Original Article

Human resource assessment of a district hospital applying WISN method: Role of laboratory technicians

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Access this article online

Website: www.ijmedph.org

DOI: 10.4103/2230-8598.123459

Quick response code:

Abstract

Context: The Workload Indicators of Staffing Need (WISN) human resource planning and management tool, developed by Shipp (1998) and popularized by the World Health Organization (WHO), gives health managers a way to analyze and calculate correct staffing levels in health facilities. In present study, WISN tool was used to assess a District Hospital in terms of staffing of laboratory technicians to understand the staffing need against the existing workload of health system. **Aims:** To assess the staffing needs of laboratory technicians in District Hospital using WISN method. **Settings and Design:** Hospital-based cross-sectional study. **Materials and Methods:** The present study is a cross-sectional survey involving observation, record review, and personal interview. Study was performed in a District Hospital of Madhya Pradesh. There were six laboratory technicians in the District Hospital and all of them were included in the study. The staffing pattern and need of laboratory technicians in District Hospital was estimated and WISN indicators calculated. **Statistical Analysis Used:** Rate ratio and proportions were calculated using Microsoft Excel 2007. **Results:** WISN calculation showed that District Hospital in which the study was done requires 16 laboratory technicians in order to provide the volume of health services in its annual statistics in accordance with the professional standards (activity standards) for these services, thus having a shortage of 10 technicians. **Conclusion:** The laboratory technicians in the District Hospital where study was conducted are constantly under pressure to match the existing workload due to shortage of manpower. Appropriate human resources management and planning can contribute greatly to the improvement of efficiency of their work by ensuring optimum workload.

Key words: Health work force, human resource management, workload indicator of staffing need

INTRODUCTION

Workload Indicators of Staffing Need (WISN) is a method of setting the correct staffing levels in health facilities. This method has been developed by Shipp (1998) and popularized by the World Health Organization (WHO).[1] In the late 1990s, the World Health Organization developed WISN to bring planning principles long used in business and industry to the health sector. Following field testing, the WISN approach was immediately used in a variety of countries. Since then, a large amount of experience has been gathered to help measure the adequacy of staffing levels in terms of the work to be done and the number of staff available to perform the many necessary tasks.

In the context of public health, there has been a need for rational method of setting the correct staffing levels in health facility. There is fixed pattern of staff for health posts, health centers, district hospitals, etc., in India which does not take into account the demand-supply dynamics of health services. With this background in mind, we undertook this study with the objective of human resource assessment of laboratory technicians in a District Hospital of Madhya Pradesh applying WISN method.

MATERIALS AND METHODS

The present study was conducted in a District Hospital in the state of Madhya Pradesh in India. There were six laboratory technicians working in this District Hospital, and all of them were included in

the study. Study design was cross-sectional using Key Informant Interview of Lab Technician, WISN, secondary sources/record review of annual hospital statistics.

To conduct the research study in selected hospital, formal written permission was obtained from the concerned authority before data collection. The investigator introduced her and the purpose of the study was explained to the subjects and informed consent was obtained. Structured interview questionnaires were given. The time taken to complete questionnaire was 20-30 min. Annual hospital statistics were collected by record review. The study was conducted between January and July 2012.

Development of Tool

The tools were developed by:

- Review of literature which provided adequate content area and information.
- Discussion and consultation with Chief Medical Officer of the District Hospital.

Ethical considerations

Ethical approval of study protocol was obtained from Institutional Ethics Committee, Indian Institute of Public Health (IIPH), Delhi.

Informed consent was taken from participants before the interview.

WISN Method

The WISN method is based on the work which is actually undertaken by health staff. Every health facility has its own pattern of workload which may include inpatients, surgical operations, deliveries, outpatients, clinics of various types, health education, home visits, outreach activities, inspection visits, etc. Each type of workload calls for effort (i.e., time) from specific health staff categories. For each type of workload (inpatient, outpatient, Medical Center Health (MCH) clinic, etc.) we can set an activity standard. This is a unit time for each staff category-how much time on average a case, a prescription, etc., should take each staff category which is involved in it, working to acceptable professional standards. This activity standard, an activity time or a rate of working (either can be used), can now be converted into the equivalent annual workload, that is, how much of this type of work could be done by one person in a year working to these professional standards and also making due allowance for time spent on vacation, holidays, training, sickness absence, etc. This equivalent annual workload is called the standard workload.

The amount of each type of work done in a health facility in a year is reported in its annual statistics. Thus, applying the standard workloads (annual work rates) to these annual statistics will show how many staff in each category is required in order to accomplish this workload to acceptable professional standards. The details of calculating these indicators can be obtained from http://whqlibdoc.who.int/publications/2010/9789241500197_users_eng.pdf.

RESULTS

The present study used WISN calculations to study staffing needs of laboratory technicians in a District Hospital. To calculate the workload indicators, first the estimated available working time of laboratory technicians was calculated. The same is shown in Table 1.

As seen from the above table, average available working time per month for these staff categories is: 264 days/year/12 = 22 days/month.

The result of calculating the average available working time per year for staff categories can be used directly to calculate the staffing requirements of posts which must be manned according to a fixed than according to a fixed time pattern rather than according to workload.

To calculate the workload of laboratory technicians, annual hospital statistics were scanned from the hospital records and total number of tests performed by laboratory technicians during the previous year was noted, as seen in Table 2.

The WISN method uses currently available service statistics, rather than calling for a special data collection. Workload data for WISN calculations were obtained mainly from the Health Management Information System Records in District Hospital. At times, it was necessary to visit the individual health units when data were missing. A checklist was prepared to facilitate data collection.

The workload of laboratory technicians was also categorized into main health service activities, support activities, and other additional

Table 1: Estimated available working time of laboratory technicians in district hospital

Available time	No. of days
Vacation days/year	20
Public holiday/year	17
Training days/year	11
Absence days/year	0
Total unavailable days/year	48
Unavailable week/year (divide by 6)	8
Available week/year (subtract from 52)	44
Available day/year (multiply by 6)	264
Available hour/year (multiply by 6)	1584

Table 2: Total number of tests performed by laboratory technicians in district hospital in the previous year

Workload data	
Investigation	Total number (annual)
Biochemistry	12,669
Hematology	27,958
Bacteriology	5,136
Immunoserology	3,685
Blood donation	2,189
Parasitology	19,667

activities, as per WISN method. Table 3 shows the activities under each of the categories performed by the laboratory technicians.

Main health service activities are carried out by all members of the health worker category. Regular statistics are collected on them. Important support activities are carried out by all members of the health worker category. Regular statistics are not collected on them. Other activities are carried out by certain (but not all) members of the health worker category. Regular statistics are not collected them.

Based on the information gathered above, WISN method was used to calculate standard workload and staff requirement for laboratory technicians. Calculations are shown in Table 4.

Table 3: Work load components of a staff category

Workload group	Workload component
Main health service activities of all members of the staff category	A. Biochemistry SGOT/SGPT Uric acid Serum bilirubin Serum cholesterol Urea Electrolytes Albumin Urine sugar Blood sugar B. Hematology Hb ESR TLC/DLC BT/CT Blood Group C. Bacteriology Sputum examination D. Parasitology Stool examination Urine examination Malaria parasite PF PV E. Immunoserology VDRL Widal Pregnancy F. Blood donation Blood transfusion Cross matching G. Specimen collection
Important support activities of all members of the staff category	A. Recording B. Expenditure register maintenance C. Stock register maintenance D. Slides From periphery for confirmation of result E. Salary collection
Additional activities of certain number of the staff category	A. Camp duties B. Administrative duties

SGOT = Serum glutamic oxaloacetic transaminase, SGPT = serum glutamic pyruvate transaminase, Hb = hemoglobin, ESR = erythrocyte sedimentation rate, TLC = total leukocyte count, DLC = differential leukocyte count, BT = bleeding time, CT = clotting time, PF = peak flow, PV = per vagina, VDRL = Venereal disease research laboratory

Table 4 shows how to determine number of health workers you require in total to cope with all the different components of the current workload of your WISN staff category in District Hospital. For this, we first need the health facility's annual service statistics for the previous year. Divide the annual workload of each main service activity by its respective standard workload. This gives us the health workers required for that activity. The requirements of all activities together are added to get the total staff requirement for all main service activities.

The actual staffing levels and the calculated staffing levels and the calculated staffing requirements in one health facility denotes the shortage of staff in the facility according to the actual workloads and professional standards. The ratio between actual and calculated staffing level (WISN) shows whether these staff are working under pressure there is on them, that is, to what extent the professional standards can be upheld in the facility.

Table 5 shows the WISN ratio calculation for laboratory technicians in District Hospital.

DISCUSSION

WISN calculation shows that the District Hospital in which the study was done requires 16 laboratory technicians in order to provide the volume of health services in its annual statistics in accordance with the professional standards (activity standards) for these services. The WISN method is a very objective way of establishing staffing levels, but requires a dedicated team with adequate expertise to make the raw data meaningful for calculations. The results of the assessment revealed a real shortage of laboratory technicians. Appropriate human resources management and planning can contribute greatly to the improvement of efficiency in the health sector. This study is supported by the findings of the previous studies on improving the current staffing situation of health staff.[2-5] This study was restricted to a select category of

Table 4: Staff requirement based on WISN

Workload component	Annual statistic	Standard workload	Required staff
Biochemistry	12,669	6,600	2.674
Hematology	27,958	6,600	5.922
Bacteriology	5,136	6,600	1.078
Immunoserology	3,685	6,600	0.77
Blood donation	2,189	1,584	1.932
Parasitology	19,667	6,600	4.158
Total			16.534

WISN = Workload indicators of staffing need

Table 5: WISN calculation for laboratory technicians in district hospital

Category	Actual staff	Required staff	WISN ratio	Difference
Lab Technician	6	16	0.375	10

WISN = Workload indicators of staffing need

health staff in a single hospital. However, large scale studies in this regard, will provide evidence for rationale human resource planning in health sector which is need of the hour.

CONCLUSION

The present study highlights the acute shortage of manpower and urgent need to address human resource management issues in a health center in India. Further studies on a larger scale will help to understand the situation better and suggest suitable recommendations to improve human resources in health.

REFERENCES

1. WISN Workload Indicators of Staffing Need by World Health Organization, World Health Organization. Available from: http://whqlibdoc.who.int/publications/2010/9789241500197_users_eng.pdf [Last accessed date on].
2. Musau P, Nyongesa P, Shikhule A, Birech E, Kirui D, Njenga M, *et al*. Workload indicators of staffing need Method in determining optimal staffing levels at Moi Teaching and referral. East Afr Med J 2008;85:232-9.
3. Seran SB, Kromoredjo P, Kolehmainen-Aitken RL, Smith J, Darmawan J. Applying the WISN method in practice: case studies from Indonesia 2010; p. 1-9.
4. Vio F. Applying the WISN method in practice: case studies from Mozambique 2010; p. 1-9.
5. Namaganda G. Applying the WISN method in practice: case studies from Uganda 2010; p. 1-9.

How to cite this article: Pandey AA, Chandel S. Human resource assessment of a district hospital applying WISN method: Role of laboratory technicians. Int J Med Public Health 2013;3:267-70.

Source of Support: Nil, **Conflict of Interest:** None declared.