Lessons Learned from Introducing a Village Health Registry in Malawi

Prestor J Kubalalika

Centre for Community Health Promotion, Chichiri, Blantyre3, Malawi

Abstract

The Village Health Registry (VHR) was a community health data collection tool introduced in 1998. It was first introduced in Mwanza district of Malawi with the objectives of collecting community-based data, analyzing and taking action in a local setting. The tool was collecting and updating data such as demography, immunization status for children under one year, growth monitoring for children under five, monitoring of all pregnant women, incidence of malaria, acute respiratory infections, diarrhea cases, water and sanitation and deaths, by visiting households in every village every month.

The tool was able to collect all targeted information as required. The data collected by the tool appeared to be more reliable than that obtained through a national information system used by the Ministry of Health (MoH) for the same district and the same year. It was easy for health centers to accurately order supplies based on actual requirements, to follow-up cases during disease outbreaks and to identify deficiencies in immunization coverage rates.

Despite promising results, the VHR registry fell into disuse following the establishment of a national register. The MoH's Health Information System (HIS) data used projections which normally did not represent the actual situation on the ground while the VHR registry gave real physical data which was representative and verifiable. The potential of the VHR outweighed that of the HIS. Although the HIS had been rolled out nationally, there were shortfalls which MoH could consider rectifying to reach its full potential. In conclusion, the VHR was worth adopting as it would give MoH realistic statistics to be effectively used at all levels.

Keywords: Village Health Registry, Mwanza district, Ministry of Health, Community Health Workers, Health Information System.

Correspondence: Prestor J Kubalalika, Director, Centre for Community Health Promotion, P.O. Box 31247, Chichiri, Blantyre3, Malawi. prestorkubalalika@gmail.com

DOI: 10.5210/ojphi.v10i2.9117

INTRODUCTION

The Village Health Registry (VHR) was a community health data collection tool which was introduced in Mwanza district of Malawi in January 1998. The tool was established after the District Health Management (DHM) had realized that there was no reliable community data collection tool for different programs. The district had no accurate data collection methods therefore the information used was mostly based on projections from figures generated by either the National Statistical Office (NSO) or from previous year's data files. Such figures were seen to be inaccurate in that they were not representing the actual physical situations on the ground. To make matters worse, even Health Centers (HCs) did not know their actual catchment areas' populations as well as targets for specific services.

The notable anomalous situation was discovered in the Expanded Program on Immunization (EPI). During the program's monthly routines and or mass immunization campaigns, the program was registering coverage as high as more than 100% for the presumed under one year target population for services such as Polio, DPT3, Measles and Vitamin A supplementation. Due to such unreliable demographic data, it was later discovered that there were some sporadic occurrences of measles outbreaks in areas where coverage for both routine and mass campaigns was registering above 100%. These observations and others therefore, made the DHM decide to create a community-based demographic data collection tool. The tool was at that time intended for EPI services only and it was provided for every village in the district hence the name Village Health Registry (VHR).

In this registry, the sections include; (a) Household (hh) where every member was recorded, (b) Immunization for children aged under one year, where every child under one year in the village was entered and followed on its immunization status. (c) Growth Monitoring (GM) and Vitamin "A" supplementation for children aged under five, where all children from birth to five years were registered. (d) Antenatal Care, for every pregnant woman who was monitored until delivery. (e) Death for every death from these villages together with the indicated cause, and finally (f) Summary where total figures of each section were collated at the end of every year.

LITERATURE REVIEW

Health Management Information System (HMIS) are one of the six building blocks essential for health system strengthening. According to Measure Evaluation (2016), HMIS is a system where data are collected basically for supporting health facilities and organizations in their planning, management, and decision making.

Health Information Systems (HIS) provide a broad overview of healthcare information systems with emphasis on historical foundations and current issues. Major issues include healthcare overview through use of information technology, medical and public health informatics, information technology infrastructure, computing ethics, computer security, consumer informatics, clinical software, clinical education computing, research computing, health information exchange, and the future of healthcare computing.

The World Health Organization (2014) observed that over the years, most developed health systems are either technology-driven or adopted with no consideration to local settings which prompted it (WHO) to publish the "Developing Health Management Information System". This is a guide for Developing Countries aiming at providing health managers and designers of health information with a set of practical guidelines for a logical approach to develop HIS taking into consideration a country-specific setting.

In Malawi, the existing HIS are unnecessarily fragmented and incapable of generating quality information at the needed time. It is for this reason that concerted efforts have been underway, in collaboration with partners, to harmonize and synthesize various data-management systems in the entire health sector (MoH 2015). The Ministry of Health (MoH) further noted that despite those concerted efforts, they still face challenges in the areas of data collection, analysis, dissemination, and use. These are further exacerbated by continued existence of problems of data accuracy, timelines of reporting, analysis, and completeness (MoH 2015).

Village Health Registry

This paper reports the experience and outcome of a Village Health Registry (VHR) as a community health data collection tool which was introduced in the Mwanza district of Malawi in January 1998. The VHR was established after the District Health Management (DHM) had realized that there was no reliable community data collection tool for different programs. The district had no accurate data collection methods therefore the information used was mostly based on projections from figures generated by either the National Statistical Office (NSO) or from previous year's data files.

We compared the information obtained by the registry in its first year of operation, 1998, with data of the same year within the same area as published by the National Health Information System.

METHODS

Population studied:

Mwanza is one of the districts situated in the Southern-Eastern region of Malawi. It lies between 15˚ and 16˚ South and 34˚ and 35˚ East. The district borders with Ntcheu district to the North, Blantyre district to the East, Chikwawa district to the South and Mozambique to the West. The district covers an area of 2,259 km^2 with various topography ranging from valleys to plains and hills which influence climatic conditions. It comprises a population of 166,443 in 239 villages and 14 health centers.

Development of the registry

The Registry was paper based and was developed by Mwanza District Health Management in 1998 and comprised of sections including; (a) Household (hh); where every hh and its members were recorded, (b) Immunization for children aged under one; where every child under one year in the village was entered from their hhs and followed on their immunization status. (c) Growth Monitoring (GM) and Vitamin "A" supplementation for under five children; where all children from birth to five years were registered and monitored for five years. (d) Antenatal Care; for every pregnant woman monitored until delivery. (e) Death; every death from these villages was registered with their causes indicated, and finally (f) Summary; where total figures of each section were collated at the end of every year.

Collection of information

Community Health Workers (CHWs) were initially trained in the use of the tool by the district Maternal and Child Health (MCH) Coordinator who was one of the architects of the tool for three days. Every village in all the 14 health facilities was assigned a registry book which had all the components and these registry books were given to all the CHWs Known as; "Health Surveillance Assistants (HSAs)". Each HSA was given the number of registry books according to villages he/she was working in. These CHWs/HSAs visited every household in these villages once every month to either record any new information occurring during the month or to update the already registered information.

Utilization of the VHR information –at the village and Health Centre level:

Every month CHWs would describe coverage for any of the registered indicators for each village purely based on the VHR data. These data were then shared with community-based health volunteers such as Village Health Committees (VHCs). These volunteers together with their CHWs after analyzing each village's monthly data would then seek audience with local leaders i.e. village heads to give them monthly updates about the collected data. The village heads would later convene special meetings for everyone for feedback. This was mostly so if and when a certain indicator wasn't performing well and needed people to promptly act upon either an individual or as a group. Otherwise these meetings were routinely scheduled after every three months (quarterly). CHWs together with VHCs would thereafter plot and or update performance graphs for each indicator per village. This action helped CHWs at village level to;

i. Closely monitor all performance indicators
ii. Identify health problems and take immediate action
iii. Make proper and realistic monthly work plans
iv. Consult relevant community leaders for action (if any) on specific issues
v. Know populations for every age groups in each village
vi. Give logical and realistic information to their HCs on village health performance indicators
vii. Know all the new born babies for every village every month
viii. Make consistent follow ups of children under one year old on immunization and GM for under-fives.
ix. Identify pregnant women and advise them to start attending ANCs
x. Be well conversant with particular hh's health needs and offered on the-spot advice.
xi. Strengthen relationships and understanding between them and individual hhs plus local leaders.
xii. Have at hand all village/community health related data at all times

This village data would thereafter be taken to the Health Centre level where all CHWs under the HC summed up monthly indicator performance data for all villages under the HC. They would later together plot and/or update monthly performances graphs from the collated data.

Before sending the data to the district level however, they would analyze the data and the graphs by identifying underperforming indicators and the corresponding villages. Solutions were discussed and possible actions decided upon at that level. This monitoring system, allowed the HCs to;

a) Become aware of any looming dangers which would make them take immediate actions (as HFs) before it was too late.
b) Consult with responsible underperforming villages as early as possible to seek their prompt action or response.
c) Know exactly what their target populations for various services were which enabled them realistically order supplies for their facilities.
d) Make follow-ups on defaulters of various monitored indicators
e) Monitor performance coverage for various vaccine antigen and other services
f) Know actual villages with low immunization coverage within their HC catchment areas
g) Come up with exact physical target and total populations for each HC
h) Have readily available community health related data at hand for each village at all times
i) Know numbers of deaths with causes

Utilization of the VHR information – at district level:

Upon compilation and/or collation of HC data, every HC sent the data to the district for an overall aggregation. Each HC data were accompanied by a write up attachment explaining any weak areas and actions decided or taken to abate them or sought help and or advices from the district health office. The district would thereafter be able to;

a) Collate data from all HCs and come up with realistic physical total population and its break down by age groups.
b) Know the actual number of children from the district alone to those from outside of it
c) Come up with meaningful target populations for specific services
d) Identify actual underperforming HCs and villages with low immunization, antenatal attendances and WATSAN coverage, high malaria, diarrhea and ARI incidences.
e) Identify straggling HCs and offer specific targeted assistance such as supportive supervision and/or supplies.
f) Know the most prevalent communicable diseases and strategically apply targeted intervention measures.
g) Come up with performance and determinant graphs for each indicator
h) Order and distribute supplies based on realistic figures and requirements
i) Easily compile districts' deaths figures/rates with precision and accuracy

RESULTS

Data obtained from the VHR and routine registries

Tables 1 and 2 show the demographic data obtained by the VHR and the national HIS. We noted small differences in numbers between the two.

Tables 3 and 4 show the data on immunization coverage for both systems. The data from the national HIS appear to indicate some immunization rates of more than 100%. The rankings of immunization rates between different health centers differ in different tables according to the source of the data.

Table 1 shows the VHR demographic data from 1998, the initial year of VHR data collection, for each of the 14 health centers.

TABLE 1: VHR DEMOGRAPHIC DATA for 1998

HEALTH CENTRE	TOTAL POP	UNDER1 POP	UNDER5 POP	WCBA	# OF VGES
Neno-Parish	9,985	500	1,701	2,490	14
Kunenekude	9,854	494	174	2,475	20
Tulonkhondo	8,854	445	1,499	2,224	13
MDH	30,865	1,541	5,256	7,712	56
Chifunga	6,654	335	1,135	1,652	07
Magareta	7,653	342	1,309	1,921	10
Neno-Rural	25,439	1,278	4,329	6,368	14
Matandani	8,795	446	1,505	2,191	10
Thambani	10,009	506	1,711	2,502	26
Lisungwe	16,123	798	2,756	4,021	26
Luwani	5,543	285	956	1,396	03
Matope	7,761	394	1,328	1,942	18
Nkula	5,643	285	964	1,444	5
Nsambe	13,265	669	2,261	3,328	17
Totals	**166,443**	**8,318**	**26,884**	**41,666**	**239**

TABLE 2: NATIONAL (HIS) DEMOGRAPHIC DATA

HEALTH CENTRE	TOTAL POP	UNDER1 POP	UNDER5 POP	WCBA
Neno-Parish	10,354	518	1,760	2,589
Kunenekude	10,223	511	1,738	2,556
Tulonkhondo	9,223	461	1,568	2,306
MDH	31,246	1,562	5,312	7,812
Chifunga	7,023	351	1,194	1,756
Magareta	8,022	401	1,364	2,006
Neno-Rural	25,808	1,290	4,387	6,452
Matandani	9,164	458	1,558	2,291
Thambani	10,378	519	1,764	2,595
Lisungwe	16,492	825	2,804	4,123
Luwani	5,912	296	1,005	1,478
Matope	8,130	407	1,382	2,033
Nkula	6,012	301	1,022	1,503
Nsambe	13,634	682	2,318	3,409
Totals	**171,621**	**8,581**	**29,176**	**42,905**

Table 3 below shows the VHR data on immunization aggregated for each of the health centers, as well as the numbers and causes of deaths recorded by the registry in that year. We see that immunization coverage was generally high, ranging from 82% for measles to 90% for BCG. One health center had a measles immunization rate of only 71% and another DPT3 rate of only 75%.

Table 4 shows the immunization coverage based on routine data. Most of the health centers' coverage is above the target population. These data were the ones being used in HIS which did not represent the actual population on the ground. Although the data were considered as for Mwanza, some of the children were not from the district. Some belonged to neighboring districts while others from across the border with Malawi.

TABLE 3: VHR IMMUNIZATION DATA for 1998

1998 VHR VACCINE COVERAGE											DEATHS	
											UNDER ONE DEATHS	
HEALTH CENTRE	TOTAL POP	TARGET POP	BCG	%	DPT3	%	OPV3	%	MEASLES	%	No.	Common Cause
Neno-Parish	9,985	500	451	90	412	82	399	80	353	71	4	Malaria
Kunenekude	9,854	494	426	86	419	85	421	85	402	81	6	Pneumonia
Tulonkhondo	8,854	445	441	99	438	98	437	98	420	94	4	Malaria
MDH	30,865	1,541	1312	85	1,302	84	1,302	84	1,293	84	28	Malnutrition & malaria
Chifunga	6,654	335	329	98	318	95	312	93	301	90	2	Malaria
Magareta	7,653	342	302	88	289	85	283	83	251	73	5	Measles & malnutrition
Neno-Rural	25,439	1,278	1192	93	1,072	84	1,083	85	1,001	78	7	Malaria, pneumonia & diarrhea
Matandani	8,795	446	442	99	440	99	438	98	422	95	3	Diarrhea
Thambani	10,009	506	466	92	422	83	417	82	369	73	6	Measles, cholera & malaria
Lisungwe	16,123	798	621	78	601	75	603	76	589	74	8	Malnutrition, malaria & fever
Luwani	5,543	285	280	98	278	98	274	96	269	94	2	Cholera
Matope	7,761	394	361	92	349	89	341	87	333	85	6	Malaria, malnutrition & diarrhea
Nkula	5,643	285	239	84	221	78	216	76	209	73	3	Pneumonia & fever
Nsambe	13,265	669	661	99	650	97	652	97	643	96	5	Malnutrition & diarrhea
Totals	**166,443**	**8,318**	**7523**	**90**	**7,211**	**87**	**7,178**	**86**	**6,855**	**82**	**98**	

TABLE 4: ROUTINE IMMUNIZATION COVERAGE DATA for 1998

1998 ROUTINE IMMUNIZATION COVERAGE										
HEALTH CENTRE	**TOTAL POP**	**TARGET POP**	**BCG**	**%**	**DPT 3**	**%**	**OPV 3**	**%**	**MEASLES**	**%**
Neno-Parish	10,354	518	522	100.8	517	99.8	521	100.6	536	103.5
Kunenekude	10,223	511	513	100.4	526	102.9	518	101.4	511	100.0
Tulonkhondo	9,223	461	471	102.2	470	102.0	469	101.7	473	102.6
MDH	31,246	1,562	1,601	102.5	1,573	100.7	1,582	101.3	1,599	102.4
Chifunga	7,023	351	350	99.7	349	99.4	355	101.1	361	102.8
Magareta	8,022	401	398	99.3	412	102.7	408	101.7	411	102.5
Neno-Rural	25,808	1,290	1,306	101.2	1,296	100.5	1,289	99.9	1,293	100.2
Matandani	9,164	458	462	100.9	462	100.9	458	100.0	449	98.0
Thambani	10,378	519	604	116.4	582	112.1	591	113.9	624	120.2
Lisungwe	16,492	825	951	115.3	851	103.2	841	101.9	853	103.4
Luwani	5,912	296	294	99.3	296	100.0	298	100.7	300	101.4
Matope	8,130	407	505	124.1	438	107.6	451	110.8	466	114.5
Nkula	6,012	301	420	139.5	306	101.7	312	103.7	320	106.3
Nsambe	13,634	682	753	110.4	691	101.3	689	101.0	690	101.2
Totals	**171,621**	**8,581**	**9,150**	106.6	**8,769**	102.2	**8,782**	102.3	**8,886**	103.6

LIMITATIONS

There are, however, a number of limitations of the VHR. Although the VHR had shown enough potential to collect important and accurate data, there were some notable limitations which still made it unable to effectively achieve its intended purpose. One clearly observed limitation was *impact limitation*. This had been due to limited knowledge of CHWs on how to effectively use the tool. Most of them were not trained therefore made them unable to understand how they could collect data using this registry. This again was compounded by limited or insignificant supportive supervision by MoH to districts and within districts on the tool.

There was little consultation to relevant experienced stakeholders before nationally rolling out this tool. This made the MoH miss some important and critical operational information which could make the registry as reliable as expected. This was why there was need for thorough and comprehensive consultation and adequate training to all CHWs and supervisors.

The other limitation was *data-based*. For this register to show real impact there was need for enough data to be collected. At that point, there was little VHR data available at all levels of MoH system which could be aggregated to make significant impact. This was the case because CHWs did not use the tool to collect the needed data anymore as most of them were not knowledgeable of it. There was need therefore to equip all CHWs with knowledge and maximum supportive supervision at all levels.

The MoH had weak data management systems in place at all levels which made it difficult for the VHR data to stand out as expected. Districts did not have enough resources and knowledgeable personnel to effectively manage and later on supervise the flow of VHR data from community to HC and district levels as expected. The MoH system did not have VHR data storage at any of its HMIS levels. Finally, there was no reliable and sustainable funding for the implementation of the register, or important operations such as trainings, supervisions and procurement of supplies.

DISCUSSION

The results of immunization rates obtained from the VHR and the national HIS are quite different. The data from the national HIS appears to indicate immunization rates of more than 100%, suggesting a problem in either the numerators of number of children immunized, or denominators of the population, or both. The rankings of immunization rates between different health centers differ in different tables according to the source of the data. This has serious implications as some of the data obtained by the VHR indicate problems with low immunization rates – if these are missed by an inaccurate HIS, remedial measures to improve rates will not be undertaken which will result into potential implications for population health.

This VHR approach of data collection appears to be more reliable as the information is based on physical count rather than extrapolation or intuition. Data from this registry were more genuine as the registry books were conveniently village based. The information from this registry was more accurate and readily available as it could easily be accessed and verified at Health Centre, village and household levels at any time. Every individual was well accounted for and could easily be physically identified using unique code numbers. Both total and target populations were established through physical counting rather than estimations as is the case with the national system. The data were updated at the household level where every individual was entered. Any upward or downward variations to the data due to migration, death or births were spontaneously noticed and captured within a month by responsible CHWs. The data excluded all those from outside villages and districts hence no HC had its total and target population exceeding the actual as was the case with the national routine system. Follow-up of the data were so simple at HC, village and household levels when needed.

The MoH has weak data management systems in place at all levels which makes it difficult for the VHR data to stand out as expected. Districts do not have enough resources and knowledgeable personnel to effectively manage and later on supervise the flow of VHR data from community to HC and district levels as expected. The MoH system does not have VHR data storage at any of its HMIS levels. Finally, there is no reliable and sustainable funding for the implementation of the registry, or important operations such as training, supervisions and procurement of supplies.

This registry could be a vital community-based health data collection tool if it were used appropriately. It has the potential of being a reliable data collection instrument with accurate and verifiable community level health statistics. Despite this, however, more needs to be done on its development and implementation to ensure the realization of its maximum intended potential. It is a shame that the registry has fallen into disuse, and lessons need to be learned from this experience.

There was need to fully consult relevant stakeholders who had experience, as in any information system, before nationally rolling it out. Thorough and conclusive training needed to be done to all CHWs before giving them the task of using the tool. There was also need to officially pilot it in a few districts with maximum support which would be taken as reference points when rolling it out.

For constructive supervision at all levels, deliberate Training of Trainers (ToTs) sessions need to be done. This will equip such trainers with knowledge and ability to understand the registry and be able to also train others in their respective districts. The trained DHMT members and program managers would in turn be able to effectively supervise CHWs at health center level.

Strong and coherent data management flow systems from village to health center and district levels which can easily be followed and verified should be put in place. For security and safety of this data, every health center needs to have a special computer and trained personnel specifically for managing this information.

CONCLUSION

Based on experience with VHR, it is indeed worthwhile adopting it at a national level. However, it needs to be implemented step by step rather than in a hurry as was the case. Wide and extensive consultations with relevant stakeholders were required. Before rolling it out, there was need to pilot it in a few districts which would be used as reference points. Enough training and refreshers could also be conducted to all CHWs and their supervisors. Finally the MoH had to incorporate other interested partners to help it with some other aspects of the tool.

REFERENCE

1. Chaulagai CM. Moyo & R Pendame (2015). Health Management Information System in Malawi: Issues and Innovations. https://www.researchgate.net/publication/265048139_Health_Management_Information_System_in_Malawi_Issues_and_Innovations

2. Johns Hopkins School of Public Health. (2014). 312.633.81 Health Management Information Systems. http://www.jhsph.edu/courses/course/20055/2014/312.633.81/health-management-information-systems

3. Measure Evaluation. (2016). Health Management Information Systems (HMIS) https://www.measureevaluation.org/resources/training/materials/health-management-information-systems-hmis-1

4. Ministry of Health. (2015). Malawi National Health Information System Policy. http://int.search.myway.com/search/GGmain.jhtml?searchfor=Malawi+Health+Management+Information+System&n=783999a2&p2=%5E9N%5Exdm007%5ETTAB02%5Emw&ptb=5990FFEA-A16A-4265-B23C-F9E7E765D8ED&qs=&si=CM6ese3zlNMCFQ3jGwodgOkH-g&ss=sub&st=hp&trs=wtt&tpr=sbt&ts=1497084894108

5. Singogo E, Kanike E, van Lettow M, Cataldo F, Zachariah R, et al. (2013). Village registers for vital registration in rural Malawi. https://www.ncbi.nlm.nih.gov/pubmed/23718633

6. Statistics Norway. (2017). The health management Information system in Malawi. Assessment of data quality and methods for improvement. https://www.ssb.no/en/helse/artikler-og-publikasjoner/the-health-management-information-system-in-malawi

7. World Health Organization. (2004) Developing Health Management Information Systems: A Practical Guide for Developing Countries. http://www.wpro.who.int/publications/pub_9290611650/en/