies believed that OTC medications are effective, and pediatricians were willing to prescribe or recommend OTC cough and cold medications if the child was older than one year (Gadomski & Rubin, 1993). Unproven efficacy, easy access, advertising, unclear and attractive labeling, palatable flavors, and lack of education about toxicity create the potential for misuse of OTC cough and cold medications in the preschool population.

Currently, only a few studies have documented the effects of caregivers' attitudes and beliefs regarding the health of their children and their propensity to medicate with OTC medications. In two studies, (Maiman et al. 1982, & Maiman et al. 1986) conducted 10 years ago, the researchers concluded that health care providers and parents should be concerned about the use of these medications in the preschool child. The purpose of this study is to describe how caregivers' SES, sociodemographic status, and attitudes and beliefs about their preschool child's health impacts their decision to medicate their child with OTC cough and

cold medications. The constructs of the health belief model will provide the theoretical basis for this study. Two specific questions will be addressed:

(1) What are caregivers' attitudes and beliefs concerning a child's health, vulnerability, susceptibility to illness, severity of illness, and perceived effectiveness of OTC cough and cold medication for preschool-age children?

(2) To what extent does SES, age, sex, educational level, caregiver type, and attitudes and beliefs influence the caregiver's decision-making to home manage with OTC cough and cold medication vs. seeking professional care?

## Method

### Design

A descriptive correlational study.

### Subjects

A convenience sample of caregivers with an index child between the ages of 1 and 5 years old. The index child will not have a chronic long term illness. The sample will be drawn from Madison daycare centers whose clients are willing to participate in the survey. The desired sample size will be 50. The participants will be informed of the purpose of the research through a letter and informed consent will be obtained from caregivers expressing an interest in participating. Coordination is to be made through the directors of the daycare centers.

### Instruments

To address the first research question concerning caregivers' attitudes and beliefs about child health, vulnerability, susceptibility to illness, severity of illness, and efficacy of OTC cough and cold medications the Medication Attitudes and Beliefs Scale (MABS) will be developed based on indices used in previous research employing the Health Belief Model (Bates, Fitzgerald, Wolinsky, 1994; Champion, 1984; Jette, Cummings, Brock, Phelps, & Naessens, 1981; Weissfeld, Brock, Kirscht, & Hawthorne, 1987). The questions will be designed to address the four domains of the Health Belief Model: severity, susceptibility, barriers, and benefits. The individual items in the MABS will be based on previous research instruments and adapted for the population in this survey. Jette et al. (1981), Weissfeld et al. (1987), and Bates et al. (1984) established content validity for the items in their measurement

tools. The MABS will be pilot tested in a convenience sample to determine face and content validity.

The second research question will be addressed through the development of a decision-making measure. A preliminary survey will be conducted on a convenience group of parents. They will be asked to indicate the decision-making process they use to consider giving OTC cough and cold medications vs. seeking professional care. These responses will assist in developing a scale to differentiate decision-making quantitatively. The instrument created from the survey will then be pilot tested for face and content validity on a convenience sample of caregivers. The Hollingshead Two Factor Index of Social Position (Hollingshead, 1965) will be utilized to measure SES and educational level. Additional demographic information addressing age, sex, and caregiver type will be elicited.

#### Procedure

After several daycare centers are selected and coordination is made through the directors, the investigators will send a letter home with the index children explaining the purpose of the study and ask for participation. The investigators will be available at the center when the children are picked up after work to speak to the caregivers, obtain consent, and give them the questionnaires. The questionnaires can then be answered at home and mailed back to the investigators. The questionnaires will not have identifying codes linking them to individual participants, so confidentiality can be maintained.

## References

- Bates, A.S., Fitzgerald, J.F., & Wolinsky F.D., (1994). Reliability and validity of an instrument to measure maternal health belief. Medical Care, 38,(8), 832-846.
- Champion, V.L. (1984). Instrument development for health belief model constructs. Advances in Nursing Science, 8,(3), 73-85.
- Davidhizer, R., (1983). Critique of the health belief model. Journal of Advanced Nursing , 8, 467-472.
- Gadomski A. & Horton, L. (1992). The need for rational therapeutics in the use of cough and cold medicine in infants. Pediatrics 89(4), 774-776.
- Gadomski A.M. & Rubin J.D., (1993). Cough and cold medication use in young children: A survey of Maryland pediatricians. Maryland Medical Journal 42(7), 647-650.
- Hollingshead, A.B., (1965). Two factor index of social position. New Haven, CT.
- Hutton, N., Hoover Wilson, M., Mellits E.D., Baumgardner, R., Wissow, L.S., Bonuccelli, C., Holtzman, N.A., & DeAngelis, C., (1991). Effectiveness of an antihistamine-decongestant combination for young children with the common cold: A randomized, controlled clinical trial. The Journal of Pediatrics 118(1), 125-130.
- Jette, A.M., Cummings, M., Brock, B.M., Phelps, M.C., & Naessens, J., (1981). The structure and reliability of health beliefs indices. Health Services Research, 16,(1), 81-97.
- Kogan, M.D., Pappas, G., Yu, S.M., & Kotelchuck, M., (1994). Over-the-counter medication use among US preschool-age children. Journal of the American Medical Association, 272(13), 1025-1030.
- Litovitz, T. & Manoguerra, A. (1992). Comparison of pediatric poisonings hazards: An analysis of 3.8 million exposure incidents. Pediatrics 89(6) 999-1006.

Maiman, L.A., Becker, M.H., Cummings, K.M., Drachman, R.H., & O'Connor, P.A., (1982). Effects of sociodemographic and attitudinal factors on mother-initiated medication behavior for children. Public Health Reports, 97(2), 140-149.

Maiman, L.A., Becker, M.H., & Katlic, A.W., (1986). Correlates of mother's use of medications for their children. Social Science and Medicine, 22(1), 41-51.

Rosenstock, I.M., (1974). The health belief model and preventative health behavior. Health Education Monographs, 2, 354-386.

Rosenstock, I., (1974a) Historical origins of the health belief model. In The Health Belief Model and Personal Behavior. (ed. M. Becker), Charles Slack, Thorofare, New Jersey.

Sakchainanont, B., Runagkanchanaster, S., Chantarojanasiri, T., Tapasart, C. & Suwanjutha, S., (1990). Effectiveness of antihistamines in the common cold. Journal of Medical Association of Thailand, 73,(2) 96-101.

Smith, M.B., & Feldman, W. (1993). Over-the-counter cold medications: A critical review of clinical trails between 1950 and 1991. Journal of the American Medical Association, 296(17), 2258-2263.

Weissfeld, J.L., Brock, B.M., Kirscht, J.P., Hawthorne, V.M., (1987). Reliability of health belief indexes: Confirmatory factor analysis in sex, race, and age subgroups. HSR: Health Services Research, 21(6), 777-793.