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This study was conducted to determine if a difference exists between the perceived and actual percentage of time devoted to patient care and non-patient care by physical therapy personnel at Tripler Army Medical Center. A survey of physical therapy personnel was administered to assess their perceptions of duty time spent in patient care. Actual duty performance was observed for each physical therapy person. A significant difference was found between perceived and actual percentage of time spent in patient care activities. Time spent in patient care was overstated by all staff members and time spent in non-patient care activities were understated. The author recommends use of observers to measure actual time spent in patient care for manpower surveys due to the large dicrepancies found between actual and perceived time spent in patient care. Keywords: Theses, Health administration, Medical Services. (KT)

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A STUDY TO DETERMINE IF A DIFFERENCE EXISTS BETWEEN THE PERCEIVED AND ACTUAL PERCENTAGE OF TIME DEVOTED TO PATIENT CARE AND NON-PATIENT CARE BY PHYSICAL THERAPY PERSONNEL AT TRIPLER ARMY MEDICAL CENTER

A GRADUATE RESEARCH PROJECT

SUBMITTED TO THE FACULTY OF

BAYLOR UNIVERSITY

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REQUIREMENTS FOR THE DEGREE

OF

MASTER OF HEALTH ADMINISTRATION

BY

MAJOR KAREN F. REED, AMSC

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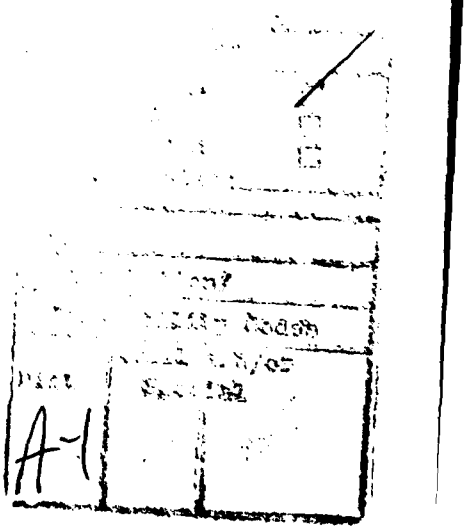

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CHAPTER I.

INTRODUCTION

Background

The concern over the rising cost of health care has prompted investigations into the effective and efficient use of personnel and the provision of quality care. Important tools in these investigations are the standards, guidelines, and methodologies for determining manpower requirements for a specific activity. Deficiencies in these tools require additional justifications as to why deviations or exceptions exist. Without objective and substantive data, the impact of these justifications is questionable.

The staffing guide[1] currently being used by the United States Army Physical Therapy Clinics was designed for U. S. Army Medical Department Activities (MEDDAC) in the continental United States. Oversea and Army Medical Centers (MEDCEN) are instructed to use the guide where applicable and rely heavily on local appraisal for manpower requirements. The guide was established based on data from multiple hospitals and various treatment modalities and establishes requirements for a clinic representative of all physical therapy clinics. It does not consider enough data to be specific for one particular clinic. Local appraisers who are unfamiliar with all the ramifications of physical therapy require additional input to assist them in translating patient appointments into understandable or defined units to determine manpower requirements.

As no two people are alike, so are no two physical therapy clinics

alike. The chief and staff of each clinic have varying interests and priorities and function for the most part according to the local medical activity's mission. A MEDDAC located on a basic training post will serve a population different from a MEDDAC located where advanced officer training is provided. A MEDCEN located with a division on post will differ from a MEDCEN located in a major metropolitan city with no active duty units nearby.

For the most part, a clinic affiliated with a regional medical center will be larger in staff and offer more diverse programs than a clinic at a local medical activity. There may also be more administrative requirements although responsibilities for various projects and programs may be delegated to other staff members. Generally, these clinics will have a greater number of long-term, labor-intensive, rehabilitative-type patients, as the medical center represents the primary, secondary, and in some instances, the tertiary level of care.

Because a MEDDAC will have a smaller clinic of one to three therapists and the complementary enlisted specialist staff, patient treatment schedules become less flexible and resistant to shifting with the addition of non-patient care responsibilities. The majority of patients treated are more acute and short-termed. Patients requiring specialized treatment not offered at the MEDDAC will be transferred to the nearest MEDCEN for definitive care and rehabilitation.

A review of the current staffing guide and yardstick (Table 1) reveals no evidence that the complexity or type of treatment, the level of providers needed for a particular treatment, nor the activities and requirements of non-patient care were considered. An eleven percent allowance factor is computed in the total manpower figures to account for non-patient care activities such as meetings, training, leave and personal time. However, new

requirements are frequently issued from parent commands as well as from the Department of the Army, emphasizing new programs and priorities. These new programs are additional requirements; i.e., current responsibilities are not discontinued. Staff members are tasked with additional duties as representatives on committees and task forces, in addition to developing and implementing plans to support the programs. Time spent is not measured in the normal yardstick work unit (Patient Visit) and frequently takes away from direct patient care time.

Some clinics have student education/affiliation programs, another aspect not considered in the yardstick.[2] Each school establishes different requirements for the affiliate, and the clinic staff's responsibilities and allotted time for each program are just as variable. Research, important for the growth of the profession, is oftentimes deferred because of other priorities.

Under the present system of manpower authorizations, additional staff requirements are narratively justified. There is no absolute rule that justifications be narratively stated; and in fact, clinics are encouraged to create task lists indicating tasks performed, time involved, and number of times performed as part of the manpower survey documents. However, this proves to be time-consuming and labor-intensive, and clinic chiefs are highly reluctant or unwilling to initiate such a project. Out of convenience, they are more willing to resort to subjective estimates.

Consultations with physical therapy officers and consultants at the Surgeon General's Office, and the Health Services Command and various clinics at both MEDDACs and MEDCENs, indicate that no studies have been done in the area of physical therapy in the U. S. Army to determine the percentage of time spent in direct patient care, indirect patient care, and non-patient care, to offer substantive evidence for these justifications.

A review of the literature produced only a handful of studies primarily in other disciplines, only two of which were recent. One of the first studies in work sampling conducted at Massachusetts General Hospital in 1950[3] revealed that nursing aides and orderlies spent eighty percent of their time in direct patient care, with registered nurses spending twenty percent, student nurses thirty percent, and vocational nurses thirty percent.

A 1966 study at a 400-bed acute private hospital revealed that occupational therapists spent thirty-eight to sixty-four percent (mean fifty percent) of their time in direct patient care while their aides spent fifty-eight percent of their time.[4]

In the mid-1960s another study determined that Canadian physiotherapists spent less than thirty-five percent of their time in direct patient care.[5]

Ninety-seven non-military physical therapy departments nationally were surveyed in 1982 to determine the work schedules of physical therapists.[6] This was done through a questionnaire with no direct observation by the surveyor. One part of the survey requested actual amount of time each therapist spent with patients in an eight-hour day. Although the study concluded that seventy-six percent of the time was spent in direct patient care, no details were given to indicate what was included in "direct patient care".

None of these studies were conducted in a military setting and only one was conducted when quality assurance programs and other highly intensive documentation programs were in effect. Emphasis has since been placed on diversification of services, education and training, quality assurance, and the need for documentation as requirements for accreditations and licensure.

The only military study published was conducted by the Army Nurse Corps in 1983 which lasted six months and surveyed nine Army hospitals within the Health Services Command.[7] This study revealed that nursing personnel spent 24.5% of their time in direct patient care, with head nurses spending only 14.5% in direct care.

Tripler Army Medical Center (TAMC) will undergo a manpower survey in the fall of 1985. Because the programs offered by the physical therapy clinic have become so diverse and tailored to the priorities of both the clinic and the medical center, the staffing guide offers very little in the way of determining required staffing positions. Although TAMC is not considered an overseas facility for command purposes, its situation is unique. In addition to providing services for active duty and retired military and their dependents, TAMC also has responsibility for Veterans Administration beneficiaries and beneficiaries who reside in American Samoa and the Trust Territories. These patients have chronic conditions which are rarely seen where sophisticated medical facilities and services are available. No other medical facility within the Health Services Command treats the numbers and types of these patients that TAMC does.[8]

An objective method of obtaining data was not feasible for the physical therapy staff at TAMC considering the short time span before the survey and the expected turnover and permanent decrease of staff during the spring and summer months of 1985. This survey was undertaken to help the chief of the physical therapy clinic determine the time spent by his staff in direct patient care, indirect patient care, and non-patient care activities for the survey document to supplement the number of clinic visits required for the yardstick. Normally, the physical therapy chief would rely on his and his staff's memory and perceptions to determine the per-

centage of time devoted in these areas because of the time-consuming and labor-intensive effort to collect objective data. The validity and reliability of the data used in such justifications are dependent upon the judgment of the chief and clinic staff. Without objective data to support the justifications, local appraisers may question the validity and reliability of this judgment. It is to preclude these problems that the study was undertaken.

Statement of Research

To determine if a difference exists between the perceived and actual percentage of time devoted to patient care and non-patient care by physical therapy personnel at Tripler Army Medical Center.

Objectives

1. Determine major activities and functions performed by the physical therapy personnel and categorize them into direct, indirect, non-patient care and personal time.

2. Conduct a survey via a questionnaire given to TAMC physical therapy personnel to determine perceived percentage of time spent in direct, indirect, non-patient care and personal time.

3. Perform an on-site survey to record the actual level of provider time spent in direct, indirect, non-patient care and personal time, and convert actual time into percentages.

4. Determine if on-site survey days collectively are representative of average workload using the one sample runs test for randomness.[9]

5. Analyze and compare the results from both surveys, using the Wil-

coxon Matched-Pairs Signed-Ranks Test.[10]

Criteria

A level of significance of five percent was used to determine if there was a statistically significant difference between perceived and observed percentages of time.

Assumptions

1. Type and amount of treatment ordered for patients were proper.

2. On-site survey days collectively were representative of average case-mix and clinic/personnel requirements.

Limitations

1. The study was limited to the Physical Therapy Clinic, Tripler Army Medical Center, Honolulu, Hawaii.

2. The survey did not consider non-duty hours worked.

3. The survey was limited to one observation day per staff member due to other mandatory requirements of the one surveyor collecting data.

4. Only quantity of time was measured. No evaluation of the quality of care was measured.

Definitions

For ease of understanding and data gathering, the time perceived and measured was defined as follows:

1. Direct Patient Care - includes interaction directly with the pa-

tient; i.e., the actual administration of treatment to, or supervision of the patient; interview; history taking; evaluation; examination; and measurements and tests.

2. Indirect Patient Care - those activities related to specific patient care ~~but~~ which may occur in the absence of the patient; i.e., preparation of the treatment site, equipment set-up, documentation of information, consultations, patient-related telephone calls, etc.

3. Non-patient Care - generally includes administrative functions, meetings, inservice education, military training, and additional duties such as Administrative Officer of the Day and Charge of Quarters.

4. Personal Time - includes time taken for sickness, leave, medical appointments, and personal hygiene.

These categories were determined after a review of the literature and prior to development of the survey tools. AR 570-5, Manpower Staffing Standards System[11], uses and defines the terms "Direct Time", "Indirect Time", "Productive Time", "Non-productive Time", "Personal Allowance", and "Non-available Time". To minimize the number of categories, to avoid assigning specific activities into more than one category, and to facilitate understanding and ease of gathering data, the specifically defined terms mentioned previously were used.

Research Methodology

A major concern in the development of this study was to formulate a plan which would minimize bias associated with answers to the questionnaire and during the on-site collection survey. The questionnaire (attached at Appendix A) and the on-site survey form (attached at Appendix B) were both

developed months before the author's arrival at TAMC.

As a means of minimizing bias with the questionnaire, pertinent questions specifically related to the studied subject were accompanied by other questions concerning the daily operation of the clinic and the role of the particular staff member. It was the intent of the author to brief the staff about the study in general terms, avoiding the specific research question. This would help to minimize their change in behavior during the on-site survey if they knew the true intent.

To eliminate differences of opinion between two or more surveyors as to how to categorize a certain activity or behavior, the author was the only surveyor used during this study. Although evaluating and categorizing a specific activity were subjective calls on the part of the surveyor, they were consistent for every subject.

Upon her arrival at TAMC, the author contacted the Chief of the Physical Therapy Clinic and presented a general briefing, emphasizing the intent to minimize any bias. An overview of the clinic and services provided was given to the surveyor and this information was compared to the questionnaire and the on-site survey form to insure that all general areas were considered. No additions were needed on either form. During a residency rotation through the Physical Therapy Clinic, the questionnaire was administered to the staff after a routine staff meeting. Participants included all officer and enlisted personnel who would be available during the second quarter of fiscal year 1985 for the on-site observation survey. This included six officers and four enlisted specialists. (One officer was eliminated from the study as she was experiencing a difficult pregnancy and was absent for the afternoon of her observation day and periodically during the quarter).

Results of the questionnaire were not tabulated until all subjects had

been observed and all data had been collected from the on-site surveys. This was to eliminate bias on the part of the surveyor during the on-site visits.

Frequent visits were made by the surveyor in order to become a familiar face prior to the actual collection of data. In addition, individual staff members were contacted on various occasions for assistance with other hospital projects in order to facilitate familiarity. These steps were taken to minimize the anticipated anxiety of the subject during the observation period.

The observation phase was conducted during the second quarter of this fiscal year (1985) on ten selected days, each day from a different week, during normal duty hours only. Initially days were to be selected randomly, but, because of a pre-set residency schedule which was not entirely flexible during the survey period, days were selected based on surveyor and subject availability. Three officers were scheduled to be absent during the latter part of the quarter (two being transferred to other duty stations, and one on maternity leave) which narrowed the time frame in which the study could be executed. Observations of all staff members had to be performed when the staff was stable and no changes were made in work assignments or responsibilities. This left an eleven-week period (7 January 1985 - 22 March 1985) available for ten observation days (one day per week).

Staff schedules were obtained from the Chief of Physical Therapy, indicating presence or absence on specific days during the quarter. The staff was observed based on availability, beginning with the officers expected to leave. This was done because of the uncertainty of their schedules during the latter part of the observation period. The remainder of the officer staff was evaluated beginning with the junior officer, working up to the Chief of Physical Therapy. For no particular reason and mainly out of con-

venience, the enlisted staff was then evaluated according to rank, beginning with the highest ranking working down to the junior enlisted member.

The staff was not informed of the observation dates, nor the subject to be monitored. This was done to discourage rearrangement of schedules in preparation for the survey.

Work sampling techniques were not employed during the observation phase mainly because of the unpredictability of patients keeping their appointed times. Instead,each subject was observed during a full normal working day. Observation began at 0730 hours and continued to the end of the duty day, 1630 hours. No off-duty time was reported by any staff member. Each subject was followed and observed from a distance (always remaining in the same room). Each function was timed using a wrist watch with a second-hand sweep. Minutes were recorded in whole numbers on the on-site survey form. Those functions not included on the survey form were noted in the "Other" row in the pertinent category. Subjects working on the wards were accompanied by the surveyor. No subject left the main hospital facility to perform patient-related duties.

After all observations were made and the on-site survey forms were completed, data were collected from the office records to determine if the observed days were representative of the mean workload for the month and for that particular day of the week. This was done by dividing the total monthly count by the number of days worked. To determine the mean count for the particular day, the total number of Mondays, Tuesdays, etc., for calendar year 1984 to the present day was determined and divided into the total patient count for all of those days.

Data from the on-site survey forms were then analyzed by totalling the number of minutes spent in each category and converting that figure into a

percentage. The results were then compared to the percentages reported on the questionnaire, using the Wilcoxon Matched-Pairs Signed-Ranks Test with a level of significance of five percent.

The null hypothesis was: there is no difference between perceived and actual percentage of time devoted to patient care and non-patient care by physical therapy personnel at Tripler Army Medical Center.

Footnotes

[1]Staffing Guide for US Army Medical Department Activities, Pamphlet 570-557 (Washington, D.C.: Headquarters, Department of the Army, 26 June 1974):2-27.

[2]Interview with Helen Gomez, Management Analyst, Directorate of Force Development, Tripler Army Medical Center, Honolulu, Hawaii, 23 January 1985.

[3]Faye G. Abdellah and Eugene Levine, "Work Sampling Applied to the Study of Nursing Personnel," Nursing Research 3(June 1954):11-16.

[4]Tali A. Conine and Diana L. Hopper, "Work Sampling: A Tool in Management," American Journal of Occupational Therapy 43(September 1976):301-304.

[5]Donna Campbell, "Occupational Therapy Statistics: Boring or Bewildering?" Canadian Journal of Occupational Therapy 43(September 1976):93-94.

[6]Marilyn Pink, "Physical Therapy Work Schedules," Physical Therapy 64(February 1984):213-217.

[7]Terry D. Misener and A. J. Frelin, Time Spent in Indirect Nursing Care (Fort Sam Houston, TX: US Army Health Care Studies and Clinical Investigation Activity, 1983):Final Report 83-004.

[8]Interview with Helen Gomez, Management Analyst, Directorate of Force Development, Tripler Army Medical Center, Honolulu, Hawaii, 23 January 1985.

[9]Wayne W. Daniel, Applied Nonparametric Statistics, (Boston: Houghton Mifflin Co., 1978):53-55.

[10]Ibid., p. 135-137.

[11]Manpower Staffing Standards System, AR 570-5 (Washington, D.C.: Headquarters, Department of the Army, 15 April 1984): Glossary.

CHAPTER II

DISCUSSION

This study dealt only with the quantitative aspect of physical therapy services. Because no qualitative evaluations were made, one may question how valid or reliable the results were. Local appraisers may raise the question and ask for work-efficiency studies to determine the proper utilization of personnel. Others may question whether the staff spent their time in a truly professional and efficient manner. Such a study would require close coordination with intensive manpower and resources expended; highly unreasonable for such a small area.

Comparisons may be made with other medical centers, but one must consider the patient-mix, the population served, and the variability between staff members and their particular interests. And again, one must question whether the staff is performing in a truly efficient manner at the other sites.

Every attempt was made to decrease change in the work patterns and habits of the staff during the observation day. This effort was successful for the most part as determined by unofficial observations made on other days. However, one staff member in particular had established a change in the number of patients seen on the observation day as compared to other "normal" days. This was noted on the survey form for interest, but not considered in the final results.

Before any of the data from the questionnaire or on-site survey form were analyzed, a statistical test was performed to determine if the on-site

observation days were representative of the workload to date. If the test showed the days were not representative, then additional days would have been selected and further observations made. This would have been difficult however, considering the tight schedule in which to perform the observations.

Table 2 displays the figures which were used to determine this test. Using the one sample runs test for randomness, there is statistical evidence to support that the days selected for observation were determined by a random process and hence, representative of the workload. Values of 6 and 5 respectively, were determined for each test. According to Table 3, critical values were 2 and 10 and 2 and 9 for each test. Since the r values fell between the critical values in each case, the null hypothesis could not be rejected.

Although the statistics indicate that the selected workdays were representative of the workload to date, evaluation of the staffing patterns from office records, revealed that the staff in calendar year 1984 consisted of five to six officers and six enlisted personnel, an increase of three people compared to the present staff. Although this is noted, it was not considered in the study.

The questionnaires were analyzed and perceived percentages for each category were noted on Table 4. Data generated from the on-site survey form were also noted on Table 4 for ease of comparison. Subject 9 was included on this table, but was eliminated from further study because of the results of the questionnaire which indicated that no time was spent in direct care, one hundred percent was spent in indirect care ("Clean-up"), and no time in non-patient care. The author felt these results were not indicative of the subject's performance and that the subject intentionally skewed his answers.

The means and ranges for each category of personnel were then computed with results on Table 5. Evaluation of this table indicates that the total staff perceived they spent much more time in total patient care than they actually did and understated non-patient care time. (Personal time was not evaluated as the study focused on direct and indirect patient care and non-patient care time).

Although the 73.1 percent of time spent in total patient care by all staff compares closely with the 76 percent found in the non-military study conducted in 1982, no correlation can be drawn because of the lack of definition of "direct patient care". Using the same definition of "direct patient care" as the military nursing study, the 29.1 percent figure was closely related to that spent by the nursing personnel (24.5 percent). But again, no conclusions can be drawn because of the difference between the two professions.

Of interest is the comparison of times actually spent between the officer and enlisted staff in total patient care. One might expect that the enlisted spent more time with patient care than the officer staff, but results indicate that the two figures are comparable. The actual times spent in non-patient care by both officer and enlisted may be representative of the participation in joint training and education programs and mandatory military duties.

Although analysis of Table 5 reveals there is a difference between the perceived and actual times spent in patient care and non-patient care, the figures were analyzed to determine their statistical significance. Table 6 displays the results for direct patient care time as determined by the Wilcoxon Matched-Pairs Signed-Ranks Test. As indicated, there is a statistically significant difference. Table 7 incorporates direct and indirect

care as an indication of total patient care. Again, the results show there is a statistically significant difference. In keeping with the other tables, Table 8 also indicates a difference exists between the perceived and actual percentage of time spent in non-patient care.

CHAPTER III

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the results of this study, it is concluded that a difference does exist between the perceived and actual percentage of time spent in patient care and non-patient care by physical therapy personnel at Tripler Army Medical Center. The average percentage of time spent in patient care by all staff members was 42.5% as opposed to the perceived value of 73.1%. Officers spent 41% in patient care as opposed to 63% perceived. Enlisted staff members spent 45% of their time in patient care as opposed to 90% perceived. In non-patient care activities, the average percentage of time spent by all staff members was 42.3% as opposed to 14.5% perceived. Officers spent 41.6% in non-patient care as opposed to 21.2% perceived; enlisted 43.3% in non-patient care as opposed to 3.3% perceived.

With the exception of one officer, staff members perceived they spent more time in direct patient care than they actually did, while understating time in non-patient care activities. These results indicate that physical therapy personnel at Tripler Army Medical Center, relying on their judgment and perceptions, would understate time spent in non-patient care activities such as reporting, meetings, inservice and unit training, counseling and student supervision. These are all activities which are required by regulation, and by clinic and medical center policies.

With the overstatement of time spent in patient care activities, local

appraisers would follow the staffing guide and yardstick for manpower requirements, since an eleven percent factor is built into the yardstick to allow for non-patient care and personal time. Depending on the hospital commander's staffing policy, it may be considered an adequate allowance, or the requirements may be adjusted to account for the discrepancy between the eleven percent and the perceived twenty-seven percent spent in non-patient care and personal time. (An adjustment would result in an increase of one additional person). Based on the number of patient visits and the perceptions of the staff of how time is spent, the Physical Therapy Clinic would be expected to continue at the present staffing level.

By including the actual figures from the survey, the Chief of Physical Therapy could justify doubling his staff. This is supported by the actual percentage of staff time spent in patient care (42.5%) as compared to the expected allowance of eighty-nine percent. This discovery more than justifies the time and effort expended in conducting this survey and provides evidence of the importance of this tool.

Recommendations

It is recommended that the physical therapy staff incorporates the findings of this study on its manpower survey documents to justify additional manpower. When the staff is stable and all authorizations are filled, another study should be conducted specifying activities and functions performed in detail. It is recommended that the staff be trained to monitor and record their own time and that this be done on a quarterly basis for a one year period of time. Although time would be taken away from patient care to perform these surveys, the results would present a more accurate

picture of the time spent in patient care activities by the staff during the year. This would also allow for any seasonal fluctuations in patient visits which would not be captured with an annual survey.

The Chief of Physical Therapy is advised to avoid using perceptions in the future to justify additional staffing requirements and authorizations. By taking the time and making the effort to conduct a survey, a more accurate picture of the clinic staff's activities is presented to the local appraisers. By using objective data on support forms, less effort will be required to justify any increase.

TABLES

TABLE 1.

YARDSTICK FOR PHYSICAL THERAPY

★*Table 557-52.27: Physical Therapy*

Work Performed. Evaluates and documents physical disabilities, plans treatment programs, and administers treatment in order to prevent disability, relieve pain, and improve or restore function.

Yardstick						
	Clinic visits*	400	800	1,600	3,200	4,800
	Manpower requirement	2	4	7	12	16
	Interval rate	*.005*	*.0037*	*.0031*	*.0025*	

Military Positions					Position Delineation	Number of Positions					Civilian Positions	
Line	Duty Position Title	BR	Code MOS	Grade							Job title	Code
1	PHYSICAL THERAPIST	SP	65B	COL/LTC*a*	C	..	..	..	1	1	SUPV PHYSICAL THERAPIST	GS-0633
2	PHYSICAL THERAPIST	SP	65B	MAJ/	C	..	..	1	1	1	SUPV PHYSICAL THERAPIST	GS-0633
3	PHYSICAL THERAPIST	SP	65B	CPT/LT	C	*b*	1	1	2	4	PHYSICAL THERAPIST	GS-0633
4	PHYSICAL THERAPY NCO	NC	91J40	E7	C	..	..	..	..	1	PHYSICAL THERAPY ASST	GS-0636
5	PHYSICAL THERAPY NCO	NC	91J30	E6	C	..	..	..	1	..	PHYSICAL THERAPY ASST	GS-0636
6	PHYSICAL THERAPY SP	..	91J20	E5	C	1	1	1	1	2	PHYSICAL THERAPY ASST	GS-0636
7	PHYSICAL THERAPY SP	..	91J10	E4	C	1	1	1	2	2	PHYSICAL THERAPY ASST	GS-0636
8	PHYSICAL THERAPY SP	..	91J10	E3	C	..	..	2	3	4	PHYSICAL THERAPY ASST	GS-0636
9	CLERK TYPIST	..	71L10	E3	C	..	1	1	1	1	CLERK TYPIST	GS-0322

*Physical Therapy Clinic visits during calendar month as reported on the Medical Summary Report, MED-302.

a Grade will be established in accordance with criteria set forth in AR 611-0-1.

b Supervision will be provided by physician from Orthopedic Clinic.

Note 1. Manpower requirements for injury prevention programs will be determined by local appraisal.

Note 2. Where clinic operates other than 40 hours a week or is combined with another clinic, manpower requirements will be determined by local appraisal.

TABLE 2.

STATISTICAL TEST TO DETERMINE RANDOMNESS OF DAYS OBSERVED

(a) Obsvd Day of Week	(b) Total Visits for Obsvd Day	(c) Ave Total for Day of Week (CY84)	b - c	(d) Ave Daily Total for Month	b - d
Tue	82	100	-18	100	-18
Mon	101	112	-11	116	-15
Thu	116	107	9	116	0
Tue	99	100	-1	116	-17
Mon	114	112	2	111	3
Wed	112	96	6	111	1
Mon	95	112	-17	111	-6
Thu	114	107	7	111	3
Wed	105	96	9	111	-6
			$n_+ = 5$		$n_+ = 3$
			$n_- = 5$		$n_- = 5$
			$n = 10$		$n = 8$
			$r = 6$		$r = 5$
			Critical values		Critical values
			$2 < r < 10$		$2 < r < 9$
			$p = .05$		$p = .05$
			accept H_o		accept H_o

H_o: The observed day of the week as represented by the total visits and compared to average daily totals is determined by a random process.

Note: (c) derived by determining average totals for each day of the week. Ex: Average for all Tuesdays in CY 84 was 100.

TABLE 3.

CRITICAL VALUES OF r IN THE RUNS TEST

Lower critical values of r in the runs test

n_1 \ n_2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2											2	2	2	2	2	2	2	2	2
3					2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
4				2	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4
5			2	2	3	3	3	3	3	4	4	4	4	4	4	4	5	5	5
6		2	2	3	3	3	4	4	4	4	4	5	5	5	5	5	5	6	6
7		2	2	3	3	3	4	4	5	5	5	5	5	6	6	6	6	6	6
8		2	3	3	3	4	4	5	5	5	6	6	6	6	6	7	7	7	7
9		2	3	3	4	4	5	5	5	6	6	6	7	7	7	7	8	8	8
10		2	3	3	4	5	5	5	6	6	7	7	7	7	8	8	8	8	9
11		2	3	4	4	5	5	6	6	7	7	7	8	8	8	9	9	9	9
12	2	2	3	4	4	5	6	6	7	7	7	8	8	8	9	9	9	10	10
13	2	2	3	4	5	5	6	6	7	7	8	8	9	9	9	10	10	10	10
14	2	2	3	4	5	5	6	7	7	8	8	9	9	9	10	10	10	11	11
15	2	3	3	4	5	6	6	7	7	8	8	9	9	10	10	11	11	11	12
16	2	3	4	4	5	6	6	7	8	8	9	9	10	10	11	11	11	12	12
17	2	3	4	4	5	6	7	7	8	9	9	10	10	11	11	11	12	12	13
18	2	3	4	5	5	6	7	8	8	9	9	10	10	11	11	12	12	13	13
19	2	3	4	5	6	6	7	8	8	9	10	10	11	11	12	12	13	13	13
20	2	3	4	5	6	6	7	8	9	9	10	10	11	12	12	13	13	13	14

Upper critical values of r in the runs test

n_1 \ n_2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2																			
3																			
4				9	9														
5			9	10	10	11	11												
6			9	10	11	12	12	13	13	13	13								
7				11	12	13	13	14	14	14	14	15	15	15					
8				11	12	13	14	14	15	15	16	16	16	16	17	17	17	17	17
9					13	14	14	15	16	16	16	17	17	18	18	18	18	18	18
10					13	14	15	16	16	17	17	18	18	18	19	19	19	20	20
11					13	14	15	16	17	17	18	19	19	19	20	20	20	21	21
12					13	14	16	16	17	18	19	19	20	20	21	21	21	22	22
13						15	16	17	18	19	19	20	20	21	21	22	22	23	23
14						15	16	17	18	19	20	20	21	22	22	23	23	23	24
15						15	16	18	18	19	20	21	22	22	23	23	24	24	25
16							17	18	19	20	21	21	22	23	23	24	25	25	25
17							17	18	19	20	21	22	23	23	24	25	25	26	26
18							17	18	19	20	21	22	23	24	25	25	26	26	27
19							17	18	20	21	22	23	23	24	25	26	26	27	27
20							17	18	20	21	22	23	24	25	25	26	27	27	28

Source: Frieda S. Swed and C. Eisenhart, "Tables for Testing Randomness of Grouping in a Sequence of Alternatives," *Ann. Math. Statist.*, 14 (1943), 66–87

Note: For the one-sample runs test, any value of r that is equal to or smaller than that shown in the body of this table for given values of n_1 and n_2 is significant at the 0.05 level.

TABLE 4

PERCENTAGE OF PERCEIVED AND ACTUAL TIME SPENT IN ALL CATEGORIES

Subject	PATIENT CARE						NON-PATIENT CARE			PERSONAL TIME		
	DIRECT CARE			INDIRECT CARE								
	Min.	%Pcvd	% Act	Min.	%Pcvd	% Act	Min.	%Pcvd	% Act	Min.	%Pcvd	% Act
1	57	50	11	80	25	15	335	20	62	68	5	12
2	178	15	33	42	10	8	251	65	46	69	10	13
3	93	45	17	79	20	15	308	15	57	60	20	11
4	202	70	37	81	10	15	95	5	18	162	15	30
5	206	40	38	83	30	16	136	1	25	115	29	21
6	189	55	35	64	25	12	215	10	40	72	10	13
7	172	75	32	46	25	8	262	0	49	60	0	11
8	164	70	30	95	20	18	221	0	41	60	10	11
9	237	0	44	23	100	4	107	0	20	173	0	32

Total minutes available in normal duty day: 540

% Pcvd: Percentage of time perceived, results from questionnaire

% Act: Percentage of actual time = $\frac{\text{Min. observed}}{540}$

TABLE 5.

MEANS AND RANGES FOR CATEGORIES OF PERSONNEL

	DIRECT CARE		INDIRECT CARE		TOTAL PATIENT CARE		NON-PATIENT CARE	
	%Pcvd	%Act	%Pcvd	%Act	%Pcvd	%Act	%Pcvd	%Act
TOTAL STAFF								
Mean	52.5	29.1	20.6	13.4	73.1	42.5	14.5	42.3
Range	15-75	11-38	10-30	8-18	25-100	26-54	0-65	18-62
OFFICER STAFF								
Mean	44	27.2	19	13.8	63	41	21.2	41.6
Range	15-70	11-38	10-30	20-25	25-80	26-54	1-65	18-62
ENLISTED STAFF								
Mean	66.7	32.3	23.3	12.7	90	45	3.3	43.3
Range	55-70	30-35	20-25	8-18	80-100	40-48	0-10	40-49

TABLE 6.

STATISTICAL RESULTS: DIRECT CARE

H_o: There is no difference between the perceived and actual percentage of time spend in direct patient care. $\alpha = .05$

SUBJECT	X %Pcvd	Y %Act	$D_i = Y_i - X_i$	Signed Rank $\|D_i\|$
1	50	11	-39	-6
2	15	33	18	2
3	45	17	-28	-4
4	70	37	-33	-5
5	40	38	-2	-1
6	55	35	-20	-3
7	75	32	-43	-8
8	70	30	-40	-7
				$T_+ = 1$

$n = 8$, $d = 1$

From Table 9., $\alpha'' = .008$ (Probability of observing a value of $T_+ = 1$ when H_o is true, is .008). Since .008 is less than .05 (level of significance), reject H_o.

Conclusion: There is a difference between the perceived and actual percentage of time spent in direct patient care.

TABLE 7.

STATISTICAL RESULTS: DIRECT + INDIRECT CARE

H_0: There is no difference between the perceived and actual percentage of time spent in patient care (direct + indirect care). $\alpha = .05$

SUBJECT	X %Pcvd	Y %Act	$D_i = Y_i - X_i$	Signed Rank $\|D_i\|$
1	75	26	-49	-8
2	25	41	16	1
3	65	32	-33	-4
4	80	52	-28	-3
5	70	54	-16	-1
6	80	47	-33	-4
7	75	40	-35	-6
8	90	48	-42	-7
				$T_+ = 1$

n = 8, d = 1

From Table 9., $\alpha' = .008$ (Probability of observing a value of $T_+ = 1$ when H_0 is true, is .008). Since .008 is less than .05 (level of significance), reject H_0.

Conclusion: There is a difference between the perceived and actual percentage of time spent in patient care.

TABLE 8.

STATISTICAL RESULTS: NON-PATIENT CARE

H_o: There is no difference between the perceived and actual percentage of time spent in non-patient care. $\alpha = .05$

SUBJECT	X %Pcvd	Y %Act	$D_i = Y_i - X_i$	Signed Rank $\lvert D_i \rvert$
1	20	62	40	5
2	65	46	-19	-2
3	15	57	42	7
4	5	18	13	1
5	1	25	24	3
6	10	40	30	4
7	0	49	49	8
8	0	41	41	6
				$T_- = 1$

$n = 8$, $d = 1$

From Table 9., $\alpha' = .008$ (Probability of observing a value of $T_- = 1$ when H_o is true, is .008). Since .008 is less than .05 (level of significance), reject H_o.

Conclusion: There is a difference between the perceived and actual percentage of time spent in non-patient care.

TABLE 9.

d-factors for Wilcoxon signed-rank test and confidence intervals for the median (α' = one-sided significance level, α'' = two-sided significance level)

n	d	Confidence coefficient	α''	α'
3	1	.750	.250	.125
4	1	.875	.125	.063
5	1	.938	.062	.031
	2	.875	.125	.063
6	1	.969	.031	.016
	2	.937	.063	.031
	3	.906	.094	.047
	4	.844	.156	.078
7	1	.984	.016	.008
	2	.969	.031	.016
	4	.922	.078	.039
	5	.891	.109	.055
8	1	.992	.008	.004
	2	.984	.016	.008
	4	.961	.039	.020
	5	.945	.055	.027
	6	.922	.078	.039
	7	.891	.109	.055
9	2	.992	.008	.004
	3	.988	.012	.006
	6	.961	.039	.020
	7	.945	.055	.027
	9	.902	.098	.049
	10	.871	.129	.065
10	4	.990	.010	.005
	5	.986	.014	.007
	9	.951	.049	.024
	10	.936	.064	.032
	11	.916	.084	.042
	12	.895	.105	.053
11	6	.990	.010	.005
	7	.986	.014	.007
	11	.958	.042	.021
	12	.946	.054	.027
	14	.917	.083	.042
	15	.898	.102	.051
12	8	.991	.009	.005
	9	.988	.012	.006
	14	.958	.042	.021
	15	.948	.052	.026
	18	.908	.092	.046
	19	.890	.110	.055
13	10	.992	.008	.004
	11	.990	.010	.005
	18	.952	.048	.024
	19	.943	.057	.029
	22	.906	.094	.047
	23	.890	.110	.055
14	13	.991	.009	.004
	14	.989	.011	.005
	22	.951	.049	.025
	23	.942	.058	.029
	26	.909	.091	.045
	27	.896	.104	.052
15	16	.992	.008	.004
	17	.990	.010	.005
	26	.952	.048	.024
	27	.945	.055	.028
	31	.905	.095	.047
	32	.893	.107	.054
16	20	.991	.009	.005
	21	.989	.011	.006
	30	.956	.044	.022
	31	.949	.051	.025
	36	.907	.093	.047
	37	.895	.105	.052
17	24	.991	.009	.005
	25	.989	.011	.006
	35	.955	.045	.022
	36	.949	.051	.025
	42	.902	.098	.049
	43	.891	.109	.054
18	28	.991	.009	.005
	29	.990	.010	.005
	41	.952	.048	.024
	42	.946	.054	.027
	48	.901	.099	.049
	49	.892	.108	.054
19	33	.991	.009	.005
	34	.989	.011	.005
	47	.951	.049	.025
	48	.945	.055	.027
	54	.904	.096	.048
	55	.896	.104	.052
20	38	.991	.009	.005
	39	.989	.011	.005
	53	.952	.048	.024
	54	.947	.053	.027
	61	.903	.097	.049
	62	.895	.105	.053
21	43	.991	.009	.005
	44	.990	.010	.005
	59	.954	.046	.023
	60	.950	.050	.025
	68	.904	.096	.048
	69	.897	.103	.052

Source: F. Wilcoxon, S. Katti, and R. A. Wilcox, *Critical Values and Probability Levels for the Wilcoxon Rank Sum Test and the Wilcoxon Signed Rank Test*, Pearl River, N.Y.: American Cyanamid Co., 1949; used by permission of American Cyanamid Company

Note: For $n > 25$ use $d \approx \frac{1}{2}[\frac{1}{2}n(n+1)+1-z\sqrt{n(n+1)(2n+1)/6}]$, where z is read from Table A.2.

APPENDIX A

To all military staff members, Physical Therapy Clinic, TAMC

The attached questionnaire seeks information about your role in the Physical Therapy Clinic. The results will be analyzed and used in a special study being conducted to determine how you are being utilized and how you utilize your time. Please answer ALL of the questions as best you can. Identity and personal results will remain confidential. Your contribution is greatly appreciated.

Please return completed questionnaire to your POC.

Name: Rank: MOS:

Years of Service: Date assigned to TAMC

Staff Position (C, NCOIC, Staff, etc):

To what area are you assigned (wards, rehab, clinic, hydro, etc)?

1. How many different patients do you treat during an average day?

2. What type of patients do you treat? (rehab, ortho, neuro, chronic, acute, etc)

3. How many different types of equipment modalities do you use in a day (average)?

4. What type of exercise programs do you instruct or supervise?

5. List any programs for which you are responsible.

6. Are you on a weekend or after-duty roster for Physical Therapy?

   If yes, how often do you have this duty?

   On an average, how many hours do you spend with each tour?

   Do you receive compensatory time for this duty?

7. List any hospital or post committees of which you are a member.

8. What extra duties do you have not related to Physical Therapy (duty roster functions, such as CQ, AOD, etc)?

9. How often do you perform these extra duties?

10. Do you receive compensatory time for these duties?

11. Are you involved in any research or educational programs performed during normal duty hours?

12. On an average, what percentage of time do you spend in the following activities? (Normal Duty time)

	In a day	In a week	In a month
Direct Patient Care (History taking, evals, testing, treating, consulting, supervising, etc)			
Indirect Patient Care (Treatment site prep and clean up, documentation in records/forms, patient consultation with hospital staff, phone calls, etc)			
Non-Patient Care (Admin reports, meetings, phone calls, inservice, unit training, physical fitness, counseling, student supervision, etc)			
Personal Time (breaks, lunch, appointments, leave, etc)			
TOTAL	100%	100%	100%

APPENDIX B

ON-SITE SURVEY FORM

1. One form will be used for one individual.

2. Time will be recorded in minutes in the appropriate block.

3. Once the observation is complete for an individual, total times will be computed for each function (row totals). Column totals should equal thirty minutes.

4. Total times will be computed for Direct Care, Indirect Care, and Non-patient Care by adding up the totals of rows in the respective major (dark-outlined) blocks.

5. Direct Care and Indirect Care times will be added together.

6. Total times will then be converted to percentages.

ON-SITE SURVEY FORM

NAME: _____

RANK: _____

DATE: _____

		0700-0730	0730-0800	0800-0830	0830-0900	0900-0930	0930-1000	1000-1030	1030-1100	1100-1130	1130-1200	1200-1230	1230-1300	1300-1330	1330-1400	1400-1430	1430-1500	1500-1530	1530-1600	1600-1630	1630-1700	TOTAL TIME
DIRECT PATIENT CARE	Evaluation, tests, measurements																					
	Modality treatment/exercise																					
	Patient training, instruction																					
	Group instruction (#participants)																					
	Other (specify)																					
INDIRECT PATIENT CARE	Treatment site prep/clean up																					
	Equipment prep/clean up																					
	Documentation in records, forms																					
	Consultation (specific patients)																					
	Telephone calls (specific patients)																					
	Other (specify)																					
NON-PATIENT CARE	Staff, Committee meetings																					
	Audit/peer review																					
	Inservice Education/Training																					
	Staff/Student Supervision/Counsel																					
	Administrative Reports																					
	Phone Calls																					
	Consultations																					
	Clinic administration																					
	Military Training/Extra Duties																					
	Other (specify)																					
	Personal Time																					
	Other (specify)																					

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