1.0 INTRODUCTION

1.1 Most nations, both in the developed and developing world, are encountering the challenge of expanding interest for health services and, related with this, rising costs in health care.

A critical resource is the health human resource, because it is the capacity, skills, and commitment of this asset that will be a major indicator of efficiency and effectiveness in the delivery of health care.

Traditional staffing norms based on population and do not take into consideration the variations of need. This creates a gap in health care provision, not only through over or under staffing of healthcare professionals but also through the misappropriate allocation of different cadres of health care staff.

Presently in our country, staffing needs in hospitals are determined on notional principles of terrain, population served and/or numbers of beds based on Indian Public Health Standards (IPHS) Guidelines for Hospitals rather than by an assessment of needs or service utilisation and workload [2].

India's Public Health System has been developed as a Three-tier system, namely tertiary, secondary and primary, level of health care. District Health System is the fundamental basis for delivery of healthcare and management of health services for defined geographic area and implementing various health policies. District hospital is an important component of the district health care delivery system at secondary level and provides promotive, preventive and curative, healthcare services to the population in the district [2].

These Hospitals have come under increasing pressure due to medical advancement and rapid rise in population, resulting in overloading of health care staff

1.2 Background

1.2.1 **Hospital**. Lal Bahadur Shastri Hospital is a secondary level multi-specialty hospital with 100 sanctioned beds. However, presently there are 188 functional beds. It is situated at Khichripur, in Trans Yamuna area of Delhi. It caters to East District of Delhi. It was commissioned in December, 1991 with OPD services only. Indoor services were started w.e.f. 11.10.1996 and fully functional w.e.f. 22.06.1999 [3].

All the health services are provided free of cost. The Hospital caters to whole of East District of Delhi with more than 15 lacs population, other Trans Yamuna in Delhi, adjoining areas from NOIDA, Ghaziabad, Khora and other areas of Uttar Pradesh and other adjoining states. Hospital campus is spread over 10.11 acres of land and has a floor area of 18,110 Sq. Mtrs. Average Bed Occupancy of the Hospital is 200%. [3]

1.3 Conceptual Framework of the Study

At Lal Bahadur Shashtri Hospital staffing was done keeping in mind all the then requirements of the hospital to provide basic primary, secondary as well as tertiary health care facilities at their door step. Increasing workload in this hospital in recent times due to increase in the number of functional units and addition of 88 floating beds[3] with the same number of sanctioned manpower is adversely affecting its smooth functioning.

The intention of this study is to carry out assessment in Human Resource planning for Health from the traditional method to an interactive one in which the determination of staff requirements is based on utilisation and workload. The tool utilised is known as Workload Indicators of Staffing Needs (WISN).[1]

1.4 Planning of Human Resource

There are many ways to define HR planning, or explain what it is. A simple definition is "The processes by which management ensures that it has the right number of personnel, who are capable of completing those tasks that help the organization, reach its objectives." This study tries to implement the use of this method at LBSH, Delhi.

1.4.1 The scope of the study will include:-

(a) Internal Scan: Identify factors internal to the organization that may affect HR planning to meet health care goals.

(b) External Scan: Determine the critical external factors likely to affect workforce capacity.

(c) Workforce Analysis: Understanding your workforce and planning for projected surpluses and shortages in specific cadres.

(d) Gap Analysis: Based on an analysis of the environmental scan and operational business goals, what are the organization's current and future HR needs?

1.5 **Objectives**

1.5.1 **General Objective**. To ascertain the requisite manpower required for Health to cope with the workload for all the units in Lal Bhadur Shashtri Hospital, Khichripur, Delhi**.**

1.5.2 **Specific Objectives**

(a) To ascertain the IPHS guidelines for provisioning of requisite manpower for 100 bedded hospital along with other functional units.

(b) To count the number of personnel being sanctioned and in- place in different functional units at Lal Bahadur Shastri Hospital.

(c) To carry out gap analysis in terms of Human Resource for Health.

(d) To assess the workload pressure of the health workers in the hospital.

(e) To give suitable recommendations with regards to manpower requirement for Health.

2.0 LITERATURE REVIEW

2.1 Indian Public Health Standards (IPHS) Guidelines forDistrict Hospitals (Revised) - 2012 Directorate General of Health Services Ministry of Health & Family Welfare Government of Indiairectorate General of Health Services

2.1.1 District Hospital is a hospital at the secondary referral level in charge of a district of a characterized geological zone containing a designate population. Its aim is to ensure comprehensive secondary health facilities to the general population in the locale at an adequate level of value and being responsive to the requirements of individuals and referring centres. Each district is relied upon to have it's area or district hospital. As the number of inhabitants in a region varies, the number of beds likewise ranges from 75 to 500 beds depending upon the population, terrain and extent of the district. [2]

The aim of IPHS is to provide quality health care , sensitive to the requirements of the population.

2.2 Indian Nursing Council of India Norms

Requirements of nurses is given as per Indian Nursing Council Norms as under [4]

One Nurse per bed for ICU

Two Nurses per OT Table

One Nurse per Six beds in General Ward

One Nurses per Four beds Special ward

Two Nurses per Labour room

Forty Five percent leave reserve

2.3 **Work Load Indicators of Staffing Needs (WISN) WHO Manual – 2010**

2.3.1 Human Resource for Health managers are facing increasing challenges due to the limited Human Resource available to respond to the ever increasing populations' demand for health care. The human resources distribution is generally inadequately balanced between rural and urban areas and between tertiary, secondary and primary levels of health care.

Challenges of balancing the Human Resource for Health within and external to the health is a day to day battle for managers as how to deal with this critical yet basic resource effectively so they can accomplish better distribution of workload versus productivity.

2.3.2 The WISN method is a human resource management tool that:

- Determines how many health workers of a particular type are required to cope with the workload of a given health facility.
- Assesses the workload pressure of the health workers in that facility.[1]

2.3.3 It utilizes a type of activity analysis, together with measures of workload and utilization to decide staffing needs. This method provides a platform for determining staffing needs that is logical and in contrast to traditional methods.

It takes into account complexity of care and differences in services provided. No separate data collection exercise is required, since the calculation of staff requirements is based on the same medical standards in all similar facilities and it uses the available service statistics.

Two kinds of results – differences and ratios – are given by the WISN method. The difference between the real and worked out number of health workers demonstrates the level of staff surplus or deficiency for the particular health staff. The ratio of the

existing to the calculated number of staff is a measure of the workload pressure with which the staff is coping.[1]

3.0 METHODOLOGY

3.1 The study will be carried out as per the following methodology/ procedures:

(a) Study the OPD performance

(b) Study the IPD performance

(c) Study the Average patient load per day

(d) Study the present HR for status Health (i.e Doctors and Nurses)

(e) Ascertain the gap in manpower compared to the work load based on IPGS guidelines

(f) Use human resource management tool like the Workload Indicators of Staffing Need (WISN) method to determine staffing requirements

(g) Find out the gaps and make suitable recommendations with regards to manpower requirement for Health.

3.2 New Approaches to Determining Staffing Needs

In the recent past health service organizations have begun to emerge from the traditional approaches of determining staffing requirements, to increasingly adopted methods based on some form of activity measurement. The newer methods of staffing norms are intended to be specific for the type and location of staff being considered.

There are 5 major ways of collecting information for analyses of an activity are:

- Monitoring using a log or a diary.
- Questionnaires.
- Direct observation.

- Interviewing.
- Expert opinion.

Each method has its own strengths and weaknesses, which relates to its cost, accuracy, and time available. Generally, the oucome of an activity study need some degree of interpolation and interpretation by experienced and relevant staff if they are to be accepted by the organization.

In the circumstances of this study in LBSH where staffing is based on Indian Public Health Standards (IPHS) Guidelines for District Hospitals suggested that a method of relative simplicity, combined with reasonable precision would be the most appropriate method to adopt. Hence WISN was adopted.

The purpose of the study was to:

- Lay down activity standards for health hospital staff.
- Determine the workload based staffing requirements for a district hospital by creating a framework.
- Integrate the outcome of the study into the processes for working out the staffing requirements.

3.3 **Organizational Structure for the Study**

The study was carried out on behalf of the management of LBSH. The hospital assigned a doctor (manager) and nurse, to help in identify the staffing needs of the hospital. All the activities undertaken were discussed with the management to gain both their technical input and to ensure cooperation.

3.4 **Samples**

3.4.1 Health Facilities

The focus of the study was on the HR planning for Health and the facilities available with LBSH.

3.4.2 Categories of Staff

The category of staff included were Doctors and Nurses which were FTE (full time employee). These categories comprise approximately 85 % of the total personnel working in LBSH [3].

3.5 Setting Activity Standards and Standard Workload

An "activity standard" is the time required by a professional and motivated staff to perform a given task in the specific conditions. There are activities which determine the workload in every type of hospital such as the number of inpatients treated, laboratory tests, surgical operations, deliveries, training sessions etc. It is possible to set an activity standard for each of these activities.

3.5.1 On comparing the total number required of each type of activity with activity standards of personnel discharging these activities we can determine the number of personnel required by the facility

The primary task, therefore, was to determine activity standards, available working time for each staff category, and volume of activity (workload), and reproduce it in a manner for the management to understand their requirement for health.

3.5.2 This study adopted an approach in which experts in all fields were involved by forming a committee. Discussions were held to determine:

(a) Available Working time for each staff category in a year;

(b) Key activities;

(c) Time to perform each activity (Activity Standards)

3.6 The steps of the WISN method are given in succeeding paras[1]:

3.6.1 Determining Priority Cadre(s)

Here are some questions we considered in making our selection:

• Which category of staff is in shortest supply with relation to its criticality?

• In which category is staff distribution likely to be most inequitable?

3.6.2 Estimating Available Working Time

Available Working Time (AWT): This is the time available to a health worker in a year to do his/ her work, taking into account all kind of absences.

AWT = [A – (B + C + D)] x E

A: Working days per year

B: Listed holidays per year

C: Annual leave per year

D: Sick leave in a year

E: Working hours per day.

3.6.3 Defining Workload Components

The 3 kinds of workload components are:

• Health Service Activities

• Support Activities

• Additional Activities

3.6.4 Setting Activity Standards

An activity standard is the time necessary for a well-trained, skilled and motivated worker to perform an activity to professional standards in the local circumstances

3.6.5 Establishing Standard Workloads

A standard workload is the amount of work within a health service workload component that one health worker can do in a year.

3.6.6 Calculating Allowance Factors

This caters for the other important activities health workers are also required to undertake for which routine data are not collected.

3.6.7 Determining Staff Requirements Based on WISN

For this, annual service statistics for the previous year for every facility for which we want to calculate the staff requirement are required.

Health Service Activities**:** Divide a health facility's annual workload for each workload component (from annual service statistics) by its respective standard workload. This gives us the number of health workers that we require for the activity in this health facility. Add the requirements of all workload components together. The answer we get is the total staff requirement for all health service activities.

Support activities done by all members of the staff category: Multiply the answer we got above (the staff requirement of health service activities) by the category allowance factor. This gives us the number of health workers we require for all health service activities and support activities.

Additional Activities of Certain Cadre Members**:** Add the individual allowance factor to the above staff requirement.

4.0 FACTS AND FINDINGS

4.1 Manpower Requirements : District Hospital

As per IPSH guidelines, the minimum essential manpower required for a functional District Hospital of different bed strengths is as under[2]:

Table 4.1: Man Power – Medical: District Hospital

Category of Specialty	Hundred Bedded	Two Hundred Bedded	Three Hundred Bedded
Surgery	2	2	3
Medicine	2	2	3
Paediatrics	2	3	4
Obstetric & Gynae	2	3	4
Anaesthesia	2	2	3
Orthopaedics	1	1	2
ENT	1	1	2
Radiology	1	1	2
Pathology	1	2	3
Opthalmology	1	1	2
Dental	1	1	2
MO	11	13	15
Psychiatry	1	1	1
AYUSH	1	1	1
Total	**29**	**34**	**50**

Table 4.2 : Total Manpower Medical

Category	Hundred Bedded	Two Hundred Bedded	Three Hundred Bedded
Nurses	45	90	135
Doctors	29	34	50
Total Strength	**74**	**124**	**185**

4.2 The services provided by LBSH are as under[3]:

4.2.1 **OutPatient Services:**

- Medicine.
- Surgery.
- Pediatric with New Born Nursery.
- Obs & Gyane.
- Ortho with Physiotherapy.
- Eye.
- ENT.
- Dental.
- Skin with PPTC and VCTC clinic.
- Psychiatry.
- ART Clinic.

Table 4.3 : Detailed Data of the OPD Performance[3]

	2014-15	2015-16	2016-17
New Cases	4,76,738	4,74,357	5,14,575
Old Cases	2,16,389	2,49,124	2,78,722

4.2.2 **Inpatient Services:**

- Medicine.
- Surgery.
- Pediatric with New Born Nursery.
- Obs & Gyane.
- Ortho with Physiotherapy.
- Eye.
- ENT.

Table 4.4 : Detailed Data of IPD Performance[3]

	2014-2015	2015-2016	2016-2017
IPD (Admissions)	2,39,948	3,84,125	3,09,488
Total Surgeries	49,634	49,793	42,000
Major	7,906	3,264	3,265
Minor	41,728	46,529	38,735
Total Deliveries	4,699	7,220	7,749

Table 4.5 : Average Daily Attendance of all Emergency Departments [3]

Department	Per Day Work Load
Main Casualty	452 - 550 (Approx.)
(a) Medical Emergency	150 - 200 (Approx.)
(b) Surgery & Ortho Emergency	125-150 (Approx.)
(c) MLC Patients	80-100 (Approx.)
Obst. & Gynae Emergency	70 – 100 (Approx.)
Pediatric Emergency	125-150 (Approx.)
Total Casualty Footfall	**700 – 800 (Approx.)**

4.3 **HR STATUS** The details of Human Resource for Health in LBSH is as under[3]:

Table 4.6 : HR Status – Authorisation of Medical Professionals in LBSH

Designation	Sanctioned	Filled	Vacant
MS (Coordinator & MCH Services)	01	01	0
M.S. (Accident & Emergency Services)	-	01	0
HOO/DMS	1	1	0
Specialists (All Specialties')	24	22	2
GDMOs	26	25	1
CAS Dental	2	1	1
S.Rs	63	60	3
J.Rs	39	39	0
Nursing Staff	134	127	7
Paramedical Staff	74	63	11

Table 4.7: HR Status – Comparison of Medical Professionals as per IPHS Guidelines for a 100 Bedded District Level Secondary Hospital and that Presently Working in LBSH

Category	As Per IPHS Guidelines	Presently Working In LBSH
Doctors	29	47
Nurses	45	127

4.4 **Observations**

Table 4.8 : Average Patient Load Per Day

Department	Capacity	Average Patient Load Per Day
OPD	500	3000 - 3500
IPD	100	209 (Including 79 in Maternity Ward)
Casualty	150	700 – 800
Surgery (Major and Minor)	100	350
Deliveries	10	30

5.0 DISCUSSION

5.1 Average Annual Working Time

These activity standards (unit time for an activity, working rates or time allowances) were turned into standard workloads (volume of work done by an individual in a year) by comparing available working time per year and the activity standards.

Annual service statistics provided information on the volume of all the activities undertaken by each hospital and the actual numbers of staff undertaking these activities.

The average working time in a year was determined as the available working time, assuming a six-day, eight-hour a day working week, less the expected average non-working days in a year[3]. Table 5.1 shows the calculation.

Table 5.1: Available AWT

Absences per Year	
Annual leave	30 days
Sick Leave	10 days
Holidays	12 days
Administrative Leave	9 days
Total	61 Days
Total Non –Working Weeks = 61/6 = 10.16 weeks	
AWT	
Working Weeks = 52 – 10.16 = 41.8 weeks per year	
Working Days = 41.8 X 6 = 250 days per year	
Working Hours = 250 X 8 = 2000 hours per year	

5.2 Activity Standards

5.2.1 Using the proposed activity standards, working time and service statistics were calculated [5]. The results were then compared with the actual situation at LBSH.

Table 5.2: Activity Standards for Doctors

Activity	Activity Standard	Workload	Allowance
Outpatient Exam			-
Specialist	12 patients/hr/day	24000 patients/yr	
GDMO	20 patients/hr/day	40000 patients/yr	
Wards			-
Visits	200 patients/day	50000 patients/yr	
Medical Intervention	50 patients/day	12500 patients/yr	
Emergency Care Unit	800 patients/day	200000 patients/yr	-
Deliveries	30 patients/day	7500 patients/yr	
Operation Theatre			-
Major Surgery	2 hrs/patient/day	1000 patients/yr	
Medium/Minor Surgery	1 hr/patient/day	2000 patients/yr	
Misc Activities (Not related to direct patient care)	1 hr/day	-	12.5 %

Table 5.3: Activity Standards for Nurses

Activity	Activity Standard	Workload	Allowance
Outpatient	25 patients/hr	50000 patients/yr	
Wards **Direct Patient Care** **Dependent Patients** **Semi-Dependent Patients** **Independent Patients** **Care management** **Cleaning and sterilising equipment**	 10 hrs/patient/day 4 hrs/patient/day 1 hr/patient/day 1 hr/day 30 min/day	 200 patients/yr 500 patients/yr 2000 patients/yr - -	 12.5 % 6.25 %
Emergency Care Unit **Minor Case** **Major Case**	 20 mins/patient/day 2 hrs/ patient/day	 6000 patients/yr 1000 patients/yr	
Deliveries	30 patients/day	7500 patients/yr	
Operation Theatre **Major operation** **Minor Operation**	 2 hrs/patient/day 1 hr/patient/day	 1000 patients/yr 2000 patients/yr	
Misc Activities (Not related to direct patient care)	2 hrs/day	-	25 %

5.3 **Limitations of the Study**

5.3.1 The study is restricted to assess the Human Resource for Health in LBSH. Paramedical and Administrative staff have not been taken into consideration.

5.3.2 The Activity Standards have been calculated based on available data and past experience. Hence, they are approximate

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 The hospital is a 100 bedded hospital but is having 200% bed occupancy. The hospital OPD was designed for 500 patients per day but the hospital is presently having an OPD attendance of 3000 to 3500 per day.

The hospital staff is having a workload equivalent to a 300 bedded hospital but the staff strength sanctioned is as per the 100 bedded hospitals.

Critical patients in various departments are being monitored by the staff sanctioned as per 100 bedded norm which leads to further constraints since monitoring of these patients requires intensive care and time consuming.

MLC load is from 12 Police Stations and 2 Police Posts.

Many services like – additional post natal ward, SNCU, Poly Clinic, Dog Bite Clinic are functioning without requisite outsourced staff and nursing staff being sanctioned.

6.2 On comparing the actual staffing and required staffing as a ratio (WISN ratio) we get a useful tool for assessing priorities to address staff overloads or staff under-utilisation. Results can be analyzed as under:

WISN ratio = 1 implies a perfect match between requirement and the actual staffing;

WISN ratio > 1 implies a staff surplus.

WISN ratio <1 implies a staff shortage.

Table 6.1: Analyses of WISN Results

Personnel Category	Actual Posted Staff	Requirement Based on WISN	Difference	WISN Ratio	Workload Pressure
MS	01	01	0	1	None
HOO/DMS	01	01	0	1	None
Specialists	22	32	-10	0.69	High
GDMOs	25	26	-1	0.96	None
Senior Residents	63	100	-37	0.63	High
Junior Residents	39	65	-26	0.6	High
Nursing Staff	127	190	-63	0.67	High

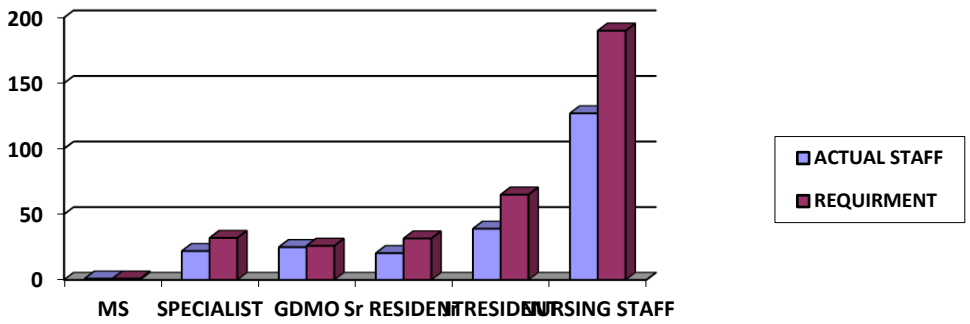

Figure 6.1 : Comparison of Actual Posted Staff To Requirement in LBSH

6.3 Recommended Staffing of HR for Health in LBSH

The Recommended Staffing of HR for Health in LBSH is given at Table 6.2 below:

Table 6.2: Recommended Staffing of HR for Health in LBSH

Personnel Category	Actual Posted Staff	Recommended Staffing
Specialists	22	32
GDMOs	25	26
Senior Residents	63	100
Junior Residents	39	65
Nursing Staff	127	190

6.4 There are many different methods for undertaking an activity analysis, each with varying degrees of accuracy and cost. The WISN method deliberately sets out to simplify the process. Necessarily, this results in the loss of some accuracy in describing and detailing the activities. Nevertheless, the relative simplicity of the WISN method makes it both appealing and understandable to those who must make judgments based on a WISN assessment.

7.0 **REFERENCES**

1. Work Load Indicators of Staffing Needs (WISN) WHO Manual – 2010

2. Indian Public Health Standards (IPHS) Guidelines for District Hospitals (Revised) - 2012 Directorate General of Health Services Ministry of Health & Family Welfare Government of India Directorate General of Health Services

3. LBSH registers and documents.

4. Indian Nursing Council of India Norms

5. Determining Hospital Workforce Requirements: A Case Study

6. Hornby P, Forte P. Human resource performance indicators. WHO Document series. In press, 1999.

7. Shipp PJ. Workload indicators of staffing need (WISN): a manual for implementation (Version 2). Geneva: World Health Organization, 1998.HR manual.