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A Survey of Attitudes of Nurse Anesthetists and Anesthesiologists

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A SURVEY OF ATTITUDES OF NURSE ANESTHETISTS AND ANESTHESIOLOGISTS

by
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PREFACE

Having been a Certified Registered Nurse Anesthetist for over 10 years, functioning both as a practitioner and as an educator, I have become very aware of many problems facing my profession. These problems are frequently discussed by physicians and nurses in the work situation as well as in the political arena. Until this time there has been no formal study of these problems.

In my study of interpersonal conflict related to the field of health care administration, I became aware that one method of solving conflict entailed utilization of opinions of the conflicting groups in order to reach a mutual expectation and therefore reduce the level of conflict. My hope is that by utilization of the material provided by this study, physicians and nurses can reach a mutual decision regarding expectation of each other. Each hospital might develop a job description similar to the one developed for UCLA, (presented in Appendix V), which is based on the results of this study. If both physicians and nurse anesthetists agree upon this job description, both groups will have similar expectations and conflict may be reduced.

This study also brings to light the feelings of both groups regarding the profession of nurse anesthesia and how

it is perceived. Verbalization of these feelings may open the area to constructive discussion or further research.

The area of education for the nurse anesthetist is very pertinent today and changes are being made in a few institutions to create more academic and less technical training programs. The results of this study indicate a need for more academic programs. This study may stimulate even more institutions to develop their programs on the academic level.

Areas become apparent from this survey in which more definitive work should be helpful. Perhaps this study will stimulate others to do research in the area.

It is my hope that by disseminating the knowledge gained here to members of the anesthesia care team, through formal presentation at meetings and publication, I might be able to begin an attempt at conflict reduction between physicians and nurses in the field, and stimulate future study of the identified problem areas.

This thesis was written to fulfill what I considered a need in the field as well as to fulfill an academic requirement.

I wish to express gratitude to the many people who have provided assistance with this study.

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CONTENTS

INTRODUCTION

In the past five years there have been many discussions of change, as well as actual implemented changes relating to the utilization of non-physician personnel in health care. The goals of these changes are provision of quality health care and development of the most economical methods of health care provision. There have been recent opinions expressed that more physicians are being trained than necessary to meet the demands of the future. Is it necessary to have the broad background of medical school to perform many of the traditional tasks of the physician, or can non-physicians with shorter, but in-depth training in specialty areas also provide quality care? Many authorities feel that non-physician personnel in anesthesia and other specialties may be a partial solution to increasing costs.

Geographical distribution of physicians is also a current area of concern. In 1974, the American College of Surgeons conducted a study of surgical care in the United States. They found that although there were more surgeons than necessary for the total population of the country, there was a maldistribution of surgeons according to population. Included in this study was a comparison of other medical specialties. In anesthesia, although there was not

at the time an overabundance of qualified practitioners, there was a demographic maldistribution for population.[1] In December, 1976, Frederick K. Orkin M.D., an anesthesiologist, published a study with similar results.[2]

Nurse anesthetists provide over fifty per cent of the anesthesia care in the United States. Frequently, nurse anesthetists work in areas where there are no physician anesthesiologists, as well as working with anesthesiologists in the larger hospitals.

In September, 1976, the American Society of Anesthesiologists printed in their newsletter that the ideal supervision of nurse anesthestists was in the ratio of two nurse anesthetists to one anesthesiologist.[3] Due to the present geographic distribution of anesthesia personnel, this ratio, is, at this time, impossible. Many nurse anesthetists work alone since there is no physician anesthesiologist in their geographical area. They must, therefore, be trained to work without supervision.

Historically, nurses have been administering anesthesia for many years. The National Association of Nurse

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[1]Francis Moore, Lecture on Medical Manpower. Rovenstein Memorial Lecture. American Society of Anesthesiologists Annual Meeting, October, 1976.

[2]Frederick K. Orkin, M.D., "Analysis of the Geographical Distribution of Anesthesia Manpower in the United States," Anesthesiology, Vol. 45, No. 6, December, 1976.

[3]Newsletter of the American Society of Anesthesiologists, July, 1976, p. 3.

Anesthetists was formed in 1931. The American Society of Anesthesiologists was formed four years later, in 1935. Today, the American Association of Nurse Anesthetists has approximately 17,000 members while the American Society of Anesthesiologists has approximately 14,000 members. "In the 1950's," D. V. Thomas states, "physicians administered approximately one-half of the anesthetics given in the United States, and the rest were given by nurses. But the specialty was growing so fast that everyone felt sure that in a decade or so almost all anesthetics would be administered by anesthesiologists. Yet, by 1976, despite an increase in the number of anesthesiologists of 300%, compared with a United States population growth of 30%, the proportion of anesthetics administered by anesthesiologists is only about one-half. The nurse anesthetist still gives the remainder."[4] It appears that utilization of nurse anesthetists will continue, and may expand, due to the increasing emphasis on utilization of non-physician personnel in the future.

For many years, anesthesiologists and nurse anesthetists have worked side by side in the community with little or no conflict. The vast majority of physicians and nurses still deal effectively with one another. Problems have recently arisen, however, from the political relationships of the ASA and the AANA, whjo were the individuals actually

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[4]D. V. Thomas, "Letter From America: Reflections of an Expatriate," Anaesthesia, 1976, Vol. 31, pp. 783-88.

working with the physician anesthesiologists. Miss Baum then wrote a letter to Senator Talmadge, who is interested in the most economical provision of quality health care, stating that nurses were providing anesthesia care in a manner equal to physicians, but more economically. The writing of this letter was, at that time also unknown to the general membership of the AANA. As would be expected, this letter was widely distributed among ASA members, and upon its publication upset their membership, particularly since it implied that Certified Registered Nurse Anesthetists were providing equal care in a more economical manner. In the background of the possible initiation of National Health Insurance with its resultant effect on physician salaries, this letter only provoked physician discontent and aimed hostility at then AANA. The membership of the AANA asked that Bernice Baum resign as Executive Director because of this letter, but the damage had already been done. Since then, relationships between the two groups, who should ideally be working together as a team for quality anesthesia care, have deteriorated. Many hostile letters have been sent between the officers of both organizations. These letters have been subsequently published and available to the general membership of both groups.[5]

The ASA challenged the authority of the AANA in 1976

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[5]Nancy A. Fevold, "Cooperation, Communication, and Coexistence: Is it Attainable?" AANA News Bulletin, November, 1976, Vol. 30, No. 6, pp. 1-3.

to accredit their own programs in nurse anesthesia. This authority is given by the Department of Health, Education and Welfare of the United States. The Department of Health, Education and Welfare has to this date, backed the American Association of Nurse Anesthetists, but it seems only a matter of time until the challenge comes again. There is a strong belief among physician anesthesiologists that training and certification of nurse anesthetists should be under physician control. This feeling was only strengthened by recent events.

Physician's Assistant programs in anesthesia have been instituted at two university centers within the last five years. These programs were formally recognized by the American Society of Anesthesiologists in 1976. It appears that there will continue to be a need for some type of non-physician personnel in anesthesia, and that team anesthesia care is the most ideal method of providing quality care. Nurse anesthetists have been concerned about the advent of Physician's Assistant programs because the physician's assistants do similar work to the nurse anesthetists. It is a possibility that if the political situation between the ASA and the AANA becomes more strained, there will be more support of the physician's assistant programs. It seems that now, however, the majority of anesthesiologists feel that the need for non-physician personnel should be provided by nurses rather than physician's assistants. There has to date, not been a published study defining this feeling.

There have been many statements as to what various individuals, both physicians and nurses, feel is included in the job of the nurse anesthetist. Many physicians and nurse anesthetists seem to have different opinions as to the role of the nurse anesthetist, but once again there have been no definitive studies published in this area.

My concern is one of defining the role of the nurse anesthetist more adequately, so that ultimately we are aware if we are providing adequate training for the graduates of our schools of nurse anesthesia. Are we under or over-training our students for their actual job needs as graduates? I believe that if we arrive at a description of the usual role of the nurse anesthetist based on both physician and nurse anesthetist opinion, we might alleviate many of the problems between physicians and nurses. If there is a mutual understanding of what care nurses are able to provide, and what nurses are trained and qualified to do, perhaps nurses would be better understood in anesthesia and we could work together with physicians to provide the best nurse anesthetists possible for their role on the anesthesia care team. Hopefully, this would also increase job satisfaction for the nurse anesthetist.

It is my wish to provide by this study, an initial description of what physicians and nurse anesthetists feel the role of the nurse anesthetist on the anesthesia care team is today contrasted with what it could possibly be in

the future. It is my assumption that given a description based on this and possibly other studies, we might obtain a definition of the role of the nurse anesthetist so that we might reach a mutual understanding with physician anesthesiologists and possibly eliminate some of the conflict between the two groups.

CHAPTER I

DEFINITION OF PROBLEM

1. Conflict and Unhappiness

There is a fair amount of conflict and unhappiness today between physician anesthesiologists and nurse anesthetists. The following areas are those which I have identified as contributing to the conflict:

1. Differences between the actual and perceived job.
2. The changing nature of the field.
3. Legal changes affecting the field.
4. Identification of physician anesthesiologist vs. nurse anesthetist tasks.
5. Political influences.
6. Departmental economy and efficiency.

These areas are a part of the more inclusive areas I have identified as the six areas of this study.

The first of the areas which can lead to conflict which I will discuss are the differences in the perceived job and the actual job. These differences in perception exist on the part of anesthesiologists and on the part of nurse anesthetists. We have inter-physician, inter-nurse, and physician-nurse differences of opinion on what is included in the job description of the nurse anesthetist.

Additional differences relating to the perceived and actual job description of the nurse anesthetist occur in the mind of the hospital administrator. Usually the hospital administrator is not trained in anesthesia, and may have difficulty interpreting the different opinions regarding the capabilities of the nurse anesthetist which they receive from nurse anesthetists as a group and from anesthesiologists as a group.

It is not always possible to categorize physicians or nurses in terms of their views. For example, an individual may feel that in the area of regional anesthesia a nurse should do less, but in the area of general anesthesia a nurse should do more than is currently the practice. Thus, it is not possible to classify people as believing either in the expanded role or in the contracted role of the nurse anesthetist, since opinions may differ on various aspects of the role.

Other variations in the job may exist in the area of pre-operative and post-operative anesthesia care. An individual may feel strongly that a nurse should have a minimal role in the pre-operative evaluation and planning, but a maximal role in post-operative care and planning.

It should thus be obvious that the number of combinations and permutations of opinion regarding the role of the nurse anesthetist may be infinite, and that the position of individuals may vary enormously depending upon specific aspects of the job with which one is dealing.

Differences in attitudes which may occur in a nurse anesthesia training program as compared with attitudes encountered in the graduate work situation may cause unhappiness and conflict. A student is often sheltered from attitudes and work situations which would adversely affect him. If he or she then encounters adversity as a graduate it may be difficult to understand and handle. There also may be differences in one job as compared with another, particularly in the areas of tasks performed and level of responsibility assumed. The graduate may have difficulty adapting to a new situation if he is not well prepared for changes in his role.

A major source of conflict arises from the fact that physicians or hospital administrators, who determine the job qualifications and the job description for the nurse anesthetist, may not be aware of the changing nature of the field. There have been marked differences in the professional training of nurse anesthetists in the last five years to include more in-depth training in technical skills and didactic background. The job of the nurse anesthetist is changing from a technical to a professional role. Advances in the field of anesthesia have been marked in the last few years. A nurse anesthetist completing training today may have totally different training and expectations than a graduate of five, ten, or twenty years ago. Previous nurse anesthesia training programs were frequently a form of apprenticeship. In the newer programs, with the increasing

sophistication of medical equipment as well as the developing ability to operate on patients who would formerly have been considered inoperable, it has been necessary to greatly expand the knowledge of the nurse anesthetist. Students today must learn a great deal about physics in order to understand some of the more complicated equipment being used. Students are being taught much more about the pathophysiology of diseases which affect the patient's response to anesthetic agents. Increasing polypharmacy has made it necessary for the new graduates to understand drug interaction to an extent which was not necessary five or ten years ago. Therefore, given the above, a physician or hospital administrator who is not familiar with the changing training programs may not appreciate the level of understanding of the newer graduates, and may not appreciate how the new graduates perceive themselves.

Another recent source of conflict has arisen from legal changes affecting nursing practice and physician liability. The law now permits nurses to carry out functions which were formerly considered to be in the purvue of the physician. Older physicians and more conservative physicians are resisting the changing nature of medical practice and nursing practice, and have difficulty in dealing with htese new laws. One simple example relates to intensive care units. Five or ten years ago it would have been unthinkable for a nurse to diagnose an arrythmia and initiate anti-arrythmic therapy before the physician

arrived. Nowadays, this is commonplace. Similarly, it would have been unthinkable for a nurse to defibrillate a patient, yet in our best hospitals today this is a common practice. Because of the current emphasis on malpractice litigation physicians may not be as willing as in the past to accept responsibility for the nurse anesthetist. Since in most states, nurses still practice anesthesia under the responsibility of the physician, be he surgeon or anesthesiologist, the malpractice situation has lead to changes in the availability of jobs for the nurse anesthetist, the type of jobs available, and the salaries earned.

The next area of conflict to be discussed is the feeling among physicians that there are certain tasks that are physician tasks and other tasks which are nursing tasks. However, these definitions are being changed daily, and it is difficult for both physicians and nurses to keep up with the changes. One of the sources of difficulty is that just as not all physicians are in favor of the expanded role of nurses, not all nurses are necessarily in favor of an expanded role for themselves. It is not uncommon to be in a situation in which a physician has written a job description which allows a nurse to carry out a certain procedure, but another nurse may not agree with this expanded role. Once again we have inter-physician differences, inter-nurse differences, and physician-nurse differences with which to deal.

If physicians are unaware of the new patterns in nurse anesthesia or do not agree with these patterns, skills which nurse anesthetists have developed may be inadequately utilized. This can lead to job discontent for the nurse anesthetist if he or she feels that he is being either over- or under-utilized. Once again this stems from differences in the perceived and actual job.

The political differences between the American Society of Anesthesiologists and the American Association of Nurse Anesthetists is another source of conflict. The ASA and the AANA have long been in conflict. While some attempts at improving relations were made in the late 1960's and early 1970's by the formation of liaison committees, at present there seems to be increasing conflict. This is due in part to the intervention of government into medicine and in part to the letter of Bernice Baum to Senator Talmadge regarding the Feldstein study.[6]

There are economic considerations which are a major source of conflict. In the past, physicians exploited nurse anesthetists, hospital administrators exploited nurse anesthetists, and nurse anesthetists have been in direct fee for service competition with anesthesiologists. Surgeons and hospital administrators have frequently become involved both

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[6]Paul J. Feldstein, "The Market for Anesthesia Services: Some Estimates and Recommendations," Journal of the American Association of Nurse Anesthetists, December, 1975, Vol. 43, No. 6. (Reprint)

for economic and political reasons, in the reimbursement of nurse anesthesia services. Employing nurse anesthetists has been a great source of income for hospitals. It has also been easy for hospital administrators and surgeons to control nurse anesthetists politically as well as economically.

Finally, we have the psychological factors which have been touched upon above. These may be summed up by stating that some physicians as well as some nurses are threatened by the increasing knowledge and ability of the newer graduates of nurse anesthesia schools, as well as by changes in the laws governing nursing practice which allow nurses to carry out functions previously allocated only to the physician.

Attempts to turn back the clock seem fruitless and pointless. I feel that we must recognize the need for the nurse anesthetist as an anesthesia care provider and define this role so that individuals in this profession may contribute in the best manner to the highest quality, most efficient, and most economical provision of anesthesia care possible. Hopefully, if this is done there may be a reduction in the level of conflict between physicians and nurses, and there will be greater job satisfaction for the nurse anesthetist.

I believe that if a typical job assessment of the current role of the Certified Registered Nurse Anesthetist is formulated, and opinions of physicians and nurses

gathered as to how they believe this role might change in the future, we who a re involved in education of both nurse anesthetists and anesthesiologists could better prepare both groups for working together to provide the highest quality and most economical form of anesthesia care. I also believe if the role of the nurse anesthetist in each department becomes more consistent, and if it is understood by both physicians and nurses, adaptation to job changes might be easier for the nurse anesthetist, and conflict between physicians and nurses might be further reduced.

2. Resolution of Conflict

I feel that in order to resolve the problems discussed above, it would be helpful for physicians and nurses to work out a job description for nurse anesthesia together. There must be both physician and nurse input into decision making. Rehnman, Stromberg, and Westerlund feel that utilization of role descriptions and the supervision of their application enables all concerned parties to have similar expectations. This then assists in the resolution of conflict.[7]

According to the current California Nurse Practice Act determination of the expanded roles of nurses should be done by physicians, nurses and administrators, jointly. In

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[7]E. Rehnman, L. Stromberg, and G. Westerlund, Conflict and Co-Operation in Business Organizations (New York: Wiley-Interscience, 1970).

addition, the input of lawyers may also be necessary. If the new job descriptions can be worked out to the mutual satisfaction of all concerned, greater job satisfaction for the nurse anesthetists, decreased conflict, and improved care of patients undergoing operations should, I believe, be the result.

Another benefit of resolving the conflict would be a decrease in the cost of health care in this country due to increasing utilization of non-physician personnel. The present rate of health costs threatens to bankrupt the system. One possible hope for the system is the redefinition of physician roles and nurse roles. The physician anesthesiologist and nurse anesthetist exemplifies one small area of the need for redefinition of physician and nurse roles in the entire medical profession.

Once physicians, nurses, and others adequately work out new job descriptions, this will provide guidelines for training programs and will avoid undertraining of students which will lead to inadequate care of patients, and will avoid overtraining of students which will result in excessive training costs. Furthermore, I believe a satisfactory determination of a job description will increase the understanding of the goals and aspirations of nurse anesthetists and will lead to greater happiness and job satisfaction. Working out the new role of the nurse anesthetist may not only improve training, but may provide important guidelines

for hospitals in the utilization of nurse anesthetists. As a result, when a nurse anesthetist changes from one institution to another, she will not have to face cultural shock, and be expected to carry out procedures for which she was not trained, nor will she experience a downgrading of the profession by not being allowed to carry out procedures which were permissible at another institution. Thus the net result of the resolution of the conflict should be increased understanding and happiness of the nurse anesthetist as well as better utilization of the nurse anesthetist resulting in increased efficiency, decreased cost of anesthesia care, and improvement in patient care.

Satisfactory resolution of physician-nurse problems in anesthesia may provide a model which will be of value in physician-nurse conflicts in other areas of medical-nursing care. I believe the resolution of these conflicts will decrease the conflict level to an advantageous one where the physician and nurse maintain just enough conflict to provide mutual stimulation for greater efficiency, thus, increasing the productivity and quality of health care.[8]

It is the goal of this study to explore the differing opinions of physicians and nurses in terms of anesthetic care of patients by nurses, and to attempt to arrive at a

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[8]Harold J. Leavitt and Lewis Pondy, Readings in Managerial Psychology (Chicago: University of Chicago Press, 1964), pp. 538-541.

basic job analysis and description based on the opinions of both physicians and nurses at various institutions. I have derived six areas of concern which I feel are important to the study of this problem. The areas include anesthesia dpeartment policy regarding whether or not nurse anesthetists should be utilized, economics and efficiency concerning whether the inclusion of nurse anesthetists in the departmental health care team increases the economic benefits and the efficiency of anesthesia care delivery, nurse anesthetist job satisfaction, practice of the nurse anesthetist including which skills and decisions should be included in the practice of the nurse anesthetist, the impact of the utilization of nurses in anesthesia care particularly as relative to the feelings of the anesthesiologist, and the education of nurse anesthetists; what should be included, what the background should be prior to training, and at what academic level should nurse anesthesia training be placed.

The areas to be explored, I believe should include current practices contrasted with the possible future practice of nurse anesthetists, recognizing that the current practice may not be what is felt to be the ideal. Hopefully, a survey of opinions on factors applicable to the areas discussed will result in a summary of a random sample of opinions of physicians and nurses regarding the practice of nurse anesthesia. The definition of this opinion will be a beginning attempt to help in the alleviation of some of the conflict in the field.

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CHAPTER II

REVIEW OF THE LITERATURE

This review of the literature, regarding utilization of Certified Registered Nurse Anesthetists and other paramedical personnel as members of the anesthesia care team, is divided into five areas. The first area of discussion includes literature relating to departmental policy. This area will include legal issues relating to the employment of nurse anesthetists as members of the care team and the demographic and manpower indications influencing the employment of nurse anesthetists. The second area will relate to the education of nurse anesthetists and how nurse anesthesia training should fit into the current academic structure. The third area of discussion will relate to the practice of nurse anesthetists in anesthesia departments. This area will include the nature of work of the nurse anesthetist. The fourth area of concern relates to the impact of hiring nurse anesthetists and will include a discussion of literature on the conflict between anesthesiologists and nurse anesthetists which is currently of importance. The fifth area includes a discussion of the influences on economics and efficiency of anesthesia departments when nurse anes-

thetists are members of the anesthesia care team. The sixth and final area will relate to job satisfaction of nurse anesthetists.

1. Policy Regarding the Employment of Nurse Anesthetists in Anesthesia Departments

The nurse anesthetist is presently in a somewhat tenuous position in employment due to the fact that he or she is practicing under only a nursing license. This makes the individual responsible for abiding by the Nurse Practice Act in each individual state. Each state has variations in the Nurse Practice Act, therefore, job descriptions may vary. Recently, there has been a great deal of emphasis placed on separate licensing of nurse anesthetists or at least recognition of nurse anesthetists in state law. In 1975, in California, the California Association of Nurse Anesthetists attempted to have this specialty of nursing named in California law. Although this bill was passed by both the House of Representatives and the Senate of California, it was subsequently vetoed by the Governor. Due to this fact, we are currently still practicing under the Nurse Practice Act. There is now another bill before California Congress regarding the mention of the nurse anesthetist in law. In 1975, the Nurse Practice Act was broadened to include almost every nurse practice specialty. Nurse anesthetists are, therefore, permitted to practice their specialty under the guidelines of the specific hospital in

which they work. This leads to variations in the practice of nurse anesthetists. To this date, three states have nurse anesthetists named as a specific entity and many of the remaining states are attempting legislation so that nurse anesthetists are named in law apart from registered nurses. The Joint Commission on the Accreditation of Hospitals states that " . . . the anesthesia services shall be properly organized, directed and integrated with other related services or departments of the hospital." The interpretation of this in the Joing Commission Accreditation of Hospitals guidelines states " . . . that the anesthesia service shall be directed by a physician member of the medical staff who shall have the overall administrative responsibility for the service provided." In addition, it states that " . . . this director must cooperate in the development of policies relative to the functioning of anesthetists in various departments or services of the hospital."[1] The meaning of this standard to me is that nurse anesthetists, unless working in a freelance situation, are under the direction of an anesthesiologist as department chairman, and practice under the standards of the department set by anesthesiologists, thus, they are dependent on the

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[1]Walter W. Carroll, "The Joint Commission Accreditation Standards for Anesthesia Services and Intensive Care Unites," Public Health Aspects of Critical Care Medicine in Anesthesiology, Clinical Anesthesia (Philadelphia: F. A. Davis Co., 1974), pp. 49-63.

anesthesiologist for employment and employment practices. This is very significant since increasing levels of conflict have developed between the two groups within the last few years. This conflict will be further discussed later in this paper.

In the past, the nurse anesthetist has practiced under the jurisdiction of any physician, be it anesthesiologist or surgeon or dentist, who is in attendance at the time of anesthesia administration. There are still some remaining situations similar to this today. In California and in the United States as a whole, approximately 6 percent of all nurse anesthetists practice in a freelance manner. Due to the rising costs of malpractice insurance and increasing inability to obtain malpractice insurance, the percentage of nurse anesthetists practicing under the direction of someone other than an anesthesiologist is decreasing. The monetary gain from this type of practice is greater for the nurse anesthetist, but the increasing disadvantages are the cause of more limited employment in this area. If nurse anesthetists in the future are specifically named in law, perhaps this area of practice would again increase.

The Joint Commission on the Accreditation of Hospitals applies equal quality of care standards to the nurse anesthetist and the anesthesiologist. The quality of care does not take into account the variation in training.

Mr. William Kucera, legal counsel of the American Association of Nurse Anesthetists, stated in a recent article that the Joint Commission on Accreditation of Hospitals' guidelines which are " . . . to be developed by a staff anesthesiologist or practicing consultant anesthesiologist are to relate to the safe use of all general anesthetic agents used in the hospital and are to be applied to all personnel, physician, and non-physician, who administer anesthesia."[2] This reiterates the fact that nurse anesthetists are now practicing under the guidelines developed by anesthesiologists and are responsible on an equal basis with anesthesiologists. There are three laws which are likely to pose problems in the not-to-distant future for the nurst anesthetist. Jeffrey A. Brown, M.D., J.D., M.P.H. discusses these laws in his article: "Toward Predicting and Managing Conflict on the Anesthesia Care Team."[3] The first of the three laws is the National Health Planning and Resources Development Act of 1974. This is the act which creates the health systems agencies as unprecedented agencies having planning pwoers. Dr. Brown states " . . . they must

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[2]William R. Kucera, Legal Brief, "How the New JCAH Standards on Anesthesia Services Affect Nurse Anesthetists," American Association of Nurse Anesthetists Journal, December, 1976, pp. 640-43.

[3]Jeffrey A. Brown, "Toward Predicting and Managing Conflict on the Anesthesia Care Team," American Association of Nurse Anesthetists Journal, February, 1977, pp. 37-45.

develop plans for nurse clinician training, improve health service quality, control health costs, and review all institutional services every five years to determine whether these services still are needed. Clearly the right to plan anesthesia services will carry with it the right to affect anesthesia training, yet the law does not guarantee you--or any other health specialty group--Health Systems Agency reporesentation."[4] This could be a problem to nurse anesthetists in the control of their own profession and job description. This further emphasizes by law the fact that the profession of nurse anesthesia may be totally under physician control in the not-too-distant future and possibly may not include any representation of nurse anesthesia as to whay may be included in the practice of this nursing specialty.

The second law I will discuss is the 1972 Professional Standards Review Organization (PSRO) Law.[5,6] This law relating to peer review creates bodies to review all health care practitioner services to be paid for by Medicare and Medicaid. These two agencies are presently the primary influence on how reimbursement for health care services may

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[4] Ibid.

[5] Public Law Number 93-641, 93rd Congress, Second Session, 1974, 88 Stat. 2225 1974.

[6] Public Law Number 92-603, 92nd Congress, Second Session, 1972, 86 Stat. 1429 1972.

be handled by both public and private agences. Peer review is expected to concern itself with, in addition to services by physicians, services ordered by physicians but rendered by other health care practitioners. Yet, this law does not require that nurse anesthetists or any other nonphysician health care practitioner sit on the peer Review Committee to review the care that their specialty provides. Again, this re-emphasizes the fact that the specialty of nurse anesthesia is becoming more and more subject to the control of the physician anesthesiologist. The third piece of legislation I will disucss is the 1974 Non-Profit Bargaining Law.[7] The result of this law is to present the proliferation of bargaining units in the health care industry. In other words, the object is to include as many different professions or specialty areas of the same profession in a single bargaining unit as possible. The difficulty with this for the nurse anesthetist lies in the fact that they will probably end up joining large Registered Nurse dominated units. Since nurse anesthetists are a comparatively small group included in the total registered nurse population, the needs and financial interests of the nurse anesthetist may be overlooked in favor of the larger group of Registered Nurses. In addition, there has been a long history of Registered Nurses not considering nurse anesthetists as part

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[7]Public Law Number 93-360, 93rd Congress, Second Session, 1974, 88 Stat. 395 1974.

of the specialty of nursing. This originated when the American Association of Nurse Anesthetists was formed in 1931. The officers asked to be a part of the American Nurses Association but this request was refused, so nurse anesthetists joined with the American Hospital Association. Later in 1976, when the membership of the AANA was large enough, they broke away from the American Hospital Association and struck out on their own. Although the nurse anesthetist loses autonomy in the hospital group by being included in the Registered Nurse bargaining unit, there is very little choice to those employed in the profession of nurse anesthesia. Although it would be advantageous for the members of the AANA to participate in and support the creation of collective bargaining units, the AANA "is dedicated to advancing the art and science of anesthesiology and establishing educational standards to ensure that high quality anesthesia care is rendered by its members. To fulfill these objectives the AANA acts as an accrediting agency and has been recognized by the Office of Education of the United States Department of Health, Education and Welfare. As a recognized accrediting agency, the AANA is required to comply continually with the criteria and regulations established for accrediting agencies by the United States Office of Education. These regulations provide that the accrediting agencies must be autonomous and that it must have sufficient independence in both organizational struc-

ture, goals and objectives. This is to permit it to effectively perform the accreditation and review function and to avoid any activity which could create a conflict of interest. Furthermore, the AANA is a nationally recognized certifying organization . . . and the AANA administers a qualifying examination. Active involvement by the AANA labor movement would cause criticism that it is engaging in a conflict of interests."[8] Therefore, due to the fact that the nurse anesthetists only have one organization, and it is considered by members of the AANA to be vitally important to maintain function as the accrediting and certifying body, that nurse anesthetists do not have a bargaining unit. They must be included in the Registered Nurse bargaining unit and their interests thus are not as paramount as if the AANA was a separate bargaining unit. Malpractice decisions have recently affected the position of the nurse anesthetist legally with the anesthesiologist. In 1975, a Texas case demonstrated that a surgeon was found negligent when operating room nurses made a mistake in counting sponges.[9] This decision led to the fact that many doctors who are worried about suit deny non-M.D.s the right to function unsupervised in expanded roles. Conversely, the American Nurses Associa-

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[8]"Editorial," American Association of Nurse Anesthetists Journal, October, 1974.

[9]Wurley Hospital, Inc. vs. Caldwell, 529 SW 2nd 639, 1975.

tion General Council recently warned that nurses are legally responsible for their actions and the excuse that they were just following doctor's orders will not hold up if something happens to the patient.[10] CRNA's tend to be hurt by the more limited job supply from the fact that physicians are becoming more hesitant, regardless of ability, to be responsible for non-physician personnel. In spite of this, CRNA's are being sued separately as independent practitioners, and are responsible, even if a physician orders them to carry out an act which they believe is inappropriate. As I have indicated from this review, the legal implications of hiring nurse anesthetists in a department of anesthesia are becoming increasingly complicated. At the present time in practice, if there are anesthesiologists in the department, the nurse anesthetist is responsible to the anesthesiologist, and the anesthesiologist as well as the nurse anesthetist assume legal responsibilities for patient care. If there are no anesthesiologists in the hospital, the nurse remains responsible to the surgeon or dentist with whom she works and both maintain legal malpractice responsibility for patient care. It then, for the 94 percent of nurse anesthetists not in private practice, is up to the decision of the physician as Department Chairman, whether he feels it is

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[10] M.S. Slade, "The Other Women in White," The New Physician, November, 1975, Vol. 24, pp. 34-6.

worthwhile to hire nurse anesthetists and take the chance of being responsible for their independent action in the case of malpractice litigation, or whether he feels it is more important to have an all-physician department, regardless of the increased cost to the department because of the greater salaries of physicians compared to nurse anesthetists. The feelings and reactions of physicians regarding the recent legal situation is, and will be in the future, a large influence on the employment and job description of nurse anesthetists. This is why in the survey related to this study a great emphasis is placed on the feelings and position of physicians in various anesthesia departments regarding the scope of practice of the nurse anesthetist.

The second aspect of policy as to whether anesthesia departments should employ nurse anesthetists as members of the health care team relates to the manpower problem is anesthesia. Richard Ament, M.D. in his chapter "Allied Health Personnel in Anesthesia" states " . . . more effective utilization of existing manpower and development of new health occupations are needed to support physicians in the delivery of care."[11] Dr. Ament recommended a breakdown of tasks from the least complicated to the most complex in anesthesia, and suggested that these tasks should then be

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[11]Richard Ament, "Allied Health Personnel in Anesthesia," Public Health Aspects of Critical Care Medicine and Anesthesiology. Clinical Anesthesia (Philadelphia: F. A. Davis Co., 1974).

allocated accordingly to employees ranging from anesthesia assistants with very little training to anesthesiologists. In 1974, the American Society of Anesthesiologists' Committee on Manpower[12] did a study which included the attitudes and opinions of ASA members on various aspects of anesthesia care. In this survey, were questions relating to the use of the anesthesia care team. Twenty-eight percent of the anesthesiologists returning the questionnaire felt that they did not believe in the anesthesia care team and that all anesthesia care should be provided by anesthesiologists, however, the remaining 72 percent of the anesthesiologists responding believed in the anesthesia team concept which was described as an integrated group of anesthesiologists, nurse anesthetists and/or anesthesiologists's assistants. When asked what ratio for medical direction or supervision nurse anesthetists required, it was felt by 49 percent of the membership returning the survey that a ratio one anesthesiologist to two nurse anesthetists was most desirable. Thirty-three percent of the membership felt that a ratio of one anesthesiologist to three nurse anesthetists was most desirable, and 13.4 percent of the membversh ip felt that one anesthesiologist to four nurse anesthetists was most desirable. This left 4.4 percent of the membership preferring

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[12]Harold Carron, John Dillon, Duard Lawrence, and Richard Kitz, Report of the 1974 Membership Survey by the ASA Committee on Manpower.

other than the ratios indicated. The study also included a question regarding ratio of supervision of anesthesiologist to resident. In this section, 62.9 percent of the anesthesiologists surveyed preferred a 1:2 level of supervision; for physician assistants, 58 percent of the anesthesiologists favored a 1:2 ratio of supervision. This indicates to me that the majority of anesthesiologists surveyed felt that nurse anesthetists could be supervised in a greater ratio than either physician's assistants or residents.[13] This would appear to indicate that a department employing nurse anesthetists could run more economically than one employing either physician's assistants or residents since the ratio of supervision was believed to be greater for the nurse anesthetist than either of the other two groups, and fewer anesthesiologists would need to be employed to supervise operating rooms. In further support of the nurse anesthetist, 57 percent of the anesthesiologists responding did not favor physician's assistants and said that they would not employ them. However, 43 percent felt that they would favor the development of physician's assistant programs, but only 8 percent strongly agreed with the concept.[14] Over 80 percent of the anesthesiologists responding to the survey felt that nurse anesthetists should be under the professional direction of anesthesiologists regardless of the

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[13] Ibid.

[14] Ibid.

ratio, and that nurse anesthesia training programs should be under anesthesiologists' guidance.[15] This further exemplifies the fact that nurses, both now and in the future, will probably be more dependent upon their physician coworkers for employment and job description.

Although some anesthesiologists still feel that only physicians should give anesthesia, presently approximately 50 percent of the anesthesia is given by nurse anesthetists in the United States. There are approximately 17,000 members of the AANA compared with 14,000 members of the ASA.[16] This indicates that it will be in the far distant future, if at all, that there will be enough physicians to provide anesthesia services needed in the United States without the help of nurse anesthetists or other nonphysician anesthesia personnel. The manpower problem in anesthesia is not only influenced by the fact that there are too few anesthesiologists trained to meet the needs, but also that there is an unevenly distributed workload throughout the country, and that there is a geographical maldistribution of anesthesiologists. The anesthesiologists tend to be employed in the larger hospitals and in the larger cities. In a survey conducted in 1971 by the AANA, two-thirds of the anesthesia given in hospitals smaller than fifty beds was

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[15] Ibid.

[16] Ibid.

reported to be provided by nurse anesthetists, much of it, apparently without an anesthesiologist's supervision or consultation.[17] Additional confirmation was provided by Nicholson, Colton, and Peterson in their area study of surgical utilization. They studied 105 hospitals performing fewer than 500 operations per year in 1971. Anesthesiologists were in attendance in only 188 of 648 operations reported by 25 of the hospitals and no anesthesiologist was in attendance for any of the operations in 13 of the hospitals.[18] This indicates that although ideally nurse anesthetists are employed by and work under the direction and supervision of a physician, there are still many areas of our country where there are no physician anesthesiologists. It has been the past and current trend that nurse anesthetists fill the gap in these areas by providing much needed anesthesiology services where physicians choose not to live. Until this dilemma can be solved and physicians can be encouraged to go to the more remote geographical areas, it appears that nurse anesthetists should be trained to meet the needs in these areas without the supervision of a physician, although this may not be ideal practice. In

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[17]Dolores E. Biggins, Alice Bakutis, Vella G. Newlson, and Martha Petraitis, "Survey of Anesthesia Service 1971," American Association of Nurse Anesthetists Journal, October, 1971, pp. 371-79.

[18]Ibid.

additional support of this theory, the AANA reported in 1971 that 40 percent of its members practice in hospitals without the assistance of anesthesiologists.[19] The anesthesiologists report that no more than 12 percent of their time is devoted to the supervision of nurse anesthetists.[20] "It is apparent that the two principle groups of providers of anesthetic care, work largely independently of each other."[21] Although Dr. Ament, and in another study, Gravenstein, Steinhjouse and Valpitto,[22] have utilized task analysis to determine which task can be delegated to non-physician members of the anesthesia care team, it appears that in the immediate future this is impossible in all hospitals since there are not enough physicians in all geographical areas. Therefore, most of us involved in nurse anesthesia training programs continue to train nurse anesthetists to carry out all aspects of anesthesia care.[23]

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[19] Ibid.

[20] Carron, op. cit.

[21] John P. Bunker, "Manpower Problems in Anesthesiology," in Jovan, D. (ed.): International Anesthesiology Clinics, Manpower and Examinations in Anesthesia (Boston: Little, Brown & Co., 1976).

[22] J. F. Gravenstein, J. E. Steinhouse, and Valpitto, "Analysis of Manpower in Anesthesiology," Anesthesiology, Vol. 33, September, 1970, p. 33, No. 3.

[23] Ibid.

Dr. Bunker also states in his article on manpower problems in anesthesia " . . . as the rest of medicine is looking almost desperately for ways to recruit and train new 'assistant' personnel, anesthesiology is blessed with a fully trained group of assistants numbered in the thousands. These are, of course, the nurse anesthetists."[24] Anesthesia care, then, seems to favor nurse anesthetists and anesthesiologists working together as they do in the majority of cases. However, quantity of medical care in anesthesia seems to favor the independent working of the anesthesiologist and nurse anesthetist groups. When this was originally discussed by a few pioneer anesthesiologists in the 1930's who tried to get the courts to declare the practice of anesthesia by nurses illegal, "some of the leading surgeons in the country came forward to support nurse anesthesia and the anesthesiologist's legal case was lost."[25] In general, the surgeons have always supported nurse anesthetists. Gravenstein and his associates focus on training physician's assistants rather than nurse anesthetists. As previously stated, this is not supported by many anesthesiologists and most anesthesiologists feel that the nurse anesthetist is still the current answer to the problem. Therefore, the

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[24] Bunker, op. cit.

[25] D. V. Thomas, "Letters from America: Reflections of an Expatriate," Anaesthesia, 1976, Vol. 31, pp. 783-88.

concept of physician's assistant will not be dealt with in detail in this paper. Although they may help to carry out some of the functions of the anesthesiologist in the larger centers, it is felt by most that they have no legal means for independent practice and cannot fill the manpower void where there are no anesthesiologists located as the nurse anesthetist can. Most feel also that the nurse anesthetist has more medical background than the physician's assistant. In South Africa, a recent correspondence printed in the South African Medical Journal concerned itself with anesthesia assistants to fill the gap in the anesthesiology shortage in that country. "The main source of our disquiet are the low standards of the assistant and the failure to define the responsibility of the supervisor. In areas where the need for anesthesia service is far more urgent, it is still required that trainees have some years of general medical background before training in anesthesia, mainly a nursing degree or diploma."[26] My interpretation of this article is that it is felt by the committee writing this article that anesthetist assistants, if not trained in nursing medical background prior to anesthesia training, would lower the standards of anesthesia care. Therefore, it appears that they also believe that nurse anesthetists are

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[26]P. A. Foster, A. Van de Vijveraed, R. N. Weer, D. Van Der Merweca, et al. "Correspondence: Briewerubriek," South African Medical Journal, May 31, 1975, p. 917.

more adequate for the job than untrained personnel. In summary of the manpower problems of anesthesia today, it appears that there are the following aspects of concern.

1. There are 14,000 anesthesiologists and 17,000 nurse anesthetists currently practicing. This indicates a need for some type of nonphysician personnel not only to provide additional manpower but also to maintain current care standards.
2. There is a demographic maldistribution of anesthesiologists with nurse anesthetists often providing anesthesia care in the areas where no anesthesiologist is available, therefore, nurses should continue to be trained in all aspects of anesthesia care.
3. The ratio of anesthesiologist to nurse anesthetist desired by the ASA is 1:2, but due to manpower shortage and demographic maldistribution, this is not possible.
4. Anesthesiologists reported that in actual practice only 12 percent of their time is devoted to supervision of CRNA's, indicating that the 1:2 ratio may not be observed in actual practice.
5. Seventy-two percent of the anesthesiologists surveyed in 1974 believe in the anesthesia care team with nurse anesthetist. Only 43 percent believed physician assistants should be utilized either in addition to, or instead of, CRNA's.

Therefore, the CRNA will probably be the nonphysician of choice to provide the needed supplement to the anesthesiologist.

In January, 1972, the Joint Liaison Committee of the ASA and the AANA wrote a joint statement concerning the qualifications of individuals administering anesthesia. They recognized that:

"1. The physician is the individual in the anesthesia care team bearing ultimate and full responsibility for proper and safe administration of anesthetics.

2. The administration of anesthetics in the United States has been effectively performed by nurses and physicians versed in the science and art of administering anesthetics.

3. All individuals administering anesthetics must at some time exercise varying degrees of clinical judgment and responsibility and this can be best exercised by those familiar with total patient care.

4. The ideal circumstances of qualified anesthesiologists and nurse anesthetists working together as a care team may not be totally possible in the future.

5. It is a requirement of the AANA that its members be trained to the standards of basic nursing and the standards of the AANA for accredited schools of

anesthesia for nurses and that these standards are encompassed by, and not in conflict with, the guidelines on anesthesia set forth by the ASA.

6. Any individual delegated the responsibility of administering anesthetics should possess the skills, knowledge and background appropriate to their role.

In view of this, it is resolved that the principles outlined by the ASA and AANA for their respective memberships should be used for determining qualifications of individuals administering anesthetics. It is further resolved that collaborative efforts to improve the utilization of qualified anesthesia personnel, the recruitment of more nurses and physicians into the field of anesthesia and study the present and future status and needs of anesthesia manpower is important to the specialty of anesthesia."[27] This statement of both organizations indicates that the two groups should work together towards bettering anesthesia care and solving the legal and manpower problems facing the specialty today. This should serve as a background for the remainder of this review of the literature and the reason for the study set forth in this paper.

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[27] Joint Statement of the American Society of Anesthesiologists and the American Association of Nurse Anesthetists Concerning Qualifications of Individuals Administering Anesthetics. January, 1972.

2. Education of Nurse Anesthetists

The final area of discussion relates to the education of a nurse anesthetist. In a 1975 survey of nurse anesthetists done by the Health Information Service, Inc., respondents to the study indicated that there were 7 percent of nurse anesthetists responding holding Associate Degrees, 87 percent of the nurse anesthetists responding holding diplomas, 8 percent of the respondents holding Baccalaureate Degrees, 1 percent of the respondents holding Masters Degrees, and at that time none of the respondents held Doctorate Degrees. A further breakdown stated that 7 percent of the respondents who were practicing only and not teaching held Associate Degrees, 86 percent of the practicing respondents held diploma degrees, 8 percent of the practicing respondents held Baccalaureate Degrees, less than .5 percent of the respondents held Masters Degrees, and none held Doctorate Degrees. Of those nurse anesthetists who were practicing and teaching, 7 percent held Associate Degrees, 93 percent held diplomas, 4 percent held Baccalaureate Degrees and 2 percent held Masters Degrees. It is unfortunate in nurse anesthesia today that most of our profession does not hold advanced academic degrees. This in part stems from the fact that for our older membership, it was encouraged up until the last five-to-ten years to earn only a diploma in nursing and that further academic training was not necessary for the practice of the specialty. Now,

however, much emphasis is being placed on academic achievement. According to the same 1975 study, 88 percent of the nurse anesthetists responding were seeking a Baccalaureate Degree, 10 percent were seeking a Masters Degree and 2 percent were seeking a Doctorate Degree.[28] This indicates that nurse anesthesia as a specialty realizes their responsibility in the present era of academic emphasis to attain further degrees and education.

There is a great deal of discussion today regarding the placement of nurse anesthesia training in the academic ladder. To this date, no definite policy has been stated. Approximately 10 percent of our schools now give Baccalaureate Degrees upon completion of the training program. Less than 1 percent of our schools are giving Masters Degrees for program completion. There is increasing emphasis on Baccalaureate Degree as a criteria for entrance and application to a program in anesthesia. If this is the case, then it appears that Masters' level is the degree needed for nurse anesthesia training. This coincides with other specialty areas of nurse practice where the Masters Degree has become extremely common. Hopefully, with the increasing emphasis upon higher degrees there will be more respect for the

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[28]"Health Information Services, Inc. A Survey of Nurse Anesthetists - 1975." American Association of Nurse Anesthetists Journal, December, 1975, Vol. 43, No. 6.

specialty of nurse anesthesia. This could, however, cause other problems. Nurses become overtrained for the job that they are permitted to do, since in most circumstances they are under the supervision and direction of a physician. This was apparent in a study done by Dr. J. W. R. McIntyre of the Department of Anesthesia at the University of Alberta In Edmunton, Alberta, Canada. He took four nurses who were in the lower half of their graduating class in nursing school and trained them for three months in anesthesia. At the completion of this time, some of the nurses felt that they were not capable of advancing to the degree that they would like in the specialty of anesthesia and that they were overtrained for the functions that they were permitted to perform under the supervision of an anesthesiologist.[29] If this can happen in approximately three months of training with increasing occurrance in the following three months of the project, I am sure that it would definitely be a problem in the 24 month training required in the United States, which includes didactic as well as clinical experience. The AANA has not, at present, indicated any requirements for entrance to schools of nurse anesthesia in this country other than the attainment of a nursing license in the state

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[29] J. W. R. McIntyre, "Participation of Allied Health Professionals in the Practice of Anesthesia: Report of a Study," Canadian Anesthesia Society Journal, March, 1975, Vol. 2, No. 2.

of the training program and graduation from an approved school of nursing in the United States. In the last few years, when there have been increasing numbers of two-year programs and five-year programs in nursing, with the deletion of the three-year program, we have seen increasing disparity in the background with which applicants come to anesthesia training. More and more schools of anesthesia within the last two years have required Baccalaureate Degrees for entrance to their programs.

In the survey which I have proposed for this study, I have included questions on opinion of background for nurse trainees. Hopefully, in the future, we can define this so that our training programs in anesthesia can further emphasize the training which we feel is necessary for the practice of anesthesia.

3. Scope of Practice in Nurse Anesthesia

In 1975, a survey of nurse anesthetists was undertaken by Health Information Services, Inc. This survey stated that 85 percent of the nurse anesthetists were currently practicing only, 1 percent were teaching only, 9 percent were practicing and teaching, and 5 percent were not practicing or teaching. It further states that 86 percent of the procedures performed by nurse anesthetists were general anesthetics, 5 percent were spinal anesthetics, 1 percent were epidural anesthetics, 2 percent wer I.V. regional anesthetics, 1 percent were other blocks, and 5 percent were

local management.[30] This study is apparently one of few to date which break down a very basic job description of nurse anesthetists. As I have previously outlined, I feel that it is important in avoiding conflict in the specialty that we have a further detailed description of the job in the specialty of nurse anesthesia. Dr. Paul J. Poppers in a conference on therapy in the 1980's stated: "I think that the function of the anesthesiologist will have to be re-defined."[31] Dr. Poppers indicates that the anesthesiologist in the future will become involved in intensive care medicine. Poppers further brings up the difficulty in recruiting good anesthesiology residents from among the medical students and discusses the importance of recruiting American medical school graduates rather than a large percentage of foreign medical school graduates. Dr. Richard Kitz at the same conference asked the question: "How can the anesthesiologist continue to provide operating room services while simultaneously assuming nonoperating room responsibilities? The anesthesia care of sick patients requiring surgery will accrue to a team of anesthesiologists, nurse anesthetists and perhaps physician assistants."[32] It is my belief that

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[30]"Health Information Services, Inc., op. cit.

[31]Therapy in the 1980's: Report of a Symposium Held at Framingham, Massachusetts, April 26, 1976.

[32]Ibid.

with the increasing involvement of the anesthesiologist in critical care medicine, it will become more important to have nurse anesthetists doing the actual care of the patient under anesthesia. Dr. Kitz states that the care will probably change to involve an anesthesia care team directed by an anesthesiologist. The anesthesiologist director who may be responsible for the care of more than a single patient at a time will prescribe the anesthesia care and will serve increasingly as the preoperative, operative, postoperative and intensive care consultant."[33] This realization of increasing responsibilities of the physician anesthesiologist in critical care and other nonsurgical anesthetizing areas will leave even more of a void in the manpower situation in anesthesia today. More highly trained physicians will be needed in the supervisory, research, and critical care role, and it is my interpretation of this that the nurse anesthetist will become even more increasingly involved in the actual practice of anesthesia in the operating room.

Another area of great concern is the provision of anesthesia care for obstetrics. Today, according to a study done by the ASA in 1970, nurse anesthetists provide approximately 25 percent of the obstetrical coverage. Anesthesiologists provide approximately 12 percent of this coverage, while the remaining coverage is done without any anesthesia

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[33] Ibid.

personnel at all. Thirty-three percent of this remaining coverage is provided by the obstetrician who, in addition, is taking care of the delivery and the baby, and 30 percent is taken care of by other personnel who may not be trained at all in anesthesia. This unfortunate situation is another problem which must be solved. Since nurse anesthetists provide the largest amount of trained anesthesia practice in the specialty of obstetrics, it appears that the nurse should be permitted to do regional anesthesia and other types of anesthesia which are necessary to this specialty. Any improvement gained by having trained anesthesia personnel rather than untrained physicians, or others, doing anesthesia in this specialty would be helpful. "In many hospitals obstetricians administer conduction anesthesia," according to Dr. Saul Schneider, "which accounts for approximately 19 percent of the total blocks administered in obstetrical anesthesia. Nurse anesthetists only administer approximately 10 percent of the total blocks performed in obstetrical anesthesia."[34] Obstetricians may have anywhere from no training at all in regional anesthesia to a few months training. It is apparent that with an increase in training of nurse anesthetists in regional anesthesia techniques and an increasing legal coverage of nurse anesthesia

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[34]James Hicks, Gershon Levinson, and Saul Schneider, "Obstetric Anesthesia Training Centers in the U.S.A. - 1975," Anesthesia and Analgesia, November-December, 1976, Vol. 55, No. 6.

in regional techniques, anesthesia care in the obstetrical specialty might be improved. Drs. Hicks, Levinson, and Schneider state that "For the foreseeable future, obstetricians and nurse anesthetists must provide the major share of obstetric anesthesia."[35] It, therefore, appears that regional and obstetrical anesthesia, although illegal in many states for nurse anesthesia practice, would be a vast improvement in the current obstetrical care. It seems that many anesthesiologists and obstetricians are beginning to realize that there is a shortage of anesthesia coverage in obstetrics and perhaps in the future nurse anesthesia practice will include regional anesthesia in a larger percentage of the training institutions for nurses. In California, in 1974, the Attorney General made an opinion that nurses were not to administer regional anesthesia. Although this was later passed through the House and Senate, it was vetoed by the Governor. Unfortunately, in this state anesthesia practice in obstetrics is often still left to the obstetrician, who usually, according to Drs. Hicks, Levinson and Schneider, has a maximum of two-to-three months training in the specialty of anesthesia. In April of 1974, the AANA published standards for nurse anesthesia practice. These included such basic things as a knowledge of the fundamental sciences, that only the competent and well trained should administer anesthesia, that continuing questioning of

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[35] Ibid.

functions and techniques of anesthesia practice should be done, that anesthesia inspection should be completed prior to anesthetizing a patient, that observance of vital signs should be done, that information should be charted, and that anesthetists should be competent to induce and terminate anesthesia.[36] These standards are extremely general definitions of the practice of nurse anesthesia. It is my purpose in this study to attempt to outline more definite standards for the specialty so that all nurses can be trained adequately in the techniques necessary for their job.

The task analysis referred to by Dr. Ament in his article: "Allied Health Personnel in Anesthesia," states that John Freeman and Joseph March, who are systems engineers, did time work studies on manpower in anesthesia in 1970. They classified the observable tasks into six levels of proficiency. After consulting with anesthesia program directors, the two groups of tasks considered most difficult were decided to be performed by the physician, the three least difficult groups of tasks were allocated to non-physicians and group four to be handled by either. The first group included simple tasks where there was no latitude for exercise of independent judgment (i.e., cleaning, supplies, counting, transportation). The second group of tasks was performed under immediate or general supervision

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[36] "Editorial," American Association of Nurse Anesthetists Journal, April, 1974, p. 95.

and required a minor degree of skill which is easily learned (i.e., attaching the blood pressure cuff and observing blood pressure and pulse). The third group of tasks were semi-routine and performed under general supervision. They required moderate degrees of skill, dexterity and mental application. These tasks included inserting intravenous needles, administering fluids, and suction. The fourth group of tasks were semi-routine tasks performed under little supervision. These required a high degree of skill and mental application. Examples included the injection of drugs, the adjustment of gas flow, the insertion of an endotracheal tube and esophageal stethoscope, manual assistance of ventilation, and recognition of harmful positions. The four previously stated tasks were those allocated to nonphysician personnel which includes nurse anesthetists. The fifth group of tasks were nonroutine tasks performed under little supervision. These required a high degree of skill and mental application, assimilation of information and decision making. These takss included venous, arterial, and spinal catheterization, and modification of drug dosage. The sixth group of tasks were nonroutine and performed without supervision. These required the highest degree of skill and mental application, and an intimate knowledge of medicine requiring differential diagnoses and independent judgments as well as responsibility for the patient.[37] In

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[37]Ament, op. cit.

my experience of over 15 years in nurse anesthesia, I have been in situations as a nurse anesthetist where I have had to perform all six of these groups of tasks. It is very common that nurse anesthetists may be called upon to handle the first five groups with little supervision. Although this may not be the ideal situation due to the demographic manpower problems previously discussed, it is important that nurses be trained to handle all six of these groups of tasks. This again is one of the most detailed studies discussed in the literature on job descriptions for nurse anesthetists. According to this particular division, nurse anesthetists should perform only the first four of these classifications. As I have stated from personal experience, this is not always the case. Therefore, I believe this is additional support of a need for a new description of job analysis for the nurse anesthetist.

There appears to be a striking void in the literature regarding the actual utilization and job description of nurse anesthetists. Perhaps until this date of conflict between physicians and nurses there has been no need for this description. There is a great deal of broad discussion of the utilization of nurse anesthetists as additional manpower to the anesthesia specialty and many ideal situations discussed with the implication of ideal 2:1 ratios and the ideal that no decisions and changes in care should be made by nonphysician personnel. However, the actual situation as it exists today, and probably will exist for some

time in the future, has never been defined by study. This is what I am attempting to do in a beginning sense, with the full realization that further study and further definition of the problem must be done to make it even more specific than this study attempts.

4. Impact of the Utilization of Nurses in Anesthesia Practice

Utilization of nurses in anesthesia may influence the anesthesiologist's feelings about his profession and also his status. Dr. J. W. R. McIntyre discussed this in his study stating that even during the initial three-month period nurses with very little didactic training were instructed by anesthesiologists to assume immediate responsibility in some instances for the conduct of anesthesia. The nurses were able to determine whether to call a physician for guidance or to carry out independent actions. None of the physicians recalled any incident where an independent decision by a nurse to administer a drug or to make a change endangered the patient's life. One anesthetist recalled an event in which a failure to call him permitted a dangerous situation to develop but the outcome was satisfactory. Two anesthetists became concerned because some of the nurses began taking independent actions to an extent that worried them, and the third became apprehensive about one of the nurse anesthetists only. Half the anesthetists involved with the four nurses in this study believed that the fact

that the case would be done by a nurse influenced the choice of the anesthetic technique. Three of the anesthetists considered that on rare occasions they had been faced with a conflict between what seemed to be the best anesthetic technique for a particular surgery and patient, and what seemed the most practical technique if the case were to be done by a nurse. This difficulty was resolved by assigning that patient to receive the full attention of one particular physician. Dr. McIntyre felt that there was no doubt that the anesthetist assumes more professional responsibility when he supervises two patients simultaneously. Some anesthetists (six of the eight in the study) considered it made their work more pleasant to work with the nurses than if they had been by themselves in one operating room. The other two felt that the scope of the study did not really justify opinions on this aspect. Three of ten anesthetists involved in that study thought that the introduction of nurses was a threat to their status, though another believed it could only be so if the anesthetist did not appear to be engaged in any useful activity at all. A gain in status was believed to be a possible outcome by approximately half of the physicians, but the reasons given were based on the appearance of the new work situation rather than the realities of it.[38] Whether some of these questions arise due to

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[38]J. W. R. McIntyre, F.R.C.P., Professor and Program Director, Department of Anesthesia, University of Alberta

the 24 month training period in the United States as opposed to the three-to-six month period in this study has not been documented. There have been discussions as to whether the utilization of nurses in anesthesia increases or decreases the status of the anesthesiologist, or whether the supervision of nurse anesthetists is more stressful than doing it oneself; or whether working with nurses makes the work situation more pleasant. Hopefully, in the questionnaire to be sent for this study some of these questions might be answered by the opinion of the selected random sample. Hopefully, due to the fact that the nurse anesthetists have had 24 months of training in the United States, which will make them competent practitioners, in contrast with the three to six months training in the Canadian study by Dr. McIntyre there may be a difference in how the physicians feel about the ability of the nurse anesthetist to handle anesthesia in varied situations.

An article entitled, "Health care Delivery Problems and Goals, A Personal Philosophic Appraisal,"[39] stated that physicians have had their image deflated by both laymen and other physicians. Lawyers' contingency fees have caused

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Hospital, Edmunton, Alberta, Canada. Personal Communication (March and April, 1977) and Survey Questionnaire (Unpublished, 1975).

[39]Peter Safar, "Health Care Delivery Problems and Goals: A Personal Philosophic Appraisal," Public Health Aspects of Critical Care Medicine and Anesthesiology (Philadelphia: F. A. Davis, 1974).

malpractice insurance premiums to skyrocket. These factors can influence the status of the physician. The increasing role of the laymen in medicine can also be a threat to the status of the anesthesiologist. Dr. Safar feels that "the future of the anesthesiologist's role within society will depend on (1) quality-oriented rather than quantity-oriented recruiting and training of physicians; (2) hospital anesthesia services provided by health care teams, including nonphysicians under the leadership of anesthesiologists; (3) leadership roles in resuscitation and respiratory therapy; (4) individual involvement as leaders or team members in emergency medical services and intensive care programs; and (5) innovation in anesthesia and/or related fields.

Dr. Francis Moore in his discussion of the demography of anesthesia and surgical personnel at the ASA meeting in October, 1976, discussed the emphasis on Board qualifications and certification of anesthesiologists. Today, approximately only half of the anesthesiologists are Board certified. With the increase in utilization of the anesthesia care team, and nurse anesthetists who are becoming more skilled, it will be important in the reduction of conflict between anesthesiologists and nurse anesthetists that Board certification and in-depth training of anesthesiologists be increased. This, then, will increase the respect and the dependence of the nurse anesthetist on the anesthesiologist as a consultant and supervisor.

Conflict has arisen recently by the letter of Bernice Baum, then Executive Director of the AANA, to Senator Talmadge based on the Feldstein study. This letter stated that nurse anesthetists provide equal care for less money. Subsequent to this letter, there have been statements from both the ASA and the AANA urging cooperation, communication, and coexistence. Whether or not it is obtainable, is still in question. John Ditzler, President of the ASA in 1976 stated: "The issue pure and simple, in my opinion, is that the leadership of the AANA seek economic, political and social advantages accruing to their position; which posture at best gives lip service to becoming integrated members of an effective anesthesia care delivery team, with the physician as the team leader." "We had better determine how these people will be trained, how their schools will be accredited, how their graduates will be certified, and when and under what circumstances, patients may best be served by their graduates when rendering an anesthetic in the absence of a physician such as in remote and deprived areas."[40] Dr. Ditzler in addition states, " . . . as things stand now we have competing organizations not cooperating organizations."[41] In response to this statement, Miss Nancy Fevold, the Acting Executive Director of the AANA asked,

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[40]John Ditzler, President's Annual Report, ASA Newsletter, October, 1976.

[41]Ibid.

"Are we, the AANA, attempting to determine how anesthesiologists will be trained, how their residencies will be accredited, how their graduates will be certified, and when and under what circumstances the patient may best be served by their graduates? Can the patients best be served presently and in the future by autocratic dictatorship or rather by cooperation, mutual respect, democracy and diplomacy." Fevold in her comments also stated, "I seriously question the credibility of the leadership of the ASA who espouses cooperation on one hand and espouses dictatorial policy on the other. Is cooperation, communication and coexistence an obtainable goal? Without demonstrated sincerity, integrity and mutual respect on the part of the ASA leadership, the outlook is at present bleak."[42]

About the same time as the above letters were written, the National Advisory Committee of the Department of Health, Education and Welfare granted a three-year recognition and recommendation to the AANA as the accrediting agency for nurse anesthesia educational programs. This was challenged by representatives of the ASA. However, the AANA was maintained as the accrediting agency designated by the United States Department of Education.

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[42]Nancy A. Fevold, "Cooperation, Communication and Co-Existence: Is It Attainable?" American Association of Nurse Anesthetists News Bulletin, November, 1976, Vol. 30, No. 6.

F. A. Smoyak[43] stated that, " . . . when work is such that two or more persons from different backgrounds or professions, disciplines, or roles can do it equally well, there are many conflicts. When work is highly specific, that is when persons who do work undergo a highly specialized technical training, there are few crises or conflicts of roles among the workers."[44] At present, we in anesthesia, both physicians and nurses, are, I believe, in the former category. In many situations, nurse anesthetists and anesthesiologists, although from different backgrounds originally, are doing work equally well. Thus, there are many conflicts resulting. It is my contention that through this study, hopefully, we will develop a job analysis of nurse anesthesia so that we can have a more highly specific role and thus perhaps fewer crisis or conflicts will result. Dr. Jeffrey Brown in his article, "Toward Predicting and Managing Conflict on the Anesthesia Care Team," states that the inter-dependence between the two groups cannot be imposed from without or from above, rather it must arise from the voluntary cooperation of the groups involved

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[43]Shirley Smoyak, "Problems in Interpersonal Relations," Bulletin of the New York Academy of Medicine, January-February, 1977, Vol. 53, No. 1.

[44]Ibid.

on the matters of common concern."[45] The possibility of the cooperation occurring increased with the diversity and volume of concern affecting the competing groups. Thus, the sine qua non of improving CRNA/MD and CRNA/RN relations would seem to be increased personal and organizational contact among these groups."[46] The ASA and AANA liaison committee is an important step towards more organizational contact. Dr. Brown feels that "one cannot stress too strongly the importance of one-to-one contact as a means of fostering inter-professional harmony.[47] Joint education of nurse anesthetist students and anesthesiology residents might be helpful. However, one anesthesiologist recently made the point, according to Dr. Brown, that " . . . having anesthetists sit in on every anesthesiology resident training conference would compromise a teaching hospital's ability to provide sufficient anesthesia services."[48] Obviously, many nurse anesthetists are used more for anesthesia coverage than for education in their training program.

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[45]Jeffrey A. Brown, "Toward Predicting and Managing Conflict on the Anesthesia Care Team," American Association of Nurse Anesthetists Journal, February, 1977, Vol. 45, No. 1.

[46]M. Sherise, "In Common Predicament, Social Psychology of Inter-Group Conflict and Cooperation," (Boston: Houghton Mifflin Co., 1966), p. 147.

[47]Brown, op. cit.

[48]Ibid.

In order to prevent destructive conflict, Drs. Ruben, Closnik, and Frye recommended that the key to preventing the destructive conflict is abandoning the idea that conflicts can be smoothed over. It may be true that the turbulent and certainly ambiguous nature of the work of all health professionals creates a high level of anxiety and uncertainty. It also may be true that speaking out about what bothers you can affect your daily work.[49] More evidence is beginning to exist that long term effective smoothing over of conflict leads to a further "intolerable build-up of anxiety which results in blow up or personnel turnover."[50] It is suggested that intergroup feedback, relating to what anesthesia team members can do to make the team more productive and job more satisfying might help. This was tried by a Montifiore group and they found that creating a norm of support was indispensable for good health team functions.[51] According to Sherise,[52] feedback need not be formalized like in the so-called "encounter groups" for sensitivity training sessions

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[49] I. Ruben, M. Closnik, and R. Frye, "Initiating Plans, Change, and Health Care Systems," Journal of Applied Behavioral Science, February, 1974, pp. 107-24.

[50] Wise, Beckard, Ruben, Kyte, Making Health Teams Work (Cambridge, Massachusetts: Ballenger Publishing Co., 1974).

[51] Ibid.

[52] Sherise, op. cit.

as referred to in Blake and Mouton.[53] These sessions usually do not involve people who know each other. They do help participants to recognize irrational aspects of inter-group conflict but perhaps they would not be workable with people who work together daily. For patient encounters, sensitivity training and other purely psychological techniques may come to be very important conflict managing strategies. Role reversal exercises in particular have been shown to be a powerful method of changing attitudes. Their current utility is severely limited and used mostly as a means of resolving rather than preventing disputes.[54] "One of the most universally used means of resolving on-going disputes of all kinds is through the utilization of the offices of those who are friends of all the disputants. Informal telephone mediation has been used often to resolve disputes between CRNA's and anesthesiologists in New York State.[55] It is impossible to create conflict-free organizations, and this may not even be desirable. We can only take measures to reduce the number of counter-productive conflicts arising, and try to manage or resolve those that do arise. Rhennan, Stromberg and Westerland have developed the following suggestions

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[53]Robert Blake, Herbert Shepard, and James Mouton, Managing Inter-Group Conflict in Industry. Houston, Texas: Gulf Publishing Co., 1964, Chap. 12.

[54]Raskinde, and Kline, "Losing a Sympton Through Keeping It," Archives of General Psychiatry, February, 1976, Vol. 40, pp. 548-55.

[55]Jeffrey A. Brown, M.D. from D. F. Loughlin, M.D., June 2, 1976, Personal Communications.

for preventing conflict in organizations. The first is to utilize role descriptions and supervise their application. This would enable all concerned parties to be aware of the role description so that expectations are similar. Since many conflicts arise from differing expectations, this would assist in conflict reduction. If organization members are included in the formulation of role descriptions, understanding and enthusiasm may be increased. If the line staff principle is de-emphasized and role description is emphasized with specific decision making programs outlined, staff cooperation may be improved.[56] Role descriptions which are simple and are in a clearcut structure will necessitate fewer-point decisions and, therefore, fewer grounds for substantive conflict will develop. I am proposing in this study to assist this philosophy of conflict reduction by the development of a sample job analysis for nurse anesthetists, utilizing the opinions of physician anesthesiologists and practicing nurse anesthetists. If both groups can be involved in determining the job description, hopefully, both will feel that the description is more acceptable to them. If a more definite job description is developed by the two groups, perhaps, as according to Rehnman, Stromberg and Westerlund, conflict may be reduced. Drexler, Yenney, and Hohman state, "Problem solving is not easy, it requires many interpersonal

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[56] E. Rehnman, L. Stromberg, G. Westerlund, Conflict and Cooperation in Business Organizations (New York: Wiley Interscience, 1970).

skills and much hard work to establish a climate of openness. It requires management to develop the courage to risk letting others take the initiative, to risk sharing of responsibilities and decisions and to risk sharing motives and expectations for substantive needs and feelings with subordinates."[57]

The working together of the two groups in question seems to be the only hope for establishing cooperation, and adding to the efficiency and economic provision of health care. Hopefully this study will be a beginning step in the direction of specific formulation of a job description so that the ultimate goal of conflict reduction is eventually achieved.

5. Economics and Efficiency

Dr. D. V. Thomas in his article, "Letter from America," states that although the "educational background, training, and control of such a person (nonphysician anesthetist) is not yet clear, the continued existence of the nondoctor anesthesia worker seems inevitable in America."[58]

It became obvious from the Committee on Health Manpower study of the recommended ratio of anesthesiologists to

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[57]Allan A. Drexler, Sharon L. Yenney, and Jo Hohman, "OD Team Building: What It's All About," Hospitals: Journal of American Hospital Association, January 16, 1977, Vol. 51.

[58]D. V. Thomas, "Letters from America: Reflections of an Expatriate," Anaesthesia, 1976, Vol. 31, pp. 783-88.

nurse anesthetists, whether it be 1:2, 1:3, 1:4 or more, that more anesthesia care can be provided with less physician personnel by utilization of nurse anesthetists or other nonphysician anesthesia personnel. In this way, efficiency of the department can be increased and the hands of the physician anesthesiologist can be extended to more patients. This is extremely important due to the fact that there is a shortage of physician anesthesiologists, particularly those who are Board trained, in the United States today. In a report entitled, "The Market for Anesthesia Services," some estimates and recommendations were made by Paul J. Feldstein, Ph.D.[59] Dr. Feldstein states that " . . . expenditures for anesthesia services could increase for any one of three reasons: (1) an increase in the number of surgical procedures, (2) an increase in anesthesia fees for a given procedure, (3) an increase in the average anesthesia fee because more complex procedures are being performed."[60] Surgical procedures are increasing in the U.S. today. In this country, more surgical procedures are performed than in any other nation in the world. Anesthesia fees also appear to be increasing. Dr. Feldstein states " . . . the availability of data on fees charged by the anesthesiologist over time is virtually nonexistent. This is partially due to the fact that there

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[59] Paul J. Feldstein, "The Market for Anesthesia Services: Some Estimates and Recommendations," American Association of Nurse Anesthetists Journal, December, 1975, Vol. 43, No. 6.

[60] Ibid.

is usually a professional fee billed by the anesthesiologist for his service as well as a fee billed by the hospitalfor equipment, medication, and other supplies necessary for the maintenance of anesthesia. The increasing complexity of surgical and anesthesia procedures cause the increasing cost of equipment and professional reimbursement. Dr. Feldstein reports " . . . the main sources for economic data on anesthesiologists are the AMA and Journal of Medical Economics. Median net incomes of anesthesiologists, using data for a Medical Economics survey, was $33,270 in 1965. In 1967, the median net income reported was $36,330."[61] Dr. Feldstein adds, " . . . income data based on this survey are likely to be underreported since it is a voluntary survey, and those physicians with very high incomes would, I believe, be less likely to report their incomes than those with lower incomes. Given these possible biases, these data indicate that 50% of the anesthesiologists had incomes greater than the median of $36,330 in 1967." In 1968, Dr. Feldstein states, " . . . the AMA reported the average net income of anesthesiologists recorded was $35,972." In 1972, the average net income, according to Dr. Feldstein, was $49,536. Based on the annual rates of increase of the studies of the AMA, Dr. Feldstein projected that in 1974 the average net income of anesthesiologists would be between $58,000 and $62,000. If a projection was based on the data from Medical Economics, the average income of an anesthesiologist would

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[61] Ibid.

be from $62,000 to $69,000 in 1974.[62] In 1974, the AANA undertook a national survey of nurse anesthetists with the following results. Those nurse anestheists employed in a hospital had an average yearly income of $16,006.50. Those nurse anesthetists employed in group practice had an average income of $17,705.78. Nurse anesthetists in free-lance practice had an average yearly income of $23,705.78, and those listed under other types of practice had an average income of $19,510.58. One can see from this that there is a great difference in the salary of an anesthesiologist compared to a nurse anesthetist. This has been stated to be due to the increased number of years an anesthesiologist has spent in training. The nurse anesthetist, however, when performing similar training tasks to the physician, often is not able to see the difference in the two practices which would account for such a great salary difference. This, in some situations, is an additional source of conflict between physicians and nurses.

Legally, nurse anesthetists are supposed to be supervised by physicians. However, several sources indicate that when an anesthesiologist is not available, surgeons may not have the expertise to evaluate the technical performance of the CRNA. The CRNA may be more familiar than the surgeon with the administration of anesthesia. Further, when an anesthesiologist and CRNA are both available, the anesthe-

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[62] Ibid.

siologist does not always observe the actual performance of the nurse anesthetist. Dr. Feldstein feels that, because of this there is a billing inequity and CRNA's, when working directly with an anesthesiologist, and therefore assuming more responsibility for anesthetic care, should be paid in a similar manner to the anesthesiologist. In his opinion, " . . . the wide difference in income between anesthesiologists and nurse anesthetists, is because one professional group (anesthesiologist) is able to bill for it's services on a fee-for-service arrangement directly to the insurance company or government, while the other profession (nurse anesthesia) is prohibited from so doing."[63] Anesthesiologists can be reimbursed for their services in three ways.

1. By salary from a hospital or group. This salary remains constant regardless of how many cases an anesthesiologist may do.
2. By fee for service directly from the patient. The anesthesiologist is then directly responsible for billing and collection and the hospital is not involved.
3. By fee for service from the hospital. The hospital then gives the physician a percentage of the income from each case he does. The hospital is responsible for billing and collection.

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[63] Ibid.

At the present time all of these options are not open to the nurse anesthetist in an equal manner with the anesthesiologist. The nurse anesthetist is usually salaried by the hospital, without regard to the numver of cases done. This salary is of course, lower than the salary of the anesthesiologist.

The nurse anesthetist is not able to directly bill Medicare, or state or private insurance companies in a satisfactory manner. Although they may submit a bill the reimbursement provided the CRNA from direct billing is extremely low; so low in fact that the practice is not worthwhile.

Some nurse anesthetists do work on a fee for service basis with the hospital. In this instance the hospital bills the insurance company for their services, and reimbursement is made to the hospital in an equitable amount. The hospital then gives the nurse anesthetist a percentage of the income, based on the number of cases done. This percentage is of course, lower than the percentage an anesthesiologist would earn. The hospital can thus make money by hiring nurse anesthetists rather than anesthesiologists. These differences in billing and reimbursement raise questions of equity and cost to the government and other third-party payers for anesthesia services. If the anesthesiologist were a salaried employee of the hospital, that then would increase the cost to the hospital for anesthesia services over the amount they would pay a CRNA. Perhaps,

according to Dr. Feldstein, this would cause a "probable increase in the demand for CRNA's which would improve the efficiency and total expenditures on anesthesia services. This policy would also presumably improve the equity situation between the CRNA and anesthesiologist since anesthesiologists' incomes would be lower if they were in direct financial competition with CRNA's than under the current reimbursement system. If anesthesiologists decided not to be salaried but to charge the hospital for their services, the hospital would then have to set a fee schedule for anesthesia services. The hospital, according to Dr. Feldstein, could then relate those fees to what it would cost the hospital if the CRNA were to perform those services. The effect of this proposal, regardless of the way the anesthesiologist is reimbursed, would be to lower the total anesthesia expenditures, increase efficiency and improve quality."[64] It becomes apparent why anesthesiologists became so incensed with this study. They felt that nurse anesthetists, through Dr. Feldstein, were attacking their incomes and competing directly with them by providing a similar service at a lower cost. With a background threat of national health insurance, this report only served to increase conflict between the two groups. A further study published by

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[64] Ibid.

E. S. Siker, William D. Stuart, and John Edwards[65] stated that anesthesiologists in private practice in 1970 earned a low of $10,000 and a high of over $60,000. This was broken down into percentages of 5 percent earning from $10-20,000, 10 percent earning from $20-30,000, 25 percent earning from $30-40,000, 39 percent earning from $40-50,000, 13 percent earning from $50-60,000, and 6 percent earning over $60,000. The average nurse anesthetist's salary at this time was approximately $12-14,000. Regardless of which study one looks at, it is obvious that there is a great disparity between the incomes of anesthesiologists and nurse anesthetists. The increasing utilization of nurse anesthetists as anesthesia care providers on the health care team could indeed increase the cost efficiency of anesthesia care provision. If it is determined, as it has been in some institutions, by job analysis and actual proof, that nurse anesthetists are providing functions necessary for anesthesia care, then utilization of more nurses under the supervision and direction of fewer physicians would help to provide a country currently interested in decreasing the cost of health care with quality anesthesia care at lower costs. The report also outlined the fact that although in many situations nurse anesthetists are

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[65]E. S. Siker, "A Demographic Dilemma," Anesthesiology, December, 1976, Vol. 45, No. 6.

providing care which includes what Dr. Ament[66] outlines as group five and six levels, or those that are ideally delegated to the physician. Under current Medicare and Medicaide billing outlines the nurse anesthetist cannot be equitably reimbursed for these services. In the proposed survey, I have outlined questions which will indicate attitudes regarding departmental economy and efficiency when nurse anesthetists are utilized. Hopefully, this then will be the basis of further study as to what might be done to make reimbursement more acceptable.

6. Job Satisfaction of Nurse Anesthetists

The next area of discussion is job satisfaction of the nurse anesthetist. Dr. J. W. R. McIntyre[67] pointed out in his study, that the four nurses which were involved with him indicated some dissatisfaction with their limited ability to do tasks they felt capable of performing within the first three-to-six months of training. Although there has been a great deal of informal discussion at gatherings of nurse anesthetists regarding job satisfaction, in my literature review I have not found any definite study. Many indicate informally that they wish they could expand their role.

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[66] Ament, op. cit.

[67] J. W. R. McIntyre, op. cit,

The wide disparity in incomes between the CRNA and the anesthesiologist is also an area of discontent for nurse anesthetists. This was outlined in the controversial Feldstein report which was commissioned by the AANA and published in December, 1975.[68] This report indicated that nurse anesthetists were providing similar service to anesthesiologists but being paid less.

I found that although there is a great deal of literature which briefly refers to the proposed study, there is not any study of the kind published. I believe this is because the problem has only recently come to the forefront for consideration. Many people discuss the job of the nurse anesthetist but there is no documentation of specific practice or feelings about education, future practice, economics, efficiency, impact and job satisfaction. A pilot study in this area will be done here.

The AANA Guidelines for Schools of Nurse Anesthesia[69] are based on what educators in the field feel are the things our students should know. I believe a study of this kind will also assist in documentation that either we are teaching or we should, or that we should study curriculum changes. If we are meeting the needs of our students, this

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[68] Feldstein, op. cit.

[69] AANA. Guidelines for Schools of Nurse Anesthesia, 1975.

will be further support if our education accreditation process is challenged again.

Finally, if both anesthesiologists and nurses respond to this study, perhaps we can make an initial attempt in formulating a job description with input from both groups and which both groups will find acceptable. This would then assist in conflict reduction between nurse anesthetists and anesthesiologists.

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CHAPTER III

METHODOLOGY

Although utilization of nurse anesthetists has been common in the United States for the past forty to fifty years there has not, until recently, been any discussion or consideration of their role. The recent influence of increasing legal demands, and the advent of the nurse practitioner and physician's assistant, has caused a great deal of discussion and concern over utilization of nurse anesthetists, as well as discussion and concern over what functions should be performed by the nurse anesthetist.

The only study published in this area was done by Dr. J. W. R. McIntyre of Edmunton, Alberta, Canada. Nurses are not presently utilized in anesthesia practice in Canada and his study was an attempt to see if it would be feasible to use nurses. Other studies discussed in the review of the literature did not define the actual practice of the nurse anesthetist, but limited their concern to demography, salary, education, and breakdown of educators and practitioners in relation to the above named factors.

It is my purpose in this study to obtain opinions of anesthesiologists and practicing nurse anesthetists, in order to test the following hypotheses:

1. Physician's assistants are not considered to be as acceptable as nurse anesthetists as the non-physician members of the anesthesia care team.
2. Utilization of nurse anesthetists does not increase the economy and efficiency of the anesthesia department.
3. Nurse anesthetists are not content with their careers.
4. Practice of the nurse anesthetist does not vary with the institution in which they work.
5. Utilization of nurse anesthetists has no impact on the feelings, job satisfaction, or status of the anesthesiologist with whom they work.
6. Opinions regarding basic education and continuing education of nurse anesthetists do not vary.

These hypotheses are based on the six sections of concern which I have previously identified: policy regarding nurse anesthetists, economics and efficiency of the utilization of nurse anesthetists, job satisfaction of nurse anesthetists, practice of nurse anesthetists, impact of the utilization of nurse anesthetists, and the ideal educational level for nurse anesthetists. A questionnaire will be utilized to elicit opinions of anesthesiologists and nurse anesthetists on questions relating to the stated hypotheses. Frequency of responses will be measured, and a .05 level of significance

will be utilized to accept or reject the hypotheses which have been stated in the null form. It is realized that this study will not elicit causal information, and is only designed to obtain frequency of opinion.

1. Sample Selection

I plan to sample opinions of those individuals working in anesthesia departments having nurse anesthetist training programs, those working in departments having physician residency training programs, and those working in departments without any anesthesia training programs. An equal number of samples will be taken from each group.

In order to select the institutions to be included I have taken random samples of hospitals utilizing a table of random numbers from the following lists:

1. The American Association of Nurse Anesthetist's List of Recognized Educational Programs for Nurse Anesthetists, June, 1976[1]
2. The Liaison Committee on Graduate Medical Education - Directory of Accredited Residencies, 1975-76.[2]

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[1] American Association of Nurse Anesthetist's List of Recognized Educational Programs for Nurse Anesthetists Chicago: AANA, June, 1976.

[2] Liaison Committee on Graduate Medical Education, Directory of Accredited Residencies, 1975-76. Chicago: American Medical Association, 1976.

3. The 1976 Annual List of Accredited Facilities - Joint Commission on Accreditation of Hospitals, January 1, 1976.[3]

After numbering each institution in order of appearance from the above named lists, one hundred institutions were selected from each list, by matching the numbers given each facility on the list with those numbers in the "Table of Random Numbers" given in the book, Introduction to Statistical Analysis, by Dixon and Massey.[4] The selection was started at a random point in the table and each subsequent number in the table was matched to that hospital so numbered in the list, and the sample thus selected. Samples from each list were selected independently with different starting points in the table. Selected hospitals were discarded from the sample only if:

1. They had been previously selected on another list (eight occurrences).
2. They had previously been selected on the same list (three occurrences).
3. They were taken from the Joint Commission on Accreditation of Hospitals List to be used for

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[3]Joint Commission on Accreditation of Hospitals, 1976 Annual List of Accredited Facilities, January 1, 1976, Chicago: Joint Commission on Accreditation of Hospitals, 1976.

[4]Wilfrid J. Dixon and Frank J. Massey Jr., Introduction to Statistical Analysis, Third Edition, New York: McGraw-Hill Book Company, 1969.

hospitals not having training programs, but did have a training program (one occurrence).

In the above instances the next number occurring in the table of random numbers was utilized to select another hospital.

One hundred hospitals having nurse anesthesia training programs, one hundred hospitals having residency training programs for physicians, and one hundred hospitals having neither type of training program were selected. This sample represents approximately fifty percent of those hospitals having nurse anesthesia training programs, approximately fifty percent of those hospitals having physician anesthesia residency training programs, and approximately three percent of those hospitals having no training programs in anesthesia.

Due to the fact this this is an exploratory study the following variables were recognized but not controlled:

1. Hospital size
2. Number of surgical cases
3. Nature of surgical cases
4. Nature of personnel employed in the anesthesia department
5. Location of the hospital
6. Nature of the hospital
7. Number of hospitals in each study category correlated with the actual number of hospitals existing in each category.

8. Consistency of responses within an individual institution.
9. If the anesthesiologist has had past work experience with nurse anesthetists.

This exploratory study might bring to light other variables in addition to those listed above which might be considered in future, more definitive studies which may be based on the results of this study.

Variables considered and correlated in this study are whether the respondent is a physician anesthesiologist or a nurse anesthetist, whether the respondent presently works with nurse anesthetists, whether the respondent works in a hospital with a training program for physicians in anesthesia, a training program for nurses in anesthesia, or no training program in anesthesia, the frequency of responses for each group as well as total response, and the current practice as compared with the possible future practice of nurse anesthetists.

2. Instrument

Because there are no previously published studies relating to the purpose of this study a new instrument was required to measure the desired information. The six sections identified from the review of the literature were enumerated and the six hypotheses developed. These hypotheses were based on ideas which I believe are important to the satisfying practice of nurse anesthesia and are areas of concern I have heard expressed by other nurse anesthetists

and physician anesthesiologists. I feel that emphasis should be placed on defining practice in order to meet the ultimate goal of this study; the formulation of a current job analysis and description for the nurse anesthetist, and a comparison of this current description with a future possible role. There are therefore, more questions relating to this area than to the other five areas.

Since this is an exploratory study many of the questions are general and being utilized to perhaps, define areas for future study.

A Likert type scale was selected as the most advantageous method of measuring attitudes relating to the nurse anesthetist. This scale will then place the respondent on an agreement continuum of the attitude in question. The items to be measured were similar in 'attitude value' and it was felt that they would fit easily onto this type of scale. A measurement of the intensity of attitude expression is also permitted by this scale. It was determined that a category of 'uncertain' was needed on the scale to emphasize to the respondent that if nothing was known in the area and there were no feelings based on knowledge that it would be better to mark uncertain.[5] Four additional categories ranging from strongly agree, agree, disagree, to

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[5]Fred N. Kerlinger, Foundations of Behavioral Research, New York: Holt, Rinehart and Winston, Inc., 1973, pp. 491-514.

strongly disagree were utilized to determine opinions relating to the current practice. Another scale of the same type was utilized to determine opinions on the future practice relating to the same question.

It was felt to be important that the questionnaire not take over five to ten minutes to complete since shorter questionnaires often have a higher percentage of return. Therefore the number of questions was limited.

Because the questionnaire had not been used before reliability and validity were a concern. Ten of the thirty-three questions used had been included in the only study found of similar nature. This was the study done in Canada by Dr. J. W. R. McIntyre and included four nurses trained in anesthesia for three to six months and ten anesthesiologists supervising them. Although Dr. McIntyre's questionnaire was not published with the results of his study, he was kind enough to send a copy to me. Questions from this study related primarily to the section on 'Impact', but were also included in the sections on 'Education', 'Practice', and 'Job Satisfaction'.[6] Due to the fact that Dr. McIntyre's study was a small, in-house study, based on only four nurses

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[6]Questions from the study of J. W. R. McIntyre include: 'Impact' - Questions 1, 2, 3, 4, 5, 6, and 7, 'Education' - Question 3, 'Practice' - Question 3, and 'Job Satisfaction' - Question 3. See questionnaire in Appendix II.

with only three to six months of training, it was felt that further validation might be in order for these as well as for the twenty-three new questions. It was determined that a Committee of Experts would be formed to evaluate the questionnaire for reliability and validity, and that in addition the questionnaire would be given to members of the UCLA Department of Anesthesiology to answer prior to the mailing. In this way their responses could be evaluated and compared with results of the survey, and their opinions could be given on the questionnaire.[7]

The Committee of Experts formed to give opinion on the questionnaire was made up of the following individuals:

1. John Viljoen M.D.
   Professor of Anesthesiology
   UCLA School of Medicine
   Chief - Department of Anesthesiology
   Wadsworth Veterans Hospital
   Los Angeles, California

2. J. W. Belleville M.D.
   Professor of Anesthesiology
   UCLA School of Medicine
   Los Angeles, California

3. Ronald Katz, M.D.
   Professor and Chairman
   Department of Anesthesiology
   UCLA School of Medicine
   Los Angeles, California

4. Jerome Seliger, Ph.D.
   Faculty Advisor
   Lindenwood College IV

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[7]Kerlinger, op. cit.

5. Mrs. Sandra Schwartz CRNA
   Associate Director
   UCLA School of Nurse Anesthesia
   Los Angeles, California

6. Stuart Sullivan, M.D.
   Professor and Vice-Chairman
   Department of Anesthesiology
   UCLA School of Medicine
   Los Angeles, California

7. Fred Dorie, Ph.D.
   Department of Biostatistics
   UCLA School of Public Health
   Los Angeles, California

Suggestions of the Committee on the format of the questionnaire were incorporated into the final product, and the committee concurred that the questions appeared to be both reliable and valed. The questionnaire was then given to the staff of the Department of Anesthesiology at UCLA and their responses observed and held for comparison with the final results of the study. (Appendix II)

In addition to the above methods of documentation of reliability and validity there were questions in the instrument designed to elicit the same information. This was done in the hope of increasing validity.

It was determined that four questionnaires would be sent to each institution. For those institutions having residency training programs for physicians, and those institutions having no training programs the questionnaires would be sent to the Chairman of the Department of Anesthesiology by name. He would also be sent a covering letter, (Appendix I) explaining the study. Those questionnaires and covering letters to be sent to the group of hospitals having

nurse anesthesia training programs would be sent by name, to the Director of the Nurse Anesthesia School. It was felt important for the highest possible percentage of return, to send the questionnaires personally to one individual by name. All names would later be discarded and the results on the questionnaire anonymous. Names of Department Chairmen and Directors of the Schools of Nurse Anesthesia are listed in the List of Approved Residencies and the List of the Approved Schools. Phone calls made to the hospitals without training programs determined the names of the individuals who are the Departmental Chairmen in those institutions.

It was determined that one questionnaire should be completed by the Department Chairman and one by the Chief Nurse Anesthetist. In order to assist in elimination of bias, since these two individuals are in administrative positions as well as practicing positions, it is requested of the Department Chairman that the other two questionnaires be given to the anesthesiologist and nurse anesthetist who would be third on a list of staff members placed in alphabetical order.

The instrument is constructed so that the questions testing each of the hypotheses are in separate sections. This was done both to simplify the appearance of the questionnaire and thus, hopefully get a larger response, and to increase the ease of tabulation of the results.

3. Covering Letter

A covering letter (Appendix I) was written to explain the study to the respondent. Due to the fact that two hundred letters were to be sent to physicians and one hundred letters were to be sent to nurse anesthetists, two form letters were written changing the wording only to make it appropriate in each situation. The reason for the survey was briefly explained and the usual length of time needed to complete the questionnaire was stated. Method of allocation of the questionnaires in that hospital was discussed.

In order to increase legitimacy of the study to the respondents, and to increase return as much as possible it was determined that the letter should be written on departmental stationary and signed by two consultants as well as myself. Permission was granted to do this by the Chairman of the Department of Anesthesiology and by the Lindenwood Faculty Advisor.

Although, due to the number, it was necessary to xerox the form letter, the name of each individual was typed in so that the correspondence would be as personal as possible.

4. Anonymity

It was believed that assurance of anonymity of the respondents was very important to the accuracy of the results of the questionnaire. It was also felt to be important that results of the questionnaires from each type of institution be tabulated. In order to achieve these two ends, each institution was given a number and all four questionnaires

addressed to each institution labeled identically. A list of institutions and their numbers was kept in the event that a second mailing would be needed to increase response; otherwise this list was not to be looked at during the study. Approximately a thirty percent response was expected and, if under this response was returned, a second mailing would have been done to those not responding within three weeks. A thirty percent return is considered average for this type of study,[8] however one study on type of practice and salary range done by the AANA in 1975 elicited a 72 percent response.[9]

Four stamped, self-addressed envelopes were included with each of the four questionnaires sent to the individual hospitals. This was hoped to increase return since each individual could return his own questionnaire, and also it would be an assurance of anonymity within the individual hospital. Even if all questionnaires were not returned from each hospital, those returned could be utilized in the general study. The results of opinions of the staff of that hospital could not, however, be cross-tabulated for validity within that institution.

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[8]Wood, Marilynne, Asst. Prof. Nursing, UCLA, Lecture Series, "Research Methodology," September-December, 1976.

[9]Health Information Services Incorporated, "A Survey of Nurse Anesthetists - 1975," Journal of the American Association of Nurse Anesthetists, December, 1975, 43:6.

5. Second Mailing

In order to insure the highest rate of return from the questionnaire a letter (available in Appendix III) was sent to all hospitals asked to participate in the survey. This letter asked the respondent to please return his questionnaire by the cut-off date, and if his questionnaires had been lost he could request replacements by letting me know by phone or letter. This letter generated requests for additional questionnaires from four hospitals. Additional questionnaires were received after the letter was sent, but it is impossible to determine if these returns were due to the letter or simply were late returns.

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CHAPTER IV

DATA PROCESSING AND ANALYSIS

1. Data Collection

A. Returns

A total of 630 questionnaires were returned by the designated cut-off date of June 3, 1977. Upon receipt of the questionnaires each was noted for the type of hospital group from which it came. This was done by the use of the number attached to the questionnaire prior to mailing. Thus, it was possible to later compute separately the responses from each of the three types of institutions without being aware which institution was responding when coding the results of the questionnaire. This effort was made to insure the anonymity of the respondent. Forty-five questionnaires were returned with the identifying numbers either cut off or crossed out. These questionnaires were discarded from the part of the study cross-correlating responses from the three types of institutions since there was no way to accurately identify the group to which each belonged.

Identification of numbers and percentage of returns in each category were as follows:

Total individual questionnaires mailed - 1200

Total individual questionnaires returned by June 3, 1977 - 630

Total individual questionnaires returned by the Post Office as "Addressee Unknown" - 8

Total questionnaires returned by the recipient unanswered due to lack of familiarity with Certified Registered Nurse Anesthetists - 16

Total percent of individual questionnaires returned - 53.6%

Total groups of four questionnaires mailed to individual hospitals - 300

Total hospitals responding by June 3, 1977 - 205

Total hospitals having questionnaires returned by Post Office as "Addressee Unknown" - 2

Total hospitals returning questionnaires unanswered due to lack of familiarity with Certified Registered Nurse Anesthetists - 3

Total questionnaires returned answered but without identifying mark - 45

Total percent of hospitals returning at least one questionnaire - 78.3%

(The forty-five questionnaires returned without an identification number were not included in the calculation of the percent of hospitals returning the questionnaire.)

Data for Hospitals with No Training Programs

Total individual questionnaires mailed	-	400
Total individual questionnaires returned	-	172
Total questionnaires returned due to lack of personnel in an individual hospital	-	3
Total questionnaires returned by the Post Office as "Addressee Unknown"	-	8
Total percent of return of individual questionnaires	-	44%
Total hospitals mailed questionnaires	-	100
Total number of hospitals returning at least one questionnaire	-	64
Total percent of hospitals returning at least one questionnaire	-	64%

Data for Hospitals with Schools of Nurse Anesthesia

Total individual questionnaires mailed	-	400
Total individual questionnaires returned	-	210
Total percent of return of individual questionnaires	-	52.5%
Total hospitals mailed questionnaires	-	100
Total hospitals returning at least one questionnaire	-	70
Total percent of hospitals returning at least one questionnaire	-	70%

Data for Hospitals with Physician Anesthesia Residency programs

Total individual questionnaires mailed	- 400
Total individual questionnaires returned	- 203
Total questionnaires returned unanswered due to lack of familiarity with Certified Registered Nurse Anesthetists	- 16
Total percent of return of individual questionnaires	- 52.8%
Total hospitals mailed questionnaires	- 100
Total hospitals returning at least one questionnaire	- 71
Total percent of hospitals returning at least one questionnaire	- 71%

Data for Certified Registered Nurse Anesthetists and Physician Anesthesiologists

Total CRNA's mailed questionnaires	- 600
Total CRNA's returning questionnaires	- 319
Total percent of CRNA's returning questionnaires	- 53.2%
Total physician anesthesiologists mailed questionnaires	- 600
Total physician anesthesiologists returning questionnaires	- 308
Total percent of physician anesthesiologists returning questionnaires	- 51.3%

The method of calculation of percentage of return was based on that described by Earl Babbie in his book, Survey Research Methods. He states, "In computing response rates, the accepted practice is to omit all those questionnaires that could not be delivered. In his methodological report the researcher should indicate the initial sample size, then subtract the number that could not be delivered due to bad addresses, death, and the like. Then the number of completed questionnaires is divided by the net sample size to produce the response rate. As a result, the response rate is really a measure of the researcher's success in persuading sample members to participate, and he does not count against himself those whom he could not even contact."[1]

Since it was planned not only to calculate total responses to test the validity of the hypotheses, but to compare the responses of the three groups of hospitals, those with no training programs, those with Schools of Nurse Anesthesia, and those with physician anesthesia residency programs, as well as the responses of the physician compared with the responses of the Certified Registered Nurse Anesthetists, a percent of response was calculated for each group as well as the total study to determine if the response rate in each area was high enough for analysis.

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[1]Earl R. Babbie, Survey Research Methods (Belmont, California: Wadsworth Publishing Company, Inc., 1973), p. 165.

A 35-40% return of each group was originally anticipated. Mayer and Pratt state, "Few published results report response rates that exceed 50%; indeed conclusions are frequently based on returns from less than 25% of the designated respondents."[2] In this survey a response rate of over 50% was received in total as well as in each separate area of analysis, with the exception of the percent of return of individual questionnaires from hospitals with no training programs which had a response rate of 44% of total individual questionnaires returned. This group had 64% of the hospitals receiving questionnaires represented by at least one returned response however, and this figure was considered the most important since it was not possible to determine if there were four individuals employed in anesthesia departments in some of the smaller hospitals. If not, as is often the case, this would limit the number of individuals receiving questionnaires and thus the return would be limited.

The size of the response rate in all areas was higher than anticipated, and considered adequate for analysis and reporting. There is in the literature, a wide variation in what is considered an acceptable response rate for analyzation and reporting. Babbie requires one of the higher rates noted for acceptability. He states, "A response rate of at

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[2]C. S. Mayer and R. W. Pratt, "A Note on No-Response in a Mail Survey," Public Opinion Quarterly, 1966, Vol. 30, pp. 637-646.

least 50% is adequate for analysis and reporting. A response rate of at least 60% is good and a response rate of 70% or more is very good."[3] All responses for this study were considered adequate and response rate from the three hospital groups was considered good to very good based on the return of questionnaires representing individual hospitals.

Bias of returns from variation in the groups was not significant since by the Chi-Square test there was not a significant difference between the MD/CRNA response rate (308 MD's to 319 CRNA's) or between the three types of hospitals responding (172 with no training programs, 210 with Schools of Nurse Anesthesia, and 203 with residencies for physicians).

2. Coding

As questionnaires were returned each was assigned an identification number which included which of the three types of institutions it represented and whether the respondent was a physician anesthesiologist or a Certified Registered Nurse Anesthetist. All coding was done individually by myself as the researcher, since this is considered at UCLA to be the area of data processing where the most frequent errors affecting outcome of the results occur.[4]

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[3]Babbie, op. cit., p. 165.

[4]James Conner MD, J. W. Belleville MD, and Fred Dorie Ph.D., Personal Communication, June, 1977.

The Track One Processing Method was utilized. This is the traditional method of data processing involving the coding of questionnaires and the transfer of code assignments to a 'transfer sheet' or 'code sheet'. "Coders write numbers corresponding to the desired punches in the appropriate columns of the sheets."[5] The code sheets were then given to the key punch service of the UCLA School of Medicine. After the cards were punched they were verified and corrected to accurately represent the data contained in the questionnaire.

3. Programing

Programs available to me for analysis of the study were those available through the UCLA Health Sciences Computing Facility. All programs listed in the current Bio-medical Data Programing book were reviewed and BMDP 5D, a program entitled "Histogram and Univariate Plots" was chosen as the most appropriate.[6] This program records frequency, cumulative frequency, percent, cumulative percent, count, mean, standard deviation, and a histogram for each variable. A total of 92 variables were read for 630 responses for the total response to the survey. Since cross correlations were desired for MD contrasted with CRNA response, and responses from the three hospital groups, the program was re-run a

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[5]Babbie, op. cit., p. 197.

[6]UCLA Computing Facility, Bio-Medical Data Processing Book. UCLA Press, 1967.

second and third time to obtain the same information for each of these groups. For the MD/CRNA response group a total of 92 variables were read for the 308 responses by physician anesthesiologists and a total of 92 variables were read for the 319 responses by Certified Registered Nurse Anesthetists. For the three hospital groups a total of 92 variables were read for each of the following: 172 responses from hospitals with no training programs, 210 responses from the hospitals with Schools of Nurse Anesthesia, and 203 responses from hospitals with physician anesthesia residency training programs. The same statistics obtained for the total responses were thus obtained for each group by re-running the program.

In order to determine significance of response, the Chi-Squared test was selected. This test reports "the probability that the parameter falls within a certain range (confidence interval)."[7] It assumes that errors are due to sampling error and determines the significance of the response as applicable to the total population. The Chi-Squared test is appropriate to use on an ordinal scale of measurement such as the Likert-like scale used in this study.[8] It is also appropriate to measure central tendency. The mean and standard deviation were reported, in the results

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[7]Babbie, op. cit., p. 308.

[8]Fred Kerlinger, Foundations of Behavioral Research. Second Edition. (New York: Holt, Rinehart, and Winston, Inc., 1973), pp. 107-108.

as it was found to be a useful figure to quickly determine if the results were on the agree or disagree side for a particular variable. Babbie states, "The uniform scaling of the Likert item response categories assumes each item has about the same intensity as the rest."[9] Thus the computation of mean and standard deviation are useful for this study.

It was determined that the Yates Continuity Correction should be added to the Chi-Squared computation. This is a modification for computations with one degree of freedom and increases accuracy since it is a more conservative measure than the Chi-Squared test alone. Dixon and Massey explain this test as follows: "In the case of one degree of freedom the approximation of the discrete sampling distribution of the Chi-Square can be markedly improved by reducing the absolute value of each difference by 0.5 before it is squared. This modification is sometimes called a continuity correction or Yate's correction."[10]

Since the original program utilized did not include the Chi-Squared test or the Chi-Squared test with the Yate's correction and no program was found among those available to be used at UCLA which would do all things desired at once,

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[9]Babbie, op. cit., p. 308.

[10]Wilfred Dixon and Frank Massey, Introduction to Statistical Analysis. Third Edition. (New York: McGraw Hill Book Co., Inc., 1969), p. 242.

the Chi-Squared tests were done after the original computer work by a separate program. The program used was the "Fortran-Chi-Squared test with the Yates Modification for Two to Four Variables". This program was developed by Robert Kaufman MD, Ph.D. of UCLA. This test was done on the agree compared to disagree response of the total results to determine the proof of the hypotheses, and was also done to determine the significance of each variable regarding current and future response, physician compared to CRNA response, and response variation between the three groups of hospitals. In determining significance, a Chi-Squared value above 3.8 indicated a 0.05 level of significance, a Chi-Squared value above 6.6 indicated a 0.01 level of significance, and a Chi-Squared value above 10 indicated a 0.001 level of significance.

For the purposes of computation the sum of the responses of the categories of Strongly Agree and Agree and the categories of Disagree and Strongly Disagree were totaled for the determination of the Chi-Squared value. The uncertain responses, according to Babbie, can either be allocated to each category according to percentage of response to the other four categories, deleted, or listed separately indicating a reason for the number of uncertain responses.[11] It was felt that in this study the uncertain responses may carry a

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[11] Ibid., pp. 264-265.

meaning in themselves for some of the items, so they were listed separately.

All data gained was recorded in the tables developed. These tables showing complete data and all analyses performed, are available to the reader in Appendix IV.

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CHAPTER V

RESULTS

The six hypotheses previously identified as specific areas for the study of the problem will each be discussed in turn and the results obtained from the survey pertaining to each will be described. The total response was utilized to determine the significance of each variable, and the significance of all variables under each hypothesis was used to determine the acceptance or rejection of the hypothesis. Each hypothesis will be listed in the order of presentation for the survey questionnaire, and it will be followed by the items relating to it, also in the order of presentation in the questionnaire.

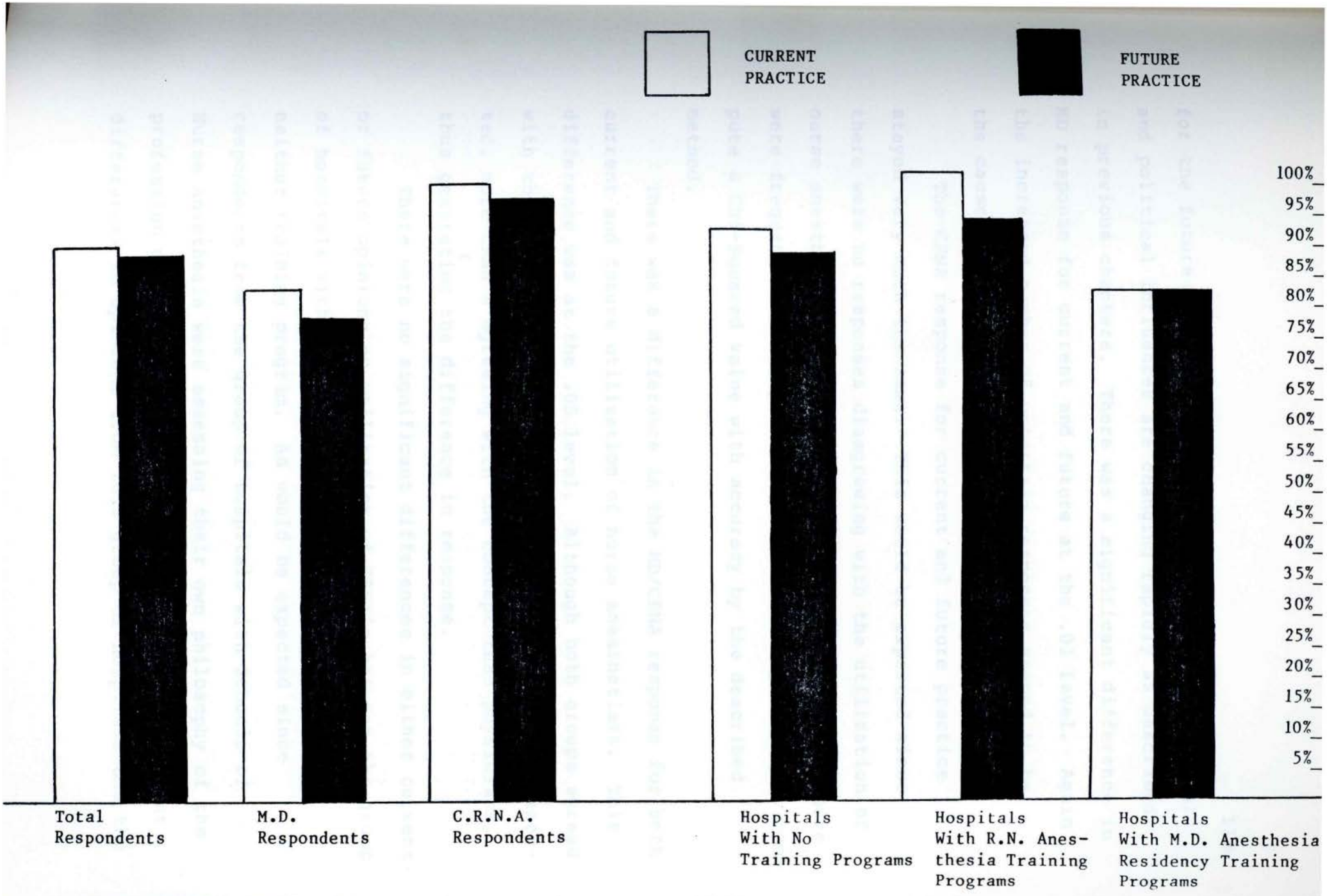
1. Physician's Assistants are not considered to be as acceptable as nurse anesthetists as the non-physician members of the anesthesia care team.
   a. The department should utilize Certified Registered Nurse Anesthetists as members of the anesthesia care team.

In the past it was felt by many physicians that CRNA's were in the specialty on a temporary basis, until the need for additional personnel could be met by physicians. This question was used to determine if this opinion still existed,

or if individuals in the field felt that currently and in the future the CRNA was a permanent member of the specialty either due to the fact that there still is a shortage of appropriately trained physicians, or because it is more economical and efficient to use a combination of CRNA's and MD's in the department. The following results indicated the total response to the first question:

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response
425 (67.5%)	130 (20.6%)	19 (3%)	20 (3.2%)	25 (4%)	11 (1.7%)

The difference between the agree and disagree responses were significant at the .001 level with a Chi-Squared value of over 100. This indicates a strong significance. It was thus determined that according to the results of the survey CRNA's should be utilized. There was a significant difference between current practice and possible future practice. The results were significant at the .01 level with a Chi-Squared value of 9.99. (See Appendix IV, Page 1 and 2) Although over 80% of the respondents agreed with the utilization of CRNA's both currently and in the future there was a larger number of uncertain responses for the future. This changed the numbers on which the Chi-Squared test was made and caused a significant difference. The higher degree of uncertainty



1. The Department should utilize Certified Registered Nurse Anesthetists as members of the anesthesia care team.

for the future is to be expected, particularly since legal and political influences are changing rapidly as described in previous chapters. There was a significant difference in MD response for current and future at the .01 level. Again the increased number of uncertain responses seemed to be the cause of the difference.

The CRNA response for current and future practice stayed very much the same. This would be expected since there were no responses disagreeing with the utilization of nurse anesthetists either now or in the future. Since there were frequencies of response under 5 it was impossible to compute a Chi-Squared value with accuracy by the described method.

There was a difference in the MD/CRNA response for both current and future utilization of nurse anesthetists. This difference was at the .05 level. Although both groups agreed with the utilization of CRNA's there were, as would be expected, more CRNA's agreeing with the concept than physicians, thus generating the difference in response.

There were no significant differences in either current or future opinions on utilization of CRNA's between the group of hospitals with residency programs and the group with neither training program. As would be expected since respondents from the group of hospitals with Schools of Nurse Anesthesia were assessing their own philosophy of the profession or their own profession, there were significant differences in opinions from this group of hospitals and the

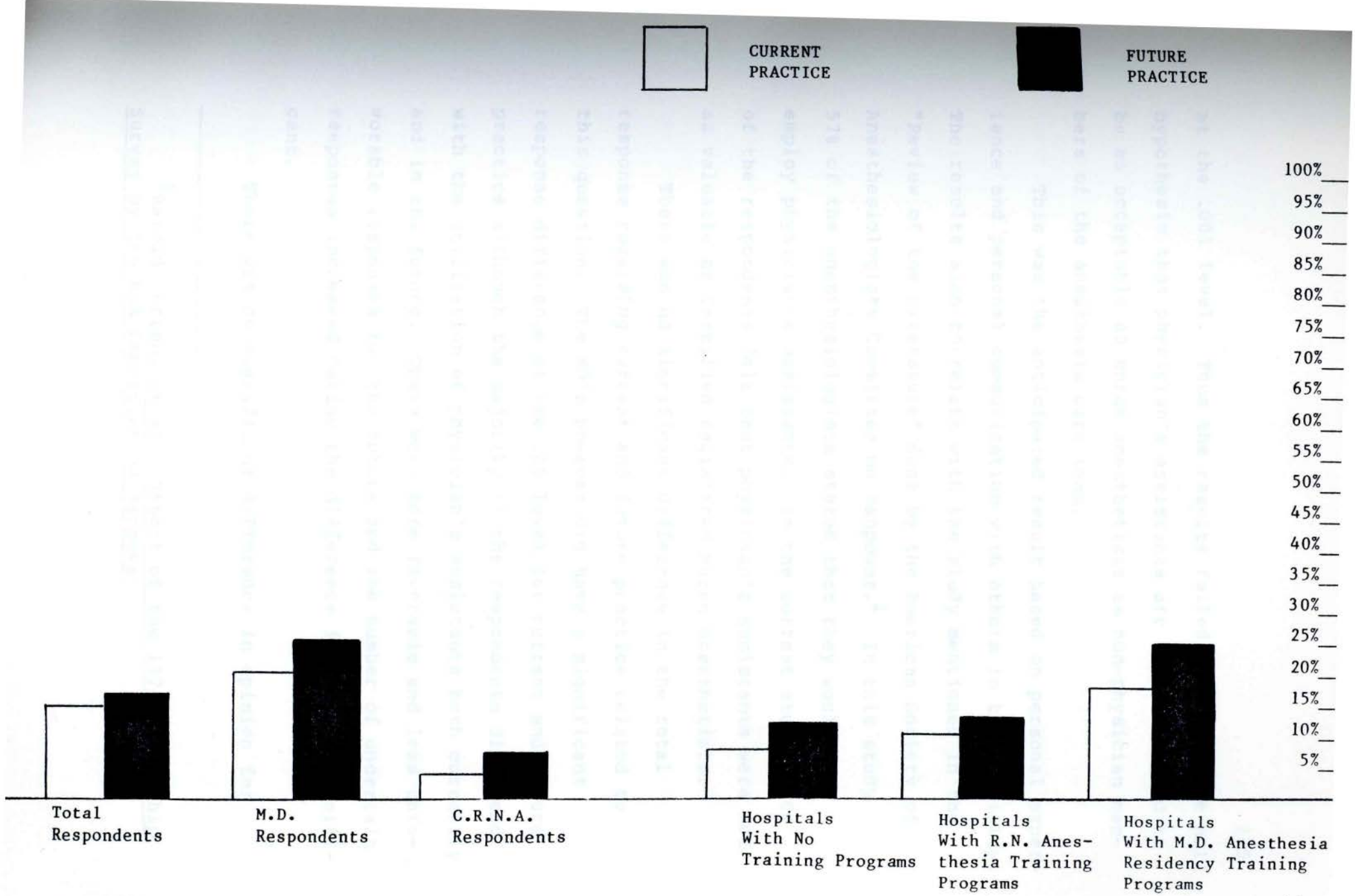
other two groups. In spite of the significant differences all three groups of hospitals favored the utilization of CRNA's both currently and in the future.

b. Appropriately trained physician's assistants would be as valuable in the department as nurse anesthetists.

Recently there has been discussion as to whether or not physician's assistants would be more valuable in an anesthesia department than CRNA's. This topic was alluded to in the previous chapters. This question was meant to give respondents an opportunity to express their views on this topic to find if we should train nurses or individuals with other background for the specialty. This question generated the results from the total survey response given in the following table. All other data pertaining to the item is available in Appendix IV, Pages 3 and 4.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
36	65	157	117	233	22
(5.7%)	(10.3%)	(24.9%)	(18.6%)	(37%)	(3.5%)

These results indicated that physician's assistants were not considered as valuable as nurse anesthetists as the non-physician members of the anesthesia care team. The Chi-Squared test of the agree compared to the disagree responses generated a value of over 100 indicating a strong significance



2. Appropriately trained physician's assistants would be as valuable in the department as nurse anesthetists.

at the .001 level. Thus the results failed to reject the null hypothesis that physician's assistants are not considered to be as acceptable as nurse anesthetists as non-physician members of the anesthesia care team.

This was the anticipated result based on personal experience and personal communication with others in the specialty. The results also correlate with the study mentioned in the "Review of the Literature" done by the American Society of Anesthesiologists Committee on Manpower.[1] In this study 57% of the anesthesiologists stated that they would not employ physician's assistants. In the current study 55.6% of the respondents felt that physician's assistants were not as valuable as Certified Registered Nurse Anesthetists.

There was no significant difference in the total response regarding current and future practice related to this question. The MD's however did have a significant response difference at the .05 level for current and future practice although the majority of the respondents disagreed with the utilization of physician's assistants both currently and in the future. There were more favorable and less unfavorable responses for the future and the number of uncertain responses increased making the difference in opinion significant.

There was no significant difference in opinion for

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[1]Harold Carron, et al., Report of the 1974 Membership Survey by the ASA Committee on Manpower.

the current and future practice in the CRNA response. Both response groups indicated disagreement with the use of physician's assistants as would be anticipated since they may be viewed by the CRNA as competing for the same job market.

Although the majority of both physicians and CRNA's disagreed with the utilization of physician's assistants there was a significant difference in the response at the .001 level for both the current and future practice when comparison was made of the difference in response between those two groups. This would again be expected since the CRNA is looking at his or her own job market while the MD is not.

There was a significant difference at the .05 level for both the current and future practice between the residency hospital group and the hospital group with no training programs. This is probably due to the fact that the CRNA is legally able to practice under the direction of the surgeon without an anesthesiologist, while the physician's assistant is not legally able to do this. Thus the physician's assistant would be of lees use to the small hospital if there was no physician anesthesiologist. There was no significant difference between the responses of the hospital group with no training program and the group with Schools of Nurse Anesthesia, or between the group with Schools of Nurse Anesthesia and the residency group for current practice, but for the future there was a significant difference at the .05 level between the residency group and the group with Schools

of Nurse Anesthesia. This indicates that perhaps the physician's assistant would be of more value due to the difference in the tasks they would perform in a residency training program compared to the needs of other hospital types. In the residency training program there would probably be more need for assistance with monitoring equipment and perhaps the job of the physician's assistant would be more in this area than in the actual practice of anesthesia. The job of the CRNA is more likely to be in the practice of anesthesia than in assisting the physician with monitoring or other needs.

In summarization of the results pertaining to this hypothesis, it is indicated by the study that nurse anesthetists should be used, and are preferred to physician's assistants by the majority of the respondents. The MD's were somewhat more accepting of the physician's assistant than the nurse anesthetists although the majority still disagreed with the concept. Of the three hospital groups, physician's assistants, if valuable as a member of the care team, would probably be most valuable to the residency training programs for future practice, although the majority of responses in this area disagree with the concept. The null hypothesis was thus not rejected.

2. Utilization of nurse anesthetists does not increase the economy and efficiency of the anesthesia department.

If this second hypothesis is rejected it would lend support to the first hypothesis showing that CRNA's are a

valuable addition to the anesthesia care team since they help increase the economy and efficiency of the department. In rejecting or accepting this hypothesis the difference between the responses agreeing and disagreeing for both questions must be significant and the majority of the respondents must agree. If either of these factors does not occur the hypothesis is not accepted.

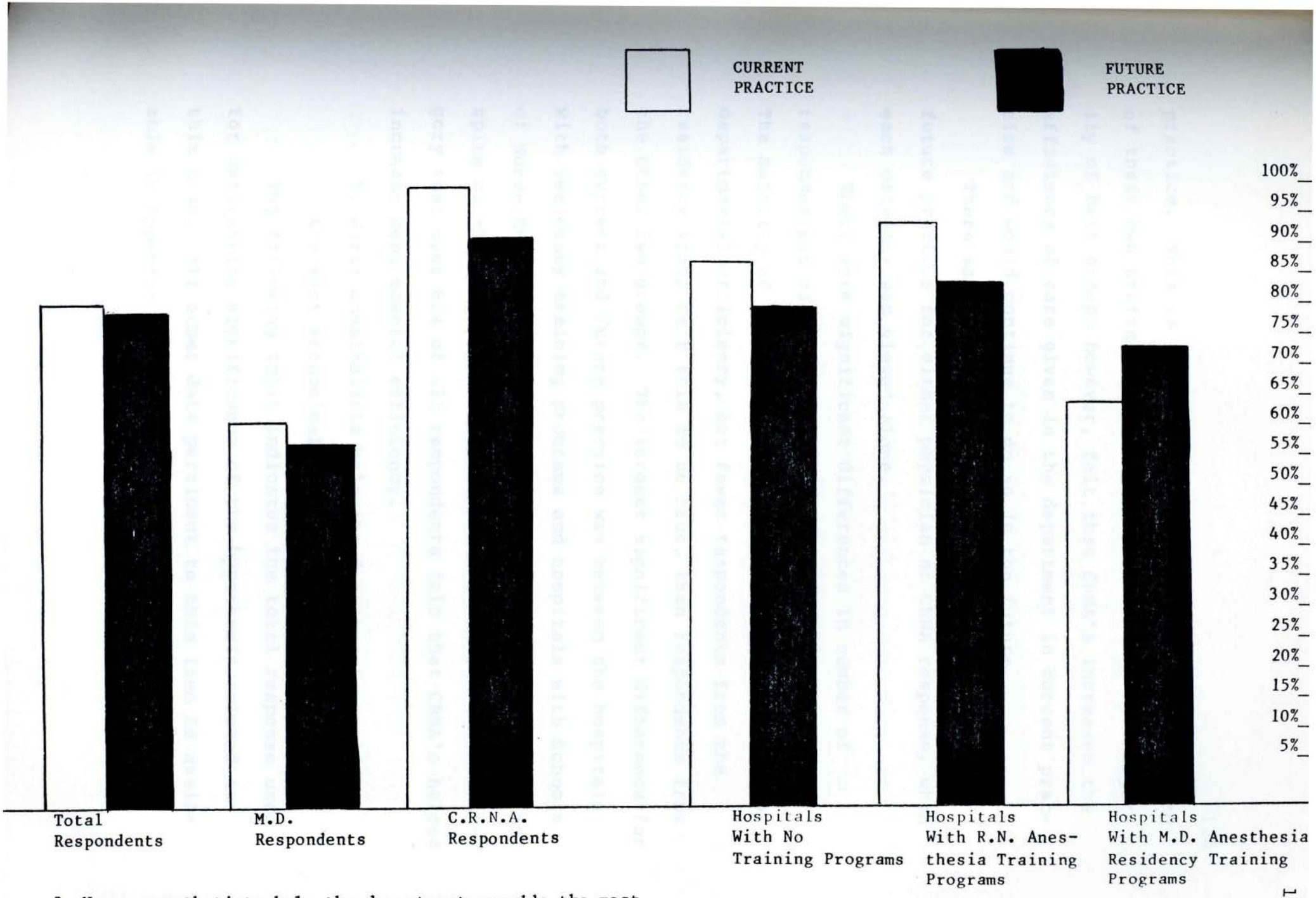
a. Nurse anesthetists help the department provide the most efficient method of anesthesia care.

The following table indicates the total response used in determining significance for the hypothesis. All other data relating to this item is available in Appendix IV, Pages 5 and 6.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
308 (48.9%)	195 (31%)	41 (6.5%)	49 (7.8%)	27 (4.3%)	10 (1.6%)

There was a significant difference at the .001 level between the 503 responses agreeing and the 76 responses disagreeing, indicating that CRNA's help provide the most efficient method of anesthesia care. There was no significant difference in total response based on current and future practice.

A significant difference at the .001 level was noted between MD and CRNA response for both current and future



3. Nurse anesthetists help the department provide the most efficient method of anesthesia care.

practice. This is to be expected since CRNA's are speaking of their own profession and physicians are not. The majority of both groups however, felt that CRNA's increased the efficiency of care given in the department in current practice and would continue to do so in the future.

There was no significant difference in current and future practice for either physician or CRNA response, when each category was viewed alone.

There were significant differences in number of responses per category between all three hospital groups. The majority of all three groups felt that CRNA's increase departmental efficiency, but fewer respondents from the residency group felt this to be true, than respondents from the other two groups. The largest significant difference for both current and future practice was between the hospitals with residency training programs and hospitals with Schools of Nurse Anesthesia. It again should be emphasized, that in spite of the differences in numbers responding to each category that over 60% of all respondents felt that CRNA's helped increase departmental efficiency.

b. Nurse anesthetists help the department provide the most economical method of anesthesia care.

The following table indicates the total response used for determining significance of the hypothesis related to this item. All other data pertinent to this item is available in Appendix IV, Pages 7 and 8.

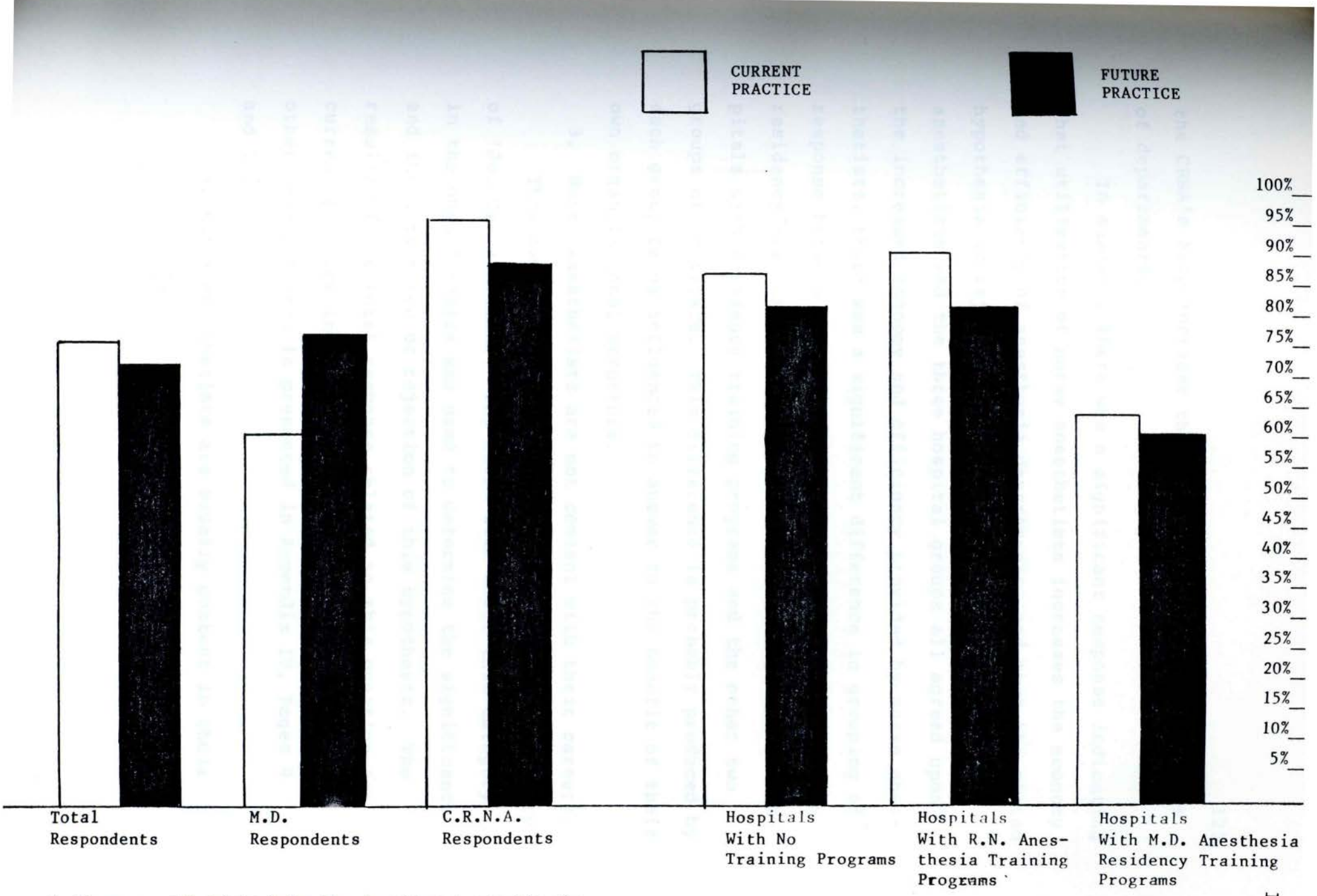
Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
277 (44%)	201 (31.9%)	63 (10%)	46 (7.3%)	27 (4.3%)	16 (2.5%)

There was a significant difference at the .001 level between the 478 responses agreeing and the 73 responses disagreeing that CRNA's help provide the most economical method of anesthesia care. There was no significant difference in the response based on current and future practice.

There was a significant difference at the .001 level between MD and CRNA response for both current and future practice, but even so over 50% of the respondents in both groups agreed with the question. As would be expected more individuals in the CRNA group agreed than in the MD group since they are discussing their own profession.

There was no significant difference between current and future response for either the MD or the CRNA groups.

Among the three hospital groups it is interesting to note that responses from the group of hospitals with residencies differed significantly at the .001 level from the other two groups, but there was no significant difference between the group with Schools of Nurse Anesthesia and other groups. This possibly indicates that residents in training and having lower salaries than staff anesthesiologists, but similar salaries to CRNA's help increase the economy of the hospitals with physician anesthesia training programs, while



4. Nurse anesthetists help the department provide the most economical method of anesthesia care.

the CRNA's help increase the economy of the other two types of departments.

In summary, there was a significant response indicating that utilization of nurse anesthetists increases the economy and efficiency of anesthesia departments, and thus the stated hypothesis is rejected. Although both physicians, nurse anesthetists and the three hospital groups all agreed upon the increased economy and efficiency provided by nurse anesthetists, there was a significant difference in grouping of response between MD's and CRNA's and between hospitals with residency training programs and the other two groups of hospitals with residency training programs and the other two groups of hospitals. This difference is probably produced by each group being influenced to answer to the benefit of their own organizational structure.

3. Nurse anesthetists are not content with their careers.

This hypothesis was related to the discussion category of 'Job Satisfaction.' The first item under this category in the questionnaire was used to determine the significance and the acceptance or rejection of this hypothesis. The results of the total response related to this question for current practice is presented in the following table. All other relevant data is presented in Appendix IV, Pages 9 and 10.

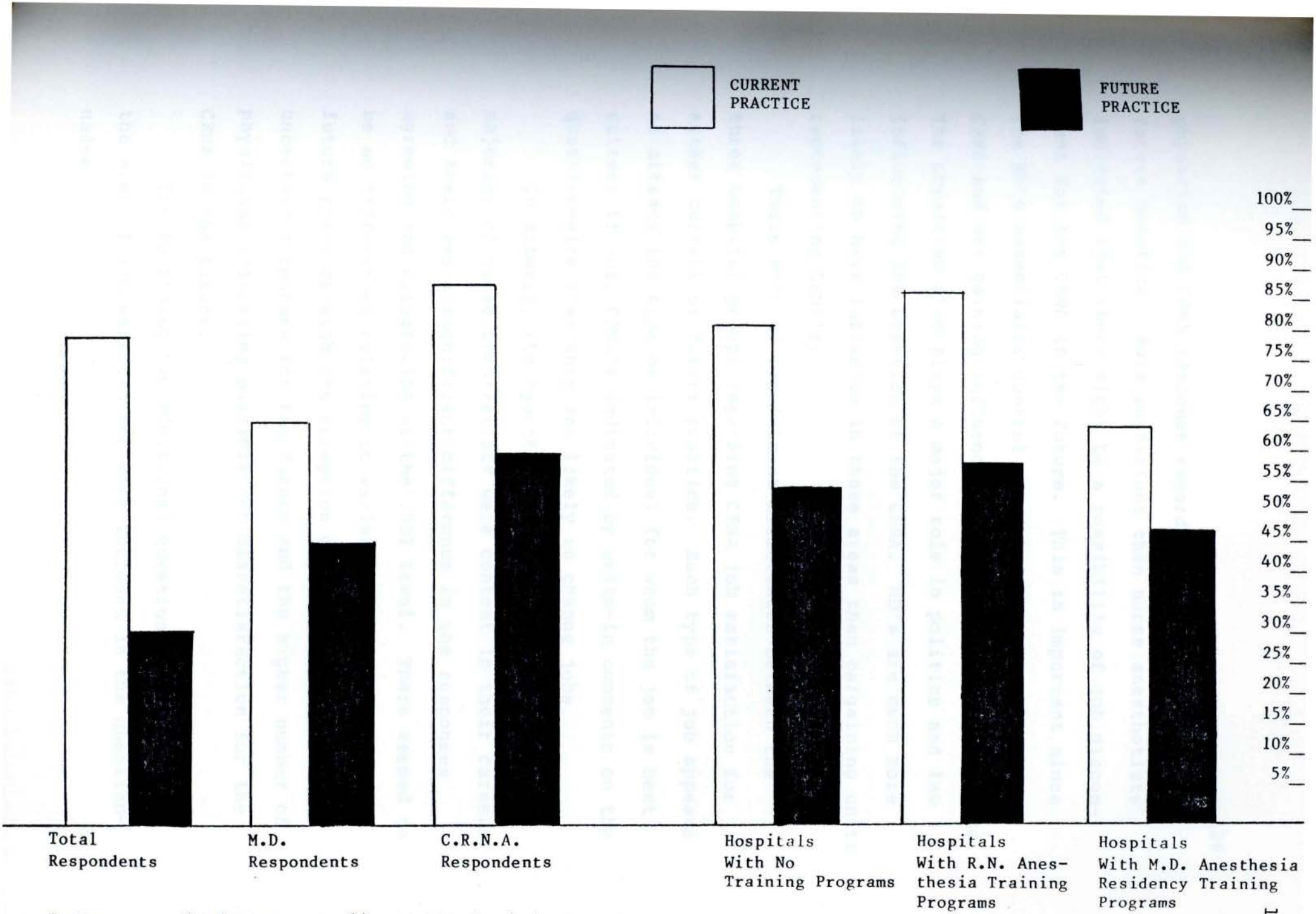
a. Nurse anesthetists are usually content in their careers.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
144 (22.9%)	327 (51.9%)	78 (12.4%)	58 (9.2%)	13 (2.1%)	10 (1.6%)

The difference between the 471 responses agreeing and the 71 responses disagreeing was significant at the .001 level. Over 70% of the respondents agreed that nurse anesthetists are content while less than 12% disagreed. Thus the null hypothesis was rejected at the .001 level of significance: nurse anesthetists are content in their careers.

There was no significant difference between current and future response in any of the categories regarding the agree and disagree responses. However, it is of interest that the number of uncertain responses increased from current to future from 12.4% to 34.3% for the total group, from 19.5% for the physician group, and from 5.6% to 32% for the CRNA group. This indicates a need for possible further definitive study in the area. The increase may be caused by the uncertainty created by the current political and legal factors affecting the profession and the influence these factors might have on future practice. Further research may delineate possible problems so that dissatisfaction is prevented before it arises.

There was no significant difference in response between the MD and CRNA groups for current practice, but there was a significant difference at the .001 level between



5. Nurse anesthetists are usually content in their careers.

physician and CRNA response regarding job satisfaction in future practice. More physicians than nurse anesthetists indicated that there might be a possibility of job discontent for the CRNA in the future. This is important since the MD's essentially control the job description of the CRNA and are gaining influence in the CRNA training programs. The physician also plays a major role in politics and law influencing the practice of the CRNA. MD's are much more likely to have influence in these areas than bargaining units representing CRNA's.

There were no significant differences between the three hospital groups regarding CRNA job satisfaction for either current or future practice. Each type of job appears to attract the type of individual for whom the job is best suited; if not, CRNA's indicated by write-in comments on the questionnaire that they are likely to change jobs.

In summary, the hypothesis was rejected because the majority of nurse anesthetists were content in their careers, and there was a significant difference in the responses agreeing and disagreeing at the .001 level. There seemed to be no differences relating to variation in current and future practice with the exception of the higher number of uncertain responses for the future and the higher number of physicians indicating possible job dissatisfaction for the CRNA in the future.

The following two additional questions pertinent to the area of job satisfaction were included in the questionnaire.

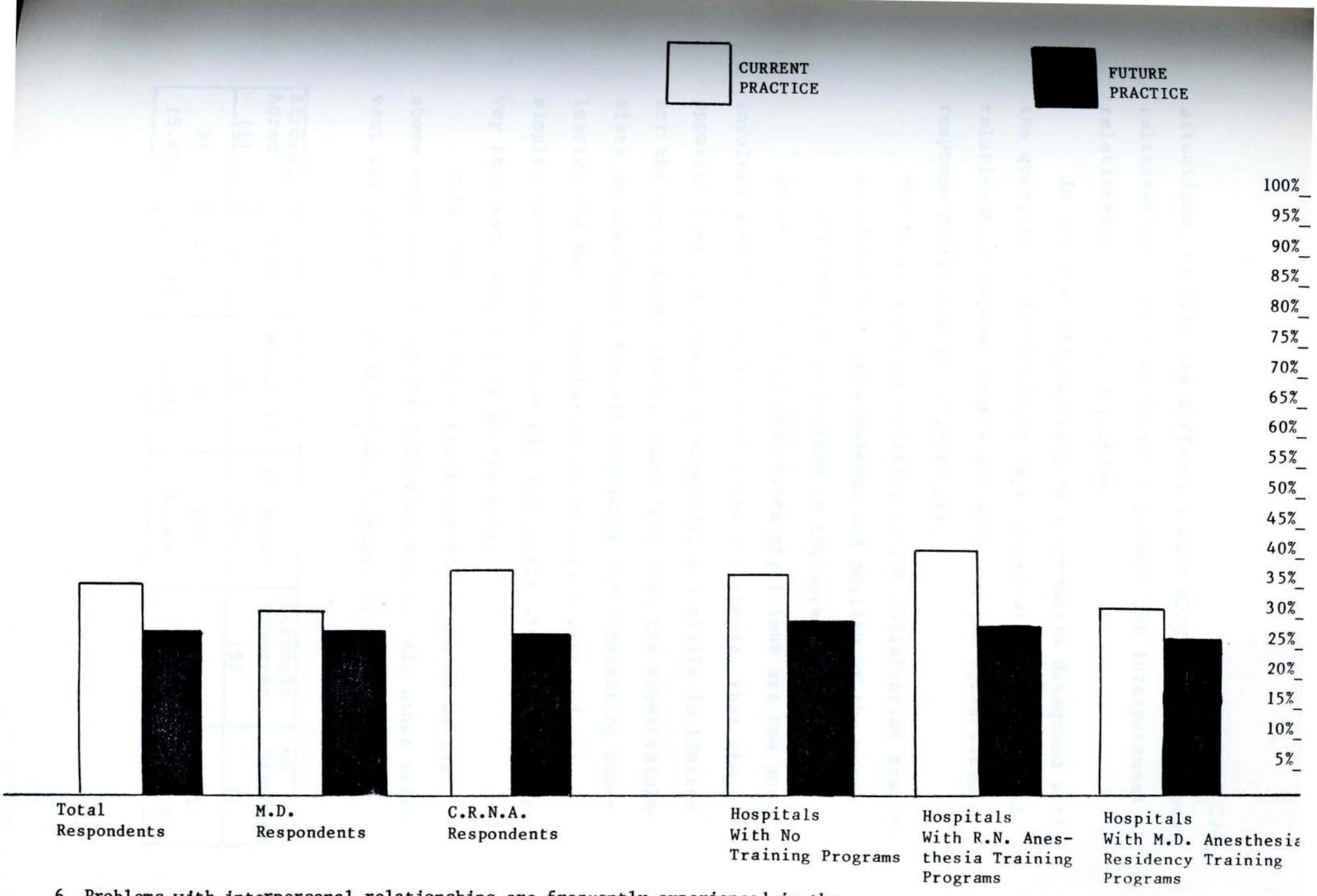
b. Problems with interpersonal relationships are frequently experienced in the work situation between nurse anesthetists and anesthesiologists.

Data from the total response is indicated in the following table. All other data relating to the item can be found in Appendix IV, Pages 11 and 12.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
51 (8.1%)	162 (25.7%)	61 (9.7%)	270 (42.9%)	76 (12.1%)	10 (1.6%)

The current and future total responses to this item indicated a significant difference at the .001 level between the number of responses in agreement and those in disagreement. The majority of responses were in disagreement indicating that interpersonal relationships in the work situation between anesthesiologists and nurse anesthetists are not frequently experienced.

There were no significant differences between current and future responses, between anesthesiologist and nurse anesthetist responses, or between responses from any of the three hospital groups. This is an interesting finding considering the political differences between the two organizations representing each group. It was also interesting to note that several respondents wrote in the questionnaire regarding this item. They said that they had in previous work



6. Problems with interpersonal relationships are frequently experienced in the work situation between nurse anesthetists and anesthesiologists.

situations, experienced difficulty with MD/CRNA interpersonal relationships, but that in their present job interpersonal relationships were not a problem.

In summary, the majority of respondents disagreed with the question of difficulties experienced with interpersonal relationships between CRNA's and MD's and the agree/disagree response difference was significant.

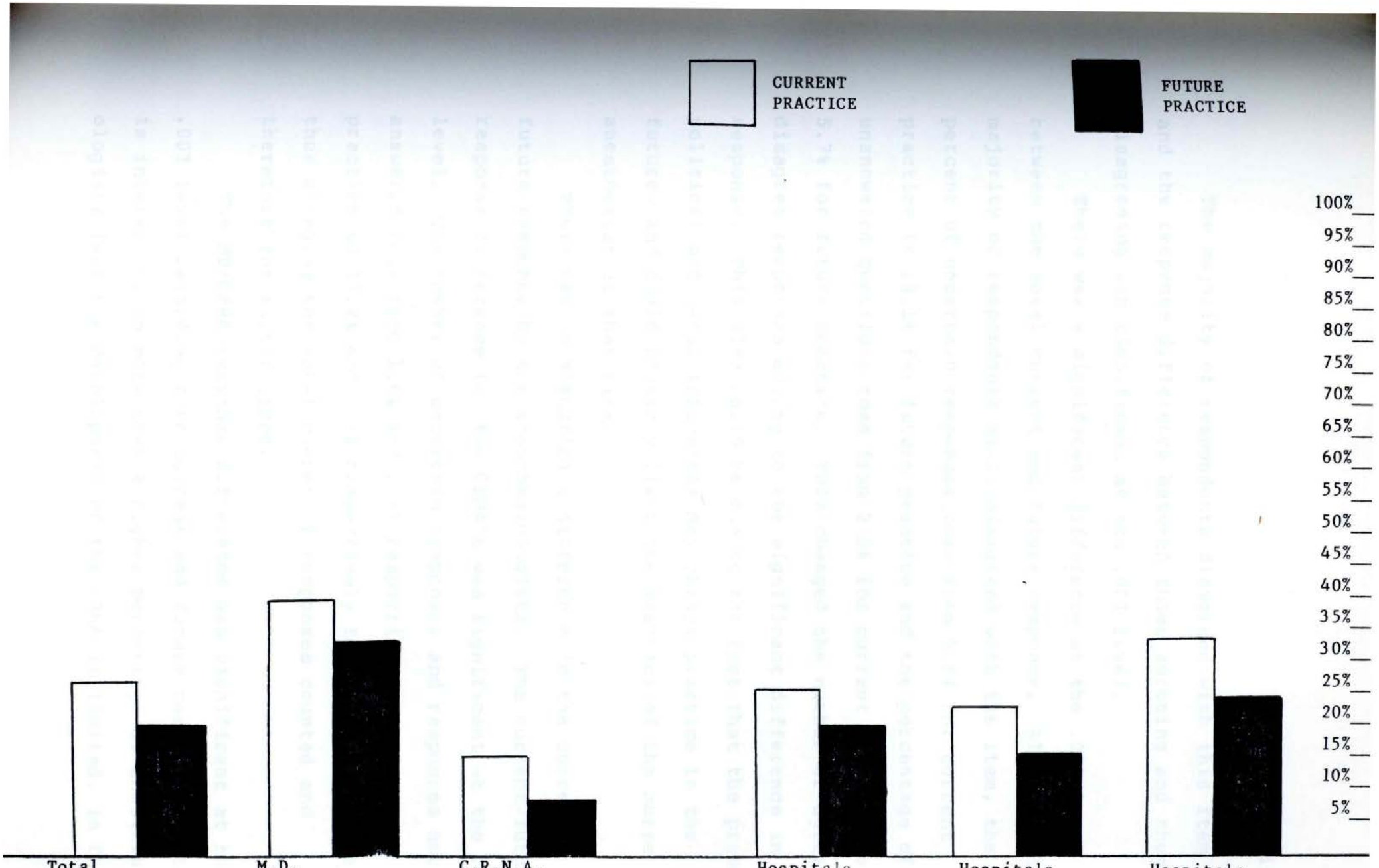
The final question relating to job satisfaction stated:

c. Development of knowledge and ability of the nurse anesthetist is limited in the work environment.

It has been stated that since physicians are now more involved with the practice of nurse anesthesia, that the opportunities for improving knowledge and skills is limited for the nurse anesthetist. Some feel that the anesthesiologists do anesthesia for all difficult and interesting cases leaving the nurse anesthetist to do relief work and the simpler anesthetics. From all applicable items in this survey this was found not to be the case.

Total response for current practice related to the above item is given in the following table. All other relevant data is given in Appendix IV, Pages 13 and 14.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
34 (5.4%)	134 (21.3%)	37 (5.9%)	267 (42.4%)	142 (22.5%)	16 (2.5%)



7. Development of knowledge and ability of the nurse anesthetist is limited in the work environment.

The majority of respondents disagreed with this item and the response difference between those agreeing and those disagreeing was significant at the .001 level.

There was a significant difference at the .001 level between the total current and future response. Although the majority of respondents still disagreed with the item, the percent of uncertain responses rose from 5.9% for current practice to 18.1% for future practice and the percentage of unanswered questions rose from 2.5% for current practice to 5.7% for future practice. This changed the number of agree/disagree responses adding to the significant difference in response. This also could be due to the fact that the present political and legal influences may change practice in the future, and could possibly limit the practice of the nurse anesthetist at that time.

There was no significant difference in the current/future response by the anesthesiologists. The current/future response difference for the CRNA's was significant at the .05 level. The number of uncertain responses and responses not answered rose from 1.6% and 1.3% respectively for current practice to 17.2% and 5.3% respectively for future practice, thus changing the total number of responses counted and therefore the significance.

The MD/CRNA response difference was significant at the .001 level regarding both current and future responses. It is interesting to note that a higher percentage of anesthesiologists feel the development of the CRNA is limited, in fact

more anesthesiologists feel this than do the CRNA's themselves. The CRNA's apparently see the future as decreasing limitations since there was a significant response difference at the .05 level from CRNA's regarding current and future practice indicating this. The percentage of CRNA's feeling limitations for current practice was 15.3% compared to only 7.5% feeling limitations for the future. Once again the number of uncertain responses increased from 1.6% currently to 17.2% for the future, thus adding to the significance of the difference by changing the total response numbers.

There were no significant differences between the three groups of hospitals regarding job limitations for the CRNA.

In summary, there was a significant difference between the agree/disagree responses regarding limitation of development of the CRNA. The majority of physicians and nurse anesthetists felt that the CRNA is not limited in development. The CRNA current/future response difference was significant, apparently attributable to increased uncertain responses and changes in numbers for both agree and disagree responses from opinion on current, to opinion on future practice. Political and legal changes influencing the work situation, and as yet unsolved could contribute to the increased uncertainty regarding the future.

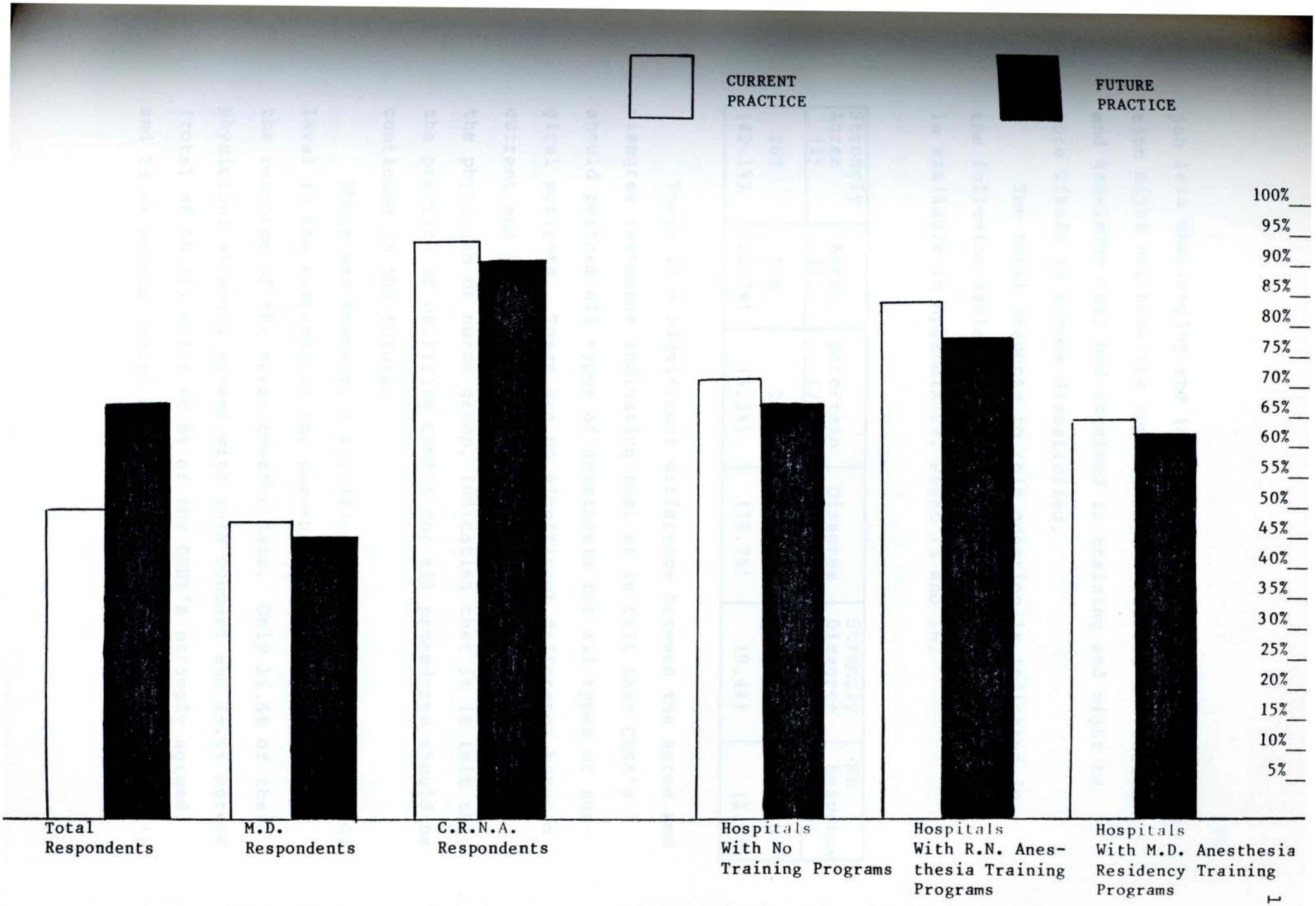
The fourth hypothesis to be tested is in the area of practice of the Certified Registered Nurse Anesthetist.

4. The practice of the nurse anesthetist does not vary with the institution in which they work.

The discussion will be based on the differences in responses to each of the questions as it appeared in the questionnaire under this category. Data from each question will be discussed individually and then results will be correlated with the hypothesis. Variations in responses among the three hospitals will be used to determine the proof of the hypothesis. Since each of the three groups of hospitals represent different organizational structures, it is felt that the various practice situations which the CRNA might encounter are represented, thus variation in practice between the three groups of hospitals represents variation in practice for the CRNA. The questions relating to this hypothesis follows.

a. Nurse anesthetists should provide anesthesia care for all types of surgical cases, and for patients with all ASA risk classifications, according to individual ability.

This question is designed with the purpose of eliciting information relative to limitations on practice of the CRNA within an institution. It was believed that in some situations physicians took care of the higher risk cases (determined by the ASA risk classification) and cared for the more involved surgical procedures. This type of situation would limit the practice of the CRNA and could be felt to make the



8. Nurse anesthetists should provide anesthesia care for all types of surgical cases and for patients with all ASA risk classifications, according to individual ability.

job less challenging and interesting. CRNA's in this situation might not have the opportunity to utilize the skills and knowledge they had obtained in training and might be more likely to become dissatisfied.

The total response to this question is indicated in the following table. All other data relating to this item is available in Appendix IV, Pages 15 and 16.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
265 (42.1%)	168 (26.7%)	21 (3.3%)	105 (16.7%)	59 (9.4%)	12 (1.9%)

There is a significant difference between the agree and disagree responses indicating that it is felt that CRNA's should perform all types of anesthesia for all types of surgical patients. There was no significant difference between current and future practice in either the total response or the physician or nurse group, indicating that it is felt that the practice of utilizing CRNA's for all procedures should be continued in the future.

There was however, a significant difference at the .001 level in the response of the anesthesiologists compared to the response of the nurse anesthetists. Only 16.6% of the physicians strongly agreed with this concept and 29.9% agreed (total of 56.5%) while 68.8% of the CRNA's strongly agreed and 23.8% agreed (total of 90.6%). From this data the CRNA's

feel that it is important to be able to participate in all types of anesthesia care, without limitation. It was of interest that both physicians and nurse anesthetists often wrote in an explanation with the item expressing a need for closer physician supervision with the more difficult cases. The CRNA's desired this supervision as well as the MD's, which is interesting since it has been expressed that CRNA's do not realize their limitations and want to do more than their capabilities would allow. There were additional comments on two of the 630 returns supporting the feeling that CRNA's do not realize their limitations, but it appears that the majority of physicians and nurses do not feel this to be a problem. This concept will be discussed further with the results of subsequent questions.

In the difference in response between the three types of hospitals, which is the breakdown of results particularly relevant to the hypothesis, it was found that although over 50% of all groups agree that CRNA's should provide all types of anesthesia care, there was no significant difference in response between the group with no training programs and the group of hospitals with a School of Nurse Anesthesia. There was a difference in response, significant at the .001 level, between the group of hospitals with residency programs and the two other groups for both current and future practice. More responses from the residency group disagreed with CRNA's providing all types of anesthesia care and fewer

agreed than among the other two groups. This might possibly be related to two factors:

1. Increased availability of physician personnel in the organizational structure of the residency program so that it is not necessary to utilize nurses for anesthesia.
2. Feelings of loyalty and protection of one's own profession by both physicians and nurses which might be related to the feelings which each group imposes on the other discussed elsewhere in this paper.

Perhaps further, more definitive study of the physician and nurse groups in each of the hospital groups might add information of interest in this area.

Even though the majority of individuals felt that CRNA's should participate in all types of anesthesia, it was believed important to determine from those disagreeing if there were any areas of anesthesia believed more important for limitation to physician practice. This is particularly relevant for the area of regional anesthesia since in California and some other states there is current legislative action regarding the participation of CRNA's in this specialty area. This action was discussed in previous sections of this paper. The four most commonly discussed specialty areas were outlined on the questionnaire, and a space was left for other specialties deemed important.

There were relatively few write-in answers under the category of other, but the most frequent additions were pediatric cases under the age of two years and high risk (ASA classification IV and V) patients. There was one mention of anesthesia for facial injuries.

Among the four outlined categories there were no significant differences, indicating that there was not one area felt to be more important for limitation to physician practice. This was of interest since nurse anesthetists frequently do obstetrical anesthesia and infrequently do regional anesthesia due to state or departmental practice policies.

In all of the four outlined specialty areas, obstetrical, cardiac, neurological and regional anesthesia, there were significant differences among the agree and disagree responses for both current and future practice and the majority of respondents favored no practice limitations. The calculation of this differed from previous calculations because the questionnaire indicated that no response was needed unless the respondent agreed that a specific type of anesthesia should not be provided by nurse anesthetists. Therefore the responses with no response were added to those disagreeing for the calculation. A few respondents indicated confusion regarding the correct marking of the specialty area questions. This did not affect the results however, since the majority of respondents felt there should be no limitations and therefore did not mark this part of the ques-

tion at all. Perhaps, since this was an area of confusion it should be clarified in a future study.

The next area of discussion will consider response relating to each of the specialty areas.

1. Obstetrical anesthesia

This has been a popular area for nurse anesthesia practice for many years. Part of the popularity relates to the fact that due to the unusual hours required for practice in the specialty it was not a popular area for the practice of anesthesiologists and CRNA's filled in the gap. In recent years regional anesthesia has become popular for obstetrical cases. Since in many areas CRNA's do not perform this type of anesthesia it might impose a limitation on practice. This was not the case from the reports of the survey. Results relating to the data for the specialty of obstetrical anesthesia are available in Appendix IV, Pages 17 and 18.

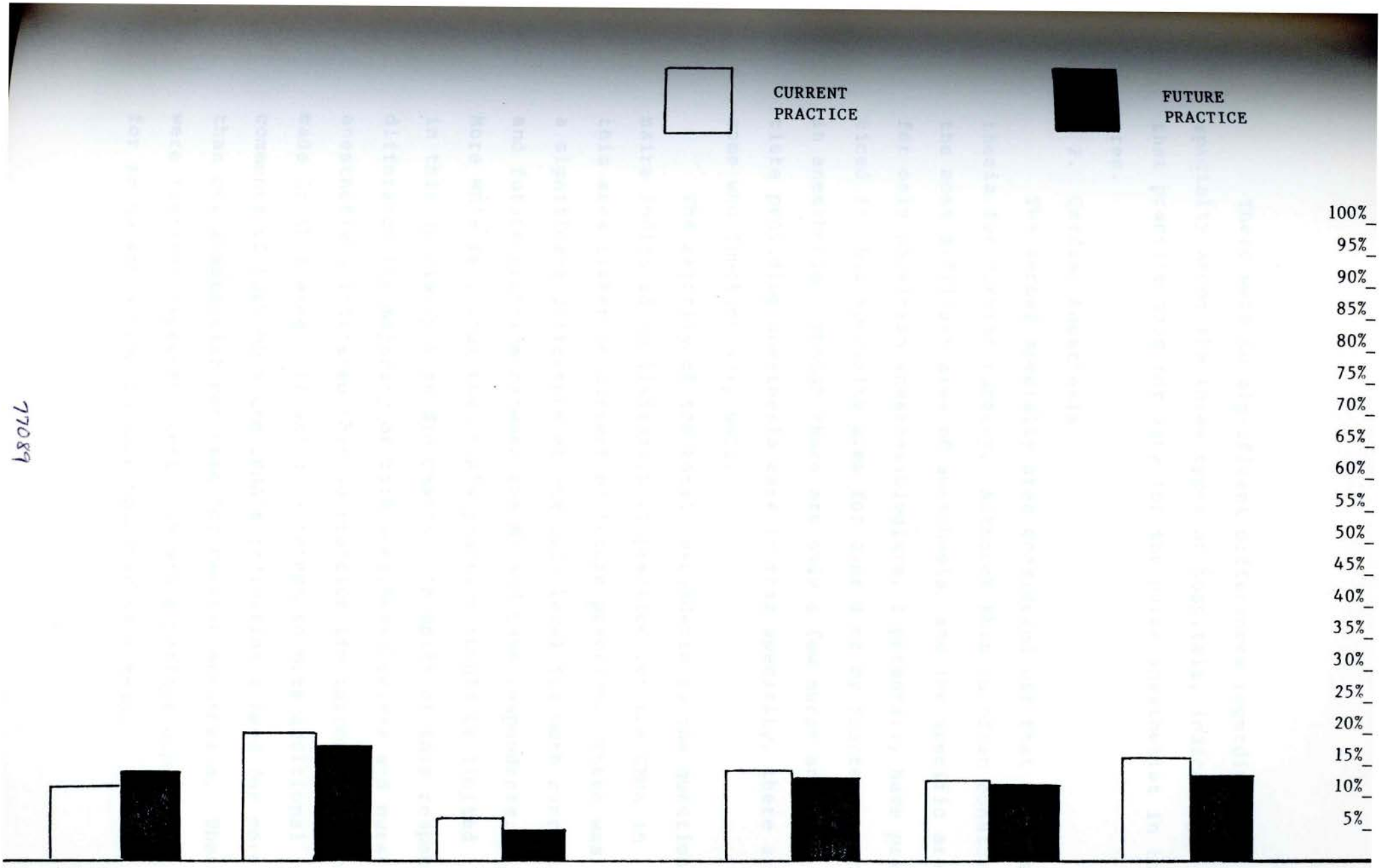
There was no significant difference in the responses relating to current and future practice in the specialty of obstetrical anesthesia.

There was a significant difference in the MD/CRNA response for both current and future practice with more physicians than nurse anesthetists feeling that CRNA's should not participate in the specialty, however the majority of respondents, both MD's and CRNA's, felt that nurses should practice in this area.

Correlation of Significance of responses agreeing or strongly agreeing that nurse anesthetists should not practice specific anesthesia specialties.

		Obstetrical	Cardiac	Neurological	Regional
CURRENT	AGREE	76	98	77	92
	DISAGREE	544	509	532	500
FUTURE	AGREE	66	89	77	84
	DISAGREE	543	506	528	510

There is no significant difference in the responses, indicating that there is no specific specialty the majority of individuals feel the CRNA should not perform more than any other specialty. The majority of responses indicate CRNA's should practice in all areas of anesthesia.



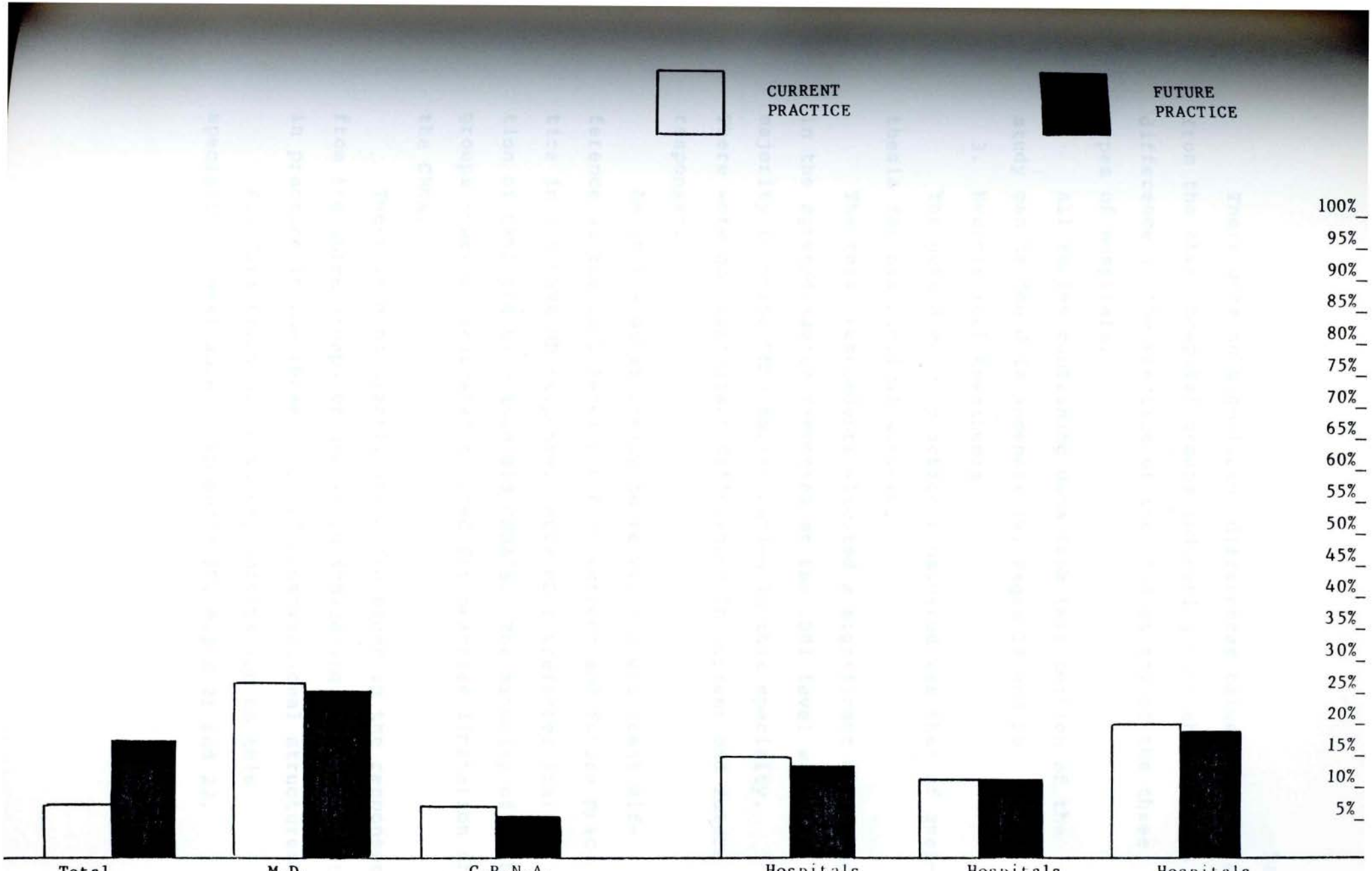
9. Nurse anesthetists should NOT do obstetrical anesthesia.

There were no significant differences regarding this specialty among the three types of hospitals, indicating that practice does not vary for the nurse anesthetist in this area.

2. Cardiac Anesthesia

The second specialty area considered was that of anesthesia for cardiac surgery. Although this is often considered the most difficult area of anesthesia, and the specific area for only physician anesthesiologists, I personally have practiced in this specialty area for over 8 of my fourteen years in anesthesia. Though there are only a few nurse anesthetists providing anesthesia care in this specialty, there are some who function very well.

The majority of the total respondents to the questionnaire indicated no limitation of practice for the CRNA in this area either in current or future practice. There was a significant difference at the .001 level for both current and future practice between the MD and CRNA respondents. More MD's felt that the CRNA's practice should be limited in this specialty than did CRNA's. In spite of this response difference the majority of both anesthesiologists and nurse anesthetists indicated that no practice limitation should be made in this area. It was of interest to note additional comments of both MD's and CRNA's indicating a need for more than one anesthetist per case for cardiac anesthesia. There were feelings expressed that this was a perfect opportunity for an MD and a CRNA to work together as a team.



10. Nurse anesthetists should NOT do cardiac anesthesia.

There were no significant differences between responses from the three hospital groups indicating that there was no difference in the practice of the CRNA at any of the three types of hospitals.

All tables containing data from this portion of the study can be found in Appendix IV, Pages 19 and 20.

3. Neurological Anesthesia

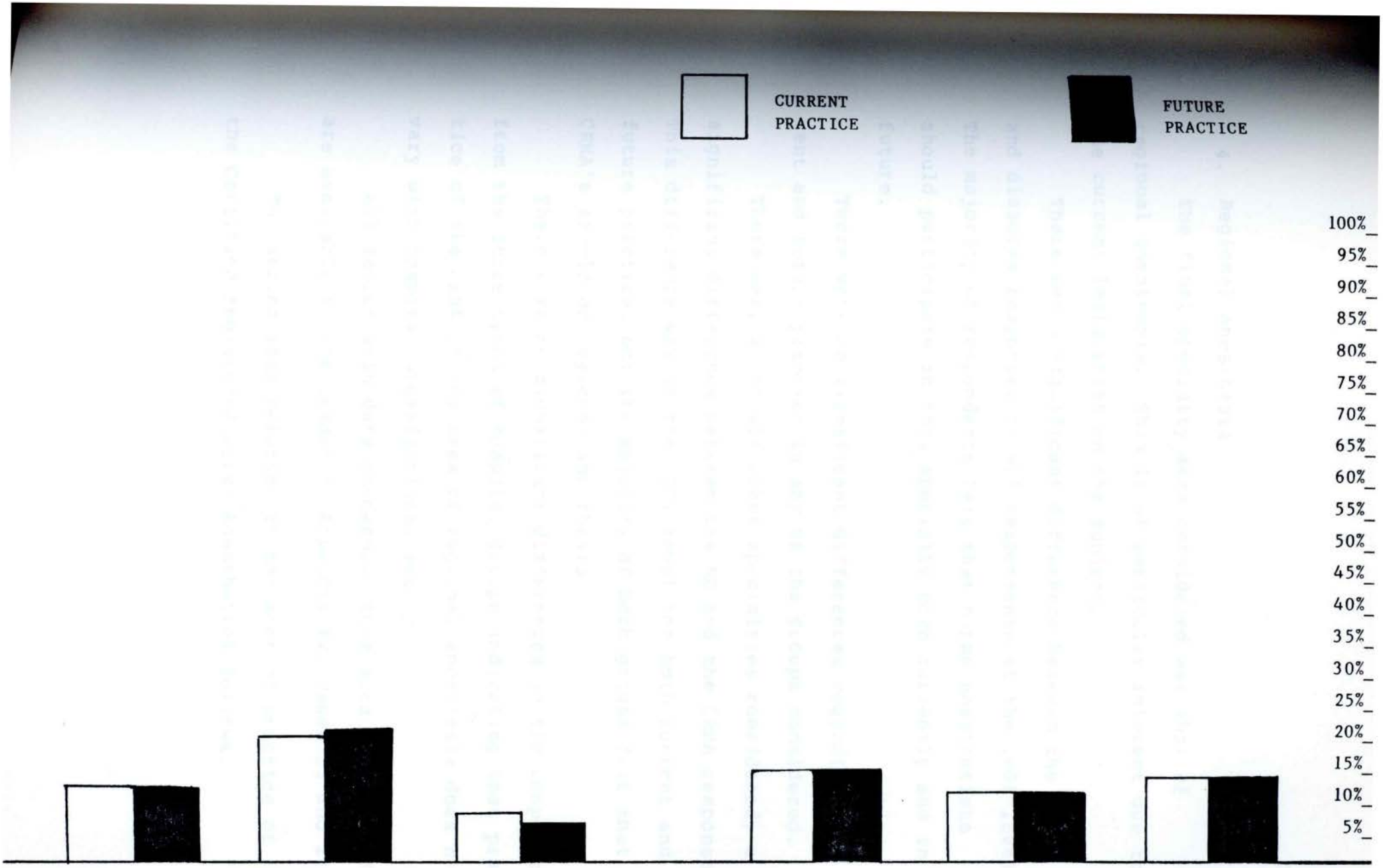
The next area of practice considered was that of anesthesia for neurological surgery.

The total respondents elicited a significant difference in the agree/disagree responses at the .001 level with the majority favoring CRNA participation in this specialty. There were no significant differences in current and future responses.

As in the other areas, there was a significant difference at the .001 level for both current and future practice in the CRNA/MD response. More MD's preferred limitation of CRNA practice than did CRNA's. The majority of both groups however, indicated no need for practice limitation of the CRNA.

There were no significant differences in the responses from the three groups of hospitals indicating no differences in practice in the three types of organizational structures.

All data relating to survey information on this specialty is available in Appendix IV, Pages 21 and 22.



11. Nurse anesthetists should NOT do neurological anesthesia.

4. Regional Anesthesia

The final specialty area considered was that of regional anesthesia. This is of particular interest due to the current legislation on the subject.

There was a significant difference between the agree and disagree responses of all respondents at the .001 level. The majority of respondents felt that nurse anesthetists should participate in this specialty both currently and in the future.

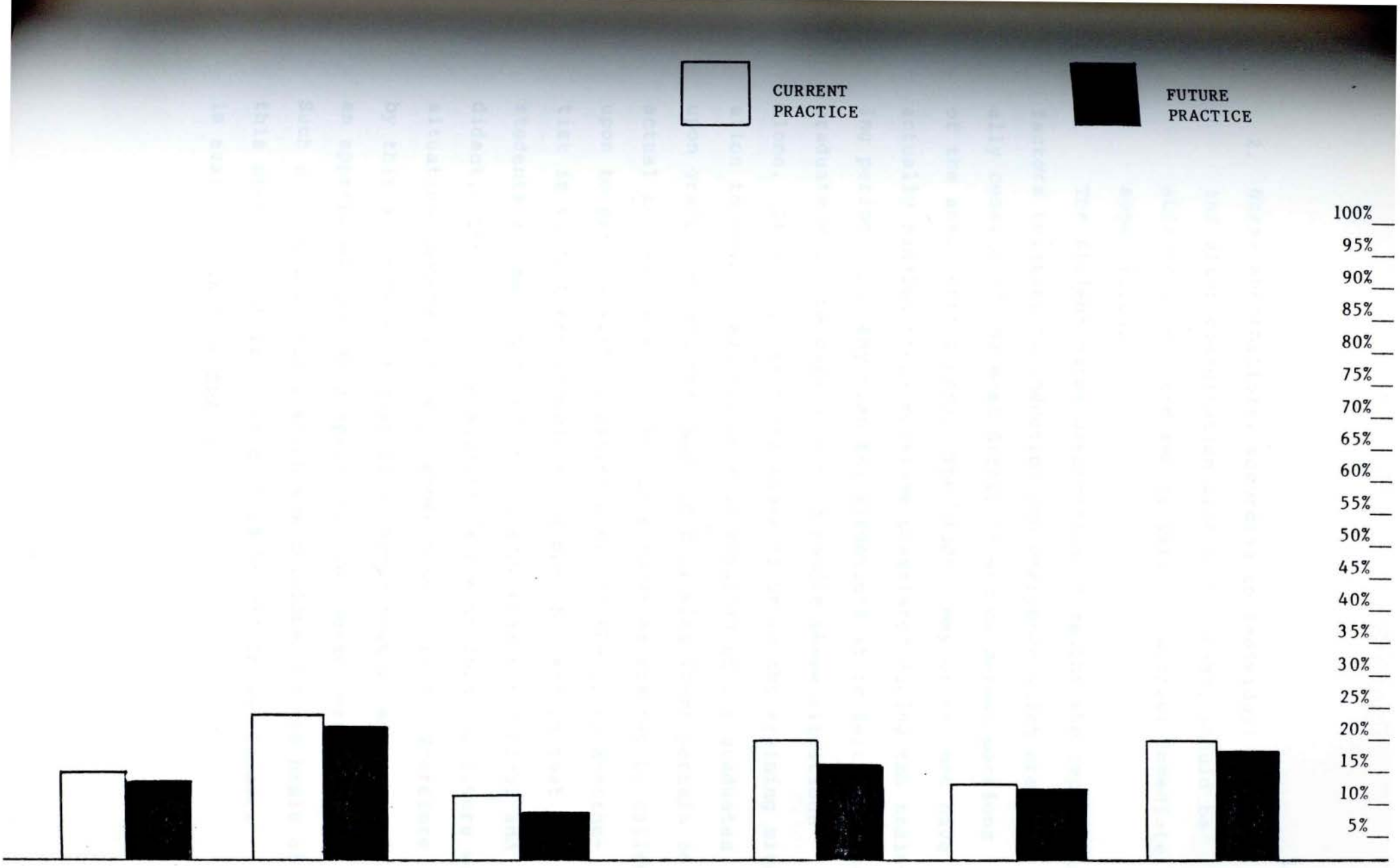
There were no significant differences regarding current and future practice in any of the groups considered.

There was, as in all other specialties considered, a significant difference between the MD and the CRNA response. This difference was at the .001 level for both current and future practice, but the majority of both groups felt that CRNA's should do regional anesthesia.

There were no significant differences in the response from the three types of hospital groups indicating that practice of the CRNA in the area of regional anesthesia does not vary with hospital organizational set-up.

All tables with data concerning this area of the study are available to the reader in Appendix IV, Pages 23 and 24.

The second item relating to the area of practice of the Certified Registered Nurse Anesthetist follows.



12. Nurse anesthetists should NOT do regional anesthesia.

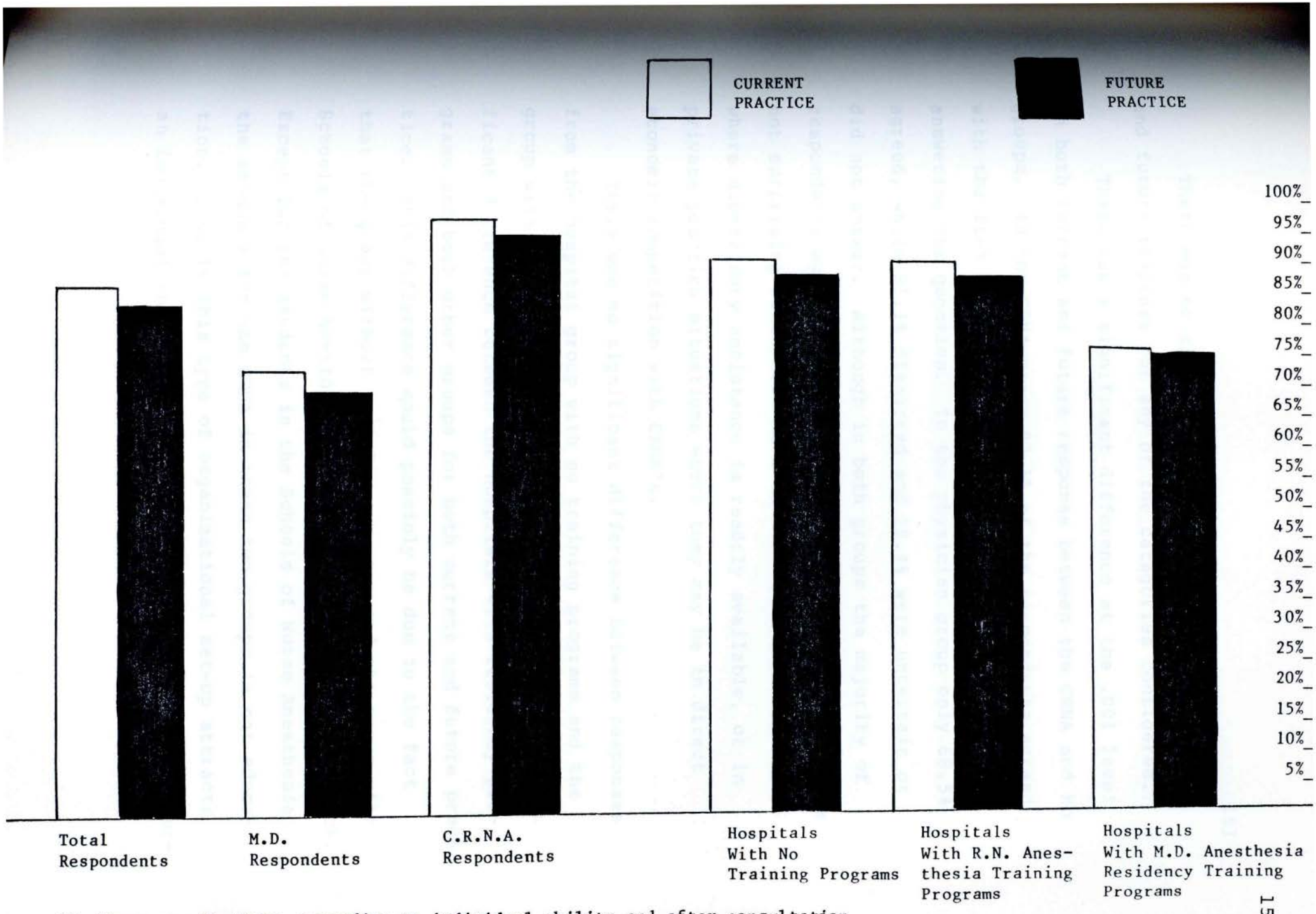
2. Nurse anesthetists, according to individual ability and after consultation with a physician, should be able to induce and emerge patients without immediate supervision.

The student nurse anesthetist is taught the important factors relating to induction and emergence which are usually considered the most difficult and dangerous portions of the anesthetic course. The student may or may not have actually handled these portions unassisted during the training period. In many hospital situations it is felt that the graduate would be called upon to handle these situations alone. It is important for those of us in the training situation to realize exactly what is required of our graduates upon graduation and this and the following items pertain to actual procedures which the nurse anesthetists may be called upon to perform without assistance. If the nurse anesthetist is to do these procedures we must be certain that our students are well trained in the appropriate technical and didactic areas. If the student is overtrained for future work situations however, he may become dissatisfied. Therefore by this and future studies it is hoped that we might reach an appropriate job description for the nurse anesthetist. Such a job description, which was developed on the basis of this study ofr utilization at UCLA Hospitals and Clinics is available in Appendix V.

The total response to the above question relating to induction and emergence of anesthesia is available in the following table. All other data pertaining to the item is printed in Appendix IV, Pages 25 and 26.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
307 (48.7%)	204 (32.4%)	21 (3.3%)	47 (7.5%)	28 (4.4%)	22 (3.5%)

There is a significant difference at the .001 level between the agree and disagree responses in favor of agreement with the item. It is interesting to note that 81.1% of the respondents agreed while only 11.9% disagreed. The remainder were uncertain or did not answer. This item seems quite important to the independence of the CRNA as these most interesting parts of the anesthetic course add to the challenge and interest of the work as well as to job satisfaction. If a CRNA is permitted to perform these tasks alone departmental efficiency would be aided since an anesthesiologist would be freed to handle other matters. If a CRNA is working in a practice situation as would be the case in many of the shopitals with no training programs it would be imperative that he or she be able to handle these portions of the anesthetic since there may not be an anesthesiologist at the hospital.



13. Nurse anesthetists, according to individual ability and after consultation with a physician, should be able to induce and emerge patients without immediate supervision.

There was no significant difference between current and future response for any of the categories considered.

There was a significant difference at the .001 level in both current and future response between the CRNA and MD groups. In the CRNA group 93.1% of the respondents agreed with the item and only 3.1% disagreed with only 3.4% not answering the question. In the physician group only 68.5% agreed, while 21.1% disagreed and 10.4% were uncertain or did not answer. Although in both groups the majority of respondents agreed, fewer MD's than CRNA's agreed. This is not surprising since most MD's either work in a situation where supervisory assistance is readily available, or in private practice situations where they may be in direct economic competition with CRNA's.

There was no significant difference between responses from the hospital group with no training programs and the group with Schools of Nurse Anesthesia. There was a significant difference between the hospitals with residency programs and both other groups for both current and future practice. This difference could possibly be due to the fact that the group without training programs and the group with Schools of Nurse Anesthesia hire CRNA's to produce a service. Except for the students in the Schools of Nurse Anesthesia the emphasis for the CRNA in these two groups is not education. Usually this type of organizational set-up attracts an individual interested in clinical practice, more than fur-

thering their education in a program with less emphasis on practice. The exact opposite may be the case in the hospital with a residency training program. There the emphasis is on teaching. In these programs there are usually more anesthesiologists who are available for teaching and immediate supervision. In addition, the type of CRNA seeking employment in such an institution may be more interested in learning than in increasing the independence of his or her own practice.

This question which relates to the original hypothesis regarding variation of practice of the CRNA with varying hospital situation indicates that there is a variation in practice between types of hospitals regarding the independence of handling patient induction and emergence from anesthesia.

The third question in the category of Practice also relates to the independence of the nurse anesthetist.

3. Nurse anesthetists should, according to individual ability, make changes in anesthesia maintenance according to patient needs, without immediate physician consultation.

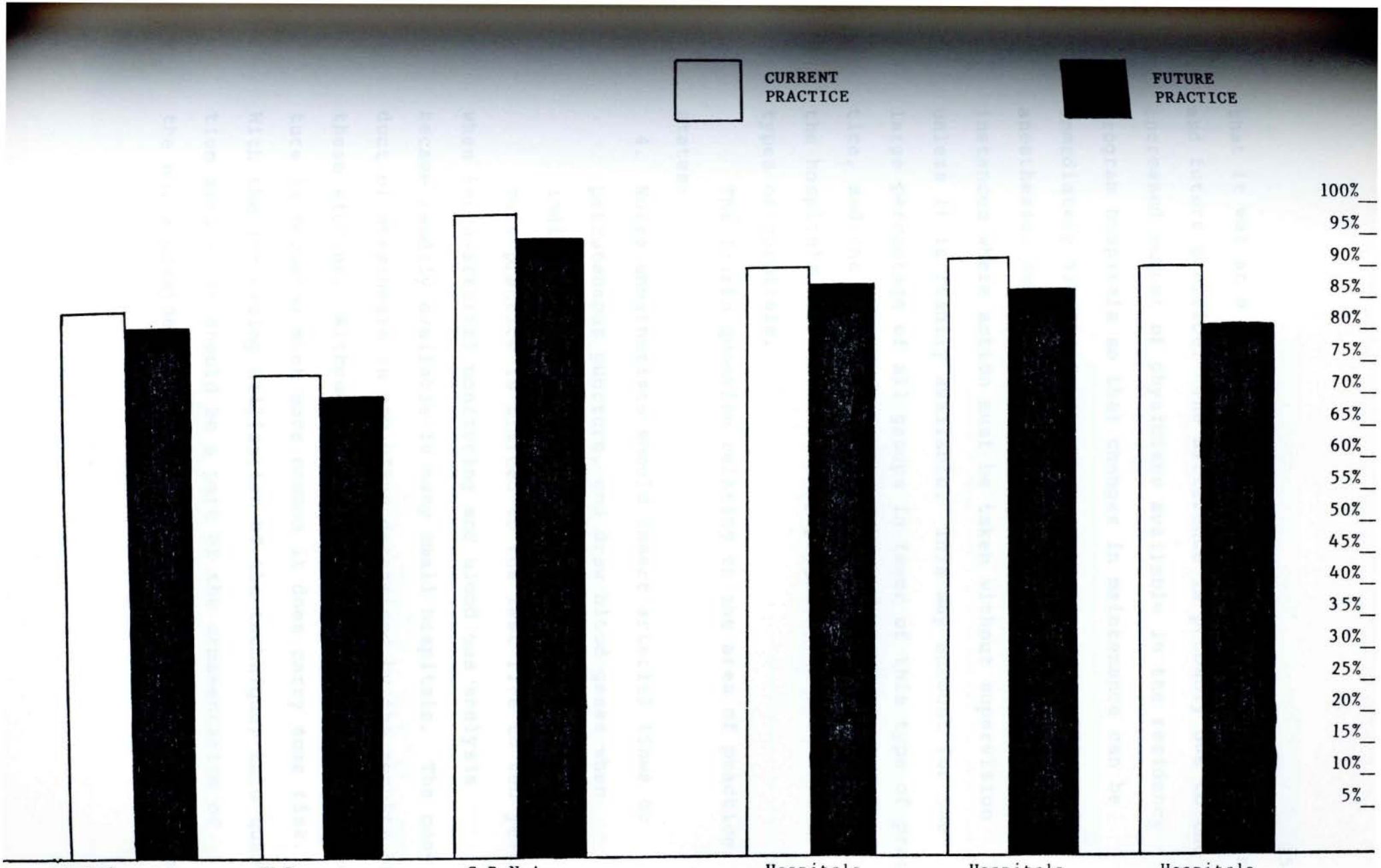
The following table contains the results of the total response relating to this question. All other data relating to the item is available in Appendix IV, Pages 27 and 28.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
305 (48.4%)	224 (35.6%)	20 (3.2%)	41 (6.5%)	30 (4.8%)	10 (1.6%)

Over 70% of the respondents agreed with this item for both current and future practice. There was a significant difference between the agree and disagree responses at the .001 level.

There was no significant difference in response for current versus future practice among any of the groups considered. Relative to both current and future practice the MD and CRNA group responses had a significant difference at the .001 level. Although 71.5% of the physician group agreed that CRNA's could make independent changes in maintenance and only 20.1% disagreed, 96.2% of the CRNA group agreed that they should be permitted to make independent changes and only 2.5% disagreed, thus causing the significant difference.

As in the previous question there was no significant difference in response between the hospital group with Schools of Nurse Anesthesia and the hospital group with no training programs. There was again however, a significant difference for both current and future practice for the hospital group with residency programs and the other two groups. This difference was unlike the response from the previous question in



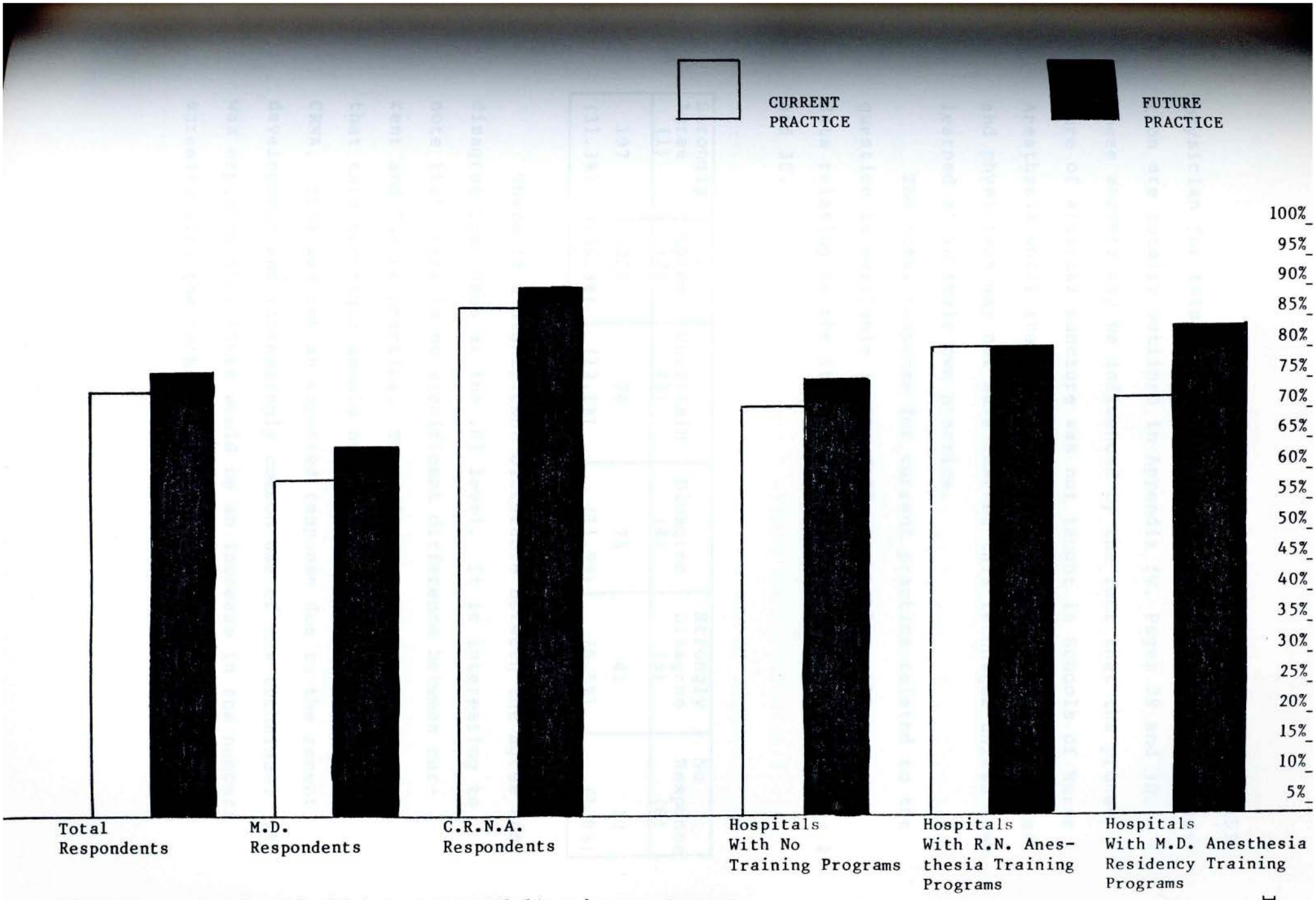
14. Nurse anesthetists should, according to individual ability, make changes in anesthesia maintenance, according to patient needs, without immediate physician consultation.

that it was at a lower level of significance for both current and future practice. The difference is probably due to the increased number of physicians available in the residency program hospitals so that changes in maintenance can be immediately discussed. As changes may occur rapidly under anesthesia, and may require immediate action, there are instances where action must be taken without supervision unless it is readily available. This may account for the large percentage of all groups in favor of this type of practice, and the lower significance of the difference between the hospitals with the residency programs and the other two types of hospitals.

The fourth question relating to the area of practice states:

4. Nurse anesthetists should insert arterial lines by percutaneous puncture, and draw blood gases when indicated.

This practice is limited to the last five to ten years when intra-arterial monitoring and blood gas analysis became readily available in many small hospitals. The conduct of anesthesia is now often determined by the results of these studies. Although the practice of intra-arterial puncture is becoming much more common it does carry some risk. With the increasing utilization of the technique, this question asks if it should be a part of the armamentarium of the nurse anesthetist or should the CRNA be dependent on the



15. Nurse anesthetists should insert arterial lines by percutaneous puncture and draw blood gases when indicated.

physician for this skill. The answers relating to this question are totally outlined in Appendix IV, Pages 29 and 30. These answers may be influenced by the fact that the procedure of arterial puncture was not taught in Schools of Nurse Anesthesia until the last five to ten years. Older graduates and physicians may not have learned this technique unless they learned it in their own practice.

The total response for current practice related to the question is available in the following table. All other data relating to the item is available in Appendix IV, Pages 29 and 30.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
197 (31.3%)	229 (36.3%)	76 (12.1%)	75 (11.9%)	41 (6.5%)	12 (1.9%)

There is a significant difference between the agree and disagree responses at the .01 level. It is interesting to note that there is no significant difference between current and future practice. The majority of respondents felt that this technique should be a part of the practice of the CRNA. This was not an expected response due to the recent development and increasingly common use of the technique. It was expected that there would be an increase in the numbers agreeing with the technique in the future.

Once again there was a significant difference between the responses of the MD's and CRNA's for both current and future practice. This difference was significant at the .001 level. 54.2% of the physicians agreed that CRNA's should insert intra-arterial lines and 29.9% disagreed while 80.5% of the nurse anesthetists wished to be able to include this skill in their practice while 8.2% disagreed. This difference contributed to the difference in response between the two groups although the majority of both groups agreed that this skill should be available to the CRNA.

Among the three hospital groups there were significant differences in current practice. The group of hospitals with Schools of Nurse Anesthesia differed significantly at the .05 level from both of the two other groups, while the group without training programs and the group with residency training programs did not significantly differ in response. This is probably related to the relatively recent initiation of the technique and the fact that those individuals working in hospitals with Schools of Nurse Anesthesia would probably be among the first to learn the technique. In hospitals with residency programs there are more physicians available to perform the arterial puncture and nurse anesthetists in these institutions are likely to be closer in response to those hospitals without training programs in learning the skill even though it is more than likely used more commonly in hospitals with residencies than in those with no training pro-

grams. If this were the case it would cause the like response of those two groups.

For future practice all three hospital types had no significant difference in response. This indicates a desire of the nurse anesthetists in all hospital types to learn the technique, and support on the part of many physicians since the majority of MD's in all groups approved of the nurse anesthetists having this skill. The response difference just discussed is probably due to the recent nature of the technique of arterial puncture in anesthesia practice and its increasingly common use in anesthesia today.

The fifth question in the area of practice of the nurse anesthetist relates to the insertion of central venous pressure monitoring lines. Although the questionnaire does not indicate the method of insertion there are various techniques in common use today. Some of these techniques have more possible complications than others and this may influence the response of the MD or CRNA to the question. This might be an area for further clarification in future research. The item is stated in the questionnaire as follows:

5. Nurse anesthetists should insert central venous pressure monitoring lines by the method commonly utilized at the institution.

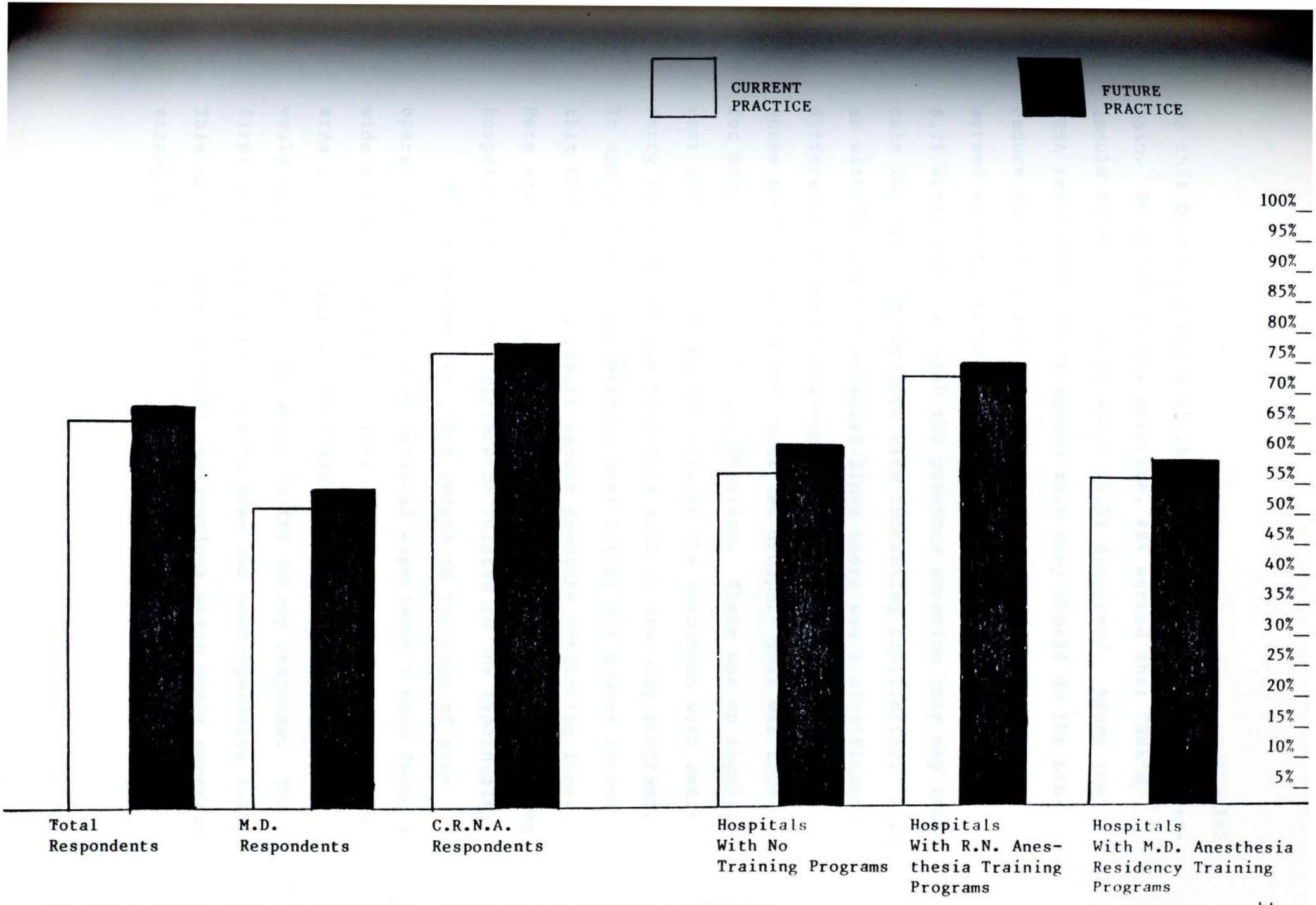
The total response to this question is indicated in the table below. All other data rleating to this question can be found in Appendix IV, Pages 31 and 32.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
175 (27.8%)	197 (31.3%)	96 (15.2%)	107 (17%)	45 (7.1%)	8 (1.3%)

There was no significant difference in the total response category between current and future response.

There was a significant difference in the agree and disagree responses indicating that CRNA's should place central venous pressure monitoring lines. While there was no significant difference in the total or MD response for current or future, there was a significant difference for current and future practice from the CRNA group at the .05 level. Fewer CRNA's disagreed for the future indicating that they probably would feel more comfortable with the technique after further training. There has been a change recently to new techniques for needle insertion in this procedure. The newer techniques do carry some risk but are more effective. As with the previous question it would be expected that more individuals would agree to this technique as part of the practice of the nurse anesthetist with increasing familiarity and utilization.

In accord with other questions under the category of practice there was a significant difference at the .001 level between MD and CRNA response. In current practice 45.7% of the physicians agreed that nurse anesthetists should



16. Nurse anesthetists should insert central venous pressure monitoring lines by the method commonly utilized at the institution.

do this procedure while 35.1% disagreed and 16.2% were uncertain. Regarding future practice, 48% agreed that CRNA's should insert CVP lines while 31.2% disagreed. Among the CRNA respondents 72.1% agreed that they should do the procedure currently and 13.8% disagreed. For the future 74% agreed with the procedure as a part of their practice and 8.2% disagreed. As with the previous question this may indicate increasing acceptance with increasing familiarity. Also as with the item on arterial lines there was a significant difference between the group of hospitals with Schools of Nurse Anesthesia and the other two groups. This was true for both current and future practice. There was no significant difference in opinion between the hospitals with residency programs and the hospitals with no training programs. In spite of this difference, over 50% of all groups agreed that CRNA's should insert venous pressure monitoring lines. Here again one is able to see a difference in practice among hospital types. This difference relates to the hypothesis.

The following two items relate to the area of pre-operative practice. From personal experience I have found a wide variation in the practice expected of the CRNA in this area in the different hospitals in which I have worked and would expect this to be shown by the survey response. The first item considered concerns pre- and post-operative visits. This practice has no legal implications which might generate strong feelings as does the second item in this area.

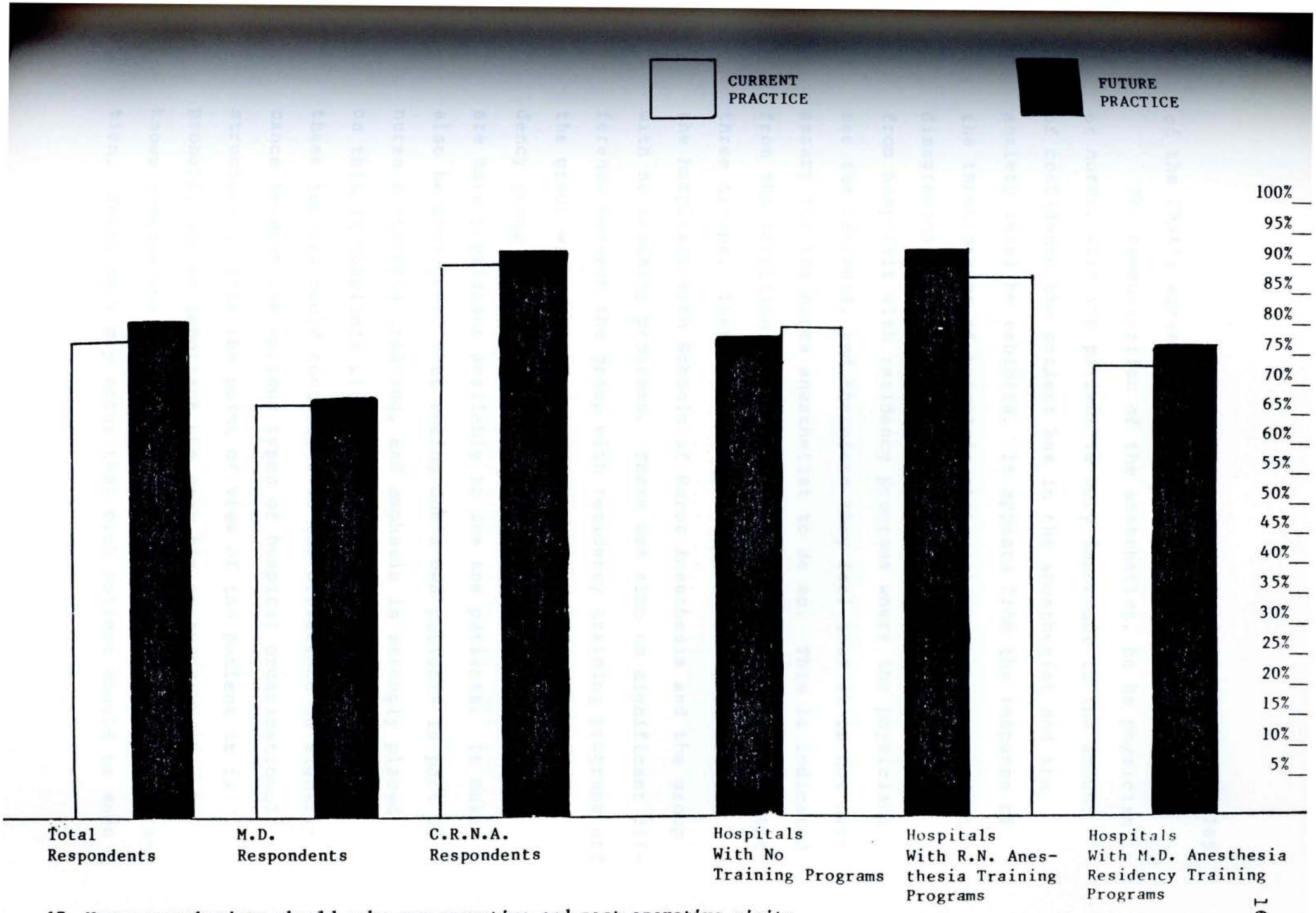
The first item is question number 6 under the area of practice.

6. Nurse anesthetists should make pre-operative and post-operative visits and evaluations on the patients they are assigned.

There was a significant difference at the .001 level in the responses of agree and disagree with over 70% agreeing that these visits should be made by the CRNA. The following chart relates the data for the total response for current practice. All other data is given in Appendix IV, Pages 33 and 34.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
253 (40.2%)	229 (36.3%)	44 (7%)	51 (8.1%)	40 (6.3%)	13 (2.1%)

There was no significant difference in opinion regarding current and future practice amony any of the groups identified. Once again there was a significant difference at the .001 level between MD and CRNA response. Among the MD respondents 65.6% felt that CRNA's should make pre- and post-operative visits and 24.7% disagreed for current practice. Among the CRNA respondents 87.1% agreed that they should make pre- and post-operative visits in their current practice while only 4.4% disagreed. In relation to future practice 66.3% of the physicians agreed and 21.7% disagreed while 87.8%



17. Nurse anesthetists should make pre-operative and post-operative visits and evaluations on the patients they are assigned.

of the CRNA's agreed and only 1.6% disagreed.

The communication of the anesthetist, be he physician or nurse, with the patient is very important to the amount of confidence the patient has in the anesthetist and the anxiety level he exhibits. It appears from the response of the three groups of hospitals that perhaps those respondents disagreeing with the nurse anesthetist seeing patients are from hospitals with residency programs where the physicians see the patients, and therefore they feel that it is not necessary for the nurse anesthetist to do so. This is indicated from the variation in the significance of the response of the three groups. There was no significant difference between the hospitals with Schools of Nurse Anesthesia and the group with no training programs. There was also no significant difference between the group with residency training programs and the group without training programs. Perhaps in the residency group and the group with no training programs there are more physicians available to see the patients. It must also be considered that seeing one's own patients is part of nurse anesthesia training, and emphasis is strongly placed on this in hospitals with CRNA training programs. Both of these factors could contribute to the difference in significance between the various types of hospital organizational structures. From the point of view of the patient it is probably not as important who sees him as the fact that he knows someone who will take care of him throughout the operation. Physicians may argue that each patient should be seen

by an MD, which is beneficial, but this might be done immediately prior to the surgery if the CRNA is scheduled to do the case and makes the pre-operative visit the night before.

Response to this question again contributes to the hypothesis relating to variations in practice among different types of institutions.

The second question relating to pre-operative care and the seventh question in the category of practice is the next to be discussed.

7. Nurse anesthetists should order pre-operative medication for assigned patients.

This question has legal implications since in many areas CRNA's are not legally permitted to order medication on the hospital wards even though they can give the same medications they select themselves in the anesthesia situation. Many hospitals have found mechanisms so that physicians later sign the orders, or the medications selected by the CRNA are ordered by the surgeon. This legal situation does impose limitations, since if the CRNA is to order the medications, a legal mechanism must be developed within each hospital which meets both the hospital's needs and is within the dictates of the law.

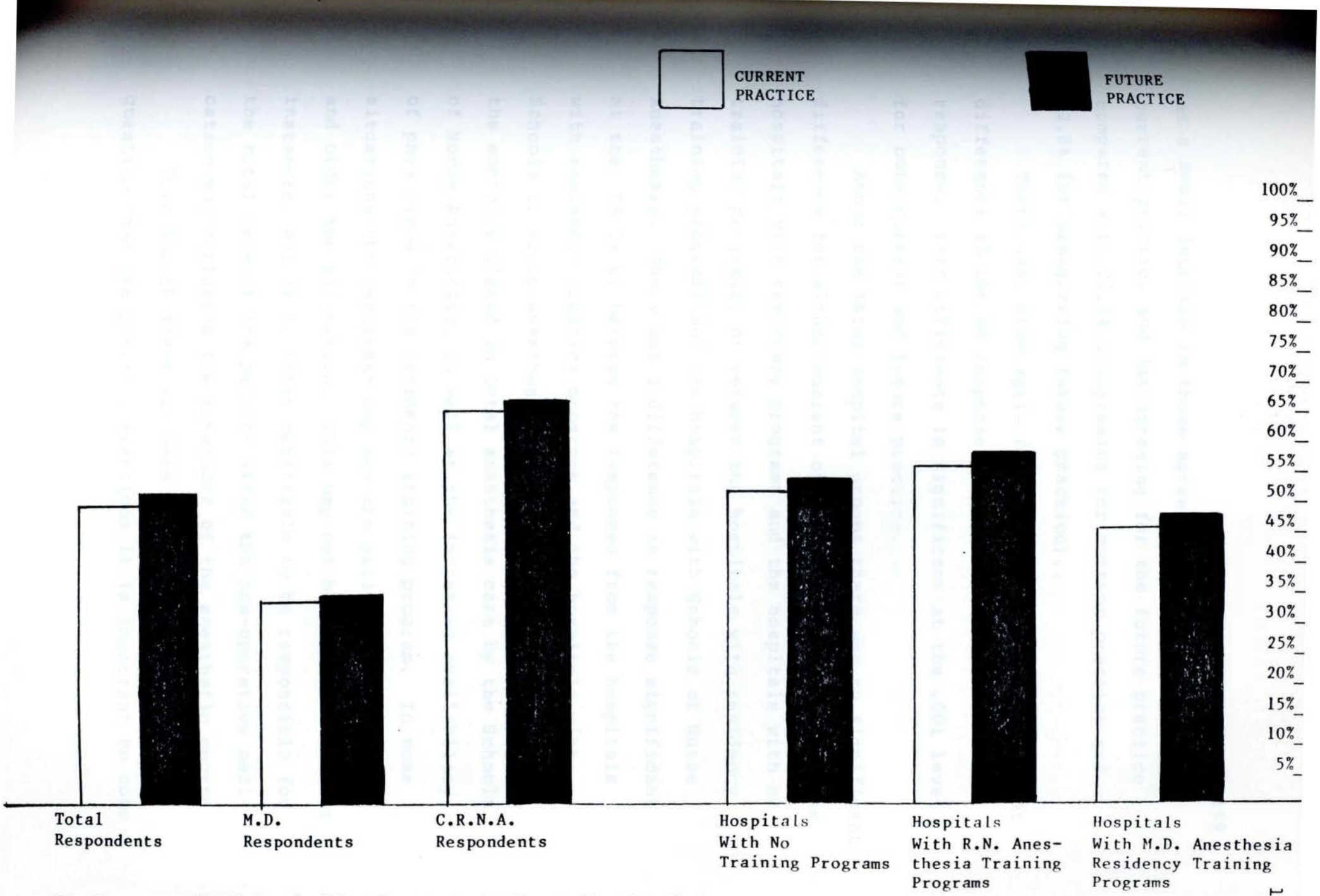
Any question relating to legal changes may be expected to generate stronger feelings and more caution in response. The total response to this question is given in the following

table. All other data relating to the item may be found in Appendix IV, Pages 35 and 36.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
123 (19.5%)	174 (27.6%)	92 (14.6%)	135 (21.4%)	91 (4.4%)	15 (2.4%)

As can be noted from the above table even though the majority of responses are in agreement with the practice of the nurse anesthetist including the ordering of pre-operative medications there is much less difference between the numbers agreeing and disagreeing than in the previous question. The difference between the agree and disagree responses is still significant, but at a lower level. This question is significant at the .01 level rather than the .001 level of significance generated by other questions relating to practice.

There was no significant difference between responses relating to current and future practice among the total responses or among the responses from physicians. There was a .05 level of significance in the difference between responses relating to current and future practice as answered by the CRNA group. Even though there is a significant difference in the response for the CRNA group it appears to be caused by increasing numbers of uncertain or not answered questions from the future group as compared to the current group as well



18. Nurse anesthetists should order pre-operative medication for assigned patients.

as a small increase in those agreeing (60.8% agreeing for current practice and 74% agreeing for the future practice compared with 20.7% disagreeing for current practice and 12.8% for disagreeing future practice).

There was, once again for this question, a significant difference in the MD response compared with the CRNA response. This difference is significant at the .001 level for both current and future practice.

Among the three hospital groups there was no significant difference for either current of future practice between the hospitals with residency programs and the hospitals with no training programs, or between the hospitals with residency training programs and the hospitals with Schools of Nurse Anesthesia. There was a difference in response significant at the .05 level between the responses from the hospitals with residency training programs and the hospitals with Schools of Nurse Anesthesia. This is probably related to the emphasis placed on total anesthesia care by the Schools of Nurse Anesthesia, as well as the increased availability of physicians in the residency training program. In some situations the residents may see the patients for the CRNA and order the medication. This may not be a problem in most instances, but it is often desireable to be responsible for the total care of the patient since the pre-operative medication may influence the remainder of the anesthetic course.

Even though there was more disagreement with this question than the previous questions it is important to note

that over 40% of all groups agree that CRNA's should order pre-operative medication. The differences between the hospital group with Schools of Nurse Anesthesia and the other two groups again contributes to the data on the hypothesis regarding variation in practice in different hospitals.

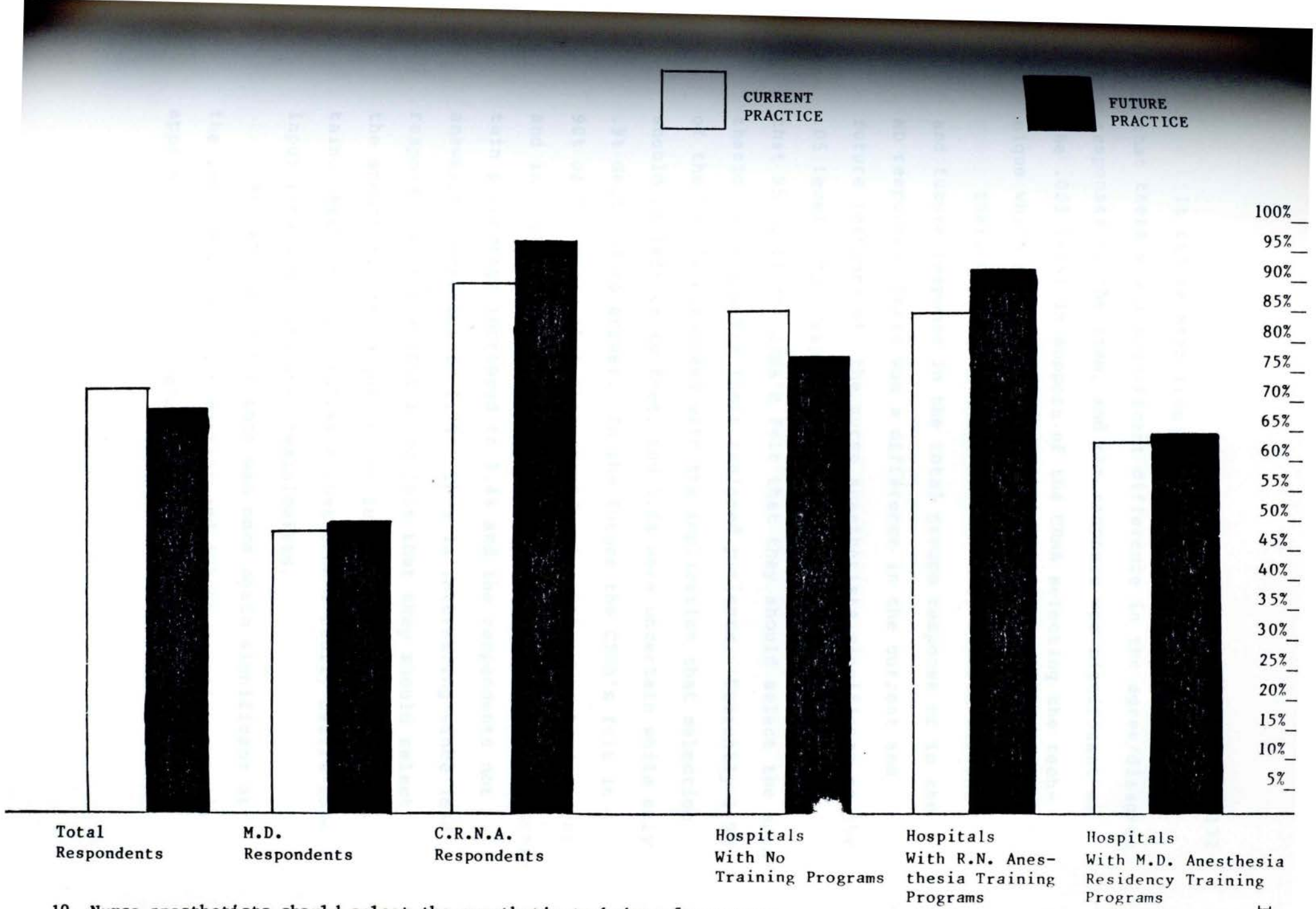
The eight item in the area of practice is:

8. Nurse anesthetists should select the anesthetic technique for use on their assigned patients in accordance with the patient's condition.

The following table relates the total response to this question. All other data is available in Appendix IV, Pages 37 and 38.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
244 (38.7%)	206 (32.7%)	43 (6.8%)	69 (11%)	52 (8.3%)	16 (2.5%)

The controversy related to this question comes from the fact that it is considered best that the individual doing the anesthesia selects the technique, since it should be one with which he feels familiar and comfortable. Physicians often think that this should be a medical decision like the prescription of any other medication. Nurse anesthetists are trained to select the best anesthetic for particular physical conditions, and thus should be able to select the anesthetic technique which they feel is best in their hands.



19. Nurse anesthetists should select the anesthetic technique for use on their assigned patients in accordance with the patient's condition.

It can be seen from the results listed in the table that there was a significant difference in the agree/disagree responses to the item, and the response was significant at the .001 level in support of the CRNA selecting the technique which he or she will use for a given patient.

There was no significant difference between current and future response in the total groups response or in the MD response. There was a difference in the current and future response of the nurse anesthetists significant at the .05 level. The response for current practice indicated that 95.6% of the CRNA's felt that they should select the anesthetic technique for their assigned patients. Currently 1.9% of the CRNA's disagreed with the implication that selection should be left up to them, and 1.6% were uncertain while only .9% declined to answer. In the future the CRNA's felt in 90% of the cases that they should select the anesthetic agent and in 1.2% of the cases felt that they should not. The uncertain percentage increased to 3.4% and the respondents not answering increased to 4.7%. This is interesting since less respondents of the CRNA group felt that they should select the anesthetic technique in the future and more were uncertain. Perhaps this indicates that CRNA's really desire more input from qualified anesthesiologists.

The MD/CRNA difference was once again significant at the .001 level for both current and future practice. It is apparent that more physicians think that they are better

qualified to select the anesthetic agent for a given patient than is the nurse anesthetist.

Among the three types of hospital groups there was no significant difference regarding this item between the groups with neither training program and the ones with Schools of Nurse Anesthesia for either current or future practice. There was a significant difference between the group with residency training programs and both other groups for current and future practice. This is probably due to the fact that since more physicians are available for consultation in the residency programs than in either of the other two groups they are more likely to make the decisions. It would be interesting to find if the type of nurse anesthetist working in these programs is more interested in having the MD determine the answer to most decisions, while the CRNA in other programs is more independent. Perhaps this could be an area for future research.

The following question is the ninth in the area relating to the practice of the nurse anesthetist.

9. Nurse anesthetists should participate in anesthesia care in the recovery and critical care areas.

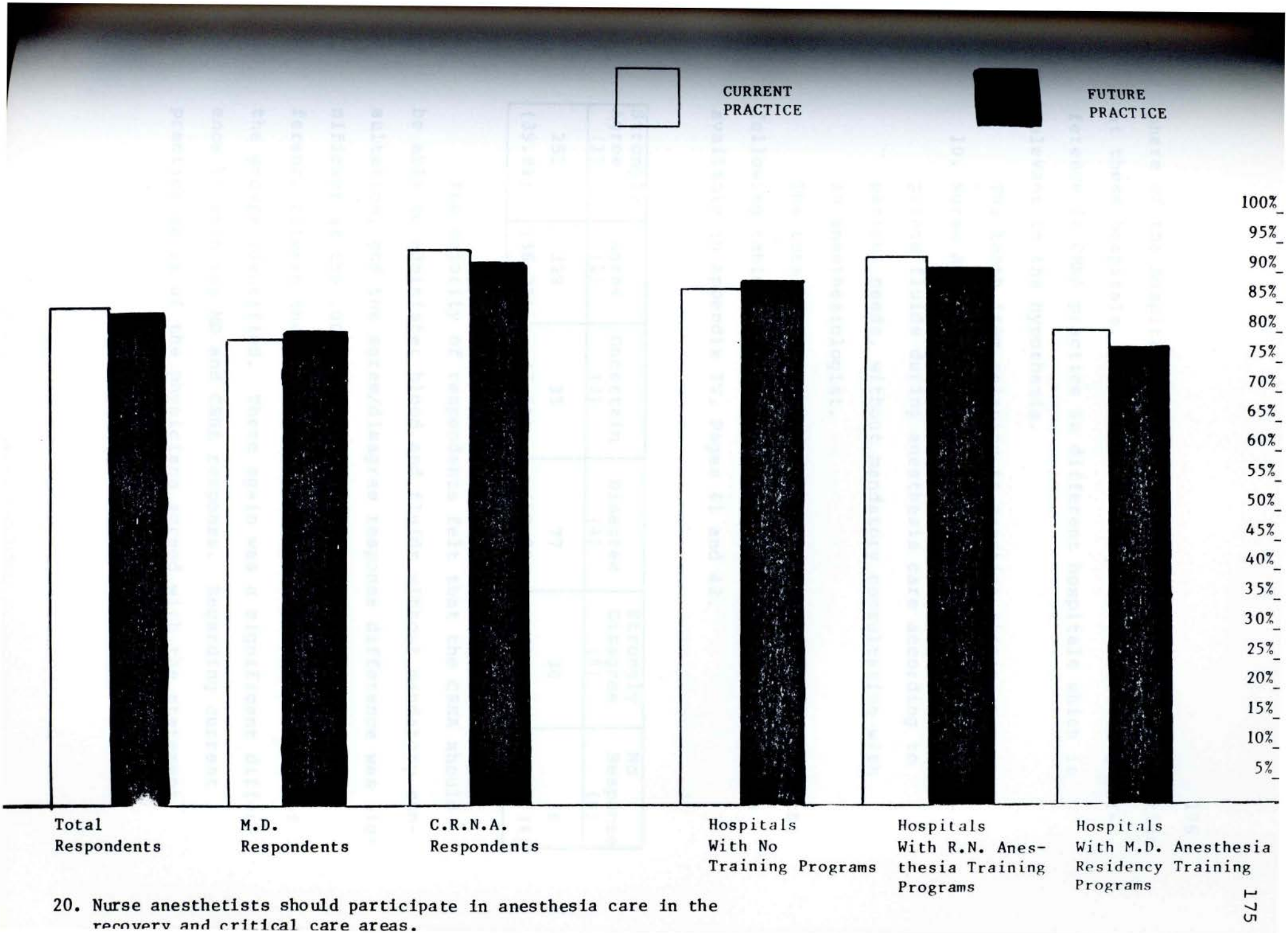
The results given in the following table indicate the response of the total group for current practice. Other data pertaining to this question may be found in Appendix IV, Pages 39 and 40.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
225 (35.7%)	296 (47%)	43 (6.8%)	34 (5.4%)	9 (2.8%)	23 (2.3%)

There was a significant difference between the agree and disagree responses at the .001 level. The majority of individuals felt that CRNA's should participate in anesthesia care in the recovery and critical care areas. There was no significant difference in the response of any of the groups regarding current and future practice. there was a significant difference between the MD and CRNA groups at the .001 level for both current and future practice.

Once again in response to this question as in response to others, more CRNA's than physicians felt that they should participate in this area. It is important to note that over 70% of both groups felt that CRNA's should participate in these areas.

There was among the three groups of hospitals, no significant difference between the group with neither training program or the group with Schools of Nurse Anesthesia. However there was a significant difference between the group of hospitals with residency training programs and each of the other two groups. Again this may be related to the availability of staff anesthesiologists, the teaching atmos-



20. Nurse anesthetists should participate in anesthesia care in the recovery and critical care areas.

phere of the hospital, and the type of CRNA seeking a position at these hospitals. As before, this question relates a difference in CRNA practice in different hospitals which is relevant to the hypothesis.

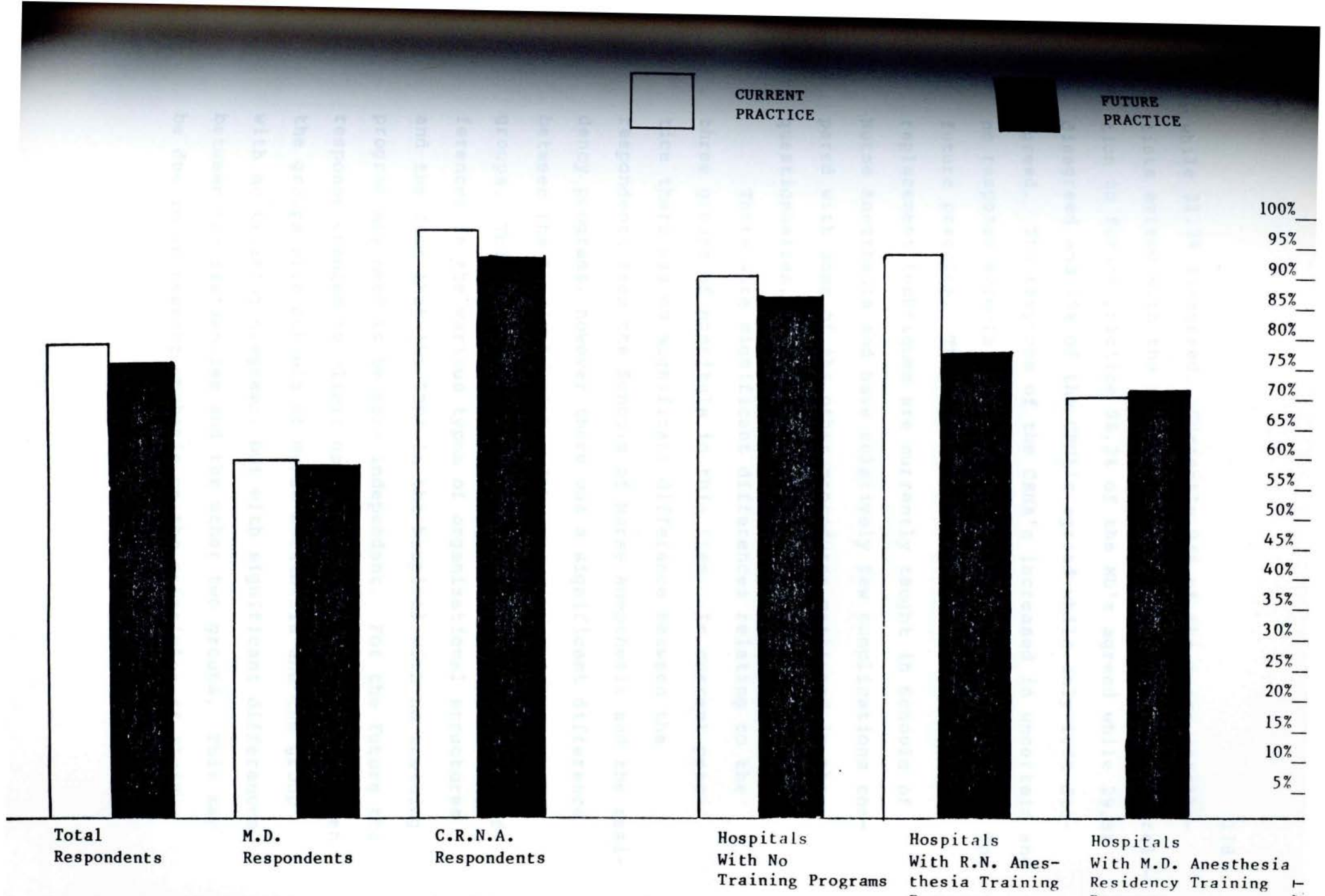
The tenth item relating to practice states:

10. Nurse Anesthetists should administer blood and appropriate fluids during anesthesia care according to patient needs, without mandatory consultation with an anesthesiologist.

The total response for current practice is given in the following table. All other data related to the question is available in Appendix IV, Pages 41 and 42.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
251 (39.8%)	229 (36.3%)	35 (5.6%)	77 (12.2%)	30 (4.8%)	8 (1.3%)

The majority of respondents felt that the CRNA should be able to administer blood and fluids without mandatory consultation, and the agree/disagree response difference was significant at the .001 level. There was no significant difference between the current and future response among any of the groups identified. There again was a significant difference between the MD and CRNA response. Regarding current practice 48.1% of the physicians agreed with the statement



21. Nurse anesthetists should administer blood and appropriate fluids during anesthesia care, according to patient needs, without [illegible] consultation with an anesthesiologist.

while 31.2% disagreed. Currently 94% of the nurse anesthetists agreed with the item while only 2.8% disagreed. In relation to future practice 56.2% of the MD's agreed while 29.8% disagreed and 89% of the CRNA's agreed while only 1.8% disagreed. The response of the CRNA's increased in uncertain and no response answers from 3.1% for current practice to 9.1% for future practice. This is interesting to note since fluid replacement techniques are currently taught in Schools of Nurse Anesthesia and have relatively few complications compared with some of the other procedures mentioned in the questionnaires.

There were significant differences relating to the three groups of hospitals in this item. In current practice there was no significant difference between the respondents from the Schools of Nurse Anesthesia and the residency programs, however there was a significant difference between the hospitals with neither program and both other groups. This difference may be related to the practice differences in the various types of organizational structures and the fact that the CRNA in the hospital with no training program may need to be more independent. For the future the response changed to elicit no significant difference between the groups with Schools of Nurse Anesthesia and the group with no training programs, but with significant differences between the residencies and the other two groups. This may be due to increasing emphasis on the principles of fluid

management in teaching institutions, increased availability of physician consultation and other factors alluded to previously. Perhaps practice for the anesthesia care team may be closest to what may have been considered 'ideal' by the recommendations of the ASA Committee on Manpower study referred to in the 'Review of the Literature.'[2] The organizational structure may allow for more personnel so that closer supervision may be maintained in this type of program. Perhaps future study may shed further light on this program.

The eleventh question relating to the practice of the CRNA is as follows:

11. Nurse anesthetists should participate in hospital cardio-pulmonary resuscitation programs.

The results of the questionnaire relating to the total response for this question is given in the following table. All other results for this question are given in Appendix IV, Pages 43 and 44.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
320 (50.8%)	256 (40.6%)	17 (2.7%)	14 (2.2%)	13 (2.1%)	10 (1.6%)

There was a significant difference in the agree and disagree responses at the .001 level. The majority (over 90%)

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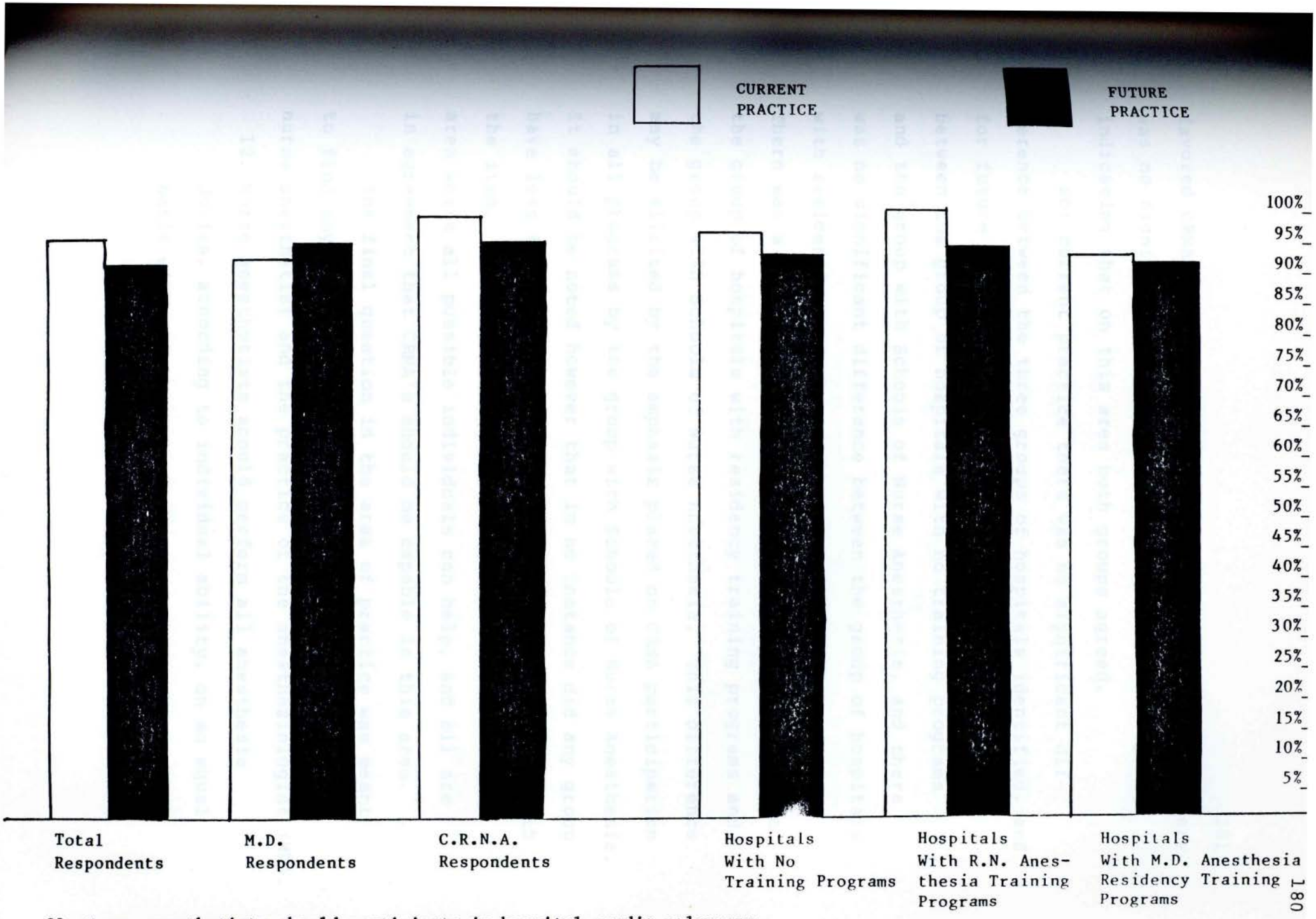
[2] Ibid.



22. Nurse anesthetists should participate in hospital cardio-pulmonary resuscitation programs.

favored CRNA's participation in hospital CPR programs. There was no significant difference in the MD and CRNA response indicating that on this area both groups agreed.

For current practice there was no significant difference between the three groups of hospitals identified, and for future practice there was no significant difference between the group of hospitals with no training programs and the group with Schools of Nurse Anesthesia, and there was no significant difference between the group of hospitals with residencies and the group with no training programs. There was a significant difference at the .05 level between the group of hospitals with residency training programs and the group with Schools of Nurse Anesthesia. This difference may be elicited by the emphasis placed on CRNA participation in all programs by the group with Schools of Nurse Anesthesia. It should be noted however that in no instance did any group have less than 85% of their respondents in disagreement with the item. It is obvious by these results that this is an area where all possible individuals can help, and all are in agreement that CRNA's should be capable in this area.

The final question in the area of practice was meant to find any differences felt between the practice of the nurse anesthetist and the practice of the anesthesiologist (MD).

12. Nurse anesthetists should perform all anesthesia duties, according to individual ability, on an equal basis with anesthesiologists.

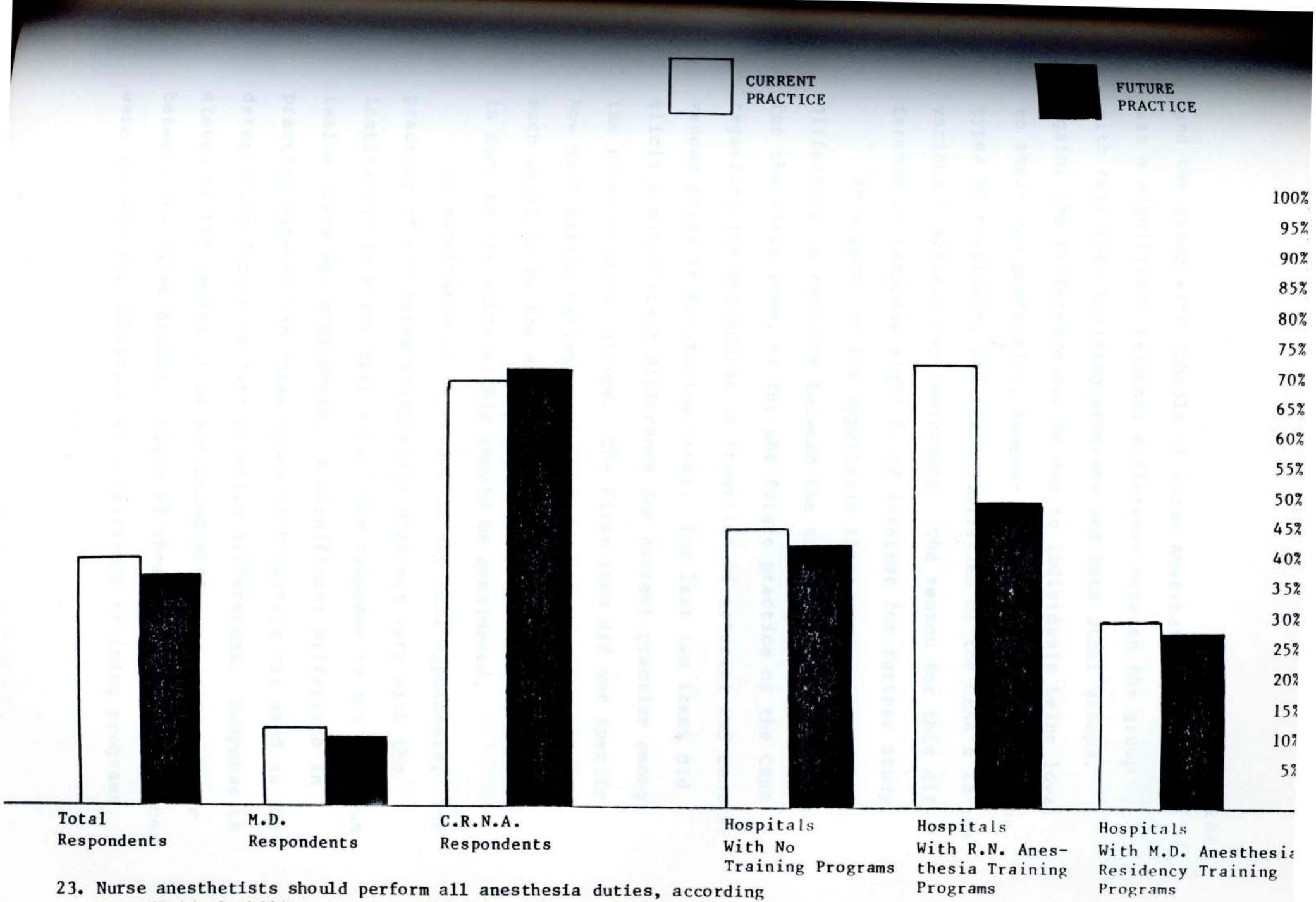
It was felt that the majority of respondents would disagree with this concept. The results of the total response for current practice were as follows. All other data related to this item can be found in Appendix IV, Pages 45 and 46.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
144 (22.9%)	106 (16.8%)	55 (8.7%)	179 (28.4%)	134 (21.3%)	12 (1.9%)

There was a significant difference at the .05 level between the agree and disagree responses, with the majority of respondents disagreeing. There was no significant difference for current or future practice for any of the groups.

There was a significant difference between CRNA and MD response at the .001 level for both current and future practice. Only 12% of the MD's favored the item for current practice while 80.2% disagreed. Among the CRNA group 66.7% of the respondents agreed while 20% disagreed. For future practice, 11.2% of the anesthesiologists agreed while 76.9% disagreed, and of the CRNA group 63.9% agreed while 16.3% disagreed.

This result was expected since each sees their profession differently. It was surprising to me that any of the physician respondents agreed with the concept. As would also be expected, for both current and future practice among the three groups of hospitals there was no significant difference in response between the group with neither training program



23. Nurse anesthetists should perform all anesthesia duties, according to individual ability, on an equal basis with anesthesiologists.

and the group with Schools of Nurse Anesthesia, but there was a significant response difference between the group with residency training programs and both other groups. Again, the difference may be due to individuals being loyal to their own profession, however staffing differences in the types of hospitals, and responsibilities of the CRNA's in the various hospitals may contribute. The reason for this difference in response might be of interest for further study.

In support of the hypothesis there was no significant difference in response between the three groups of hospitals for the first item, or for the future practice of the CRNA regarding the procedures of insertion of arterial and central venous pressure monitoring lines. The last two items did elicit a significant difference for current practice among the three hospital groups. The first item did not specify how much participation was by the nurse anesthetist and how much would be by the anesthesiologist. If further research is done on the subject this should be considered.

In acceptance or rejection of the null hypothesis, 'The practice of the nurse anesthetist does not vary with the institution in which they work,' the response to the previous twelve items was considered. A significant difference in practice between the three types of hospitals was used as the determining factor to find practice differences. Response to eleven of the twelve items indicated differences in practice between the three groups. Eight of those practice differences were between the hospitals with residency training programs

and the other two groups. This may be due to staffing differences in these hospitals, increased emphasis on teaching, and less utilization of the CRNA for clinical service than in the organizational structure of the other two types of departments. The other three items eliciting response differences showed a difference between Schools of Nurse Anesthesia and the other two groups. Those items related to the insertion of arterial lines and CVP lines as well as performing all duties on an equal basis with the physician anesthesiologists. In Schools of Nurse Anesthesia there is emphasis placed on learning all techniques and independence of practice. Techniques not done by nurse anesthetists elsewhere, are often done in nurse anesthesia training programs. These factors may then cause the differences seen.

The only item not giving significant differences in response was related to the nurse anesthetist performing cardio-pulmonary resuscitation. In relation to this item over 90% of all groups responding indicated that nurse anesthetists should take part in the area. This is not surprising since it is generally thought that as many individuals, even lay persons, should be trained in this technique as possible since time is of essence in saving lives.

In summary, because of the fact that eleven of the twelve items significantly showed practice differences between the hospital groups it is concluded that the practice of the CRNA does vary with the institution in which they work and thus the hypothesis is rejected.

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In summary, because of the fact that eleven of the twelve items significantly showed practice differences between the hospital groups it is concluded that the practice of the CRNA does vary with the institution in which they work and thus the hypothesis is rejected.

The next hypothesis to be considered relates to the area of 'Impact.'

5. Utilization of nurse anesthetists has no impact on the feelings, job satisfaction, or status of the anesthesiologists with whom they work.

The seven items related to 'Impact' on the questionnaire will be used to determine proof of this hypothesis. Response to each item will be discussed individually, then conclusions will be drawn.

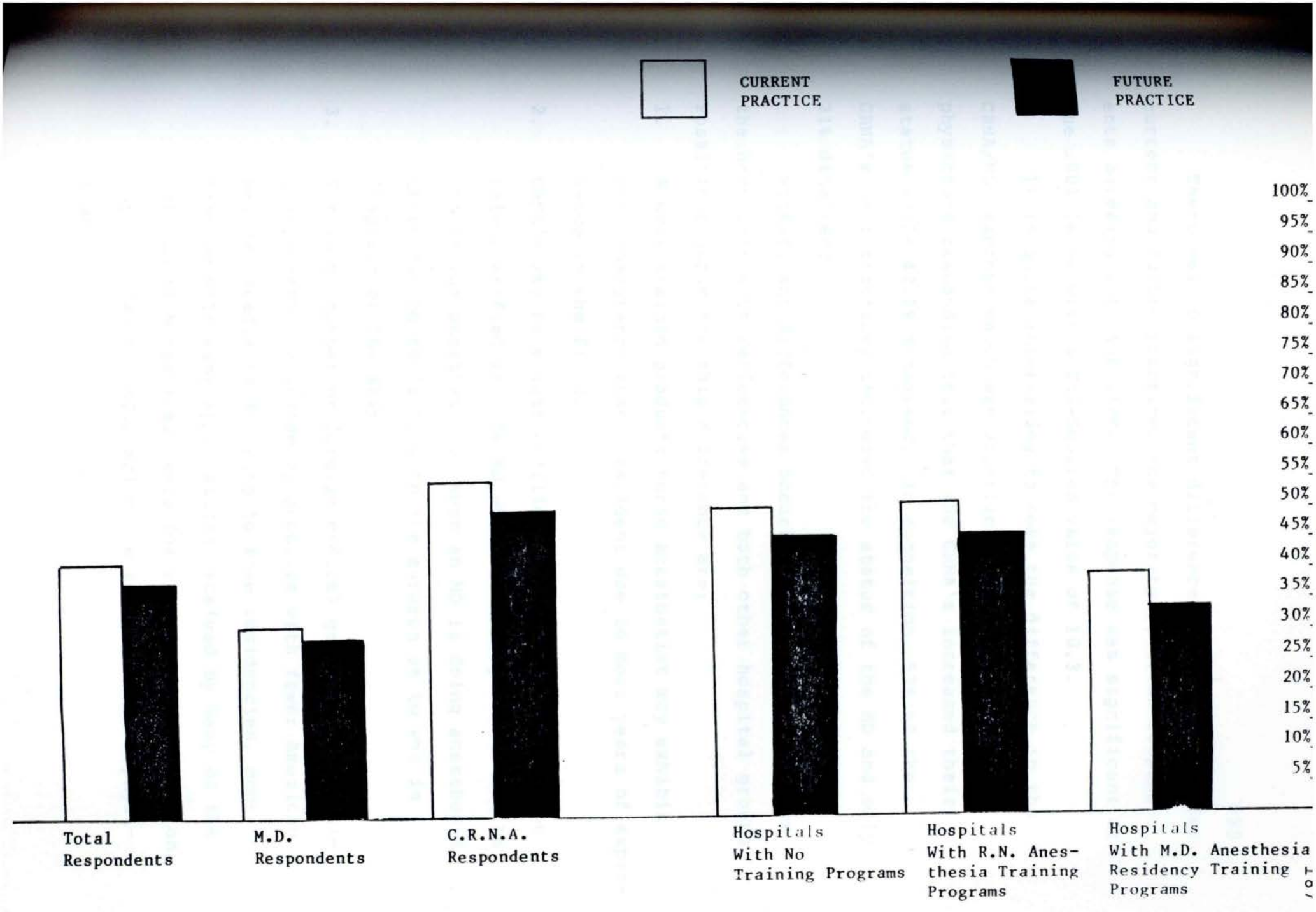
The first item considered follows:

a. Utilization of nurses in anesthesia care may increase the status of the anesthesiologist.

In a typical organizational structure the more individuals a person is held responsible for, the higher his position is often thought to be. Since the anesthesiologist is always the superior of the CRNA in rank, one might assume that supervision of CRNA's might elevate the status of the anesthesiologist more than if he did the cases himself.

The total response to this question for current practice is in the table below. All other data for this item is given in Appendix IV, Pages 47 and 48.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
72 (11.4%	195 (31%)	147 (23.3%)	135 (21.4%)	62 (9.8%)	19 (3%)



24. Utilization of nurses in anesthesia care may increase

There was no significant difference in the response for current and future practice, the majority of total respondents agreeing with the item. The response was significant at the .001 level with a Chi-Squared value of 10.3.

It is quite interesting to note the difference in the CRNA/MD response which was significant. Only 31.2% of the physicians responding felt that the CRNA's increased their status while 42.2% disagreed. In opposition, 53% of the CRNA's felt that they increased the status of the MD and only 21% disagreed.

Significant differences occurred between response from the hospitals with residencies and both other hospital groups. Possible reasons for this difference are:

1. A well trained graduate nurse anesthetist may exhibit more competence than a resident due to more years of experience in the field.
2. CRNA's may have less conflict with surgeons due to the role clarified for the MD who is the surgeon and the RN who is the anesthetist. When an MD is doing anesthesia there may be conflict with the surgeon as to who is 'Captain of the Ship.'
3. The large number of foreign medical graduates in physician anesthesia residency programs with fewer American medical graduates applying to some residencies, contrasted with many applications received by many of the Schools of Nurse Anesthesia for each available position, may be a factor influencing the feelings of the physician.

These and other psychological factors relating to physicians working with RN's, when both are doing similar tasks, may contribute to the difference in response in the areas.

In summary, this item does influence the acceptance or rejection of the hypothesis since from the response it is indicated that utilization of nurse anesthetists does have an impact on the feelings of the MD regarding his status.

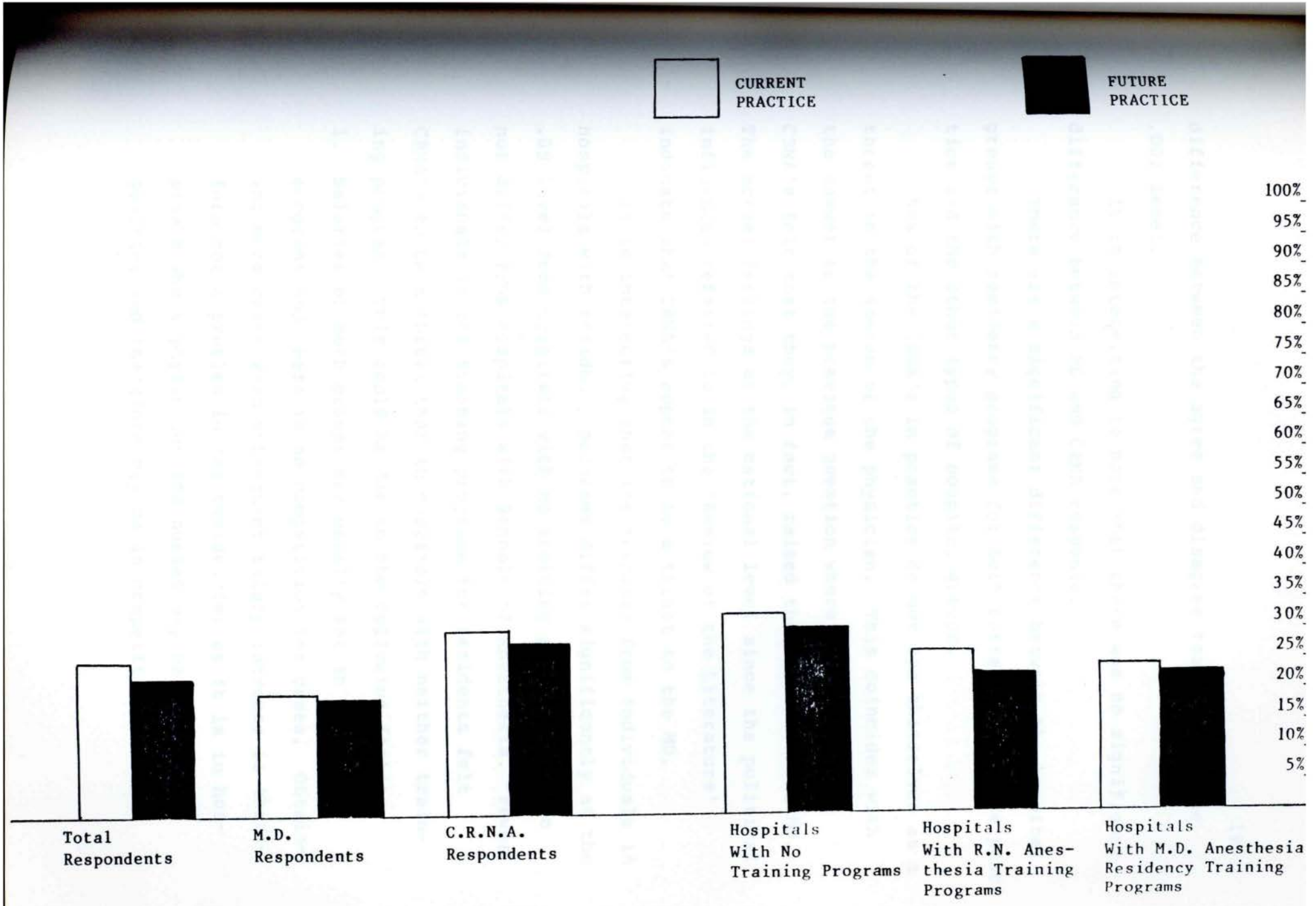
The next question, although similar to the previous item includes areas other than status such as financial threat, job availability, and the very use of the word 'threat' itself, which may influence the answer to the question.

b. Utilization of nurses in anesthesia care may be a threat to the status of the anesthesiologist.

The total response for current practice is given in the following table. All other data pertaining to the item is available in Appendix IV, Pages 49 and 50.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
56 (8.9%)	104 (16.5%)	83 (13.2%)	242 (38.4%)	130 (20.6%)	15 (2.4%)

The majority of respondents did not see nurse anesthetists as a threat, and there was no significant difference for current and future practice. There was a significant



25. Utilization of nurses in anesthesia care may be a threat to

difference between the agree and disagree responses at the .001 level.

It is interesting to note that there was no significant difference between MD and CRNA response.

There was a significant difference between the hospital groups with residency programs for both current and future practice and the other types of hospital groups.

58% of the CRNA's in practice do not see themselves as a threat to the status of the physician. This coincides with the answer to the previous question where over 42% of the CRNA's felt that they, in fact, raised the status of the MD. The actual feelings at the national level since the political influences referred to in the 'Review of the Literature' indicate that CRNA's appear to be a threat to the MD.

It is interesting that the response from individuals in hospitals with residency programs differ significantly at the .05 level from hospitals with no training programs, but do not differ from hospitals with Schools of Anesthesia. Fewer individuals in the training programs for residents felt CRNA's to be a threat than in hospitals with neither training program. This could be due to the following factors:

1. Salaries of both groups are usually set in training programs and there is no competition for cases. Obtaining more cases with subsequent salary increase is therefore not a problem in the residencies as it is in hospitals where physicians and nurses may be in private practice and therefore may be in competition.

2. The academic ladder of the university, or the hospital with a residency program has a built-in 'superior position' for the physician. In hospitals with no training programs each group may be doing identical work with no academic title differences except for the MD and CRNA differences in title.

Even in the hospitals with no training programs over 50% of the respondents felt that CRNA's were not a threat.

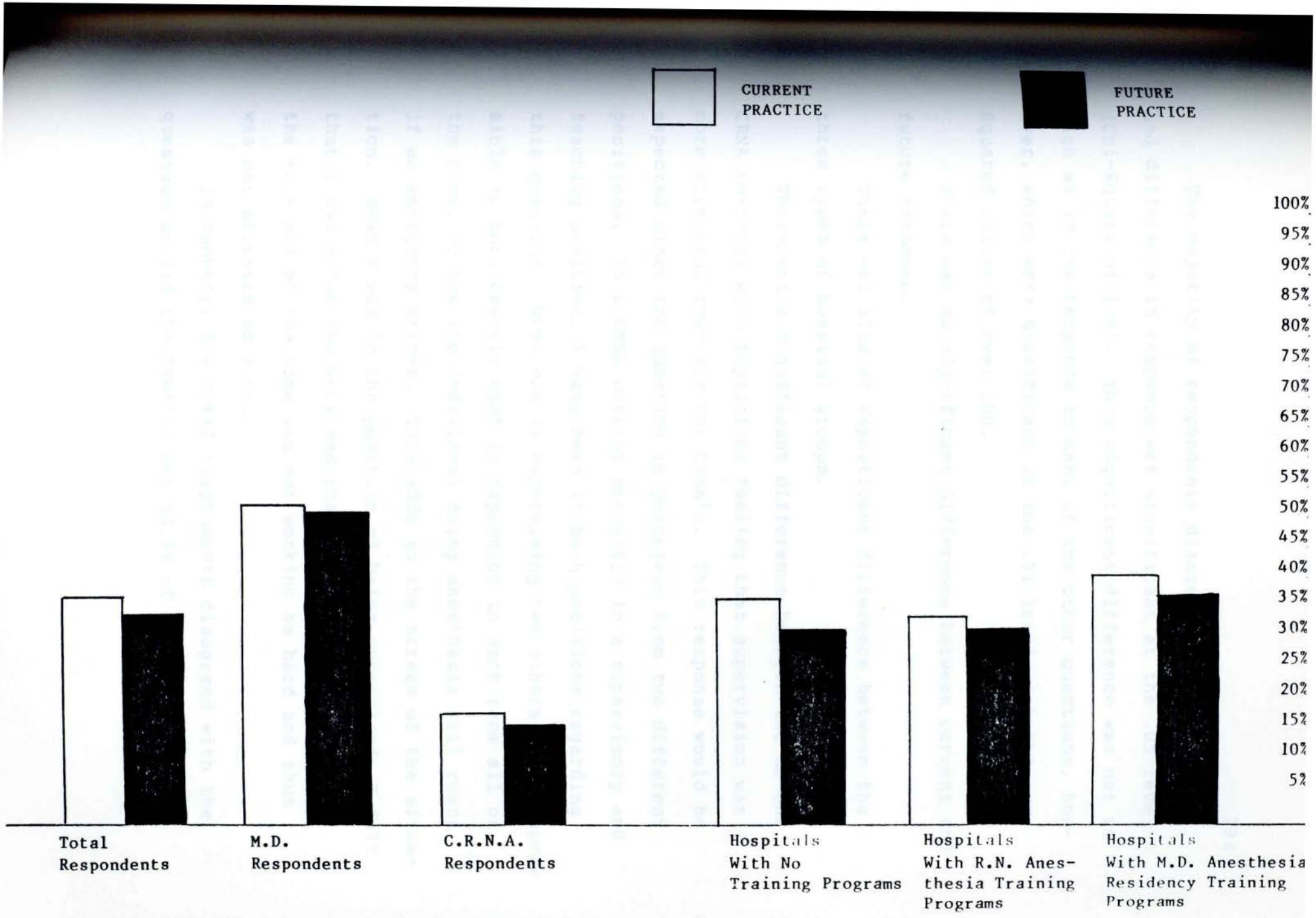
In conclusion, in all groups the response indicates that nurse anesthetists are not a threat to the status of the anesthesiologist, indicating that the hypothesis may be true.

The third item relating to the area of impact is that:

c. Supervision of two nurse anesthetists contributes more to the stress of the day than doing it oneself.

The total response for this question for current practice is indicated in the following table. All other data relating to the item is available in Appendix IV, Pages 51 and 52.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
73 (11.6%)	153 (24.3%)	87 (13.8%)	170 (27%)	106 (16.8%)	41 (6.5%)



26. Supervision of two nurse anesthetists contributes more to the stress of the day than doing a case one's self.

The majority of respondents disagreed with this item and difference in response was significant at the .05 level (Chi-Square of 4.8). This significant difference was not as high as in the response to many of the other questions, however, which were significant at the .01 level with Chi-Squared values of over 100.

There was no significant difference between current and future response.

There was also no significant difference between the three types of hospital groups.

There was a significant difference between the MD and CRNA response with physicians feeling that supervision was more stressful than did the CRNA's. This response would be expected since the question is perceived from two different positions. As a CRNA working presently in a supervisory and teaching position, I have been in both positions regarding this question. When one is supervising two others it is impossible to know exactly what is happening in each room all of the time, or how the individual doing anesthesia will react if an emergency arises. This adds to the stress of the situation. When I was in the position of being supervised, I felt that I was doing the work and the supervisor, not being in the room all of the time was not working as hard and thus was not stressed as much.

In summary, the total respondents disagreed with the question as did the CRNA's, but 52.9% of the MD's, who are

the ones most likely to be in the supervisory role, agreed with the question. The type of hospital structure did not influence the response.

In relating this response to the hypothesis that supervision of CRNA's does not have an impact on the feelings of the anesthesiologist the data from the MD response states utilization of CRNA's adds to their stress thus adding data to the rejection of the hypothesis.

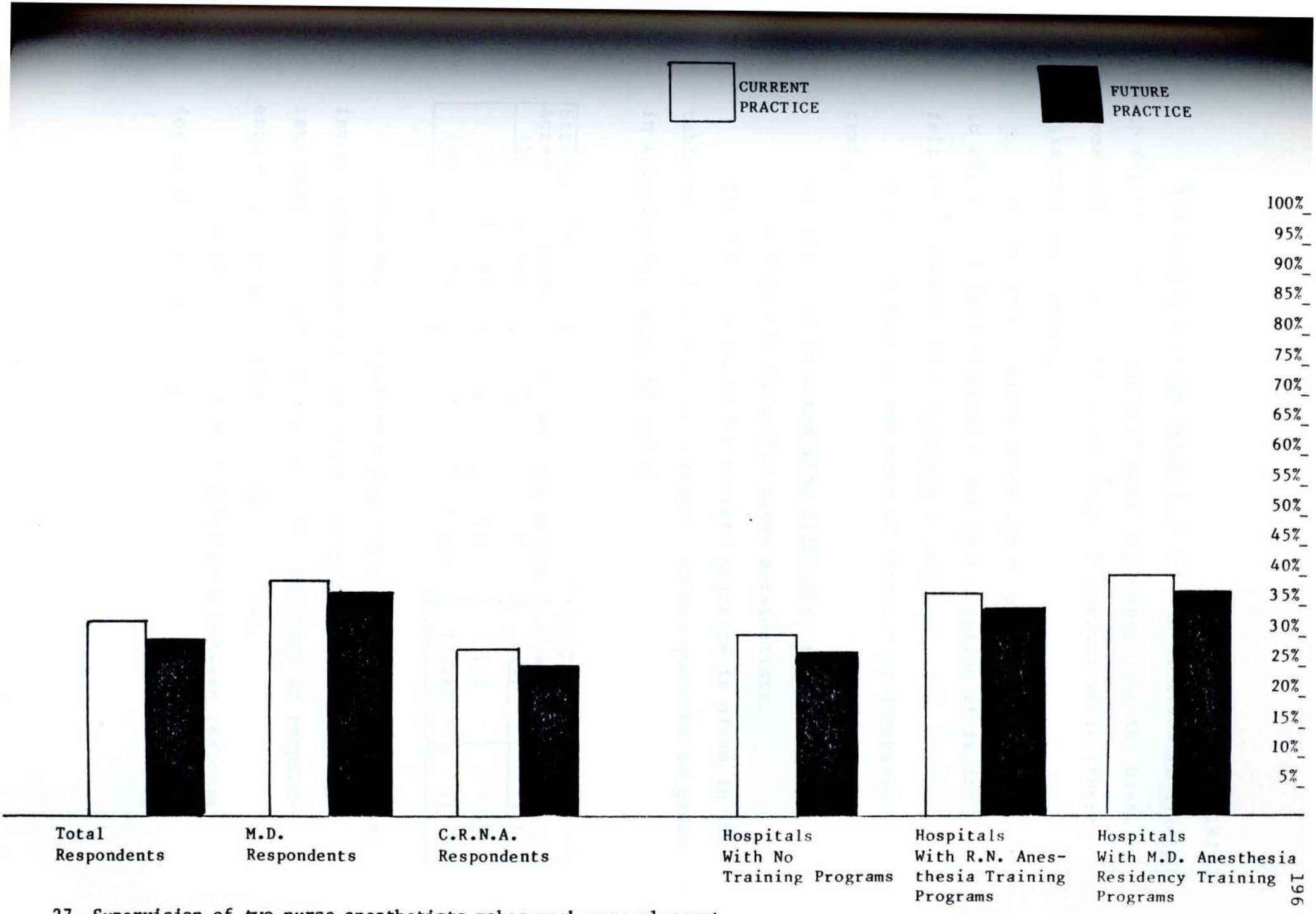
The fourth item to be considered under the area of impact is that:

d. Supervision of two nurse anesthetists makes work more pleasant and interesting than doing a case one's self.

The total response for current practice is available in the following table. All other data related to the question is available in Appendix IV, Pages 53 and 54.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
49 (7.8%)	166 (26.3%)	170 (27%)	152 (24.1%)	50 (7.9%)	43 (6.8%)

Although 34.1% of the respondents agreed with the item and 32% disagreed the difference was not significant at the .05 level. There was no significant difference between the current and future response, the MD/CRNA response, or the responses from the various hospitals.



27. Supervision of two nurse anesthetists makes work more pleasant and interesting than doing a case one's self.

The response of an individual to this question is likely to depend on which aspect of anesthesia they like the best. Some individuals prefer to do cases themselves while others like teaching better.

In conclusion, since there was no significant response to any of the data correlated for this question it is not felt to influence the hypothesis in any way.

The fifth item in the area of 'Impact' is discussed next.

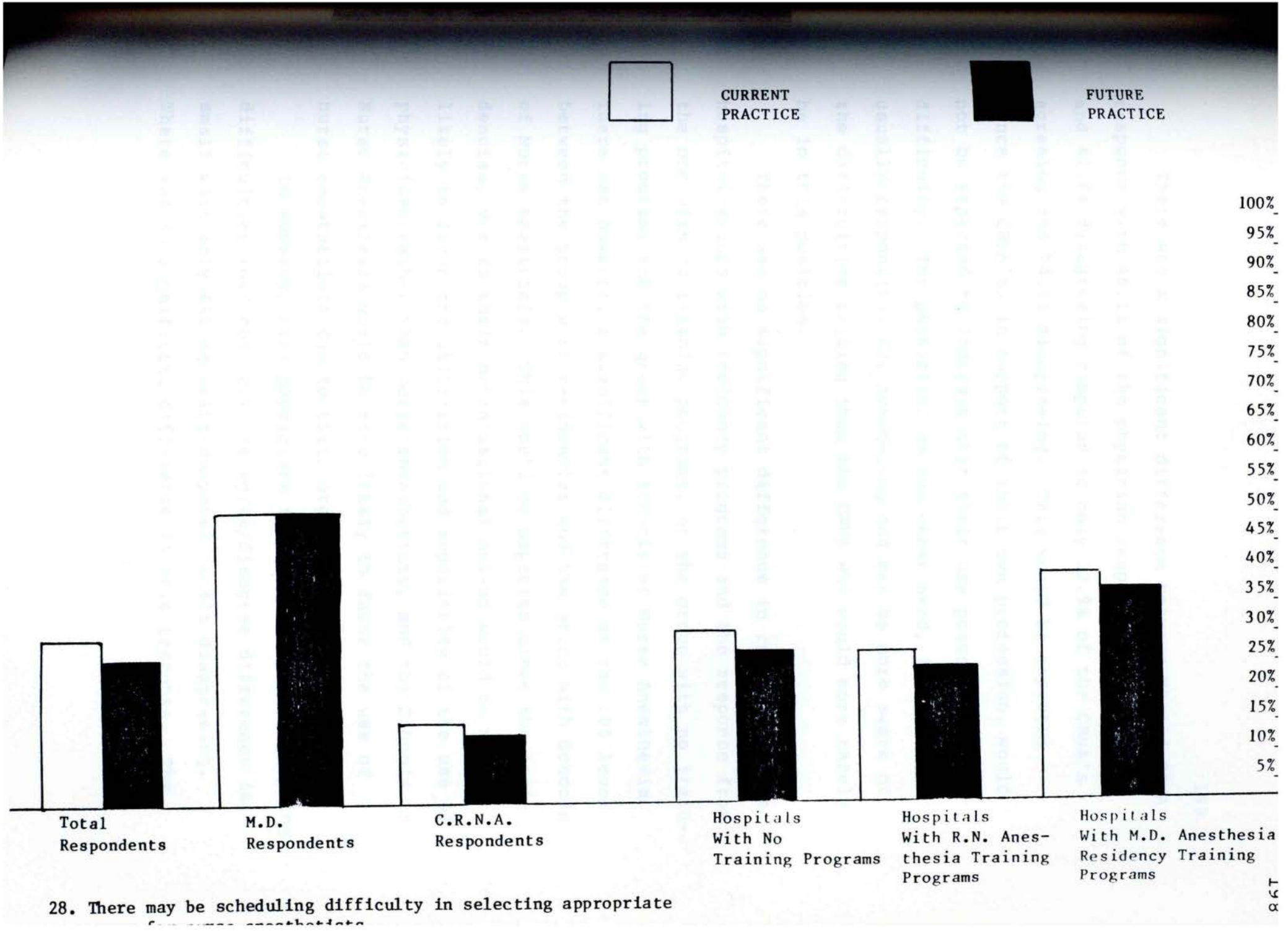
e. There may be scheduling difficulty in selecting appropriate cases for nurse anesthetists.

The total response for current practice is given in the table below. All other data related to the question is given in Appendix IV, Pages 55 and 56.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
38 (6%)	145 (23%)	56 (8.9%)	243 (38.6%)	125 (19.8%)	23 (3.7%)

There was a significant difference between those agreeing and disagreeing in the total response category for current practice at the .001 level. The majority of respondents disagreed with scheduling difficulties.

There was no significant difference between response for current and future practice.



28. There may be scheduling difficulty in selecting appropriate

There was a significant difference between MD and CRNA response with 46.1% of the physician respondents agreeing and 41.6% disagreeing compared to only 12.9% of the CRNA's agreeing and 74.7% disagreeing. This would be expected since the CRNA's, in support of their own profession, would not be expected to indicate that their use poses scheduling difficulty. The physician, on the other hand, is the one usually responsible for scheduling and may be more aware of the difficulties arising than the CRNA who would more rarely be in this position.

There was no significant difference in response of the hospital groups with residency programs and the response from the one with no training programs, or the group with no training programs and the group with Schools of Nurse Anesthesia. There was however, a significant difference at the .05 level between the group with residencies and the group with Schools of Nurse Anesthesia. This would be expected since the residencies, due to their organizational set-up would be more likely to favor the utilization and superiority of the use of physicians rather than nurse anesthetists, and the Schools of Nurse Anesthesia would be more likely to favor the use of nurse anesthetists due to their organizational set-up.

In summary, more physicians feel there may be scheduling difficulties than not, but the agree/disagree difference is small with only 46% agreeing compared to 41% disagreeing. There was no significant difference in this response. The

total response was not in agreement with the question. Thus it is concluded that scheduling difficulties should not pose an additional problem for the MD working with the CRNA in most situations and therefore should not have an impact on his feelings, job satisfaction, or status as stated in the hypothesis.

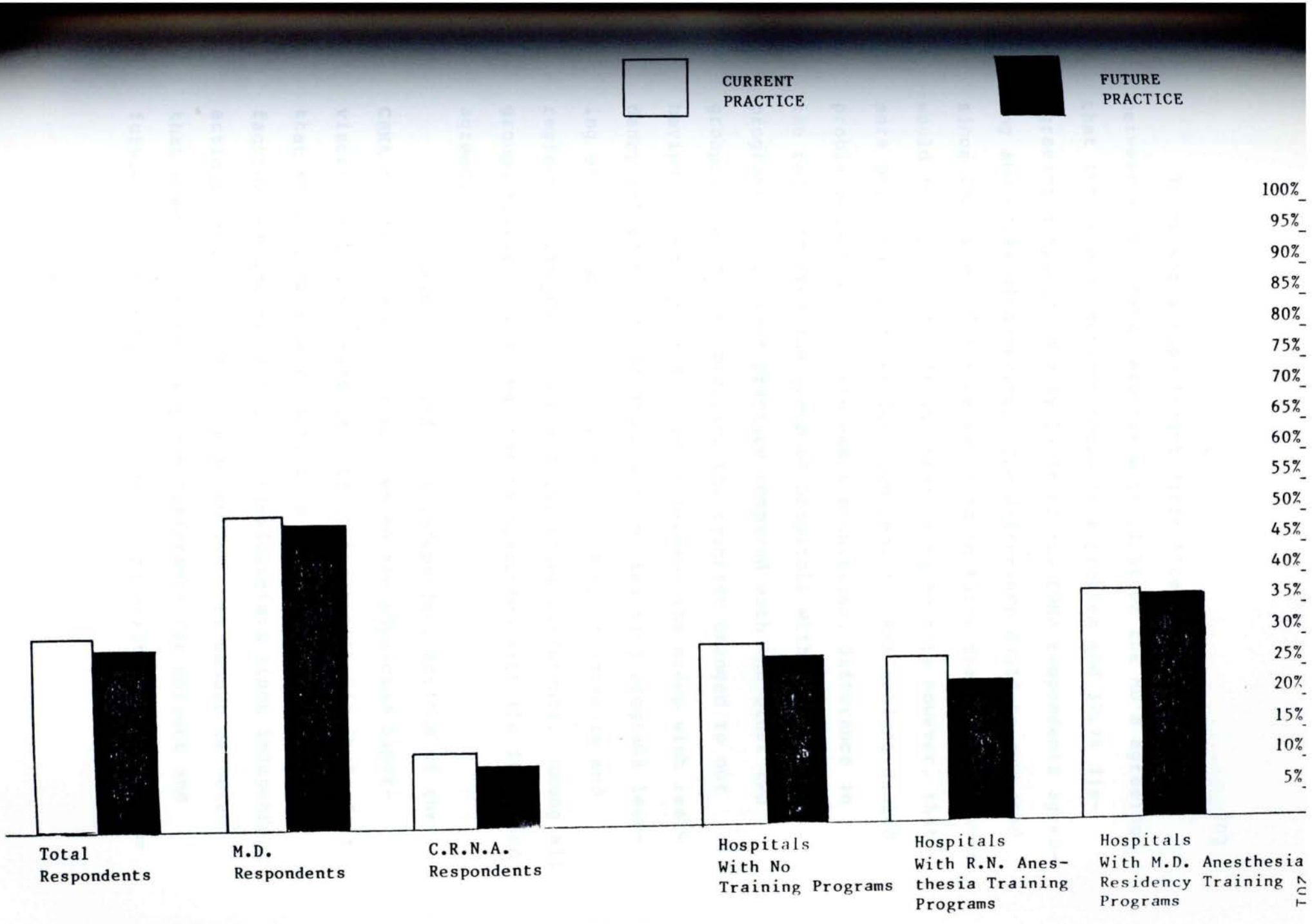
The sixth item in the category of impact relates to independent actions of nurse anesthetists causing problems for physician supervisors.

f. Independent actions of nurse anesthetists are a problem to physician supervisors of anesthetic management.

The results of the total response to this item is available in the following table, and all other relevant data is available in Appendix IV, Pages 57 and 58.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
42 (6.7%)	147 (23.3%)	89 (14.1%)	221 (35.1%)	103 (16.3%)	28 (4.4%)

The majority of respondents disagreed with the item and the agree/disagree response difference was significant at the .001 level. There was no significant difference in current and future response.



29. Independent actions of nurse anesthetists are a problem to physician supervisors of anesthetic management.

There was a significant difference at the .001 level between MD and CRNA response with 31.8% of the MD's agreeing that independent actions could be a problem and 37.7% disagreeing compared to only 10.3% of the CRNA respondents agreeing and 69.9% disagreeing. The difference would be expected since CRNA's would not be expected to think that their actions would be a problem. It is interesting to note however, that more physicians did not feel independent CRNA actions caused problems than did. There was a significant difference in the response from the group of hospitals with residency programs for current practice compared with the other two groups. For future practice the response changed to not having a significant difference between the group with residency programs and the group with no training programs leaving only the groups with Schools of Nurse Anesthesia and residency programs having a significant difference. Among all groups however, more respondents disagreed with the item than agreed.

It is thus concluded that independent actions of the CRNA currently are not a problem to the physician supervisors. Relating these results to the hypothesis it is felt that there should be no impact on the feelings, job satisfaction, or status of the anesthesiologists since independent actions were not felt to be a problem. It should be noted that even though the response difference for current and future did not prove significant in calculation, the percen-

tage of physicians feeling this was a problem currently was 31.8% compared to 48.4% for the future. This perhaps should be an area of further study.

The final item under the area of impact is as follows:

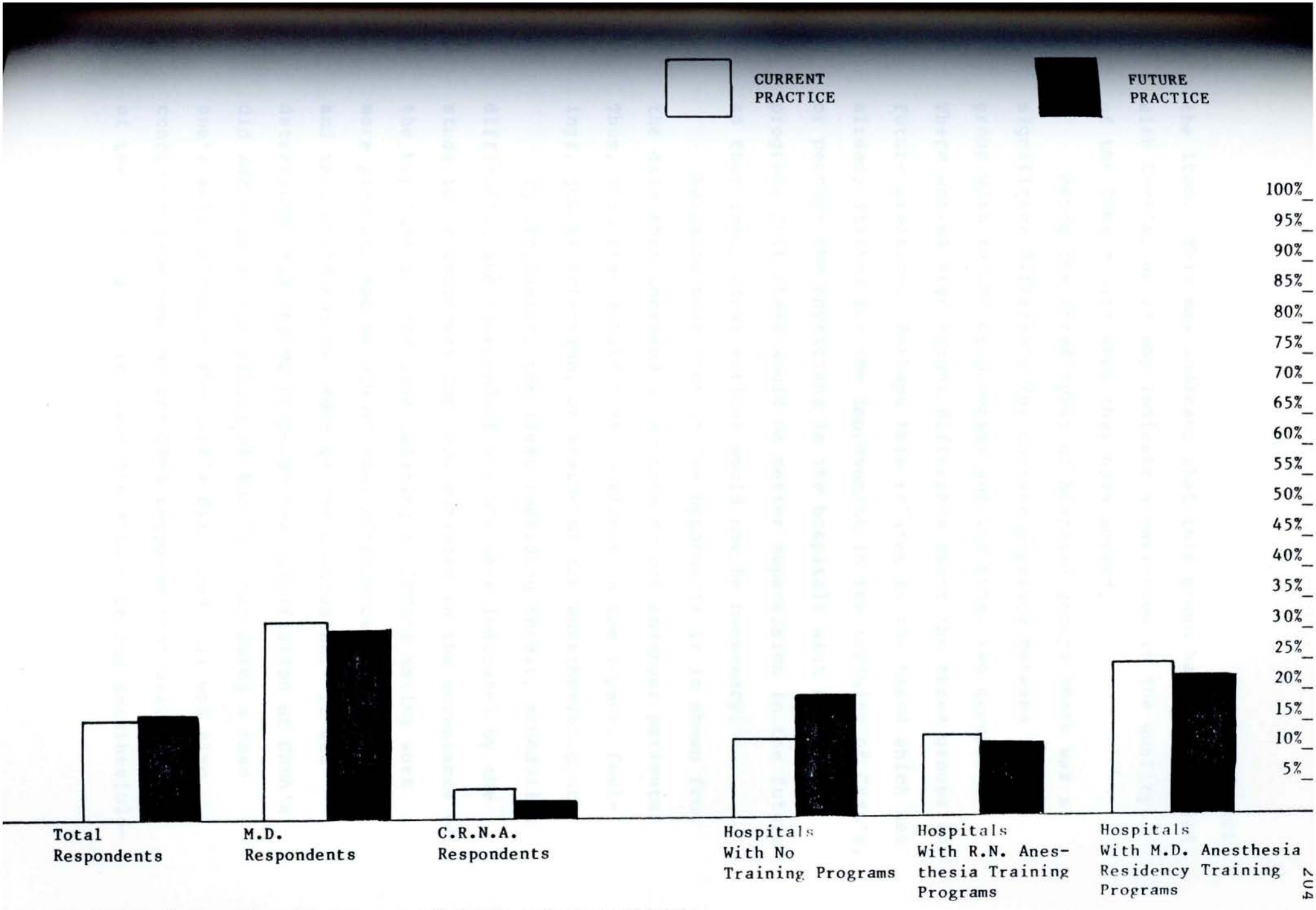
g. Independent actions by nurse anesthetists endanger patients.

The table below gives the data for the total response relating to current practice. All other data for the item is available in Appendix IV, Pages 59 and 60.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
35 (5.6%)	79 (12.5%)	93 (14.8%)	180 (28.6%)	215 (34.1%)	28 (4.4%)

The majority of respondents disagreed with the question and the difference between the agree and disagree responses was significant at the .001 level. There was no difference between current and future response in any of the groups.

There was a significant difference in response at the .001 level between the MD's and CRNA's. There were however, more MD's as well as CRNA's disagreeing with the item than agreeing. As would be expected only 4.4% of the CRNA's responded positively to the item while 87.2% responded negatively. Among the physicians, 31.8% responded positively and 37.7% negatively. It is also of interest that 30.5% of the MD's stated they were not certain, or did not respond, to



30. Independent actions by nurse anesthetists endanger patients.

the item. This may indicate that this group has never worked with CRNA's, or it may indicate a variation in the quality of the CRNA's with whom they have worked.

Among the three types of hospital groups there was a significant difference for current practice between the group with residency programs and the other two groups. There was no significant difference among the three groups for future practice. Perhaps this relates to the trend which has already started for the improvement in the training of CRNA's, or perhaps the physicians in the hospitals with residency programs felt there would be better supervision in the future so then independent actions would not be necessary.

Relating this item to the hypothesis it is shown from the data that independent actions do not endanger patients. Thus, this item should have no effect on the impact, feelings, job satisfaction, or status of the anesthesiologist.

In conclusion, the items regarding threat, scheduling difficulty, and independent actions were indicated by the study to be incorrect and thus assisted in the acceptance of the hypothesis. The item relating to CRNA's making work more pleasant had no significant differences in response and thus could not be added to any conclusion. It was determined from the MD response that utilization of CRNA's did add more to the stress of the day then doing a case one's self, although the CRNA's disagreed. It was also concluded from both MD and CRNA response that utilization of the CRNA did not increase the status of the anesthesiolo-

gist. Therefore two of the seven items indicated that utilization of CRNA's did have an impact and one item did not show a significant difference. Four items showed that the use of nurse anesthetists did not influence the feelings, job satisfaction, or status of the anesthesiologist in the specific way stated by the item.

I believe that no conclusion can be drawn from this study regarding this hypothesis. At this point I would recommend further study and clarification so that the concerns and feelings of the MD could be better defined. The study of this area shows interesting results which I believe should be investigated further. I also feel that the feelings exhibited in this area of the study may be very important to the future of MD/CRNA relationships. If MD's felt their status were increased by working with CRNA's, as in most supervisory relationships, and there were no organizational difficulties created by the utilization of CRNA's, as indicated by this study, I believe the place of the CRNA could be better delineated and job satisfaction might be increased for individuals in both groups.

The final hypothesis of the study relates to the education of the nurse anesthetist.

6. Opinions regarding basic education and anesthesia education of nurse anesthetists do not vary.

A total of seven items relating to this hypothesis were included in the questionnaire and significant variation in

opinion for each of the items will be looked for to accept or reject the hypothesis. The items considered are as follows:

a. Nurse anesthetists should participate in departmental mortality and morbidity conferences, and in departmental teaching conferences.

These conferences are well recognized in the field as good methods of inservice education and do contribute to the continuing education of the anesthesiologist and the nurse anesthetist--if they participate.

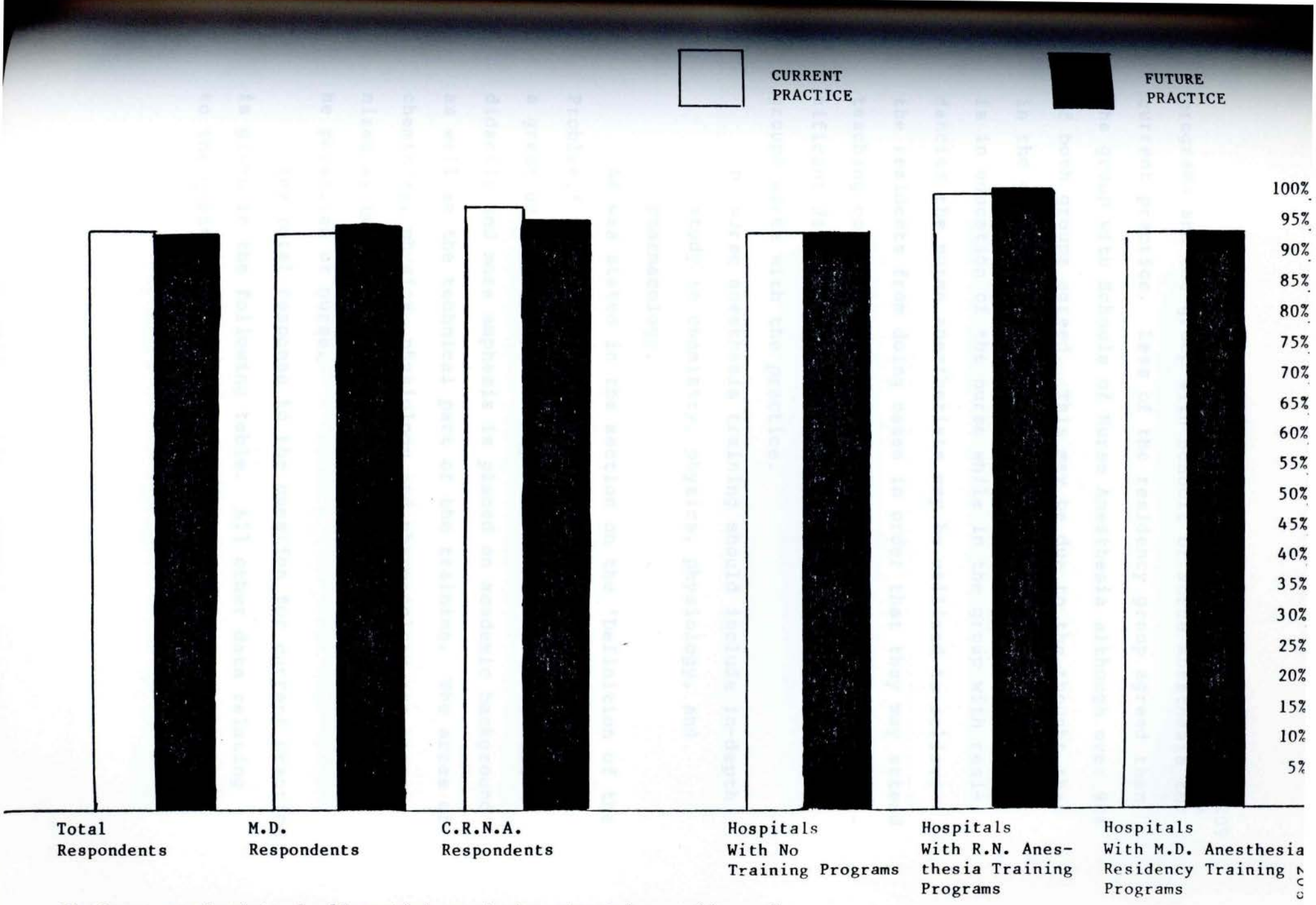
The total response regarding current practice is given in the following table. Further data relating to the question is given in Appendix IV, Pages 61 and 62.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
343 (54.4%)	241 (38.3%)	14 (2.2%)	10 (1.6%)	8 (1.3%)	11 (1.7%)

There was a significant difference between the agree and disagree responses at the .001 level with over 90% of the respondents agreeing for both current and future practice.

There was no significant difference found between current and future practice, and there was also no significant difference found for MD/CRNA response.

Among the three hospital groups the only significant difference was between the group with residency training



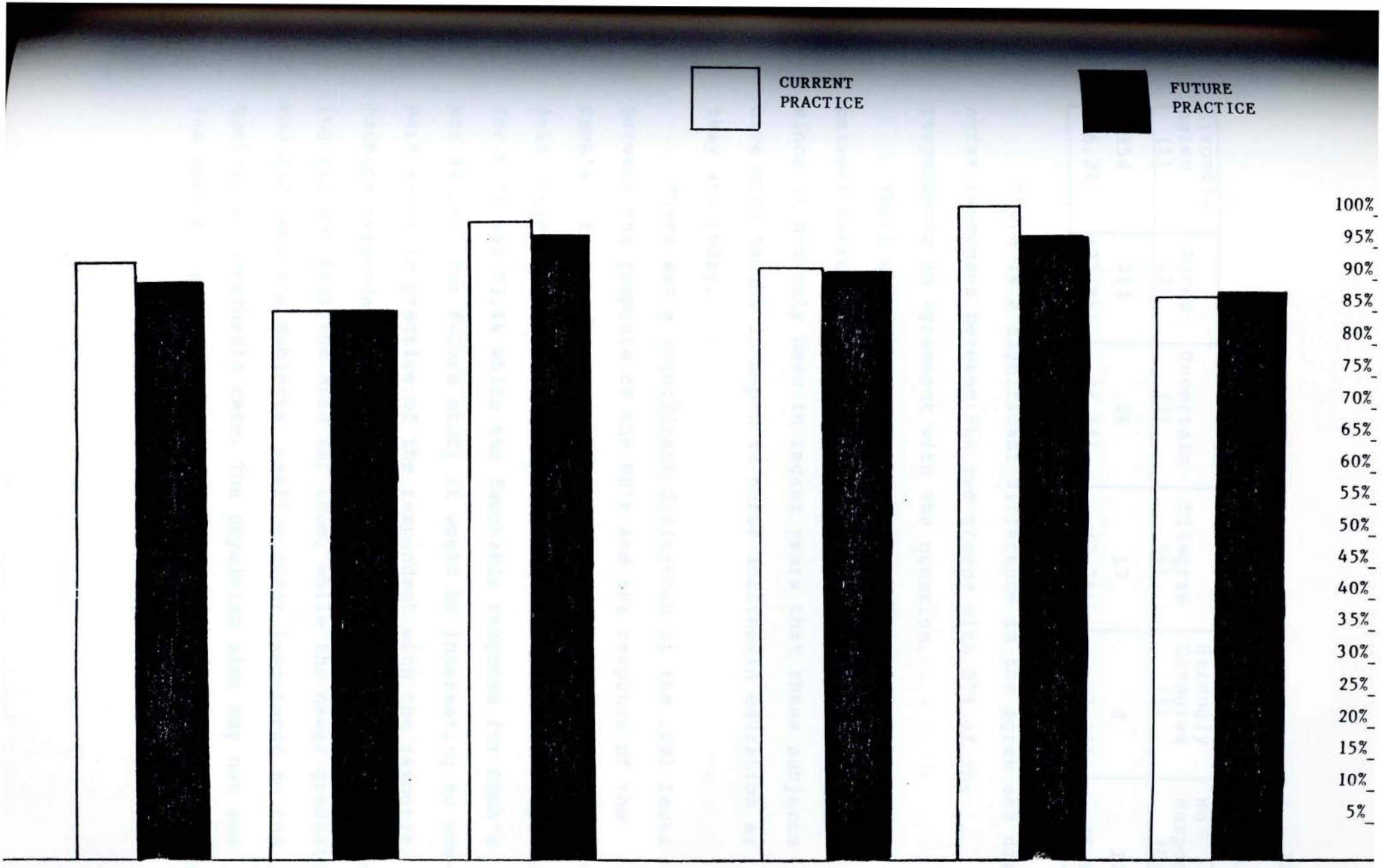
31. Nurse anesthetists should participate in departmental mortality and morbidity conferences, and in departmental teaching conferences.

programs and the group with Schools of Nurse Anesthesia for current practice. Less of the residency group agreed than the group with Schools of Nurse Anesthesia although over 90% of both groups agreed. This may be due to the thought that in the group with Schools of Nurse Anesthesia the emphasis is in education of the nurse while in the group with residencies the nurse anesthetists may be utilized to relieve the residents from doing cases in order that they may attend teaching conferences. For future practice there was no significant difference between the groups, and over 90% of all groups agree with the practice.

b. Nurse anesthesia training should include in-depth study in chemistry, physics, physiology, and pharmacology.

As was stated in the section on the 'Definition of the Problem,' the training of the nurse anesthetist has changed a great deal in the past ten years. It is becoming more didactic and more emphasis is placed on academic background as well as the technical part of the training. The areas of chemistry, physics, physiology and pharmacology are recognized as important to the background of the anesthetist, be he physician or nurse.

The total response to the question for current practice is given in the following table. All other data relating to the question is found in Appendix IV, Pages 63 and 64.



32. Nurse anesthesia training should include in-depth study in chemistry, physics, physiology, and pharmacology.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
354 (56.2%)	213 (33.8%)	26 (4.1%)	17 (2.7%)	8 (1.3%)	12 (1.9%)

There is a significant difference in the agree and disagree responses between the two groups with 87% of the respondents in agreement with the question.

There was no significant difference in the response between current and future practice. This was interesting since it has only been in recent years that these subjects have been taught in depth in nurse anesthesia education as they are today.

There was a significant difference at the .001 level between the response of the MD's and the response of the CRNA's. It is interesting to note that more CRNA's than MD's felt these subjects to be important. The favorable response for MD's was 83.4% while the favorable response for CRNA's was 96.2%. For future study it would be interesting to compare years in practice of the respondent with the response. Perhaps respondents who did not have these subjects in training did not feel the need for them, while the newer graduates, who did have the subjects, realize their importance to the quality of anesthesia care. The physician also may not see the need for the CRNA to have these subjects if they view the

nurse anesthetist as strictly a technician while they provide the theoretical background knowledge.

In comparison of the three groups of hospitals there was a significant difference at the .05 level between the responses from the residency program group and the group with Schools of Nurse Anesthesia. This may be due to the emphasis the faculties of the Schools of Nurse Anesthesia place on these subjects. All respondents, regardless of the group, agreed with the statement with at least 80% of each group on the positive side.

c. Nurses training is the most suitable background for the non-physician anesthetist.

This item is of current interest since two programs for non-nurses in anesthesia have been started in this country. The feelings regarding these programs seem to be mixed. The response to this question would be anticipated to agree with the question on utilization of physician's assistants under the first hypothesis which related to departmental policy.

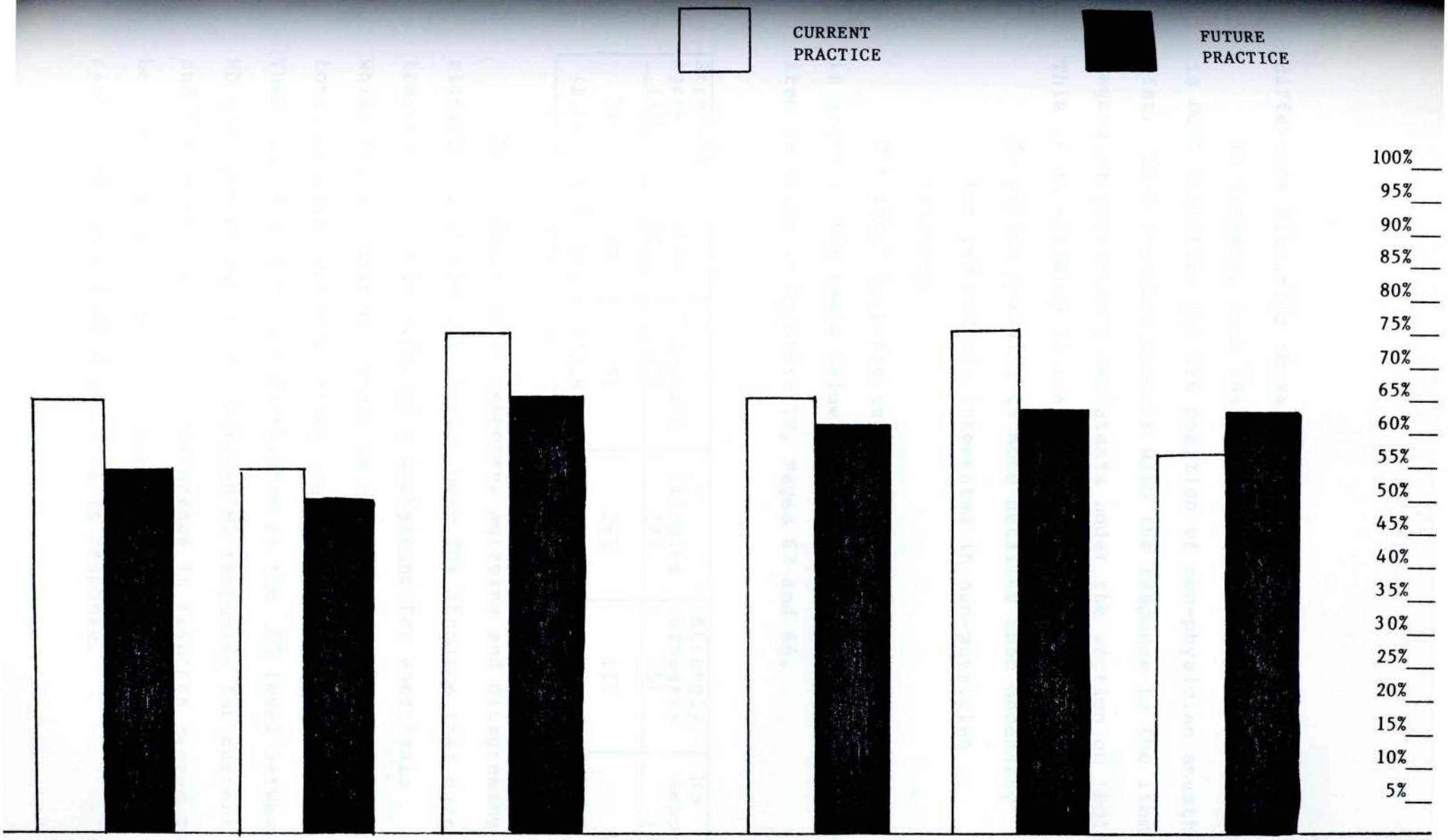
The results of this question for current practice from the total group of respondents are given in the following table. All other data relating to this question is available in Appendix IV, Pages 65 and 66.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
206 (32.7%)	195 (31%)	116 (18.4%)	69 (11%)	27 (4.3%)	17 (2.7%)

The responses between those agreeing and disagreeing are significantly different at the .001 level. Over 50% of the respondents agreed with the item for both current and future practice and there was no significant difference between any of the groups regarding current and future practice.

There was a significant difference between physician and nurse anesthetist response although over 50% of both groups agreed that nurse's training was the most suitable background. More CRNA's agreed than MD's which would be expected for a group protecting and loyal to their own profession.

It is interesting to note that even the MD group, who can be more objective, support the CRNA as the best non-physician anesthetist. Among the three hospital groups there was a difference at the .05 level between the hospitals with residencies and those with Schools of Nurse Anesthesia. As would be expected, far more respondents from the group with Schools of Nurse Anesthesia supported the CRNA. This would be attributed to the same reasons as the MD/CRNA response



33. Nurses training is the most suitable background for the non-physician anesthetist.

difference discussed above.

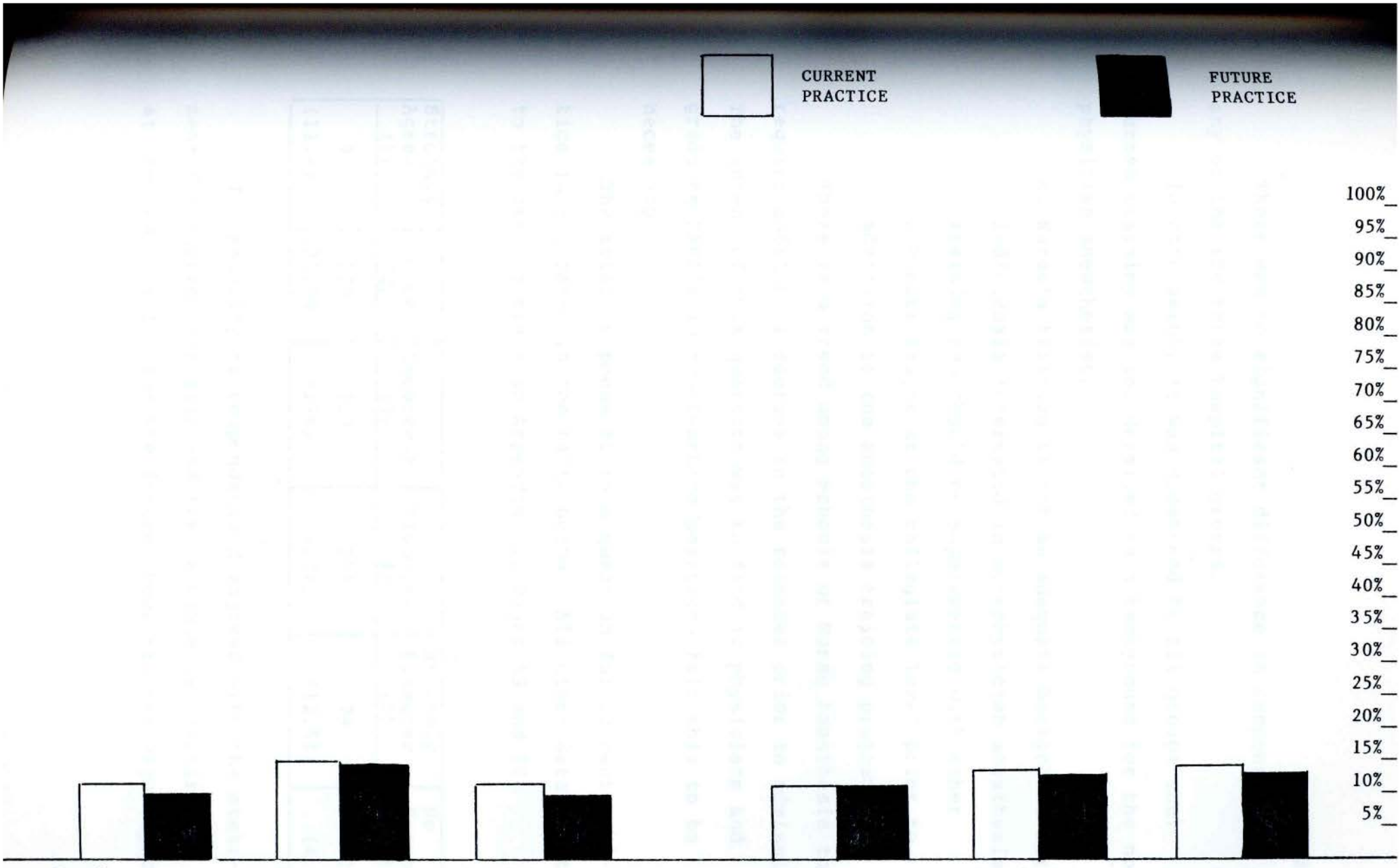
In summary, over 50% of the respondents felt the CRNA is best qualified for the position of non-physician anesthetist. This response concurs with the response to the item regarding physician's assistants under the section on 'Policy.' This lends validity to the response.

d. Nurses training is more detailed than necessary for individuals interested in non-physician training.

The total response to this item for current practice is given in the table below. All other data relating to this item is given in Appendix IV, Pages 67 and 68.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
16 (2.5%)	67 (10.6%)	81 (12.9%)	282 (44.8%)	167 (26.5%)	17 (2.7%)

The difference in responses agreeing and disagreeing is significant at the .01 level. Over 70% disagree that nurse's training is too detailed as a background for anesthesia while 12.6% disagree. There is no significant difference for total or CRNA response between current and future practice. There was a significant difference at the .05 level between MD and CRNA response, and between MD responses for current and future practice. This difference in response seemed to be due to an increase in uncertain and no answer responses rather than an actual difference in response.



34. Nurse's training is more detailed than necessary for individuals interested in non-physician anesthesia training.

There was no significant difference in response from any of the the three hospital groups.

In conclusion, it was disagreed by all groups that nurses training was too detailed as a background for the non-physician anesthetist.

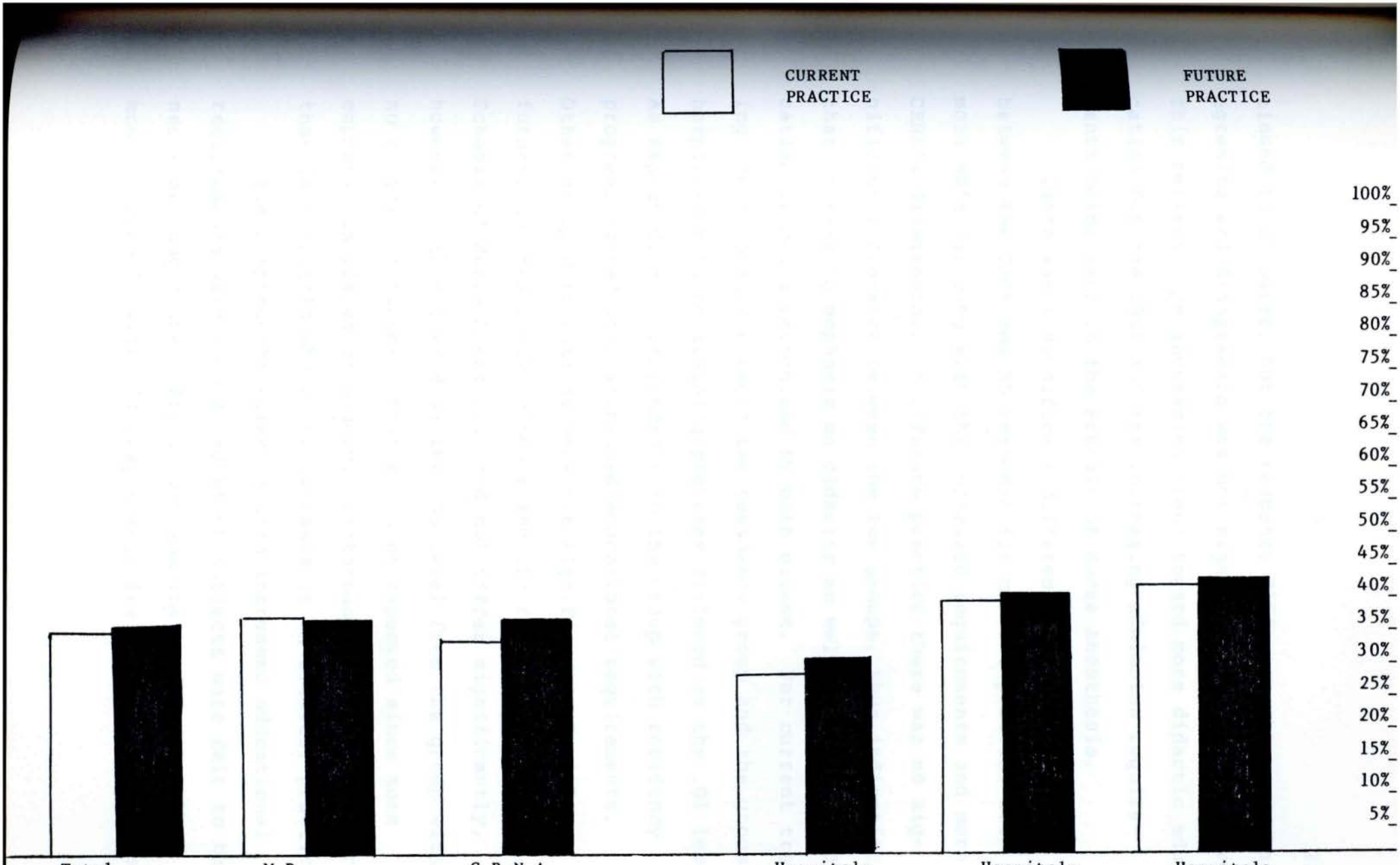
e. Nurse's training is not an adequate background for individuals interested in non-physician anesthesia training and should be supplemented with other subjects taught at the collegiate level prior to admission to the anesthesia training program.

There is a trend among Schools of Nurse Anesthesia to require additional courses in the sciences prior to admission. The intent of this question was to find if physicians and graduate CRNA's in non-teaching positions felt this to be necessary.

The total response to this question for current practice is indicated in the table below. All other data relating to the item is given in Appendix IV, Pages 69 and 70.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
72 (11.4%)	138 (21.9%)	107 (17%)	208 (33%)	79 (12.5%)	26 (4.1%)

The majority of respondents disagreed with the statement for current practice and the response was significant at the .001 level. For the future, however, the majority con-



35. Nurse's training is not an adequate background for individuals interested in non-physician anesthesia training and should be supplemented with other subjects, taught at the collegiate level, prior to admission to an anesthesia training program.

tinued to disagree, but the response difference between those agreeing and disagreeing was not significant at the .05 level. This reflects the increasing trend toward more didactic education for the CRNA and the increasing admission requirements being seen in the Schools of Nurse Anesthesia.

There was a significant difference at the .01 level between the CRNA and MD response for current practice with more MD's agreeing with the increased requirements and more CRNA's disagreeing. For future practice there was no significant difference between the two groups, thus indicating that increasing emphasis on didactic as well as clinical education is being recognized by both groups. For current training the responses between the residency group and the group of hospitals with no training programs differed at the .01 level. As expected, more respondents in the group with residency programs agreed with increased educational requirements. Other group correlations were not significant. For the future, the residency response and the response from the Schools of Nurse Anesthesia did not differ significantly, however, both differed at the .05 level from the group with no training programs. This would be expected since more emphasis is placed on academic background in training programs than in hospitals where the emphasis is on clinical practice.

The respondents agreeing with increased educational requirements were then asked which subjects were felt to be necessary additions. Physiology was the subject mentioned most frequently with 114 respondents feeling that this is a

Percentage Response Advocating Additonal Subjects Taught at the Collegiate Level Prior to Admission to an Anesthesia Training Program.

	Chemistry		Physics		Physiology	
	AGREE	DISAGREE	AGREE	DISAGREE	AGREE	DISAGREE
Total Response	105 (16.7%)	519 (82.4%)	94 (14.9%)	533 (84.6%)	114 (18.1%)	514 (81.6%)
CRNA Response	64 (20.1%)	253 (79.3%)	54 (16.9%)	265 (83.1%)	54 (16.9%)	265 (83.1%)
M.D. Response	41 (13.3%)	263 (85.4%)	40 (13.3%)	265 (86%)	60 (19.5%)	246 (79.9%)
MD/CRNA Response Difference Significance	Significant at .05 (x^2=4.5)		Not Significant at .05 (x^2=1.5)		Not Significant at .05 (x^2=.583)	

	Pharmacology		Anatomy		Other	
	AGREE	DISAGREE	AGREE	DISAGREE	AGREE	DISAGREE
Total Response	99 (15.7%)	528 (83.8%)	51 (8.1%)	577 (91.6%)	93 (14.8%)	536 (85.1%)
CRNA Response	46 (14.4%)	272 (85.3%)	28 (8.8%)	291 (91.2%)	46 (14.9%)	261 (84.7%)
M.D. Response	53 (17.2%)	253 (82%)	23 (7.5%)	283 (91.9%)	47 (14.7%)	272 (85.3%)
MD/CRNA Response Difference Significance	Not Significant at .05 (x^2=.75)		Not Significant at .05 (x^2=.19)		Not Significant at 1.05 (x^2=.001)	

needed addition prior to training. There was no significant difference between the MD's and the CRNA's mentioning the subject.

105 respondents mentioned chemistry with a significantly higher (.05 level) number of CRNA's mentioning it than MD's. This may be due to the fact that many nurses have not had sufficient chemistry in nursing school and realize their lack in the area. MD's may not be aware of this deficiency.

There were 99 respondents mentioning pharmacology with no significant difference in physician and nurse response.

94 respondents mentioned physics and 51 respondents mentioned anatomy, again with no significant difference in physician and nurse response.

There were 93 respondents mentioning other subjects with no significant difference between MD's and CRNA's. Included under this category was mathematics (the most frequently mentioned subject), the humanities, and the arts, for a more rounded education.

In summary, although the majority of respondents disagreed with the need for additional subjects other than those obtained in nurse's training prior to admission to an anesthesia training program, fewer disagreed for future practice than for current practice. There was more agreement from respondents in hospitals with training programs than from respondents working in hospitals with no training programs. This coincides with the increased emphasis on edu-

cation occurring in recent years and the increased emphasis placed on education in hospitals with training programs.

The next question is an attempt to locate the correct academic position for the School of Nurse Anesthesia. There is controversy regarding this as was discussed in earlier sections of this paper.

f. Nurse anesthesia training should be at the:

1. Certificate Level
2. Baccalaureate Level
3. Master's Level

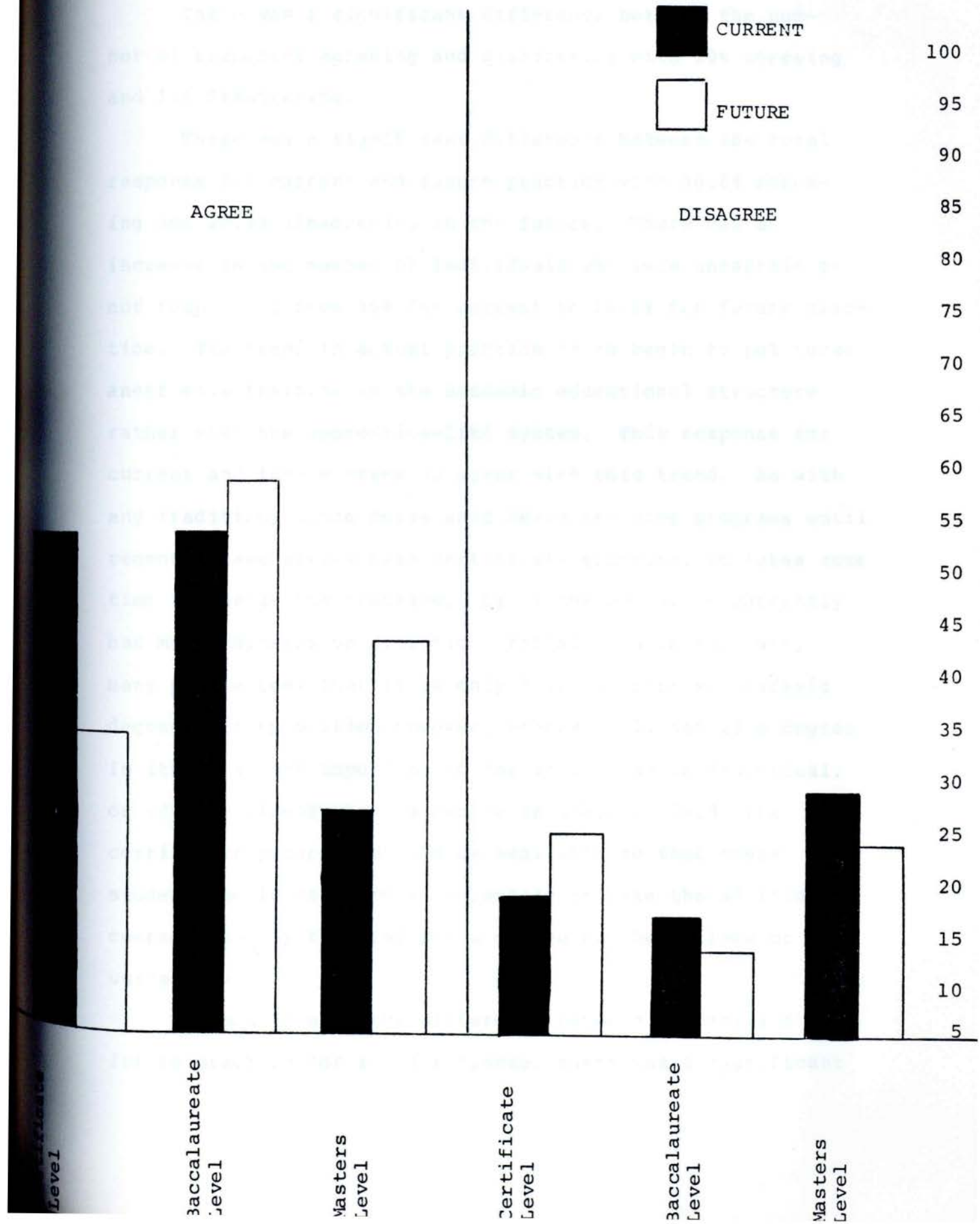
Respondents were encouraged to mark more than one level if they felt a need for this training to be at more than one level. Training for nurse anesthetists at present is at all three levels and the current trend is to increase the number of programs at the Baccalaureate and Master's Level.

1. Certificate Level

The response to the Certificate level as appropriate for anesthesia training is discussed first. The table below indicates the response for current practice from the total number of respondents.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
110 (17.5%)	205 (32.5%)	48 (7.6%)	52 (8.3%)	36 (5.7%)	179 (28.4%)

Preferred Academic Level for
Nurse Anesthesia Training



There was a significant difference between the number of responses agreeing and disagreeing with 50% agreeing and 14% disagreeing.

There was a significant difference between the total response for current and future practice with 30.8% agreeing and 20.4% disagreeing in the future. There was an increase in the number of individuals who were uncertain or not responding from 36% for current to 48.8% for future practice. The trend in actual practice is to begin to put nurse anesthesia training in the academic educational structure rather than the apprentice-like system. This response for current and future seems to agree with this trend. As with any tradition, since nurse anesthesia training programs until recently have always been certificate granting, it takes some time to change the practice. Since the education currently has more emphasis on didactic material than in the past, many people feel that it is only fair to grant an academic degree. In opposition however, others feel that if a degree in itself is not important to the student as an individual, or if they already have a degree in another field, the certificate programs should be available so that these students would not find it necessary to take the additional courses usually required for a degree by the college or university.

In addition to the difference between current and future practice for total response, there was a significant

difference in response for current and future practice from both the MD and CRNA groups. All responses were significant at the .001 level. For current practice 44.4% of the MD respondents agreed with the certificate level while 19.5% disagreed. For the future 31.2% of the MD's agreed and 20.4% disagree. The number of respondents uncertain or not responding rose from 36% to 44.1%. Of the CRNA respondents currently 55.2% agreed while 8.8% disagreed and for the future 30.1% agreed while 16.6% disagreed. Again the number of uncertain and no answer responses increased from 9.1% for current practice to 53.3% for future practice. The importance of this is that the question was worded in such a way that if one did not feel training should be at a particular level one did not have to answer. Thus, those not responding might be added to those disagreeing since both responses indicated disagreement.

There was a significant difference between the MD and CRNA response for current practice at the .001 level with more CRNA's than MD's in support of the question. For the future however, even though the significance remained, the level decreased to .05. There was no significant difference in response from any of the three groups of hospitals.

2. Baccalaureate Level

The next academic level considered for nurse anesthesia education was the Baccalaureate level. It may be recalled from the discussion in the 'Review of the Literature' that

only 8% of the respondents of the study of practicing nurse anesthetists done by the Health Information Services, Inc., held Baccalaureate Degrees, the remainder holding either Associate Arts degrees or diplomas. Of those teaching only 6% held Baccalaureate or Master's Degrees.[3] Because in the past most nurses attended three year diploma programs, there appears to be a need for nurse anesthesia training at the Baccalaureate level. As more graduate nurses earn Baccalaureate degrees in nurse's training, perhaps this trend will change.

The total response to opinion on the Baccalaureate level as the appropriate academic level for nurse anesthesia training is given in the table below. All other data relating to this item is available in Appendix IV, Pages 73 and 74.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
125 (19.8%)	189 (30%)	81 (12.9%)	63 (10%)	12 (1.9%)	160 (25.4%)

The difference between the agree and disagree responses was significant at the .001 level with 49.8% of the respondents agreeing and 11.9% of the respondents disagreeing.

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[3]Health Information Services, Inc. "A Survey of Nurse Anesthetists - 1975." American Association of Nurse Anesthetists Journal, December, 1975, Vol. 43, No. 6.

There was a significant difference in total response at the .05 level for current and future practice with 54% agreeing with the Baccalaureate level and 8.6% disagreeing. The number of no answer and uncertain responses stayed approximately equal.

There was no significant difference in the MD response for current or future practice with 50% of the physicians agreeing. There was a significant difference in the CRNA response for current and future with more respondents agreeing and fewer disagreeing for the future than for current practice.

There was no significant difference in the MD/CRNA response for current practice, but there was a significant difference at the .01 level for future practice. Fewer MD's than CRNA's agreed with the Baccalaureate degree as that degree appropriate for the future.

Among the three hospital groups there was a significant difference for current practice between the group with no training programs and the other two groups. There is undoubtedly more emphasis on academic degrees in the academic setting whereas emphasis would be less in the practice situation since holding a degree would not be likely to change actual practice.

For future practice there was a significant difference between the response from Schools of Nurse Anesthesia and the other two groups. This concurs with the response from the physicians. Perhaps the MD's feel that another level

is more appropriate for the future, when more students will enter programs already holding Baccalaureate degrees from nursing education since the trend in nursing is to move away from the diploma programs and toward the Associate Arts degree or the Baccalaureate program.

3. Master's Level

The final level considered for nurse anesthesia education was the Master's level. The total response for current practice is in the following table. All other data pertaining to the item is available in Appendix IV, Pages 75 and 76.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
68 (10.8%)	76 (12.1%)	87 (13.8%)	109 (17.3%)	47 (7.5%)	243 (38.6%)

There was no significant difference between agree and disagree responses for current practice. There was also no significant difference between MD and CRNA responses for current practice. There were however, significant differences between current and future responses for all groups considered. The total group had a difference of .001 for current and future response. In addition, the response for the future had a significant difference in the agree/disagree responses at the .001 level with 38.4% agreeing with the Master's level and 18.7% disagreeing. This was an increase in the number of respondents agreeing and a decrease in those

disagreeing from the response generated for current practice. The difference in MD response for current and future was significant at the .01 level, with the agreeing responses increased from 20.8% for current practice to 33.8% for future practice, and the disagreeing responses decreasing from 26.3% for current practice to 21.8% for future practice. The CRNA current/future responses showed a significant difference at the .001 level with an increase in the number of respondents agreeing from 25.1% for current practice to 43.3% for future practice and a decline in those disagreeing from 23.2% for current to 15.6% for future practice. The number of uncertain and no response answers decreased from current to future in all groups indicating, due to the wording of the question, more agreement with this level for future practice. There was a significant difference in the MD/CRNA response for future practice at the .05 level with more CRNA's than MD's agreeing with the Master's level.

Among the three groups of hospitals, for both current and future practice there was a significant difference at the .05 level between the group with no training programs and the other two groups. This once again, is probably due to more emphasis being placed on academic degrees in hospitals with educational programs than is usual in clinical practice situation.

In summary, the responses agreeing with the certificate level decrease from current to future practice and those in disagreement increase indicating that nurse anesthesia train-

ing should move from this level to a degree granting level in the future. Responses in agreement with both Baccalaureate and Master's levels increased from current to future practice and those in disagreement decreased. The Baccalaureate level was thought more appropriate today, while the Master's level increased in popularity for the future. This is probably a reflection of the fact that nursing education is moving away from the diploma programs and toward the Associate Arts or Baccalaureate levels, so many nurses are entering nurse anesthesia educational programs already possessing a Baccalaureate degree.

The seventh and final item pertaining to the area of education relates to the minimum academic prerequisites needed for entrance to a School of Nurse Anesthesia. This area is under much discussion currently as more applicants are requesting admission to training programs and requirements become higher. The increased emphasis on didactic education also causes an increase in academic prerequisites.

g. Minimum academic achievement for admission to a nurse anesthesia training program should be:
   1. A nursing diploma (3 years)
   2. An Associate Degree (2 years)
   3. A Baccalaureate degree in nursing
   4. A Baccalaureate degree in any field, but with a nursing license and subject to prerequisites (i.e., chemistry)

As in the previous question, respondents were instructed that they could mark more than one area if they felt that more than one background was effective.

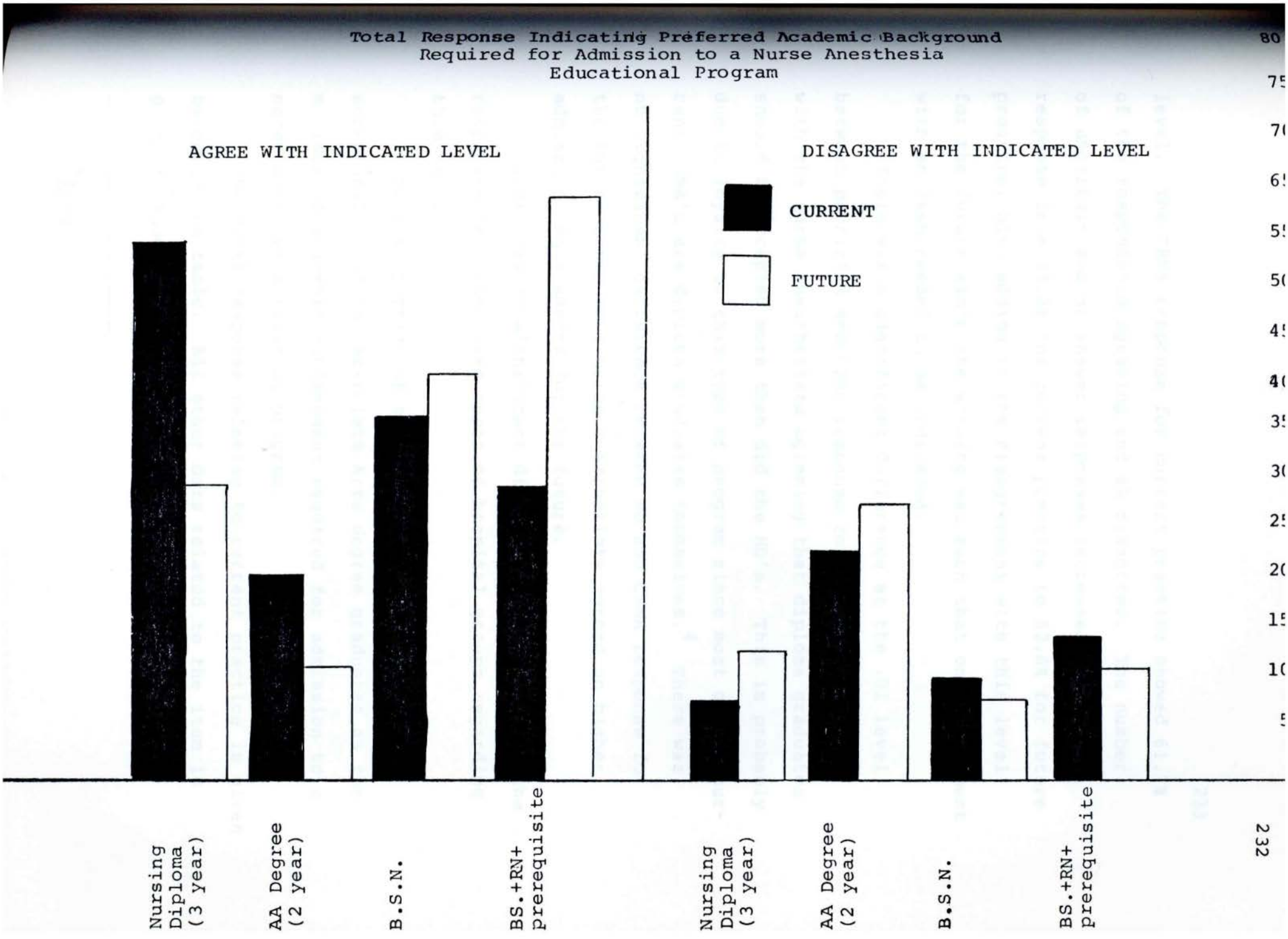
The first area of this question to be discussed is the portion relating to a nursing diploma as the minimum background acceptable for admission. The following table relates the total responses for current practice. All other data relating to the item is available in Appendix IV, Pages 77 and 78.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
142 (22.5%)	211 (33.5%)	30 (4.8%)	37 (5.9%)	18 (2.9%)	192 (30.5%)

There was a significant difference between the responses agreeing and disagreeing with the majority agreeing that a nursing diploma was appropriate for admission for current practice. There was a significant difference between current and future practice among all groups correlated. Among the total respondents currently 56% agreed and 8.8% disagreed with the item while for future practice only 33.2% agreed and 14.2% disagreed.

Of the MD respondents 49.3% currently agreed and 11% disagreed whereas for future practice 33.4% agreed and 15.6% disagreed. The response difference for MD's was only at the .01 level, but for all other correlations it was at the .001

Total Response Indicating Preferred Academic Background Required for Admission to a Nurse Anesthesia Educational Program



level. The CRNA response for current practice showed 61.7% of the respondents agreeing and 6% disagreed. The number of uncertain and no answer responses increased for total response from 35.2% for current practice to 52.6% for future practice, also adding to the disagreement with this level for the future since the wording was such that only agreement with an item needed to be indicated.

There was a significant difference at the .01 level between physician and CRNA response for current practice with the nurse anesthetists agreeing that diploma graduates should be accepted more than did the MD's. This is probably due to loyalty to this type of program since most of the current CRNA's are diploma graduates themselves.[4] There was no significant difference between MD and CRNA response for the future since more nurse anesthetists agreed on higher admission requirements for the future.

There was no significant difference between any of the responses from the three types of hospital groups regarding this item.

The next portion of the question was related to the acceptability of the Associate Arts degree graduates as the minimum of academic achievement required for admission to a nurse anesthesia training program.

The total response relating to current practice is given below in the table. All other data related to the item is given in Appendix IV, Pages 79 and 80.

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[4] Ibid.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
37 (5.9%)	99 (15.7%)	52 (8.3%)	90 (14.3%)	66 (10.5%)	286 (45.4%)

There was no significant difference between the agree and disagree responses for current practice, although 24.8% of the respondents disagreed and 21.6% of the respondents agreed. If one considers that respondents only needed to mark the item if they agreed with it, the response disagreeing is even higher since 45.4% did not respond. There was a significant difference at the .001 level for the total response relating to both current and future practice. The totla response agreeing and disagreeing for the future did show a significant difference at the .001 level with only 12.6% agreeing that Associate Arts degree graduates should be admitted and 28.2% disagreeing. Those not responding, which again due to question wording could be added to those disagreeing, increased to 51%.

There was no significant difference in MD response for current and future practice. In both instances more MD's disagreed with this level for admission than agreed.

There was a significant difference at the .001 level in CRNA response for current and future practice. Currently 27.3% agreed that Associate Arts graduates should be admitted

while 24.8% disagreed. For the future only 13.5% of the CRNA's agreed and 28.6% disagreed. Those CRNA's not responding also increased from 40.8% currently to 50.2% for future practice. There was a significant difference at the .05 level for MD/CRNA response for current practice with more MD's then CRNA's disagreeing with this level for admission. There was no significant difference relating to future practice. Both groups disagreed with this level as a minimum for admission.

Currently there were significant differences at the .001 level between the group of hospitals with Schools of Nurse Anesthesia and the other two groups. More respondents from the Schools of Nurse Anesthesia agreed that Associates Arts degree graduates should be admitted than respondents from both other programs. For future practice the number of responses agreeing from Schools of Nurse Anesthesia declined, and the only significant difference was with responses from hospitals with Schools of Nurse Anesthesia compared with those from residency programs. This difference was significant at the .01 level. It remained that more respondents from Schools of Nurse Anesthesia agreed with admitting Associate Arts degree graduates although the majority of both groups disagreed with this practice.

It is apparent from the results that the majority of respondents do not agree that Associate Arts degree graduates should be admitted and that even if they were admitted cur-

rently, they should not be admitted in the future.

The next area of consideration as the minimum academic achievement required for admission was the Baccalaureate of Science Degree in Nursing. The total responses for current practice are given in the following table. All other data relating to this item is available in Appendix IV, Pages 81 and 82.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
85 (13.5%)	154 (24.4%)	54 (8.6%)	57 (9%)	21 (3.3%)	259 (41.1%)

There was a significant difference between the agree and disagree responses at the .001 level for both current and future total response. Currently, 37.9% agreed that the BSN should be the minimum academic achievement required for admission and 12.3% disagreed. 41.1% of the respondents did not mark the item which might be added to those disagreeing with the question. There was a significant difference between current and future response at the .05 level. Those respondents agreeing increased to 42.6% for future practice and those disagreeing declined to 8.3%. Those not responding remained at the 40% level. There was no significant difference in the MD response for current and future practice. There were 40.2% of the physicians agreeing with the BSN as the minimum requirement and 12.9% disagreeing currently and

45.8% agreeing and 10.1% disagreeing for the future. There was a significant difference at the .05 level between current and future CRNA response. There were 35.8% of the CRNA's agreeing with the question for current practice and 11.6% disagreed. For the future 39.5% agreed and 6.2% disagreed. Those not responding for current and future remained constant.

There was no significant difference between MD and CRNA response.

Among the three hospital groups for current practice there was a significant difference between hospitals with no training programs and the other two groups, with fewer respondents agreeing that the BSN should be the minimum entrance requirement from the group with no training programs. This would be expected since as discussed before, emphasis on didactic achievement is less in hospitals without academic programs than in hospitals with such programs.

There were no significant differences between the groups for future practice.

Thus, the data showed that it is believed that academic requirements for admission to training programs should increase, and the BSN may be an appropriate minimum level for the future.

The final area to be considered as a minimum requirement for admission to a nurse anesthesia training program is a Baccalaureate degree in any field but with a nursing license and subject prerequisites (i.e., chemistry).

The total response related to current practice follows. All other data can be found in Appendix IV, Pages 83 and 84.

Strongly Agree (1)	Agree (2)	Uncertain (3)	Disagree (4)	Strongly Disagree (5)	No Response (6)
81 (12.9%)	114 (18.1%)	78 (12.4%)	60 (9.5%)	39 (6.2%)	258 (41%)

There is a significant difference at the .001 level in responses agreeing and disagreeing. There were 33% of the respondents agreeing for current practice and 15.7% disagreeing. 53.4% of the respondents were uncertain or not responding. These could be considered with those disagreeing as in the items above.

There was a significant difference in total response for current and future practice with those agreeing increasing to 35.5% and those disagreeing increasing to 22.7%. Those uncertain or not responding decreased to 41.9%. The increase in those disagreeing is probably due to the feeling that minimum requirements should include academic nursing education rather than Baccalaureate education with perhaps a diploma or Associate Arts degree in nursing.

There was no significant difference between MD response for current and future practice. There was a significant difference at the .05 level for CRNA current and future response. The difference was due to more respondents agreeing and less disagreeing with the item in the future than currently.

There was no significant difference between MD and CRNA response.

In the three groups of hospitals there was no significant difference between the group with residency programs and those with Schools of Nurse Anesthesia for either current or future practice. There was however, a significant difference at the .001 level between those hospitals with no training programs and the other two groups for current practice. There was also a significant difference between the hospitals with no training programs and those with residencies at the .05 level for future practice and those with neither training program and those with Schools of Nurse Anesthesia at the .001 level for future practice. Again in this item it was shown that those respondents in clinical practice do not agree as strongly with the need for higher academic degrees, whereas those respondents from hospitals with training programs do feel that these degrees are important. Which viewpoint is correct cannot be determined from this data, but it should be known that larger hospitals with training programs often do more difficult procedures which require more theoretical knowledge of physiology and pharmacology for successful management than do the smaller hospitals with no training programs. One could also relate to the fact that until one is educated they do not realize how much their knowledge was limited prior to the education.

In conclusion, the certificate level is felt appropriate for minimum admission requirements currently, but

the numbers agreeing with this decrease in the future indicating a higher academic level will be required. Those disagreeing with an Associate Arts degree as the minimum for admission are more in number than those agreeing for both current and future practice indicating that this degree is not acceptable as a level of minimum academic achievement for admission to an anesthesia training program either currently or in the future. In the future the Baccalaureate degrees have the most respondents in favor, and the certificate level and Associate Arts degree decline further in popularity.

There was no significant difference between the MD and CRNA response of whether the BSN or the BS with a nursing license and other prerequisites was the most valuable.

It is thus concluded that currently the certificate or the Baccalaureate either in nursing or in another field, but with a nursing license and prerequisites, are the most appropriate minimum requirements for admission to nurse anesthesia training. In the future it is felt that the BSN or the Baccalaureate in another field with a nursing license and prerequisites would be the most beneficial minimum requirement for admission. If this is true, then in the future there should be an even greater demand for nurse anesthesia education at the Master's level since students will enter already holding a Baccalaureate degree. This indicates that those of us involved in nurse anesthesia education should begin to move our programs in the direction of granting a degree.

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CHAPTER VI

CONCLUSIONS AND IMPLICATIONS

In this section each of the six areas of the study are considered and the results are correlated with possible implications for either changes in practice or further research.

1. Policy

The hypothesis related to the area of policy stated that "Physician's assistants are not considered to be as acceptable as nurse anesthetists as the non-physician members of the anesthesia care team."

This hypothesis was accepted as was discussed in the section on results. The response from the questionnaire also indicated that CRNA's will continue to be used currently, and will be used in future practice. This data gained from the present study correlates well with the survey done by the ASA Committee on Manpower which reported 72% of the anesthesiologists believing that anesthesia practice should be done by the use of an anesthesia care team, and 57% of the anesthesiologists against the use of physician's assistants on that care team.[1] In this study the utilization of the words

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[1] Harold Carron, et al. Report of the 1974 Membership Survey by the ASA Committee on Manpower.

'anesthesia care team' implies that there are non-physician personnel working with physicians to care for the patients. Thus nurse anesthetists are included in the study as members of the anesthesia care team. This concept was fully discussed in the Chapters relating to 'Discussion of the Problem' and 'Review of the Literature.'

Due to the results of this study and its correlation with the previous study, I believe that we can ascertain that the Certified Registered Nurse Anesthetist should continue to be trained as the non-physician member of the anesthesia care team, and that those of us involved in education of these individuals should continue admitting only Registered Nurses to our training programs rather than individuals with other background which were not considered by the respondents to be as acceptable.

2. Economics and Efficiency

The second area of consideration in the study related to the economics and efficiency of the anesthesia department as it is affected by the utilization of Certified Registered Nurse Anesthetists. According to the results of the survey, the majority of all respondents indicated that they believed that CRNA's did assist the department in providing the most efficient and economical method of anesthesia care. This data supports the first hypothesis relating to opinions on the use of nurse anesthetists since if the practice of utilizing nurses as members of the anesthesia care team relates positively to economics and efficiency, it would be to the benefit of the department to hire these individuals.

The hypothesis in the section on 'Economics and Efficiency' follows. "Utilization of nurse anesthetists does not increase the economy and efficiency of the anesthesia department." This hypothesis was rejected.

For further study it might be interesting to relate the economic and efficiency considerations for departments utilizing nurse anesthetists with those utilizing residents only. In this study it was found that there was a significant difference in response to these items from those involved in work with physician anesthesia residency programs compared to the other two groups. It may be possible that utilization of residents increases the economic and efficiency benefits to the departments as much as does the utilization of the nurse anesthetist. It must be considered however, that residents are not potentially available to all departments, and the nurse anesthetist is.

It is implied from the results of this study that the utilization of nurse anesthetists does increase the economy and efficiency of the anesthesia departments.

3. Job Satisfaction

The third area of consideration in the study was that of job satisfaction of the Certified Registered Nurse Anesthetist. The hypothesis relating to this area was as follows: "Nurse anesthetists are not content with their careers." This hypothesis was rejected.

Data relating to this area showed that CRNA's are currently content, but doubt and uncertainty about job content-

ment increased for the future. This result may be related to the political disagreements occurring between the organizations representing the anesthesiologists and the nurse anesthetists, discussed elsewhere in this paper.

It is interesting to note that more physicians feel that nurse anesthetists should not be content with their careers, than do the nurse anesthetists themselves. Perhaps this may be due to the physician's projection of his own feelings to the opinion of the nurse, or perhaps the physician may be more aware than the CRNA of changes which will occur in future practice due to either legal requirements or increasing need for didactic knowledge related to changes in anesthesia practice. It would be interesting to study this further to find the reasons why the physicians and nurses have significantly different opinions in this area.

One of the most important items of the study indicated that 55% of both physicians and nurses feel that there are not frequent difficulties experienced with interpersonal relationships between the two groups. The political situation in the field today is such that it would be supposed that many problems exist, as was described in the 'Review of the Literature' related to conflict. This seems, according to the results of this survey, not to be true in the actual work situation. Some CRNA respondents wrote in comments stating that they had experienced problems with interpersonal relationships in previous work situations, but have changed jobs and do not have problems now. Perhaps, since the MD is in

charge of the CRNA, and therefore if there is no interest on the part of the MD in changing the quality of the relationship, the difficulty is solved by the CRNA by changing jobs. It would be best if this were not necessary, and if communication between the two groups were increased, thus adding to the betterment of the work situation, it might not be. Hopefully studies such as this will increase understanding between the two groups and decrease what interpersonal problems do exist. I have been invited to discuss the results of this study at three national meetings in the next few months. It will be interesting to find what effect, if any, actual data relating to good working relationships between CRNA's and MD's at the ' grass roots' level will have on the political climate. I believe that data such as this may change the course of events in the field since prior to this time there have been many expressions of feelings but no actual studies.

Data generated by the study indicated that development of the CRNA is not limited by the work situation and that it will not be limited in the future. The ability for development as a graduate, I feel, is important to the job satisfaction of the CRNA. It appears from the results of this survey that job satisfaction is high among CRNA's and will continue to be high in the future.

Due to the conclusions drawn above from the results of the survey, I feel it may be implied that the students we are training should find jobs as graduates in satisfactory

ork situations and relationships with physician colleagues will be good. The graduates will be able to continue developing their knowledge and abilities in the work situation they will enter.

For future study I believe the increasing uncertainty for the area of future practice should be delineated. If it is possible to find the reason for concern in this area and prevent it before it begins, we will be able to keep job satisfaction high for this group of people considered important to the anesthesia care team.

4. Practice

The fourth area considered in the study was that of the practice of the Certified Registered Nurse Anesthetist.

The hypothesis related to this area is that, 'The practice of the nurse anesthetist does not vary with the institution in which they work.' This hypothesis was rejected.

The results of the response from the three types of hospitals was used to find that items indicating parts of the job description of the CRNA varied with the different types of hospitals.

The majority of respondents felt that CRNA's should provide anesthesia care for all types of cases in both current and future practice according to their individual ability. Many CRNA's and MD's expressed by write-in comment that there was a desire for MD supervision of the CRNA particularly for the higher risk cases. The fact that it is felt

that CRNA's should do all types of cases according to individual ability, indicates that we should continue training our students to deliver all types of anesthesia.

This is also an important finding since it implies that although it was expressed in the opinion of the survey by the ASA Committee on Manpower that the MD/CRNA ratio for supervision should be 1:2, this might vary with the ability of the nurse anesthetist.[2] It might also imply that if anesthesiologist supervision were not readily available as was discusesed in the section, 'Review of the Literature,' the CRNA would be prepared to handle the more difficult situations if training continues in all areas of anesthesia and if didactic knowledge of the CRNA continues to increase.

Since there was no difference indicated that any of the specialties were more important to limit to physician practice than any other, those of us involved in training of the nurse anesthetist should be sure that our graduates are competent in all specialties including, regional anesthesia, which is not taught in some training programs at this time.

In specific areas relating to the independence of practice of the CRNA, which influences their job description at a particular hospital work situation, it was felt that the nurse anesthetist should be able to induce and emerge patients according to individual ability and without immedi-

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[2] Ibid.

ate supervision and make changes in anesthesia maintenance without immediate physician consultation. This seems important to the job satisfaction of the nurse anesthetist since such a practice enables one not to be just a technician, but to think and follow through on one's own ideas.

There was more of a difference of opinion regarding the areas of insertion of arterial lines and central venous pressure monitors, however the majority of respondents continued to agree that nurse anesthetists could and should do these procedures. The increased difference may have been due to the fact that many of these techniques are relatively new. It was indicated by the study that in future practice there was more agreement that these techniques should be carried out by the CRNA. The response to these items may be related to the fact that many of the respondents are just becoming familiar with the newer techniques themsleves. It is implied by the response however, that our graduates will need to utilize these techniques in their future practice situations, and therefore we should be sure that they are competent in these areas upon graduation.

Pre-operative and post-operative care was the next area of practice considered.

The majority of all respondents felt that CRNA's should make pre- and post-operative visits, however there was a divided opinion on whether or not the CRNA should order pre-operative medication with more MD's disagreeing than agreeing.

The response from the CRNA's indicated that they would like to be able to do this to an even greater extent in future practice. This is limited, as was discussed previously, by the legal limitations not permitting nurse anesthetists to write orders which others must carry out although the nurse anesthetist is permitted to give the medications she desires for pre-operative care herself. This legal limitation does not mean that this is the correct policy, since other aspects of practice which the nurse is permitted to do may carry a higher complication rate. Perhaps further research on the need for, and the desireability of the CRNA giving pre-operative medication should be done. If further research bears out a desire for a legal change, perhaps measures for this change should be instituted.

More respondents than not agreed that CRNA's should select the anesthetic technique for a desired patient although fewer MD's than CRNA's agreed with this. This may imply a need for education of the anesthesiologist on the extent of the education of the CRNA, and also may indicate a need for increasing the background of the CRNA so that his or her understanding is such that he or she is definitely capable of selecting the technique and thus worthy of the trust of the physician. This understanding would include knowledge in the areas of physiology, pathology, and pharmacology. A combination of these two factors would be perhaps the best elimination of conflict between the groups.

Thus education for both MD's and CRNA's would be implied.

All groups of respondents agreed by majority with the items on participation in cardio-pulmonary resuscitation. This indicates that we should make sure that our students are well trained in this area.

There were fewer MD's agreeing with the administration of blood and fluids without consultation than with the other areas. This may be due to the higher risk of hepatitis or transfusion reaction when blood is given. Many feel however, that a competent CRNA recognizes these risks and the importance of caution in this area. There may also be a future relationship of this item with legal limitations, although no such limitations are now present. I believe it is implied from this study that since currently the majority of CRNA's are administering blood and fluids, and that if we as CRNA's wish to prove ourselves worthy of continued trust in this area, that we should be certain that our students have a good education related to the principles involved. The final item in the area of practice related to CRNA's performing all duties on an equal basis with physician anesthesiologists. The majority of respondents disagreed with this although difference in response with more CRNA's than MD's disagreeing was noted.

I feel that this item brings to the surface much of the conflict between the two groups. I believe that studies such as this should illuminate the specific areas of difference

between the two groups and then agreement should be worked upon. Perhaps each group should be educated as to the job differences, expectations and needs of the other group. As Rehnman, Stromberg, and Westerlund have stated in their book, Conflict and Co-operation in Business Organizations, "Utilization of role descriptions and the supervision of their application enables all concerned parties to have similar expectations. This then assists in the resolution of conflict."[2]

From the results of the section on practice of this survey it was found that there are presently differences in the practice of the CRNA working in the three types of hospitals participating in the study. The CRNA must be prepared for all types of practice, which implies that those of us working in the area of nurse anesthesia training should assure ourselves that we are providing education sufficient that our graduates could handle any of the work situations encountered. This would include training students in all areas of practice included in this study and any new knowledge and techniques which may be developed in the future. The only complication which may be foreseen with this policy, might result if the graduate is overtrained for the job which he or she accepts upon graduation. The graduate would then be capable of doing

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[2]E. Rehnman, L. Stromberg, and G. Westerlund, Conflict and Co-operation in Business Organizations (New York: Wiley Interscience, 1970).

more than permitted or required and this might lead to dissatisfaction.

Although job dissatisfaction was not considered to be a problem currently, it was indicated by the survey that uncertainty about the future did exist in this area. A program of education in the skills learned by the newer graduates of Schools of Nurse Anesthesia might assist in solving this problem by permitting the CRNA to perform at her highest level of ability. This would not only increase the economic benefit and the efficiency of the anesthesia department hiring the CRNA, but also would help assure that the job satisfaction of the CRNA does not decrease.

Making sure that the supervising physicians are trained in all the techniques and that they have sufficient didactic background to supervise the more highly educated CRNA's will be of help also. The recent law excluding foreign medical graduates from entering the United States for post-graduate work except under special circumstances should assist in increasing the quality of physician supervision since in many areas these individuals, not having the quality education which their colleages trained in the United States have acquired, have been used to fill in personnel shortages.[3] Comments added to questionnaires returned from respondents in this study have shown many CRNA's desire supervision, but that they also desire quality supervision. Data from items

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[3]United States Public Law 96-401, 1976, Effective January 10, 1977.

in the study show that the CRNA wants and believes in the physician as supervisor, and that education of both groups as to the needs of the other might help reduce the conflict which exists in a few work situations and politically. This conflict should be kept at a level where it would be stimulating to both groups making each more productive.[4]

5. Impact

The fifth area of consideration in the study was the impact that the utilization of nurse anesthetists in the anesthesia department had on the feelings of the anesthesiologist.

It was found that utilization of CRNA's was not believed by physicians to increase their status, although the nurse anesthetists felt that they should increase the status of the MD. This is an interesting difference which perhaps should be investigated further. It is usual in the organizational structure that one who supervises others has more status than those he supervises. The feeling among the physicians that nurse anesthetists do not do this does not fit into the usual pattern. This would be an interesting area for further delineation.

The MD's did not feel threatened by the nurse anesthetists which was expected considering organizational theory. Subordinate employees do not usually pose a threat to their

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[4]Harold J. Leavitt and Lewis Pondy. Readings in Managerial Psychology (Chicago: University of Chicago Press, 1964), pp. 538-541.

supervisors. This data bears out the opinion of Safar when he stated that, "physicians have had their image deflated by both laymen and other physicians."[5] Perhaps the CRNA can be added to this list.

The next item was related to supervision of CRNA's adding to the stress of the day of the anesthesiologist. The MD response to this survey showed that 52.9% of the physicians felt supervision of two CRNA's did add to the stress, but 33.7% did not. The fact that one-third of the MD respondents disagreed with the item is of interest. This may be related to the quality of CRNA practitioner in their particular hospital or it may be due to the fact that the respondents answering in disagreement could be more secure in their role as supervisor than the other respondents.

It will be recalled from the 'Review of the Literature' that Dr. J. W. R. McIntyre did a study in his own hospital regarding utilization of nurse anesthetists. He felt that there was no doubt that the anesthetist assumes more professional responsibility when he supervises two patients' care simultaneously.[6] In Dr. McIntyre's study he was referring to

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[5]Peter Safar, "Health Care Delivery Problems and Goals: A Personal Philosophic Appraisal," Public Health Aspects of Critical Care Medicine and Anesthesiology (Philadelphia: F. A. Davis Co., 1974).

[6]J. W. R. McIntyre, "Participation of Allied Health Professionals in the Practice of Anesthesia: Report of a Study," Canadian Anesthesia Society Journal, March, 1975, Vol. 2, No. 2.

nurse's with a maximum of 6 months training in anesthesia which was given by his department, whereas the CRNA is a graduate who has a minimum of 24 months of training.

Further study is indicated to determine why supervision adds to stress for some individuals and how this stress might be eliminated.

All other items in this category did not, according to the survey results, affect the MD adversely.

The study of this area has brought forth some feelings of interest to me, and perhaps these areas may be followed up by further study in the future.

6. Education

The final area of consideration was the education of the nurse anesthetist. I believe the most important conclusions in this area were that the academic requirements for admission to a nurse anesthesia training program, and the academic level of training most appropriate for these training programs will be increasing in the future. The results of the study imply that it is important for those of us in teaching positions to obtain a higher academic quality and standing for our programs in the future. This data from the survey substantiates the effect I have seen from applicants to my own School of Nurse Anesthesia at UCLA. There are increasing numbers of better qualified applicants annually, and these applicants are more commonly requesting education at the Baccalaureate and Master's level.

The hypothesis related to this area of the study stated that, "Opinions regarding basic education and anesthesia education of nurse anesthetists do not vary." It was apparent that opinions did vary from the results of the study. The hypothesis was thus rejected. There was also however, a trend of opinion apparent which implied an increase in standards in the future.

Implications

The conclusions listed above as important will, I feel, bring forth the following implications.

1. CRNA's are considered a useful member of the anesthesia care team for both current and future practice, and they are more valuable in this role than the physician's assistant. CRNA's are also helpful in increasing departmental economics and efficiency. Therefore those of us involved in the training of nurse anesthetists should not be threatened by comments that the goal of the future is all physician anesthesia. This is not borne out by the numbers of physicians doing anesthesia, nor was it found to be true in the results of this survey.
2. Job satisfaction is currently high for the nurse anesthetist and even though the majority of respondents feel this will continue in the future, perhaps efforts should be made to insure that CRNA's remain satisfied, since the number of uncertain responses increased in the sur-

vey when future practice was considered. Further study relating to factors influencing job satisfaction would be helpful with a follow-up of changes based on the results of the study.

3. Even though political influences (See section on 'Review of the Literature') state that there is a great deal of conflict between the physician anesthesiologists and nurse anesthetists, it was shown by this study that there is not a problem with interpersonal relationships in the actual work situation. I feel that if the results of this study were made known relating to the fact that there are few actual problems, perhaps the political climate would change. If this conflict between the two organizations ceased it might not spread the feelings of unrest to those in practice together. The more political conflict is emphasized, the more it may influence the actual work situation.

4. In the area of practice I believe it would be helpful for MD's and CRNA's to work together on a job description so that both groups are aware of the assets and limitations of the other.

   At UCLA a job description was worked out jointly with MD's, CRNA's, administrators, and attorneys based on the results of this study. This applied directly the results obtained to the work situation in that hospital. All groups are now aware of the practice of the nurse anes-

thetist and what may and may not be expected. Having this description written and approved by all has led to a decrease in uncertainty and conflict between the various groups. Since the attorney was involved we can be assured that all that was written was within legal boundaries for the CRNA. A copy of this Job Description is available in Appendix V.

At UCLA we are continuing to permit the nurse anesthetist do as much as possible and make as many decisions as possible, but have competent physician consultation available if needed. This practice allows the department to gain the most economic and efficient benefit from employing the nurse anesthetists, but also allows the nurse anesthetist to gain the most job satisfaction since he or she is encouraged to think and use all skills. If a CRNA does not have all the required skills upon employment an orientation program was developed and teaching is available so that skills may be expanded or improved. CRNA's are also encouraged to attend departmental teaching conferences to keep up with the didactic knowledge needed for their work. We have worked out a supplementation mechanism for CRNA's attending outside educational conferences, and provide extra benefits as an incentive for those who do attend outside conferences.

5. In the area of impact it was found that independent actions of CRNA's do not endanger patients, nor do these independent actions pose a problem to physician supervisors. There was also felt to be no difficulties in selecting appropriate cases for the CRNA. These conclusions add validity to the previous statements that CRNA's add to departmental economy and efficiency and that CRNA's therefore will continue to be used. Further study may be indicated as to why MD's do not feel threatened by the CRNA, but they also do not feel that the CRNA adds to their status. It might be interesting to look at the reasons behind the finding that for approximately two-thirds of the respondents, supervision of CRNA's adds to stress. Further definition of these findings may assist in decreasing the difficulties arising from MD's and CRNA's working together and aid in finding a prevention or cure for any problems.
6. I feel that one of the most important areas of this study relates to the implications regarding education. Since it was believed by results of this study given to members of the department at UCLA as well as the national study, that CRNA's should participate in departmental teaching conferences we have placed increased emphasis on this in our hospital. I have approached one of our CRNA staff to be in charge of this area, thus delegating responsibility which is thought to be a valid principle of administration. This person has developed an orienta-

tion program as well as an in-service education program for nurse anesthetists. We have nurse anesthetists from outside of our hospital attending our teaching conferences and I have obtained a California State Board of Nursing Continuing Education Provider Number so that CRNA's may obtain credit for attending our conferences. We have now, within our department, placed emphasis on continuing education for the CRNA as well as the MD.

I believe that one of the most important implications of this study is that the need for a higher academic level for nurse anesthesia education is desired in the future. Based on the results of this study I have developed and submitted a proposal for Master of Science level training for our student nurse anesthetists through the School of Medicine at UCLA The proposal has at this writing been accepted through the level of the Graduate Council of UCLA and will be presented to the Academic Senate of UCLA in October, 1977. If it passes this level and is approved by the Board of Regents of the University of California at Berkeley it will be implemented in Winter Quarter of 1977. At the present time it is felt that the people involved in passing judgement on the proposal view it positively and that it will very likely be approved. If this occurs, then we at UCLA will have the second Master's level educational program available for nurse anesthe-

sia training in the United States. I feel that this is very important for both the present and future since many applicants to our program already have Baccalaureate degrees. The results of the study indicated that such programs would ne beeded even more in the future and I am pleased that we will be among the first offering such a program.

In developing the Master's proposal curriculum, changes to increase both the didactic knowledge and the clinical skills of the nurse anesthetist were included. These changes were delineated from the results of the 'Practice' and 'Education' sections of this study.

We have not as yet increased our entrance requirements to include only Baccalaureate graduates since we will continue to have the certificate level program available. In the future, as indicated by the study results, we will be prepared to train only at the academic level and to delete the Certificate program admitting only Baccalaureate graduates if this is felt best.

Thus, our own training program is being developed to the point that it is prepared for the trends for current and future practice indicated by the study. I believe the development of the Master's program and the preparation of our program to meet needs indicated for both current and future practice has been the most helpful area of the study to me personally, and for our program. Hopefully the results presented here will help others in a similar manner.

Areas Indicated for Future Study

Since this was a pilot study I have found areas in which further research maybe indicated. These areas include:

1. Factors adding to job satisfaction for the CRNA so that the current high level of job satisfaction may continue in the future.
2. Factors adding to the stress of the physician supervisor of nurse anesthetists. If these were found efforts could be made to eliminate them.
3. Factors related to the reasons that MD's feel the utilization of nurse anesthetists in the department does not increase their status, and what may be done to correct this.
4. Further delineation of Certified Registered Nurse Anesthetists qualifications for giving pre-operative medications and opinions relating to this. If it is felt best that nurse anesthetists carry out this function legal action might be started for change in the present restrictions.
5. Views of the CRNA graduates on education as to what they feel was taught well for their needs as graduates, and why. Factors related to this knowledge could then be used to improve anesthesia education for nurses. Areas might also be included as to what subjects needed more emphasis during their training period and how educational methods might be improved to better graduates for their future work.

I believe that the results of this study might be helpful to leaders of other training programs as they have been helpful to me and to making changes in our program at UCLA. I have therefore submitted an abstract of this study for presentation at the International Anesthesia Research Society meeting in March, 1978 and am discussing the results at two anesthesia meetings in November, 1977. The American Association of Nurse Anesthetists is also aware of the survey.

In conclusion, I believe that the following results will be the most helpful.

1. That most CRNA's and MD's do not experience interpersonal difficulties in the work situation. This directly refutes the conflicts experienced politically and publicized widely.
2. That educational needs for the future are changing and that there is a need for training at a higher academic level rather than at the certificate level.
3. That admission to a School of Nurse Anesthesia may in the future require a Baccalaureate degree either in nursing or in another area if the applicant has a current nursing license and has met subject prerequisites.
4. That physician anesthesiologists and Certified Registered Nurse Anesthetists agree on nurse anesthetist participation in departmental teaching programs.
5. That specific skills and techniques regarding practice have been delineated and therefore can assist in the

writing of job descriptions for nurse anesthetists. If these descriptions are written then both MD's and CRNA's will have similar expectations.

6. That CRNA job satisfaction is high now, but more uncertainty for the future is apparent. Efforts might be made to describe the uncertainty further and then to keep job satisfaction high.
7. That there is no area of anesthesia felt to be limited to MD practice and of the areas of obstetrical anesthesia, cardiac anesthesia, neurological anesthesia and regional anesthesia, all were not only thought suitable for CRNA participation, but none were thought to be more or less suitable for CRNA participation than others.
8. That CRNA's should be assigned tasks according to ability rather than because they are a nurse anesthetist rather than a physician anesthesiologist.
9. That CRNA's are considered as valuable members of the anesthesia care team, and that they are thought to increase departmental economy and efficiency. Physician's assistants are not considered to be as valuable for either current or future practice as nurse anesthetists.

It is hoped that the information gained in this study will guide the future direction of physician anesthesiologists and Certified Registered Nurse Anesthetists working together on the

anesthesia care team, so as to provide the best quality and most efficient and economical method of patient care, as well as promote the best possible interpersonal working relationships between the two groups.

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APPENDIX I

UNIVERSITY OF CALIFORNIA, LOS ANGELES

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SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF ANESTHESIOLOGY
SCHOOL OF MEDICINE
THE CENTER FOR THE HEALTH SCIENCES
LOS ANGELES, CALIFORNIA 90024

Dear

We have become interested in utilization of nurse anesthetists on the anesthesia care team. In reviewing the literature on this subject we find that although there is a great deal written regarding non-physician personnel in anesthesia, there is no work specifically defining the tasks for which nurse anesthetists are currently utilized contrasted with how it is felt this might change in the future.

We realize that the enclosed questionaire looks lengthy, but in testing, it took members of our department only 5 to 10 minutes to complete.

If you would take a few minutes from your busy schedule to assist us we would be very appreciative.

Please answer one questionaire yourself, give one to your Chief Nurse Anesthetist (if you have one), and to avoid administrative bias, please give the other two questionaires to the anesthesiologist and the nurse anesthetist falling third on an alphabetical list of the anesthesiologists and nurse anesthetists in your department.

Your anonymity is assured and your honest opinions would be greatly appreciated.

Thank you.

Sincerely,

John F. Viljoen M.D.
Professor
UCLA Department of Anesthesiology

Leah Evans Katz CRNA
Director, School of Nurse Anesthesia

Ronald L. Katz M.D.
Professor and Chairman

UNIVERSITY OF CALIFORNIA, LOS ANGELES

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Dear

We have become interested in utilization of nurse anesthetists on the anesthesia care team. In reviewing the literature on this subject we find that although there is a great deal written regarding non-physician personnel in anesthesia, there is no work specifically defining the tasks for which nurse anesthetists are currently utilized contrasted with how it is felt this might change in the future.

We realize that the enclosed questionaire looks lengthy, but in testing, it took members of our department only 5 to 10 minutes to complete.

If you would take a few minutes from your busy schedule to assist us we would be very appreciative.

Please answer one questionaire yourself, give one to your Department Chairman, and to avoid administrative bias, please give the other two questionaires to the anesthesiologist and the nurse anesthetist falling third on an alphabetical list of the anesthesiologists and nurse anesthetists in your department.

Your anonymity is assured and your honest opinions would be greatly appreciated.

Thank you.

Sincerely,

John F. Viljoen M.D.
Professor
UCLA Department of Anesthesiology

Leah Evans Katz CRNA
Director, School of Nurse Anesthesia

Ronald L. Katz M.D.
Professor and Chairman
UCLA Department of Anesthesiology

APPENDIX II

This questionaire is designed to elicit opinions regarding current utilization of non-physician personnel on the anesthesia care team, contrasted with how utilization might change in the future considering the current emphasis on quality care in the most economical and efficient manner.

Please mark the top scale regarding current practice in your hospital, and the lower scale regarding how you feel practice might change in the future.

You may note questions which you feel are controversial. We would like your honest opinion regarding these questions. Your ananymity is assured.

Please feel free to add any comments you desire.

PLEASE INDICATE THE TYPE OF PERSONNEL CURRENTLY INVOLVED IN ANESTHESIA CARE IN YOUR HOSPITAL.

1. ANESTHESIOLOGISTS

2. CERTIFIED REGISTERED NURSE ANESTHETISTS

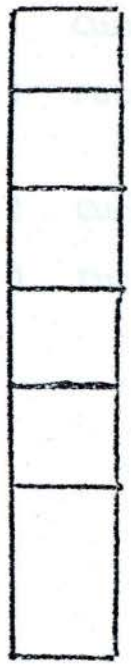
3. RESIDENT ANESTHESIOLOGISTS

4. STUDENT NURSE ANESTHETISTS

5. PHYSICIAN ASSISTANTS

6. OTHER - PLEASE SPECIFY

_____



I AM AN ANESTHESIOLOGIST_____

I AM A NURSE ANESTHETIST_____

ECONOMICS AND EFFICIENCY

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	
1. Nurse anesthetists help the department provide the most efficient method of anesthesia care.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
2. Nurse anesthetists help the department provide the most economical method of anesthesia care.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

NURSE ANESTHETIST JOB SATISFACTION

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	
1. Nurse anesthetists are usually content in their careers.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
2. Problems with interpersonal relationships are frequently experienced in the work situation between nurse anesthetists and anesthesiologists.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
3. Development of knowledge and ability of the nurse anesthetist is limited in the work enviornment.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

PRACTICE

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	
1. Nurse anesthetists should provide anesthesia care for all types of surgical cases, and for patients with all ASA risk classifications, according to individual ability.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
If you disagree with the above statement please indicate which of the following types of cases you feel the nurse anesthetist should not do.						
a. Obstetrical anesthesia	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
b. Cardiac anesthesia	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
c. Neurological anesthesia	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
d. Regional anesthesia	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
e. Other - please specify						
2. Nurse anesthetists, according to individual ability and after consultation with a physician, should be able to induce and emerge patients without immediate supervision.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

3.	Nurse anesthetists should, according to individual ability, make changes in anesthesia maintenance according to patient needs, without immediate physician consultation.	( ) ( ) ( ) ( ) ( ) Curre ( ) ( ) ( ) ( ) ( ) Future
4.	Nurse anesthetists should insert arterial lines by percutaneous puncture, and draw blood gases when indicated.	( ) ( ) ( ) ( ) ( ) Curre ( ) ( ) ( ) ( ) ( ) Futur
5.	Nurse anesthetists should insert central venous pressure monitoring lines by the method commonly utilized at the institution.	( ) ( ) ( ) ( ) ( ) Curre ( ) ( ) ( ) ( ) ( ) Futur
6.	Nurse anesthetists should make pre-operative and post-operative visits and evaluations on the patients they are assigned.	( ) ( ) ( ) ( ) ( ) Curre ( ) ( ) ( ) ( ) ( ) Futur
7.	Nurse anesthetists should order pre-operative medication for assigned patients.	( ) ( ) ( ) ( ) ( ) Curr ( ) ( ) ( ) ( ) ( ) Futu
8.	Nurse anesthetists should select the anesthetic technique for use on their assigned patients in accordance with the patient's condition.	( ) ( ) ( ) ( ) ( ) Curr ( ) ( ) ( ) ( ) ( ) Futu
9.	Nurse anesthetists should participate in anesthesia care in the recovery and critical care areas.	( ) ( ) ( ) ( ) ( ) Curr ( ) ( ) ( ) ( ) ( ) Futu
10.	Nurse anesthetists should administer blood and appropriate fluids during anesthesia care according to patient needs, without mandatory consultation with an anesthesiologist.	( ) ( ) ( ) ( ) ( ) Cur ( ) ( ) ( ) ( ) ( ) Fut

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	
11. Nurse anesthetists should participate in hospital cardio-pulmonary resuscitation programs.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
12. Nurse anesthetists should perform all anesthesia duties, according to individual ability,on an equal basis with anesthesiologists.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

IMPACT

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	
1. Utilization of nurses in anesthesia care may increase the status of the anesthesiologist.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
2. Utulization of nurses in anesthesia care may be a threat to the status of the anesthesiologist.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
3. Supervision of two nurse anesthetists contributes more to the stress of the day than doing a case one's self.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
4. Supervision of two nurse anesthetists makes work more pleasant and interesting than doing a case one's self.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
5. There may be scheduling difficulty in selecting appropriate cases for nurse anesthetists.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
6. Independent actions of nurse anesthetists are a problem to physician supervisors of anesthetic management.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
7. Independent actions by nurse anesthetists endanger patients.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

EDUCATION

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	
1. Nurse anesthetists should participate in departmental mortality and morbidity conferences, and in departmental teaching conferences.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
2. Nurse anesthesia training should include in depth study in chemistry, physics, physiology, and pharmacology.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
3. Nurse's training is the most suitable background for the non-physician anesthetist.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
4. Nurse's training is more detailed than necessary for individuals interested in non-physician anesthesia trianing.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
5. Nurse's training is not an adequate background for individuals interested in non-physician anesthesia training and should be supplemented with other subjects, taught at the collegiate level, prior to admission to an anesthesia training program.	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

If the answer to Question 5 is positive, please indicate the subjects you feel are necessary addition.

_____

_____

_____

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	
6. Nurse anesthesia training should be at the:						
a. Certificate level	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
b. Baccalaureate level	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
c. Master's level	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

Please feel free to mark more than one answer to the above question.

7. Minimum academic achievement for admission to a nurse anesthesia training program should be:						
a. A nursing diploma (3 years)	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
b. An associate degree (2 years)	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
c. A baccalaureate degree in nursing	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future
d. A baccalaureate degree in any field, but with a nursing license and subject prerequisites ie. chemistry	( )	( )	( )	( )	( )	Current
	( )	( )	( )	( )	( )	Future

APPENDIX III

UNIVERSITY OF CALIFORNIA, LOS ANGELES

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DEPARTMENT OF ANESTHESIOLOGY
SCHOOL OF MEDICINE
THE CENTER FOR THE HEALTH SCIENCES
LOS ANGELES, CALIFORNIA 90024

Dear

A few weeks ago we sent you a survey relating to attitudes on the practice of nurse anesthesia. The cut off date selected for analysis of data is July 3, 1977. It would be appreciated if you would return the questionnaires sent to your department by that date so that your opinions may be included.

We regret that due to the anonomyous nature of the survey we are unable to determine who has thus far returned the questionnaires. If you are among those who have helped us with the good response which we have recieved so far we thank you for your help and you may disregard this letter. If, by chance, you have not received the questionnaires mailed to you please let us know so that we may send additional copies.

We appreciate the time you have taken to make this study a success.

Sincerely,

John F. Viljoen MD
Professor and Vice-Chairman

Leah E. Katz CRNA
Director, School of Nurse Anesthesia

Ronald L. Katz MD
Professor and Chairman

APPENDIX IV

Hypothesis: Physician's assistants are not considered to be as acceptable as nurse anesthetists as the non-physician members of the anesthesia care team.

1. The Department should utilize certified Registered Nurse Anesthetists as members of the anesthesia care team.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	123 (71.5%)	31 (18%)	3 (1.7%)	9 (5.2%)	4 (2.3%)	2 (1.2%)	1.5± 1.1
	RNATP (210)	168 (80%)	36 (17.1%)	1 (.5%)	0 (0%)	1 (.5%)	4 (1.9%)	1.3± 1.8
	MDATP (203)	106 (52.2%)	53 (26.1%)	13 (6.4%)	8 (3.9%)	18 (8.9%)	5 (2.5%)	

NTP/RNATP response difference significant at .001 (x^2=11.6)

RNATP/MDATP response difference significant at .001 (x^2=25.7)

NTP/MOATP response difference not significant at .05 (x^2=2.9)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	117 (68%)	28 (16.3%)	12 (7%)	6 (3.5%)	2 (1.2%)	6 (3.5%)	2.0± 1.4
	RNATP (210)	154 (73.3%)	35 (16.7%)	7 (3.3%)	0 (0%)	0 (0%)	14 (6.7%)	1.6± 1.3
	MDATP (203)	105	56	20	6	12	4	1.9± 1.3

NTP/RNATP response difference significant at .05 (x^2=4.4)

RNATP/MDATP response difference significant at .001 (x^2=17.9)

NTP/MDATP response difference not significant at .05 (x^2=2.0)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV. 7
CURRENT	M.D. 308	141 (45.8%)	100 (32.5%	17 (5.5%)	20 (6.5%)	25 (8.1%)	5 (1.6%)	2.0± 1.3
	CRNA 319	282 (88.4%)	29 (9.1%)	2 (.6%)	0 (0%)	0 (0%)	6 (1.9%)	1.197± 0.74

MD/CRNA response difference significant at .001 (x^2=50.7)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
FUTURE	M.D. 308	129 (41.9%)	100 (32.5%)	39 (12.7%)	12 (3.9%)	15 (4.9%)	12 (3.9%)	2.1± 1.3
	CRNA 319	271 (85%)	28 (8.8%)	5 (1.6%)	0 (0%)	0 (0%)	15 (4.7%)	1.4± 1.1

MD/CRNA response difference significant at .001 (x^2=31.0)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
TOTAL RESPONSES 630	CURRENT	425 (67.5%)	130 (20.6%)	19 (3%)	20 (3.2%)	25 (4%)	11 (1.7%)	1.6±1.1
	FUTURE	402 (63.8%)	129 (20.5%)	44 (7%)	12 (1.9%)	15 (2.4%)	27 (4.3%)	1.7± 1.2

Current/Future (Total Response) significant at .01 (x^2=9.9)
Current/Future (M.D. Response) significant at .01 (x^2=9.2)
Current/Future (CRNA Response) not significant at .05 (x^2=1)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. 308	141 (45.8%)	100 (32.5%	17 (5.5%)	20 (6.5%)	25 (8.1%)	5 (1.6%)	2.0± 1.3
	CRNA 319	282 (88.4%)	29 (9.1%)	2 (.6%)	0 (0%)	0 (0%)	6 (1.9%)	1.197± 0.74

MD/CRNA response difference significant at .001 (x^2=50.7)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. 308	129 (41.9%)	100 (32.5%)	39 (12.7%)	12 (3.9%)	15 (4.9%)	12 (3.9%)	2.1± 1.3
	CRNA 319	271 (85%)	28 (8.8%)	5 (1.6%)	0 (0%)	0 (0%)	15 (4.7%)	1.4± 1.1

MD/CRNA response difference significant at .001 (x^2=31.0)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
	CURRENT	425 (67.5%)	130 (20.6%)	19 (3%)	20 (3.2%)	25 (4%)	11 (1.7%)	1.6±1.1
	FUTURE	402 (63.8%)	129 (20.5%)	44 (7%)	12 (1.9%)	15 (2.4%)	27 (4.3%)	1.7± 1.2

Current/Future (Total Response) significant at .01 (x^2=9.9)
Current/Future (M.D. Response) significant at .01 (x^2=9.2)
Current/Future (CRNA Response) not significant at .05 (x^2=1)

2. Appropriately trained physician's assistants would be as valuable in the department as nurse anesthetists.

TOTAL RESPONSES -585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	5 (2.9%)	6 (3.5%)	29 (16.9%)	43 (25%)	80 (46.5%)	9 (5.2%)	4.2± 1.1
	RNATP (210)	10 (4.8%)	12 (5.7%)	43 (20.5%)	41 (19.5%)	93 (44.3%)	11 (5.2%)	4.1± 1.2
	MDATP (203)	8 (3.9%)	25 (12.3%)	35 (17.2%)	49 (24.1%)	75 (36.9%)	11 (5.4%)	3.9± 1.3

NTP/RNATP response difference not significant at .05 (x^2=1.9)

RNATP/MDATP response difference not significant at .05 (x^2=2.1)

NTP/MDATP response difference significant at .01 (x^2=8.3)

TOTAL RESPONSES -585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	6 (3.5%)	12 (7%)	44 (25.6%)	34 (19.8%)	69 (40.1%)	7 (4.1%)	4.0± 1.2
	RNATP (210)	11 (5.2%)	16 (7.6%)	62 (29.5%)	32 (15.2%)	79 (37.6%)	10 (4.8%)	3.9± 1.3
	MDATP (203)	14 (6.9%)	34 (16.7%)	40 (19.7%)	44 (21.7%)	67 (33%)	4 (2%)	3.6±1.3

NTP/RNATP response difference not significant at .05 (x^2=0.69)

RNATP/MDATP response difference significant at .05 (x^2=3.9)

NTP/MDATP response difference significant at .01 (x^2=8.1)

TOTAL RESPONSES-627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. 308	21 (6.8%)	36 (11.7%)	68 (22.1%)	85 (27.6%)	81 (26.3%)	17 (5.5%)	3.7± 1.3
	CRNA 319	7 (2.2%)	8 (2.5%)	44 (13.8%)	60 (18.8%)	184 (57.7%)	16 (5%)	4.4± 1.0

MD/CRNA response difference significant at .001 (x^2=35.3)

TOTAL RESPONSES-627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. 308	28 (9.1%)	50 (16.2%)	84 (27.3%)	69 (22.4%)	67 (21.8%)	10 (3.2%)	3.4± 1.3
	CRNA 319	8 (2.5%)	14 (4.4%)	73 (22.9%)	48 (15%)	164 (51.4%)	12 (3.8%)	4.2± 1.1

M.D./CRNA response difference significant at .001 (x^2=45.6)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	36 (5.7%)	65 (10.3%)	157 (24.9%)	117 (18.6%)	233 (37%)	22 (3.5%)	3.8±1.3
	FUTURE	36 (5.7%)	65 (10.3%)	157 (24.9%)	117 (18.6%)	233 (37%)	22 (3.5%)	3.8± 1.3

Current/Future (Total Response) not significant at .05 (x^2=.006)
Current/Future (M.D. Response) significant at .05 (x^2=5.6)
Current/Future (CRNA Response) not significant at .05 (x^2=1.8)

Hypothesis: Utilization of nurse Anesthetists does not increase the economy and efficiency of the anesthesia department.

TOTAL RESPONSES-585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	93 (54.1%)	54 (31.4%)	5 (2.9%)	14 (8.1%)	3 (1.7%)	3 (1.7%)	1.8± 1.1
	RNATP (210)	131 (62.4%)	63 (30%)	8 (3.8%)	6 (2.9%)	1 (.5%)	1 (.5%)	1.5 ± 0.8
	MDATP (203)	70 (34.5%)	60 (29.6%)	23 (11.3%)	23 (11.3%)	22 (10.8%)	5 (2.5%)	2.4±1.5

NTP/RNATP response difference significant at .05 (x^2=5.9)

RNATP/MDATP response difference significant at .001 (x^2=3.7

NTP/MDATP response difference significant at .001 (x^2= 12.4)

TOTAL RESPONSES-585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	89 (51.7%)	48 (27.9%)	11 (6.4%)	12 (7%)	3 (1.7%)	9 (5.2%)	1.9± 1.3
	RNATP (210)	120 (57.1%)	53 (25.2%)	16 (7.6%)	7 (3.3%)	0 (0%)	14 (6.7%)	1.8± 1.4
	MDATP (203)	68 (33.5%)	61 (39%)	27 (13.3%)	20 (9.9%)	18 (8.9%)	9 (4.4%)	2.4± 1.5

NTP/RNATP response difference significant at .05 (x^2=3.8)

RNATP/MDATP response difference significant at .001 (x^2=25.7)

NTP/MDATP response difference significant at .01 (x^2=8.6)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	89 (28.9%)	102 (33.1%)	37 (12%)	47 (15.3%)	26 (8.4%)	7 (2.3%)	2.5±1.4
	CRNA (319)	216 (67.7%)	93 (29.2%)	4 (1.3%)	2 (.6%)	1 (.3%)	3 (.9%)	1.4±0.73

MD/CRNA response difference significant at .001 (x^2=86.6)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	81 (26.3%)	98 (31.8%)	52 (16.9%)	39 (12.7%)	22 (7.1%)	16 (5.2%)	2.6± 1.4
	CRNA (319)	208 (65.2%)	80 (25.1%)	11 (3.4%)	2 (.6%)	0 (0%)	18 (5.6%)	1.6± 1.2

MD/CRNA response difference significant at .001 (x^2=74.3)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	308 (48.9%)	195 (31%)	41 (6.5%)	49 (7.8%)	27 (4.3%)	10 (1.6%)	1.9± 1.2
	FUTURE	292 (46.3%)	178 (28.3%)	63 (10%)	41 (6.5%)	22 (3.5%)	34 (5.4%)	2.1± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.32)
Current/Future (M.D. Response) not significant at .05 (x^2=.28)
Current/Future (CRNA Response) not significant at .05 (x^2=2.6)

2. Nurse Anesthetists help the department provide the most economical method of anesthesia care.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	91 (52.9%)	50 (29.1%)	15 (8.7%)	10 (5.8%)	3 (1.7%)	3 (1.7%)	1.8± 1.1
	RNATP (210)	113 (53.8%)	71 (33.8%)	11 (5.2%)	5 (2.4%)	6 (2.9%)	4 (1.9%)	1.7± 1.1
	MDATP (203)	59 (29.1%)	65 (32%)	29 (14.3%)	27 (13.3%)	15 (7.4%)	8 (3.9%)	2.5± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.662)

RNATP/MDATP response difference significant at .001 (x^2=26.1)

NTP/MDATP response difference significant at .001 (x^2=14.8)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	84 (48.8%)	47 (27.3%)	22 (12.8%)	9 (5.2%)	3 (1.7%)	7 (4.12%)	2.0±1.3
	RNATP (210)	108 (51.4%)	56 (26.7%)	26 (12.4%)	5 (2.4%)	2 (1%)	13 (6.2%)	1.9±1.3
	MDATP (203)	58 (28.6%)	60 (29.6%)	39 (19.2%)	23 (11.3%)	13 (6.4%)	10 (4.9%)	2.5±1.4

NTP/RNATP response difference not significant at .05 (x^2=1.8)

RNATP/MDATP response difference significant at .001 (x^2=25.0)

NTP/MDATP response difference significant at .001 (x^2=11.2)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	63 (20.5%)	118 (38.3%)	51 (16.6%)	40 (13%)	24 (7.8%)	12 (3.9%)	2.6± 1.4
	CRNA (319)	211 (66.1%)	83 (26%)	12 (3.8%)	6 (1.9%)	3 (.9%)	4 (1.3%)	1.5±0.9

MD/CRNA response difference significant at .001 (x^2=64.4)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	62 (20.1%)	102 (33.1%)	74 (24%)	35 (11.4%)	19 (6.2%)	16 (5.2%)	2.7± 1.4
	CRNA (319)	200 (62.7%)	72 (22.6%)	25 (7.8%)	5 (1.6%)	1 (.3%)	16 (5%)	1.7± 1.2

MD/CRNA response difference significant at .001 (x^2=56.6)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	277 (44%)	201 (31.9%)	63 (10%)	46 (7.3%)	27 (4.3%)	16 (2.5%)	2.0± 1.3
	FUTURE	265 (42.1%)	174 (27.6%)	99 (15.7%)	40 (6.3%)	20 (3.2%)	32 (5.1%)	2.2±1.4

Current/Future (Total Response) not significant at .05 (x^2=.253)
Current/Future (M.D. Response) not significant at .05 (x^2=.240)
Current/Future (CRNA Response) not significant at .05 (x^2=.126)

Hypothesis: Nurse anesthetists are not content with their careers.

TOTAL RESPONSES-585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	54 (31.4%)	82 (47.4%)	14 (8.1%)	18 (10.5%)	2 (1.2%)	2 (1.2%)	2.1± 1.1
	RNATP (210)	51 (24.3%)	124 (59%)	13 (6.2%)	19 (9%)	1 (.5%)	2 (1%)	2.1± .93
	MDATP (203)	33 (16.3%)	97 (47.8%)	42 (20.7%)	18 (8.9%)	8 (3.9%)	5 (2.5%)	2.4± 1.1

NTP/RNATP response difference not significant at .05 (x^2=.339)

RNATP/MDATP response difference not significant at .05 (x^2=2.6)

NTP/MDATP response difference not significant at .05 (x^2=.63)

TOTAL RESPONSES-585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	39 (22.7%)	51 (29.7%)	57 (33.1%)	12 (7%)	2 (1.2%)	11 (6.4%)	2.5±1.3
	RNATP (210)	44 (21%)	73 (34.8%)	61 (29%)	12 (5.7%)	3 (1.4%)	17 (8.1%)	2.6±1.4
	MDATP (203)	27 (13.3%)	66 (32.5%)	78 (38.4%)	8 (3.9%)	9 (4.4%)	15 (7.4%)	2.8± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.08)

RNATP/MDATP response difference not significant at .05 (x^2=.56)

NTP/MDATP response difference not significant at .05 (x^2=.05)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	30 (9.7%)	167 (54.2%)	60 (19.5%)	34 (11%)	10 (3.2%)	7 (2.3%)	2.5±1.0
	CRNA (319)	113 (35.4%)	158 (49.5%)	18 (5.6%)	24 (7.5%)	3 (.9%)	3 (.9%)	2.0±.971

MD/CRNA response difference not significant (x^2=1.4)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	26 (8.4%)	108 (35.1%)	114 (37%)	23 (7.5%)	11 (3.67%)	26 (8.4%)	2.9± 1.3
	CRNA (319)	89 (27.9%)	93 (29.2%)	102 (32%)	12 (3.8%)	4 (.3%)	19 ((6%)	2.4±1.3

MD/CRNA response difference significant at .001 (x^2=10.4)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	144 (22.9%)	327 (51.9%)	78 (12.4%)	58 (9.2%)	13 (2.1%)	10 (1.6%)	2.2± 1.1
	FUTURE	116 (18.4%)	202 (13.1%)	216 (34.3%)	35 (5.6%)	15 (2.4%)	46 (7.3%)	2.6± 1.3

Current/Future (Total Response) not significant at .05 (x^2=.02)
Current/Future (M.D. Response) not significant at .05 (x^2=.14)
Current/Future (CRNA Response) not significant at .05 (x^2=2.6)

2. *Problems with interpersonal relationships are frequently experienced in the work situation between nurse anesthetists and anesthesiologists.*

TOTAL RESPONSES-585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	15 (8.7%)	43 (25%)	19 (11%)	70 (40.7%)	20 (11.6%)	5 (2.9%)	3.3±1.3
	RNATP (210)	15 (7.1%)	63 (30%)	13 (6.2%)	95 (45.2%)	23 (11%)	1 (.5%)	3.2±1.2
	MDATP (203)	18 (8.9%)	42 (20.7%)	23 (11.3%)	91 (44.8%)	26 (12.8%)	3 (1.5%)	3.4± 1.2

NTP/RNATP response difference not significant at .05 (x^2=.001)

RNATP/MDATP response difference not significant at .05 (x^2=1.2)

NTP/MDATP response difference not significant at .05 (x^2=.76)

TOTAL RESPONSES-585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	14 (8.1%)	31 (18%)	58 (33.7%)	45 (26.2%)	12 (7%)	12 (7%)	3.3± 1.3
	RNATP (210)	14 (6.7%)	41 (19.5%)	67 (31.9%)	55 (26.2%)	16 (7.6%)	17 (8.1%)	3.3± 1.3
	MDATP (203)	14 (6.9%)	35 (17.2%)	49 (24.1%)	72 (35.5%)	23 (11.3%)	10 (4.9%)	3.4± 1.2

NTP/RNATP response difference not significant at .05 (x^2=.004)

RNATP/MDATP response difference not significant at .05 (x^2=2.2)

NTP/MDATP response difference not significant at .05 (x^2=2.2)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	19 (6.2%)	79 (25.6%)	38 (12.3%)	134 (43.5%)	31 (10.1%)	7 (2.3%)	3.3± 1.2
	CRNA (319)	32 (10%)	81 (25.4%)	23 (7.2%)	135 (42.3%)	45 (14.1%)	3 (.9%)	3.3± 1.3

MD/CRNA response difference not significant at .05 (x^2=.052)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	20 (6.5%)	61 (19.8%)	85 (27.6%)	101 (32.8%)	22 (7.1%)	19 (6.2%)	3.3± 1.2
	CRNA (319)	26 (8.2%)	52 (16.3%)	108 (33.9%)	79 (24.8%)	34 (10.7%)	20 (6.3%)	3.3± 1.3

MD/CRNA response difference not significant at .05 (x^2=.02)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	51 (8.1%)	162 (25.7%)	61 (9.7%)	270 (42.9%)	76 (12.1%)	10 (1.6%)	3.3± 1.2
	FUTURE	46 (7.3%)	114 (18.1%)	193 (30.6%)	180 (28.6%)	56 (8.9%)	41 (6.5%)	3.3± 1.3

Current/Future (Total Response) not significant at .05 (x^2=0.42)
Current/Future (M.D. Response) not significant at .05 (x^2=0.2)
Current/Future (CRNA Response) not significant at .05 (x^2=0.2)

3. Development of knowledge and ability of the nurse anesthetist is limited in the work environment.

TOTAL RESPONSES -585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	4 (2.3%)	37 (21.5%)	9 (5.2%)	82 (47.7%)	37 (21.5%)	3 (1.7%)	3.7± 1.6
	RNATP (210)	15 (7.1%)	31 (14.8%)	10 (4.8%)	87 (41.4%)	63 (30%)	4 (1.97%)	3.8± 1.3
	MDATP (203)	12 (5.9%)	52 (25.6%)	16 (7.9%)	79 (38.9%)	37 (18.2%)	7 (3.4%)	3.5± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.12)

RNATP/MDATP response difference not significant at .05 (x^2=2.2)

NTP/MDATP response difference not significant at .05 (x^2=.82)

TOTAL RESPONSES -585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	3 (1.7%)	29 (16.9%)	28 (16.3%)	62 (36%)	40 (23.3%)	10 (5.8%)	3.8± 1.2
	RNATP (210)	12 (5.7%)	19 (9%)	41 (19.5%)	63 (30%)	6 (28.6%)	14 (6.7%)	3.9± 1.3
	MDATP (203)	11 (5.4%)	35 (17.2%)	37 (18.2%)	75 (36.9%)	36 (17.7%)	9 (4.4%)	3.7± 1.2

NTP/RNATP response difference not significant at .05 (x^2=.03)

RNATP/MDATP response difference not significant at .05 (x^2=.45)

NTP/MDATP response difference not significant at .05 (x2=1.03)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	22 (7.1%)	96 (31.2%)	32 (10.4%)	109 (35.4%)	37 (12%)	12 (3.9%)	3.3± 1.3
	CRNA (319)	11 (3.4%)	38 (11.9%)	5 (1.6%)	157 (49.2%)	104 (32.6%)	4 (1.3%)	4.0± 1.1

M.D./CRNA response difference significant at .001 (x^2=56.3)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	20 (6.5%)	76 (24.7%)	59 (19.2%)	99 (32.1%)	34 (11%)	19 (6.2%)	3.3±1.3
	CRNA (319)	7 (2.2%)	17 (5.3%)	55 (17.2%)	115 (36.1%)	108 (33.9%)	17 (5.3%)	4.1 ± 1.1

M.D./CRNA response difference significant at .001 (x^2=63.7)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	34 (5.4%)	134 (21.3%)	37 (5.9%)	267 (42.4%)	142 (22.5%)	16 (2.5%)	3.6± 1.3
	FUTURE	28 (4.4%)	93 (14.8%)	114 (18.1%)	215 (34.1%)	143 (22.7%)	36 (5.7%)	3.7± 1.2

Current/Future (Total Response) significant at .001 (x^2=25.1)
Current/Future (M.D. Response) not significant at .05 (x^2=.28)
Current/Future (CRNA Response) significant at .05 (x^2=4.0)

4. Hypothesis: The practice of the nurse anesthetist does not vary with the institution in which they work.

1. Nurse anesthetists should provide anesthesia care for all types of surgical cases and for patients with all ASA risk classifications, according to individual ability.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	79 (45.9%)	36 (20.9%)	11 (6.4%)	29 (16.9%)	12 (7%)	5 (2.9%)	2.3± 1.5
	RNATP (210)	104 (49.5%)	64 (30.5%)	2 (1%)	29 (13.8%)	7 (3.3%)	4 (1.9%)	2.0± 1.3
	MDATP (203)	64 (31.5%)	58 (28.6%)	6 (3%)	42 (20.7%)	31 (15.3%)	2 (1%)	2.6± 1.5

NTP/RNATP response difference not significant at .05 (x^2=3.4)

RNATP/MDATP response difference significant at .001 (x^2=18.7)

NTP/MDATP response difference significant at .05 (x^2=4.4)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	73 (42.4%)	36 (20.9%)	20 (11.6%)	23 (13.4%)	11 (6.4%)	9 (5.2%)	2.4± 1.5
	RNATP (210)	99 (47.1%)	57 (27.1%)	4 (1.9%)	24 (11.4%)	11 (5.2%)	15 (7.1%)	2.2± 1.6
	MDATP (203)	62 (30.5%)	55 (27.1%)	13 (6.4%)	36 (17.7%)	32 (15.8%)	5 (2.5%)	2.7± 1.6

NTP/RNATP response difference not significant at .05 (x^2=1.2)

RNATP/MDATP response difference significant at .001 (x^2=15.1)

NTP/MDATP response difference significant at .05 (x^2=5.8)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV. 7
CURRENT	M.D. (308)	51 (16.6%)	92 (29.9%)	15 (4.9%)	85 (27.6%)	58 (18.8%)	7 (2.3%)	3.1± 1.5
	CRNA (319)	213 (66.8%)	76 (23.8%)	4 (1.3%)	20 (6.3%)	1 (.3%)	5 (1.6%)	1.5 ± 1.0

MD/CRNA response difference significant at .001 (x^2=41.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
FUTURE	M.D. (308)	47 (15.3%)	85 (27.6%	29 (9.4%)	71 (23.1%)	61 (19.8%)	15 (4.9%)	3.2±
	CRNA (319)	203 (63.6%)	71 (22.3%)	13 (4.1%)	14 (4.4%)	2 (.6%)	16 (5%)	1.7± 1.3

MD/CRNA response difference significant at .001 (x^2=42)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
	CURRENT	265 (42.1%)	168 (26.7%	21 (3.3%)	105 (16.7%)	59 (9.4%)	12 (1.9%)	2.3± 1.5
	FUTURE	251 (39.8%)	156 (24.8%)	43 (6.8%)	86 (13.7%)	63 (10%)	31 (4.9%)	2.4± 1.6

Current/Future (Total Response) not significant at .05 (x^2=.036)
Current/Future (M.D. Response) not significant at .05 (x^2=.007)
Current Future (CRNA Response) not significant at .05 (x^2=.221)

1 A. CRNA's should not do obstetrical anesthesia.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	8 (4.7%)	12 (7%)	5 (2.9%)	11 (6.4%)	2 (1.2%)	134 (77.9%)	5.3± 1.5
	RNATP (210)	7 (3.3%)	16 (7.6%)	1 (.5%)	9 (4.3%)	3 (1.4%)	174 (82.9%)	5.4± 1.4
	MDATP (203)	7 (3.4%)	24 (11.8%)	2 (1%)	12 (5.9%)	14 (6.9%)	144 (70.9%)	5.1± 1.6

NTP/RNATP response difference not significant at .05 (x^2=.017)

RNATP/MDATP response difference not significant at .05 (x^2=1.4)

NTP/MDATP response difference not significant at .05 (x^2= .64)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	8 (4.7%)	10 (5.8%)	8 (4.7%)	11 (6.4%)	1 (.6%)	134 (77.9%)	5.1 ± 1.6
	RNATP (210)	8 (3.8%)	13 (6.2%)	2 (1%)	9 (4.3%)	3 (1.4%)	175 (83.3%)	5.4± 1.4
	MDATP (203)	7 (3.4%)	20 (9.9%)	7 (3.4%)	12 (5.9%)	13 (6.4%)	144 (70.9%)	5.1± 1.5

NTP/RNATP response difference not significant at .05 (x^2=.01)

RNATP/MDATP response difference not significant at .05 (x^2=1.2)

NTP/MDATP response difference not significant at .05 (x^2=.79)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	14 (4.5%)	44 (14.3%	10 (3.2%)	29 (9.4%)	17 (5.5%)	194 (63%)	4.9± 1.7
	CRNA (319)	9 (2.8%)	9 (2.8%)	0 (0%)	5 (1.6%)	2 (.6%)	294 (92.2%)	5.7± 1.1

MD/CRNA response difference significant at .001 (x^2=30)

TOTAL RESPONSES627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	15 (4.9%)	35 (11.4%)	19 (6.2%)	29 (9.4%)	15 (4.9%)	195 (63.3%)	4.8± 1.7
	CRNA (319)	8 (2.5%)	8 (2.5%)	2 (.6%)	4 (1.3%)	2 (.6%)	295 (92.5%)	5.7± 1.0

MD/CRNA response difference significant at .001 (x^2=22.1)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES 630	CURRENT	23 (3.7%)	53 (8.4%)	10 (1.6%)	34 (5.4%)	20 (3.1%)	490 (77.8%)	5.3± 1.5
	FUTURE	23 (3.7%)	43 (6.8%)	21 (3.3%)	33 (5.2%)	18 (2.9%)	492 (78.1%)	5.3± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.476)
Current/Future (M.D. Response) not significant at .05 (x^2=.324)
Current/Future (CRNA Response) not significant at .05 (x^2=.124)

1 b. CRNA's should not do cardiac anesthesia.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	(Disagree) NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	10 (5.8%0	16 (9.3%)	9 (5.2%)	8 (4.7%)	8 (4.7%)	121 (70.3%)	5.0± 1.7
	RNATP (210)	11 (5.2%)	13 (6.2%)	6 (2.9%)	7 (3.3%)	7 (3.3%)	166 (79%)	5.3± 1.5
	MDATP (203)	19 (9.4%)	21 (10.3%)	7 (3.4%)	12 (5.9%)	16 (17.9%)	128 (63.1%)	4.8± 1.8

NTP/RNATP response difference not significant at .05 (x^2=1.0)

RNATP/MDATP response difference significant at .05 (x^2=4.9)

NTP/MDATP response difference not significant at .05 (x^2=.90)

(Disagree)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	10 (5.8%)	13 (7.6%)	11 (6.4%)	7 (4.1%)	9 (5.2%)	122 (70.9%)	5.1± 1.6
	RNATP (210)	10 (4.8%)	13 (6.2%)	6 (2.9%)	7 (3.3%)	7 (3.3%)	167 (79.5%)	5.3± 1.5
	MDATP (203)	19 (9.4%)	19 (9.4%)	13 (6.4%)	7 (3.4%)	15 (7.4%)	130 (64%)	4.8± 1.8

NTP/RNATP response difference not significant at .05 (x^2=.493)

RNATP/MDATP response difference significant at .05 (x^2=5.1)

NTP/MDATP response difference not significant at .05 (x^2=.44)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6 (Disagree)	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	32 (10.4%)	44 (14.3%)	17 (5.5%)	26 (8.4%)	29 (9.4%)	160 (51.9%)	4.5± 1.9
	CRNA (319)	11 (3.4%)	10 (3.1%)	6 (1.9%)	5 (1.6%)	3 (.9%)	284 (89%)	5.6± 1.2

MD/CRNA response difference significant at .001 (x^2=40.7)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6 (Disagree)	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	30 (9.7%)	40 (13%)	25 (8.1%)	21 (6.8%)	29 (9.4%)	163 (52.9%)	4.5± 1.9
	CRNA (319)	11 (3.4%)	7 (2.2%)	10 (3.1%)	3 (.9%)	3 (.9%)	285 (89.3%)	5.6± 1.2

MD/CRNA response difference significant at .001 (x^2=40.3)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6 (Disagree)	MEAN ± ST. DEV.7
	CURRENT	44 (77%)	54 (8.6%	23 (3.7%)	31 (4.9%)	32 (5.1%)	446 (70.8%)	5.0± 1.7
	FUTURE	42 (6.7%)	47 (7.5%)	35 (5.6%)	24 (3.8%)	32 (5.1%)	450 (71.4%)	5.1± 1.6

Current/Future (Total Response) not significant at .05 (x^2=.25)
Current/Future (M.D. Response) not significant at .05 (x^2=.08
Current/Future (CRNA Response) not significant at .05 (x^2=.08)

1 c. CRNA's should not do neurological anesthesia.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	Disagree NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	6 (3.5%)	18 (10.5%)	4 (2.3%)	7 (4.1%)	6 (3.5%)	131 (76.2%)	5.2± 1.5
	RNATP (210)	6 (2.9%)	15 (7.1%)	7 (3.3%)	8 (3.8%)	3 (1.4%)	171 (81.4%)	5.4± 1.4
	MDATP (203)	8 (3.9%)	18 (8.9%)	8 (3.9%)	15 (7.4%)	12 (5.9%)	142 (70%)	5.1± 1.5

NTP/RNATP response difference not significant at .05 (x^2=1.0)

RNATP/MDATP response difference not significant at .05 (x^2=1.6)

NTP/MDATP response difference not significant at .05 (x^2=1.6)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	Disagree NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	4 (2.3%)	19 (11%)	5 (2.9%)	7 (4.1%)	6 (3.5%)	131 (76.2%)	5.2± 1.5
	RNATP (210)	6 (2.9%)	15 (7.1%)	7 (3.3%)	7 (3.3%)	3 (1.4%)	172 (81.9%)	5.4± 1.4
	MDATP (203)	8 (3.9%)	19 (9.4%)	11 (5.4%)	12 (5.9%)	11 (5.4%)	142 (70%)	5.1± 1.6

NTP/RNATP response difference not significant at .05 (x^2=.73)

RNATP/MDATP response difference not significant at .05 (x^2=.95)

NTP/MDATP response difference not significant at .05 (x^2=.005)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	Disagree NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	16 (5.2%)	45 (14.6%	18 (5.8%)	29 (9.4%)	18 (5.8%)	182 (59.1%)	4.7± 1.7
	CRNA (319)	7 (2.2%)	10 (3.1%)	2 (.6%)	3 (.9%)	2 (.6%)	295 (92.5%)	5.7± 1.0

MD/CRNA response: difference significant at .001 (x^2=31.8)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	Disagree NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	15 (4.9%)	46 (14.9%)	22 (7.1%)	25 (8.1%)	17 (5.5%)	183 (59.4%)	4.7± 1.7
	CRNA (319)	6 (1.9%)	10 (3.1%)	3 (.9%)	3 (.9%)	2 (.6%)	295 (92.5%)	5.7± 1.0

MD/CRNA response difference significant at .001 (x^2=34.2)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	Disagree NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	23 (3.7%)	55 (8.7%)	20 (3.2%)	32 (5.1%)	21 (3.3%)	479 (76%)	5.3± 1.5
	FUTURE	21 (3.3%)	56 (8.9%)	25 (4%)	28 (4.4%)	20 (3.2%)	480 (76.2%)	5.2± 1.5

Current/Future (Total Response) not significant at .05 (x^2=.003)
Current/Future (M.D. Response) not significant at .05 (x^2=.001)
Current/Future (CRNA Response) not significant at .05 (x^2=.001)

1 d. CRNA's should not do regional anesthesia.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	13 (7.6%)	16 (9.3%)	4 (2.3%)	14 (8.1%)	8 (4.7%)	117 (68%)	5.0± 1.7
	RNATP (210)	15 (7.1%)	9 (4.3%)	6 (2.9%)	9 (4.3%)	9 (4.3%)	162 (77.1%)	5.3± 1.6
	MDATP (203)	16 (7.9%)	18 (8.9%)	4 (2%)	13 (6.4%)	23 (11.3%)	129 (63.5%)	5.0± 1.7

NTP/RNATP response difference not significant at .05 (x^2=1.9)

RNATP/MDATP response difference not significant at .05 (x^2=1.9)

NTP/RNATP response difference not significant at .05 (x^2=.009)

TOTAL RESPONSES585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	11 (6.4%)	13 (7.6%)	7 (4.1%)	14 (8.1%)	8 (4.7%)	119 (69.2%)	5.0± 1.6
	RNATP (210)	13 (6.2%)	9 (4.3%)	9 (4.3%)	6 (2.9%)	9 (4.3%)	164 (78.1%)	5.3± 1.5
	MDATP (203)	17 (8.4%)	16 (7.9%)	7 (3.4%)	12 (5.9%)	20 (9.9%)	131 (64.5%)	4.9± 1.7

NTP/RNATP response difference not significant at .05 (x^2=.776)

RNATP/MDATP response difference not significant at .05 (x^2=2.4)

NTP/MDATP response difference not significant at .05 (x^2=.2)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	35 (11.4%)	33 (10.7%)	12 (3.9%)	31 (10.1%)	37 (12%)	160 (51.9%)	4.6± 1.8
	CRNA (319)	12 (3.8%)	11 (3.4%)	5 (1.6%)	7 (2.2%)	6 (1.9%)	278 (87.1%)	5.6± 1.2

MD/CRNA response difference significant at .001 (x^2=28.1)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	36 (11.7%)	30 (9.7%)	15 (4.9%)	30 (9.7%)	35 (11.4%)	162 (52.6%)	4.6± 1.8
	CRNA (319)	8 (2.5%)	9 (2.8%)	11 (3.4%)	4 (1.3%)	5 (1.6%)	282 (88.4%)	5.6± 1.1

MD/CRNA response difference significant at .001 (x^2=35.0)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
	CURRENT	48 (7.6%)	44 (7%)	17 (2.7%)	17 (2.7%)	43 (6.8%)	440 (69.8%)	5.1± 1.6
	FUTURE	45 (7.1%)	39 (6.2%)	26 (4.1%)	34 (5.4%)	40 (6.3%)	446 (70.8%)	5.1± 1.6

Current Future (Total Response) not significant at .05 (x^2=1.4)
Current Future (M.D. Response) not significant at .05 (x^2=.001)
Current Future (CRNA Response) not significant at .05 (x^2=.57)

2. Nurse anesthetists, according to individual ability and after consultation with a physician, should be able to induce and emerge patients without immediate supervision.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
CURRENT	NTP (172)	150 (58.1%)	48 (27.9%)	3 (1.7%)	8 (4.7%)	3 (1.7%)	9 (5.2%)	1.8± 1.3
	RNATP (210)	122 (58.1%)	59 (28.1%)	7 (3.3%)	11 (5.2%)	4 (1.9%)	7 (3.3%)	1.7± 1.2
	MDATP (203)	66 (32.5%)	80 (39.4%)	11 (5.4%)	22 (10.8%)	20 (9.9%)	4 (2%)	2.3± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.004)

RNATP/MDATP response difference significant at .001 (x^2=16.7)

NTP/MDATP response difference significant at .001 (x^2=15.99)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	NTP (172)	97 (56.4%)	47 (27.3%)	6 (3.5%)	7 (4.1%)	3 (1.7%)	12 (7%)	1.9± 1.4
	RNATP (210)	117 (55.7%)	54 (25.7%)	8 (3.8%)	12 (5.7%)	3 (1.4%)	16 (7.6%)	1.9± 1.5
	MDATP (203)	68 (33.5%)	78 (38.4%)	17 (8.4%)	15 (7.4%)	21 (10.3%)	4 (2%)	2.3± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.118)

RNATP/MDATP response difference significant at .01 (x^2=9.6)

NTP/MDATP response difference significant at .001 (x^2=11.4)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	61 (19.8%)	150 (48.7%)	21 (6.8%)	40 (13%)	25 (8.1%)	11 (3.6%)	2.5± 1.4
	CRNA (319)	244 (76.5%)	53 (16.6%)	0 (0%)	7 (2.2%)	3 (.9%)	11 (3.4%)	1.4± 1.1

MD/CRNA response difference significant at .001 (x^2=51.6)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	62 (20.1%)	141 (45.8%)	31 (10.1%)	34 (11%)	25 (8.1%)	15 (4.9%)	2.6± 1.4
	CRNA (319)	237 (74.3%)	51 (16%)	3 (.9%)	5 (1.6%)	3 (.9%)	20 (6.3%)	1.6± 1.3

MD/CRNA response difference significant at .001 (x^2=49.8)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	307 (48.7%)	204 (32.4%	21 (3.3%)	47 (7.5%)	28 (4.4%)	22 (3.5%)	2.0± 1.3
	FUTURE	301 (47.8%)	193 (30.6%	34 (5.4%)	39 (6.2%)	28 (4.4%)	35 (5.6%)	2.1± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.12)
Current/Future (M.D. Response) not significant at .05 (x^2=.03)
Current/Future (CRNA Response) not significant at .05 (x^2=.03)

3. Nurse anesthetists should, according to individual ability, make changes in anesthesia maintenance, according to patient needs, without immediate physician consultation.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	100 (58.1%)	50 (29.1%)	5 (2.9%)	9 (5.2%)	4 (2.3%)	4 (2.3%)	1.7± 1.6
	RNATP (210)	116 (55.2%)	69 (32.9%)	5 (2.4%)	9 (4.3%)	10 (4.8%)	1 (.5%)	1.7± 1.1
	MOATP (203)	69 (34%)	87 (42.9%)	8 (3.9%)	19 (9.4%)	16 (7.9%)	4 (2%)	2.2± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.07)

RNATP/MDATP response difference significant at .05 (x^2=6.04)

NTP/MDATP response difference significant at .01 (x^2=7.2)

TOTAL RESPONSES		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	99 (57.6%)	45 (26.2%)	10 (5.8%)	7 (4.1%)	4 (2.3%)	7 (4.1%)	1.8± 1.3
	RNATP (210)	114 (54.3%)	60 (28.6%)	6 (2.9%)	11 (5.2%)	9 (4.3%)	10 (4.8%)	1.9± 1.4
	MDATP (203)	68 (33.5%)	83 (40.9%)	9 (4.4%)	20 (9.9%)	15 (7.4%)	8 (3.9%)	2.3± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.74)

RNATP/MDATP response difference significant at .05 (x^2=4.9)

NTP/MDATP response difference significant at .01 (x^2=8.97)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	63 (20.5%)	157 (51%)	17 (5.5%)	38 (12.3%)	24 (7.8%)	9 (2.9%)	2.4± 1.3
	CRNA (319)	241 (75.5%)	66 (20.7%)	3 (.9%)	3 (.9%)	5 (1.6%)	1 (.3%)	1.3± .74

MD/CRNA response difference significant at .001 (x^2=55.1)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	63 (20.5%)	146 (47.4%)	24 (7.8%)	39 (12.7%)	23 (7.5%)	13 (4.2%)	2.5± 1.4
	CRNA (319)	236 (74%)	58 (18.2%)	5 (1.6%)	2 (.6%)	4 (1.3%)	14 (4.4%)	1.5± 1.2

MD/CRNA response difference significant at .001 (x^2=57.2)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES 630	CURRENT	305 (48.4%)	224 (35.6%)	20 (3.2%)	41 (6.5%)	30 (4.8%)	10 (1.6%)	1.9± 1.2
	FUTURE	300 (47.6%)	205 (32.5%)	29 (4.6%)	41 (6.5%)	28 (4.4%)	27 (4.3%)	2.0± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.001)

Current/Future (M.D.Response) not significant at .05 (x^2=.006)

Current/Future (CRNA Response) not significant at .05 (x^2=.032)

4. Nurse anesthetists should insert arterial lines by percutaneous puncture and draw blood gases when indicated.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
CURRENT	NTP (172)	47 (27.3%)	61 (35.5%)	20 (11.6%)	26 (15.1%)	12 (7%)	6 (3.5%)	2.5± 1.4
	RNATP (210)	84 (40%)	71 (33.8%)	27 (12.9%)	16 (7.6%)	10 (4.8%)	2 (1%)	2.1± 1.2
	MDATP (203)	47 (23.2%)	86 (42.4%)	24 (11.8%)	25 (12.3%)	17 (8.4%)	4 (2%)	2.5± 1.3

NTP/RNATP response difference significant at .05 (x^2=6.3)

RNATP/MDATP response difference significant at .05 (x^2=4.5)

MDATP/RNATP response difference not significant at .05 (x^2=.12)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	NTP (172)	57 (33.1%)	58 (33.7%)	24 (14%)	14 (8.1%)	11 (6.4%)	8 (4.7%)	2.3± 1.4
	RNATP (210)	89 (42.4%)	67 (31.9%)	20 (9.5%)	15 (7.1%)	8 (3.8%)	11 (5.2%)	2.1± 1.4
	MDATP (203)	52 (35.6%)	86 (42.4%)	25 (12.3%)	17 (8.4%)	17 (8.4%)	6 (3%)	2.4± 1.3

NTP/RNATP response difference not significant at .05 (x^2=1.2)

RNATP/MDATP response difference not significant at .05 (x^2=2.6)

MDATP/RNATP response difference not significant at .05 (x^2=.08)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	37 (12%)	130 (42.2%)	42 (13.6%)	56 (18.2%)	34 (11%)	9 (2.9%)	2.8± 1.3
	CRNA (319)	159 (49.8%)	98 (30.7%)	33 (10.3%)	19 (6%)	7 (2.2%)	3 (.9%)	1.8± 1.1

MD/CRNA response difference significant at .001 (x^2=51.8)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	42 (13.6%)	133 (43.2%	46 (14.9%)	44 (14.3%)	32 (10.4%)	11 (3.6%)	2.7± 1.3
	CRNA (319)	174 (54.5%)	88 (27.6%)	28 (8.8%)	8 (2.5%)	6 (1.9%)	15 (4.7%)	1.8± 1.3

MD/CRNA response difference significant at .001 (x^2=57.2)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
	CURRENT	197 (31.3%)	229 (36.3%)	76 (12.1%)	75 (11.9%)	41 (6.5%)	12 (1.9%)	2.3± 1.3
	FUTURE	217 (34.4%)	222 (35.2%)	75 (11.9%)	52 (8.3%)	38 (6%)	26 (4.1%)	2.3± 1.4

Current/Future (Total Response) not significant at .05 (x^2=3.04)
Current/Future (M.D. Response) not significant at .05 (x^2=1.1)
Current/Future (CRNA Response) not significant at .05 (x^2=3.0)

5. Nurse anesthetists should insert central venous pressure monitoring lines by the method commonly utilized at the institution.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
CURRENT	NTP (172)	42 (24.4%)	52 (30.2%)	28 (16.3%)	31 (18%)	15 (8.7%)	3 (1.7%)	2.6± 1.4
	RNATP (210)	77 (36.7%)	67 (31.9%)	28 (13.3%)	27 (12.9%)	8 (3.8%)	2 (1%)	2.2± 1.2
	MDATP (203)	38 (18.6%)	67 (33%)	34 (16.7%)	40 (19.7%)	21 (10.3%)	3 (1.5%	2.7± 1.3

NTP/RNATP response difference significant at .01 (x^2=6.7)

RNATP/MDATP response difference significant at .001 (x^2=11.8)

NTP/MDATP response difference not significant at .05 (x^2=.35)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	NTP (172)	46 (26.7%)	52 (30.2%)	31 (18%)	22 (12.8%)	15 (8.7%)	6 (3.5%)	2.6± 1.4
	RNATP (210)	82 (39%)	66 (31.4%)	26 (12.4%)	20 (9.5%)	5 (2.4%)	11 (5.2%)	2.2± 1.4
	MDATP (203)	42 (20.7%)	69 (34%)	34 (16.7%)	34 (16.7%)	18 (8.9%)	6 (3%)	2.7± 1.4

NTP/RNATP response difference significant at .01 (x^2=7.1)

RNATP/MDATP response difference significant at .001 (x^2=13.5)

NTP/MDATP response difference not significant at .05 (x^2=.51)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (309)	34 (11%)	107 (34.7%)	50 (16.2%)	73 (23.7%)	35 (11.4%)	7 (2.3%)	2.9± 1.3
	CRNA (319)	141 (44.2%)	89 (27.9%)	44 (13.8%)	34 (10.7%)	10 (3.1%)	1 (.3%)	2.0± 1.2

MD/CRNA response difference significant at .001 (x^2=45.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (309)	38 (12.3%)	110 (35.7%)	54 (17.5%)	64 (20.8%)	32 (10.4%)	10 (3.2%)	2.9± 1.3
	CRNA (319)	150 (47%)	86 (27%)	43 (13.5%)	19 (6%)	7 (2.2%)	14 (4.4%)	2.0± 1.3

MD/CRNA response difference significant at .001 (x^2= 3.0)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	175 (27.8%)	197 (31.3%)	96 (15.2%)	107 (17%)	45 (7.1%)	8 (1.3%)	2.5± 1.3
	FUTURE	188 (29.8%)	197 (31.3%)	99 (15.7%)	83 (13.2%)	39 (6.2%)	24 (3.8%)	2.5± 1.4

Current/Future (Total Response) not significant at .05 (x^2=3.0)
Current/Future (M.D. Response) not significant at .05 (x^2=.67)
Current/Future (CRNA Response) significant at .05 (x^2=3.9)

6. Nurse anesthetists should make pre-operative and post-operative visits and evaluations on the patients they are assigned.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	71 (41.3%)	58 (33.7%)	17 (9.9%)	13 (7.6%)	8 (4.7%)	5 (2.9%)	2.1± 1.3
	RNATP (210)	110 (52.4%)	72 (34.3%)	7 (3.3%)	11 (5.2%)	8 (3.8%)	2 (1%)	1.8± 1.1
	MDATP (203)	56 (27.6%)	85 (41.9%)	15 (7.4%)	21 (10.3%)	21 (10.3%)	5 (2.5%)	2.4± 1.4

NTP/RNATP response difference not significant at .05 (x^2=1.3)

RNATP/MDATP response difference significant at .001 (x^2=12.1)

NTP/RNATP response difference not significant at .05 (x^2=3.7)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	78 (45.3%)	53 (30.8%)	15 (8.7%)	10 (5.8%)	9 (5.2%)	7 (4.2%)	2.1± 1.4
	RNATP (210)	109 (51.9%)	68 (32.4%)	8 (3.8%)	6 (2.9%)	7 (3.3%)	12 (5.7%)	1.9± 1.4
	MDATP (203)	59 (29.1%)	88 (43.3%)	15 (7.4%)	15 (7.4%)	20 (9.9%)	6 (3%)	2.3± 1.4

NTP/RNATP response difference not significant at .05 (x^2=2.7)

RNATP/MDATP response difference significant at .001 (x^2=11.6)

NTP/MDATP response difference not significant at .05 (x^2=2.1)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	62 (20.1%)	140 (45.5%)	23 (7.5%)	41 (13.3%)	35 (11.4%)	7 (2.3%)	2.6± 1.4
	CRNA (319)	189 (59.2%)	89 (27.9%)	21 (6.6%)	10 (3.1%)	4 (1.3%)	6 (1.9%)	1.6± 1.03

MD/CRNA response difference significant at .001 (x^2=52.8)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	64 (20.8%)	140 (45.5%)	26 (8.4%)	34 (11%)	33 (10.7%)	11 (3.6%)	2.6± 1.4
	CRNA (319)	197 (61.8%)	83 (26%)	19 (6%)	1 (.3%)	4 (1.3%)	15 (4.7%)	1.7± 1.2

MD/CRNA response difference significant at .001 (x^2=62.9)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	253 (40.2%)	229 (36.3%)	44 (7%)	51 (8.1%)	40 (6.3%)	13 (2.1%)	2.1± 1.3
	FUTURE	263 (41.7%)	223 (35.4%)	45 (7.1%)	35 (5.6%)	38 (6%)	26 (4.1%)	2.1± 1.4

Current/Future (Total Response) not significant at .05 (x^2=1.6)
Current/Future (M.D. Response) not significant at .05 (x^2=.36)
Current/Future (CRNA Response) not significant at .05 (x^2=3.3)

7. Nurse anesthetists should order pre-operative medication for assigned patients.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	40 (23.3%)	43 (25%)	27 (15.7%)	34 (19.8%)	24 (14%)	4 (2.3%)	2.8± 1.5
	RNATP (210)	50 (23.8%)	59 (28.1%)	33 (15.7%)	46 (21.9%)	19 (9%)	3 (1.4%)	2.7± 1.4
	MDATP (203)	23 (11.3%)	64 (31.5%)	26 (12.8%)	42 (20.7%)	43 (21.2%)	5 (2.5%)	3.2± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.32)

RNATP/MDATP response difference significant at .05 (x^2=4.6)

NTP/RNATP response difference not significant at .05 (x^2=1.8)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	45 (26.2%)	41 (23.8%)	31 (18%)	22 (12.8%)	25 (14.5%)	8 (4.7%)	2.8± 1.5
	RNATP (210)	53 (25.2%)	59 (28.1%)	32 (15.2%)	37 (17.6%)	17 (8.1%)	12 (5.7%)	2.7± 1.5
	MDATP (203)	26 (12.8%)	65 (32%)	32 (15.8%)	35 (17.2%)	38 (18.7%)	7 (3.4%)	3.1± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.15)

RNATP/MDATP response difference significant at .05 (x^2=4.5)

NTP/MDATP response difference not significant at .05 (x^2=2.2)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	25 (8.1%)	78 (25.3%)	35 (11.4%)	92 (29.9%)	67 (21.8%)	11 (3.6%)	3.4± 1.4
	CRNA (319)	98 (30.7%)	96 (30.1%)	55 (17.2%)	43 (13.5%)	23 (7.2%)	4 (1.3%)	2.4± 1.3

MD/CRNA response difference significant at .001 (x^2=64.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	26 (8.4%)	78 (25.3%	44 (14.3%)	81 (26.3%)	66 (21.4%)	13 (4.2%)	3.4± 1.4
	CRNA (319)	109 (34.2%)	95 (29.8%	59 (18.5%)	24 (7.5%)	17 (5.3%)	15 (4.7%)	2.3± 1.4

MD/CRNA response difference significant at .001 (x^2=90.4)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
	CURRENT	123 (19.5%)	174 (27.6%)	92 (14.6%)	135 (21.4%)	91 (14.4%)	15 (2.4%)	2.9± 1.4
	FUTURE	135 (21.4%)	173 (27.5%)	105 (16.7%)	105 (16.7%)	84 (13.3%)	28 (4.4%)	2.9± 1.5

Current/Future (Total Response) not significant at .05 (x^2=2.6)
Current/Future (MD Response) not significant at .05 (x^2=.16)
Current/Future (CRNA Response) significant at .05 (x^2=5.1)

8. Nurse anesthetists should select the anesthetic technique for use on their assigned patient in accordance with the patient's condition.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172	83 (48.3%)	54 (31.4%)	8 (4.7%)	14 (8.1%)	10 (5.8%)	3 (1.7%)	2.0± 1.3
	RNATP (210)	99 (47.1%)	68 (32.4%)	12 (5.7%)	18 (8.6%)	9 (4.3%)	4 (1.9%)	2.0± 1.3
	MDATP (203)	45 (22.2%)	74 (36.5%)	20 (9.9%)	29 (14.3%)	29 (14.3%)	6 (3%)	2.7± 1.5

NTP/RNATP response difference not significant at .05 (x^2=.01)

RNATP/MDATP response difference significant at .001 (x^2=17.6)

NTP/MDATP response difference significant at .001 (x^2=13.7)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	80 (46.5%)	44 (25.6%)	16 (9.3%)	14 (8.1%)	11 (6.4%)	7 (4.1%)	2.1± 1.5
	RNATP (210)	96 (45.7%)	61 (29%)	14 (6.7%)	17 (8.1%)	9 (4.3%)	13 (6.2%)	2.1± 1.5
	MDATP (203)	47 (23.2%)	73 (36%)	21 (10.3%)	26 (12.8%)	28 (13.8%)	8 (3.9%)	2.7± 1.5

NTP/RNATP response difference not significant at .05 (x^2=.24

RNATP/MDATP response difference significant at .001 (x^2=13.6)

NTP/MDATP response difference significant at .01 (x^2=8.1)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV. 7
CURRENT	M.D. (308)	33 (10.7%)	110 (35.7%)	38 (12.3%)	65 (21.1%)	49 (15.9%)	13 (4.2%)	3.1± 1.5
	CRNA (319)	210 (65.8%)	95 (29%)	5 (1.6%)	4 (1.3%)	2 (.6%)	3 (.9%)	1.4± .79

MD/CRNA response difference significant at .001 (x^2= over 100)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
FUTURE	M.D. (308)	36 (11.7%)	102 (33.1%)	45 (14.6%)	62 (20.1%)	49 (15.9%)	14 (4.5%)	3.1± 1.4
	CRNA (319)	204 (63.9%)	85 (26.6%)	11 (3.4%)	2 (.6%)	2 (.6%)	15 (4.7%)	1.6± 1.2

MD/CRNA response difference significant at .001 (x^2= over 100)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
TOTAL RESPONSES 630	CURRENT	244 (38.7%)	206 (32.7%)	43 (6.8%)	69 (11%)	52 (8.3%)	16 (2.5%)	2.2± 1.4
	FUTURE	241 (38.3%)	188 (29.8%)	56 (8.9%)	64 (10.2%)	52 (8.3%)	29 (4.6%)	2.3± 1.5

Current/Future (Total Response) not significant at .05 (x^2=.001)
Current/Future (MD Response) not significant at .05 (x^2=.002)
Current/Future (CRNA Response) significant at .05 (x^2=4.9)

9. Nurse anesthetists should participate in anesthesia care in the recovery and critical care areas.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	71 (41.3%)	74 (43%)	12 (7%)	7 (4.1%)	5 (2.9%)	3 (1.7%)	1.9± 1.1
	RNATP (210)	97 (46.2%)	89 (42.4%)	10 (4.8%)	10 (4.8%)	3 (1.4%)	1 (.5%)	1.7± .91
	MDATP (203)	42 (20.7%)	112 (55.2%)	15 (7.4%)	17 (8.4%)	14 (6.9%)	3 (1.5%)	2.3± 1.2

NTP/RNATP response difference not significant at .05 (x^2=.039)

RNATP/MDATP response difference significant at .01 (x^2= 8.9)

NTP/MDATP response difference significant at .05 (x^2= 5.6)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	72 (41.9%)	75 (43.6%)	11 (6.4%)	4 (2.3%)	4 (2.3%)	6 (3.5%)	1.9± 1.2
	RNATP (210)	97 (46.2%)	82 (39%)	13 (6.2%)	6 (2.9%)	2 (1%)	10 (4.8%)	1.9± 1.2
	MDATP (203)	44 (21.7%)	106 (52.2%)	19 (9.4%)	15 (7.4%)	13 (6.4%)	6 (3%)	2.3± 1.2

NTP/RNATP response difference not significant at .05 (x^2=.02)

RNATP/MDATP response difference significant at .001 (x^2=12.2)

NTP/MDATP response difference significant at .01 (x^2= 8.5)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (309)	47 (15.3%)	187 (60.7%)	25 (8.1%)	24 (7.8%)	19 (6.2%)	6 (1.9%)	2.3± 1.1
	CRNA (319)	175 (54.9%)	109 (34.2%)	18 (5.6%)	10 (3.1%)	4 (1.3%)	3 (.9%)	1.6± .93

MD/CRNA response difference significant at .001 (x^2=17.6)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (309)	51 (16.6%)	181 (58.8%)	27 (8.8%)	22 (7.1%)	17 (5.5%)	10 (3.2%)	2.4± 1.2
	CRNA (319)	175 (54.9%)	101 (31.7%)	22 (6.9%)	4 (1.3%)	3 (.9%)	14 (4.4%)	1.7± 1.2

MD/CRNA response difference significant at .001 (x^2=24.3)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	225 (35.7%)	296 (47%)	43 (6.8%)	34 (5.4%)	9 (2.8%) 1	27 (3.3%)	2.0± 1.1
	FUTURE	229 (36.3%)	282 (44.8%)	49 (7.8%)	26 (4.1%)	20 (3.2%)	24 (3.8%)	2.0± 1.2

Current/Future (Total Response) not significant at .05 (x^2=.08)
Current/Future (M.D. Response) not significant at .05 (x^2=.06)
Current/Future (CRNA Response) not significant at .05 (x^2=1.4)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. (309)	47 (15.3%)	187 (60.7%)	25 (8.1%)	24 (7.8%)	19 (6.2%)	6 (1.9%)	2.3± 1.1
	CRNA (319)	175 (54.9%)	109 (34.2%)	18 (5.6%)	10 (3.1%)	4 (1.3%)	3 (.9%)	1.6± .93

MD/CRNA response difference significant at .001 (x^2=17.6)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. (309)	51 (16.6%)	181 (58.8%)	27 (8.8%)	22 (7.1%)	17 (5.5%)	10 (3.2%)	2.4± 1.2
	CRNA (319)	175 (54.9%)	101 (31.7%)	22 (6.9%)	4 (1.3%)	3 (.9%)	14 (4.4%)	1.7± 1.2

MD/CRNA response difference significant at .001 (x^2=24.3)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
	CURRENT	225 (35.7%)	296 (47%)	43 (6.8%)	34 (5.4%)	9 (2.8%) 1	27 (3.3%)	2.0± 1.1
	FUTURE	229 (36.3%)	282 (44.8%)	49 (7.8%)	26 (4.1%)	20 (3.2%)	24 (3.8%)	2.0± 1.2

Current/Future (Total Response) not significant at .05 (x^2=.08)
Current/Future (M.D. Response) not significant at .05 (x^2=.06)
Current/Future (CRNA Response) not significant at .05 (x^2=1.4)

10. Nurse Anesthetists should administer blood and appropriate fluids during anesthesia care, according to patient needs, without mandatory consultation with an anesthesiologist.

TOTAL RESPONSES585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	89 (51.7%)	58 (33.7%)	7 (4.1%)	11 (6.4%)	4 (2.3%)	3 (1.7%)	1.8± 1.1
	RNATP (210)	98 (46.7%)	69 (32.9%)	8 (3.8%)	26 (12.4%)	8 (3.8%)	1 (.5%)	2.0± 1.2
	MDATP (203)	46 (22.7%)	89 (43.8%)	13 (6.4%)	37 (18.2%)	16 (7.9%)	2 (1%)	2.5± 1.3

NTP/RNATP response difference significant at .01 (x^2=8.4)

RNATP/MDATP response difference not significant at .05 (x^2=2.5)

NTP/MDATP response difference significant at .001 (x^2=18.7)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	88 (51.2%)	53 (30.8%)	10 (5.8%)	9 (5.2%)	5 (2.9%)	7 (4.1%)	1.9± 1.3
	RNATP (210)	95 (45.2%)	59 (28.1%)	15 (17.1%)	21 (10%)	10 (4.8%)	10 (4.8%)	2.2± 1.4
	MDATP (203)	49 (24.1%)	85 (41.9%)	15 (7.4%)	32 (15.8%)	17 (8.4%)	5 (2.5%)	2.5± 1.4

NTP/RNATP response difference not significant at .05 (x^2=3.7)

RNATP/MDATP response difference significant at .05 (x^2=4.9)

NTP/MDATP response difference significant at .001 (x^2=16.3)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	40 (13%)	139 (45.1%)	26 (8.49%)	69 (22.4%)	27 (8.8%)	7 (2.3%)	2.8± 1.3
	CRNA (319)	210 (65.8%)	90 (28.2%)	9 (2.8%)	7 (2.2%)	2 (.6%)	1 (.3%)	1.4± .76

MD/CRNA response difference significant at .001 (x^2=98.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	41 (13.3%)	132 (42.9%	34 (11%)	62 (20.1%)	30 (9.7%)	9 (2.9%)	2.8± 1.3
	CRNA (319)	208 (65.2%)	76 (23.8%)	15 (4.7%)	3 (.9%)	3 (.9%)	14 (4.4%)	1.6± 1.2

MD/CRNA response difference significant at .001 (x^2=99.3)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES 630	CURRENT	251 (39.8%)	229 (36.3%)	35 (5.6%)	77 (12.2%)	30 (4.8%)	8 (1.3%)	2.1± 1.3
	FUTURE	250 (39.7%)	208 (33%)	49 (7.8%)	66 (10.5%)	34 (5.4%)	23 (3.7%)	2.2± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.003)
Current/Future (MD Response) not significant at .05 (x^2=.002)
Current/Future (CRNA Response) not significant at .05 (x^2=.159)

34. Nurse anesthetists should participate in hospital cardio-pulmonary resuscitation programs.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
CURRENT	NTP (172)	97 (56.4%)	61 (35.5%)	6 (3.5%)	4 (2.3%)	2 (1.2%)	2 (1.2%)	1.6± .91
	RNATP (210)	126 (60%)	76 (36.2%)	2 (1%)	4 (1.9%)	0 (0%)	2 (1%)	1.5± .76
	MDATP (203)	79 (38.9%)	102 (50.2%)	5 (2.5%)	4 (2%)	11 (5.4%)	2 (1%)	1.9± 1.1

NTP/RNATP response difference not significant at .05 (x^2=.48)

RNATP/MDATP response difference not significant at .05 (x^2=1.6)

NTP/MDATP response difference not significant at .05 (x^2=.06)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	NTP (172)	97 (56.4%)	56 (32.6%)	9 (5.2%)	3 (1.7%)	1 (.6%)	6 (3.5%)	1.7± 1.1
	RNATP (210)	123 (58.6%)	66 (31.4%)	5 (2.4%)	3 (1.4%)	0 (0%)	13 (6.2%)	1.7± 1.3
	MDATP (203)	83 (40.9%)	96 (47.3%)	6 (3%)	4 (2%)	9 (4.4%)	5 (2.5%)	1.9± 1.1

NTP/RNATP response difference not significant at .05 (x^2=.132)

RNATP/MDATP response difference significant at .05 (x^2=5.3)

NTP/MDATP response difference not significant at .05 (x^2=2.5)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	103 (33.4%)	169 (54.9%)	11 (3.6%)	5 (1.6%)	12 (3.9%)	8 (2.6%)	2.0± 1.1
	CRNA (319)	214 (67.1%)	87 (27.3%)	6 (1.9%)	9 (2.8%)	1 (.3%)	2 (.6%)	1.4± .79

MD/CRNA response difference not significant at .05 (x^2=1.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	105 (34.1%)	159 (51.6%)	17 (5.5%)	4 (1.3%)	9 (2.9%)	14 (5.5%)	2.0± 1.2
	CRNA (319)	213 (66.8%)	75 (23.5%)	9 (2.8%)	7 (2.2%)	1 (.3%)	14 (4.4%)	1.6± 1.2

MD/CRNA response difference not significant at .05 (x^2=1.1)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	320 (50.8%)	256 (40.6%)	17 (2.7%)	14 (2.2%)	13 (2.1%)	10 (1.6%)	1.7± .98
	FUTURE	321 (51%)	234 (37.1%)	26 (4.1%)	11 (1.7%)	10 (1.6%)	28 (4.4%)	1.8± 1.2

Current/Future (Total Response) not significant at .05 (x^2=.33)
Current/Future (M.D. Response) not significant at .05 (x^2=.20)
Current/Future (CRNA Response) not significant at .05 (x^2=.02)

12. Nurse Anesthetists should perform all anesthesia duties, according to individual ability, on an equal basis with anesthesiologists.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	38 (22.1%)	36 (20.9%)	13 (7.6%)	59 (34.3%)	22 (12.8%)	4 (2.3%)	3.0± 1.5
	RNATP (210)	65 (31%)	37 (17.6%)	21 (10%)	52 (24.8%)	32 (15.2%)	3 (1.4%)	2.8± 1.5
	MDATP (203)	29 (14.3%)	28 (13.8%)	18 (8.9%)	61 (30%)	64 (31.5%)	3 (1.5%)	3.6± 1.5

NTP/RNATP response difference not significant at .05 (x^2=1.4)

RNATP/MDATP response difference significant at .001 (x^2=19.8)

NTP/MDATP response difference significant at .01 (x^2=8.8)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	39 (22.7%)	31 (18%)	22 (12.8%)	52 (30.2%)	21 (12.2%)	7 (4.1%)	3.0± 1.5
	RNATP (210)	64 (30.5%)	33 (15.7%)	23 (11%)	43 (20.5%)	33 (15.7%)	14 (6.7%)	3.0± 1.7
	MDATP (203)	30 (14.8%)	25 (12.3%)	22 (10.8%)	56 (27.6%)	64 (31.5%)	6 (3%)	3.6± 1.5

NTP/RNATP response difference not significant at .05 (x^2=1.3)

RNATP/MDATP response difference significant at .001 (x^2=20.5)

NTP/MDATP response difference significant at .01 (x^2=9.4)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	15 (4.9%)	22 (7.1%)	17 (5.5%)	124 (40.3%)	122 (39.6%)	8 (2.6%)	4.1± 1.1
	CRNA (319)	129 (40.4%)	84 (26.3%)	38 (11.9%)	53 (16.6%)	11 (3.4%)	4 (1.3%)	2.2± 1.3

MD/CRNA response difference significant at .001 (x^2=over 100)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	15 (4.9%)	19 (6.2%)	25 (8.1%)	114 (37%)	123 (39.9%)	12 (3.9%)	4.1± 1.1
	CRNA (319)	129 (40.4%)	75 (23.5%)	46 (14.4%)	41 (12.9%)	11 (3.4%)	17 (5.3%)	2.3± 1.5

MD/CRNA response difference significant at .001 (x^2=over 100)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	144 (22.9%)	106 (16.8%	55 (8.7%)	179 (28.4%)	134 (21.3%)	12 (1.9%)	3.1± 1.5
	FUTURE	144 (22.9%)	94 (14.9%	71 (11.3%)	157 (24.9%)	135 (21.4%)	29 (4.6%)	3.2± 1.6

Current/Future (Total Response) not significant at .05 (x^2=.003)
Current/Future (M.D. Response) not significant at .05 (x^2=.46)
Current/Future (CRNA Response) not significant at .05 (x^2=.46)

Hypothesis: Utilization of nurse anesthetists has no impact on the feelings, job satisfaction, or status of the anesthesiologists with whom they work.

1. Utilization of nurses in anesthesia care may increase the status of the anesthesiologist.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	22 (12.8%)	58 (33.7%)	38 (22.1%)	39 (22.7%)	9 (5.2%)	6 (3.5%)	2.8± 1.3
	RNATP (210)	31 (14.8%)	72 (34.3%)	46 (21.9%)	36 (17.1%)	19 (9%)	6 (2 9%)	2.8± 1.3
	MDATP (203)	16 (7.9%)	56 (27.6%)	45 (22.2%)	50 (24.6%)	31 (15.3%)	5 (2.5%)	3.2± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.121)

RNATP/MDATP response difference significant at .01 (x^2=9.7)

NTP/MDATP response difference significant at .05 (x^2=6.1)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	25 (14.5%)	49 (28.5%)	46 (26.7%)	30 (17.4%)	12 (7%)	10 (5.8%)	2.9± 1.4
	RNATP (210)	29 (13.8%)	63 (30%)	54 (25.7%)	26 (12.4%)	20 (9.5%)	18 (8.6%)	3.0± 1.5
	MDATP (203)	22 (10.8%)	44 (21.7%)	56 (27.6%)	42 (20.7%)	31 (15.3%)	8 (3.9%)	3.2± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.120)

RNATP/MDATP response difference significant at .01 (x^2=9,6)

NTP/MDATP response difference significant at .05 (x^2=6.2)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV. 7
CURRENT	M.D. (308)	19 (6.2%)	77 (25%)	74 (24%)	87 (28.2%)	43 (14%)	8 (2.6%)	3.3± 1.2
	CRNA (319)	53 (16.6%)	116 (36.4%)	72 (22.6%)	48 (15%)	19 (6%)	11 (3.4%)	2.7± 1.3

MD/CRNA response difference significant at .001 (x^2=38.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
FUTURE	M.D. (308)	24 (7.8%)	70 (22.7%)	88 (28.6%)	70 (22.7%)	45 (14.6%)	11 (3.6%)	3.2± 1.3
	CRNA (319)	55 (17.2%)	95 (29.8%)	84 (26.3%)	38 (11.9%)	21 (6.6%)	26 (8.2%)	2.9± 1.4

MD/CRNA response difference significant at .001 (x^2=29.8)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV. 7
	CURRENT	72 (11.4%)	195 (31%)	147 (23.3%)	135 (21.4%)	62 (9.8%)	19 (3%)	3.0± 1.3
	FUTURE	79 (12.5%)	167 (26.5%)	173 (27.5%)	108 (17.1%)	66 (10.5%)	37 (5.9%)	3.0± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.06)
Current/Future (MD Response) not significant at .05 (x^2=.18)
Current/Future (CRNA Response) not significant at .05 (x^2=.005)

2. Utilization of nurses in anesthesia care may be a threat to the status of the anesthesiologist.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	23 (13.4%)	31 (18%)	24 (14%)	57 (33.1%)	33 (19.2%)	4 (2.3%)	3.3± 1.4
	RNATP (210)	18 (8.6%)	34 (16.2%)	23 (11%)	84 (40%)	48 (22.9%)	3 (1.4%)	3.6± 1.3
	MDATP (203)	12 (5.9%)	32 (15.8%)	30 (14.8%)	85 (41.9%)	40 (19.7%)	4 (2%)	3.6± 1.2

NTP/RNATP response difference not significant at .05 (x^2=2.7)

RNATP/MDATP response difference not significant at .05 (x^2=.12)

NTP/MDATP response difference significant at .05 (x^2=4.2)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	23 (13.4%)	28 (16.3%)	29 (16.9%)	50 (29.1%)	33 (19.2%)	9 (5.2%)	3.4± 1.4
	RNATP (210)	19 (9%)	27 (12.9%)	37 (17.6%)	66 (31.4%)	47 (22.4%)	14 (6.7%)	3.7± 1.4
	MDATP (203)	13 (6.4%)	26 (12.8%)	36 (17.7%)	81 (39.9%)	41 (20.2%)	6 (3%)	3.6± 1.2

NTP/RNATP response difference not significant at .05 (x^2=2.3)

RNATP/MDATP response difference not significant at .05 (x^2=.68)

NTP/MDATP response difference significant at .05 (x^2=6.0)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	17 (5.5%)	48 (15.6%)	48 (15.6%)	142 (46.1%)	43 (14%)	10 (3.2%)	3.6± 1.2
	CRNA (319)	39 (12.2%)	56 (17.6%)	34 (10.7%)	99 (31%)	86 (27%)	5 (1.6%)	3.5± 1.4

MD/CRNA response difference not significant at .05 (x^2=3.6)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	20 (6.5%)	41 (13.3%)	68 (22.1%)	121 (39.3%)	44 (14.3%)	14 (4.5%)	3.6± 1.2
	CRNA (319)	37 (11.6%)	46 (14.4%)	45 (14.1%)	88 (27.6%)	83 (26%)	20 (6.3%)	3.6± 1.4

MD/CRNA response difference not significant at .05 (x^2=1.6)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	56 (8.9%)	104 (16.5%)	83 (13.2%)	242 (38.4%)	130 (20.6%)	15 (2.4%)	3.5± 1.3
	FUTURE	57 (9%)	87 (13.8%	114 (18.1%)	210 (33.3%)	128 (20.3%)	34 (5.4%)	3.6± 1.3

Current/Future (Total Response) not significant at .05 (x^2=.001)
Current/Future (M.D. Response) not significant at .05 (x^2=.02)
Current/Future (CRNA Response) not significant at .05 (x^2=.05)

3. Supervision of two nurse anesthetists contributes more to the stress of the day than doing a case one's self.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	15 (8.7%)	45 (26.2%)	29 (16.9%)	40 (23.3%)	29 (16.9%)	14 (8.1%)	3.4± 1.5
	RNATP (210)	20 (9.5%)	50 (23.8%)	25 (11.9%)	62 (29.5%)	39 (18.6%)	14 (6.7%)	3.4± 1.4
	MDATP (203)	27 (13.3%)	50 (24.6%)	23 (11.3%)	58 (28.6%)	33 (16.3%)	12 (5.6%)	3.3± 1.5

NTP/RNATP response difference not significant at .05 (x^2=.72)

RNATP/MDATP response difference not significant at .05 (x^2=.64)

NTP/MDATP response difference not significant at .05 (x^2=.001)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	14 (8.1%)	37 (21.5%)	35 (20.3%)	41 (23.8%)	27 (15.7%)	18 (10.5%)	3.5± 1.5
	RNATP (210)	19 (9%)	44 (21%)	34 (16.2%)	52 (24.8%)	35 (16.7%)	26 (12.4%)	3.6± 1.5
	MDATP	27 (13.3%)	46 (22.7%)	26 (12.8%)	56 (27.6%)	33 (16.3%)	15 (7.5%)	3.3± 1.5

NTP/RNATP response difference not significant at .05 (x^2=.001)

RNATP/MDATP response difference not significant at .05 (x^2=.19)

NTP/MDATP response difference not significant at .05 (x^2=.06)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	54 (17.5%)	109 (35.4%	33 (10.7%)	83 (26.9%)	21 (6.8%)	8 (2.6%)	2.8± 1.3
	CRNA (319)	19 (6%)	43 (13.5%)	54 (16.9%)	85 (26.6%)	85 (26.6%)	33 (10.3%)	3.9± 1.4

MD/CRNA response difference significant at .001 (x^2= 57.7)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	51 (16.6%)	101 (32.8%	42 (13.6%)	80 (26%)	20 (6.5%)	14 (4.5%)	2.9± 1.4
	CRNA (319)	19 (6%)	33 (10.3%	61 (19.1%)	78 (24.5%)	80 (25.1%)	48 (15%)	4.0± 1.4

MD/CRNA response difference significant at .001 (x^2=57.3)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	73 (11.6%)	153 (24.3%	87 (13.8)	170 (27%)	106 (16.8%)	41 (6.5%)	3.3± 1.5
	FUTURE	70 (11.1%)	135 (21.4%)	103 (16.3%)	160 (25.4%)	100 (15.9%)	62 (9.8%)	3.4± 1.5

Current/Future (Total Response) not significant at .05 (x^2=.05)
Current/Future (M.D. Response) not significant at .05 (x^2=.006)
Current/Future (CRNA Response) not significant at .05 (x^2=.13)

4. *Supervision of two nurse anesthetists makes work more pleasant and interesting than doing a case one's self.*

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
CURRENT	NTP (172)	14 (8.1%)	36 (20.9%)	57 (33.1%)	44 (25.6%)	10 (5.8%)	11 (6.4%)	3.2± 1.3
	RNATP (210)	17 (8.1%)	58 (27.6%)	57 (27.1%)	47 (22.4%)	16 (7.6%)	15 (7.1%)	3.2± 1.3
	MDATP	16 (7.9%)	60 (29.6%)	46 (22.7%)	49 (24.1%)	20 (9.9%)	12 (5.9%)	3.2± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.7)

RNATP/MDATP response difference not significant at .05 (x^2=.04)

NTP/MDATP response difference not significant at .05 (x^2=.29)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	NTP (172)	14 (8.1%)	32 (18.6%)	63 (36.6%)	39 (22.4%)	9 (5.2%)	15 (8.7%)	3.2± 1.3
	RNATP (210)	17 (8.1%)	50 (23.8%)	58 (27.6%)	42 (20%)	16 (7.6%)	27 (12.9%)	3.3± 1.5
	MDATP (203)	14 (6.9%)	58 (28.6%)	50 (24.6%)	47 (23.2%)	19 (9.4%)	15 (7.4%)	3.2± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.30)

RNATP/MDATP response difference not significant at .05 (x^2=.01)

NTP/MDATP response difference not significant at .05 (x^2=.12)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	25 (8.1%)	96 (31.2%)	55 (17.9%)	96 (31.2%)	31 (10.1%)	5 (1.6%)	3.1± 1.2
	CRNA (319)	24 (7.5%)	68 (21.3%)	115 (36.1%)	55 (17.2%)	19 (6%)	38 (11.9%)	3.3± 1.4

MD/CRNA response difference not significant at .05 (x^2=1.5)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	23 (7.5%)	91 (29.5%)	61 (19.8%)	90 (29.2%)	32 (10.4%)	11 (3.6%)	3.2± 1.3
	CRNA (319)	24 (7.5%)	58 (18.2%)	120 (37.6%)	48 (15%)	16 (5%)	53 (16.6%)	3.4± 1.5

MD/CRNA response difference not significant at .05 (x^2=1.9)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	49 (7.8%)	166 (26.3%)	170 (27%)	152 (24.1%)	50 (7.9%)	43 (6.8%)	3.2± 1.3
	FUTURE	47 (7.5%)	151 (24%)	181 (28.7%)	139 (22.1%)	48 (7.6%)	64 (10.2%)	3.3± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.001)
Current/Future (M.D. Response) not significant at .05 (x^2=.001)
Current/Future (CRNA Response) not significant at .05 (x^2=.001)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	25 (8.1%)	96 (31.2%)	55 (17.9%)	96 (31.2%)	31 (10.1%)	5 (1.6%)	3.1± 1.2
	CRNA (319)	24 (7.5%)	68 (21.3%)	115 (36.1%)	55 (17.2%)	19 (6%)	38 (11.9%)	3.3± 1.4

MD/CRNA response difference not significant at .05 (x^2=1.5)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	23 (7.5%)	91 (29.5%)	61 (19.8%)	90 (29.2%)	32 (10.4%)	11 (3.6%)	3.2± 1.3
	CRNA (319)	24 (7.5%)	58 (18.2%)	120 (37.6%)	48 (15%)	16 (5%)	53 (16.6%)	3.4± 1.5

MD/CRNA response difference not significant at .05 (x^2=1.9)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	49 (7.8%)	166 (26.3%)	170 (27%)	152 (24.1%)	50 (7.9%)	43 (6.8%)	3.2± 1.3
	FUTURE	47 (7.5%)	151 (24%)	181 (28.7%)	139 (22.1%)	48 (7.6%)	64 (10.2%)	3.3± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.001)
Current/Future (M.D. Response) not significant at .05 (x^2=.001)
Current/Future (CRNA Response) not significant at .05 (x^2=.001)

5. There may be scheduling difficulty in selecting appropriate cases for nurse anesthetists.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	8 (4.7%)	39 (22.7%)	18 (10.5%)	64 (37.2%)	38 (22.1%)	5 (2.9%)	3.6± 1.3
	RNATP (210)	10 (4.8%)	40 (19%)	18 (8.6%)	89 (42.4%)	46 (21.9%)	7 (3.3%)	3.7± 1.2
	MDATP (203)	19 (9.4%)	53 (26.1%)	15 (7.4%)	75 (36.9%)	32 (15.8%)	9 (4.4%)	3.4± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.61)

RNATP/MDATP response difference significant at .05 (x^2=6.5)

NTP/MDATP response difference not significant at .05 (x^2=2.3)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	5 (2.9%)	36 (20.9%)	24 (14%)	59 (34.3%)	38 (22.1%)	10 (5.8%)	3.7± 1.3
	RNATP (210)	9 (4.3%)	35 (16.7%)	30 (14.3%)	73 (34.8%)	47 (22.4%)	16 (7.6%)	3.8± 1.3
	MDATP (203)	19 (9.4%)	50 (24.6%)	20 (9.9%)	71 (35%)	31 (15.3%)	12 (5.9%)	3.4± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.182)

RNATP/MDATP response difference significant at .05 (x^2=6.3)

NTP/MDATP response difference not significant at .05 (x^2=3.3)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	24 (7.8%)	118 (38.3%)	31 (10.1%)	112 (36.4%)	16 (5.2%)	7 (2.3%)	3.0± 1.2
	CRNA (319)	14 (4.4%)	27 (8.5%)	24 (7.5%)	130 (40.8%)	108 (33.9%)	16 (5%)	4.1± 1.2

MD/CRNA response difference significant at .001 (x^2=78.7)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	22 (7.1%)	113 (36.7%)	41 (13.3%)	102 (33.1%)	18 (5.8%)	12 (3.9%)	3.1± 1.3
	CRNA (319)	12 (3.8%)	20 (6.3%)	38 (11.9%)	114 (35.7%)	106 (33.2%)	29 (9.1%)	4.2± 1.2

MD/CRNA response difference significant at .001 (x^2=91)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES 630	CURRENT	38 (6%)	145 (23%)	56 (8.9%)	243 (38.6%)	125 (19.8%)	23 (3.7%)	3.5± 1.3
	FUTURE	34 (5.4%)	133 (21%)	80 (12.7%)	217 (34.4%)	125 (19.8%)	41 (6.5%)	3.6± 1.3

Current/Future (Total Response) not significant at .05 (x^2=.005)
Current/Future (M.D.Response) not significant at .05 (x^2=.16)
Current/Future (CRNA Response) not significant at .05 (x^2=.29)

6. Independent actions of nurse anesthetists are a problem to physician supervisors of anesthetic management.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	8 (4.7%)	38 (22.1%)	22 (12.8%)	60 (34.9%)	35 (20.3%)	9 (5.2%)	3.6± 1.3
	RNATP (210)	13 (6.2%)	39 (18.6%)	29 (13.8%)	82 (39%)	40 (19%)	7 (3.3%)	3.6± 1.3
	MDATP (203)	18 (8.9%)	54 (26.6%)	34 (16.7%)	67 (33%)	20 (9.9%)	10 (4.5%)	3.2± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.16)

RNATP/MDATP response difference significant at .01 (x^2=7.9)

NTP/MDATP response difference significant at .05 (x^2=4.5)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	10 (5.8%)	36 (20.9%)	30 (17.4%)	52 (30.2%)	32 (18.6%)	12 (7%)	3.6± 1.3
	RNATP (210)	13 (6.2%)	34 (16.2%)	36 (17.1%)	72 (34.3%)	36 (17.1%)	19 (9%)	3.7± 1.3
	MDATP (203)	18 (8.9%)	53 (26.1%)	38 (18.7%)	59 (29.1%)	22 (10.8%)	13 (6.4%)	3.3± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.61)

RNATP/MDATP response difference significant at .01 (x^2=8.03)

NTP/MDATP response difference significant at .01 (x^2=8.03)

NTP/MDATP response difference not significant at .05 (x^2=3.3)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	31 (10.1%)	123 (39.9%)	44 (14.3%)	85 (27.6%)	15 (14.9%)	10 (3.2%)	2.9± 1.2
	CRNA (319)	10 (3.1%)	23 (7.2%)	45 (14.1%)	135 (42.3%)	88 (27.6%)	18 (5.6%)	4.0± 1.1

MD/CRNA response difference significant at .001 (x^2= over 100)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	31 (10.1%)	118 (38.3%)	54 (17.5%)	75 (24.4%)	15 (4.9%)	15 (4.9%)	2.9± 1.3
	CRNA (319)	12 (3.8%)	17 (5.3%)	57 (17.9%)	118 (37%)	83 (26%)	32 (10%)	4.1± 1.2

MD/CRNA response difference significant at .001 (x^2= over 100)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES	CURRENT	42 (6.7%)	147 (23.3%)	8.9 (14.1%)	221 (35.1%)	103 (16.3%)	28 (4.4%)	3.4± 1.3
	FUTURE	44 (7%)	136 (21.6%)	111 (17.6%)	194 (30.8%)	98 (15.6%)	47 (7.5%)	3.5± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.13)
Current/Future (M.D. Response) not significant at .05 (x^2=.10)
Current/Future (CRNA Response) not significant at .05 (x^2=.002)

7. Independent actions by nurse anesthetists endanger patients.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	6 (3.5%)	15 (8.7%)	21 (12.2%)	59 (34.3%)	64 (37.2%)	7 (4.1%)	4.1± 1.2
	RNATP (210)	9 (4.3%)	17 (8.1%)	22 (10.5%)	61 (29%)	90 (42.9%)	11 (5.2%)	4.1± 1.2
	MDATP (203)	17 (8.4%)	34 (16.7%)	41 (20.2%)	55 (27.1%)	47 (23.2%)	9 (4.4%)	3.5± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.017)

RNATP/MDATP response difference significant at .001 (x^2=14.9)

NTP/MDATP response difference significant at .001 (x^2= 13.2)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	7 (4.1%)	13 (7.6%)	23 (13.4%)	54 (31.4%)	65 (37.8%)	10 (5.8%)	4.1± 1.2
	RNATP (210)	9 (4.3%)	15 (7.1%)	28 (13.3%)	60 (28.6%)	76 (36.2%)	22 (10.5%)	4.2± 1.3
	MDATP (203)	17 (8.4%)	30 (14.8%)	49 (24.1%)	48 (23.6%)	48 (23.6%)	11 (5.4%)	3.6± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.001)

RNATP/MDATP response difference not significant at .05 (x^2=3.3)

NTP/MDATP response difference not significant at .05 (x^2=3.5)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	26 (8.4%)	72 (23.4%)	78 (25.3%)	93 (30.2%)	23 (7.5%)	16 (5.2%)	3.2± 1.3
	CRNA (319)	8 (2.5%)	6 (1.9%)	15 (4.7%)	86 (27%)	192 (60.2%)	12 (3.8%)	4.5± .91

MD/CRNA response difference significant at .001 (x^2= over 100)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	27 (8.8%)	66 (21.4%)	86 (27.9%)	88 (28.6%)	22 (7.1%)	19 (6.2%)	3.2± 1.3
	CRNA (319)	8 (2.5%)	3 (11%)	23 (7.2%)	79 (24.8%)	180 (56.4%)	26 (8.2%)	4.6± 1.0

MD/CRNA response difference significant at .001 (x^2= over 100)

TOTAL RESPONSES		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
	CURRENT	35 (5.6%)	79 (12.5%)	93 (14.8%)	180 (28.6%)	215 (34.1%)	28 (4.4%)	3.9± 1.3
	FUTURE	36	70	109	168	202	45	3.9± 1.3

Current/Future (Total Response) not significant at .05 (x^2=.001)
Current/Future (M.D. Response) not significant at .05 (x^2=.009)
Current/Future (CRNA Response) not significant at .05 (x^2=.044)

Hypothesis: Opinions regarding basic education and anesthesia education of nurse anesthetists do not vary.

1. Nurse anesthetists should participate in departmental mortality and morbidity conferences, and in departmental teaching conferences.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	83 (48.3%)	72 (41.9%)	5 (2.9%)	3 (1.7%)	1 (.6%)	7 (4.1%)	1.8± 1.1
	RNATP (210)	136 (64.8%)	68 (32.4%)	1 (.5%)	3 (1.4%)	0 (0%)	1 (.5%)	1.4± .66
	MDATP (203)	98 (48.3%)	86 (42.4%)	4 (2%)	4 (2%)	7 (3.4%)	3 (1.5%)	1.7± 1.0

NTP/RNATP response difference not significant at .05 (x^2=.23)

RNATP/MDATP response difference significant at .05 (x^2=4.1)

NTP/MDATP response difference not significant at .05 (x^2=1.4)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	87 (50.6%)	68 (39.5%)	7 (4.1%)	3 (1.7%)	0 (0%)	7 (4.1%)	1.7± 1.1
	RNATP (210)	135 (64.3%)	65 (31%)	0 (0%)	0 (0%)	0 (0%)	10 (4.8%)	1.5± 1.1
	MDATP (203)	103 (50.7%)	80 (39.4%)	5 (2.5%)	2 (1%)	6 (3%)	7 (3.4%)	1.8± 1.2

NTP/RNATP response difference not significant at .05 (x^2=1.4)

RNATP/MDATP response difference not significant at .05 (x^2=.08)

NTP/MDATP response difference not significant at .05 (x^2=.16)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	133 (43.2%)	148 (48.1%)	6 (1.9%)	6 (1.9%)	7 (2.3%)	7 (2.3%)	1.8 ± 1.0
	CRNA (319)	208 (65.2%)	92 (28.8%)	8 (2.5%)	4 (1.3%)	1 (.3%)	4 (1.3%)	1.4± .82

MD/CRNA response difference not significant at .05 (x^2=3.1)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	137 (44.5%)	144 (46.8%)	5 (1.6%)	3 (1%)	6 (1.9%)	13 (4.2%)	1.8± 1.2
	CRNA (319)	212 (66.5%)	84 (26.3%)	9 (2.8%)	2 (.6%)	0 (0%)	12 (3.8%)	1.5± 1.0

MD/CRNA response difference not significant at .05 (x^2=3.5)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES	CURRENT	343 (54.4%)	241 (38.3%)	14 (2.2%)	10 (1.6%)	8 (1.3%)	11 (1.7%)	1.6± .94
	FUTURE	351 (55.7%)	229 (36.3%)	14 (2.2%)	5 (.8%)	6 (1%)	25 (4%)	1.6± 1.1

Current/Future (Total Response) not significant at .05 (x^2=1.2)
Current/Future (M.D. Response) not significant at .05 (x^2=.38)
Current/Future (CRNA Response) not significant at .05 (x^2=3.5)

2. Nurse anesthesia training should include in depth study in chemistry, physics, physiology and pharmacology.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV. 7
CURRENT	NTP (172)	81 (47.1%)	70 (40.7	9 (5.2%)	5 (2.9%)	1 (.6%)	6 (3.5%)	1.8± 1.1
	RNATP (210)	149 (71%)	56 (26.7%)	1 (.5%)	3 (1.4%)	0 (0%)	1 (.5%)	1.3± .65
	MDATP (203)	97 (47.8%)	73 (36%)	12 (5.9%)	9 (4.4%)	7 (3.4%)	5 (2.5%)	1.9± 1.2

NTP/RNATP response difference not significant at .05 (x^2=.25)

RNATP/MDATP response difference significant at .05 (x^2=6.1)

NTP/MDATP response difference not significant at .05 (x^2=2.5)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV. 7
FUTURE	NTP (172)	81 (47.1%)	69 (40.1%)	8 (4.7%)	6 (3.5%)	0 (0%)	8 (4.7%)	1.8± 1.2
	RNATP (210)	151 (71.9%)	44 (21%)	1 (.5%)	3 (1.4%)	0 (0%)	11 (5.2%)	1.5± 1.2
	MDATP (203)	97 (47.8%)	75 (36.9%)	7 (3.4%)	8 (3.9%)	7 (3.4%)	9 (4.4%)	1.9± 1.3

NTP/RNATP response difference not significant at .05 (x^2=.98)

RNATP/MDATP response difference significant at .01 (x^2=7.7)

NTP/MDATP response difference not significant at .05 (x^2=1.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	127 (41.2%)	130 (42.2%)	21 (6.8%)	13 (4.2%)	8 (2.6%)	9 (2.9%)	1.9± 1.2
	CRNA (319)	226 (70.8%)	81 (25.4%)	5 (1.6%)	4 (1.3%)	0 (0%)	3 (.9%)	1.4± .73

MD/CRNA response difference significant at .001 (x^2=12.7)

TOTAL RESPONSES627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	133 (43.2%)	124 (40.3%)	17 (5.5%)	14 (4.5%)	6 (1.9%)	14 (4.5%)	2.0± 1.2
	CRNA (319)	225 (70.5%)	72 (22.6%)	3 (.9%)	3 (.9%)	1 (.3%)	15 (4.7%)	1.5± 1.1

MD/CRNA response difference significant at .001 (x^2=11.1)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	354 (56.2%)	213 (33.8%)	26 (4.1%)	17 (2.7%)	8 (1.3%)	12 (1.9%)	1.6± 1.0
	FUTURE	359 (57%)	198 (31.4%)	20 (3.2%)	17 (2.7%)	7 (1.1%)	29 (4.6%)	1.7± 1.2

Current/Future (Total Response) not significant at .05 (x^2=.008)
Current/Future (M.D. Response) not significant at .05 (x^2=.001)
Current/Future (CRNA Response) not significant at .05 (x^2=.06)

3. Nurse's training is the most suitable background for the non-physician anesthetist.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	55 (32%)	54 (31.4%)	30 (17.4%)	23 (13.4%)	2 (1.2%)	8 (4.7%)	2.4± 1.3
	RNATP (210)	91 (43.3%)	64 (30.5%)	28 (13.3%)	21 (10%)	5 (2.4%)	1 (.5%)	2.0± 1.1
	MDATP (203)	48 (23.6%)	63 (31%)	48 (23.6%)	19 (9.4%)	18 (8.9%)	7 (3.4%)	2.6± 1.4

NTP/RNATP response difference not significant at .05 (x^2=1.4)

RNATP/MDATP response difference significant at .05 (x^2=5.3)

NTP/MDATP response difference not significant at .05 (x^2=.64)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	52 (30.2%)	48 (27.1%)	35 (20.3%)	20 (11.6%)	6 (3.5%)	11 (6.4%)	2.5± 1.4
	RNATP (210)	79 (37.6%)	46 (21.9%)	51 (24.3%)	16 (7.6%)	7 (3.3%)	11 (5.2%)	2.3± 1.0
	MDATP (203)	47 (23.2%)	51 (25.1%)	55 (27.1%)	22 (10.8%)	18 (8.9%)	10 (4.9%)	2.7± 1.4

NTP/RNATP response difference not significant at .05 (x^2=.88)

RNATP/MDATP response difference significant at .01 (x^2=6.8)

NTP/MDATP response difference not significant at .05 (x^2=2.0)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	51 (16.6%)	113 (36.7%)	69 (22.4%)	45 (14.6%)	20 (6.5%)	10 (3.2%)	2.6± 1.3
	CRNA (319)	154 (48.3%)	82 (25.7%)	46 (14.4%)	24 (7.5%)	6 (1.9%)	7 (2.2%)	2.0± 1.2

MD/CRNA response difference significant at .001 (x^2=22.1)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	48 (15.6%)	97 (31.5%)	81 (26.3%)	45 (14.6%)	22 (7.1%)	15 (4.9%)	2.8± 1.3
	CRNA (319)	140 (43.9%)	59 (18.5%)	72 (22.6%)	19 (6%)	10 (3.1%)	19 (6%)	2.2± 1.4

MD/CRNA response difference significant at .001 (x^2=21.8)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	206 (32.7%)	195 (31%)	116 (18.4%)	69 (11%)	27 (4.3%)	17 (2.7%)	2.3± 1.3
	FUTURE	189 (30%)	156 (24.8%)	154 (24.4%)	64 (10.2%)	33 (5.2%)	34 (5.4%)	2.5± 1.4

Current/Future (Total Response) not significant at .05 (x^2=.84)
Current/Future (M.D. Response) not significant at .05 (x^2=.13)
Current/Future (CRNA Response) not significant at .05 (x^2=.13)

4. Nurse's training is more detailed than necessary for individuals interested in non-physician anesthesia training.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	2 (1.2%)	18 (10.5%)	20 (11.6%)	88 (51.2%)	37 (21.5%)	7 (4.1%)	3.9± 1.0
	RNATP (210)	6 (2.9%)	23 (11%)	26 (12.4%)	89 (42.4%)	65 (31%)	1 (.5%)	3.9± 1.1
	MDATP (203)	8 (3.9%)	20 (9.9%)	30 (14.8%)	90 (44.3%)	48 (23.6%)	7 (3.4%)	3.8± 1.1

NTP/RNATP response difference not significant at .05 (x^2=.13)

RNATP/MDATP response difference not significant at .05 (x^2=0.1)

NTP/MDATP response difference not significant at .05 (x^2=.35)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	3 (1.7%)	17 (9.9%)	25 (14.5%)	79 (45.9%)	39 (22.7%)	9 (5.2%)	3.9± 1.1
	RNATP (210)	5 (2.4%)	21 (10%)	30 (14.3%)	82 (39%)	58 (27.6%)	14 (6.7%)	4.0± 1.1
	MDATP (203)	7 (3.4%)	18 (8.9%)	34 (16.7%)	85 (41.9%)	47 (23.2%)	12 (5.9%)	3.9± 1.1

NTP/RNATP response difference not significant at .05 (x^2=.02)

RNATP/MDATP response difference not significant at .05 (x^2=.008)

NTP/MDATP response difference not significant at .05 (x^2=.032)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	10 (3.2%)	37 (12%)	53 (17.2%)	140 (44.5%)	57 (18.5%)	11 (3.6%)	3.7± 1.1
	CRNA (319)	6 (1.9%)	30 (9.4%)	27 (8.5%)	142 (44.5%)	108 (33.9%)	6 (1.9%)	4.0±1.0

MD/CRNA response difference significant at .05 (x^2=4.0)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	9 (2.9%)	37 (12%)	56 (18.2%)	132 (42.9%)	55 (17.9%)	19 (6.2%)	3.8± 1.1
	CRNA	6 (1.9%)	25 (7.8%)	38 (11.9%)	126 (39.5%)	105 (32.9%)	19 (6%)	4.1± 1.1

MD/CRNA response difference significant at .05 (x^2=5.3)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES	CURRENT	16 (2.5%)	67 (10.6%)	81 (12.9%)	282 (44.8%)	167 (26.5%)	17 (2.7%)	3.9±1.1
	FUTURE	15 (2.4%)	62 (9.8%)	95 (15.1%)	258 (41%)	162 (25.7%)	38 (6%)	4.0±1.1

Current/Future (Total Response) not significant at .05 (x^2=.001)
Current/Future (M.D. Response) significant at .05 (x^2=4.8)
Current/Future (CRNA Response) not significant at .05 (x^2=.02)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	10 (3.2%)	37 (12%)	53 (17.2%)	140 (44.5%)	57 (18.5%)	11 (3.6%)	3.7± 1.1
	CRNA (319)	6 (1.9%)	30 (9.4%)	27 (8.5%)	142 (44.5%)	108 (33.9%)	6 (1.9%)	4.0±1.0

MD/CRNA response difference significant at .05 (x^2=4.0)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	9 (2.9%)	37 (12%)	56 (18.2%)	132 (42.9%)	55 (17.9%)	19 (6.2%)	3.8± 1.1
	CRNA	6 (1.9%)	25 (7.8%)	38 (11.9%)	126 (39.5%)	105 (32.9%)	19 (6%)	4.1± 1.1

MD/CRNA response difference significant at .05 (x^2=5.3)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES	CURRENT	16 (2.5%)	67 (10.6%)	81 (12.9%)	282 (44.8%)	167 (26.5%)	17 (2.7%)	3.9±1.1
	FUTURE	15 (2.4%)	62 (9.8%)	95 (15.1%)	258 (41%)	162 (25.7%)	38 (6%)	4.0±1.1

Current/Future (Total Response) not significant at .05 (x^2=.001)
Current/Future (M.D. Response) significant at .05 (x^2=4.8)
Current/Future (CRNA Response) not significant at .05 (x^2=.02)

5. Nurse's training is not an adequate background for individuals interested in non-physician anesthesia training and should be supplemented with other subjects, taught at the collegiate level, prior to admission to an anesthesia training program.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	13 (7.6%)	32 (18.6%)	27 (15.7%)	62 (36%)	30 (17.4%)	8 (4.7%)	3.5± 1.3
	RNATP (210)	20 (9.5%)	56 (26.7%)	30 (14.3%)	72 (34.3%)	27 (12.7%)	5 (2.4%)	3.2± 1.3
	MDATP (203)	33 (16.3%)	44 (21.7%)	39 (19.2%)	59 (29.1%)	17 (8.4%)	11 (5.4%)	3.1± 1.4

NTP/RNATP response difference not significant at .05 (x^2=3.2)

RNATP/MDATP response difference not significant at .05 (x^2=1.3)

NTP/MDATP response difference significant at .01 (x^2=8.4)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	15 (8.7%)	32 (18.6%)	31 (18%)	53 (30.8%)	29 (16.9%)	12 (7%)	3.5± 1.4
	RNATP (210)	28 (13.3%)	49 (23.3%)	39 (18.6%)	57 (27.1%)	21 (10%)	16 (17.6%)	3.2± 1.4
	MDATP (203)	34 (16.7%)	46 (22.7%)	44 (21.7%)	53 (26.1%)	13 (6.4%)	13 (6.4%)	3.0± 1.4

NTP/RNATP response difference significant at .05 (x^2=4.5)

RNATP/MDATP response difference not significant at .05 (x^2=.42)

NTP/MDATP response difference significant at .01 (x^2=7.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	33 (10.7%)	78 (25.3%)	69 (22.4%)	99 (32.1%)	15 (4.9%)	14 (4.5%)	3.1± 1.3
	CRNA (319)	39 (12.2%)	60 (18.8%)	37 (11.6%)	107 (33.5%)	64 (20.1%)	12 (3.8%)	3.4± 1.4

MD/CRNA response difference significant at .01 (x^2=7.6)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	38 (12.3%)	72 (23.4%)	75 (24.4%)	91 (29.5%)	13 (4.2%)	19 (6.2%)	3.1± 1.3
	CRNA (319)	47 (14.7%)	59 (18.5%)	53 (16.6%)	81 (25.4%)	56 (17.6%)	23 (7.2%)	3.3± 1.5

MD/CRNA response difference not significant at .05 (x^2=2.4)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
TOTAL RESPONSES	CURRENT	72 (11.4%)	138 (21.9%)	107 (17%)	208 (33%)	79 (12.5%)	26 (4.1%)	3.3± 1.3
	FUTURE	85 (13.5%)	131 (20.8%)	129 (20.5%)	174 (27.6%)	69 (11%)	42 (6.7%)	3.2± 1.4

Current/Future (Total Response) not significant at .05 (x^2=3.2)
Current/Future (M.D. Response) not significant at .05 (x^2=.114)
Current/Future (CRNA Response) not significant at .05 (x^2=2.3)

6a. Nurse anesthesia training should be at the Certificate Level.

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	39 (22.7%)	57 (33.1%)	17 (9.9%)	13 (7.6%)	8 (4.7%)	38 (22.1%)	3.0± 1.9
	RNATP (210)	36 (17.1%)	73 (34.8%)	10 (4.8%)	16 (7.6%)	10 (4.8%)	65 (31%)	3.4± 2.0
	MDATP (203)	28 (13.8%)	63 (31%)	15 (7.4%)	19 (9.4%)	14 (6.9%)	64 (31.5%)	3.6± 1.9

NTP/RNATP response difference not significant at .05 (x^2=.011)
RNATP/MDATP response difference not significant at .05 (x^2=1.6)
NTP/MDATP response difference not significant at .05 (x^2=2.1)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	25 (14.5%)	39 (22.7%)	25 (14.5%)	23 (13.4%)	13 (7.6%)	47 (27.3%)	3.6± 1.8
	RNATP (210)	20 (9.5%)	32 (15.2%)	26 (12.4%)	26 (12.4%)	14 (6.7%)	92 (43.8%)	4.2± 1.8
	MDATP (203)	22 (10.8%)	44 (21.7%)	23 (11.3%)	26 (12.8%)	17 (8.4%)	71 (35%)	3.9± 1.9

NTP/RNATP response difference not significant at .05 (x^2=.83)
RNATP/MDATP response difference not significant at .05 (x^2=.19)
NTP/MDATP response difference not significant at .05 (x^2=.14)

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	34 (11%)	103 (33.4%)	30 (9.7%)	36 (11.7%)	24 (7.8%)	81 (26.3%)	3.5± 1.8
	CRNA (319)	75 (23.5%)	101 (31.7%)	17 (5.3%)	16 (5%)	12 (3.8%)	98 (30.7%)	3.3± 2.0

MD/CRNA response difference significant at .001 (x^2=15.4)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	28 (9.1%)	68 (22.1%)	37 (12%)	47 (15.3%)	29 (9.4%)	99 (32.1%)	3.9± 1.8
	CRNA (319)	43 (13.5%)	53 (16.6%)	43 (13.5%)	32 (10%)	21 (6.6%)	127 (39.8%)	4.0± 1.9

MD/CRNA response difference significant at .05 (x^2=5.8)

TOTAL RESPONSES		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	110 (17.5%)	205 (32.5%)	48 (7.6%)	52 (8.3%)	36 (5.7%)	179 (28.4%)	3.3± 1.9
	FUTURE	72 (11.4%)	122 (19.4%)	81 (12.9%)	79 (12.5%)	50 (7.9%)	226 (35.9%)	3.9± 1.9

Current/Future (Total Response) significant at .001 (x^2=27.2)
Current/Future (M.D. Response) significant at .001 (x^2=13.0)
Current/Future (CRNA Response) significant at .001 (x^2=22)

6b. Nurse anesthesia training should be at the Baccalaureate level.

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	25 (14.5%)	49 (28.5%)	26 (15.1%)	24 (14%)	6 (3.5%)	42 (24.4%)	3.4± 1.8
	RNATP (210)	50 (23.8%)	62 (29.5%)	25 (11.9%)	19 (9%)	3 (1.4%)	51 (24.3%)	3.1± 1.9
	MDATP (203)	40 (19.7%)	63 (31%)	23 (11.3%)	19 (9.4%)	2 (1%)	56 (27.6%)	3.3± 1.9

NTP/RNATP response difference significant at .05 (x^2=5.1)

RNATP/MDATP response difference not significant at .05 (x^2=.006)

NTP/MDATP response difference significant at .05 (x^2=4.0)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	29 (16.9%)	59 (34.3%)	22 (12.8%)	17 (9.9%)	2 (1.2%)	43 (25%)	3.2± 1.8
	RNATP (210)	66 (31.4%)	65 (31%)	21 (10%)	7 (3.3%)	4 (1.9%)	47 (22.4%)	2.8± 1.9
	MDATP (203)	41 (20.2%)	57 (28.1%)	19 (9.4%)	18 (8.9%)	4 (2%)	64 (31.5%)	3.4± 2.0

NTP/RNATP response difference significant at .05 (x^2=4.9)

RNATP/MDATP response difference significant at .05 (x^2=5.7)

NTP/MDATP response difference not significant at .05 (x^2=.004)

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	42 (13.6%)	104 (33.8%)	46 (14.9%)	38 (12.3%)	3 (1%)	75 (24.4%)	3.3± 1.8
	CRNA (319)	83 (26%)	84 (26.3%)	34 (10.7%)	25 (7.8%)	8 (2.5%)	85 (26.6%)	3.1± 2.0

MD/CRNA response difference not significant at .05 (x^2=1.5)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	53 (17.2%)	101 (32.8%)	40 (13%)	30 (9.7%)	6 (1.9%)	78 (25.3%)	3.2± 1.9
	CRNA (319)	92 (28.8%)	93 (29.2%)	29 (9.1%)	12 (3.8%)	5 (1.6%)	88 (27.6%)	3.0± 2.0

MD/CRNA response difference significant at .01 (x^2=8.4)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES 627	CURRENT	125 (19.8%)	189 (30%)	81 (12.9%)	63 (10%)	12 (1.9%)	160 (25.4%)	3.2± 1.9
	FUTURE	145 (23%)	195 (31%)	70 (11.1%)	42 (6.7%)	12 (1.9%)	166 (26.3%)	3.1± 1.9

Current/Future (Total Response) significant at .05 (x^2=4.0)
Current/Future (M.D. Response) not significant at .05 (x^2=.35)
Current/Future (CRNA Response) significant at .05 (x^2=5.3)

6c. Nurse anesthesia training should be at the Master's level.

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	18 (10.5%)	17 (9.9%)	23 (13.4%)	49 (28.5%)	13 (7.6%)	52 (30.2%)	4.0± 1.7
	RNATP (210)	25 (11.9%)	25 (11.9%)	31 (14.8%)	20 (9.5%)	19 (9%)	90 (42.9%)	4.2± 1.9
	MDATP (203)	20 (0.0%)	32 (15.8%)	27 (13.3%)	32 (15.8%)	12 (5.9%)	80 (39.4%)	4.1± 1.8

NTP/RNATP response difference significant at .01 (x^2=6.8)

RNATP/MDATP response difference not significant at .05 (x^2=.02)

NTP/MDATP response difference significant at .05 (x^2=5.7)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	35 (20.3%)	26 (15.1%)	26 (15.1%)	39 (22.7%)	9 (5.2%)	37 (21.5%)	3.4± 1.8
	RNATP (210)	41 (21.4%)	38 (18.1%)	28 (13.3%)	14 (6.7%)	17 (8.1%)	68 (32.4%)	3.6± 2.0
	MDATP (203)	42 (20.7%)	43 (21.2%)	26 (12.8%)	20 (9.9%)	9 (4.4%)	63 (31%)	3.5± 2.0

NTP/RNATP response difference significant at .05 (x^2=6.2)

RNATP/MDATP response difference not significant at .05 (x^2=.02)

NTP/MDATP response difference significant at .01 (x^2=7.7)

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	29 (9.4%)	35 (11.4%)	49 (15.9%)	58 (18.8%)	23 (7.5%)	114 (37%)	4.1± 1.7
	CRNA (319)	39 (12.2%)	41 (12.9%)	37 (11.6%)	51 (16%)	23 (7.2%)	128 (40.1%)	4.1± 1.8

MD/CRNA response difference not significant at .05 (x^2=1.5)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	51 (16.6%)	53 (17.2%)	43 (14%)	47 (15.3%)	20 (6.5%)	94 (30.5%)	3.7± 1.9
	CRNA (319)	78 (24.5%)	60 (18.8%)	40 (12.5%)	32 (10%)	18 (5.6%)	91 (28.5%)	3.4± 2.0

MD/CRNA response difference significant at .01 (x^2=5.9)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO RESPONSE 6	MEAN ± ST. DEV.7
	CURRENT	68 (10.8%)	76 (12.1%)	87 (13.8%)	109 (17.3%)	47 (7.5%)	243 (38.6%)	4.1± 1.8
	FUTURE	129 (20.5%)	113 (17.9%)	84 (13.3%)	79 (12.5%)	39 (6.2%)	186 (29.5%)	3.5± 1.9

Current/Future (Total Response) significant at .001 (x^2=24.1)
Current/Future (M.D. Response) significant at .01 (x^2=8.1)
Current/Future (CRNA Response) significant at .001 (x^2=15.9)

7a. Minimum academic achievement for admission to a Nurse Anesthesia training program should be a nursing diploma (3 years).

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	51 (29.7%)	56 (32.6%)	7 (4.1%)	15 (8.7%)	2 (1.2%)	41 (23.8%)	2.9± 2.0
	RNATP (210)	44 (21%)	70 (33.3%)	11 (5.2%)	9 (4.3%)	5 (2.4%)	71 (33.8%)	3.4± 2.1
	MDATP (203)	38 (18.7%)	75 (36.9%)	9 (4.4%)	12 (5.9%)	9 (4.4%)	60 (29.6%)	3.3± 2.0

NTP/RNATP response difference not significant at .05 (x^2=.23)

RNATP/MDATP response difference not significant at .05 (x^2=.89)

NTP/MDATP response difference not significant at .05 (x^2=.07)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	33 (19.2%)	40 (23.3%)	21 (12.2%)	22 (12.8%)	4 (2.3%)	52 (30.2%)	3.5± 1.9
	RNATP (210)	22 (10.5%)	32 (15.2%)	25 (11.9%)	18 (8.6%)	8 (3.8%)	105 (50%)	4.3± 1.9
	MDATP (203)	28 (13.8%)	43 (21.2%)	25 (12.3%)	20 (9.9%)	13 (6.4%)	74 (36.5%)	3.8± 1.9

NTP/RNATP response difference not significant at .05 (x^2=.84)

RNATP/MDATP response difference not significant at .05 (x^2=.002)

NTP/MDATP response difference not significant at .05 (x^2=.77)

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	42 (13.6%)	110 (35.7%)	19 (6.2%)	22 (7.1%)	12 (3.9%)	103 (33.4%)	3.5± 2.0
	CRNA (319)	99 (31%)	101 (31.7%)	11 (3.4%)	14 (4.4%)	5 (1.6%)	89 (27.9%)	3.0± 2.0

MD/CRNA response difference significant at .01 (x^2=7.3)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	26 (8.4%)	77 (25%)	28 (9.1%)	30 (9.7%)	18 (5.8%)	129 (41.9%)	4.1± 1.9
	CRNA (319)	61 (19.1%)	44 (13.8%)	48 (15%)	31 (9.7%)	9 (2.8%)	126 (39.5%)	3.8± 2.0

MD/CRNA response difference not significant at .05 (x^2=.44)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES 627	CURRENT	142 (22.5%)	211 (33.5%)	30 (4.8%)	37 (5.9%)	18 (2.9%)	192 (30.5%)	3.2± 2.0
	FUTURE	88 (14%)	121 (19.2%)	76 (12.1%)	62 (9.8%)	28 (4.4%)	255 (40.5%)	3.9± 2.0

Current/Future (Total Response) significant at .001 (x^2=28.2)
Current/Future (M.D. Response) significant at .01 (x^2=7.5)
Current/Future (CRNA Response) significant at .001 (x^2=21.6)

7b. Minimum academic achievement for admission to a nurse anesthesia training program should be an associate degree. (2 years)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	2 (1.2%)	30 (17.4%)	16 (9.3%)	31 (18%)	19 (11%)	74 (43%)	4.5± 1.6
	RNATP (210)	25 (11.9%)	45 (21.4%)	17 (8.1%)	15 (7.1%)	16 (7.6%)	92 (43.8%)	4.1± 2.0
	MDATP (203)	6 (3%)	18 (8.9%)	15 (7.4%)	41 (20.2%)	27 (13.3%)	96 (47.3%)	4.7± 1.5

NTP/RNATP response difference significant at .001 (x^2=15.6)

RNATP/MDATP response difference significant at .001 (x^2=34.3)

NTP/MDATP response difference not significant at .05 (x^2=2.8)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	2 (1.2%)	22 (12.8%)	16 (9.3%)	31 (18%)	22 (12.8%)	79 (45.9%)	4.7± 1.5
	RNATP (210)	14 (6.7%)	18 (8.6%)	15 (7.1%)	29 (13.8%)	16 (7.6%)	118 (56.2%)	4.8± 1.7
	MDATP (203)	5 (2.5%)	13 (6.4%)	15 (7.4%)	41 (20.2%)	30 (14.8%)	99 (48.8%)	4.8± 1.4

NTP/RNATP response difference not significant at .05 (x^2=1.4)

RNATP/MDATP response difference significant at .01 (x^2=7.9)

NTP/MDATP response difference not significant at .05 (x^2=2.1)

TOTAL RESPONSES 308		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	9 (2.9%)	39 (12.7%)	28 (9.1%)	47 (15.3%)	29 (9.4%)	156 (50.6%)	4.7± 1.6
	CRNA	27 (8.5%)	60 (18.8%)	23 (7.2%)	42 (13.2%)	37 (11.6%)	130 (40.8%)	4.2± 1.8

MD/CRNA response difference significant at .05 (x^2=4.8)

TOTAL RESPONSES 319		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	8 (2.6%)	27 (8.8%)	26 (8.4%)	52 (16.9%)	34 (11%)	161 (52.3%)	4.8± 1.5
	CRNA (319)	14 (4.4%)	29 (9.1%)	25 (7.8%)	50 (15.7%)	41 (12.9%)	160 (50.2%)	4.7± 1.6

MD/CRNA response difference not significant at .05 (x^2=.169)

		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
TOTAL RESPONSES 627	CURRENT	37 (5.9%)	99 (15.9%)	52 (8.3%)	90 (14.3%)	66 (10.5%)	286 (45.4%)	4.8± 1.5
	FUTURE	23 (3.7%)	56 (8.9%)	52 (8.3%)	103 (16.3%)	75 (11.9%)	321 (51%)	4.7± 1.6

Current/Future (Total Response) significant at .001 (x^2=13.7)
Current/Future (M.D. Response) not significant at .05 (x^2=2.2)
Current/Future (CRNA Response) significant at .001 (x^2=11.7)

7c. Minimum academic achievement for admission to a nurse anesthesia training program should be a Baccalaureate degree in nursing.

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP -(172)	17 (9.9%)	40 (23.3%)	19 (11%)	26 (15.1%)	7 (4.1%)	63 (30.6%)	3.9± 1.9
	RNATP (210)	28 (13.3%)	51 (24.3%)	11 (5.2%)	11 (5.2%)	7 (3.3%)	102 (48.6%)	4.1± 2.1
	MDATP (203)	33 (16.3%)	55 (27.1%)	18 (8.9%)	19 (9.4%)	5 (2.5%)	73 (36%)	3.6± 2.0

NTP/RNATP response difference significant at .05 (x^2=6.8)

RNATP/MDATP response difference not significant at .05 (x^2=.118)

NTP/MDATP response difference significant at .05 (x^2=5.0)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	23 (13.4%)	51 (29.7%)	19 (11%)	13 (7.6%)	5 (2.9%)	61 (35.5%)	3.6± 2.0
	RNATP (210)	42 (20%)	50 (23.8%)	12 (5.7%)	7 (3.3%)	6 (2.9%)	93 (44.3%)	3.8± 2.1
	MDATP (203)	42 (20.7%)	43 (21.2%)	18 (8.9%)	14 (6.9%)	5 (2.5%)	81 (39.9%)	3.7± 2.1

NTP/RNATP response difference not significant at .05 (x^2=1.4)

RNATP/MDATP response difference not significant at .05 (x^2=.98)

NTP/MDATP response difference not significant at .05 (x^2=.002)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	42 (13.6%)	82 (26.6%)	28 (9.1%)	34 (11%)	6 (1.9%)	116 (37.7%)	3.7± 2.0
	CRNA (319)	42 (13.2%)	72 (22.6%)	25 (7.8%)	23 (7.2%)	14 (4.4%)	143 (44.8%)	4.0± 2.0

MD/CRNA response difference not significant at .05 (x^2=.01)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	55 (17.9%)	86 (27.9%	23 (7.5%)	24 (7.8%)	7 (2.3%)	113 (36.7%)	3.6± 2.0
	CRNA (319)	59 (18.5%)	67 (21%)	32 (10%)	10 (3.1%)	10 (3.1%)	141 (44.2%)	3.8± 2.1

MD/CRNA response difference not significant at .05 (x^2=.80)

TOTAL RESPONSES		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	85 (13.5%)	154 (24.4%	54 (8.6%)	57 (9%)	21 (3.3%)	259 (41.1%)	3.9± 2.0
	FUTURE	115 (18.3%)	153 (24.3%	56 (8.9%)	34 (5.4%)	18 (2.9%)	254 (40.3%)	3.7± 2.1

Current/Future (Total Response) significant at .05 (x^2=6.3)
Current/Future (M.D. Response) not significant at .05 (x^2=1.7)
Current/Future (CRNA Response) significant at .05 (x^2=4.9)

7d. Minimum academic achievement for admission to a nurse anesthesia training program should be a Baccalaureate degree in any field, but with a nursing license and subject pre-requisites. (i.e. chemistry)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
CURRENT	NTP (172)	19 (11%)	25 (14.5%)	23 (13.4%)	32 (18.6%)	17 (9.9%)	56 (32.6%)	4.0± 1.8
	RNATP (210)	33 (15.7%)	46 (21.9%)	15 (17.1%)	13 (6.2%)	9 (4.3%)	94 (44.8%)	4.0± 2.0
	MDATP (203)	24 (11.8%)	37 (18.2%)	32 (15.8%)	14 (6.9%)	9 (4.4%)	87 (42.9%)	4.0± 1.9

NTP/RNATP response difference significant at .001 (x^2=19.6)

RNATP/MDATP response difference not significant at .05 (x^2=.701)

NTP/MDATP response difference significant at .001 (x^2=10.7)

TOTAL RESPONSES 585		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	NTP (172)	29 (16.9%)	32 (18.6%)	23 (13.4%)	26 (15.1%)	13 (7.6%)	49 (28.5%)	3.6± 1.9
	RNATP (210)	59 (28.1%)	46 (21.9%)	16 (7.6%)	8 (3.8%)	8 (3.8%)	73 (34.8%)	3.4± 2.1
	MDATP (203)	37 (18.2%)	47 (23.2%)	28 (13.8%)	13 (6.4%)	11 (5.4%)	67 (33%)	3.6± 2.0

NTP/RNATP response difference significant at .001 (x^2=18.1)

RNATP/MDATP response difference not significant at .05 (x^2=2.6)

NTP/MDATP response difference significant at .05 (x^2=6.2)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST.DEV.7
CURRENT	M.D. (308)	30 (9.7%)	57 (18.5%)	49 (15.9%)	34 (11%)	10 (3.2%)	128 (41.6%)	4.0± 1.9
	CRNA (319)	51 (16%)	57 (17.9%)	29 (9.1%)	24 (7.5%)	28 (8.8%)	130 (40.8%)	4.0± 2.0

MD/CRNA response difference not significant at .01 (x^2=.005)

TOTAL RESPONSES 627		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
FUTURE	M.D. (308)	48 (15.6%)	71 (23.1%)	43 (14%)	31 (10.1%)	11 (3.6%)	104 (33.8%)	3.6± 1.9
	CRNA (319)	86 (27%)	59 (18.5%)	33 (10.3%)	15 (4.7%)	24 (7.5%)	101 (31.7%)	3.4± 2.1

MD/CRNA response difference not significant at .05 (x^2=.89)

TOTAL RESPONSES 630		STRONGLY AGREE 1	AGREE 2	UNCERTAIN 3	DISAGREE 4	STRONGLY DISAGREE 5	NO 6 RESPONSE	MEAN ± ST. DEV.7
	CURRENT	81 (12.9%)	114 (18.1%)	78 (12.4%)	60 (9.5%)	39 (6.2%)	258 (41%)	4.0± 1.9
	FUTURE	134 (21.4%)	130 (42%)	76 (12.1%)	48 (7.6%)	36 (5.7%)	205 (32.5%)	3.5± 2.0

Current/Future (Total Response) significant at .01 (x^2=6.7)
Current/Future (M.D. Response) not significant at .05 (x^2=1.6)
Current/Future (CRNA Response) significant at .05 (x^2=5.1)

APPENDIX V

APPENDIX V

Policy for Nurse Anesthetists at UCLA Hospitals and Clinics

Staff Nurse Anesthetists

Training

A nurse anesthetist must be a licensed R.N. in the State of California and a graduate of an approved School of Nurse Anesthesia within the United States.

Duties

A nurse anesthetist

1. performs at all times under the direction and supervision of an anesthesiologist.
2. reviews clinical charts and recommends specific types of general anesthesia.
3. interviews patients to discuss type of anesthesia to be used, to reassure patients and to obtain informed consents for the administration of anesthesia.
4. orders pre-operative medication. All orders must be countersigned by an anesthesiologist within 24 hours.
5. administers general anesthetic agents by inhalation, endotracheal intubation, intravenously or topically induces anesthesia to the proper state of narcosis and manages throughout the surgical procedure.
6. determines need for and administers parenteral fluids, including plasma and blood, setting up solutions and maintaining appropriate flow.
7. assists an anesthesiologist or surgeon during emergencies occurring ~~within the~~ inside the operating and recovery areas.
8. assists a physician during emergencies occurring outside the operating and recovery areas.
9. assists in post-anesthesia care.

Student Nurse Anesthetists

Training

A student nurse anesthetist must be a licensed R.N. in the State of California and be enrolled either in the UCLA School of Nurse Anesthesia or another approved School of Nurse Anesthesia within the United States.

Duties

A student nurse anesthetist performs all the duties described for a nurse anesthetist under the direction and supervision of a nurse anesthetist on the faculty of the UCLA School of Nurse Anesthesia or of an anesthesiologist.