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## **WHO's Service Availability and Readiness Assessment of Primary Health Care Services of Commune Health Centres in a Rural District of Northern Vietnam**

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## ABSTRACT

The objective of this study was to assess the availability and readiness of the primary health care (PHC) services of commune health centres (CHCs) in Quoc Oai, a rural district of Northern Vietnam based on the WHO's Service Availability and Readiness Assessment (SARA) tool. The study was done in two steps. First, the heads of the 21 CHCs of Quoc Oai district were interviewed using SARA, a quantitative survey, and the responses were then validated by direct observations of each facility. The results showed that although the average number of health staffs in each CHC met the national standards (at least 5 staffs per CHC), its allocation within each CHC was not properly met since some CHCs had only two health staffs. Several health equipment and facilities were not fully available in many CHCs, and while the majority of the PHC services were available at the CHCs, their readiness remained limited. Several significant correlates between the availability of healthcare workers and the availability of the facilities and the PHC services were observed, suggesting that they depend upon and affect one another in the health system. Using the SARA-based inventory, the study helps health managers and policy makers to prioritize efforts and allocate resources more appropriately. To be effective, attention should be given to how to make facilities, services, and HRH ready for PHC activities - more investment and support from the system (from higher to lower level) and the government.

**Key words:** Health system, Primary health care (PHC), Commune health centres (CHCs), World Health Organization Service Availability and Readiness Assessment (WHO SARA), Vietnam.

## INTRODUCTION

According to the 2000 World Health Report, a health system is defined to incorporate “all activities whose primary purpose is to promote, restore or maintain health” [1]. A health system includes six major input components and four output components. The input components consist of 1) human resources, 2) health financing, 3) health information systems, 4) medical products and technologies, 5) health system governance, and 6) service delivery. The output components are: 1) people’s improved health, 2) financial risk protection, 3) responsiveness, and 4) improved efficiency [2]. Strengthening the health system means refining all six input components and their interactions, in order to improve the equity and sustainability of health services and consequently people’s health [3].

The “grassroots healthcare network” is an important part of the health system, because it is the first technical unit in contact with the population. In Vietnam, this network is defined as a system of healthcare organizations and institutions within a district, with close links among health facilities at the commune and district levels for providing healthcare based on principles and values of primary health care (PHC). This concept is similar to the concept of “district health system” or “general practitioner system” used in many countries [4]. Strengthening and refining the grassroots healthcare network have always been considered a major policy orientation in Vietnam, to help people, especially the poorest ones, so they can access health services more easily and conveniently [4]. In Vietnam, while the grassroots healthcare system is expected to be able to manage 80% of people’s healthcare needs, it is not really the case in reality.

In the past three decades, significant changes have been made in Vietnam's health system, especially at the grassroots level. By 2014, 99% of communes had a health centre; 78% of commune health centres (CHCs) were served by doctors; 98% of CHCs had midwives or obstetric/paediatric assistant doctors; and 78% of villages and urban neighbourhoods were served by village health

workers [4]. Circular No. 43/2013/TT-BYT was issued in 2013 increasing the number of medical procedures and services that can be implemented at the district and commune levels to over 17,000. The number of PHC facilities covered by health insurance was also expanded, including CHCs and private hospitals. In these district and commune level PHC facilities, several models for managing chronic diseases such as hypertension, diabetes, and asthma among others have been implemented [5]. These changes can be explained as a result of the national economic and social developments, the introduction of new health policies and the growing health care needs requiring innovations in the healthcare system.

Despite these significant achievements, Vietnam is facing many challenges in improving health services at the grassroots level. CHCs can only implement about 52.2% of service items in the classification of all services by the level of the provider [4]. The capacities of illness prevention and health care management within the community remain weak. Health services at CHCs are usually under-utilized [4]. It is, therefore, important to know whether health care services are sufficiently available and ready for people to seek at CHCs.

To date, several studies have been conducted to assess service availability and readiness using the World Health Organization (WHO) methodology [6]. The starting point of the WHO's Service Availability and Readiness Assessment (SARA) is the master facility list [7]. The master list comprises all public, private non-profit, private for-profit and faith-based health facilities, including hospitals, health centres, dispensaries and specialized clinics [8]. The "availability" considers both the physical presence of facilities and the distribution of healthcare infrastructure, health workforce, and services, while the "readiness" is understood as the availability as well as the functionality of the facilities and/or resources required to provide services. The tool was developed through a collaboration between WHO and the United States Agency for International Development (USAID) [9]. It is a helpful tool to assess the health services and health facilities in many countries [9, 10], as it is usually conducted on an annual basis just before a country's planning cycle to provide information for the health sector reviews [6].

For example, the 2010 SARA for Zambia was conducted as a census of the facilities in 17 districts, covering a total of 565 facilities. The SARA survey in Zambia provided key information on the state of the health system with regards to the accessibility of various healthcare services. General services availability index and domain scores for the 17 districts were grouped by urban/rural categorization. Urban districts appeared to have a higher service availability score compared to the rural districts. Health infrastructure scores tended to be relatively high across the districts, whereas health workforce scores were low in both urban and rural districts. Urban districts had higher overall readiness scores compared to the rural districts. Basic equipment scores tended to be high, whereas the diagnostic capacity and essential medicines scores tended to be quite low across the districts. Hospitals had higher readiness scores on average (88%) compared to primary health care facilities (62%), while private sector facilities had higher scores (74%) compared to public health facilities (59%) [11].

SARA for Sierra Leone was conducted in 2011 to assist the health sector in assessing and monitoring the service readiness and the capacity at district and health facility levels. A nationally representative sample of 210 health facilities was drawn, stratified by region and type of facility including the private sector [12]. In 2012, another SARA study for Sierra Leone was carried out to inform the annual health sector review and planning process, in particular, to fill key data gaps in service delivery and readiness. A nationally representative sample of 106 facilities out of 1264 was selected for the assessment, with an oversampling of hospitals. All results were weighted to take into account the national distribution of facilities. The results were almost similar between 2011 and 2012.

There remained substantial gaps in diagnostic capacity, both for the basic list of twelve diagnostic tests as well as for services such as antiretroviral therapy (ART), antenatal care, and diagnosis of sexually transmitted infections. Availability of medicines and commodities decreased between 2011 and 2012, both for the general list of 14 essential medicines as well as for specific services such as obstetric care, child immunization, and antiretrovirals for the prevention of mother-to-child transmission and ART [13]. Overall, the SARA provides inputs into the annual health review as well as the annual planning process. Therefore, we used this SARA inventory to assess the availability and readiness of the PHC services of the CHCs in Quoc Oai, a rural district of Northern Vietnam.

## METHODS

**Design and setting.** Institutional surveys were administered to the CHCs in Quoc Oai district, which is located to the west of the capital, Hanoi, about 20 km from the city centre. It is a transitional area between mountainous and river delta area covering 147 km<sup>2</sup>. It has 21 communes and one town, two of which are mountainous communes. It has 46,455 households with a total of 177,417 people with 12 ethnic minorities, most of whom are Muong, Thai, Tay, Nung, Hoa, Hre, and other ethnicities. Most people primarily live on agricultural activities with very low income per capita.

**Sample and sampling.** All the CHCs (21 CHCs) of Quoc Oai district health system were approached to conduct the WHO's SARA inventory, combined with observation at CHCs to identify key gaps in the PHC's availability and readiness.

**Measures.** In order to examine the availability and readiness of PHC services of Quoc Oai district's local healthcare system, a mix methods approach was done. First, interviews with heads of the CHCs were done including questions about the WHO's SARA inventory, and their responses were validated by direct observations of the facilities [14].

The SARA inventory is a health facility assessment tool designed to assess and monitor the service availability and readiness of the health sector and to generate evidence to support the planning and managing of a health system [15]. This tool was used to identify the availability of basic equipment, basic amenities, essential medicines, and diagnostic capacities, and on the readiness of health facilities to provide basic health-care interventions relating to family planning, child health services, basic and comprehensive emergency obstetric care, human immunodeficiency virus (HIV), tuberculosis (TB), malaria, and non-communicable diseases (NCDs). Summary or composite indicators, also called indices, were used to summarize and communicate information about multiple indicators and domains of the indicators. These indices can be used for the assessment of general and service-specific availability and readiness. Service availability referred to the physical presence of the delivery of services and encompassed health infrastructure, core health personnel and aspects of service utilization. Service availability was described by an index using the three areas of tracer indicators. General services readiness referred to the overall capacity of health facilities to provide general health services. Readiness was defined as the availability of components required to provide services, such as basic amenities, basic equipment, and standard precautions for infection prevention, diagnostic capacity, and essential medicines. A score was generated per domain based on the number of domain elements present. These indicators included the following specific indicators: the availability of human resources for health (HRH) of CHCs, the availability of facilities of CHCs, and the availability and readiness of PHC services of CHCs. Given WHO's instructions and with limited resources, our study focused mainly on these three indicators.

**Availability of human resources for health of CHCs.** This was measured by three sub-indicators: first was the percentage of CHCs having each of the health workers (medical doctor, assistant doctor, midwife, nurse, and pharmacist); second was the average number of health workers each CHC had; and last was the percentage of CHCs having enough all 5 job positions as per Vietnamese national standards for CHCs [16, 17].

**Availability of facilities of CHCs.** This indicator was assessed by percentages of the following facilities: the availability and readiness of infrastructure, sanitary conditions, and standard precautions; the availability and readiness of basic equipment; the availability of active communication (fixed telephone, contact number, speaker, computer, and internet access), means of patient transportation, and electricity.

**Availability and readiness of PHC services of CHCs.** The availability of PHC services was assessed by percentages of CHCs providing each of the following PHC services: 1) family planning, 2) antenatal care, 3) basic emergency obstetric care, 4) home care, 5) child immunization (Expanded Programme on Immunization, EPI), 6) preventive and curative care for children under five, 7) diagnosis or treatment of sexually transmitted infections (STIs), excluding HIV, 8) TB diagnosis, treatment prescription, or treatment follow-up, 9) diagnosis or treatment of malaria, 10) diagnosis or management of NCDs, 11) minor surgery, 12) laboratory diagnostics, including any kind of rapid diagnostic testing, and 13) storage of medicines, vaccines or contraceptive commodities. The availability of cumulative numbers of the PHC services was measured by percentages of CHCs having one to all of the 13 PHC services. The readiness of PHC services was assessed with percentages of CHCs both having the services available as well as being able to provide the following seven PHC services: family planning, antenatal care, STI diagnosis or treatment excluding HIV, services for TB, services for malaria, NCDs management, and minor surgery.

**Independent variables** included the availability of an average number of human resources for health (HRH), the availability of medical doctors, the availability of the given 5 health professions (medical doctor, assistant doctor, midwife, nurses, and pharmacist), the availability of infrastructure, and the availability of communication and readiness of transportation. The availability of all 13 PHC services was used as the **dependent variable**, which was coded as one and zero. The one meant having all 13 PHC services and zero having less than 13 PHC services.

**Data collection.** The field researchers were well trained to become familiar with the key contents and questions of the research, survey methods, recruiting study subjects, and noting the responses of the study subjects before the main survey. Data were collected via two steps. First, interviews with the heads of the CHCs were carried out, and then, responses were validated by direct observations of the facilities. All the heads of the 21 CHCs of Quoc Oai district were interviewed. Each interview lasted for about 30-45 minutes. During the survey, data quality was controlled in the field by supervisors as well as by the investigators of this study.

**Data analysis.** Data analysis was done using Stata 12. We started with descriptive statistics such as frequency, percentage, mean, and range to describe the availability and readiness of resources and services for PHC. Spearman's correlation between pairs of variables was then applied to assess correlations among key indicators, with the statistically significant level set at  $p < 0.05$ . We applied Spearman's correlation statistics, a kind of non-parametric as the basic assumptions of Pearson's Product Moment correlation statistics were not met (small sample size).

**Research ethics.** The study was ethically approved with certificate No 003/2016/YTCC-HD3 by the Institutional Review Board of Hanoi University of Public Health. Participation of all respondents was anonymous and voluntary. They were informed about research contents and objectives as well as how the interview data would be documented and reported and that their confidentiality would be respected. Participants provided verbal informed consent and were notified that they could withdraw at any time.

## RESULTS

Table 1 displays data on the availability and readiness of resources for PHC in the 21 CHCs in Quoc Oai district. Most of the CHCs (19/21) had a medical doctor, and all of them had an assistant doctor. More than half of the CHCs had a nurse and a midwife (13/21 and 14/21, respectively), while very few had a pharmacist. Special attention should be given to the data showing that although the average number of healthcare workers per CHC was more than 5, only 3 out of the 21 CHCs had enough 5 job positions, which is the Vietnamese national standard for CHCs. In terms of facilities, all CHCs reported enough sanitation conditions and electricity, more than half had an infrastructure for healthcare (14/21), the majority of CHCs had basic equipment (17/21), and just more than half had adequate means of active communication (12/21). However, only one CHC reported the availability of means of patient transportation and only a few CHCs had standard precautions (3/21).

### INSERT TABLE 1 ABOUT HERE

Table 2 shows the availability and readiness of the 13 PHC services at the 21 CHCs in Quoc Oai. Most of the CHCs reported PHC services to be available in a range of more than 90% up to 100%. Strikingly, only 16 out of the 21 CHCs had all the 13 PHC services. More importantly, although CHCs reported high rates of availability of PHC services, the readiness for these services was not as high. Antenatal care, services for TB and family planning were the least ready.

### INSERT TABLE 2 ABOUT HERE

Table 3 indicates the results of correlation analysis using Spearman's correlation coefficient between pairs of variables assessing the availability of PHC resources and services. Several correlates were observed, as they were statistically significant. To be specific, CHCs that had a higher number of healthcare workers were less likely to report the availability of communication means ( $r=-0.39$ ,  $p<0.05$ ), but more likely to report the availability of all the 13 PHC services ( $r=0.24^*$ ,  $p<0.05$ ). Furthermore, CHCs that reported the availability of infrastructure were more likely to report the availability of patient transportation. Last, but not least, CHCs that reported the availability of patient transportation were less likely to report the availability of the 13 PHC services ( $r=-0.30$ ,  $p<0.05$ ).

### INSERT TABLE 3 ABOUT HERE

## DISCUSSION

The purpose of our study is to assess the availability and readiness of PHC services of CHCs in Quoc Oai, a rural district of Northern Vietnam, using the SARA inventory developed by WHO. To date, research on this topic in Vietnam remains limited. From an international perspective, however, there have been some studies in low and middle-income countries (LMICs) such as in Africa. Regarding the availability of human resources for health (HRH), the percentage of the CHCs served by a doctor in Quoc Oai was higher than the national average level in 2013 (90.48% vs. 75%) while the

availability of midwives was lower (61.90% vs. 96%) [4]. Also, the average number of HRH in each CHC was slightly lower compared to a previously reported indicator in 2014 (5.86 vs. 6.3) [18], and in particular, there were some CHCs that had only two health staffs, which are not adequate for a CHC as they have to provide PHC services to their community. On the other hand, in terms of the availability of facilities, the results of SARA reports in several LMICs, such as in Zimbabwe and Sierra Leone, showed that the percentages of standard precautions in the CHCs were 69% (2010) and 59% (2012), respectively. These figures are higher than such in our study from Quoc Oai district (only 14.29%) [11, 13]. Besides, the availability of means of patient transportation of the CHCs in Quoc Oai was very low (only 4.76%) in comparison to health centres level IV in Uganda (level IV means the same level to the CHCs in Vietnam), which was 24.85% [19].

These findings showed that the availability of the PHC services of the 21 CHCs in Quoc Oai was very remarkable with all of the PHC services reaching more than 90%, which was higher than the corresponding indicators in Zambia, Uganda and several other LMICs [11, 13]. However, the readiness of PHC services in Quoc Oai district was lower than in the mentioned countries. Particularly, although the availability of family planning services in Quoc Oai was 100%, the readiness was only 38.1%, while Zambia reached 79% in readiness [11]. Especially, despite having a very high percentage of availability for antenatal care (100%), the readiness of this service in the CHCs in Quoc Oai was only 9.5%. Meanwhile, the availability and readiness of the relevant indicators related to these services in Sierra Leone were 95% and 60%, respectively [13]. On the other hand, TB diagnosis, treatment prescription or treatment follow-up in Quoc Oai district were more available and ready in comparison to Tanzania and Sierra Leon (2-10%) [13, 20]. Hence, it could be seen that the availability of the PHC services in the CHCs in Quoc Oai was quite acceptable but the readiness, particularly for some specific services was very limited. It may come from the enforcement of the Vietnamese Government as well as the local authorities to make investments in the CHCs in order to meet the national commune health standards [21]. However, the difficulty in attracting and recruiting well-trained and experienced personnel at the commune level and the shortage of HRH with the corresponding capacity to deliver the PHC services to the community could explain the reduced readiness of these services. Another reason to explain this situation is that Quoc Oai district is a suburb of Hanoi, quite close to the capital city, where many big hospitals and health care centres are located, which are believed to have a higher quality of healthcare as compared to such of CHCs. People may, therefore, tend to seek health services in the big city rather than at the CHCs in Quoc Oai. Consequently, many services may be under-utilized in several CHCs, which would make them unready to be served as health workers may not have opportunities to practice such services frequently.

CHCs with more health staffs have more opportunities and capacity to deliver more PHC services to the community. This could be an explanation for the positive correlation between the number of healthcare workers and the availability of all the 13 PHC services. In contrast, some CHCs not having enough health staffs or the capacity to deliver the PHC services were more likely to transfer patients to higher levels of the healthcare system. It is the reason for the negative correlation between the availability of patients' transportation and the availability of all the 13 PHC services.

The limitation of applying SARA tool at the commune level in Quoc Oai district was that this tool did not mention other aspects of access to health services such as geographical factors, economic factors or the quality of the services. Also, as indicated by our current study at the commune level in Vietnam, some health services are not found in the SARA tool. In contrast, there are some services specified in the SARA instrument but are not provided to patients at the CHCs in Vietnam. Some content in the SARA tool are also not very clear or specific to give a response [22]. As a result, there should be some adaptation when applied in different countries [22]. Given experiences from Tanzania,



Zambia and Sierra Leone, it has been argued that the tool remains complex such as classified by public vs. private sector, small vs. large sector and lower and higher level of decentralization [11, 13, 20]. Because of this, the results of applying the SARA tool may not be interpreted simply as a performance measurement of public services. It is also recommended that indices be calculated on government facilities and non-government facilities with government's financing, supplies support, and supervision. Nonetheless, the results of using this tool in Quoc Oai revealed that applying a toolkit is suitable for the maintenance monitoring and evaluation system of the medical services with standardized indicators. Database based on SARA indicators should be developed not only in Quoc Oai district, but also in other districts or provinces, and these should be aggregated with data from other sources such as national census, and surveys on the quality of medical services with regular reporting systems. It will provide comprehensive analysis on monitoring and evaluation of the situation and the trend of the health care system. Besides that, the SARA tool could provide information about the availability of the facilities and the availability of the health services that are the essential factors to provide good quality services. Therefore, the SARA tool could be integrated with other tools such as evaluations of patients' satisfaction, or the quality of health services among others. This is a prerequisite to achieving universal health coverage [6].

## **CONCLUSIONS**

This study used the WHO's SARA inventory to provide a snapshot of the current status of the PHC service provisions in Quoc Oai district, a rural district in the north of Vietnam in 2015. Even though the average number of health staffs in each CHC met the national standards (at least 5 staffs per CHC), its allocation among the CHCs was not adequate, as some CHCs had only two health staffs. The findings highlight that several health equipment and facilities were not available in many CHCs, such as standard precautions, means of patient transportation, etc. The majority of PHC services were available at the CHCs in Quoc Oai, but their readiness was very limited.

The study represents a major contribution to how to monitor the health service delivery system effectively in this district. As well as filling an immediate information gap, the study also provides a "baseline" assessment of the current situation that could be used as a reference for judging future progress. The study also responds to the increased demand for accountability by publishing objective measures of the PHC service delivery capability at the grassroots levels. By highlighting areas of strengths and weaknesses, the study can help policy makers and health managers in Quoc Oai district and at higher levels to prioritize efforts and allocate resources more appropriately. To be specific, attention should be given to how to make facilities, services and human resources for health ready for serving PHC. More investment and support from the system from higher to lower levels and the government are needed if the health care of CHCs is to be effective.

## **CONFLICT OF INTEREST**

We declare that there are no competing interests.

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**Table 1. Availability and readiness of the PHC resources of the 21 CHCs in Quoc Oai**

<b>Indicators</b>	<b>n (%)</b>
<b>Availability of HRH</b>	
Medical doctor	19 (90.48)
Assistant doctor (of any kinds)	21 (100.00)
Midwife (of any kinds)	13 (61.90)
Nurse (of any kinds)	14 (66.67)
Pharmacists (of any kinds)	6 (28.57)
<i>Average number of HRH</i>	5.86 (range: 2-7)
<i>All of above 5 positions</i>	3 (14.29)
<b>Availability of facilities</b>	
Infrastructure	14 (66.67)
Sanitary conditions	21 (100.00)
Standard precautions	3 (14.29)
Basic equipment	17 (80.95)
Active communication (fixed telephone, contact number, speaker, computer, internet access)	12 (57.14)
Means of patient transportation	1 (4.76)
Electricity	21 (100.00)

**Table 2. Availability and readiness of PHC services of 21 CHCs in Quoc Oai**

Indicators	n(%)
<b>Availability of PHC services</b>	
Family planning	21 (100.0)
Antenatal care	21 (100.0)
Basic emergency obstetric care	21 (100.0)
Home care	19 (90.48)
Child immunization (EPI)	21 (100.0)
Preventative and curative care for children under 5	21 (100.0)
Diagnosis or treatment of STIs, excluding HIV	20 (95.24)
TB diagnosis, treatment prescription, or treatment follow-up	21 (100.0)
Diagnosis or treatment of malaria	20 (95.24)
Diagnosis or management of NCDs	19 (90.48)
Minor surgery	21 (100.0)
Laboratory diagnostics, including any rapid diagnostic testing	20 (95.24)
Storage of medicines, vaccines, or contraceptive commodities	21 (100.0)
<b>Availability of cumulative numbers of PHC services</b>	
1 service	21 (100.0)
2 services	21 (100.0)
3 services	21 (100.0)
4 services	21 (100.0)
5 services	21 (100.0)
6 services	21 (100.0)
7 services (>50%)	21 (100.0)
8 services	21 (100.0)
9 services	21 (100.0)
10 services (75%)	20 (95.24)
11 services	19 (90.48)
12 services	17 (80.95)
13 services (100%)	16 (76.19)
<b>Readiness of PHC services</b>	
Family planning	8 (38.1)
Antenatal care	2 (9.5)
Diagnosis or treatment of STIs, excluding HIV	11 (52.4)
TB diagnosis, treatment prescription, or treatment follow-up	5 (23.8)
Diagnosis or treatment of malaria	16 (80.0)
Diagnosis or management of NCDs (hypertension, diabetes)	18 (85.7)
Minor surgery	14 (66.7)

**Table 3. Correlations of the variables measuring the availability of resources and PHC services (Spearman's correlate coefficient)**

<b>Indicators</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
1. Availability of average number of healthcare workers	-						
2. Availability of medical doctors	0.41*	-					
3. Availability of enough 5 positions	-0.01	0.13	-				
4. Availability of infrastructure	-0.05	0.12	0.29	-			
5. Availability of communication	-0.14	-0.28	0.35	0.00	-		
6. Availability of transportation	-0.39*	0.07	-0.09	0.16*	0.19	-	
7. Availability of 13 PHC services	0.24*	0.20	0.23	0.08	-0.30*	0.13	-

\* $p < .05$