

# A Study To Assess the Level of Manpower Utilization and Stress of Employees in Selected Supportive Services

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**Abstract**—The healthcare industry as a whole spends more than half the amount that other industries are spending on human resources management. The term staff utilization here simply means the effective and efficient use of human resource in an organization in order to achieve desired growth and development of any organization, and to avoid wastage of manpower. Hence, an extensive study on manpower planning in a hospital was planned with the main objective of observing the utilization of existing manpower in terms of number of hours that they have spent in performing the duties. *Employees stress* is a growing concern for organizations today. The present study examines the relationship between *stress* and the *utilization* of employees in health services.

## I. INTRODUCTION

A hospital is a health care institution providing treatment with specialized staff and equipment. Support services are the functions within the hospital which carry out much of the ground work. They support the work carried out by the doctors and nurses and their roles are crucial too in the working of a large health care institution.

In healthcare, the production of the service that is purchased and the consumption of that service occur simultaneously. After recruitment, hospitals like any other industry prefer to have optimum output from employees for continuous delivery of service. Hence, an extensive study on manpower planning hospital was planned with the main objective of observing the utilization of existing manpower in terms of number of hours that they have spent in performing the duties. Beyond the numbers of staffs, how are they impacting the organization, patients and industry. Over the past few years, there has also been a significant increase in consolidations and mergers across the full continuum of care, bringing in additional complexities such as defining and addressing variability in data that lead to disproportionate budgets and staffing decisions, and the need to choose between using premium labour or deal with staffing gaps in shifts. Especially now they are affecting quality of care, safety engagement, staff burnout, readmission risks and even CMS reimbursements. These are all tied to your ability to adequately staff your organization.

Workplace stress then is the harmful physical and emotional responses that can happen when there is a conflict between job demands on the employee and the amount of control an employee has over meeting these demands. Work-related stress is a growing problem around the world

that affects not only the health and well-being of employees, but also the productivity of organizations. Work-related stress arises where work demands of various types and combinations exceed the person's capacity and capability to cope up with. Psychological well-being, which is influenced by stressors in the workplace, has been identified as the biggest predictor of utilization of employees. The relationship between stress and utilization suggests that greater utilization correlates with greater stress level in employee.

Stress in the workplace can have many origins or come from one single event. It can impact on both employees and employers alike. It is generally believed that some stress is okay (sometimes referred to as "challenge" or "positive stress") but when stress occurs in amounts that you cannot handle, both mental and physical changes may occur. Work-related stress can be caused by poor work organization (the way we design jobs and work systems, and the way we manage them), by poor work design (for example, lack of control over work processes), poor management, unsatisfactory working conditions and lack of support from colleagues and supervisors. Pressure at the workplace is unavoidable due to the demands of the contemporary work environment. Pressure perceived as acceptable by an individual may even keep workers alert, motivated, able to work and learn, depending on the available resources and personal characteristics. However, when that pressure becomes excessive or otherwise unmanageable it leads to stress. Stress can damage an employees' health and the business performance. Stress happens in workplaces and it arises at different levels. Job stress is becoming an alarming situation in the workplace. There is relationship between stress level and utilization of employees within an organisation. Because higher utilization of staff can lead to higher level of stress in employees.

Spearman Rank correlation of stress and utilization of employees,  $r = \frac{6 \sum D^2}{N(N^2 - 1)}$

Where D is the difference between ranks and n is the number of staff

## II. REVIEW OF LITERATURE

### STAFF UTILIZATION

Employee utilization refers to the amount of an employee's working time that is used for billable work. Employee utilization rate is the percentage of an employee's total working hours spent doing work that can be billed vs.

administrative tasks. The employee utilization rate is most often used in professional services and service-based organizations like hospitals. However, other organizations can also use it as a key metric to measure their team's current productivity.

Employee utilization rate may appear as a simple measurement. Still, measuring and tracking this can positively affect your employee's engagement and productivity levels at work. Knowing employee utilization rate will also enable an organization to set profitable rates for services, compensate your employees fairly, make more informed hiring decisions, and determine whether employees are being overworked or underutilized and implement changes as an HR department. Although employee utilization is often used as a metric to measure and improve profits, its main focus is employees. This means there are valuable lessons and opportunities for HR departments to learn from the employee utilization rate and better support the organization's people and culture at large. The departments and employees with the highest utilization rates are more in demand and providing the most value. Likewise, the employees with the lowest utilization rates show you your least productive people. They are most likely not a good fit for their role or are not receiving adequate direction or training. Stress happens in workplaces and it arises at different levels. Job stress is becoming an alarming situation in the workplace. There is relationship between stress level and utilization of employees within an organisation. Because higher utilization of staff can lead to higher stress in them.

#### *Objectives of work measurement*

When we establish target times for jobs at the defined level of performance, work measurement will be found to have the following uses.

1. To compare efficiency.
2. To enable realistic schedules of work, to be prepared by relating reasonably accurate assessment of human work to hospital capacity.
3. As the basis of realistic and fair incentive schemes.
4. To assist in the organisation of employees by enabling a daily comparison to be made between actual times and target times.
5. As a basis for labour budgeting and budgeting control systems.
6. To enable estimates to be prepared of future labour requirements and cost.

#### *Procedure of work measurement*

The general procedure followed in work measurement is as follows.

1. The job is broken down into its elements.
2. The observed time for each element is recorded.
3. Basic time is determined for those elements for which data is not available.
4. The values so determined for any of the elements which could conceivably secure in another job are added to the records of basic times.

5. Determine the frequency of occurrence of each element in the job, multiply the work content of each element with its frequency and add up the time to arrive at the work content for the job.
6. The proportion of the rest required is assessed and added to the basic time for doing the work at standard rate of working and for recovering from the effort, i.e., the work content.
7. The addition of the relaxation allowance may be made element by element.
8. If there is any contingent delay, a blanket allowance may be added since they are not economical to measure.

#### *Techniques of work measurement*

- I. Time study
- II. Synthesis from elemental data
- III. Predetermined motion-time study
- IV. Activity sampling
- V. Analytical Estimation

##### *1) Time study*

It is a work measurement technique for recording the times and rates of working for the elements of a specified job carried under specified condition and for analysing the data so as to obtain the time necessary for the carrying out of the job at a defined level of performance.

#### *Usefulness of time measurement*

It is indeed useful to the management to know how long it should take to carry out various kinds of work in plant. Let us discuss various uses,

- I. It reveals the capacity of each machine and enables the planning department to apportion work correctly.
- II. It is useful in costing.
- III. It enables reliable forecasts to be made of machine when a new department or factory is planned.
- IV. It helps in choosing best method.
- V. It helps to prevent misuses of manpower in each department.
- VI. It fosters the development of equitable incentive payments system.
- VII. It increases accuracy in forecasting delivery dates.

It is the oldest work measurement technique. It is regarded as the fundamental technique. A systematic method study should be carried out before the time study, because it is not worthwhile to carry out a time study on any work until the simplest way of carrying out that work has been determined by a systematic method study.

#### *Objectives of time study*

- For Cost allocation
- For scheduling production
- For determining alternatives
- For determining pay incentives
- For determining fair days' work for individual employees.

#### *Method of time study*

Any work measurement system must perform the following two tasks

- I. Measurement of actual observed time and

II. Adjustments of observed time to obtain normal time

2) *Synthesis from elemental Data*

*It is a work measurement technique for building up the time for a job at a defined level of performance by totalling. Element time obtained previously, from time studies in other jobs containing the elements concerned. It is seen that many of the timed elements reoccurred in similar forms in various jobs. This realization led to the recording and filling of times so that when elements reoccurred the existing records could be utilized in order to save time and energy. This recording would save work and make job times much quicker and cheaper to produce.*

3) *Predetermined Motion Time Study*

It is a work measurement technique whereby times established for basic human motions are used to build up time for a job at a defined level of performance. This technique is used for finding the times for basic motions of the working. To obtain these times, various operations are filmed and then the film is analysed very carefully. The advantage of film is that each element can be observed many times merely by projecting the film repeatedly.

4) *Analytical Estimation*

It is a work measurement technique whereby time required to carry out elements of a job at a defined level of performance is estimated from knowledge and practical experience of the elements concerned. Analytical estimation is widely used to estimate times in engineering, maintenance and construction work. In this method, the estimator should be fully conversant with all the details of work being studied. Analytical estimation can give satisfactory results although these are less accurate than those obtained by activity sampling.

5) *Activity Sampling*

It is a work measurement technique in which a large number of instantaneous observations are made over a period of time on a group of machines, processes or workers.

It analyses as to what is happening at that instant. The concept is that random observations can produce results whose accuracy depends upon the number of observations made. This technique is also known by random observation and work sampling.

Work sampling is used in:

- Measuring the working and on-working time of man and machines.
- To estimate the percentage of time devoted to each of duties included in the jobs performed by such people as maintenance personnel, office workers, managers etc.
- To establish time standards.

The work sampling method consists of taking a number of random observations of the activity being studied and from this determining, the percent of time devoted to each aspect of the operation

The key to the accuracy of the techniques is the number of observations. A greater number of observations provide a higher degree of accuracy. However, it is far reliable than

analytical estimation, which is only a rule-of-thumb determination.

Advantages of work sampling over work study

- It is economical in bigger set-ups.
- Applicable to activities that are impractical to measure by time study.
- No trained work measurement analyst is required. Measure can be made with pre-assigned degree of reliability.
- Time study evens out the results of day-to-day variations.
- A work sampling study may be interpreted any time without affecting the results.
- It is easier for the studied people

STRESS LEVEL OF EMPLOYEES IN ORGANISATIONS

Stress is a reaction to a situation – it isn't about the actual situation. We usually feel stressed when we think that the demands of the situation are greater than our resources to deal with that situation. For example, someone who feels comfortable speaking in public may not worry about giving a presentation, while someone who isn't confident in their skills may feel a lot of stress about an upcoming presentation. Common sources of stress may include major life events, like moving or changing jobs. Long-term worries, like a long-term illness or parenting, can also feel stressful. Even daily hassles like dealing with traffic can be a source of stress. Workplace stress then is the harmful physical and emotional responses that can happen when there is a conflict between job demands on the employee and the amount of control an employee has over meeting these demands. In general, the combination of high demands in a job and a low amount of control over the situation can lead to stress.

Stress in the workplace can have many origins or come from one single event. It can impact on both employees and employers alike. It is generally believed that some stress is okay (sometimes referred to as "challenge" or "positive stress") but when stress occurs in amounts that you cannot handle, both mental and physical changes may occur.

CAUSES OF STRESS IN ORGANISATIONS

All the following issues have been identified as potential stressors at workplaces. A risk management approach will identify which ones exist in your own workplace and what causes them.

They include:

- Organisation culture
- Bad management practices
- Job content and demands
- Physical work environment
- Relationships at work
- Change management
- Lack of support
- Role conflict
- Trauma.
- Long hours
- Heavy workload
- Changes within the organisation

- Tight deadlines
- Changes to duties
- Job insecurity
- Lack of autonomy
- Boring work
- Insufficient skills for the job
- Over-supervision
- Inadequate working environment
- Lack of proper resources
- Lack of equipment
- Few promotional opportunities
- Harassment
- Discrimination
- Poor relationships with colleagues or bosses
- Crisis incidents, such as an armed hold-up or workplace death.

### ***BENEFITS OF PREVENTING STRESS IN THE WORKPLACE***

- Reduced symptoms of poor mental and physical health
- Fewer injuries, less illness and lost time
- Reduced sick leave usage, absences and staff turnover
- Increased productivity
- Greater job satisfaction
- Increased work engagement
- Reduced costs to the employer
- Improved employee health and community wellbeing.

B.

### ***TAKING STEPS TO MANAGE STRESS***

- **Track your stressors.** Keep a journal for a week or two to identify which situations create the most stress and how you respond to them. Record your thoughts, feelings, and information about the environment, including the people and circumstances involved, the physical setting, and how you reacted. Did you raise your voice? Get a snack from the vending machine? Go for a walk? Taking notes can help you find patterns among your stressors and your reactions to them.
- **Develop healthy responses.** Instead of attempting to fight stress with fast food or alcohol, do your best to make healthy choices when you feel the tension rise. Exercise is a great stress-buster. Yoga can be an excellent choice, but any form of physical activity is beneficial. Also make time for hobbies and favourite activities. Whether it's reading a novel, going to concerts, or playing games with your family, make sure to set aside time for the things that bring you pleasure. Getting enough good-quality sleep is also important for effective stress management. Build healthy sleep habits by limiting your caffeine intake late in the day and minimizing stimulating activities, such as computer and television use, at night.
- **Establish boundaries.** In today's digital world, it's easy to feel pressure to be available 24 hours a day. Establish some work-life boundaries for yourself. That might mean making a rule not to check email from home in the evening, or not answering the phone during dinner.

Although people have different preferences when it comes to how much they blend their work and home life, creating some clear boundaries between these realms can reduce the potential for work-life conflict and the stress that goes with it.

- **Take time to recharge.** To avoid the negative effects of chronic stress and burnout, we need time to replenish and return to our pre-stress level of functioning. This recovery process requires "switching off" from work by having periods of time when you are neither engaging in work-related activities, nor thinking about work. That's why it's critical that you disconnect from time to time, in a way that fits your needs and preferences. Don't let your vacation days go to waste. When possible, take time off to relax and unwind, so you come back to work feeling reinvigorated and ready to perform at your best. When you're not able to take time off, get a quick boost by turning off your smartphone and focusing your attention on nonwork activities for a while.

- **Learn how to relax.** Techniques such as meditation, deep breathing exercises, and mindfulness (a state in which you actively observe present experiences and thoughts without judging them) can help melt away stress. Start by taking a few minutes each day to focus on a simple activity like breathing, walking, or enjoying a meal. The skill of being able to focus purposefully on a single activity without distraction will get stronger with practice and you'll find that you can apply it to many different aspects of your life.

- **Talk to your supervisor.** Employee health has been linked to productivity at work, so your boss has an incentive to create a work environment that promotes employee wellbeing. Start by having an open conversation with your supervisor. The purpose of this isn't to lay out a list of complaints, but rather to come up with an effective plan for managing the stressors you've identified, so you can perform at your best on the job. While some parts of the plan may be designed to help you improve your skills in areas such as time management, other elements might include identifying employer-sponsored wellness resources you can tap into, clarifying what's expected of you, getting necessary resources or support from colleagues, enriching your job to include more challenging or meaningful tasks, or making changes to your physical workspace to make it more comfortable and reduce strain.

- **Get some support.** Accepting help from trusted friends and family members can improve your ability to manage stress. Your employer may also have stress management resources available through an employee assistance program, including online information, available counselling, and referral to mental health professionals, if needed. If you continue to feel overwhelmed by work stress, you may want to talk to a psychologist, who can help you better manage stress and change unhealthy behavior.

### **III. RESEARCH METHODOLOGY**

The research study is to assess the level of manpower utilization and stress of employees in selected supportive services. The research design is descriptive in nature. The

universe of the study was the permanent employees working in pharmacy, laboratory, radiology, physiotherapy, blood bank, insurance and registration. The selected supportive services were taken as strata. Broadly a census study was conducted to gather data regarding the level of manpower utilization and stress of employees in the selected supportive services. The selected supportive services were divided into strata and simple random sampling was done for selection of strata and within each strata, namely pharmacy, laboratory, radiology, physiotherapy, blood bank, insurance and registration the samples (employees) were coded numerically and intermittent observations were done. All the permanent employees of supportive service were observed to assess the level of manpower utilization and stress. A total of 55 permanent employees were covered from 7 supportive services for the study. An unstructured interview was conducted with HR manager and in-charges of supportive services to collect information regarding the details of work schedule and activities involved in providing services. Direct observation was done to collect data regarding the level of manpower utilization of employees in selected supportive services. Survey method was used for collection of data regarding the level of stress in employee Diary was used as the tool for unstructured interview and questions were asked to the HR manager and in-charges of supportive service to gather information about the activities and work schedule of employees. The list of employees along with their shifts were noted so as to ensure, whether the employee is 'on duty' or 'off duty' during the time of observation. Observation time was scheduled on duty hours only. The flow of activities of each supportive service was prepared after unstructured interview and by observing the activities of the employees. Master data sheet used as tool for observation study to assess employee utilization. Later a correlation analysis was done with the stress level.

### **3.1 TITLE**

A study to assess the level of manpower utilization and stress of employees in selected supportive services along with patients feedback towards these services at Mar Baseliious Medical Mission Hospital, Kothamangalam.

### **3.2 OBJECTIVES**

#### **3.2.1 General Objective**

To assess the level of manpower utilization and stress of employees in selected supportive services along with patients feedback towards these services at Mar Baseliious Medical Mission Hospital, Kothamangalam.

#### **3.2.2 Specific Objectives**

- To study the functions of supportive services at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- To assess the level of present manpower utilization in the selected supportive services at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- To assess the level of stress of employees in selected supportive services at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- To perform comparative analysis about the level of manpower utilization and stress of employees in selected supportive services at Mar Baseliious Medical Mission Hospital, Kothamangalam.

- To assess patients feedback towards this selected supportive services at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- To suggest improvements, if any, for the betterment of the services in the selected supportive services.

### **3.3 DEFINITIONS**

#### **3.3.1 Theoretical Definitions**

- **Manpower utilization:** The term manpower utilization is a business concept that describes how effectively a business uses its employees.
- **Stress:** Stress is a feeling of emotional or physical tension resulting from adverse or demanding circumstances.
- **Employees:** An employee is a person employed for wages or salary, especially at non-executive level.
- **Supportive services:** The services which are not directly related to patient care but, indirectly contribute in the care of patient. The spectrum of hospital supportive services encompasses pharmacy, clinical laboratory, radiology, front office, linen & laundry, physiotherapy, medical records, insurance, hospital stores, biomedical department and blood bank.
- **Patient:** A patient is any recipient of health care services that are performed by healthcare professionals; the patients are most often ill or injured and in need of treatment.
- **Feedback:** The information provided by customers about their experience with the service.

#### **3.3.2 Operational Definitions**

- **Manpower utilization:** This describes how effectively an employee is utilized in selected supportive services at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- **Stress:** Stress is a feeling of emotional or physical tension of employees in selected supportive services at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- **Supportive services:** The spectrum of selected supportive services encompasses pharmacy, clinical laboratory, radiology, front office, physiotherapy, blood bank and insurance at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- **Pharmacy:** Pharmacy is a hospital dispensary where medical drugs are stored and dispensed to the patients at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- **Clinical Laboratory:** A clinical laboratory is a place where tests are carried out on clinical specimens to obtain information about the health of a patient to aid in diagnosis, treatment, and prevention of disease at Mar Baseliious Medical Mission Hospital, Kothamangalam.
- **Blood bank:** Blood bank typically refers to a division of a hospital where the storage and disposal of blood product occurs and where proper testing is performed at Mar Baseliious Medical Mission Hospital, Kothamangalam.

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insurance at Mar Baseliou Medical Mission Hospital, Kothamangalam.

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- **Blood bank :** Blood bank typically refers to a division of a hospital where the storage and disposal of blood product occurs and where proper testing is performed at Mar Baseliou Medical Mission Hospital, Kothamangalam

### **3.4 RESEARCH DESIGN**

- The study is descriptive in nature as it describes the level of manpower utilization and stress of employees in supportive services along with the patients feedback towards the selected supportive services at Mar Baseliou Medical Mission Hospital, Kothamangalam.

### **3.5 UNIVERSE**

- The universe of the study will be the permanent employees working in pharmacy, clinical laboratory, radiology, front office, physiotherapy, blood bank and insurance ; and the patients registered at this supportive services from 16/06/2022 to 31/07/2022 at Mar Baseliou Medical Mission Hospital, Kothamangalam

### **3.6 SOURCES OF DATA**

#### **3.6.1 Primary Source**

- The primary source of the study will be the HR manager, in-charges of the supportive services, the employees of supportive services and the patients registered at this supportive services at Mar Baseliou Medical Mission Hospital, Kothamangalam

#### **3.6.2 Secondary Sources**

- The secondary sources of data is hospital records (personnel files ), hospital website, registers, text books, journals, and internet.

### **3.7 SAMPLING DESIGN**

#### **3.7.1 Sampling design**

##### **3.7.1.1 Sampling design to assess level of manpower utilization and stress**

Broadly a census study will be conducted to gather data regarding the level of manpower utilization and stress.

##### **3.7.1.2 Sampling design for feedback survey**

The patients will be taken as sample on the basis of simple random sampling from selected supportive services at Mar Baseliou Medical Mission Hospital, Kothamangalam.

#### **3.7.2 Selection of sample**

- The selected supportive services will be divided into strata and simple random sampling will be done for selection of strata. The strata will be namely pharmacy, clinical laboratory, radiology, front office, physiotherapy, blood bank and insurance services. Within each strata employees will be coded alphanumerically.

- The samples for feedback survey will be selected from patients registered at respective supportive services.

#### **3.7.3 Sample size**

- All the permanent employees of supportive service will be observed to assess the level of manpower utilization and stress.

- For feedback survey the sample size will be 10% of the total patient registered at the respective supportive services during previous year. This will be divided by 300 (holiday dependent); and since this study will be for 45 days, multiplying with 45 gives patients statics for 45 days. If the calculated value is less than 10 in number a minimum of 10 samples will be taken from each strata.

### **3.8 METHODS OF DATA COLLECTION**

#### **3.8.1 UNSTRUCTURED INTERVIEW**

- An unstructured interview will be conducted with HR manager and in-charges of supportive services to collect information regarding the details of work schedule and activities involved in providing services.

#### **3.8.2 DIRECT OBSERVATION**

- Direct observation will be done to collect data regarding the level of manpower utilization in selected supportive services .

#### **3.8.3 SURVEY METHOD**

- Survey method will be used for collection of data regarding the level of stress in employees and patients feedback towards the selected supportive services.

### **3.9 TOOLS OF DATA COLLECTION**

#### **3.9.1 DIARY**

- Diary will be used as the tool for unstructured interview. Unstructured questions will be asked to the HR manager and in-charges of supportive service to gather information about the activities and work schedule .

##### **3.9.1.1 Preparation of list of functions**

- The flow of activities will be prepared after discussing with the HR manager and in-charges .

##### **3.9.1.2 Preparation of list of employees**

- The list of employees along with their shifts will be noted so as to ensure, whether the employee is 'on duty' or 'off duty' during the time of observation. Observation time have to schedule on duty hours only

#### **3.9.2 MASTER DATA SHEET**

- Master data sheet will be used to enter the data collected through direct observation. It consists of horizontal time rows and vertical activities columns. **It consists of rows and columns in which staff code will be entered in first column of each row and observation time intervals will be entered in respected columns in each row.**

- **Under each column of observation, there is a denominator, i.e., the time of observation and one or more nominators depending on the number of functions that a particular employee will be carrying out during the period of observation. Observations will be noted as time in minutes.**

##### **3.9.2.1 Order of observations**

Observations will be done against the alphanumerical ascending order of codes. To assess manpower utilisation in the supportive services, the strata that randomly selected will be observed throughout till all the samples are covered and then forward to the next strata.

### 3.9.2.2 Size of observations

Size depends on the number of activities and the employee involved in performing these activities. This will be finalised after discussing with HR manager during pilot study.

### 3.9.2.3 Selection of time period and timing of observation

The time period will be finalised after pilot study whereas timing depending on strata selected and shift .

### 3.9.3 QUESTIONNAIRE FOR MEASURING STRESS

The questionnaire for measuring stress will contains two sections. The first section deals with demographic factors such as age, sex, marital status, income and years of experience. The second section has 22 questions to assess the level of stress of employees.

### 3.9.4 INTERVIEW SCHEDULE

Schedule will be used to collect data regarding patients feedback towards the supportive services and will be programmed service specific. Each schedule contain 5 questions with grading pattern for response.

### 3.10 PILOT STUDY

- A Pilot study will be conducted to determine the ideal time of observation and size of observation to assess the levels of manpower utilisation and to check whether there are any flaws in questionnaire for assessing level of stress.
- Five employees will be observed continuously for 30 minutes and observations will be marked in sheets for every 5 minutes. Later the correlation is drawn out on the following basis using Karl Pearson's Coefficient of Correlation method.

### 3.11 DATA PROCESSING AND ANALYSIS

#### 3.11.1 EDITING

Spot editing will be done to ensure completeness of questionnaire .

#### 3.11.2 CODING

##### 3.11.2.1 Coding of activities for analysing level of employee utilization

- Employees will be coded S1 1, S1 2, S13..... for first strata; S2 1, S2 2, S2 2 ... for second and so on.
- Activities will be coded as S1 A1,S1 A2,S1 A3... for activities of first strata service ; S2 A1,S2 A2,S2 A3 for activities of second strata

##### 3.11.2.2 Coding of questionnaires

- Demographic factors
- The responses regarding age, income and years of experience will be coded as A, B and C.
- The responses for gender and marital status will be coded as A and B.
- Questionnaire of stress
- The responses are strongly disagree, moderately disagree, neither agree nor disagree, moderately agree and strongly agree and the numerical values assigned to these responses were 1,2,3,4 and 5 respectively.

### 3.11.3 CLASSIFICATION

- For staff utilization and feedback survey
- The classification will be done on the basis of
- Section(strata) wise
- For stress
- Measure wise
- Demographic factor wiseand so on...

### 3.11.4 TABULATION

The results will be tabulated as follows

#### For Staff Utilization

- Overall utilization
- Employee wise
- Section wise
- Shift wise
- Day wise
- Hour wise
- Activity wise

#### For stress

- Total average score
- Employee wise average score
- Demographic factor wise average score
- Question wise average score
- Correlation table between stress and utilization of staff.

#### For feedback survey

Table for section wise analysis.

### 3.11.5 CALCULATION

#### 3.11.5.1 Calculation of staff utilisation

- $$\frac{\text{Utilisation rate}}{\text{Total productive time} / *100} = \frac{\text{Total time observed}}{\text{Total time taken for an activity} / *100}$$
- $$\frac{\text{Activity wise calculation of utilization rate}}{\text{Total productive time in a section} / *100} = \frac{\text{Total duration of observation in that section}}{\text{Total time observed in that hour}}$$
- $$\frac{\text{Section wise calculation of utilization rate}}{\text{Total productive time in a shift} / *100} = \frac{\text{Total duration of observation in that shift}}{\text{Total time observed in that hour}}$$
- $$\frac{\text{Conversion of Arithmetical fraction into time fraction}}{\text{Obtained sec (i.e., number after decimal point)} *60} = \frac{100}{5}$$

100

#### 3.11.5.2 Calculation of stress

- $$\frac{\text{Total average score}}{\text{total number of question} * \text{no of respondent}} = \frac{\text{total score of each staff}}{\text{total number of questions}}$$
  - $$\frac{\text{Staff wise average score}}{\text{total number of questions}} = \frac{\text{total score of each factor}}{\text{no of respondent of that factor} * \text{total number of questions}}$$
  - $$\frac{\text{Question wise average score}}{\text{total number of respondent}} = \frac{\text{total score of each question}}{\text{total number of respondent}}$$
- The responses will be strongly disagree, moderately disagree, neither agree nor disagree, moderately agree and strongly agree and the numerical values assigned to these responses are 1,2,3,4 and 5 respectively.
- Class interval is  $(5-1)/5=0.8$

- Very high level of stress: Above 4.2
- High level of stress: Score between 3.4 and 4.2
- Moderate level of stress: score between 2.6 and 3.4
- Low level of stress: Score between 1.8 and 2.6
- Very low level of stress: Below 1.8

### **3.11.5.3 Calculation of feedback**

Percentage analysis = no of entry/  
total entry \*100

### **3.11.5.4 Correlation on stress and staff utilization**

Spearman Rank correlation of stress and utilization of employees,  $r = 6 \sum D^2 / N(N^2 - 1)$

Where D is the difference between ranks and n is the number of staff

### **3.12 REPORT WRITING**

The report is divided into 5 chapters. The first chapter deals with the introduction and profile of the hospital. The second chapter presents the review of literature. The third chapter deals with the methodology. The fourth chapter deals with the analysis and interpretation of data. The fifth chapter deals with the findings, suggestions, and conclusion.

### **3.13 TIME FRAME OF THE STUDY**

- Finding topic – 2 days
- Selecting hospital – 1 day
- Preparing methodology – 3 days
- Pilot study – 1 day
- Data collection – 33 days
- Analysis and interpretation – 5 days

## **IV FINDINGS**

### **FUNCTIONS OF PHARMACY SERVICES**

- Billing and collecting cash
- Tracing medicine and collecting from rack
- Predisensing
- Final verification, dispensing and advising
- Storing medicines in racks
- Checking of new stickers
- Returning of medicines

### **FUNCTIONS OF LABORATORY SERVICES**

- **Receiving request form, cross check and entry in the system**

- Billing, barcode issuing and payment
- Inpatient billing
- Blood bank billing
- **Verification of the bill – collection lab**
- Preparation and collection of samples/blood
- Entering the details of samples and forward to different sections

- Collection of inpatient samples
- **Acknowledging samples received - biochemistry**
- Centrifuge and loading the barcode machine
- Mispas machine setting and result observing
- Unloading and retrieving the results from machine
- Result entry and result verification
- Emergency samples
- **Acknowledging samples received- hematology**
- Loading and unloading of samples into machine
- Smear evaluation/microscopy(if variation occur)
- Result entry and result verification
- **Acknowledging samples received - parasitology**
- Smear evaluation/microscopy

- Rapid test
- Confirmatory test
- **Receiving and smear preparation - microbiology**
- Microscopy and staining in microbiology
- Result entry in system and outsourcing

### **FUNCTIONS OF RADIOLOGY DEPARTMENT**

- Receive requisition form, cross check and billing
- Entry in register and computer
- Manual radiography
- Digital radiography
- Portable x ray
- Result verification and entry

### **FUNCTIONS OF PHYSIOTHERAPY DEPARTMENT**

- Receive requisition form, cross check and billing
- Exercise therapy
- Pain management- ultra sound
- SWD, IFT and traction
- Stimulation therapy
- Home exercise guiding and review
- IP and causality on call
- Entry of activities in system

### **FUNCTIONS OF INSURANCE SERVICES**

- Details collection and documentation
- Dealing with insurance company
- Accounting activities
- IP collection and verification
- Scanning and sending documents
- Reimbursements procedure

### **FUNCTIONS OF BLOOD BANK**

- Vital check and HB assessment
- Bleed the donor care
- Component separation
- Blood grouping and cross matching
- Diagnostic test (Elisa test)
- Recipient procedure
- Documentation

### **FUNCTIONS OF REGISTRATION DEPARTMENT**

- Receiving request form department
- Retrieving OP record
- Retrieving emergency record
- Receiving and verifying medical record
- Filling and numbering
- Checking and verifying new medical records
- Cross consultation record management
- Entering in system
- Detain verifying and issuing of registration card
- Old op registration and billing

### **UTILIZATION OF EMPLOYEES**

#### **OVERALL UTILIZATION**

- Overall analysis of utilization shows 60.21%, moderate rate of employee utilisation in selected supportive services.
- From section wise analysis of utilization, it was found that physiotherapy had very good utilization whereas blood bank, insurance and registration had optimum utilisation of employees. In laboratory, pharmacy and radiology services employees are underutilized.

#### **UTILIZATION OF EMPLOYEES IN PHARMACY**

- Utilization rate of employees was 49.14%; underutilized.

- Shift wise analysis of employees shows a moderate rate of utilization during day shift whereas under utilization during night shift.
- From hour wise analysis of utilization, 10.00AM - 1.00PM and 4.00PM – 5.00PM shows moderate utilization and underutilized during rest of the hours both day and night.
- Activity wise analysis shows activity B tracing medicine and collecting from the rack is the major one. Percentage of idle time is very high.
- 2,4,7,10,12 and 16 no employees show moderate utilization. It was found that in charge show very low utilization rate.

#### UTILIZATION OF EMPLOYEES IN LABORATORY

- Utilization rate of employees was 47.55%; underutilized.
- Shift wise analysis of employees shows a under utilization during night and day shift. Among the day shift shows moderate utilization.
- From hour wise analysis of utilization, 10.00AM-2.00PM shows moderate utilization and underutilized during rest of the hours both day and night.
- Activity wise analysis shows result verification and entry in system was the major since all the sections are engaged in this .Percentage of idle time and time for personal activities are very high.
- Majority of the staff are underutilized.

#### UTILIZATION OF EMPLOYEES IN RADIOLOGY

- Utilization rate of employees was 46.89%; underutilized.
- Shift wise analysis shows moderate utilization during 10.00 AM-7.00PM.
- Hour wise analysis shows, 11.00AM- 3.00 PM shows moderate utilization and underutilized during rest of the day.
- Employee wise analysis of utilization shows that all employees are underutilized.
- From Activity wise analysis, it is Manual radiography and portable xray service takes more of the utilized time.
- Only employee no33 shows moderate utilization.

#### UTILIZATION OF EMPLOYEES IN PHYSIOTHERAPY

- Utilization rate of employees was 60.11%; moderate utilization.
- Shift wise analysis 8.00AM- 5.00 PM shows moderate utilization and 9.00- 6.00 shows optimum utilization.
- From hour wise analysis of employee utilization. 10.00-11.00 shows very good utilization.11.00-12.00 shows optimum utilization and rest hours'shows moderate utilization.
- Employee no 41 shows underutilization utilization where as 39 and 40 shows moderate utilization.
- It was found that pain management was the most repeated activity. IP and causality or portable x-ray services care also takes more time. Idle time was low compared to other services

#### UTILIZATION OF EMPLOYEES IN INSURANCE

- Utilization rate of employees was 57.77 %; moderate utilization.
- Hour wise analysis of employee utilization reveals that 10.00A AM12PM 1.00- 2.00 PM and 4.00-5.00 PM shows optimum utilization and except 3.00-4.00 which is underutilized, all other hours shows moderate utilization..
- Employee no 42 shows optimum utilization where as 43 and 44 shows moderate utilization.
- It was found that verification of collected IP charts takes more time.

#### UTILIZATION OF EMPLOYEES IN BLOOD BANK

- Utilization rate of employees was 56.76%; optimum utilization.
- Both the shift show moderate utilization.
- Optimum utilization in majority of the time.
- Employee46 shows moderate utilization.
- It was found that component separation was more time consuming.

#### UTILIZATION OF EMPLOYEES IN REGISTRATION

- Utilization rate of employees was 54.82%; optimum utilization.
- Shift wise analysis shows a n optimum utilization during 1.00- 7.00, under utilized in9.00-6.00 and moderate utilization in8.00-5.00 shifts.
- 3.00 PM- 6.00PM shows moderate utilization, 10.00- 12.00 shows optimum and other hour's shows under utilization.
- Employee no54 shows optimum utilization and 49, 50, 53 and 54 shows moderate; whereas 55 shows underutilized utilization.
- It was found that retrieving of medical record from racks is more time consuming activities charts takes more time.

#### STRESS LEVEL OF EMPLOYEES

- Overall analysis of stress level of employees shows that, they have moderate level of stress.
- Employee wise analysis of stress shows that employee numbers 39 and 54 has high level of stress ; 33,40,42,45,48 and 53 have moderate level of stress and other Employees had low and very low level of stress.
- Gender wise analysis of stress shows that both male and female staff have low level of stress, among which female staff have more stress than male staff.
- From the age wise analysis of stress level of employees, it is found that staff of 20-30 years of age has low level of stress whereas others had moderate level of stress..
- Experience wise analysis of stress level of employees shows that Employees of all categories have moderate level of stress. Among them, those having more than 10 years of experience have highest level of stress than others.
- From Marital status wise analysis, it is found that both single and married employees have moderate level of stress and among them married employees have more stress.
- Income wise analysis of stress level of employees shows that employees of all categories have moderate level of stress in which employees having monthly income

between Rs.10, 000 and 20,000 have more stress than the other categories.

- From question wise analysis of stress, it is found that question 'is your work monotony and boring', questions related to approach to work, career growth, long working hours, annoyed of frequent change in duties have high level of stress and Remaining questions have moderate level and low level of stress.

#### CORRELATION ANALYSIS BETWEEN UTILIZATION AND STRESS OF EMPLOYEES

- From the correlation analysis of Utilization and stress level of employees, it is found that there is high positive correlation between utilization and stress. So, utilization and stress level of employees have a dependable relationship. As utilization become higher, stress level also become higher.

#### V .SUGGESTIONS

- If the management takes decision to reduce or rearrange staffs in laboratory, pharmacy and radiology services, it will definitely help to reduce under utilization of staff in those departments.

- Idle time of employees appears to be very high, so better perfect planning and process optimization can be done to reduce it.

- In areas having optimum utilization ie, physiotherapy, insurance, blood services, better manpower planning either to reduce staffs or to manage existing utilization according to number of patient.

- Reallocation of unskilled trainee staff from pharmacy, laboratory and radiology where there is an increased idle time can solve the problem.

- Creating more balanced schedules for break time can manage unnecessary absence from doubling duty hours.

- During 10.00 AM – 12.00 PM there was optimum utilization in almost all the departments since patient flow is high during the hours. So measures to increase patient flow can be adopted from the part of management to increase utilization of the staff.

- Rescheduling the morning shift time so as to increase in demand during the early morning time can be managed and staff can be effectively utilized.

- Better supervision can bring control on unproductive and idle time.

- Get employee feedback to improve engagement.

- Adequate training programmes and activities can improve utilization rate.

- Efficient organisational structure through organisational redesign followed to minimize duplication of work.

#### VI .CONCLUSION

Employee utilization refers to the amount of an employee's working time that is used for billable work. Employee utilization rate is the percentage of an employee's total working hours spent doing work that can be billed vs. administrative tasks. The employee utilization rate is most often used in professional services and service-based organizations like hospitals. However, other organizations

can also use it as a key metric to measure their team's current productivity.

Stress is a reaction to a situation – it isn't about the actual situation. We usually feel stressed when we think that the demands of the situation are greater than our resources to deal with that situation. For example, someone who feels comfortable speaking in public may not worry about giving a presentation, while someone who isn't confident in their skills may feel a lot of stress about an upcoming presentation. Common sources of stress may include major life events, like moving or changing jobs. Long-term worries, like a long-term illness or parenting, can also feel stressful. Even daily hassles like dealing with traffic can be a source of stress. Workplace stress then is the harmful physical and emotional responses that can happen when there is a conflict between job demands on the employee and the amount of control an employee has over meeting these demands. In general, the combination of high demands in a job and a low amount of control over the situation can lead to stress.

The present study has brought to the surface certain grey areas to which the hospital needs to pay attention. Most of the supportive service shows employees underutilization. This necessitates management to conduct further studies to improve the efficiency. Adequate manpower planning and proper supervisions are also important and this can reduce under utilization. Idle times are also very high and staffing can be done take in consideration of the patient concentration.

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