Pediatric Nurse Practitioners' Knowledge, Attitudes and Interventions Regarding Passive Smoking in Pediatric Practice

by

Julie F. Jackson, R.N., B.S.N.

A Thesis

Presented to

The Oregon Health Sciences University

School of Nursing

In partial fulfillment of

the requirements for

the degree of

Master of Science

June 10, 1988

APPROVED:

[redacted]

Catherine Burns, R.N., M.N., Associate Professor,
Thesis Advisor

[redacted]

Pamela Hellings, R.N., Ph.D., Associate Professor,
Chairperson, First Reader

[redacted]

Sheila M. Kodadek, R.N., Ph.D., Associate Professor,
Second Reader

[redacted]

Carol A. Lindeman, R.N., Ph.D., Professor, Dean, School of
Nursing

This study was supported by United States Public Health Service Traineeships from Grant Numbers 2A11 NU 00250-10 and 2A11 NU 00250-11.

Acknowledgements

I would like to express my deep appreciation to my thesis advisor, Cathie Burns, R.N., M.N., for her constant support, knowledgeable assistance, and especially for her words of encouragement along the way. I would also like to thank Pam Hellings, R.N., Ph.D. and Sheila Kodadek, R.N., Ph.D. for their time, scholarly advice and support as members of my thesis committee.

I am very grateful to co-researchers Dr. Kathy Zavela and Dr. Larry Baker for their expertise and assistance throughout the course of this research project. They were a great source of knowledge, support and humor.

I would like to extend a special thank you to all the Pediatric Nurse Practitioners who took the time to respond to the questionnaire.

Finally, I thank my wonderful family and dear friends for their love, understanding and support throughout this endeavor.

Julie

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

LIST OF TABLES

APPENDICES

Appendix

A "Health Survey"

B Cover Letters

CHAPTER I

INTRODUCTION

Since 1964 when the Surgeon General issued the first report on smoking and health (U.S. Department of Health and Human Services, 1986), it has been widely accepted that cigarette smoking is hazardous to one's health. More recently however, research has revealed that cigarette smoke can also pose a serious threat to nonsmokers. Passive exposure to tobacco smoke is now considered to be a significant health problem, especially in more vulnerable populations, such as infants and children. Parental smoking has been associated with increased respiratory symptoms and respiratory illnesses requiring hospitalization in children, as well as long term physiologic changes that may predispose children to chronic obstructive pulmonary disease and lung cancer as adults (American Thoracic Society, 1985; Weiss et al., 1983).

Statement of Problem

Due to the relatively recent nature of this information, it is not known if pediatric primary health care providers, in particular Pediatric Nurse Practitioners (PNPs), are addressing the issue of passive smoke exposure in their care of infants. Consequently, nurse educators do not know what

educational support, if any, is needed to help PNPs intervene in this area. Without specific information such as the practitioners' knowledge of passive smoking, their perceptions of their skills in the area of smoking cessation, and their attitudes towards the problem, it is difficult to effectively intervene in this area. This study is designed to provide this information. Only PNPs will be surveyed in this study as this is a portion of a larger project in which selected physicians throughout the state were previously surveyed.

Purpose

The purpose of this study is to assess knowledge, attitudes, and current interventions of pediatric nurse practitioners related to passive smoking and smoking cessation in their practice settings. The results from this study will provide essential information needed to develop educational programs that will assist PNPs in their efforts to decrease the incidence of passive smoke exposure to children.

A secondary purpose is to determine if a relationship exists between perceived self-efficacy regarding smoking cessation techniques and the amount of intervention reported by pediatric nurse practitioners in this area. This information will be

useful in isolating potential barriers that PNPs may encounter as they incorporate new scientific findings into their practice. In addition this information may be useful in supporting the utility of Bandura's (1977) self-efficacy theory.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

In this chapter literature pertaining to passive smoking and smoking cessation programs and the PNP's roles in these areas will be reviewed. The conceptual framework for the study will follow. This chapter will conclude with the research questions and the hypothesis of the proposed study.

Cigarette Smoking and Health

Cigarette smoking remains the single largest preventable cause of death and disability in the United States. It is a major cause of cancer, particularly cancers of the lung and respiratory tract, though it also causes cancers at other sites including the pancreas and urinary bladder. It is the single greatest cause of chronic obstructive lung diseases. Smoking also causes cardiovascular disease, including coronary heart disease, aortic aneurysm, and atherosclerotic peripheral vascular disease. Maternal cigarette smoking endangers fetal and neonatal health by contributing to perinatal mortality, low birth weight, and complications during pregnancy. It is estimated that smoking is responsible for more than

300,000 deaths per year in the United States, representing approximately 15 percent of all mortality (U.S. Department of Health and Human Services, 1986).

Although the adverse effects of cigarette smoking on health have been studied in depth for several decades, only recently have health professionals taken an interest in exploring the effects of smoke exposure on non-smokers. Recent data now reveal that passive or involuntary smoking should be considered a low-dose exposure to a known human carcinogen sufficient to generate a lung cancer risk. It is also now well documented that infants and children of parents who smoke have an increased risk of hospitalization for bronchitis and pneumonia and may experience a slower rate of growth in lung function as compared with infants and children of non-smoking parents (U.S. Department of Health and Human Services, 1986).

Passive or involuntary smoking is defined as "the exposure of nonsmokers to tobacco combustion products in the indoor environment" (Weiss et al., 1983). The term "involuntary" is used to imply that such exposures are often not by choice, but are instead, an unavoidable consequence of being in close proximity to smokers, especially in the case of children. The main difficulty in studying the effects of passive smoking

is quantifying the amount of actual tobacco smoke exposure.

Environmental tobacco smoke is a product of both mainstream or secondhand smoke and sidestream smoke. Mainstream smoke is that which enters the environment after having been inhaled through the end of the cigarette, filtered by the smoker's lungs, and then exhaled. Sidestream smoke results from the burning end of the cigarette, entering unfiltered, directly into the environment. Many potential toxins such as carbon monoxide, ammonia, nicotine, and hydrogen cyanide are often in higher concentration in sidestream smoke than in mainstream smoke. Almost 85% of smoke in a room consists of sidestream smoke (Weiss et al., 1983). Air sampling surveys have demonstrated that smoking in enclosed rooms can produce carbon monoxide levels greater than the national ambient air quality standard of 9 parts per million (Committee on Environmental Hazards, 1986). However, because mainstream smoke is inhaled directly into the lungs,it is much more concentrated than sidestream smoke which is generally diluted in a large volume of room air. Consequently, passive smokers receive a quantitatively smaller and qualitatively different smoke exposure than active smokers. Factors such as type and number of cigarettes

burned, size and ventilation rates of the room, and length of exposure also affect the level of exposure for passive smokers (Weiss et al., 1983).

Some studies have used physiologic measures to assess the effects of passive smoking on infants. Biologic evaluations of passive smokers less than one year of age have shown increased levels of nicotine and cotine, the major metabolite of nicotine, in the urine and saliva (Greenburg et al., 1984). Other physiologic studies have used carbon monoxide levels for monitoring sidestream smoke exposure because of its ease of measurement and the well known relationship between carbon monoxide and carboxyhemoglobin levels. Carbon monoxide has an affinity for hemoglobin approximately 210 times that of oxygen. Elevations of 1 to 3 percent in blood carboxyhemoglobin levels have been demonstrated in nonsmokers involuntarily exposed to cigarette smoke (Huch, 1980). Because the half life of carboxyhemoglobin is approximately four hours, carboxyhemoglobin levels appear to be a useful biologic monitor of acute passive smoking, but they are not useful in assessing chronic exposure (Weiss et al., 1983).

Although there are no accurate statistics describing the number of American children

involuntarily exposed to cigarette smoke, recent surveys revealed that 53 to 76 percent of homes in the United States contain at least one cigarette smoker (Committee on Environmental Hazards, 1986). Because most children spend 60 to 80 percent of their time indoors, especially in temperate zones, and since recent energy-saving measures have reduced air exchanges in homes, there is legitimate concern in determining the extent of indoor air contaminants (Burchfiel et al., 1986; Ware, 1984).

Passive Smoking and Respiratory Illnesses in Infants

Several studies have found that the association between parental smoking and childhood respiratory infection is most evident during the first one to two years of life and diminishes thereafter (Fergusson, Horwood, Shannon & Taylor, 1981; Harlap and Davies, 1974; Padreira, 1985). This association may be due to the rapid respiratory rate during infancy, increasing their susceptibility to toxins (Siebe, 1981).

In a prospective study of 10,672 infants born between 1965 and 1969 in West Jerusalem, Harlap and Davies (1974) compared the number of hospital admissions during the first year of life for infants of smoking mothers (n = 986), with the number of admissions for infants of non-smoking mothers

(n = 9686). Infants of smokers had 13.1 admissions for pneumonia and bronchitis per 100 infants, as compared to 9.5 admissions per 100 infants of non-smokers ($p < .001$). There was also a higher percentage of admissions for injuries and poisonings in the smoking group. Admissions due to bronchitis and pneumonia for infants of smokers increased in frequency with increasing number of cigarettes smoked by the mother. The difference in admissions for each group was not significant during the first five months of life. The difference was least significant during the summer months and most significant in the winter months. The greatest difference in rates of lower respiratory illness in infants of smokers and infants of non-smokers was between the ages of six and nine months and occurred across subgroups of birth weight, social class, and birth order. There was no difference found in the number of upper respiratory tract infections between the two groups. However, the number of hospital admissions might only indirectly reflect illnesses that don't require hospitalization.

There were several limitations of the above study. The researchers failed to take into account whether or not the fathers in the home smoked, although this was not found to be a significant factor in Fergusson et

al.'s study (1981). Also, smoking information was collected antenatally, so some mothers may have quit following the interview, while others may have started smoking again after delivery but prior to data collection. It is an important study despite its limitations because it pinpoints a specific period when infants are particularly vulnerable to the dose-related effect of passive smoke exposure.

In another study by Fergusson et al. (1981), an increased incidence of pneumonia and bronchitis was found during the first two years of life in children whose mothers smoked, but by the third year of life this relationship had disappeared. In Fergusson et al.'s sample of 1265 New Zealand children, information regarding the child's health, including respiratory illness, development, family socioeconomic status, and parental smoking habits was collected at birth, four months, one, two, and three years using structured interviews with the child's mother, supplemented by hospital records. After controlling for maternal age, education, socioeconomic status and family size, analysis of the data revealed that during the first year of life, infants of smokers had 7 to 11 percent higher incidence of lower respiratory illness than did infants of nonsmokers. During the second year, the

difference in frequency of respiratory illnesses between infants of smokers and infants of non-smokers decreased to 5 to 6 percent, and by the third year the differences were insignificant. Results also suggested a dose-related response such that an increase in maternal smoking of five cigarettes a day produced an increase from 2.5 to 3.5 lower respiratory illnesses per 100 infants. However, because it is common for smokers to under-report the actual number of cigarettes smoked, the dose/response figures may be somewhat accurate. Paternal smoking did not significantly affect the rates when considered alone or in conjunction with maternal smoking.

One limitation of this study is that the researchers did not account for parental respiratory illnesses, specifically those in which there is phlegm production, which may be a contributing factor towards respiratory illness in infants and has thus been addressed in other studies. Despite the fact that children in the United States may spend less time indoors, the study does demonstrate that cigarette smoke directly or indirectly affects the respiratory systems of children.

In a prospective study conducted from 1976 through 1981 by Padreira, 1144 infants were monitored for the

first year of life, during which all episodes of lower respiratory illness for which there was an office visit, including laryngitis, epiglottitis, laryngotracheobronchitis, tracheitis, bronchitis, bronchiolitis, and pneumonia were recorded. The sample was obtained from a group pediatric practice located in a suburb approximately 30 miles from Washington, D.C., in which the population was 89 percent white and 68 percent of the parents were aged 18 to 64 years with a median income of $34,000 per household. Of the 1,144 infants included in the study, 731 (64%) were from "non-smoking" families and 413 (36%) were from families with at least one smoker. Both parents smoked in 127 households (11%).

Results of the study revealed that tracheitis was 89 per cent more frequent among infants exposed to household smokers (r = .06), and bronchitis was 44 percent more frequent in smoking households (r = .06). Because 40 percent of the parents didn't reveal how much they smoked, the analysis of a smoke dose-related effect on respiratory illness was restricted to 121 families. Neither tracheitis nor bronchitis showed a consistent relationship to the number of cigarettes smoked. However, a family history that was positive for respiratory disease (chronic cough and bronchitis)

was associated with twice the incidence of infant bronchitis, but was not significant for tracheitis. Unfortunately, the number of infants in the study who had both family history of respiratory disease and parents who smoked was too low for statistical analysis of the interaction between these two variables.

Due to the homogeneous sample in the above study it is difficult to generalize to other populations. The researchers also did not consider the occurrence of lower respiratory illnesses for which no medical attention was sought, a significant number in the Fergusson et al., (1981) study. Despite these problems, the study presents valuable evidence regarding the effects of passive smoke exposure on the incidence of lower respiratory illness in infants.

Another recent study in which an association was sought between passive smoking and inpatient hospital admissions of infants for respiratory illness took place in Shanghai, and included 1058 children born between June 1 and December 31, 1981 who attended a well child clinic (Chen et al., 1986). A self-administered questionnaire was mailed to parents of each subject in the study when the child reached 18 months of age that inquired about the dates and causes of inpatient admissions for the child from birth to 18

months. Information regarding smoking habits of parents and family members, as well as sociodemographic, educational,and living status were also obtained. Of the parents included in the study, 294 did not smoke, 290 smoked from 1 to 9 cigarettes daily, and 474 smoked greater than 10 cigarettes per day. Because it is rare for young women in Shanghai to smoke, none of the mothers in this study smoked. This is of particular interest since it is unlikely that these mothers smoked during pregnancy, thus the possible adverse effects of maternal smoking during pregnancy were eliminated, and the harmful effects of household exposure to cigarette smoke on children made clearer. Therefore, passive smoking was analyzed in relation to the amount the father and other family members smoked.

Results of this study showed a clear dose response relation between household exposure to cigarette smoke and the inpatient admission rate for first episodes of respiratory illness in the first 18 months of life. After adjusting for the child's birth weight, type of feeding, father's education, size of home, and chronic respiratory disease among family members, the relative risk of developing a first episode of respiratory illness was almost twice as great for children living in families including people who smoked 10 or more

cigarettes a day, as compared with those living in non-smoking families (Chen et al., 1986).

Assuming that mothers are the primary caregivers of children in Shanghai these results conflict with studies done in the U.S. that showed no relationship between paternal smoking and respiratory illness in children (Fergusson et al., 1981; Burchfiel et al., 1986). Unfortunately, information regarding the primary caregiver was not given. Also, this study may not be generalizable to the United States as Chinese homes tend to be much smaller than homes in the United States, and are often limited to one to two rooms (Chen et al., 1986). This study, however, does provide further evidence supporting a smoke dose-related effect of passive smoke exposure in children.

Finally, in a longitudinal, correlational, and prospective study of 27 infants in Oregon, aged 5 1/2 to 9 1/2 months, Siebe (1981) found that infants of smokers had a greater incidence of cough, runny nose, stuffed up nose, and wheeze compared to infants of non-smoking families. No dose-related response was found in this study. However, because of the small sample size, the homogeneity of the sample (all subjects were from middle and upper class families in Portland, Oregon), and the fact that data were obtained

only during certain months of the year, not controlling for seasonal variation, limit the utility of these results.

In summary, all of the studies cited suggest a definite relationship between passive smoke exposure and respiratory illness in infants up to twelve months of age. This relationship was almost always independent of any incidence of parental or family respiratory illness. There was conflicting evidence as to whether or not this association is dose related. In most of the studies the relationship was limited to maternal smoking only.

Effects of Passive Smoking on Older Children

In contrast to the infant studies which suggest that the relationship between passive smoke exposure and respiratory illness is no longer significant after one year of age (Fergusson et al., 1981; Harlap & Davies, 1974), several researchers have demonstrated a persistent effect of parental smoking on children throughout their school-age years (Said et al., 1978 & Burchfiel et al., 1986). Using adenoidectomy and/or tonsillectomy in children as an index of upper respiratory tract disease, Said et al. (1978) studied 3920 schoolchildren in Paris, France, aged 10 to 20, to determine whether a relationship existed between upper

respiratory infections (URIs) and parental smoking. The adenoidectomy/tonsillectomy rate was used because it is difficult to estimate directly the prevalence of URIs, as medical attention is rarely sought for such illnesses. However, children who suffer repeated URIs are often subjected to a adenoidectomy and/or tonsillectomy by the age of five.

The subjects completed the questionnaires by themselves in class, which covered sex, age, number of siblings, day nursery attendance prior to age three, smoking habits of mother and father, and history of adenoidectomy, tonsillectomy, and appendectomy. The last item was intended as a control question. Twenty-eight percent of the children with two non-smoking parents reported a history of a tonsillectomy or adenoidectomy, while 42 percent of the children with one smoking parent and 51 percent of children with two smoking parents, reported such a history. Thus a strong relationship was found between parental smoking and the incidence of tonsillectomies and adenoidectomies, regardless of sex, family size, day nursery attendance, geographic location, and socioeconomic status.

The limitations of the research by Said et al. include the questionable reliability of self-reports of

ten year olds. The questionnaire asked about current smoking habits of the child's parents, which might have changed since the time prior to their child's surgery. Finally, when considering the index of measure used in this study, one must remember that medical practices in France may differ a great deal from those in the United States. Despite these limitations, this study demonstrates a relationship between passive smoke exposure and the necessity of a surgical procedure, whether or not this reflects the number of URIs the child actually had.

Using a cross-sectional design to assess the relationship of passive smoking to respiratory conditions and pulmonary function, Burchfiel et al. (1986) studied 3,482 children, aged 0 to 19 years old, between 1962 and 1965. Respiratory symptoms and illnesses such as cough, phlegm, wheeze, asthma, bronchitis, and colds settling in the chest were evaluated by a questionnaire completed by parents for children 15 years or younger. Extensive histories of passive smoke exposure in the household was obtained including current parental smoking habits, as well as duration of parental smoking during the child's lifetime. The questionnaire also solicited information regarding parental education, family size, and presence

or absence of parental respiratory symptoms. Pulmonary function was evaluated using spirometry to measure forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and forced expiratory flow at 50 percent of vital capacity (Vmax).

Analysis of the data revealed that 61.7 percent of all subjects had at least one currently smoking parent, 31.5 percent had both parents who currently smoked, and only 15.7 percent of the subjects were never exposed to parental smoking. Passive smoke exposure from both parents produced higher prevalence rates for wheeze, bronchitis, and chest colds in females, and phlegm, wheeze, asthma, and chest colds in males, as compared with children of non-smoking parents. Exposure to one parental smoker, who in this study was most often the father, was not associated with an increase in respiratory symptoms or illnesses. Mean FEV and FVC for males and Vmax for females were significantly lower by 5 percent if both parents were current smokers as opposed to never smoked, indicating that passive smoke exposure to children may impair their lung function.

Tager et al. (1983) also studied the effects of passive smoking on pulmonary function in 1156 white children who were followed prospectively over a seven year period from 1974 to 1981. Analysis, based on data

from seven annual examinations, showed that children of mothers who were current cigarette smokers had significantly reduced annual increases in FEV1 after correcting for initial FEV1, age, sex, height, and change in height. These results suggest that, after five years, the lungs of non-smoking children with mothers who smoke grow at only 93 percent of the rate of growth in non-smoking children with mothers who do not smoke. The failure to attain complete pulmonary function may predispose these children to chronic obstructive lung disease or early pulmonary failure (Committee on Environmental Hazards, 1986).

However, when Colley et al. (1974) studied 2205 infants at birth and annually for the first five years of life, they did not find that parental smoking had a persistent effect on the child past the first year of life. Using data from a longitudinal study done in London between 1963 and 1969, Colley et al. found a statistically significant gradient ($p<.0005$) of increasing incidence of bronchitis and pneumonia in the first year of life in infants whose parents both smoked, that was independent of parental respiratory symptoms or infant birth weight. This gradient was not consistent, however, in children over the age of one year.

Passive Smoking and Cancer Risks

Not only is passive smoke exposure in childhood thought to contribute to acute respiratory illnesses, but recent studies are now revealing that chronic exposure to environmental tobacco smoke may be associated with increased risk for developing cancer, particularly lung cancer (Dalager et al., 1986; Sandler et al., 1985). Sandler et al.'s (1985) results suggest that cancer risks are greatest for those people whose involuntary exposure began in childhood and continued throughout adult life.

In summary, the evidence continues to mount regarding the harmful effects of passive smoke exposure on infants and children. Passive smoking is associated with an increased incidence of upper and lower respiratory infections resulting in more hospitalizations for infants, as well as tonsillectomies and adenoidectomies in older children (Burchfiel et al., 1986; Chen et al., 1986; Colley et al., 1974; Fergusson et al., 1981; Harlap & Davies, 1974; Padreira, 1985; Said et al., 1978; Tager et al., 1983). Children passively exposed to tobacco smoke may also experience a slower rate of lung growth predisposing them to chronic obstructive lung disease and possibly lung cancer (Dalager et al., 1986; Sandler

et al., 1985). Because these effects seem to be more pronounced in infants up to twelve months of age, this study will be limited to only those PNPs who see infants in their practice.

Self-Efficacy Theory

In an effort to isolate specific factors that might influence whether or not PNPs choose to intervene in the problem of passive smoke exposure to children, Bandura's (1986) self-efficacy theory will be used. Because the task of helping parents quit smoking is a difficult one, it is doubtful that practitioners would attempt it unless they believed themselves capable of succeeding. For this reason, the self-efficacy theory was chosen as a framework to assess practitioners' perceptions of their capabilities related to smoking cessation to determine if these self-evaluations may be acting as barriers to intervention in passive smoke exposure.

Self-efficacy is the "belief in one's capabilities to execute the courses of action needed to exercise control over given events" (Bandura, 1986). Developed by Albert Bandura (1977) within the framework of social learning theory, self-efficacy theory emphasizes the importance of people's thoughts about themselves and

its influence on their behavior. The theory postulates that people's beliefs about their capabilities affect how they behave, their level of motivation and their willingness to stick with a task, their thought processes, and the amount of stress they experience in difficult situations (O'Leary, 1985).

Sources of information that contribute to a person's perceived self-efficacy are 1) mastery experiences or performance accomplishments, 2) modeling, 3) social persuasion or through the opinions of others, and 4) one's physiological state as determined by autonomic arousal. The information obtained by these four methods gains significance through cognitive processing (Bandura, 1986).

Self-efficacy theory has been applied in the health sciences in many different capacities in an effort to predict changes in client behavior in specific situations such as smoking cessation, weight loss, and pain control in childbirth (Condiotte and Lichtenstein, 1981; Manning and Wright, 1983; Weinberg et al., 1984). For example, Condiotte and Lichtenstein (1981) used self-reported levels of self-efficacy among participants in smoking cessation programs to predict incidence of relapse. First of all, their results showed a significant change in pre- and post-treatment

efficacy levels, demonstrating that the treatment programs served to enhance the subject's belief in their ability to quit. Secondly, the results revealed a strong relationship between predicted ability to resist the urge to smoke in different situations and the incidence of relapse in the same situation.

In this particular study self-efficacy states were measured during different phases of treatment by the "Confidence Questionnaire" developed by Best and Hakstian (in Condiotte & Lichtenstein, 1981). The questionnaire consisted of 48 items that described different situations in which subjects were asked to predict the probability that they would be able to resist the urge to smoke. To provide an index of self-efficacy strength, the magnitude of expectancy scores across situations was added and then divided by the total number of items. Responses were given in percentages ranging from 0 to 100% in increments of 10%. The results of this study demonstrate that by predicting behavior, in this case relapse, the self-efficacy theory can be used to anticipate and avoid situations that are problematic, thereby decreasing the incidence of relapse. To date, no studies have used the self-efficacy theory to

understand the behavior of the health care provider rather than the client.

Self-efficacy theory has the potential to be a powerful concept in understanding how PNPs incorporate new scientific knowledge into practice. Specifically, it can be used to understand health promotion activities of PNPs such as helping parents stop smoking to decrease infant respiratory disease, as well as to promote the parents' health directly.

Health Professional Involvement in Smoking Cessation

Although most health care professionals agree that promoting smoking cessation should be an important health promotion activity, few are actually intervening in the problem (Anda et al., 1987; Russell et al., 1979). In a study by Anda et al. (1987) data from 2143 smokers in the state of Michigan revealed that only 44% of them had ever been told they should stop smoking by their physician. Of these smokers, those with additional cardiovascular risk factors were no more likely to have been told to quit. Smokers who had suffered a myocardial infarction or a stroke were, however, significantly more likely to have been told to quit. The younger the patient, the less likely it was that he or she was told to quit smoking. These results

demonstrate that the majority of smoking cessation counseling takes place after irreversible harm to the patient has occurred, rather than beforehand as a preventive measure.

Russell et al. (1979) showed that minimal counseling by a physician is often enough to convince patients to quit smoking. Because most smokers who successfully give up smoking do so without the help of a formal program (Owen, 1985), authoritative advice and education may be adequate stimulation for many to quit. The results of Russell et al.'s (1979) study revealed that a single one to two minute consultation regarding smoking, accompanied by a written pamphlet, and advance notice of follow-up produced a one year success rate of almost 5 percent. Although this is not a highly significant statistic, it does demonstrate the benefit of a very minimal intervention.

Another study evaluating the effectiveness of physician intervention in smoking cessation (Richmond & Webster, 1985) revealed a 33% success rate as compared with 3% in a control group. The intervention consisted of six monthly sessions in which counseling and various physiologic measures were done. Participants were also required to keep a diary of their smoking habits. Members of the control group had only two sessions with

their physician. The majority of participants in this study felt that their chances of successfully quitting were greater if a physician administered the program, and that the physiologic test results provided strong incentives to stop.

Ewart and Coates (1983) attempted to demonstrate the importance of feedback as a motivator to physicians to persist in their anti-smoking efforts. Their data revealed that providing performance feedback for physicians regarding their smoking intervention techniques resulted in an immediate increase in the frequency of intervention. These results are consistent with one of the components of Bandura's self-efficacy theory which suggests that previous mastery performance will contribute to one's belief in his or her ability to execute the task (Bandura, 1977).

These studies demonstrate that health care professionals can play an important role in helping people stop smoking with a minimal amount of time and effort. Now that there is evidence regarding the harmful effects of passive smoking on infants and children, it is even more imperative that PNPs and physicians address smoking cessation in their practices for the sake of their children's health, as well as their own.

The Role of the Pediatric Nurse Practitioner

Originally conceived as a solution to a physician shortage and escalating medical costs, the Pediatric Nurse Practitioner (PNP) was created in 1965 (Ford & Silver, 1967). Since that time, the role of the PNP has evolved from a "physician extender" into a valuable primary pediatric health care provider who offers unique care to children and their families (Foye, Chamberlin & Charney, 1977).

Because the PNP is a nurse he/she approaches health care somewhat differently than a physician does. In addition to diagnosing and treating minor illnesses, the PNP applies knowledge of growth and development, family dynamics, and the psychosocial impact of illness on the child and family to provide a holistic approach that involves the entire family in the plan of care. The PNP incorporates nursing theory, such as mutual goal setting with clients (Roberts, 1983) which is particularly important in promoting change in patients, such as smoking cessation.

According to the literature, PNPs provide equally competent and satisfying well-child care to children and families as physicians in a variety of settings (Foye et al., 1977; Duncan et al., 1971). Because well-child care is essentially preventive health care

in the form of early detection of disease through assessment, and prevention of disease through immunizations and anticipatory guidance, these visits offer excellent opportunities for educating parents regarding the harmful effects of passive smoke exposure on infants and children.

In a study by Frank and Chaney (1974), PNPs reported their principle responsibilities as being parent education, disease prevention, and screening, in contrast to physicians who see their primary role as curing disease (Davidson and Lauver, 1984). These findings are consistent with Draye and Peszecker (1980) whose results demonstrated that teaching is the most frequently performed intervention by nurse practitioners. In light of the PNP's educative and preventive health focus, PNPs appear to be ideal health care providers to counsel parents regarding smoking cessation as presented in the best interest of their children.

Conceptual Framework

Current research indicates passive smoking can be dangerous to health, especially for vulnerable populations such as infants. As primary health care providers, PNPs are in a position to practice

preventive health in the form of educating new parents about the harmful effects of their smoking habits. Due to a paucity of literature in nursing journals regarding passive smoking, it is unknown whether or not this topic is being addressed by PNPs in their practice.

If one assumes that PNPs are indeed aware of the harmful effects of passive smoking, there are still many factors that influence the incorporation of new knowledge into practice. In his Self-Efficacy Theory, Albert Bandura (1966) proposes that the major influencing factor in determining behavior change is one's belief in one's ability to execute a task. In this study PNPs' perceived self-efficacy specific to smoking cessation techniques is measured to determine whether or not it is influencing the amount of intervention by PNPs regarding passive smoking.

Research Questions

1) How extensive is infant passive smoke exposure in PNP practice?

2) Are PNPs knowledgeable about the harmful effects of involuntary tobacco smoke exposure on infants and children?

3) What are PNPs' attitudes toward smoking and smoking cessation?

4) How do PNPs see their role in helping parents stop smoking?

5) How are PNPs intervening in this health issue within their practice settings?

6) Are PNPs interested in helping parents stop smoking?

7) Do PNPs feel qualified to help parents stop smoking as measured by their perceived self-efficacy?

Hypothesis

There will be a positive correlation between level of self-efficacy (PSE score) and reported frequency of intervention reflected by items 31, 26, 32.

CHAPTER III

METHODS

This study will address the above research questions by specifically assessing the extent of the problem, and the knowledge, attitudes, and current interventions of PNPs in the state of Oregon regarding passive smoking in pediatric practice settings. To test the hypothesis of the study the PNPs' perceived self-efficacy regarding their interventions to help parents stop smoking will be measured and correlated with their reported frequency of these interventions.

Design

Because little is known regarding PNP practices in the area of passive smoking a descriptive correlational design was chosen for the study. A questionnaire was mailed to PNPs throughout the state of Oregon to assess their knowledge level and attitudes regarding passive smoking in pediatric populations. The researcher also measured levels of perceived self-efficacy related to smoking cessation techniques and attempted to correlate these with the amount of intervention reported by PNPs in this area.

Because of time and financial constraints, a questionnaire was chosen to collect the data. It also offered more anonymity for subjects than would

interviews. PNPs surveyed were restricted to the state of Oregon for convenience and to remain consistent with a parallel study of physicians for future data analysis.

To ensure a high rate of return of the questionnaires a second mailing was completed for those who had not returned the questionnaire within ten days. Also, all respondents' names were entered into a drawing for $50 towards dinner at a restaurant of their choice.

In an effort to identify bias and error, a random sample of nonrespondents was called to ascertain why they didn't return the questionnaire. This, as well as sampling an entire population, was done to assure that a representative sample was obtained.

Anonymity of all subjects was assured. Although the surveys were coded, names were not associated with the data. Because the raffle tickets contained names and addresses of the subjects they were enclosed in separate return envelopes. A copy of the results was offered to all respondents. Rights of subjects have been protected by the standard review process of the OHSU Department of Research.

Sample

Subjects included all practicing pediatric nurse practitioners in the state of Oregon. Because of the relatively small number of PNPs in the state the entire population was used in order to ensure a representative sample.

Names of subjects were obtained through the statewide professional organization for PNPs. Criteria for inclusion in the study were that all subjects provided primary are to a general pediatric population that included some infants, and that they agreed to participate in the study.

Instrument

Data were collected using a self-administered questionnaire containing six demographic questions, followed by 34 items arranged in a Likert-type format and four multiple-choice questions titled "Health Survey" (see Appendix A). The items elicited knowledge, attitudes, current interventions, and perceived self-efficacy of pediatric nurse practitioners regarding passive smoking and smoking cessation in pediatric practice settings.

Item numbers 1 and 5 assessed the PNP's knowledge of passive smoking with statements such as "Newborns (birth to one month) of parents who smoke have a higher

incidence of respiratory illnesses than newborns whose parents don't smoke." If PNPs agreed with this statement as well as with item number 5, they were considered knowledgeable regarding the effects of passive smoking.

Item numbers 2, 3, 4, 6, and 11 assessed attitudes regarding smoking and smoking cessation. Attitude statements elicited feelings and beliefs about cigarette smoking and smoking cessation techniques with statements such as "There is no effective way to help people stop smoking" (item 11).

Item numbers 26, 31, 32, 33, and 34 assessed current interventions by PNPs directed toward parental smoking. "I tell parents to stop smoking to improve their children's health" (item 26) is an example of an intervention statement.

How PNPs envisioned their role in helping parents quit smoking was assessed with item numbers 7, 9, 10, 12, 16, 18, 24, and 25. These items elicited beliefs about whether or not they, as pediatric health care providers, should be addressing parental smoking in their practice settings.

The PNPs' perceived self-efficacy related to their efforts in helping parents stop smoking was measured by calculating the mean response of a group of items

including item numbers 7, 8, 13, 14, 15, 16, 27, 28, 29, 30, and 38. These included statements such as "As a pediatric health care provider I am qualified to help people stop smoking" (item 8), "The people that I've told to quit smoking have continued to smoke" (item 29), and "I've helped parents of newborns stop smoking" (item 30).

Lastly, item numbers 17, 19, 20, 21, 22, 23, and 24 assessed the PNPs' interest in helping parents stop smoking with statements such as "I would use video cassettes on smoking cessation in my practice" (item 21).

The first set of items (1 through 26) assessed knowledge of passive smoking effects, attitudes towards smoking cessation, and willingness to learn more about these areas. These all had seven possible responses that ranged from "strongly disagree" to "strongly agree". Scores for each item could range from one to seven, with a score of one assigned to a response of "strongly disagree, while a score of seven was given for a response of "strongly agree".

A second set of items (27 thru 34) inquiring about interventions by PNPs currently being directed toward parents who smoke was also followed by seven possible responses that ranged from "never" to "always". These

items were scored in the same manner as the previous set, with a score of one assigned to a response of "never", and a score of seven given for a response of "always". Again, more intermediate responses acquired scores somewhere between one and seven.

Lastly, there were four multiple-choice items (35 through 38). Item 35 asked the PNP to describe her personal smoking habits using four possible responses: 1) Current smoker, 2) Unsuccessfully tried to quit, 3) Ex-smoker, or 4) Never smoked. Scores from one to four were assigned, respectively. Items 36 thru 38 asked what percentage of newborns in the PNP's practice have one or both parents who smoke, and what percentage of these parents have quit smoking in the past year, or been referred to smoking cessation programs. The last three items had five possible responses that ranged from 0 to 100 percent. A score of 1 was assigned to "0%", 2 for "1-25%", 3 for "26-50%", 4 for "51-75%", and 5 for "76-100%".

In an attempt to develop operational definitions for the various variables in the study a factor analysis was performed using data from 288 identical surveys distributed to physicians in Oregon. Fifteen factors of minimal significance emerged making it difficult to group items into useful clusters or

constructs. Further efforts to measure perceived self-efficacy proved more valuable when several key items thought to reflect or contribute to one's self-efficacy were selected and grouped together to create the Perceived Self-Efficacy (PSE) Subscale (see Table 5). The eleven items and their content are listed below:

7. The professional literature recommends that people in my profession should address parental smoking.

8. As a pediatric health care provider I am qualified to help people stop smoking.

13. I am familiar with available resources to help people stop smoking.

14. Even though people continue to smoke after I recommend they quit, I still encourage them to stop smoking.

15. I know several colleagues who successfully address parental smoking in their practice.

16. I know enough about smoking cessation to help people stop smoking.

27. I've helped people stop smoking.

28. The people that I've told to quit smoking have continued to smoke.

29. The people that I've told to quit have quit.

30. I've helped parents of newborns stop smoking.

38. What percentage of smoking parents in your practice have quit in the past year?

An alpha reliability coefficient computed on 27 cases was .799 for the subscale. (Only cases which had data for all eleven items in the subscale were used.)

The questionnaire was developed by a team of researchers that included a medical psychologist who is knowledgeable regarding Bandura's (1986) self-efficacy theory. His expertise added content validity to the instrument specifically to the concept of self-efficacy. This instrument was also piloted in an earlier study in which it was sent to approximately 300 physicians providing pediatric care in Oregon.

The questionnaire takes approximately fifteen minutes to complete, and does not require any special provisions to administer. Therefore, it is a fairly convenient instrument that does not place a great demand on busy practitioners.

CHAPTER IV

RESULTS

This chapter will begin with a description of the study sample. Next, the results will be presented as they relate to the research questions of the study. To determine whether or not the hypothesis will be accepted or rejected an analysis of the correlations between perceived self-efficacy and the frequency of intervention reported by PNPs will follow. The significance of the findings will then be discussed in terms of their clinical, theoretical, and educational implications. The chapter will conclude with the limitations of the study and recommendations for future research.

Sample

Of the 79 questionnaires mailed, 44 questionnaires were completed and returned within three weeks. A second mailing three weeks after the first mailing yielded an additional 18 surveys for a final response rate of 78%. Seventeen questionnaires were rejected as the subjects did not have an infant population, resulting in a responding sample of 45 pediatric nurse practitioners. Although there were missing data on 8 of the 45 questionnaires due to a missing page, all 45 surveys were used in data analysis.

The responding PNPs were all female, 31 to 66 years old, with a mean age of 41 years, and had been registered nurses for 1 to 45 years, with a mean of 9 years. 36% of the PNPs were in a group practice, 31% were employed by the Public Health Department, 9% in HMOs, 9% in hospital clinics, and 6% in other settings. None reported being in a solo practice.

The subjects saw an average of 18 infants per week in their practice. The practitioners were predominantly from urban settings, but rural settings were well represented. With regard to personal smoking status, 30% of the PNPs reported being ex-smokers, while 70% reported that they had never smoked. None of the PNPs were current smokers.

A phone interview was conducted with 23 percent (n = 4) of the non-respondents. No significant differences regarding age, sex, number of infants seen per week, or practice setting were found between those who elected not to respond and the respondents.

Extent of Problem

To answer the first research question which addresses the extent of the problem, the mean and standard deviation were computed for item number 36. Estimates of the number of newborns in their practices who had parents who smoked ranged from 1% to 100%.

Most of the PNPs reported that 26% to 50% of their newborn population had one or both parents who smoke. This figure is somewhat lower than the figure of 50% to 75% of newborns with smoking parents reported in the literature (Committee on Environmental Hazards, 1986).

PNPs' Knowledge Regarding Passive Smoking

To answer the second research question which asks if PNPs are knowledgeable about the harmful effects of involuntary tobacco smoke exposure on infants and children, the mean and standard deviation for each knowledge related item were calculated (see Table 1). Most of the PNPs agreed (M = 5.93) that "Newborns of parents who smoke have a higher incidence of respiratory illnesses than newborns whose parents don't smoke" (item 1). All subjects expressed moderate to strong agreement (M = 6.24) that newborns whose parents quit smoking will have fewer respiratory illnesses than those whose parents continue to smoke (item 5). These findings demonstrate that the majority of PNPs agree with the literature regarding the effects of passive smoking on infants.

PNPs' Attitudes Regarding Smoking and Neonatal Health

In answer to the third research question, "What are PNPs' attitudes toward smoking and smoking cessation?" (see Table 1), PNPs reported that they were

Table 1

Knowledge and Attitudes Regarding Smoking and Neonatal Health

Item no.	Statement	n	M	SD
	Knowledge			
1.	Newborns (birth to one month) of parents who smoke have a higher incidence of respiratory illnesses than newborns whose parents don't smoke.	45	5.93	1.45
5.	Newborns of parents who stop smoking will have fewer respiratory illnesses than newborns whose parents continue to smoke.	45	6.24	0.80
	Attitudes			
2.	Parents are unaware that cigarette smoking adversely affects their children's health.	45	4.40	1.23
3.	Patients should be able to enter a smoke free environment when they walk into a waiting room.	45	6.91	0.29
4.	Cigarette smoking is too strong of a habit for parents to break to improve their children's health.	45	2.31	1.31
6.	Anyone can stop smoking once they decide to quit.	45	5.04	1.68
11.	There is no effective way to help people stop smoking.	37	2.11	1.61

Note. Scale Used: 1 = Strongly Disagree; 3 = Moderately Disagree; 5 = Moderately Agree; 7 = Strongly Agree

unsure (M = 4.40) if parents were aware that cigarette smoking adversely affects their children's health (item 2). They strongly agreed (M = 6.91) that the waiting room should be a smoke free environment (item 3). The PNPs moderately agreed (M = 5.04) with the statement that "Anyone can stop smoking once they decide to quit" (item 6), and strongly disagreed (M = 2.31) with the statement "Cigarette smoking is too strong of a habit for parents to break to improve their children's health" (item 4). They also strongly disagreed (M = 2.11) that "There is no effective way to help people stop smoking" (item 11).

In summary, PNPs are not sure if parents realize that smoking adversely affects their children's health. They do feel however, that there are ways to help parents stop smoking for the sake of their children's health.

Professional Role

The fourth research question asks how "PNPs see their role in helping parents stop smoking" (see Table 2). The PNPs agreed (M = 6.04) that their professional literature recommends they should address the issue of parental smoking (item 7), and that it's worth the time it takes to help people stop smoking (item 24, M = 5.89). However, as a group they felt that there were

Table 2

PNPs' Professional Role in Passive Smoking

Item no.	Statement	n	M	SD
7.	The professional literature recommends that people in my profession should address parental smoking.	45	6.04	1.04
9.	It's primarily my role to educate people about the hazards of smoking.	45	5.29	1.60
10.	There are health professionals other than myself more qualified to help people stop smoking.	45	5.84	1.33
12.	I'm so busy managing acute and chronic illness that I have little time to spend helping people stop smoking.	37	4.14	1.49
16.	I know enough about smoking cessation to help people stop smoking.	37	2.73	1.63
18.	It's appropriate for me to prescribe nicotine chewing gum for parents of newborns who want to stop smoking.	35	2.94	1.97
24.	It's worth the time it takes to help people stop smoking.	36	5.89	1.24
25.	The status of my profession would make me influential in getting people to stop smoking.	36	4.70	1.45

Note. Scale Used: 1 = Strongly Disagree; 3 = Moderately Disagree; 5 = Moderately Agree; 7 = Strongly Agree

other health professionals more qualified to help people stop smoking (item 10). Although the majority felt that it was primarily their role to educate people about the hazards of smoking (item 9), they did not feel that they knew enough to help people stop smoking (item 16). The PNPs felt it was inappropriate for them to prescribe nicotine chewing gum for parents of newborns who want to stop smoking (item 18), and they did not view their profession as being particularly influential in convincing people to stop smoking (item 25).

PNPs' attitudes regarding their role in pediatric passive smoking reflect that they feel obligated, but not qualified, to intervene in the problem. They feel that other health professionals are better prepared to help parents stop smoking, including prescribing nicotine gum for them.

Interventions Towards Smoking Parents

Research question number five addresses how PNPs are intervening in pediatric passive smoke exposure. Means and standard deviations were calculated for all items addressing current interventions by PNPs directed toward pediatric passive smoking (see Table 3). With regard to smoking policies in their practice settings, the majority of the PNPs reported that neither

Table 3

Interventions Related to Passive Smoke Exposure

Item no.	Statement	n	M	SD
26.	I tell parents to stop smoking to improve their children's health.	36	5.97	1.25
31.	I ask parents of newborns if they smoke.	44	5.14	1.68
32.	I have referred people to available resources to help them stop smoking.	45	3.69	1.86
33.	People who work in my practice setting are allowed to smoke in the office.	45	1.64	1.53
34.	Patients are allowed to smoke in my office.	45	1.24	1.07

Note. Scale used for item 26: 1 = Strongly Disagree; 3 = Moderately Disagree; 5 = Moderately Agree; 7 = Strongly Agree

Scale used for items 31 thru 34: 1 = Never; 3 = Occasionally; 5 = Frequently; 7 = Always

employees nor patients are allowed to smoke in the office (items 33 and 34).

The PNPs reported that they frequently ask parents of newborns if they smoke (item 31), as well as tell parental smokers to stop smoking to improve their children's health (item 26). Only on occasion do PNPs refer parents who smoke to available resources to help them stop smoking (item 32). These reported interventions reflect that PNPs are attempting to decrease the incidence of passive smoke exposure to infants especially by telling parents they should stop smoking. However, they are not taking any further steps to help parents stop smoking.

Interest in Helping Parents Stop Smoking

In response to the research question "Are PNPs interested in helping parents stop smoking?", the mean and standard deviation for subject related items (see Table 4) revealed that the majority of the PNPs were interested in learning more about smoking cessation (item 19) and felt that it is worth the time it takes to help people stop smoking (item 24). More specifically, they expressed interest in attending a workshop on smoking cessation (item 20) and using articles on passive smoking in their practices (item 17). They were not interested however, in using video

Table 4

Interest in Helping Parents Stop Smoking

Item no.	Statement	n	M	SD
17.	I would use reprints of articles on the effects of passive smoking on children.	37	6.22	0.98
19.	I would like to learn more about smoking cessation.	36	5.42	1.30
20.	I would attend a one-day workshop to learn how to use smoking cessation in my practice.	36	5.17	1.54
21.	I would use video cassettes on smoking cessation in my practice.	36	4.11	1.79
22.	I would consider sponsoring a smoking cessation group for parents in my office (held after hours and conducted by someone other than myself).	35	4.37	1.70
23.	I would consider using a consultant to set up an organized program for smoking cessation in my office.	36	3.69	1.62
24.	It's worth the time it takes to help people stop smoking.	36	5.89	1.24

Note. Scale used: 1 = Strongly Disagree; 3 = Moderately Disagree; 5 = Moderately Agree; 7 = Strongly Agree

cassettes on smoking cessation (item 21), sponsoring a smoking cessation group (item 22), or using a consultant to set up a program for smoking cessation in their office (item 23).

Perceived Self-Efficacy Related to Smoking Cessation Efforts

The last research question asks if PNPs feel qualified to help parents stop smoking as measured by their perceived self-efficacy. Means and standard deviations were computed on individual items within the PSE Subscale (see Table 5). The PNPs reported that they did not feel qualified to help people stop smoking (item 8), although they strongly agreed that the literature recommends that their profession address parental smoking (item 7). They reported persisting in their efforts to encourage people to stop smoking (item 14), even though they didn't feel that their efforts were very successful (items 27, 28, 29, 30, and 38).

To summarize the answers to the research questions, PNPs in Oregon are fairly knowledgeable about the effects of passive smoking on infants and report that one-fourth to one-half of the newborns in their practices are affected. They feel that it is their role as a pediatric care provider to intervene in parental smoking, but their current interventions are

Table 5

Perceived Self-Efficacy (PSE) Subscale

Item no.	Statement	n	M	SD
7.	The professional literature recommends that people in my profession should address parental smoking.	45	6.07	1.11
8.	As a pediatric health care provider I am qualified to help people stop smoking.	45	4.15	1.81
13.	I am familiar with available resources to help people stop smoking.	37	4.11	1.65
14.	Even though people continue to smoke after I recommend they quit, I still encourage them to stop smoking.	37	5.78	1.34
15.	I know several colleagues who successfully address parental smoking in their practice.	36	3.59	1.72
16.	I know enough about smoking cesstion to help people stop smoking.	37	2.74	1.68
27.	I've helped people stop smoking.			
28.	The people that I've told to quit smoking have continued to smoke.	39	2.52	0.98
29.	The people that I've told to quit have quit.	40	2.67	0.83
30.	I've helped parents of newborns stop smoking.	44	2.52	1.19
38.	What percentage of smoking parents in your practice have quit in the past year?	35	1.94	0.35

Note: Scale used for items 7 through 16: 1 = Strongly Disagree; 3 = Moderately Disagree; 5 = Moderately Agree; 7 = Strongly Agree

Scale used for items 27 thru 30: 1 = Never; 3 = Occasionally; 5 = Frequently; 7 = Always

Scale used for item 38: 1 = 0%; 2 = 1-25%; 3 = 26-50%; 4 = 51-75%; 5 = 76-100%

limited to telling parents to stop smoking. Although they do not feel qualified to intervene further, they believe there are ways to help people stop smoking and are interested in doing so.

Correlations Between PSE and Frequency of Intervention

In order to test the hypothesis in the study, or determine if a relationship exists between the PNPs' level of self-efficacy and their reported frequency of intervention, a Perceived Self-Efficacy (PSE) score was calculated for 43 of the 45 subjects by computing the mean of all eleven items in the PSE Subscale. (Two subjects were rejected due to missing data on more than seven of the eleven items.)

To determine the magnitude of the relationship between the presumed antecedent variable, i.e. the perceived self-efficacy, and the dependent variable, the reported frequency of intervention, this score was correlated with three separate interventions measured by items 31, 26, and 32 (see Table 6). The results of this correlation were designed to show whether or not the data support the hypothesis of the study.

In an effort to address other influencing variables that might also affect the frequency of intervention, such as the PNP's knowledge or lack of

Table 6

Correlations Between PSE Scores and Reported Frequency of Intervention

	Interventions by PNPs		
	Item 31 (I ask parents)	Item 26 (I tell parents)	Item 32 (I refer parents)
PSE	0.2191	0.4309*	0.4177**
	n = 43	n = 36	n = 43

*p<.01. **p<.005.

Table 7

Correlations Between Other Influencing Factors (Items 1, 4, 12) and Frequency of Intervention

	Interventions by PNPs		
	Item 31 (I ask parents)	Item 26 (I tell parents)	Item 32 (I refer parents)
Item 1 (Knowledge)	0.0234	-0.1455	0.1476
	n = 44	n = 36	n = 45
Item 4 (Attitudes)	-0.0200	-0.0185	0.0407
	n = 44	n = 36	n = 45
Item 12 (Lack of time)	-0.0824	0.1484	0.0660
	n = 37	n = 36	n = 37

knowledge regarding the effects of passive smoking (item 1), their attitudes towards smoking (item 4), or a lack of time (item 12), correlations were computed between these items and the above mentioned interventions (see Table 7).

When the PSE scores were correlated with three individual interventions, the correlations were significant in two out of three interventions ($p<.01$ for item 26 and $p<.005$ for item 32). There were no significant correlations between these same interventions and any of the items that represented other influencing items,i.e., knowledge level, attitudes toward smoking, and lack of time (items 1, 4, and 12 respectively).

There was some correlation ($r = .372$) between the PNP's practice setting and item 26, "I tell parents to stop smoking to improve their children's health". To determine if the PNP's practice setting did indeed influence her frequency of intervention an ANOVA was done. This showed that PNPs practicing in an HMO (Health Maintenance Organization) reported telling parents to quit smoking (item 26) more frequently ($f=2.70$) than PNPs in any other practice setting ($p = .039$). No significant results were produced when an ANOVA was done to see if PNPs' personal smoking

habits influenced their frequency of intervention. However, the PNPs in the study either had never smoked or had quit successfully.

The hypothesis of the study was supported in that there is a positive correlation between the PNPs' PSE scores and their reported frequency of intervention related to passive smoking in pediatric practice settings. Other influencing factors such as knowledge about passive smoking, attitudes toward smoking cessation, or time constraints did not correlate significantly with the reported frequency of intervention.

CHAPTER V

DISCUSSION OF FINDINGS AND IMPLICATIONS FOR FUTURE WORK

The results of this study provide both encouraging and valuable information regarding a relatively new health issue for pediatric nurse practitioners. In this section the significance of the findings will be discussed in terms of their clinical, theoretical, and educational implications.

Contrary to what one might expect considering the paucity of information in nursing journals concerning passive smoke exposure, the PNPs in the study demonstrated some knowledge of the problem. The level of sophistication of this knowledge could not be accurately assessed, however, as only two items on the questionnaire pertained to knowledge level. Regardless, one might conclude that their responses were either based on previous knowledge of the hazards of direct tobacco smoke, or that PNPs are reading health care journals which contained articles related to passive smoking.

The results of this study support findings from other studies in the literature in which PNPs reported education as the main function in their practice. The majority of PNPs in the study agreed that it was

primarily their role to educate people regarding the hazards of smoking. The fact that they did not feel comfortable prescribing nicotine chewing gum for parents who smoked or referring these parents to smoking cessation programs may reflect a philosophical decision to treat only patient, in this case the child, and not other family members. PNPs may need to develop a more family centered philosophy in order to intervene more effectively with parental smoking.

A very encouraging statistic was the large number of PNPs who indeed are addressing the issue of parental smoking. This finding contradicts the medical literature which reported that few health professionals were addressing smoking cessation in their practices. Even though they report little success in their efforts to decrease the amount of infant exposure to tobacco smoke, the PNPs still persist in asking if parents smoke, as well as telling them they should stop.

Interestingly, however, it is at this point where their efforts to intervene end. For some reason PNPs are not taking the next step necessary to help parents stop smoking beyond simply telling them they should quit. They even are reluctant to refer parents to smoking cessation programs and admit to not being familiar with available resources to help people stop

smoking. According to the results of this study, it is neither a lack of knowledge about the adverse effects of parental smoking, a lack of time, nor their attitudes about smoking cessation that are preventing PNPs from intervening further. Rather, it appears that although PNPs consider it their professional obligation, they do not feel adequately prepared or qualified enough to intervene in infant passive smoke exposure.

Furthermore, in support of the hypothesis of the study, the data demonstrated a significant correlation between the PNPs' perceived self-efficacy and their frequency of intervention (see Table 6), specifically how often they tell parents to quit smoking (item 26) and how often they refer parents to available resources (item 32). Of interest is the lower correlation between item number 31 "I ask parents of newborns if they smoke" and the PSE score. This might be due to the fact that simply asking a parent if they smoke is not really an intervention, but rather an act of data gathering.

Bandura (1986) states that one's belief in his or her ability to execute a task will determine his or her behavior related to that task, the level of motivation and willingness to stick with the task. The results of

this study show that PNPs' beliefs that they can help parents stop smoking, as measured by their PSE score, is significantly correlated ($p < .005$ to $p < .01$) with their behavior or reported frequency of intervention in parental smoking (responces to items 31, 26, 32). PNPs also reported that they persisted ($\underline{M} = 5.78$) in their endeavors even they were unsuccessful. These findings thus support the application of Bandura's Self-Efficacy Theory to the practitioner and the process of integrating new knowledge into practice.

The educational implications of the results are relevant to both nursing school curricula as well as continuing education programs for PNPs. Simply providing practitioners with knowledge regarding the perils of parental smoking does not appear to be sufficient. Educators may need to revise curriculums to include techniques of practical application, or more "how to" instruction. Fortunately, PNPs in the study expressed an overall interest in learning more about smoking cessation strategies and available resources.

Limitations

There are several limitations of this study that are apparent. The results of this study may not accurately reflect the state of the problem due to errors in design, instrumentation and methods of

analysis. Although the survey is anonymous practitioners may still give socially desirable responses.

A limitation in the conceptual framework of the study is that the self-efficacy theory only addresses one factor involved in the incorporation of new knowledge into practice, and ignores other possible motivators and barriers that might determine how one practices, such as values, time, costs, personal recognition, and financial rewards.

Another limitation which might inhibit the interpretation of the data was due to a printing error in which the second page of the questionnaire was missing from all the questionnaires in the first mailing. The second page, which contained sixteen items, was mailed two weeks after the original mailing date. Fortunately, all but eight were returned.

Because infants are considered more vulnerable to the effects of passive smoking than older children, this study addressed only an infant population. This again limits the generalizability of the findings to PNP interventions with infants only.

Some items in the questionnaire that addressed office policies may not have been applicable to PNPs in group practices or agencies, as the PNP may have had

little control over individual office policy (items 21, 22, 23, 33, and 34). Items related to smoking in office settings, or decisions to hire outside consultants, may reflect only the physician's or office manager's attitudes in that office and not necessarily the PNP in that practice setting.

Results of this study are only generalizable to PNPs in the state of Oregon during 1987, as the practice of nurses may vary from state to state and change over time. Because this study addressed only an infant population, this also limits the generalizability of the findings to PNP interventions directed toward infants, and not older children.

Lastly, this was the first use of this instrument other than a pilot test. The validity and reliability of the newly developed tool are questionable, and must be considered when interpreting the results of this study.

Recommendations for Future Research

There is a need for further research related to many aspects of this study. Because it is so difficult to accurately measure the effects of passive smoking on infants, previous studies have used indirect methods of measurement which are less conclusive than direct methods of measurement. More precise methods of

measuring the adverse effects of passive smoke exposure are needed.

In order to better predict practitioners' behavior, further application of Bandura's Self-Efficacy Theory in a similar fashion is needed. Also, it would be useful to study other motivators or barriers in the process of incorporating new knowledge into PNP practice.

SUMMARY AND CONCLUSIONS

In light of the mounting evidence that passive smoke exposure can be harmful to vulnerable populations such as infants, a descriptive study was undertaken to determine if pediatric nurse practitioners (PNPs) were addressing this issue in their practice. More specifically, their knowledge of the problem, general attitudes towards smoking, and current interventions directed toward parental smoking were assessed.

A second purpose of the study was to explore potential barriers PNPs might encounter as they incorporate new knowledge into practice. Using Bandura's (1986) Self-Efficacy Theory as a framework, specific questionnaire items were developed to determine if a relationship existed between the PNP's perceived self-efficacy and her reported frequency of intervention in infant passive smoke exposure.

A three-page questionnaire arranged in a Likert-type format was distributed to all practicing PNPs in Oregon in two separate mailings. A final response rate of 78% yielded 45 subjects after 17 respondents were rejected because they did not have an infant population. The sample was all female, aged 31 to 66 years old, and practiced in a variety of professional settings for an average of 9 years.

A PSE score, or level of perceived self-efficacy was calculated for every subject using the mean of eleven questionnaire items thought to reflect or contribute to one's self-efficacy. This score was correlated with selected individual interventions to determine if a relationship existed between the two.

Descriptive statistics computed with the data showed that PNPs were knowledgeable about the harmful effects of passive smoke exposure to newborn infants. They reported asking parents if they smoked and persisted in encouraging them to stop smoking even though they felt their efforts were generally unsuccessful. However, they did not feel qualified or adequately prepared to intervene further with parental smoking, even if only to refer parents to smoking cessation programs.

There was also a significant correlation ($p < .005$ to $p < .01$) found between the PNP's perceived self-efficacy related to helping parents stop smoking and the reported frequency of intervention in this area by each PNP. This relationship supports both the hypothesis of the study as well as the utility of Bandura's self-efficacy theory in predicting the behavior of health care providers.

Conclusion

It appears that PNPs are both interested in, and feel a professional obligation towards, addressing passive smoking in pediatric practice settings. However, other than simply telling parents they should stop smoking, they do not feel qualified or effective in their efforts to intervene with parental smoking.

These findings suggest that educational curricula for PNPs should include not only didactic information regarding the adverse effects of passive smoking, but should also include education and training in smoking cessation strategies. In addition, nursing educators should promote a family-centered philosophy of nursing to encourage more interventions by PNPs directed toward parents as presented in the best interest of their children.

References

American Thoracic Society, Medical Section of American Lung Association, November, 1985.

Anda, R. F., Remington, P. L., Sienko, D. G. & Davis, R. M. (1987). Are physicians advising smokers to quit? The patient's perspective. Journal of the American Medical Association, 257(14), 1916-1919.

Bandura, A. (1986). Self-efficacy mechanism in physiological activation and health-promoting behavior. In J. Madden IV, S. Matthysse, & J. Barchas (Eds). Adaptation, learning and affect. New York: Raven Press.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. Psychological Review, 84(2), 191-215.

Burchfiel, C. M., Higgins, M. W., Keller, J. B., Howatt, W. F., Butler, W. J., & Higgins, I. T. (1986). Passive smoking in childhood. American Review of Respiratory Diseases, 133, 966-973.

Chen, Y., Li, W., Yu, S. (1986). Influence of passive smoking on admissions for respiratory illness in early childhood. British Medical Journal, 293(6542), 303-306.

Colley, J. R. T., Holland, W. W., & Corkhill, R. T. (1974, November). Influence of passive smoking and parental

phlegm on pneumonia and bronchitis in early childhood. The Lancet, 1031-1034.

Committee on Environmental Hazards. (1986). Involuntary smoking--a hazard to children. Pediatrics, 77(5), 755-757.

Condiotte, M. & Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation programs. Journal of Consulting and Clinical Psychology, 49(5), 648-658.

Dalager, N. A., Pickle, L. W., Mason, T. J., Correa, P., Fontham, E., Stemhagen, A., Buffler, P. A., Ziegler, R. G., & Fraumeni, Jr., J. F. (1986). The relation of passive smoking to lung cancer. Cancer Research, 46(9), 4808-4811.

Davidson, R. A. & Lauver, D. (1984). Nurse practitioner and physician roles: delineation and complementarity of practice. Research in Nursing and Health, 7, 3-9.

Draye, M. A. & Pesznecker, B. (1980). Teaching activities of family nurse practitioners. Nurse Practitioner, 5(5), 28-33.

Duncan, B., Smith, A. N., Silver, H. K. (1971). Comparison of the physical assessment of children by pediatric nurse practitioners and pediatricians. American Journal of Public Health, 61(6), 1170-1176.

Ewart, C. K., Li, V. C., & Coates, T. J. (1983). Increasing physicians' antismoking influence by applying

an inexpensive feedback technique. Journal of Medical Education, 58, 468-473.

Fergusson, D. M., Horwood, L. J., Shannon, F. T. & Taylor, B. (1981). Parental smoking and lower respiratory illness in the first three years of life. Journal of Epidemiology and Community Health, 35, 180-184.

Frank, D. J., & Chaney, P. (1974). Eighty-one PNA's later. A professional appraisal. Clinical Pediatrics, 13(9), 790-793.

Ford, L. C. & Silver, H. K. (1967, September). The expanded role of the nurse in child care. Nursing Outlook, 15, 43-45.

Foye, H., Chamberlin, R. & Charney, E. (1977). Content and emphasis of well-child visits: experienced nurse practitioners vs. pediatricians. American Journal of Diseases of the Child, 131, 794-797.

Greenburg, R. A., Haley, N., Etzel, R. & Loda, F. (1984). Measuring the exposure of infants to tobacco smoke. New England Journal of Medicine, 310(17), 1075-1078.

Harlap, S. & Davies, A. M. (1974). Infant admissions to hospital and maternal smoking. Lancet, 1, 529-532.

Huch, R., Danko, J. & Spatling, L. (1980). Risks the passive smoker runs. Lancet, 2, 1876.

Manning, M. & Wright, T. (1983). Self-efficacy expectancies, outcome expectancies, and the persistence

of pain control in childbirth. Journal of Personality and Social Psychology, 45(2), 421-431.

O'Leary, A. (1985). Self-efficacy and health. Behavior, Research and Therapy, 23(4), 437-451.

Owen, N. (1985). Advising patients to stop smoking. The Medical Journal of Australia, 142(3), 176-178.

Padreira, G. A., Guandolo, V. L., Feroli, E. J., Mella, G. W. & Weiss, I. P. (1985). Involuntary smoking and incidence of respiratory illness during the first year of life. Pediatrics, 75, 594-597.

Richmond, R. L. & Webster, I. W. (1985). A smoking cessation programme for use in general practice. The Medical Journal of Australia, 142(3), 190-194.

Roberts, F. B. (1983). An interaction model for family assessment. In I. W. Clements & F. B. Roberts (Eds.), Family health: a theoretical approach to nursing care, (pp. 189-204). New York: John Wiley & Sons.

Russell, M. A. H., Wilson, C., Taylor, C. & Baker, C. D. (1979). Effect of general practitioners' advice against smoking. British Medical Journal, 2, 231-235.

Said, G., Zaolokar, J., Lellouch, J. & Patois, E. (1978). Parental smoking related to adenoidectomy and tonsillectomy in children. Journal of Epidemiology and Community Health, 32, 97-101.

Sandler, D. P., Everson, R. B., Wilcox, A. J. & Browder, J. P. (1985). Cancer risk in adulthood from early life exposure to parents' smoking. American Journal of Public Health, 75(5), 487-492.

Siebe, K. J. (1981). Respiratory symptoms in infants of parents who smoke cigarettes. Unpublished master's thesis, University of Oregon Health Sciences Center, Portland.

Tager, I. B., Weiss, S. T., Munoz, A., Rosner, B. & Speizer, F. E. (1983). Longitudinal study of the effects of maternal smoking on pulmonary function in children. New England Journal of Medicine, 309(12), 699-703.

U. S. Department of Health and Human Services. (1986). The health consequences of involuntary smoking: a report of the surgeon general. Washington, DC: U. S. Government Printing Office.

Weinberg, R., Hughes, H., Critelli, J., England, R. & Jackson, A. (1984). Effects of preexisting and manipulated self-efficacy on weight loss in a self-control program. Journal of Research in Personality, 18, 352-358.

Weiss, S. T., Tager, I. B., Schenker, M. & Speizer, F. E. (1983). The health effects of involuntary smoking. American Review of Respiratory Diseases, 128, 933-942.

APPENDIX A

"HEALTH SURVEY"

Case #_____

HEALTH SURVEY

PLEASE ANSWER THE FOLLOWING QUESTIONS BEFORE COMPLETING THE SURVEY:

1. Age_____ 2. Sex_____M (1) _____F (1) 3. Number of years in practice_____
4. Approximate number of infants under 1 year of age seen per week _____
5. Are you a ____ Pediatrician ____ Family Practitioner ____ General Practitioner ____ PNP?

6. Type of practice setting (please check all that apply)
_____(1) Group practice _____(2) Solo practice _____ (3) HMO _____ (4) Hospital based clinic
_____(5) Health Department _____(6) Other (specify)

PLEASE RESPOND TO THE FOLLOWING ITEMS BY CIRCLING THE APPROPRIATE NUMBER ON THE SCALE:

	Strongly Disagree		Moderately Disagree		Moderately Agree		Strongly Agree
1. Newborns (birth to one month) of parents who smoke have a higher incidence of respiratory illnesses than newborns whose parents don't smoke.	1	2	3	4	5	6	7
2. Parents are unaware that cigarette smoking adversely affects their children's health.	1	2	3	4	5	6	7
3. Patients should be able to enter a smoke free environment when they walk into a waiting room.	1	2	3	4	5	6	7
4. Cigarette smoking is too strong of a habit for parents to break to improve their children's health.	1	2	3	4	5	6	7
5. Newborns of parents who stop smoking will have fewer respiratory illnesses than newborns whose parents continue to smoke.	1	2	3	4	5	6	7
6. Anyone can stop smoking once they decide to quit.	1	2	3	4	5	6	7
7. The professional literature recommends that people in my profession should address parental smoking.	1	2	3	4	5	6	7
8. As a pediatric health care provider I am qualified to help people stop smoking.	1	2	3	4	5	6	7
9. It's primarily my role to educate people about the hazards of smoking.	1	2	3	4	5	6	7
10. There are health professionals other than myself more qualified to help people stop smoking.	1	2	3	4	5	6	7

	Strongly Disagree		Moderately Disagree		Moderately Agree		Strongly Agree
11. There is no effective way to help people stop smoking.	1	2	3	4	5	6	7
12. I'm so busy managing acute and chronic illness that I have little time to spend helping people stop smoking.	1	2	3	4	5	6	7
13. I am familiar with available resources to help people stop smoking.	1	2	3	4	5	6	7
14. Even though people continue to smoke after I recommend they quit, I still encourage them to stop smoking.	1	2	3	4	5	6	7
15. I know several colleagues who successfully address parental smoking in their practice.	1	2	3	4	5	6	7
16. I know enough about smoking cessation to help people stop smoking.	1	2	3	4	5	6	7
17. I would use reprints of articles on the effects of passive smoking on children.	1	2	3	4	5	6	7
18. It's appropriate for me to prescribe nicotine chewing gum for parents of newborns who want to stop smoking.	1	2	3	4	5	6	7
19. I would like to learn more about smoking cessation.	1	2	3	4	5	6	7
20. I would attend a one-day workshop to learn how to use smoking cessation in my practice.	1	2	3	4	5	6	7
21. I would use video cassettes on smoking cessation in my practice.	1	2	3	4	5	6	7
22. I would consider sponsoring a smoking cessation group for parents in my office (held after hours and conducted by someone other than myself).	1	2	3	4	5	6	7
23. I would consider using a consultant to set up an organized program for smoking cessation in my office.	1	2	3	4	5	6	7
24. It's worth the time it takes to help people stop smoking.	1	2	3	4	5	6	7
25. The status of my profession would make me influential in getting people to stop smoking.	1	2	3	4	5	6	7
26. I tell parents to stop smoking to improve their children's health.	1	2	3	4	5	6	7

	Never		Occasionally		Frequently		Always
27. I've helped people stop smoking.	1	2	3	4	5	6	7
28. The people that I've told to quit smoking have continued to smoke.	1	2	3	4	5	6	7
29. The people that I've told to quit have quit.	1	2	3	4	5	6	7
30. I've helped parents of newborns stop smoking.	1	2	3	4	5	6	7
31. I ask parents of newborns if they smoke.	1	2	3	4	5	6	7
32. I have referred people to available resources to help them stop smoking.	1	2	3	4	5	6	7
33. People who work in my practice setting are allowed to smoke in the office.	1	2	3	4	5	6	7
34. Patients are allowed to smoke in my office.	1	2	3	4	5	6	7

35. Describe your smoking habits: _____ (1)Current smoker
_____ (2)Unsuccessfully tried to quit
_____ (3)Ex-smoker
_____ (4)Never smoked

36. What percentage of newborns in your practice have one or both parents who smoke? 0%, 1-25%, 26-50%, 51-75%, 76-100%

37. What percentage of smoking parents in your practice do you refer to smoking cessation programs? 0%, 1-25%, 26-50%, 51-75%, 76-100%

38. What percentage of smoking parents in your practice have quit in the past year? 0%, 1-25%, 26-50%, 51-75%, 76-100%

THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY.

You may return the raffle ticket separately if you wish. The winner will be notified personally, as well as announced in respective professional newsletters.

239D:jmm

APPENDIX B

COVER LETTERS

THE OREGON HEALTH SCIENCES UNIVERSITY

Department of Pediatrics
School of Medicine
Doernbecher Memorial
Hospital for Children

3181 S.W. Sam Jackson Park Road Portland, Oregon 97201 (503) 225-8194

Dear Practitioner:

Please read this letter before you decide whether or not to respond to the enclosed survey. I am a graduate nursing student at Oregon Health Sciences University and in collaboration with the Department of Pediatrics at OHSU, I am conducting a study of attitudes and behaviors of selected health professionals (pediatricians, pediatric nurse practitioners, family practitioners, and general practitioners) towards smoking prevention and cessation. The data will not only be used for my thesis, but will also be used to help develop new curricula and further research studies.

The survey should take approximately fifteen minutes to complete and we have enclosed a stamped return envelope. Subjects will remain totally anonymous.

BONUS! If you return this survey not only will you feel good about contributing to science, but also your name will go into a drawing for a prize -- $50 towards dinner at your favorite restaurant!

If you decide to participate, please enclose your raffle ticket in the smaller blank envelope and return it with the survey by September 4. Thank you in advance for your help.

Respectfully yours,

[redacted]

Julie Jackson, R.N.

THE OREGON
HEALTH SCIENCES UNIVERSITY
3181 S.W. Sam Jackson Park Road, PED, Portland, Oregon 97201, (503) 225-8194

Department of Pediatrics, School of Medicine
Doernbecher Memorial Hospital for Children

Dear Practitioner:

Those of you who have participated in research will undoubtedly agree that rarely does it proceed without a few hindrances along the way. This study is certainly no exception!

A few weeks ago you responded to a questionnaire entitled "Health Survey". First of all, I would like to thank you for completing the survey and returning it so promptly. Unfortunately, as some of you may have noticed, the entire second page was missing due to a printing error.

You are now receiving the second page, which I am asking you to complete and return as soon as possible. You need not fill out any of the first page.

I apologize for the inconvenience and extra demand on your time. Thank you very much for your patience and help once again.

Sincerely,

[redacted]

Julie Jackson, R.N.
Graduate Nursing Student

THE OREGON
HEALTH SCIENCES UNIVERSITY
3181 S.W. Sam Jackson Park Road, PED, Portland, Oregon 97201, (503) 225-8194

Department of Pediatrics, School of Medicine
Doernbecher Memorial Hospital for Children

Dear Practitioner:

Approximately one month ago you received a survey in the mail regarding your attitudes and behaviors towards smoking prevention and cessation. The data from the survey will be used for my master's thesis and to help develop new curricula and research studies. I am beginning to compile the data now and would greatly appreciate your participation in this study.

The survey should take approximately fifteen minutes to complete and I have enclosed a stamped return envelope. Subjects will remain totally anonymous.

And remember, if you return this survey your name will be entered in a drawing for a prize -- $50 towards dinner at your favorite restaurant! If you decide to participate, please enclose your raffle ticket in the small blank envelope and return it with the survey by October 2.

Thank you again for your help. If you have already returned the survey please disregard this letter.

Sincerely,

[redacted]

Julie Jackson, R.N.

Graduate Nursing Student

ABSTRACT

There is sufficient documentation of the harmful effects of infant passive exposure to tobacco smoke to warrent more aggressive intervention in this area by pediatric care providers. A 38-item questionnaire was mailed to Pediatric Nurse Practitioners (PNPs) in Oregon to determine their knowledge, attitudes, and current interventions related to infant passive smoking. A 78% response rate yielded a sample of 45 PNPs who saw at least one new infant per week in their practice. A perceived self-efficacy level related to their efforts to intervene in parental smoking was measured for each subject. Results of descriptive statistics revealed that, as a group, PNPs were knowledgeable about the effects of passive smoke exposure on infants and that they frequently encouraged parents to stop smoking. However, they felt that other health professionals were more qualified than themselves to actually help parents stop smoking. In support of the hypothesis of the study, significant correlations were found between the PNPs' perceived self-efficacy levels regarding passive smoking and how frequently they told parents to stop smoking ($p<.01$), and how often they referred parents to smoking cessation programs ($p<.005$). Results of this study suggest that PNPs lack confidence and

skills necessary to intervene further in parental smoking, and that future educational curriculums for PNPs should include additional training in smoking cessation strategies.