Veteran dedication makes them more efficient in receiving directions on medication, driving veterans to be more medication compliant

Franklin Ray Howerton

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VETERAN DEDICATION MAKES THEM MORE EFFICIENT IN RECEIVING
DIRECTIONS ON MEDICATION, DRIVING VETERANS TO BE MORE
MEDICATION COMPLIANT

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Health Services Administration

by
Franklin Ray Howerton Jr.

June 2001
VETERAN DEDICATION MAKES THEM MORE EFFICIENT IN RECEIVING DIRECTIONS ON MEDICATION, DRIVING VETERANS TO BE MORE MEDICATION COMPLIANT

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ABSTRACT

There are several factors that affect medication compliance. A few examples are, age, gender, and education; while factors for medication non-compliance include complex medication schedules, inadequate individual teaching, poor vision, loss of hearing, loss of dexterity, low literacy. The elderly have special situations and requirements that hamper compliancy.

The purpose of this study was to determine if there is a relationship between having military discipline, the military rank, the branch of service, the number of years served, reserve status and if these factors would affect a veterans' compliancy in taking daily medications. Age and gender were also included in the study. Length of time taking daily medication, taking medication on a timely basis, taking the correct dosage of medication, do you skip taking medication? Feeling that medication is beneficial? This study used a questionnaire that was filled out by 173 veterans and 163 non-veteran individuals concerning their compliancy status according to these factors of possible medication compliancy.
TABLE OF CONTENTS

ABSTRACT ........................................ iii

LIST OF FIGURES .................................. vii

CHAPTER ONE: INTRODUCTION

Reason For Noncompliance ............................. 1

Net Barriers ........................................ 4

Explanations On Why Net Barriers May Be Less Important For Long Term Treatment .......... 6

Additional Findings ................................ 7

Age ................................................... 7

Other Variables .................................... 9

Gender as a Barrier .................................. 10

A Tool For Screening Individual Compliance and Barriers To Compliance ......................... 11

Veteran Compliance ................................ 16

Hypotheses .......................................... 17

Length of Time Taking Medication .................... 17

Frequency of Taking Daily Medication ............... 17

Veteran’s Compliance for Taking Medication On a Timely Basis .................................. 17

Veteran’s Compliance for Taking Correct Dosage of Medication .................................. 17

Do You Skip Taking Medication ....................... 18

Feeling That Medication is Beneficial ............... 18

Gender of Individual Affects Compliance .......... 18
Age of the Individual Affects Compliance ... 18
Length of Service Affects Compliance ... ... 19
Reserve Service Affects Compliance ... ... 19
Branch of Service Affects Compliance ... ... 19
Rank Affects Compliance ... ... ... ... ... 19
Length of Time Out of Service Affects Compliance ... ... ... ... ... 19

CHAPTER TWO: RESEARCH AND METHODS ... ... ... ... ... ... 20
Sampling Method ... ... ... ... ... ... ... ... ... ... ... 21
Definitions Pertinent to Study ... ... ... ... ... ... 22
Design of Study ... ... ... ... ... ... ... ... ... ... ... 22
Veteran Data Collection Method ... ... ... ... ... ... 23
Non-Veteran Data Collection Method ... ... ... ... ... ... 24
Selection of Questionnaire ... ... ... ... ... ... ... ... ... 24
Analysis of Data ... ... ... ... ... ... ... ... ... ... ... 24

CHAPTER THREE: DATA ANALYSIS ... ... ... ... ... ... ... ... ... ... ... 26
Length of Time Taking Medication ... ... ... ... ... ... 28
Frequency of Taking Daily Medication ... ... ... ... ... 34
Taking Medication On a Timely Basis ... ... ... ... ... 39
Taking the Correct Dosage of Medication ... ... ... ... ... 44
Do You Skip Taking Medication ... ... ... ... ... ... 47
Feeling That Medication is Beneficial ... ... ... ... ... 50
Gender of Individual Affects Compliance ... ... ... ... ... 54
LIST OF FIGURES

Figure 1. Age of the Individual Versus Number of Samples . 26
Figure 2. Length of Time Taking Medication Versus Number of Samples . 29
Figure 3. Length of Time Taking Medication Versus On Time . 32
Figure 4. Frequency of Taking Medication Versus Number of Samples. . 35
Figure 5. Frequency of Taking Medication Versus On Time . 37
Figure 6. Do You Take Medication On Time Versus Number of Samples. . 40
Figure 7. Do You Take Your Medication On Time Versus Percent . 42
Figure 8. Do You Take the Correct Dosage of Medication Versus Number of Samples . 44
Figure 9. Do You Take the Correct Dosage of Medication Versus Percent . 46
Figure 10. Do You Skip Taking Your Medication Versus Number of Samples . 48
Figure 11. Do You Skip Taking Your Medication Versus Percent . 49
Figure 12. Do You Think Your Medication is Helping You Versus Number of Samples . 51
Figure 13. Do You Think Your Medication is Helping You Versus Percent . 53
Figure 14. Sex of Patient Affects Compliance Versus Number of Samples . 54
Figure 15. Sex of Patient Affects Compliance Versus On Time . 56
Figure 16. Age of the Patient Affects Compliance Versus Number of Samples .......... 58

Figure 17. Age of the Patient Affects Compliance Versus On Time .................. 60

Figure 18. Length of Service Affects Compliance Versus Number of Samples ........ 61

Figure 19. Length of Service Affects Compliance Versus On Time .................. 62

Figure 20. Reserve Service Affects Compliance Versus Number of Samples ........ 64

Figure 21. Reserve Service Affects Compliance Versus On Time .................. 65

Figure 22. Branch of Service Affects Compliance Versus Number of Samples ........ 67

Figure 23. Branch of Service Affects Compliance Versus On Time .................. 68

Figure 24. Rank Affects Compliance Versus Number of Samples .................... 69

Figure 25. Rank Affects Compliance Versus On Time .................. 70

Figure 26. Length of Time Out of Service Affects Compliance Versus Number of Samples .......... 72

Figure 27. Length of Time Out of Service Affects Compliance Versus On Time .......... 73
CHAPTER ONE: INTRODUCTION

Millions of Americans spend million of dollars on medication each year to protect their personal health. The downside of this fact is that many of these medications are never taken or taken incorrectly. This fact is known as, “Lack of medication compliance” or “Medication noncompliance.” (Hussey, 1991) Medication noncompliance is defined as “Inappropriate use of legal medication not taken according to a physician’s prescribed directions”. (Hussey, 1991) It is estimated that geriatric individuals comply with their medication schedule only “25% to 50%” of the time. (Hussey, 1991)

Reason For Noncompliance

Hussey points out that there are several obvious factors that contribute to medication noncompliance including complex medication schedules, inadequate individual teaching, poor vision, loss of hearing, or loss of dexterity. Hussey states that there are also less obvious barriers such as “low literacy.” (Hussey 1991).

The elderly have special requirements for successful learning as well as normal physiological changes that occur with aging. The combination of cognitive change, loss of...
vision and/or hearing make learning to take medications, a difficult chore.

Low literacy is not only a lack of reading skills. It is also linked to a person's ability to understand verbal instructions received from their physicians, nurse, or pharmacists. Low literacy skills contribute to the incidence of noncompliance by enhancing the individuals non-ability to organize thoughts; about the instructions given concerning the who, what, where, and when about medication compliance. Individuals with low literacy skills may simply react to complicated, time taking, or fast paced learning simulations by simply withdrawing from the ordeal. Hussey states, "this reaction may be due to a lack of vocabulary, fluency, or problem solving ability, to explain what is not understood." (Hussey, 1991)

Another part of the low literacy problem is that of the non-ability to synthesize information to fit it into the individual behavior pattern. (Hussey, 1991) If a individual with low or poor literacy skill is given new behavior, then a change is required or a reason to invoke that change is needed. This behavior pattern will be disregarded if the change is not recognized or understood. Therefore according to Hussey, teaching methods that minimize or eliminates barriers would greatly increase medication compliance.
To solve medical noncompliance many methods have been introduced to decrease individual misunderstanding. Methods showing success have to do with using stickers for medication bottles accompanied by instruction sheets with large size type, eliminating visual disability and direction misunderstanding barriers. Other variations to stickers rely on medication reminders via the use of pagers or medicine dispensers. Some methods use special packaging coupled with instruction sheets to make medicinal directions more recognizable.

More intrusive methods of applying compliance to daily schedules has also been formulated, tailoring and cueing. Tailoring applies the medication regimen to the individual by introducing the medicinal consumption into the individual’s daily format or routine. This is beneficial because the individual does not have to alter or convert any aspect of his or hers daily activities. Rather the medication is introduced at times when consumption is easy or simple, although the timing must by within the physician’s orders. Cueing involves the proper combination of timing and situation that reminds a person to perform the task. For example using a routine throughout the day to remind oneself to administer his or her medication. Such
reminders may be cued with brushing teeth, setting an alarm, getting ready for bed, or removing glasses (Hussey, 1991).

Hussey states, “that the picture schedule has helped individuals to understand their medication schedules,” (Hussey, 1991) even when significant learning barriers exist. The key to decreasing medication noncompliant is to minimize and simplify the instructions that are given to the individual.

A study done by Isaac (1993) described a method for assessing the relationship between cognitive function and compliance with taking daily medication. Out of the thirty individuals that were examined, only one was taking the correct amount of medication on time. Memory loss was examined and equated to show the highest correlation with medication noncompliance.

Net Barriers

Richardson and Simons-Morton (1993) have developed the “values expectancy theory.” With this theory individuals rationally choose noncompliance when the barriers or cost of treatment outweigh the expected benefit. Therefore, noncompliance is likely to take place when the net cost of a treatment is high.

Richardson and Simon-Morton (1993) sponsored a study where 197 individuals attended a specialized clinic for
hypertension. They measured the "net barriers" (costs), self-reported compliance, and possible determinants of noncompliance. These consisted of social demographics, the medical regimen, and locus of control. They found that noncompliance (47%) was associated with younger age, higher salt use, and longer duration of treatment and higher severity of net barriers. Results also showed evidence concerning individuals with a short-term treatment plan, noncompliance increased with severity of net barriers. Conversely, individuals in long-term treatment showed an association between noncompliance and levels of net cost. The study showed that the subjects at greatest risk for noncompliance were those who reported "high net barriers regardless of duration or treatment. Net barriers made up for 50% of the noncompliance and appeared most important for individuals who were younger or in the early stages of treatment.

An unanticipated finding was discovered. The researchers (Richardson and Simon-Morton 1993) found that, "noncompliance increased with severity of net barriers only among individuals in short term treatment. Investigators (Richardson and Simon-Morton 1993) believed that this was true because the negative aspects of treatment are more important in the early stages of treatment and digress in
importance as the individual remains in long term care. The study showed that those individuals in long term care were "9.5 times" more likely to be noncompliant than those in short term treatment. (Richardson and Simon-Morton, 1993) The study also pointed out that individuals who perceived the most severe net barriers regardless of the length of treatment were at greater risk for noncompliance. (Richardson and Simon-Morton, 1993)

Explanations On Why Net Barriers May Be Less Important For Long Term Treatment

The researchers, Lawrence and Hodson, gave 3 reasons why net barriers maybe less important for long-term treatment. 1. Individuals in long-term treatment may have been more comfortable with self-regulation and taking "pill vacations" because of their experience with their medication and with their disease. 2. The individual providers may have been unaware that individuals with uncontrolled hypertension were noncompliant and adjusted to the medication regimen to compensate for noncompliance. Other variables that would instigate individuals to adjust or self regulate their medication and in turn become noncompliant are loss of body fat, individuals that stop smoking, or individuals that started exercising after their medication was prescribed. These factors would cause the medication
requirement to change and therefore allow the individuals to intervene and self regulate. (Richardson and Simon-Morton, 1993)

Additional Findings

The finding in the study by Richardson and Simon-Morton (1993) discovered the following facts: 1. A lack of association between satisfaction with providers and compliance was not found. 2. This study also failed to find an association between compliance and demographics including education, employment, gender and the "Multidimensional Health Locus of Control." 3. The positive relationship between adherence of antihypertensive medical regime and blood pressure control found in this study was consistent with other studies as is the compliance rate of 52.8%.

Age

When the individual was between the ages of 36 to 45 the noncompliance rate was close to 25%. But as the individual became middle aged (45 to 65) the noncompliance rate was around 15%. As the individual reached old age (above 65) the noncompliance rate rose to over 60%.

Another study was done on the subject of medication compliance and found that age was the only variable influencing compliance to treatment. (Cerveri et al. 1999)
This study pointed out that noncompliance to medication is a major barrier to the effectiveness of asthma management. The study that was done by Cerveri points out that compliance levels range from "41% in the United States and over 78% in Iceland." (Cerveri et al. 1999)

In a study done by Guillemin (1999) showed that of a study of 556 subjects consistent behavior was recorded in "49.9% of the cases and 37.5% of the subjects in the study were consistency compliant and 22.8% were consistently noncompliant." (Guillemin et al. 1999) Cerveri (et al. 1999) stated that the following factors led to this medication noncompliance, "older age, female gender, decrease in disability and the individuals have a strong knowledge about their disease."

In another study done by Gravely (1999) points out those veterans over 64 years of age that might be at risk for medication noncompliance were in fact 73% noncompliant. Using age as a variable, this study showed these results for medication noncompliance. Subjects between the ages of 64-72 had a "76.3%" noncompliance percentage and those above 72 years of age showed a "79.9%" rate of noncompliance.

A study done by Black (1987) using individuals 60 years of age and older pointed out that individuals in this age group had unique barriers that prevented them from being
medication compliant. Elderly individuals expressed barriers such as transportation difficulties, multiple health problems, long drug regime, social isolation and cognitive impairment.

Selby (1999) conducted a research program concerned with identifying barriers involved with individuals diagnosed with type 2 diabetes. Selby’s research concluded that age was a key barrier in diabetic individuals for medication compliance. The results found that individuals in the 30 to 50 age bracket were 31.1% noncompliant, the age group of 51 to 70 were 47.6% noncompliant and the age group of 71 and above were 63.9% noncompliant with their medication.

Other Variables

Another study found a relationship between individual education and the degree of compliance. Compliance increases based on how educated an individual is, the higher the education, the more compliant an individual. Individuals whom did not finish high school yielded a non-compliant rate of 59.4%. An individual who received a high school education exhibited a 28.1% noncompliance rate. Individuals with some college education showed a 11.7% noncompliance rate. (Hussey 1991)
The number of different medications that an individual receives also directly affects individual noncompliance. This study showed that as the different medications count increases, noncompliance rates decrease. Results concluded that taking two pills yielded a more uniform median line between compliance and pill intake and was not detrimental to compliance. (Greenwich 1993)

A study carried out by Black (1987) showed other variables such as social isolation, transportation problems, and cognitive impairment as barriers increased the risk of an individual being medication noncompliant.

Miller (1999) produced a study identifying sexual dysfunction in men. This side effect of taking medication yielded a higher risk of being medication noncompliance. Men taking medication without a side effect of sexual dysfunction had lower risk of noncompliance. Side effects affected men yielded a 3.5 times greater risk of being or becoming medication noncompliant.

Gender as a Barrier

Selby (1999) performed research with individuals exhibiting type 2 diabetes. Selby stated, "women were more likely than men to be medication compliant." Ettinger (1999) also did a study that found similar results. Ettinger's study used women to take daily antihypertension...
drugs, and found that women were 2.6 times more likely to be medication compliant than men in the same age grouping.

Conversely, Rudd (1990) studied antihypertensive drug therapy involving both male and females. Rudd found that the longer a male individual was not antihypertensive the more compliant they became. The female group showed that the longer they were on the medication the less compliant they became.

A Tool For Screening Individual Compliance and Barriers To Compliance

Self-report tools for monitoring compliance can be useful in identifying individuals who need assistance with their medications, assessing an individual’s concerns, and evaluating new programs. This was the aim of a study done to test the validity of the Brief Medication Questionnaire performed by Svarstad and Chewning (1999). The questionnaire asked individuals how they took each medication in the past week. Then questions concerning barriers were introduced, questions directly identifying bothersome features or possible difficulties inhibiting the how and when to take their medication.

The researchers (Svarstad, Chewning 1999) found that this method needed ulterior methods to produce sound and valuable data, “no single method is adequate.”
Multiple tools are needed to detect all types of non-adherence. Most methods of measuring noncompliance involved physician estimates and this method revealed no more accurate data than chance alone. Therefore this technique is no longer used.

Another technique that was studied was that of the pill count method. Studies show that pill count provides useful information if performed in individual homes. The purpose of the assessment is not emphasized beforehand, in hopes of extracting any changed attitude in individual’s trying to make favorable impressions. But the problem with this approach is that home visits are not always feasible, and individuals often combine medication from several bottles into a single container, making it difficult to interpret pill counts. Another problem with this technique is that individuals do not bring containers back to the clinic and those that are returned seriously overestimate adherence when compared to more objective methods (Hussey 1991).

Another method that has been examined is using pharmacy refill records and drug claims. This method provided relatively objective and inexpensive estimates of adherence in large populations over long periods of time. However, these methods only provide a gross measure of compliance and cannot be used for short-term regime. (Richardson 1993)
Researchers also have looked at the possibilities of using laboratory tests, blood pressure readings, and other physiological measures for detecting medication noncompliance. The drawback with these methods is that they are not always available or feasible. Another concern is that most of these techniques only show the individuals medication compliance in the day or two before the test. This a serious problem because individuals often increase drug intake a few days before coming into the clinic, giving an erroneous impression of their daily medication compliance. (Duct 1996)

Another method that is being used to test the individual's compliance level is that of the Medication Events Monitoring System. This technique uses dispensing each individual's medication in a bottle that contains a microprocessor in the cap. The microprocessor records the date and time of each bottle opening, assuming each opening counts as a presumptive dose. There is no assurance that individuals actually take their medication, but they would have to open and close the bottle at a the prescribed time on a daily basis to create a false pattern of medication compliance. (Rudd 1990)

Experts agree that this method is one of the best ways to screen if the individual is being compliant with their
daily medication. But despite these advantages, this tool has not yet been applied widely due to its cost and other practical issues that limit its use in large studies and routine clinical practice.

Face to face interviews, telephone interviews, questionnaires, and diaries provide a practical method of assessing compliance and a unique opportunity to identify individuals concerns. Although there are serious concerns about the accuracy of these measures due to poor sensitivity or the ability to detect true noncompliance.

Many of the experts question the validity of self-reporting. (Green and Markers 1990 and Walters and Cooper 1993) There are several explanations for the low sensitivity of existing self-report measures. For example, it is possible that no single tool can detect all types of medication noncompliance and that multiple tools are needed. For example, Park and Lipman (1994) found that their instruments were more sensitive in detecting major dosage errors, such as repeat taking of the same medication, but the same tool could not pick up minor dosage errors. Unfortunately, most studies do not distinguish repeat and sporadic noncompliance and simply lump them together when calculating sensitivity.
Survey researchers have developed a number of time proven techniques for minimizing the different types of reporting errors that are known to occur when asking people to report the frequency of behaviors that are embarrassing, threatening, or difficult to report accurately for other reasons. Unfortunately, these survey techniques have not been applied rigorously to the design of self-reporting tools for measuring compliance. For example, survey methodologists, recommend asking about behavior during a specific time period and using a shorter recall or an unspecific time period to measure compliance via self-reports.

Another problem of existing tools is that they include questions that might be worded more carefully to reduce memory errors, the level of threat, or embarrassment experienced by individuals who want to make a good impression, and other sources of response error. Examples of this type of errors are broad questions that ask about multiple drugs in the same item, poor worded questions that ask "how regularly" a drug was used, and narrowly worded questions that mention only one or two types of noncompliance behavior.
Veteran Compliance

Graveley and Oseashon (1991) assessed the factors contributing to medication noncompliance among veterans over 65 years of age. These veterans were all prescribed from one to seven oral medications daily. Particular factors examined included demographic data, living arrangements, the need of help to remember to take medication, knowledge of the medicine, the subject's judgment of the medication's effect, the subject's perception of having had adverse drug reaction, cognition, presence or absence of depression, and health locus of control. These factors were assessed through questions as well as particular relational tests.

Confirming an accurate pill count via date and time of recorded home visits tested compliance. These recordings were compared against the statements of the subjects, when asked what time they took the pills. (Graveley and Oseashon 1991)

Results led to an association between lack of compliance with the total number of pills to be consumed. The more pills prescribed the less compliant were veterans to take medication. Compliance varied because of ethnicity, age, and marital status, but no difference existed for veterans living alone. Most importantly was the fact that
the only variables found to be significant were those of ethnicity and number of pills. (Graveley and Oseashon 1991)

Hypotheses

**Length of Time Taking Medication**

To determine if the longer an individual is on the same medication, the higher the compliance would be for the individual. As medication becomes part of an individual’s daily plan, will the compliance increase?

**Frequency of Taking Daily Medication**

To determine if it is difficult for individuals to do more than one task a day on a continuing schedule. As one increases the number of things an individual must be responsible for per day, will the compliance decrease?

**Veteran’s Compliance for Taking Medication On a Timely Basis**

To determine if the veteran’s status will have a higher compliance in taking medication or treatments on time as compared to civilians. Will the increased discipline taught within the military service affect compliance?

**Veteran’s Compliance for Taking Correct Dosage of Medication**

To determine if veteran’s status will have a higher compliance in taking correct dosage of medication. Will the
increased discipline taught within the military service affect levels of compliance?

*Do You Skip Taking Medication*

To determine if veteran's status will have a higher compliance in not skipping medication. Will the increased discipline taught within the military service affect the levels of compliance?

*Feeling That Medication is Beneficial*

To determine if veteran status will have a higher feeling of the medication being helpful due to the fact that veterans have been taught that their superiors know what is best for them. In this case the veteran individual will view the physician as a superior for their health care.

*Gender of Individual Affects Compliance*

To determine if the gender of the individual has an effect on the compliance of the individual taking the medication in the veteran population. Females are more compliant than males in following orders, so should have a higher compliance. Will the compliance for female veterans be higher than for male veterans?

*Age of the Individual Affects Compliance*

To determine if the older the individual becomes the more compliant they become. To be determined for veteran and non-veteran.
Length of Service Affects Compliance

To determine if the longer the time an individual is in the Service the higher the compliance will be. Will the increased exposure to discipline cause the individual to have higher compliance?

Reserve Service Affects Compliance

To determine if any additional military service will reinforce the discipline to be compliant. Will this give a higher compliance?

Branch of Service Affects Compliance

To determine if the Marine Corps will have higher compliance than the rest of the branches. The discipline of the marine corps has the most rigid discipline but will this give the highest compliance?

Rank Affects Compliance

To determine if the higher the rank the higher the compliance. The higher the rank normally indicates increased education and longer time in the military. Will these factors increase the compliance?

Length of Time Out of Service Affects Compliance

The longer the individual is out of the military the lower the compliance. Will decay of discipline from non-reinforcement cause the lowering of compliance?
CHAPTER TWO: RESEARCH AND METHODS

Significant information on the relationship between age and compliance has been published in several studies in an attempt to define, predict, and produce the factors responsible for individual compliance. The studies have concerned themselves with issues such as net barriers and the manipulation of these barriers. Other studies have tried to intervene in these barriers, such as introducing reminders or pill counts. The overall hypotheses statement is, do individuals who are compliant with their daily medication regime have a higher success rate on their treatment.

Individuals with a combination of daily schedules and other barriers (age, length of time taking daily medication, and frequency of taking medication) influence the outcome of medication compliance. Physicians and health workers must help patients adapt to these barriers. A health care provider can prescribe the best medicine for treatment, but if the individual is not compliant then the treatment is at risk of failure and the patient is at risk of recovery or maintaining good health.

This study will attempt to determine if there is a correlation between age and compliance. If the individuals are veterans, does their dedication to maintaining
medication compliance change? Perhaps these results would help to understand the particular regime that is needed to maintain an adaptable and regular attendance to consumption of medicine.

The individual plays an important role on how effective individual treatment is going to be. After the medication is administered then the role of the person becomes individual in its consumption. By adding the factor that a individual is a veteran, certain factors in medication compliance may increase, in particular the attendance of medication consumption.

Veterans are taught to comply with orders and directions that in turn influence their daily activities and more importantly their roles in military actions. Does this regime continue to exist after their tenure is finished? It is proposed that this dedication makes them more efficient in receiving directions on medication and in turn drives them to be more medication compliant.

**Sampling Method**

The subject group for this study is placed into two different populations, veteran and non-veteran. Populations differ only on the fact of being a veteran from the armed forces and not being part of the armed forces. Both populations will consist of males and females. These
populations are composed of six different age groups. These
groups range from 20 to 70 and up and increase in values of
ten. For example the first group would be ages 20-29 and
the next group would be 30-39. The last defined age group
would be 71 and greater. Each age group will be made of 10
to 15 volunteers.

Volunteers will be made up of subjects from the
Veterans Hospital and will be approached while waiting to
see their physician. Those not involved in the armed forces
will be approached at Hemet Hospital, Hemet Hospital
outpatient clinic, and Geriatric Assessment Center at
Arrowhead Regional Medical Center.

Definitions Pertinent to Study

Medication Noncompliance
Inappropriate use of legal medication taken not in
accordance to a physician's prescribed directions.

Net Barriers
Any obstacle that decreases an individuals ability
to be compliant (costs, education, age,
disability).

Design of Study

This is a prospective study examining two sets of study
populations, veteran and non veteran.
Veteran Data Collection Method

The researcher went to Jerry Pettis Medical Center and Geriatric Assessment Center at Arrowhead Regional Medical Center to collect data from individual patients. The researcher approached individuals waiting for outpatient care services and ask them to participate in the study. Individuals, who agreed to participate, were asked the questions from the questionnaire and the researcher recorded the information. The questions were read to assure there was no misunderstanding. If a individual did not understand the questions, the researcher clarified the question. All answers that were acceptable had to be from the questionnaire and must be the predetermined answers. No qualifications of the answer were accepted.

Information from only individuals who were at the medical center for outpatient treatment and only those willing to participate in the study was used. Thus the data set is not a random set of data, but a sample of convenience. However, the data set should accurately reflect the compliance of the veteran community.

The target sample sizes are at least 15 for each age group. There are 6 age groups giving a minimum of 75 veterans.
Non-Veteran Data Collection Method

For non-veterans, the researcher went to the outpatient clinic at Hemet Community Hospital, Valley Blind Center, Neighborhood Center in Hemet, Senior Day Care Center in San Jacinto, and the local community. Only those subjects who are taking medication on a regular bases will be included in the population. This method should give an accurate picture of compliance in the general population.

Selection of Questionnaire:

A questionnaire was self-developed and consists of fifteen questions each having a multiple choice format or ranking from one to five. Questions are selected to obtain the compliance of the individual from a veteran or non-veteran environment. Additional questions for veterans are included to determine if length of service, rank, and branch are relevant to compliance. There was no effort made to create reliability and validity of the questionnaire.

Analysis of Data

Data will be analyzed using qualitative descriptive statistics methods to determine if the hypotheses are valid. Use of mean, median, mode, percents, and standard deviation, and variance will be calculated and/or figured to substantiate the hypotheses. Data collected will allow a separation of populations. For example, a veteran to non-
veteran, veteran-active to veteran non-active, and veteran-army to veteran-navy.

All data collected will be organized into a spreadsheet format for easier analysis.
CHAPTER THREE: DATA ANALYSIS

The heading for figure one is; "Age of the Individuals Versus Numbers of Samples."

Figure 1. Age of the Individual Versus Number of Samples.

Age of the Individual Versus Number of Samples

<table>
<thead>
<tr>
<th>Non Vet</th>
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</tbody>
</table>

(1)–20 to 29 (2)–30 to 39 (3)–40 to 49 (4)–50 to 59 (5)–60 to 69 (6)–greater than 70
The x-axis is labeled with the different age groupings. Age group number one is age 20 to 29. The total population of that age group is 40 subjects. Also this grouping is made up of 20 veterans and 20 non-veterans. Age grouping number 2 is individuals age 30 to 39 years of age. This age grouping has 20 veterans and 29 non-veterans to make up a total of 49. Individuals that are 40 to 49 years of age make up age grouping number 3. There are 28 veterans and 27 non-veterans. The total number of individuals of this age group is 55 subjects. Age grouping number 4 is made up of individuals that have an age between 50 to 59 years. Within this grouping there are 25 veterans and 37 non-veterans subjects. The total of subjects in this grouping is 62 subjects. Age grouping number 5 is made up of individuals that have an age between 60 to 69. Within this group there are 19 veterans and 33 non-veterans subjects. The total number of subjects is 52. The last age grouping is labeled number 6. Age grouping number 6 is made up of individuals with an age of 70 and greater. Within age grouping number 6 there are 26 veterans and 18 non-veterans. The total number of subjects in this population is 42. The y-axis of figure number one is labeled number of samples. The number of samples starts at the bottom with 0 and climbs up to 70 with a 10-point spacing.
After looking at figure number one, you can see that all age grouping meet the 15 individuals per age grouping required to run the study.

Length of Time Taking Medication

Figure two is labeled; "Length of Time Taking Medication Versus Number of Samples."
Figure 2. Length of Time Taking Medication Versus Number of Samples.

Length of Time Taking Medication Versus Number of Samples

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Vet</td>
<td>5</td>
<td>11</td>
<td>18</td>
<td>33</td>
<td>41</td>
<td>29</td>
</tr>
<tr>
<td>Vet</td>
<td>1</td>
<td>13</td>
<td>25</td>
<td>36</td>
<td>50</td>
<td>36</td>
</tr>
<tr>
<td>combined</td>
<td>6</td>
<td>24</td>
<td>43</td>
<td>69</td>
<td>91</td>
<td>65</td>
</tr>
</tbody>
</table>

(1)--1 week (2)--1 month (3)--6 months (4)--1 year (5)--5 years (6)--more than 5 years
The x-axis is made up of 6 lengths of time an individual has taken their medication. Age grouping is made up with individuals that have been taking their medication one week or less. Within group number one there is 1 veteran and 5 non-veterans. The total number of individuals in this group is 6. Grouping number 2 is made up of individuals that have been taking their medication for greater than 1 week but no longer than 1 month. Group number 2 has 13 veterans and 11 non-veterans. The total number of subjects in this group is 24. Grouping number 3 is made up of individuals that have been taking medication greater than 1 month, but no longer than 6 months. This grouping is made up of 25 veterans and 18 non-veterans. The combined number is 43.

Grouping number 4 is made up of 36 veterans and 33 non-veterans. Group number four has a combined population of 69. This population has been taking medication for greater than 6 months but less than one year. Group number 5 is a population of individuals that have been taking medication for greater than one year but less than 5 years. Within this grouping there are 50 veterans and 41 non-veterans. The combined population of group 5 is 91. Group number 6 is made up of individuals that have been taking their
medication for more than 5 years. Within this population there are 36 veterans and 29 non-veterans.

The y-axis is labeled “number of samples.” The numbering pattern starts at zero on the bottom and goes to 100. A ten-point scale is used.

The title of figure three is: “Length of Time Taking Medication Versus On Time.”
Figure 3. Length of Time Taking Medication Versus On Time.

Length of Time Taking Medication Versus On Time

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Vet</td>
<td>1.8</td>
<td>2.181818</td>
<td>2.722222</td>
<td>2.424242</td>
<td>1.902439</td>
<td>2.241379</td>
</tr>
<tr>
<td>Vet</td>
<td>1</td>
<td>1.923077</td>
<td>1.84</td>
<td>1.805556</td>
<td>1.82</td>
<td>2.194444</td>
</tr>
<tr>
<td>combined</td>
<td>1.666667</td>
<td>2.041667</td>
<td>2.209302</td>
<td>2.101449</td>
<td>1.857143</td>
<td>2.215385</td>
</tr>
</tbody>
</table>

1)--1 week (2)--1 month (3)--6 months (4)--1 year (5)--5 years (6)--more than 5 years
Group number one consists of individuals that have been taking their medication for 1 week. The veteran's portion of this population shows a rating of 1.0. While the non-veterans portion show a 1.8 rating. The y-axis of this figure gives the following information: a rating of 1.0 means that the population tested always takes their medication on time, a rating of 2.0 means the population most of the time takes their medication on time, a 3.0 rating means that the population tested sometimes takes their medication on time, a 4.0 rating means the population tested rarely takes their medication on time, and a 5.0 rating means that the population tested never take their medication on time. The combined ratio for both veterans and non-veterans population taking medication for 1 week has a combined rating of 1.66. Group number two are individuals that have been taking their medication for more than one week but less than 1 month. The veteran's portion shows a rating of 1.92, while the non-veterans portion shows a 2.19 rating. The combined ratio for this group shows a 2.04 rating. Group number three are individuals that have been taking their medication for more than 1 month but less than 6 months. The veteran's portion of this group shows a 1.84, while the non-veterans portion show a 2.72 rating. The combined rating for this group is 2.20. Group number four
are individuals that have been taking their medication for greater than 6 month but less than 1 year. The veteran’s portion of this group shows a 1.80 while the non-veterans portion show a 2.42 ratio. The combined ratio for this group was 2.10. Group number five was made up of individuals that have been taking their medication for greater than 1 year but less than 5 years. The veteran’s portion of this group had a 1.82 while the non-veterans portion showed a 1.90. The combined rating for this group was 1.85. Group number six were individuals that have been taking their medication for greater than 5 years. The veteran’s portion of this population showed a 2.19 rating, while the non-veterans portion showed a 2.24 rating. The combined rating for this group was 2.21.

**Frequency of Taking Daily Medication**

Figure four is labeled; “Frequency of taking daily medication versus number of samples.”
Figure 4. Frequency of Taking Medication Versus Number of Samples.

<table>
<thead>
<tr>
<th>Frequency of Taking Daily Medication</th>
<th>Number of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Vet</td>
<td></td>
</tr>
<tr>
<td>1--once a day</td>
<td>59</td>
</tr>
<tr>
<td>2--twice a day</td>
<td>40</td>
</tr>
<tr>
<td>3--three times a day</td>
<td>29</td>
</tr>
<tr>
<td>4--four times a day</td>
<td>7</td>
</tr>
<tr>
<td>5--greater than four times a day</td>
<td>1</td>
</tr>
<tr>
<td>Vet</td>
<td></td>
</tr>
<tr>
<td>1--once a day</td>
<td>52</td>
</tr>
<tr>
<td>2--twice a day</td>
<td>59</td>
</tr>
<tr>
<td>3--three times a day</td>
<td>30</td>
</tr>
<tr>
<td>4--four times a day</td>
<td>17</td>
</tr>
<tr>
<td>5--greater than four times a day</td>
<td>3</td>
</tr>
<tr>
<td>combined</td>
<td></td>
</tr>
<tr>
<td>1--once a day</td>
<td>111</td>
</tr>
<tr>
<td>2--twice a day</td>
<td>99</td>
</tr>
<tr>
<td>3--three times a day</td>
<td>59</td>
</tr>
<tr>
<td>4--four times a day</td>
<td>24</td>
</tr>
<tr>
<td>5--greater than four times a day</td>
<td>4</td>
</tr>
</tbody>
</table>
The x-axis is split up into five groups. Group number one is made up of individuals that take their medication once a day. Within this group there are 52 veterans and 59 non-veterans. The total amount of samples in this group is 111 individuals. Group number two is made up of individuals that take their medication twice a day. Within that group there are 59 veterans, 40 non-veterans. The total amount of individuals within this group is 99. Group number 3 is made up with individuals that take their medication three times a day. Within this group there are 30 veterans and 29 non-veterans. The total amount of individuals within this group is 59. Group number four is made up of individuals that take their medication four times a day. Within this group there is 1 veteran and 7 non-veterans. The total number of individuals within this group is 24. Group number five is made up of individuals that take their medication greater than 4 times a day. Within this group there are 3 veterans and 1 non-veteran. The total number of sample in this group is 4. The y-axis of figure 4 is the number of samples. The scale begins at zero and increases to 120 by tens.

Figure five is labeled; "Frequency of taking daily medication versus on time."
Figure 5. Frequency of Taking Medication Versus On Time.

**Frequency of Taking Daily Medication Versus On Time**

<table>
<thead>
<tr>
<th></th>
<th>1 (always)</th>
<th>2 (most of the time)</th>
<th>3 (sometimes)</th>
<th>4 (rarely)</th>
<th>5 (never)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Vet</td>
<td>2.033898305</td>
<td>2.2</td>
<td>2.655172414</td>
<td>2.142857143</td>
<td>4</td>
</tr>
<tr>
<td>Vet</td>
<td>1.711538462</td>
<td>1.796610169</td>
<td>2.033333333</td>
<td>2.411764706</td>
<td>3.333333333</td>
</tr>
<tr>
<td>combined</td>
<td>1.882882883</td>
<td>1.95959596</td>
<td>2.338983051</td>
<td>2.333333333</td>
<td>3.5</td>
</tr>
</tbody>
</table>

(1) -- once a day  (2) -- twice a day  (3) -- three times a day  (4) -- four times a day  (5) -- greater than four times a day
The x-axis of figure five is made up of five groups. What makes up this different group is the amount of time an individual takes their medication. The y-axis is made up by 5 responses. A 1 response means that the individual always takes their medication on time. A 2 response means that an individual takes their medication most of the time on time. A 3 response means that an individual sometimes takes their medication on time. A 4 response means that an individual rarely takes their medication on time. A 5 response means that the individual never takes their medication on time. The x-axis shows that the number 1 group, which are those that take their medication once a day. In this group the veterans show a 1.71 rating, while the non-veterans show a 2.03 rating. Combined these once a day medication takers show a 1.88 rating. Group number 2 which are individuals that take their medication twice a day, with the veterans population show a 1.79 rating while the non veterans show a 2.2 rating. The combined rating for group two is 1.95. Group 3 is made up of individuals that take their medication three times a day. The veterans in this group show a 2.03 while the non-veterans showed a 2.65 rating. The combined rating for group three was 2.33. Group 4 is made up of individuals that take their medication four times a day. The veterans within this group showed a 2.41 while the non-
veterans showed a 2.14. The combined rating for group four was 2.33. Group number 5 was made up of individuals that take their medication more than four times a day. The veterans in this group showed a 3.33 while the non-veterans showed a 4.0. The combined rating for this group was 3.5

Taking Medication On a Timely Basis

Figure six is labeled; "Do You Take Your Medication On Time Versus Number of Samples."
Figure 6. Do You Take Medication On Time Versus Number of Samples.

<table>
<thead>
<tr>
<th>Number of Samples</th>
<th>Vet</th>
<th>NonVet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>62</td>
<td>47</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

(1)--always (2)--most of the time (3)--sometimes (4)--rarely (5)--never
On the x-axis there are 5 groups. The first group has individuals that always take their medication on time. Within that first group there are 65 veterans and 51 non-veterans. Group number 2 is made up of individuals that take their medication most of the time, on time. Within that group there are 62 veterans and 47 non-veterans. Group number 3 is a group of individuals that sometimes take their medication on time. Within that group there are 21 veterans and 22 non-veterans. Group number four are individuals that rarely take their medication on time. Within that group there are 15 veterans and 16 non-veterans. Group number 5 is a group of individuals that report they never take their medication on time. Group 5 is made up of zero veterans and 1 non-veteran. The y-axis is the number of samples taken. It starts at zero and increases by tens to 70.

Figure seven is labeled; “Do you take your medication on time versus percent.”
Figure 7. Do You Take Your Medication On Time Versus Percent.

Do You Take Your Medication On Time Versus Percent

(1)--always (2)--most of the time (3)--sometimes (4)--rarely (5)--never
The x-axis there is 5 groups. The first group shows a percentage of the population that always take their medication on time. Within that first group there are 40 percent of the veterans population and 37 percent of the non-veterans population. Group number 2 is made up of a percentage of the population that take their medication most of the time, on time. Within that group there is 38 percent that are veterans and 34 percent are non-veterans. Group number 3 is a group of a percentage of the population that sometimes takes their medication on time. Within that group there is 13 percent of the population that are veterans and 12 percent are non-veterans. Group number four is a percentage of the total population that rarely takes their medication on time. Within that group there are 9 percent that are veterans and 16 percent are non-veterans. Group number 5 is a group that is a percentage of the total population that report they never take their medication on time. Group 5 is made up of zero veterans and one non-veteran. The y-axis is the percent of samples, starting with zero percent and increasing by five percent steps up to forty percent.
Taking Correct Dosage of Medication

Figure eight is labeled; "Do You Take the Correct Dosage of Medication Versus Number of Samples."

Figure 8. Do You Take the Correct Dosage of Medication Versus Number of Samples.

<table>
<thead>
<tr>
<th>Number of Samples</th>
<th>Vet</th>
<th>NonVet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>82</td>
<td>58</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

(1)—always (2)—most of the time (3)—sometimes (4)—rarely (5)—never
The x-axis is split up into five groups. Group number one is made up of individuals that take their correct dosage of medication always. Within this group there are 82 veterans and 58 non-veterans. The total amount of samples in this group is 140 individuals. Group number two is made up of individuals that take their correct dosage medication most of the time. Within that group there are 50 veterans, 30 non-veterans. The total amount of individuals within this group is 80. Group number 3 is made up with individuals that take their correct dosage of medication sometimes. Within this group there are 22 veterans and 27 non-veterans. The total amount of individuals within this group is 49. Group number four is made up of individuals that rarely take their correct dosage of medication. Within this group there are 8 veterans and 23 non-veterans. Group five is made up of individuals that never take the correct dosage of their medication. Within this grouping there is 1 veteran and zero non-veterans. The total number of individual's in-group 5 is 1. The y-axis is the number of samples starting with zero and increasing by tens up to 90.

Figure nine is labeled; "Do You Take the Correct Dosage of Medication Versus Percent."
Figure 9. Do You Take the Correct Dosage of Medication Versus Percent.

Do You Take the Correct Dosage of Medication Versus Percent

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vet</td>
<td>50</td>
<td>31</td>
<td>13</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>NonVet</td>
<td>42</td>
<td>22</td>
<td>17</td>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

(1)--always  (2)--most of the time  (3)--sometimes  (4)--rarely  (5)--never
To this question there are 5 possible responses, (1) always (2) most of the time, (3) sometimes, (4) rarely, and (5) never. To this question 50 per cent of the veteran population answered always. While 31 per cent of the veteran's population answered most of the time, only 13 percent of the veteran's population answered sometimes, and 5 percent of the veteran's population answering rarely, with 1 percent of the population of veterans answered never. In the non-veterans population 42 per cent answered always, 22 percent answered most of the time, 17 percent answered sometimes, 20 percent answered rarely and zero percent said never. The y-axis is labeled percent, starting at the bottom at zero percent and stopping at the top at 60 percent.

Do You Skip Taking Medication

Figure ten is labeled; "Do You Skip Taking Your Medication Versus Number of Samples."
Figure 10. Do You Skip Taking Your Medication Versus Number of Samples.

To this question there are two possible responses, "yes" or "no". The x-axis is labeled yes and no with the veterans and non-veterans population. In the veterans population 54 percent, 88 out of 163, answered yes while 46 percent, 75 out of 163 answered no. In the non-veterans population 55 percent, 71 out of 128, answered yes while 45
percent, 57 out of 128, answered no. The y-axis is label number of samples. The scale begin at zero and stops at 90.

Figure eleven is labeled: "Do you Skip Taking Your Medication Versus Percent."

Figure 11. Do You Skip Taking Your Medication Versus Percent.

The x-axis is labeled "yes" and "no" which is the two possible answers to the question of skipping your medication. Also there is a veteran’s population and a non-
veterans population. In regards to the veterans population 54 percent, 88 out of 163, answered yes, while 46 percent, 75 out of 163 answered no. With the non-veterans population 51 percent, 71 out of 163, answered yes and 67 percent, 67 out of 163 answered no.

The y-axis is labeled percent and the scale starts at 0 and stops at 60.

Feeling That Medication is Beneficial

Figure twelve is labeled, "Do You Think Your Medication is Helping You Versus Number of Samples."
The x-axis is made up by a "yes" or "no" response to the question. There are also 2 populations. There is a veteran's population and a non-veterans population. With regards to the veterans population there was a 67 percent, 110 out of 163, answered yes and a 33 percent, 53 out of 163, answered no. In the non-veterans population there was
a 75 percent, 103 out of 163, answered yes and a 25 percent, 34 out of 163 answered no. The y-axis is labeled; number of samples. The scale starts at zero and ends at 120.

Figure thirteen is labeled; "Do You Think Your Medication is Helping You Versus Percent."
Figure 13. Do You Think Your Medication is Helping You Versus Percent.

The x-axis is made up with a "yes" or "no" response to the question. There are two populations. One is the veteran's population and the other is the non-veterans population. With this question 67 percent, 110 out of 163, answered yes while 33 percent, 53 out of 163, answered no. With the non-veterans population 75 percent, 103 out of 163, answered yes while 25 percent, 34 out of 163, answered no.
The y-axis is labeled percent. The scale starts at zero and ends at 80.

Gender of Individual Affects Compliance

Figure fourteen is labeled: "Sex of the Patient Affect Compliance Versus Number of Samples."

Figure 14. Sex of Patient Affects Compliance Versus Number of Samples.
The x-axis is made up of "male" or "female" and a veterans and non-veterans population. There is also a combined population. In the veterans population there was 116 male and 46 female subjects. In the non-veterans population there was 58 male and 79 female. The combined population was 174 males and 125 females. The y-axis is labeled Number of samples. The scale begins at zero and ends at 180.

Figure fifteen is labeled; "Sex of the Patient Affects Compliance Versus On Time."
The x-axis is made up of "male" or "female" in the veteran population, non-veterans population and a combined population. There were 5 possible responses to this question. (1) always, (2) most of the time, (3) sometimes, (4) rarely, and (5) never. With the male veterans population there was a compliance level of 2.008, while the female veterans population showed a 1.673 compliancy rate. In the non-veterans population the males had a 2.517 compliance level and the females had a 2.025 compliance
level. In the combined population the males showed a 2.178 and the females showed a 1.896 level. The y-axis is made up of different levels of compliance, starting with 0 and ending with 3.

Age of the Individual Affects Compliance

Figure sixteen is labeled; "Age of the Patient Affects Compliance Versus Number of Samples."
Figure 16. Age of the Patient Affects Compliance Versus Number of Samples.

The x-axis is made up of 6 different age groups. (1) 20 to 29, (2) 30 to 39, (3) 40 to 59, (5) 60 to 69, and (6) greater than 70. With these age groups there were a
veterans population, non-veterans population and a combined population. With the veterans there were 20 in age group 1, 29 in age group 2, 27 in age group 3, 37 in age group 4, 33 in age group 5 and 16 in age group 6. In the non-veterans population there were 20 in age group 1, 20 in age group 2, 28 in age group 3, 25 in age group 4, 19 in age group 5 and 26 in age group 6. In the combined population there were 40 in age group 1, 49 in age group 2, 55 in age group 3, 62 in age group 4, 52 in age group 5 and 42 in age group 6. The y-axis is labeled number of samples. The scale begins with zero and ends with 70.

Figure seventeen is labeled: "Age of the Patient Affects Compliance Versus On Time."
Figure 17. Age of the Patient Affects Compliance Versus On Time.

The x-axis is made of 6 different age groups, (1) 20 to 29, (2) 30 to 39, (3) 40 to 49, (4) 50 to 59, (5) 60 to 69, and (6) greater than 70. There also are 3 different populations. Those populations are veterans, non-veterans and combined. The y-axis is made up of the different level of compliance of taking the individuals medication on time.
The groups are (1) always, (2) most of the time, (3) sometimes, (4) rarely and (5) never.

Length of Service Affects Compliance

Figure eighteen is labeled; "Length of Service Affects Compliance Versus Number of Samples."

Figure 18. Length of Service Affects Compliance Versus Number of Samples.

The x-axis is made up of 5 possible choices to one's length of stay in the military. (1) 4 years, (2) 8 years, (3) 12 years, (4) 16 years and (5) 20 years. In the 4 years group there were 69 veterans, the 8-year group there were
46, the 12 years group had 22, the 16-year group there were 15 and in the 29-year group there were 10 veterans. The y-axis was labeled number of samples. The scale begins with 0 and ends with 80.

Figure nineteen is labeled; “Length of Service Affects Compliance Versus On Time.”

Figure 19. Length of Service Affects Compliance Versus On Time.

The x-axis is made up of 5 different groups. This group is the number of years served in the military by these individuals. The grouping are (1) 4 years, (2) 8 years, (3)
12 years, (4) 16 years (5) 20 years. The y-axis is made up of the different level of compliance of taking the individuals medication on time. The groups are (1) always, (2) most of the time, (3) sometimes, (4) rarely and (5) never. Looking at the x-axis the individuals in the 4-year grouping showed a 1.942 level of compliancy. The 8 years of military duty individuals showed a 1.9565. Group 3 showed a 1.727. Group 4 military individuals showed a 1.9333 and the 20 years of duty showed a 2 level of compliancy.

Reserve Service Affects Compliance

Figure twenty is labeled; "Reserve Service Affects Compliance Versus Number of Samples."
The x-axis is made up of 5 different groups. Group 1 is of veterans with 4 years of reserve duty. Group 2 are those veterans with 8 years of reserve duty. Group 3 are veterans with 12 years reserve duty. Group 4 are veterans with 16 years of reserve duty and group 5 are those with 20 years reserve duty. For this study there were 128 veterans in group 1, 25 veterans in group 2, 4 veterans in group 3, 3 veterans in group 4 and zero veterans in group 5.
The x-axis is labeled "Number of samples." The scale starts at 0 and stops at 150.

Figure twenty-one is labeled; "Reserve Service Affects Compliance Versus On Time."

Figure 21. Reserve Service Affects Compliance Versus On Time.

The x-axis is made up of 5 different groupings. Group 1 are veterans with 4 years of reserve duty. Group 2 are those veterans with 8 years of reserve duty. Group 3 are veterans with 12 years reserve duty. Group 4 are veterans with 16 years of reserve duty and group 5 is those with 20
years reserve duty. The y-axis has 5 different choices of levels of compliance of taking medication on time. (1) always, (2) most of the time, (3) sometimes, (4) rarely, and (5) never. Looking at the x-axis the veterans with 4 years reserve duty show a 1.953 level of compliancy, the 8 years of reserve duty group show a 2.04 level of compliancy, the 12, 16 and 20 years groupings have too few number in their population to study.

Branch of Service Affects Compliance

Figure twenty-two is labeled; "Branch of Service Affects Compliance Versus Number of Samples."
Figure 22. Branch of Service Affects Compliance Versus Number of Samples.

The x-axis is made up of the different branches of military service. (1) Army, (2) Navy, (3) Air Force, (4) Marines, and (5) Coast Guard. For this study there were 36 veterans from the Army, 38 veterans from the Navy, 34 veterans from the Air Force, 30 from the Marine Corps and 24 veterans from the Coast Guard. The y-axis is labeled Number of samples. The scale begin at zero and ends at 40.

Figure twenty-three is labeled: "Branch of Service Affects Compliance Versus On Time."
Figure 23. Branch of Service Affects Compliance Versus On Time.

The x-axis is made up of 5 different branches of the military. (1) Army, (2) Navy, (3) Air Force, (4) Marines, and (5) Coast Guard. The y-axis has 5 different levels of compliancy. (1) always, (2) most of the time, (3) sometimes, (4) rarely, and (5) never. Looking at the x-axis the Army veterans showed a 1.944 level of compliancy, the Navy veterans showed a 1.842, the Air Force veterans showed a 1.705, the Marine Veterans showed a 2.2 level while the Coast Guard showed a 1.958 level of compliancy.
Rank Affects Compliance

Figure twenty-four is labeled; “Rank Affects Compliance Versus Number of Samples.”

Figure 24. Rank Affects Compliance Versus Number of Samples.

The x-axis is made up of different military ranks. Group 1 has veterans that have a rank of E-1 to E-5, Group 2 are ranks E-6 to E-9, group 3 are ranks O-1 to O-5 and group 4 are ranks O-6 to O-9. The y-axis is labeled “Number of samples.” The scale begins at zero and ends at 40. For this study there were 38 veterans from group 1, 38 veterans
from group 2, 34 veterans from group 3 and 30 veterans from group 4.

Figure twenty-five is labeled; “Rank Affects Compliance Versus On Time.”

Figure 25. Rank Affects Compliance Versus On Time.

The x-axis is made up of 4 different grouping that are made up of different military ranks. Group 1 are ranks E-1 to E-5, group 2 are ranks E-6 to E-8, group 3 are ranks O-1 to O-5 and group 4 are ranks O-6 to O-9. The y-axis is made up of 5 possible responses to the question, if medications are being taken on time. Those responses were, (1) always,
most of the time, (3) sometimes, (4) rarely, and (5) never. The x-axis shows that the veterans in the E-1 to E-4 grouping show a 1.944 level of compliance. The veterans in the second rank group show a 1.842 level of compliance. The veterans in the third group ranking show a compliance level of 1.705. The last rank grouping is of those of ranks 0-6 to 0-9 showing a 2.2 level of compliance.

**Length of Time Out of Service Affects Compliance**

Figure twenty-six is labeled: "Length of Time Out of Service Affects Compliance Versus Number of Samples."
The x-axis is made up of 5 different numbers of years that a veteran has been out of the military. Group 1 is 4 years, group 2 is 8 years, group 3 is 12 years, group 4 is 16 years and group 5 is 20 years. The y-axis is labeled number of samples. The figure shows that for this study, group 1 had 37 veterans, group 2 had 29 veterans, group 3 had 39, group 4 had 38 and group 5 had 19.

Figure twenty-seven is labeled: “Length of Time Out of Service Affects Compliance Versus On Time.”
Figure 27. Length of Time Out of Service Affects Compliance Versus On Time.

The x-axis is made up of 5 different year groupings. Group 1 is 4 years, group 2 is 8 years, group 3 is 12 years, 16 years and group 5 is 20 years. The y-axis is made up of 5 different responses to the question of taking medication on time. (1) always, (2) most of the time, (3) sometimes, (4) rarely, and (5) never. Looking at the figure the group one shows a 2.378 level of compliancy, group 2 shows a 1.892 level, group 3 shows a 1.615 level, group 4 shows a 1.789 and group 5 shows a 1.947 level of compliancy.
CHAPTER FOUR: FINDINGS

Length of Time Taking Medication

The hypothesis was to determine if the longer a individual is on the same medication, the higher the compliance for the individual. As medication becomes part of individual's daily plan, the compliance will increase.

Looking at figure two, number of subjects, population 1 indicating the individual has been taking medication for 1 week, has a total 6 subjects and only 1 veteran subject. Any time there are less than 10 subjects for any population the results will be excluded. Thus for figure two the values for population 1 are not counted.

Looking at figure three, the best is at 5 years and the worst compliance rate is a tie between more than 5 years and 6 months. Overall, the average answer is around a 2, indicating that the individuals take their medication most of the time. The data does not substantiate the hypothesis that the longer an individual is on medication the more compliant they are. The difference between lengths of time does not appear to be statistically significant. Except for a spike in the 6-month population for non-veterans, the results were very close to each other.
The thought of doing a task over and over again to form habit does not seem to apply to taking medication. Thus our original hypothesis is supported by the data.

**Frequency of Taking Daily Medication**

The hypothesis was to determine if it is difficult for individuals to do more than one task a day on a continuing schedule. As you increase the number of things a individual must be responsible for per day, the compliance will decrease.

Looking at figure four, number of samples, population 4 and 5 indicating the individual has been taking medication for 4 times a day or greater than 4 times a day, have less than 10 samples in some of the populations. Populations of less than 10 subjects will be excluded from the calculations.

Looking at figure five, the most compliant group is population 1, taking medication 1 time a day, and the least compliant was population 3, taking medication 3 times a day. Populations 4 and 5 are ignored due to lack of data for those populations. Although the difference between population 1 and 2 are not great, there is an improvement in compliance with the reduction of times medication has to be taken. Population 3 shows a marked increase in non-
compliance. The data taken supports the original hypothesis.

**Taking Medication On a Timely Basis**

The hypothesis was "the veteran’s will have a higher compliance to taking medication or treatments on time as compared to civilians."

Looking at figure six, number of samples, population 5 indicating the individual that never took the medication on time, has less than 10 samples in some of the populations.

Looking at figure seven, we see that the veteran group has a higher compliance in "always", "most", and "sometimes" of taking medication on time and the civilian group rarely takes medication on time. The data taken supports the original hypothesis.

**Taking Correct Dosage of Medication**

The hypothesis was to determine if veteran’s status will have a higher compliance to taking correct dosage on medication.

Looking at figure eight, number of samples, population 5 indicating the individual that never took the medication on time, has less than 10 samples in some of the populations.

Looking at Figure 9, we see that the veteran group has higher compliance in "always" and "most" of the of taking
correct dosage of medication and the civilian group in
sometimes and rarely takes medication correct dosage of
medication. The data taken supports the original
hypothesis.

Do You Skip Taking Medication

The hypothesis was to determine if veteran's status
will have a higher compliance in not skipping medication.

Looking at figure ten, number of samples, all
populations have more than 10 samples.

Looking at figure eleven, we see that the veteran group
has a lower compliance than the civilian group. The
veterans skip taking their medications more often than the
civilians. The data taken does not support the original
hypothesis.

Feeling That Medication is Beneficial

The hypothesis was if veteran status will have a higher
feeling of the medication being helpful due to the fact that
veterans have been taught that their superiors know what is
best for them. In this case the veteran individual will
view the physician as a superior for their health care.

Looking at figure twelve, number of samples, all
populations have more than 10 samples.

Looking at figure thirteen, we see that the veteran
group has less confidence in the medication helping them
than does the civilian group. The data taken does not support the original hypothesis.

Gender of Individual Affects Compliance

The hypothesis was to determine if the gender of the individual has an effect on the compliance of the individual taking the medication in the veteran population. Will the compliance for female veterans be statistically higher than for male veterans?

Looking at figure fourteen, number of samples, all populations have more than 10 samples. Populations of less than 10 subjects will be excluded from the calculations.

Looking at figure fifteen, we see that the female veteran group has higher compliance than the male counterpart in the veteran population. The data taken does support the original hypothesis.

Age of the Individual Affects Compliance

The hypothesis was to determine if the older the individual becomes the more compliant they become. To be determined for veteran and non-veteran.

Looking at figure sixteen, number of samples, all populations have more than 10 samples.

Looking at figure seventeen, we see that the individuals become more compliant until they are over the age of 70. This is true for both veteran and non-veteran
populations. The data does support the hypothesis for all ages except those over 70.

Length of Service Affects Compliance

The hypothesis was to determine if the longer the time an individual is in the Service the higher the compliance. Looking at figure eighteen, number of samples, all populations have more than 10 samples.

Looking at figure nineteen, we see that the individuals with service over 12 years and less than 16 years to be the most compliant. The data does not support the hypothesis.

Reserve Service Affects Compliance

The hypothesis was to determine if any additional military service will reinforce the discipline to be compliant.

Looking at figure twenty, number of samples, two populations 3, 4 and 5 have less than 10 samples.

Looking at figure twenty-one, considering that we have only 2 populations and the percentage is close, there is not enough data to determine if the original hypothesis is valid.

Branch of Service Affects Compliance

The hypothesis was to determine if the marine corps will have higher compliance than the rest of the branches of the service.
Looking at figure twenty-two, number of samples, all populations have more than 10 samples.

Looking at figure twenty-three, the marine corps has the worst compliance. The data does not support the hypothesis.

**Rank Affects Compliance**

The hypothesis was to determine if the higher the rank the higher the compliance. The higher the rank normally indicates increased education and longer time in the military.

Looking at figure twenty-four, number of samples, all populations have more than 10 samples.

Looking at figure twenty-five, we see the group that is most compliant is the young officers. The data does not support the hypothesis.

**Length of Time Out of Service Affects Compliance**

The hypothesis was the longer the individual is out of the military the lower the compliance.

Looking at figure twenty-six, number of samples, all populations have more than 10 samples.

Looking at figure twenty-seven, we see the group out of service from over 12 years but less than 16 years has the highest compliance. The data does not support the hypothesis.
CHAPTER FIVE: CONCLUSIONS

In the previous pages, I chose the topic: Veteran dedication makes them more efficient in receiving directions on medication, driving veterans to be more medication compliant.

My reason for choosing this topic is because I am a veteran and I am on medications. My interest in knowing if other Veterans were medication compliant versus the Non-Veteran population brought stimulating areas of exploration in this study. With the HMO's today being so important in mainstream American Medicine, this study sheds light on many issues, types of peoples, and groups. Physicians and patients can find reasons for compliance and non-compliance as well. The changes that complying with medication goes through as well as barriers were considered.

The relationship between age and compliance was a factor. The length of time taking the medications versus the number of samples was an issue. Time variables continued in the length of time they have taken medications, frequency, to, do you take your medications on time? Dosage was also a primary factor, both in the number of samples and percentages. Skipping medications and whether the medications were helping was included. The sex of a patient and if it affected the compliance factor as well as length
of time in the military versus reserve time, rank, and time beyond serving in the armed forces. Education levels and compliance were also considered.

The data was collected in a questionnaire form with 15 questions used, ranging from "Do you take medication daily?" to the length of time an individual took medication. Dosage compliance questions as well as gender and age groupings information were collected. Veteran related questions on branch of service, length of time in the military, rank, years served, and how many years since you served in active duty were included. Reserve status was also an issue.

The sample of convenience was the sampling method used with the subject groups in this study and was compiled into two different populations, veteran and non-veterans. The age span ranged from age 20 to 70 and above. Age grouping was in values of ten for each grouping. Jerry Pettis Veteran Hospital was used and the Geriatric Assessment Center for collecting the data from individual patients. The local populations in the San Jacinto Valley and Hemet Hospital, and Valley Blind Center provided data for the non-veteran survey.

The heading for figure one is; "Age of the individuals versus number of samples." The age samples start at age 20
and climbs to age 70 with a 10 year and 10 point spacing. After looking at the figure all age groupings meet the 15 individuals per age grouping required to run the study. The hypothesis was to determine if veteran’s status would have a higher compliance in not skipping medication. Both veterans and non-veterans skipped taking their medications. The non-veterans were higher over all. This data does not support the hypothesis.

Veterans are taught to comply with orders and directions on a daily basis. The data was analyzed using qualitative descriptive statistics methods to determine the validity of the hypotheses. The use of mean, median, mode, percentages, and standard deviation and variance were calculated and or figured to substantiate the hypotheses. A spreadsheet format was used for easier analysis.

The thought of doing a task over and over again to form a habit does not seem to apply to taking medication as shown in figures 2 and 3 on "Length of time taking medications". Thus the original hypothesis is supported by the data.

Frequency of taking daily medication decreased as the number of things an individual must be responsible for increases daily for a patient. Figures number 4 and 5 substantiate this finding.
In figures 6 and 7 the veterans were more compliant than non-veterans in taking medications on a timely basis.

Taking the correct dosage of medication, the hypothesis was to determine whether veteran status would have a higher compliance level than non-veterans. Figure number 8, the populations for "rarely" and "never" had less than 10 samples the results were excluded. While figure number 9 showed higher compliance levels for veterans than non-veterans except in "sometimes." This shows the veteran's are normally more compliant for taking correct dosages of medication.

Figure number 10 shows we have enough samples to consider the results, while figure number 11 shows civilians are more compliant in taking the correct dosage of medication than the veterans. This was a surprise and does not support the original hypothesis. One reason may be the civilians have to pay for their medications while the veterans do not and take it for granted.

Figure number 12 show we have enough samples to consider the results, while figure 13 shows the civilians are more compliant than the veterans in thinking the medication is helping them. Again like the previous figures on correct dosage, the data does not support the hypothesis. Probably the same reason as the correct dosage reason.
Figure number 14 shows we have enough samples to consider the results, while figure 15 shows the female individuals in both veteran and civilian populations have a higher compliance than the male counterparts. The data does support the hypothesis.

Figure 16 shows there are enough samples to consider the results, while figure 17 shows individuals become more compliant with age, until they are over 70. This could be the result of memory, sight, or cognitive functions due to age. Overall the data supports the hypothesis.

Figure 18 shows there are enough samples to consider the results, while figure 19 shows there is no clear correlation to compliance with the length of service. The data does not support the hypothesis. A possible reason is at 12 years of service, the individuals are in the middle ranks and are still use to following orders, while later they get to higher ranks and give orders instead of following orders. This may explain the results.

Figure 20 shows only enough samples in the first two populations. Analyzing the reserve service compliance, we looked at 4 and 8 years. Figure 21 shows a close correlation for the two populations we can consider and thus due to lack of sampling the status of the hypothesis cannot be proved or disproved.
Figure 22 shows there are enough samples to consider the results, while figure 23 shows the Air Force has the highest compliance while I predicted the marines would have the highest compliance rate. In fact the Marines had the lowest compliance. The results do not support the hypothesis. One reason may be that the Marines tend to be more “macho” so bullets or diseases cannot stop them.

Figure 24 shows there are enough samples to consider the results, while figure 25 more compliance until the higher officer ranks showing lowest compliance. The data does not support the hypothesis. One reason may be similar to the length in service reason. As the individuals become more powerful, they do not think rules apply to them.

Figure 26 shows there are enough samples to consider the results, while figure 27 shows they become more compliant until they have been out of the service over 16 years and they start to become less compliant. The data does not support the hypothesis. The reason may be similar to the age reason. As they become older they forget or have additional problems that causes the non-compliance.

Overall mixed findings were shown with some of the hypothesis true and others false. Additional studies are required to find any definite relationship between veterans having a higher compliance of taking medication over the
general population. Finding a solution for non-compliance in taking of medications is still unknown.
APPENDIX A: QUESTIONNAIRE

1. Do you take medication daily?
   (1)---Yes (2)---No

2. How long have you taken this medication?
   (1)---1 week (2)---1 month (3)---6 months
   (4)---1 year (5)---5 years (6)---more than 5 years

3. How often do you take your medication?
   (1)---once a day (2)---twice a day
   (3)---three times a day (4)---four times a day
   (5)---greater than four times a day

4. Do you take your medication on time?
   (1)---always (2)---most of the time (3)---sometimes
   (4)---rarely (5)---never

5. Do you take the correct dosage of medication?
   (1)---always (2)---most of the time (3)---sometimes
   (4)---rarely (5)---never

6. Do you skip taking your medication?
   (1)---yes (2)---no

7. Do you think your medication is helping you?
   (1)---yes (2)---no

8. Sex?
   (1)---male (2)---female

9. Are you a U.S. veteran?
   (1)---yes (2)---no

10. What is your age group?
    (1)---20 to 29 (2)---30 to 39 (3)---40 to 49
     (4)---50 to 59 (5)---60 to 60 (6)---greater than 70

11. How long did you serve in the active armed forces?
    (1)---4 years (2)---8 years (3)---12 years
     (4)---16 years (5)---20 years
12. How many years was your reserve service?
   (1)—4 years  (2)—8 years  (3)—12 years
   (4)—16 years  (5)—20 years

13. What branch of the armed services were you a member?
   (1)—Army  (2)—Navy  (3)—Air Force
   (4)—Marines  (5)—Coast Guard

14. What was your rank in the armed forces?
   (1)—E1 to E5  (2)—E6 to E9
   (3)—O1 to O5  (4)—O6 to O9

15. How many years has it been since your active duty?
   (1)—4 years  (2)—8 years  (3)—12 years
   (4)—16 years  (5)—20 years
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