
Original Articles

Likely Benefit of Using Workload Indicators of Staffing Need (WISN) for Human Resources Management and Planning in the Health Sector of Bangladesh

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Abstract

This study demonstrates how Workload Indicators of Staffing Need (WISN) can be used as a human resources planning and management tool for improving decisions at all levels of health services about the provision, allocation and deployment of staff. WISN has been estimated for doctors, nurses and medical assistants working in different Thana and Union level public health facilities under Chittagong district of Bangladesh. The estimate of WISN turns out to be 0.6 for both doctors and nurses working in Thana Health Complexes. However, there exists a wide variation of this figure among facilities. It varies from 0.45 to 0.93 for doctors; for nurses it varies from 0.4 to 1.2. For medical staff working in Union level Health Sub-centres, WISN is estimated at 1.5 with a variation from 0.9 to 2.8. The presence of significant variation of WISN within facilities of the same level as well as facilities of different levels indicates that health managers have a role to increase efficiency and equity by making optimal deployment of the workforce among facilities.

Key words : Workload indicators, Staffing needs, Human resources planning, Human resources management.

Introduction

Bangladesh with a population of 123 million, is one of most densely populated countries (more than 800/sq.km) in the world. The current GNP per capita of \$250 is among the lowest in the world⁽¹⁾. The present population growth rate is estimated to be about 1.8% per year.

The planned country-wide network of public sector health facilities includes a health and family welfare centre in each of Unions (located in rural areas), a 30 bedded health complex in each of 397 rural Thanas, one hospital in each of 64 Districts as well as 13 tertiary level medical college hospitals and 8 post-graduate institutes, besides other specialized establishments/hospitals. Within each Thana there are some outpost health sub-centres which provide mostly outdoor health services. Presently, there are 1,362 health sub-centres located at Union level in the country⁽²⁾.

Health has been considered one of the urgent development issues in the country. Accordingly, health sector strategy has been set as one of the most important poverty reduction strategies. The present government is committed to reform the health and population sector in order to make the system more efficient, accountable and better serve the interests of the people. As a part of the reform, recently the Ministry of Health and Family Welfare (MOHFW) adopted a programme called "First Health and Population Programme (HAPP-5)" for 1998-2003 with a budget of about \$3.3 billion⁽³⁾. The major objective of this programme is to deliver Essential Services Packages (ESP) at Thana and below, targeting the most vulnerable groups of the society consisting of women and children.

Presently policy makers in Bangladesh are concerned about both the efficiency and equity in the use of resources in the health sector. Studies^(4, 5) show that most of the

public sector health facilities, particularly in the rural areas, are not being used properly. Lack of appropriate human resources development and management are considered major factors determining the inefficient use of the public health facilities. The development of human resources has been identified as a strategy to bring improvement in the efficiency as well as quality of the health services in the country^(1, 3).

The Ministry of Health and Family Welfare (MOHFW) has undertaken a project to formulate a “Human Resources Development (HRD) Master Plan for the health and population sector”⁽⁶⁾. This plan is now in its final stage. As a part of this plan a study⁽⁷⁾ was conducted recently to determine Workforce Supply and Requirement Projections based on the WHO Projection Model. Different scenarios of projections were made under alternative assumptions to see their implications.

Efforts should be taken to make the projections more representative and realistic. Determination of appropriate staffing needs for different types of health establishments is the most crucial among all factors for making requirements projections representative. In the absence of any objective method of determining staffing needs, some subjective type of staffing norms should be used in the above requirements projections. Thus, Workforce projections can be improved greatly by using objective methods of staffing needs rather than the subjective staffing norms commonly used.

Population ratios and standard staffing schedules are generally used in determining the workforce requirements. These methods have serious limitations. Population ratios are based on all qualified staff in a particular category irrespective of their specialty. On the other hand, with the standard staffing schedules the distribution of the facilities themselves is a major factor determining staffing needs. None of these methods takes account of the wide local variations with respect to morbidity, access to facilities, etc.

Staffing norms based on population ratios and standard staffing schedules are usually set somewhere in the middle of the range. This leads to over-staffing in some facilities and under-staffing in others. The latter facilities, unable to cope with their workloads, apply for more staff and frequently get an increase because the request is in fact justified. Once this precedent has been established, other facilities also seek staff increases even though their staffing levels are in fact adequate for their workloads. Thus the authority of the norms or standard staffing schedules disappears and their value in the management and control of human resources for health (HRH) is diminished.

Using these methods tends to undermine the very systems and procedures of HRH control and deployment that they were supposed to strengthen. Given this resource constraint, the use of these methods of staffing needs generate inefficiency and inequity in the health system.

Presently, health managers in Bangladesh (at different levels) do not follow any objective guidelines or criteria to determine the staffing needs and to allocate the available workforce among regions as well as among establishments. For transfer and posting there are some rules but these rules are relatively complex and contain subjective elements. So they are not followed properly. Absence of appropriate deployment, transfer and posting of workforces greatly hampers efficiency and equity.

Shipp J. Peter⁽⁸⁾ in collaboration with WHO, Geneva has developed guidelines to determine Workload Indicators of Staffing Need (WISN). Given the situation now in Bangladesh the WISN can be used as a guideline for human resources management and planning in the country. The WISN method determines staffing requirements for each category based on the workload of the facility. The calculated staffing requirements for each category are compared with the actual level. WISN is estimated dividing the actual

staffing level by the required number of staff. It shows the workload pressure of a particular category of workforce in different health facilities. The WISN method is described in the next section. The objective of this study is to demonstrate how WISN method can be used for human resources management in Bangladesh and to show how the use of WISN can increase efficiency and equity in the health sector.

So far no study has been conducted in any country to demonstrate how the WISN method could be used effectively in human resources management and planning. But some countries like, Tanzania, Papua New Guinea, Kenya, Hong Kong, Oman, Sri Lanka, etc., have set activity standards for various staff categories and subcategories⁽⁸⁾. These activity standards could be used to implement the WISN method in the respective country. No follow-up study of these activity standards in the use of WISN method is available in these countries. However, these activity standards show: (i) how the jobs of different categories have been broken down into their main functions and tasks in order to set activity standards for each and (ii) what actual times or rates have been set for these functions and tasks. Since conditions and circumstances vary from one country to another, activity standards also vary greatly from country to country.

Methods

1. Workload Indicators of Staffing Need (WISN) Method⁽⁸⁾

1.1 Activity Standard

WISN method is based on the work which is actually undertaken by health staff. Each health establishment has its own pattern of different workload types. Each of these types of workload calls for effort (i.e., time) from specific health staff categories according to the medical practices in the country. The times required by different staff categories to carry out each type of workload activity (like inpatient, outpatient treatment, etc.) can be called Activity Standards. Activity Standard is the average time required for a specific activity (e.g., complete a patient consultation, perform a surgical operation, pay a home visit etc.). Alternatively, a standard rate-how many patients, clinic attendance, laboratory tests, etc., can be dealt with to an acceptable standard of performance per hour or per day.

The major functions or activities performed by each staff category are called the Workload Components for the staff category. The selection of these Workload Components for staff categories, and setting a Activity Standard for each of them, is at the heart of the WISN method. There are two types of Activity Standards:

a) Standards for the services and activities which are reported in the annual service statistic are called **Service Standards**.

b) Standards which apply to activities **not** reported in the annual service statistics (because the activities cannot easily be measured) are called **Allowance Standards**. Allowance standards are also considered as part of the duty.

1.2 Standard Workload

The activity standard, which is an activity time or rate of working, can be converted into annual workload, i.e., how much of this type of work could be done with acceptable professional standard by one person in a year. Practicing health professionals deliver services only when they are on duty. Therefore, it is necessary to make due allowances in the annual workload for time spent on vacation, holidays, study leave, sick leave, etc. The amount of work which could be done by a provider in a year (during the time available for work after due adjustment) is called Standard Workload.

The amount of each type of work done in a health facility in a year is reported in its annual statistics. They are also available at different levels such as at

district, division and national levels. Thus applying the standard workload to these annual volumes of workload will show how many staff in each category are required in order to accomplish the reported workload to acceptable professional standards. This figure is considered the staffing requirement of the facility, district or country, etc., calculated according to the WISN method.

To be useful to decision makers and managers, the required staffing figure must be compared with the actual staffing level in order to identify the location and magnitude of shortages and surpluses, by staff category, by service, in each health facility, district, province, etc.

1.3 Difference and Ratios

From the actual staffing level in a particular facility and its calculated staffing requirement according to the WISN Method, two separate figures can be calculated: (I) the difference between required and actual and (II) the ratio of actual to required. The difference shows the amount of shortage or surplus; while the ratio shows the Workload Indicators of Staffing Need (WISN).

If the WISN ratio is 1.00 (i.e., actual staff = required staff), then the current staff is sufficient to meet the workload according to the professional standards which have been set. If the WISN is less than 1.00, then the current staff is not sufficient to meet this standard. If the WISN is greater than 1.00, then there are more than enough staff to meet the standards set.

The ratio (WISN) shows where the workload pressure is the greatest and where it is the least, and where it is the most urgent to take action in order to adjust staffing levels. It is used for identifying which facilities should be given priority when considering staffing changes (both increases or reductions).

1.4 Limitations of the Method

The estimate of WISN uses annual statistics of work done by a health facility. In using annual statistics, the accuracy of the method is determined by the accuracy of the statistics themselves. If record-keeping in a facility is poor or inaccurate, the results will be inaccurate and may provide wrong indications.

Sometimes lack of materials, can reduce the workload in a facility. In these cases the results of the ordinary WISN calculations will show the number of staff required which corresponds to the low workload figures, i.e., the staff which would be required while such shortages continue. Shortages of supplies, shortages of workforce, poor services, poor community relations, inconvenient location of the facilities and short hours (facilities remain open) are considered to be important factors that seriously limit the volume of health services delivered in Bangladesh. As a result the annual service statistics are lower than they would otherwise be. Therefore, requirements made in this study are highly underestimated.

2. Sample and Data Source

All Thanas (Third level administrative unit from the top) under Chittagong District were selected for the study. Chittagong is a coastal district along the Bay of Bengal. It is one of the 64 districts of Bangladesh having an area of 5,284 sq. km. and a population of 5,258 thousand (according to 1991 census). The district is divided into 14 administrative units called Thanas (Police Stations). Below each Thana, there are local administrative units called Unions. Nearly one third of the population lives in the Metropolitan area of the district and the remaining two-thirds of the population live in these 14 Thanas. Except one, all Thanas are located on the mainland. One Thana (Sandip) is separated from the mainland, situated on an island in the Bay of Bengal.

Public sector health facilities in 14 Thanas of Chittagong include 15 Thana Health Complexes (THC) and 73 health sub-centres located at the union level. These health facilities of Chittagong district have been used as samples. That is, Workload Indicators of Staffing Need (WISN) has been calculated for all these facilities. The number of health sub-centres located in each Thana are provided in Table 1. However, all health sub-centres in each Thana were grouped together. The Thana has been considered as the unit of analysis.

Thana health complexes and health sub-centres have standard staffing schedules. Each Thana health Complex has the provision of 8 doctors and 6 senior staff nurses along with other staff. On the other hand, each health sub-centre has the provision of one doctor and one medical assistant.

The services, particularly indoor and outdoor services provided by all health facilities under the study, were used as a basis for staff requirements. The information about the volume and types of services provided by all facilities under the study was collected from the records of the Civil Surgeon's office of Chittagong District. The service statistics include out-patient attendance and in-patients admitted, discharged, number of days stayed, etc. The most recent service statistics have been used in the analysis. The service statistics used were from January to June 1998. Civil Surgeon's office also supplied the information about the number of sanctioned posts, and the number of persons of different categories actually in place (in-position) in June 1998. Thana level health managers were consulted to determine activity standards and allowance standards for different categories of the workforce.

3. Scope of the Study

Doctors and nurses are the two most important categories of workforce in the health sector. They remain directly in contact with the patient and deliver services directly to the patients. In Bangladesh medical assistants who have two year diplomas from the Para-Medic Institute are also assigned to see patients at the grass roots level, particularly at union level health sub-centres. Therefore, the study is devoted to calculate Workload Indicators of Staffing Need (WISN) for doctors, nurses (working in different Thana Health Complexes) and for medical staff consisting of doctors and medical assistants (working in health sub-centres). As stated above all public sector health facilities under 14 Thanas of Chittagong district are part of the scope of the present study.

4. Activity Standard Used

The Activity Standards that are set for health workers in a country must be authoritative, i.e., acceptable to health professionals and to administrators. The standards are usually set by groups of senior and knowledgeable staff with substantial experience of the activities concerned, who command respect within the health services. Setting the time per unit of service, rates and allowances are the most critical steps in the whole task of implementing the WISN method. Activity standards were estimated in this study based on the opinions given by health managers who have long professional experience.

The duties and responsibilities of doctors working in the Thana Health Complexes and Union Sub-centres include patients' consultation, supervision, management, administration, etc. It is estimated that a doctor should spend 10 minutes to examine an out-patient (which also includes record keeping). In case of inpatient care, each patient should be visited three times a day by the doctor. On average, it is estimated that thirty minutes of a doctor's time should be required for one occupied bed a day. In Thana Health Complexes, nurses are employed to care for in-patients. The list of activities

which are supposed to be performed by nurses is presented at the bottom of Table 3. Estimates show that one nurse should be available for every 15 occupied beds. The activity standards used here are to some extent overestimated compared to other countries. For example, the estimate of activity standards of Sri Lanka shows that ward duties in a district hospital require one nurse for every 5 beds⁽⁸⁾. Besides service standards, there are provision of allowance standards which will be discussed in the next section.

Results and Analysis

Table 1 shows patient statistics for all Thana health complexes and health sub-centres. Each Thana health complex provides both in and out patient care. On the other hand, health sub-centres only provide outpatient care. Total admissions, discharges, cumulative stay, and outpatients attended in each of the Thana health complexes for six months (January to June, 1998) are depicted in Table 1. This table also shows total outpatients seen by health sub-centres in each Thana.

Table 1 also presents bed utilization rates which are calculated by dividing cumulative patient stay by total number of beds available in six months. It is to be noted that each Thana health complex has the provision of 31 beds. The bed utilization rate varies from 28% (for Sandip) to 85% (for Patiya). For all Thana the average estimate is 68%. Important factors contributing low bed utilization rate are poor working conditions, poor supplies, shortage of doctors and nurses, poor communications, etc.

Table 1 In and Out Patient Statistics of Different Health Complexes and Health Sub-Centres Under Different Thanas of Chittagong District, Jan-June 1998.

Name of Thanas	Adm.	Disch.	Death	Cum. Stay	Av Day Stayed	O Pat H Com	O Pat H Sub Centre	# of H Sub Centre	Bed U Rate
Rangunia	1,655	1,608	21	4,132	2.57	11,636	23,416	7	73.00
Raozan	1,745	1,644	24	4,581	2.79	20,940	28,273	8	81.19
Hathazari	1,300	1,111	20	4,403	3.96	20,892	25,333	5	78.04
Fatickchari	6,118	2,135	11	4,641	2.17	26,934	25,354	10	82.26
Mirsarai	2,253	2,176	58	4,949	2.27	18,760	42,883	7	87.72
Sitakunda	1,055	1,035	15	2,078	2.01	19,825	8,082	1	36.83
Sandip	680	607	53	2,102	3.46	31,578	19,144	3	28.17
Boalkhali	1,546	1,297	31	4,602	3.55	17,717	24,801	6	81.57
Patiya	2,024	1,990	9	4,781	2.40	21,850	35,032	7	84.74
Chandanaish	730	729	10	1,963	2.69	22,882	19,303	5	34.79
Dohazari	2,127	2,239	27	4,394	1.96	20,092	0	0	77.88
Anowara	1,874	1,847	36	4,282	2.32	16,020	13,563	2	75.90
Banskhali	1,715	1,616	56	3,496	2.16	10,156	14,480	3	61.96
Satkanaia	1,423	1,584	41	4,170	2.63	15,813	30,417	5	73.91
Lohagara	1,859	1,812	44	4,365	2.41	23,723	28,928	4	77.37
Total	28,104	23,430	456	58,939	2.52	298,818	339,009	73	68.18

- Notes :**
1. All of the above statistics are for six months (Jan.-June 1998)
 2. Bed occupancy rate is estimated dividing cumulative stay by number of beds available
 3. **Abbreviations Used :** Adm. = Admission; Disch. = Discharge; Cum. = Cumulative; Av. = Average; O pat. = Outpatient; H Com. = Health Complex; H Sub Centre = Health sub centre; U = Utilization.

Table 2 shows the average number of hours available for work by a nurse, a medical assistant and a doctor in a year after adjusting public holidays, leave and weekly holidays. Total number of days available for work is estimated at 205 for nurses and medical assistants; for doctors it is estimated at 210 days. Government offices in Bangladesh remain open for 8 hours in a given working day. As stated above, activity standard is divided into service standard and allowance standard. Allowance standard is for activities which are part of the duty but not measurable. In each working day 2 hours are assumed to be allowed for performing activities under the allowance standard for all three categories of workforce under consideration. That is, 6 hours in each working day are assumed for activities under the service standard. The average number of hours available for reported workload in a year are estimated to be 1,230 hours for nurses and medical assistants; for doctors it is 1,260 hours (Table 2).

Table 2 Average Number of Hours Available for Work for Nurses, Medical Assistants and Doctors in a Year in Bangladesh.

	Nurse	Med. Assistant	Doctors
1. Govt. Holidays (in days) (including optional holidays)	25	25	25
2. Casual Leave (in days)	20	20	20
3. Earned and Medical Leave (in days) (Max.33 days; but 15 days are assumed to be availed on an average)	10	10	5
Total Leave (in days)	55	55	50
4. Total Leave (in weeks)	11	11	10
5. Total # of Weeks available for work (in weeks)	41	41	42
6. Total # days available for work (in days)	205	205	210
7. Total Number of Hours (available for work)	1,230	1,230	1,260

Table 3 and 4 estimate the required number of nurses and doctors for different Thana health complexes, respectively. The activities a nurse usually performs are listed at the bottom of Table 3. One nurse for 15 occupied beds is assumed to be required to perform all of the activities properly. It should be noted that nurses in the Thana Health Complex are used only for indoor patient care. The fifth column of Table 3 shows the number of nurses required for different Thana Health Complexes. The table shows that the required number of nurses varies from 3.8 (for Chandanaish) to 9.7 (for Mirsharai). It shows a proportional relationship with the bed utilization rate.

Table 3 Determination of Workload Indicators for Nurses Working in Thana Health Complexes of Chittagong Districts, 1998

Name of Thanas	Occ. Bed for June	Nurse Man-days for 1 shift	Nurse Man-days per Yr 3 shifts	Nurse Req	Nurse Sanct	Nurse Inpos	Diff B sanc Inpos	Diff Bet Req & Inpos	Nurse WISN
Rangunia	4,143.4	276.2	828.7	8.1	6	6	0	2.1	0.7
Raozan	4,593.6	306.2	918.7	9.0	6	5	1	4.0	0.6
Hathazari	4,415.1	294.3	883.0	8.6	6	6	0	2.6	0.7
Fatickchari	4,653.8	310.3	930.8	9.1	6	4	2	5.1	0.4
Mirsarai	4,962.6	330.8	992.5	9.7	5	4	1	5.7	0.4
Sitakunda	2,083.7	138.9	416.7	4.1	6	5	1	-0.9	1.2
Sandip	2,107.6	140.5	421.6	4.1	7	3	4	1.1	0.7
Boalkhali	4,614.6	307.6	922.9	9.0	5	5	0	4.0	0.6
Patiya	4,794.1	319.6	958.8	9.4	5	4	1	5.4	0.4
Chandanaish	1,968.4	131.2	393.7	3.8	6	4	2	-0.2	1.0
Dohazari	4,406.1	293.7	881.2	8.6	5	4	1	4.6	0.5
Anowara	4,293.8	286.3	858.8	8.4	6	5	1	3.4	0.6
Banskhali	3,505.6	233.7	701.1	6.8	6	5	1	1.8	0.7
Satkanaia	4,181.5	278.8	836.3	8.2	5	4	1	4.2	0.5
Lohagara	4,377.0	291.8	875.4	8.5	6	5	1	3.5	0.6
Total	59,100.9	3,940.1	11,820.2	115.3	86	69	17	46.3	0.6

- Notes :** 1. Following Activities are supposed to perform by Nurses Working in Thana Health Complexes (Nurses Working in Thana Health Complexes are involved with In-Patient Care) :-
- | | | |
|------------------------|----------------------------|------------------|
| Receive Patient | Supervision of Diets | Routine Check-up |
| Filing and Reporting | Supervision of Cleaning | Push Injections |
| Preparing Patient Beds | Help Doctors in the Rounds | Linen |
2. One Nurse per 15 occupied beds is considered to be optimum in order to perform all of the above functions properly. This standard has been estimated based on the opinions given by health managers who have long experience in this area.
3. **Abbreviations Used :** Occ. = Occupied; Sanct = Sanctioned; Inpos = Inposition; Reg = Required; Diff B Sanc Inpos = Difference between sanctioned and inposition; Diff Bet Req & Inpos = Difference between required and in-position; WISN = Workload Indicators of Staffing Need.

Table 4 Number of Doctors Required for Different Thana Health Complexes of Chittagong District, 1998

Name of Thanas	Bed U Rate	Occ. Bed Jan to June	Doc Hr Req Indoor H Com	Doc Req Indoor per yr	O Pat H Com Jan to June	Doc Hr Req O Pat per yr	Doc Req O Pat	Total Doc Req H Com per yr
Rangunia	0.7	4,143.4	4,143	3.3	11,636	3,879	3.1	7.4
Raozan	0.8	4,593.6	4,594	3.6	20,940	6,980	5.5	10.2
Hathazari	0.8	4,415.1	4,415	3.5	20,892	6,964	5.5	10.0
Fatickchari	0.8	4,653.8	4,654	3.7	26,934	8,978	7.1	11.8
Mirsarai	0.9	4,962.6	4,963	3.9	18,760	6,253	5.0	9.9
Sitakunda	0.4	2,083.7	2,084	1.7	19,825	6,608	5.2	7.9
Sandip	0.3	2,107.8	2,108	1.7	31,578	10,526	8.4	11.0
Boalkhali	0.8	4,614.6	4,615	3.7	17,717	5,906	4.7	9.3
Patiya	0.8	4,794.1	4,794	3.8	21,850	7,283	5.8	10.6
Chandanaish	0.3	1,968.4	1,968	1.6	22,882	7,627	6.1	8.6
Dohazeri	0.8	4,406.1	4,406	3.5	20,092	6,697	5.3	9.8
Anowara	0.8	4,293.8	4,294	3.4	16,020	5,340	4.2	8.6
Banskhali	0.6	3,505.6	3,506	2.8	10,156	3,385	2.7	6.5
Satkanaia	0.7	4,181.6	4,181	3.3	15,813	5,271	4.2	8.5
Lohagara	0.8	4,377.0	4,377	3.5	23,723	7,908	6.3	10.7
Total	0.7	59,100.9	59,101	46.91	298,818	99,606	79.1	141.0

- Notes :**
1. 30 minutes of a doctor's time is assumed to be required for one occupied bed (Inpatient treatment) in a day.
 2. 10 minutes of a doctor's time is assumed to be required for one out-patient.
 3. Above standards are estimated based on the opinions given by health managers who have long experience in this area.
 4. **Abbreviations Used;** U = Utilization; Occ. = Occupied; Doc Hr Req Indoor H com = Doctors' Hour requires for indoor patient in health complex; O pat H com = Outpatient treated in Health complex; Doc Hr Req O pat = Doctors' hour required for outpatient treatment; Doc Req = Doctor required; O pat = Outpatient; H com = Health complex.

Doctors are involved in both in and out-patient care at Thana Health Complexes. The number of doctors required for in and out-patient care are separated as shown in Table 4. On the average, 30 minutes of a doctor's time is assumed to be required for one occupied bed in a day. Similarly, 10 minutes of a doctor's time is assumed to be required per out-patient.

A considerable amount of a doctor's time is required for administration, supervision, management, etc. Thana Health and Family Planning Officer, called THFPO (who is in-charge of Thana Health Complex), Resident Medical Officer (RMO) and Medical Officer (disease control) are involved in administration, supervision and management. One full time doctor is assumed to be required for administration, supervision and management purpose in each Thana Health Complex. The total number of doctors required for different Thana Health Complexes is estimated summing inpatient requirements, outpatient requirements and administrative requirements as presented in the last column of Table 4. The requirements show a significant variation ranging from 6.5 (for Bankhali) to 11.8 (for Fatickchari).

Table 5 Determination of Workload Indicators for Doctors Working in Different Thana Health Complexes of Chittagong District, 1998.

Name of Thana	Doctor Sanct. Post	Doctor Inpos	Doctor Req	Doctor Diff. Bet Sanct. & Inpos	Doctor	
					Differ B Req & Inpos	Doctor WISN
Rangunia	8	6	7.4	2	1.4	0.81
Raozan	8	7	10.2	1	3.2	0.69
Hathazari	8	7	10.0	1	3.0	0.70
Fatickchari	8	6	11.8	2	5.8	0.51
Mirsarai	8	5	9.9	3	4.9	0.50
Sitakunda	8	6	7.9	2	1.9	0.76
Sandip	10	5	11.0	5	6.0	0.45
Boalkhali	8	5	9.3	3	4.3	0.53
Patiya	8	6	10.6	2	4.6	0.57
Chandanaish	8	4	8.6	4	4.6	0.46
Dohazari	7	5	9.8	2	4.8	0.51
Anowara	8	7	8.6	1	1.6	0.81
Banskhali	8	6	6.5	2	0.5	0.93
Satkanaia	8	6	8.5	2	2.5	0.71
Lohagara	8	5	10.7	3	5.7	0.47
Total	121	86	141.0	35	55.0	0.61

- Notes :**
1. Sandip has two in-bed public health facilities; one is Thana Health Complex and the other is a 10 bed hospital. The 10 bed hospital has the provision of 2 doctors and 2 nurses positions.
 2. **Abbreviations Used :** Sanct. = Sanctioned; Inpos = In-position; Req = Required; Diff. Bet Sanct. & Inpos = Difference between Sanctioned and in-position; WISN = Workload Indicators of Staffing Need.

Table 5 presents the difference between sanctioned and in-position as well as between required and in-position for doctors working in different Thana Health Complexes. Table 3 shows similar information for nurses. There is a practice in Bangladesh that sometimes a person is posted in one place but he/she does not work there; rather he/she is allowed to work in some other place on deputation. For the analysis here, these type of persons are excluded from their place of posting but included in their place of work. Two types of differences have been estimated: one is between sanctioned and in-position and the other is between required and in-position.

In the case of doctors, the total difference between sanctioned and in-position are found 35 (as on June 30, 1998) in all Thana Health Complexes of Chittagong district (Table 5). The corresponding figures for nurses are 17 (Table 3). That is, 35 and 17 positions for doctors and nurses were vacant in all Thana Health Complexes of Chittagong district in June 1998. Some Thanas, such as Sandip and Chandanaish, have 50% of the doctors positions remaining vacant. The difference between required and in-position provides a different picture. The big difference between sanctioned and in-position does not necessarily imply big differences between required and in-position. For example, many Thanas have the same number of vacancies for doctors' as well as for nurses' but they have wide variations in the differences between required and in-position (Table 3 and 5).

Workload indicators of staffing need (WISN) has been estimated for both doctors and for nurses as presented in Tables 3 and 5. It is the ratio of workforce in-position to required that indicates workload pressure of a category in a particular facility. The ratio closer to 1 implies a better situation and conversely a ratio greater than 1 implies a worse. Situation on the other hand, a wide difference among the ratios also implies inefficient

allocation and inequitable distribution of the workforce; and there is room for improvement through better management.

The estimate of WISN turns out to be 0.6 for both doctors and nurses for all Thana Health Complexes in Chittagong District. However, there exists a wide variation of this figure among the Thanas. It varies from 0.45 (for Sandip) to 0.93 (for Banskhali) for doctors. In the case of nurses, it shows a variation from 0.4 to 1.2. The presence of a significant variation of WISN indicates that health managers have a role in increasing efficiency and equity by making optimal deployments of the workforce among facilities.

Table 6 Determination of Workload Indicators for Medical Staff Working in Different Thana Health Sub-Centres of Chittagong District, 1998

Name of Thanas	O Pat Atten Jan to June' 98	Staff Hr Req per yr	Staff Doc Req per yr	Doc Sanct post	M.A sanct post	T Staff sanct post	Total Staff Inpos	Diff Bet San & Inpos	Diff Bet Req & Inpos	WISN for M Staff
Rangunia	23,416	7,805	6.2	7	7	14	12	2	-5.8	1.9
Raozan	28,273	9,424	7.5	8	8	16	16	0	-8.5	2.1
Hathazari	25,333	8,444	6.7	5	5	10	10	0	-3.3	1.5
Fatickchari	25,354	8,451	6.7	10	10	20	19	1	-12.3	2.8
Mirsarai	42,883	14,294	11.3	7	7	14	12	2	-0.7	1.1
Sitakunda	8,082	2,694	2.1	1	1	2	2	0	0.1	0.9
Sandip	19,144	6,381	5.1	3	3	6	6	0	-0.9	1.2
Boalkhali	24,801	8,267	6.6	6	6	12	10	2	-3.4	1.5
Patiya	35,032	11,677	9.3	7	7	14	14	0	-4.7	1.5
Chandanaish	19,303	6,434	5.1	5	5	10	8	2	-2.9	1.6
Dohazari	0	0	0.0	0	0	0	0	0	0.0	0.0
Anowara	13,563	4,521	3.6	2	2	4	4	0	-0.4	1.1
Banskhali	14,480	4,827	3.8	3	3	6	6	0	-2.2	1.6
Satkanaia	30,417	10,139	8.0	5	5	10	10	0	-2.0	1.2
Lohagara	28,928	9,643	7.7	4	4	8	8	0	-0.3	1.0
Total	339,009	113,003	89.7	73	73	146	137	9	-47.3	1.5

- Notes :**
- 10 minutes of staff time are assumed to be required to attend to one out patient. (This estimate is made based on the opinion given by health managers who have long experiences in this area).
 - Health Sub-Centres treat outpatients only
 - Each Health Sub-Centre is supposed to be staffed with one doctor and one med. assistant (who provide same types of services).
 - Abbreviations Used:** O Pet Atten = Outpatient Attended; Hr. Req = Hour required; Yr = year; Sanct = Sanctioned; M.A. = Medical Assistant; T Staff = Total Staff; Inpos = In-position; Diff Bet San & Inpos = Difference between sanctioned and in-position; Diff Bet Req & Inpos = Difference between required and in-position; WISN for M Staff = Workload Indicators of Staffing Need for Medical Staff.

Table 6 presents the number of required medical staff for union level health sub-centres located in different Thanas of Chittagong district. Health sub-centres do not have beds; so they treat only outpatients. Medical staff in these sub-centres include one doctor and one medical assistant. Like Thana Health Complexes, it is also assumed that 10 minutes of staff time will be required per patient. The table shows that the required medical staff vary highly across Thanas. It shows only 2 for Sitakunda but for Mirshari it shows more than 11. It should be noted that in Dohazari there is no health sub-centre, rather it is induced under Chandanaish Thana.

WISN has also been estimated for medical staff working at the union level health sub-centres under different Thanas of Chittagong district as shown in Table 6. Unlike Thana Health complex, it shows an average of 1.5 for all health sub-centres under all Thanas. This ratio varies from 0.9 (for Sitakunda) to 2.8 (for Fatickchari). The WISN of more than one implies that workforces in-position are more than what is required. Most of the health sub-centres are located in the remote rural areas, often with poor communications. Furthermore, most of them are in bad physical shape (dilapidated) and have very poor facilities. All these de-motivate the doctors (who mostly reside and conduct private practice in the nearest urban area) to come to these health sub-centres.

Generally those doctors who are posted in the health sub-centres occasionally visit their work-place for a few hours and they are not truly rendering services for which they are employed. On the other hand medical assistants posted in the health sub-centres usually stay in the area. As a result, it is the medical assistants who mostly attend to the patients in the health sub-centres. The estimated result of WISN for health sub-centres clearly indicates that doctors posted at the sub-centres could easily be moved to other places, particularly in Thana Health Complexes where workload pressure is greater. Unless steps are taken to improve the working conditions, as well as supervision to ensure their stay in the sub-centres, doctors should not be posted in the sub-centres and should be utilized in other places.

Discussion

1. Rationale of Using WISN Method in Bangladesh

Like in many developing countries, the Ministry of Health in Bangladesh is constantly under pressure to provide better health services to an ever-increasing population and to maintain equity in the distribution of those services. But resources are not keeping pace with the increase in demand. Thus, health administrators must make all out efforts to achieve optimum utilization of resources, particularly human resources, in order to have greater impact (by improving current effectiveness levels) and equity in the provision of services (i.e., overall staffing deployment according to demand) and economy of operation (by controlling staff categories, numbers and mix).

WISN method can be used to make decisions on:

- The optimal allocation and deployment of current staff **geographically**, i.e., allocating staff within divisions, to districts within a division, to areas within a district, and so on, according to the volumes and types of services being delivered and the different categories of health staff that these services call for;
- The optimal allocation and deployment of current staff **functionally**, i.e., allocating staff between the different types of health facilities or different services within a region, or in the country as a whole according to the volumes and types of services which are being delivered and the different categories of health staff that these services require;
- The optimal **staffing patterns and levels** (categories and numbers) in individual health facilities according to local conditions (morbidity, access, attitudes) and not based on national averages (population ratios, standard staffing schedules, bed ratios);
- The optimal **staff categories** and their activities, to achieve maximum health impact with maximum economy.

Presently, Bangladesh is in the process of reforming its health sector. Human resources development and management have been considered as one of the strategies of health sector development and reform. Hence the use of WISN method is extremely important for Bangladesh. The WISN method provides an objective criterion to the health managers to prioritize the situation of staff shortages, i.e., to identify where the need is the greatest and where best to post new staff.

2. How the WISN Method can be Used in HR Management in a District

By comparing the estimated results (Ratios and Differences) for a group of facilities, a manager can identify whether there are any staffing inequities between the facilities and, moreover, what can be done to improve the situation. In particular, the manager can determine:

- a) Which staff categories in which facilities are under pressure, how much pressure they are under, and how big the staffing deficit is at each facility;
- b) Which facilities have staff in excess of their workload requirements, and how big the excess is at each facility;
- c) What staff movements (transfers) would bring about a more equitable distribution of staff in the group of facilities;
- d) Which facilities should be considered first in possible staff movements;
- e) How many extra staff are required to bring the total staffing in the group of facilities up to the level which corresponds to acceptable professional standards;
- f) Where any new staff should be posted in order to achieve maximum impact on the quality of services provided.

The first use of the WISN method in a country is usually to review the current staffing levels in relation to the current workloads in health levels in relation to the current workloads in health facilities. However, once the method is established a whole range of further uses are then available to assist in planning health services and to help solve specific management problems as they arise.

The initial requirements of the workforce are based on current workloads under current professional standards and current conditions of employment. Alternative requirements could be made based on anticipated workloads under planned future services, improved professional standards and changed conditions of employment.

Conclusions and Recommendations

Like other developing countries, the health sector of Bangladesh is constantly under pressure to increase efficiency and equity. Appropriate human resources management and planning can contribute greatly to the improvement of efficiency and equity in the health sector. Presently, in Bangladesh no objective criteria is followed in determining staffing needs as well as in allocating workforces. Deployment, transfer, posting, etc. are important issues for human resources management in the health sector. Workload Indicators of Staffing Need (WISN) can be used to determine workforce requirements and deployment.

WISN method is based on the work which is actually undertaken by health staff. The time required by different staff categories to complete each type of workload activity can be called Activity Standard. The activity standard can be converted into annual workload. The amount of work which could be done by a provider in a year is called Standard Workload. Applying this standard workload to the reported annual work

accomplished in a health facility will show how many staff in each category are required in order to carry out the reported workload.

Workload indicator of staffing need (WISN) has been estimated for doctors, nurses and medical staff working in different Thanas and union level public health facilities under Chittagong district of Bangladesh. The average estimate of WISN turns out to be 0.6 for both doctors and nurses for all Thana Health Complexes in Chittagong District. However, there exists a wide variation of this figure among the Thanas. It varies from 0.45 to 0.93 for doctors. In case of nurses, it shows a variation from 0.4 to 1.2. The presence of significant variation of WISN indicates that health managers have a role in increasing efficiency and equity by making optimal deployment of workforces among facilities.

WISN has also been estimated for medical staff working at the union level health sub-centres under different Thanas of Chittagong district. Unlike Thana Health Complex, it shows an average of 1.5 for all health sub-centres under all Thanas. This ratio varies from 0.9 to 2.8. The WISN of more than one implies that the workforce in-position is more than what is required.

The estimated result of WISN for health sub-centres clearly indicates that given the existing situation, doctors posted at the sub-centres could easily be moved to other places, particularly in Thana Health Complex where workload pressure is greater. That is, unless steps are taken to improve the working conditions as well as supervision which ensure their stay in the sub-centres, doctors should not be posted in the sub-centres as they could be better utilized in other places.

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