

Coverage and Skill Mix Balance of Human Resources for Health in Myanmar

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Abstract

Background

The township health system in Myanmar is regarded as *means* to achieve the *end* of an equitable, efficient and effective health system based on the principles of primary health care approach. A township hospital caters medical care at the second referral level. Under the leadership and management of a Township Medical Officer in each township, para-professionals deployed at Rural Health Centers (RHCs) and Sub-centers under each RHC's jurisdiction play key roles for providing primary health care services for rural population. There had been an expansion of township hospital beds, RHCs and Sub-centers during the past 15 years. However, whether the current HRH skill mix is appropriate and cost-effective for primary health care services in Myanmar's rural areas need a proper review. In this paper we attempted to explore current distribution and balance of skill mix of selected categories township level HRH for effective coverage of essential health care services in rural areas.

Methods

Desk review was made on available HRH data, previous HRH research works done in Myanmar and other reports of relevant governmental departments. Informal discussions were performed with relevant health services managers of departments under the Ministry of Health.

Results

In spite of expansion of hospital beds and health professionals there is an indication of low coverage of medical care services provided through these hospitals. Although the responsibility for primary health care services for rural population falls in large parts on non-professional health workers stationed at RHCs, the skill mix for these health workers need improvements.

Conclusions

Rural health services need to be reviewed to develop a scientific evidence base for policy decision-making. In this endeavour, work studies and studies on utilization of existing facilities need to be conducted at township level health teams in Myanmar, using both quantitative and qualitative research methods. The studies should determine how the task could be distributed between rural health team members; what are the determinants of productivity of these HRH; and what should be a cost-effective skill mix for equitable coverage with essential health services in rural areas.

Background

Human resources for health (HRH), as defined by WHO, include all persons who provide health care and prevention services or who assist persons using health care to do so in appropriate ways¹. The numbers, skills distribution and motivation of the HRH determine the performance of health systems. HRH constitute the broadest category and “health personnel” is a sub-set of HRH². The term “health personnel” refers to those individuals who are formally organized to work in the health sector.

One of the main problems facing health services managers in most developing countries is the unbalanced coverage of health services originating mainly from imbalances in health personnel distribution and in their skill mix. This can be considered as one of the root causes of inequity in health and health care within a country.

In Myanmar, while assessing the health status by means of important health indicators, improvements in health status were observed during the past three decades. For instance life expectancy of the general population had increased from 59 years to 62.2 years; infant mortality rate had declined from 148.6 per 1,000 live births to 59.7 per 1,000 live births; maternal mortality rate had declined from 3.5 per 1,000 live births to 2.55 in 1999; and under 5 mortality rate had declined from 96.2 per 1,000 live births to 77.7³.

On the other hand, while measuring the health status by means of morbidity and mortality, malaria, TB and AIDS are among the priority disease problems in Myanmar. The morbidity and mortality rates for malaria have dropped from 25/1,000 and 12/100,000 populations respectively in 1990 to 11/1,000 and 3.6/100,000 populations respectively in 2004^a. The current incidence rate (for all TB cases) is 171 per 100,000 populations per year and the prevalence rate (for all TB cases) is 187 per 100,000 populations. Sero-positive rate for HIV infection among TB patients is 4.5%^b. There is an increasing trend in HIV infection among commercial sex workers coming to STD clinics, and also among new military recruits; there is no marked difference in the trend among general population^c.

Hand in hand, there is a rising trend in cardiovascular diseases (CVD) in Myanmar⁴, and this rising trend in CVD may also reflect the phenomena of a reversal in the socio-economic gradient, where poorer and disadvantaged groups suffer the largest burden of CVD, as seen in other developing countries⁵. One study in rural areas of Myanmar showed that about 22% of the study population 15-years-or-above was having hypertension⁶.

The health care infrastructure covers the whole country up till the grassroots level. The country has 14 states and divisions which are again sub-divided into districts; one district health department oversees 3-7 townships under its jurisdiction. There are at present 52 districts, 324 township, 13,762 village tracts and 65,235 villages in the country.

The basic structure of the national health care system lies at the township levels as 70% of the total population resides in the rural areas which take a large part of townships all over the country⁷. Remarkably it serves a well-defined population (100,000 to 300,000) living in a clearly

^a Interview with the national project manager for vector-borne diseases control, Department of Health, Ministry of Health.

^b Interview with national project managers for National TB programme, Department of Health, Ministry of Health.

^c Interview with the national project manager for National AIDS programme, Department of Health, Ministry of Health.

outlined administrative and geographical area including both rural and urban. Township health system in Myanmar is regarded as *means* to achieve the *end* of an equitable, efficient and effective health system based on the principles of primary health care approach⁸.

A typical township health department consists of a township hospital and, urban and rural health facilities. Township hospital bed number varies from 16 to 200, depending on the population of the township. Urban health facilities in each township consist of a school health team and a maternal and child health (MCH) center, and rural health facilities consist of 1-3 station health units and 2-5 rural health centers (RHCs). There exists a 16-bedded station hospital in each station health unit. Each station health unit/RHC is expected to serve for about 20,000 to 25,000 people. Under the jurisdiction of each station health unit/RHC, there are 3-5 Rural Health Sub-centers (Sub-centers) each manned by one midwife alone or together with one Public Health Supervisor grade-2 (PHS-2). The Township Health Officer (THO), Township Health Assistant (THA), Township Health Nurse (THN) and Health Assistant (1) (HA-1) assist the Township Medical Officer (TMO) for monitoring and supervision of urban and rural health services in the community as well as for training of health personnel within the township. (See Table 1).

Table 1. Staffing pattern of township health system in Myanmar

Township Health Department (Headed by a Township Medical Officer --- TMO)		
<p>Township hospital</p> <ul style="list-style-type: none"> • Medical doctors • Nurses • Dental surgeon • Paramedical personnel <p>Urban health facilities <i>Urban/Maternal & Child health center</i></p> <ul style="list-style-type: none"> • 1 Lady Health Visitor • 1 Public Health Supervisor grade 1 (PHS-1) • 1 Public Health Supervisor grade 2 (PHS-2) • 3-5 midwives <p><i>School health team</i> (outreach services also provided to rural schools)</p> <ul style="list-style-type: none"> • 1 medical doctor • 1 dental surgeon • 1 dental nurse 	<p>Township supervisors</p> <ul style="list-style-type: none"> • Township Health Officer (THO) (a medical doctor) • Township Health Assistant (THA) • Township Health Nurse (THN) • Health Assistant (1) (HA-1) <p>Township Administrative Office</p> <ul style="list-style-type: none"> • Administrative staff 	<p>Rural health facilities</p> <p>Station Health Unit (SHU)</p> <ul style="list-style-type: none"> • Station Medical Officer • 1 Medical doctor • 2 Nurses • 1 Lady Health Visitor (LHV) • 1 PHS-1 • 1 PHS-2 • 1 midwife • Other paramedical personnel <p>Rural Health Center (RHC)</p> <ul style="list-style-type: none"> • 1 Health Assistant (HA) • 1 LHV • 1 midwife • 1 PHS-2 <p>Rural Health Sub-Center (Sub-center)</p> <ul style="list-style-type: none"> • 1 midwife (+/-) 1 PHS-2

There also exist health volunteers --- Community Health Workers (CHWs) and Auxiliary Midwives (AMWs) --- in rural areas of each township. These volunteers are selected by local people and trained by township health personnel. Station Health Unit/RHC/Sub-center staff are supervisors of these volunteers.

In this paper, we attempted to explore current distribution of health personnel for selected categories and balance of skill mix for effective coverage of essential health care services for rural people. In this exploration, focus is made on public sector health personnel at the township level.

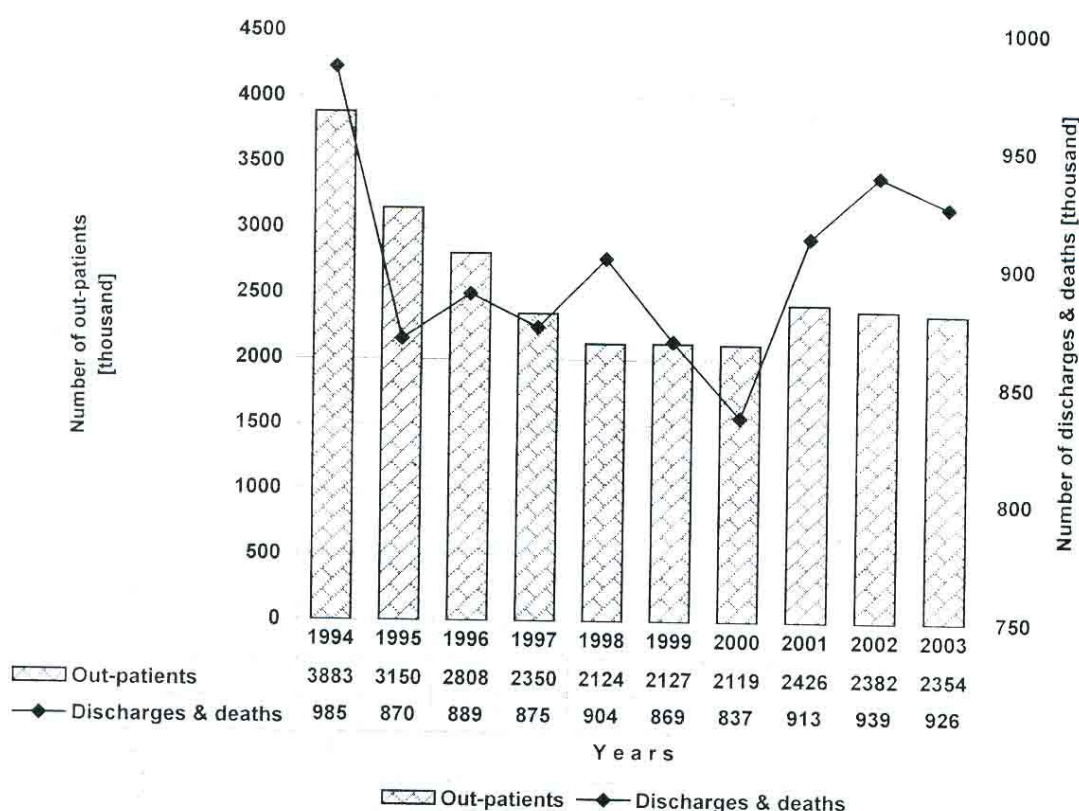
Methods

A desk review was made on available HRH data of the Department of Health (DOH) and Department of Medical Science (DMS), Ministry of Health (covering the period 2000 to 2004); previous HRH research works (from 1987 to 2004) done in Myanmar; and other reports of relevant governmental departments. Some deficiencies in HRH information system and limitations in the HRH research studies in Myanmar constrained us in generating some in-depth information. Informal discussions were made with relevant health services managers of DOH for acquiring some information.

Results and Discussions

Utilization of medical care services provided by township hospitals

Figure 1. Trends of hospital services (in-patients and out-patients, in thousands)



Source: Department of Health Planning (2003), Annual hospital statistics report, 2003.

There has been an increase of about 9% in township hospital beds during the 10-year period from 1993 to 2003^{9, 10}. This was due to upgrading of some township hospitals in terms of number of hospital beds and number of staff deployed. Medical specialists like physicians^d, surgeons, pediatricians, obstetrician and gynecologists, and anesthetists are posted at 100 bedded township hospitals, and additional categories of specialists at 200-bedded hospitals. The intention of this new policy development for medical care services was to bring specialist services, formerly

^d In Myanmar, a medical doctor specialized in one of the clinical medicine specialities is referred to as a Physician.

confined to teaching hospitals and other tertiary hospitals located in few cities, much closer to the community.

On reviewing hospital statistics, it was revealed that in-patient admissions in public hospitals decreased and there were much more decrease in utilization of out patient departments⁴. (See Figure 1). Increasing availability of private sector health care services could be one possible reason⁴, and introduction of cost-sharing schemes could be another¹¹, for the decreasing trends in utilizing public hospitals. However, a proper study has not been made either on the reasons for the decreasing trends or on the social group characteristics of those who are utilizing the public hospital services.

Coverage of services is said to be a function of utilization patterns, personnel productivity, and accessibility to care¹². Low utilization of services means low coverage; and this low utilization can be due to low productivity of health service units or due to low access of clients to the services being provided. Although one cannot draw conclusions on productivity and accessibility from Figure 1, the decrease in utilization of hospital services (and thus of the hospital health personnel) does indicate low coverage of medical care services despite increase in total number of beds and staff.

Distribution of selected categories of township level HRH

Table 2. Distribution of selected categories of HRH in Myanmar (2001-2004)

Category of HRH	HRH per 10,000 population for year:			
	2001	2002	2003	2004
• Medical doctors	2.96	3.08	3.12	3.17
• Nurses	2.73	2.82	2.91	2.96
• Health Assistants (HA)	0.49	0.48	0.48	0.47
• Lady Health Visitors (LHV)	0.63	0.65	0.67	0.69
• Public Health Supervisors grade 1 (PHS-1)	0.15	0.14	0.14	0.14
• Midwives	2.43	2.55	2.73	2.89
• Public Health Supervisors grade 2 (PHS-2)	0.31	0.30	0.30	0.29

Note: Medical doctors and nurses are calculated for both urban and rural populations; the remaining categories are calculated for rural population only.

Sources: (1) Statistical year book 2003, Central Statistical Organization, Ministry of National Planning and Economic Development. (2) Interview with Deputy Director for Basic Health Services and Primary Health Care, Department of Health.

The data in Table 2 indicate the stability of HRH distribution, including that for medical doctors, in Myanmar during the past four years. Medical doctors' roles at townships are crucial to meet the health needs of local population; to receive referrals from lower level health facilities; to supervise paraprofessional health workers working in rural areas. As a matter of fact, medical doctors, in their capacities as TMOs, are the leaders and managers of township health teams.

Table 3 shows that medical doctors are being produced in Myanmar at an average of about 650 per year from three medical schools. Beginning in the year 2007 the number of medical doctor production will be increased further as a new medical school was opened in central Myanmar in 2001^e. The problem is that many of the new medical graduates are reluctant to join the public

^e Interview with Deputy Director for undergraduate studies, Department of Medical Science.

sector. For example in the year 1993 only 42% of the new graduates applied for the government posts^f. Possible push-pull factors are shown in Table 4.

Table 3. Production of selected categories of HRH in Myanmar

Category of HRH	No. of institutions/schools	Yearly production (average)
• Medical doctors	4	650*
• Nurses	23	1,200
• Health Assistants	1	110
• Lady Health Visitors	1	120
• Public Health Supervisor grade 1 (PHS-1)	1	70
• Midwives	20	1100
• Public Health Supervisor grade 2 (PHS-2)**	1	300

* Current production from 3 medical schools. ** Training of PHS-2 takes place at State/Division Health Departments for the first 4 months, and the last 2 months at University of Community Health. *Source:* Department of Medical Science, Ministry of Health.

Table 4. Possible push-pull factors operating on new medical graduates' reluctance to join the public sector

Push factors	Pull factors
<ul style="list-style-type: none"> • Social class backgrounds of most of the medical students being from well-off urbanite families. • Dislike of HRH management practices in the public sector especially the financial incentive. • Does not want to work at peripheral areas. • Prefers to migrate abroad. 	<ul style="list-style-type: none"> • Prefers to do private business which may not be related to the medical training received. • Increased opportunities in private sector medical care services located in big cities, and where salaries are high. • Prefers to join an international NGO where salary is higher than in the public sector.

Source: Discussion with HRH managers of the Department of Health

From 1994 a system was set up that only the medical doctor who serves the country will have a doctor's registration number which is needed as compulsory for practice. In order to get the service of new medical graduates for the country, the government gives them two choices. One choice is that they will have to serve in areas outside big cities, as temporary public staff for three years, after which they are released from the service and can serve in the private sector or migrate abroad if they wish. Another choice is that they will have to join the public sector as permanent public staff. They can undergo postgraduate studies after two years of service; if they have served in a rural area, they are given credits for selection to attend a postgraduate course. In the year 2005 there is an increase in percentage (about 80%) of those who applied for government service after graduation^g. Problems similar to medical doctors are also being encountered with nurses, and push-pull factors are also more or less similar^h. Nursing students

^f Interview with Directors concerned for personnel management of the Department of Health and Department of Medical Science.

^g Interview with Directors concerned for personnel management of the Department of Health and Department of Medical Science.

^h Interview with Director and Deputy Director for Nursing services, Department of Health.

are bonded to work for a minimum of three years after graduation; if not, license for practice is withheld.

The need to improve coverage for rural health services

Although there have been improvements in overall health indicators, there are some variations between different parts of the country, particularly between urban and rural areas. For example, under-five deaths were reported to be greater in rural areas (72.5) than in urban areas (37.3)¹³. When these deaths were further analyzed by region, the central plain region was found to have the highest proportion, likely due to low utilization of existing primary health care services. One recent study findings highlighted a need to further strengthen the health care infrastructure, targeting the poor in rural areas¹⁴. These small pieces of information reveal that there still need some more efforts in primary health care services for rural people in achieving Millennium Development Goals in 2015.

In Myanmar, the responsibility for primary health care services for rural population falls in large parts on non-professional health workers stationed at RHCs. In order to increase coverage with primary health care services new RHCs had been opened during the past 15 years. The number of RHCs increased from 1337 in 1990 to 1452 in 2005ⁱ.

The new organizational set-up of Sub-centers with one midwife and one PHS-2 was introduced in 1988. RHC set-ups in cross sectional forms are presented in Figures 1a and 1b. At the moment, there are 1337 RHCs with the old staffing pattern (i.e., only 1 midwife at each Sub-center) and 115 RHCs with the new staffing pattern (i.e., 1 midwife and 1 PHS-2 at each Sub-center).

Credits for achievements of high universal child immunization coverage, making multi-drug therapy accessible to persons affected with leprosy and increasing accessibility of TB patients to DOTS in rural areas of Myanmar should go to the RHC staff in general and to midwives in particular. Many other projects also targeted at midwives to operate in the fields for the community. On the other hand some studies have shown that many rural mothers, especially the poor, are still depending on untrained attendants for birth deliveries^{15, 16}.

The need to improve HRH skill mix for rural health services

Among the rural health team HRH, midwives constitute the only category having a demand from the private sector^j. Attrition rate for midwives is about 3% in 2004^k. Being placed at Sub-centers, midwives are at work places closest to the community. The duties of a midwife are mainly on MCH. A midwife has to take care of pregnant mothers during antenatal, delivery and post-natal periods. She has to give immunizations to new born babies and infants and also monitor growth of the children.

ⁱ Interview with Deputy Director for Basic Health and Primary Health Care services, and Director for Public Health, Department of Health.

^j Interview with Deputy Director and Director for Nursing services, Department of Health.

^k Interview with Deputy Director and Director for Nursing services, Department of Health.

Figure 1a. Old RHC set-up with 3-5 Sub-centers, each manned by a midwife

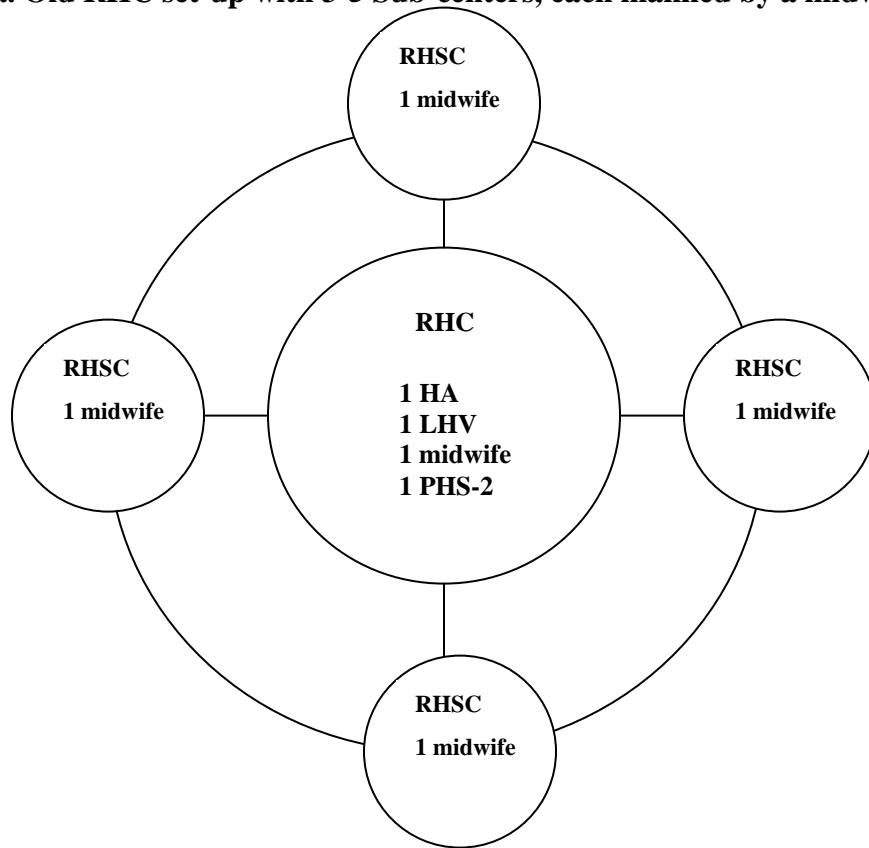
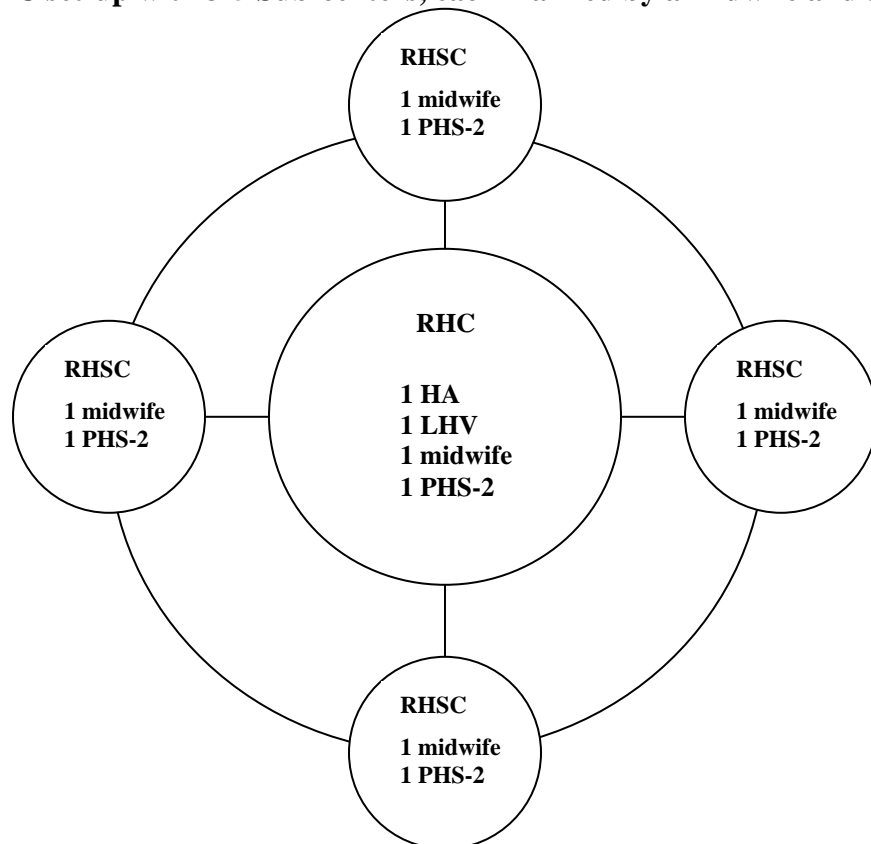


Figure 1b. New RHC set-up with 3-5 Sub-centers, each manned by a midwife and a PHS-2



During the last few decades several projects had been implemented in Myanmar according to the main programmes of primary health care; it had significantly increased the workload of the RHC staffs over the whole country¹. Some activities were new to the RHC staffs and a series of training had to be given to the implementers. Following, programme managers are concerned with the huge amount of workload borne by the RHC staffs, particularly midwives^m.

There were complaints that midwives being overburdened with various project activities so much so that they have not sufficient time to perform their main task of MCH care¹⁷. In one study of RHC staffs, midwives complained that they would prefer MCH services including immunization rather than doing disease control jobs¹⁸. The new idea to place a midwife and a PHS-2 in duo at Sub-centers (see Figure 1b) can be a possible solution for transferring some of the midwives' workload to the shoulders of PHS-2. The duties of a PHS-2 involve environmental sanitation, disease control and school health services.

Table 4 identifies the current mix of HRH skills in Myanmar, for selected categories of HRH. It is quite striking that the skill mix between a medical doctor and HA, and that between HA and PHS-2 need improvements although it is difficult to say which ratio is an optimal mix for a township health care system.

Table 4. Ratios between selected categories of HRH in Myanmar (2004)

HRH categories	Ratio
Nurses per Medical doctor	2
Health Assistants per Medical doctor	0.25
Midwives per HA	8
Midwives per LHV	6
PHS-2 per HA	0.5

Source: Department of Health

It can be noted from Table 3 that production of rural health personnel is comparatively low, particularly for HAs and PHS-2. In the light of the key roles to be played by rural health teams for improving equity in primary health care services particularly for rural poor this situation should be taken into great consideration. A study indicated that for the cost of training of a medical doctor about 3 HAs, 4 PHS- 1 and 10 PHS-2 could be trained¹⁹. Basing on this theoretical consideration, one way of increasing coverage with HRH for providing primary health care services in rural areas of Myanmar is to increase production of paraprofessionals and then to deploy them more.

Deploying PHS-2s in duo with midwives at Sub-centers in rural areas is an idea to increase coverage of primary health care services in rural areas. In order to keep a midwife and a PHS-2 in duo at all the existing (old) Sub-centers, a minimum of 6,000 new PHS-2 posts will have to be created, which also will have training implications. One study identified that the duties of PHS-2

¹ Interview with Deputy Director for Basic Health and Primary Health Care services, and Director for Public Health, Department of Health.

^m ¹ Interview with Deputy Director for Basic Health and Primary Health Care services, and Director for Public Health, Department of Health.

were not so popular like midwives among rural people²⁰. This could be due to differences in work nature between the two categories. Suggestions had been made in the past to review and revise (if necessary) existing job descriptions of PHS-2s and midwives first, to study cost-effectiveness of different deployment patterns of the two categories within a rural health team, and to pay more attention on appropriate skill mix for efficient and effective functional coverageⁿ than on geographical coverage²¹. Functional coverage is defined in terms of use of health services by the population (passive coverage) or of the population that health service providers contact and serve (active coverage)¹⁰. Geographical coverage is the ratio between each health worker and the population in the jurisdiction of the unit where the worker works.

What is more important than increasing numbers of HRH is the ways these HRHs are being managed. Management and supervisory practices at township levels are said to be weak²². In considering a balanced HRH mix for further improving coverage with primary health care services for rural people, the whole team operating the township health system, including the TMO (the key leader and manager of the township health team) and THO, THA, THN and HA-1 who are supervisors of RHC teams, should be taken into crucial consideration, as the management and supervisory practices rendered by these managers/supervisors will have a great impact on the quality, efficiency and effectiveness of RHC staff.

In this context, work studies on township level health personnel in general and RHC staffs in particular, will help determine how the tasks could be distributed between them and the possible effects of such distribution on productivity, not forgetting other determinants on productivity of HRH.

Over-representation or under-representation of certain categories of health workers in a health team will lead to inefficient and inappropriate use of manpower. Another important point is that long-term solutions like increasing the numbers of production and employment are, in general, resource-based. Without actually changing staff numbers, an effective staff increase can be achieved by changing personnel and operating policies that lead to higher productivity, efficiency and motivation of rural health staff. Appropriate cost-effective skill mixes could substantially increase coverage and provision of primary health care services within the financial limits of a country.

Conclusions

From this paper, it is evident that there is a need to undertake a HRH review in Myanmar. This review will provide a preliminary step for developing a HRH database under the Ministry of Health. This HRH database will be useful for policy-development purposes and for creation of an integrated system of planning, production and management of HRH. This HRH database development will lead towards development of an HRH information system.

Research studies need to be conducted at township level health teams in Myanmar, using both the quantitative and qualitative research methods, to determine:

- dynamics of HRH movements within the country as well as between countries;
- utilization of existing township and rural health facilities;
- how the tasks could be distributed between rural health team members;
- determinants of productivity of these HRH;

ⁿ Functional coverage is defined in terms of use of health services by the population (passive coverage) or of the population that health service providers contact and serve (active coverage)¹⁰. Geographical coverage is the ratio between each health worker and the population in the jurisdiction of the unit where the workers work.

- how an effective staff increase can be achieved by changing personnel and operating policies that lead to higher productivity, efficiency and motivation of rural health staff (without actually changing staff numbers); and
- what should be a cost-effective skill mix for equitable coverage with essential health services in rural areas.

Improving HRH management can enhance motivation and productivity of HRH, thus management capabilities of managers and supervisors at different levels of health system need to be further improved through provision of management effectiveness training. However, providing training alone will not improve practice; standard operating procedures in work environments may need to be changed or modified so that what had been trained could be practically materialized.

List of abbreviations used

CVD: Cardiovascular diseases

DMS: Department of Medical Science (ministry of health)

DOH: Department of health (ministry of health)

HA: Health assistant (one level higher than a LHV/PHS-1)

HA-1: Health assistant grade-1 (one level higher than HA)

HRH: Human resources for health

LHV: Lady health visitor (one level higher than a midwife)

MCH: Maternal and child health

PHS-1: Public health supervisor grade-1 (one level higher than a PHS-2)

PHS-2: Public health supervisor grade-2

RHC: Rural health center

STD: Sexually transmitted diseases

Sub-center: Rural health sub-center

TB: Tuberculosis

THA: Township health assistant (one level higher than HA-1)

THN: Township health nurse

THO: Township health officer

TMO: Township medical officer

Competing interests

None to be declared.

Authors' contributions

The idea behind this paper was generated jointly. TTS wrote the first draft after which the other two authors made critical review on it. Comments made were taken into consideration in finalizing the paper.

Acknowledgements

We are grateful to those who provided necessary data and information in preparing this paper.

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