

EFFICIENCY ANALYSIS OF THE COMMUNITY HEALTH PROGRAMS OF THE PARTIDO DISTRICT IN THE PHILIPPINES

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Abstract – *The study assessed the efficiency of the community health programs (CHPs) of the Partido District. It surveyed the incidence of primary health problems that confronted the rural health unit (RHU) and estimated the budget allocation of the local government unit (LGU) on the CHP. It traced the remuneration scheme, services rendered, and work-related background of the barangay/village health worker (BHW). It utilized survey, key informant interview and written document analysis in gathering data. To assess efficiency, the Data Envelopmental Analysis (DEA) was used where the ten municipalities of the district were considered as Decision-Making Units (DMU). The top health problems were malnutrition, tuberculosis and tropical diseases. The LGU's annual budget for health was PhP0-30,000. Most BHWs rendered blood pressure monitoring and house visitation. They worked four times a month and covered one zone. A few were accredited BHW and all had no civil service eligibility. Their pay was way below the legal minimum wage. Based on the DEA calculation, the efficiency was relatively higher in three municipalities – Lagonoy, Caramoan and Garchitorena. However, these were also the municipalities which allocated small amount of funds and resources on health, including compensation for BHW. The study posited that the high efficiency level may be at the expense of the CHP workforce.*

Keywords – community health program, efficiency analysis, barangay health worker

INTRODUCTION

The study of Nickel & von dem Knesebeck [1] showed that community-based interventions may be reducing absolute health inequalities of deprived and disadvantaged populations, but their potential so far is not fully realized. This was confirmed by Haldane et al. [2] that community participation is a fundamental element of an equitable and rights-based approach to health that is proven effective in optimizing health interventions for positive public health impact.

Community health programs (CHPs) take various forms in different countries. Some have established community health outreach which is a temporary, mobile project that involves the collaboration of a community to

undertake its purposeful health intervention of reaching a population facing health risks. This outreach is undertaken by health workers and enables the strong connection between health professionals and community residents [3]. Some have put up community health centers (CHCs) and are considered the backbone of primary care for millions of people, the majority of whom are low-income, underserved, and rural populations [4].

The study of Haldane et al. [2] supported the utility of community participation in yielding positive outcomes at the organizational, community, and individual level across a wide range of health domains. Overall, it is evident that community involvement is key in priority setting to drive healthcare

improvement and that interventions utilizing community involvement can benefit from a contextualizing learning phase whereby organizational relationships and trust can develop [2].

Give et al. [5] claimed that referrals strengthen communication and feedback between community health workers (CHWs), supervisors and health professionals based in the health facilities. Active community engagement and feedback can stimulate better use of healthcare facilities and critical services provided by CHWs and health authorities at community level [5]. CHCs have already integrated CHWs in their enabling services workforce [4]. A literature review by Hartzler et al. [6] identified 12 functions of CHWs: care coordination, health coaching, social support, health assessment, resource linking, case management, medication management, remote care, follow-up, administration, health education, and literacy support; and three prominent roles representing clusters of functions: clinical services, community resource connections, and health education and coaching. However, Park et al. [4] found that nearly 70% of the CHC studied did not employ CHWs. Moreover, rural CHCs are less likely to employ CHWs. But if they have CHWs, they employ them more.

Park et al. [4] concluded that while the study did not address the reasons why health centers have been slow to add CHWs to their enabling services workforce, the results were consistent with prior research that points to substantial financial barriers associated with expanding the use of CHWs in their clinics. Fry et al. [7] confirmed that increasingly, public and private resources are being dedicated to community-based health improvement programs.

OBJECTIVES OF THE STUDY

The study assessed the efficiency of the community health programs (CHPs) of the Partido District in the Philippines. To accomplish the general objective, the study pursued the following specific objectives:

1. Survey the incidence of primary health problems that confronted the rural health units (RHU);
2. Estimate the budget allocated by the local government units (LGUs) to the barangay-level health units;
3. Appraise the remuneration scheme of the barangay/village health workers (BHWs) in the study areas;
4. Trace the services rendered by the BHWs – (a) type of service rendered; (b) frequency of service; (c) service coverage area;
5. Trace the work-related background of the BHWs – (a) health-related training taken; (b) membership in health organization; (c) length of service; and
6. Analyze the overall efficiency of CHPs in the Partido District.

MATERIALS AND METHOD

The investigation utilized key informant interview (KII), survey, and written document analysis. The KII was done with the personnel at the RHU and the municipal health unit (MHU) for data required under objectives 1, 2, and 3. The survey was a personal interview with the target BHW respondents for data requirements of objectives 3, 4, and 5. The primary data were validated through written document analysis available at the MHU and LGU.

The study utilized the Data Envelopment Analysis (DEA), a data-oriented approach for evaluating efficiency of a set of entities called Decision-Making Units (DMUs) which convert multiple inputs into multiple outputs [8]. The idea of the outputs is to capture as comprehensively as possible the deliverables from the units and the idea of the inputs is to capture as comprehensively as possible all resources used and any contextual factors that affect the outcomes being delivered by the units being compared [9]. The DEA is a tool for multiple-criteria evaluation problems where DMUs are alternatives and each DMU is represented by its performance in multiple criteria [10]. The unit of analysis or DMU of this study were each of the 10 municipalities of the Partido District.

Table 1 presents the list of the ten municipalities in Partido, the total number of barangays/villages per municipality, and the computed number of sample barangays per municipality. The data were taken from the website of the Local Government Academy [11]. Each DMU was composed of a number of barangays distributed proportionately. The total

number of sample barangays for the study was 169, based on the formula of Krejcie & Morgan [12] as shown below. To give each barangay equal chances of being chosen, the sample was selected at random using the Microsoft Excel Program.

$$s = \frac{X^2 NP(1-P)}{d^2 (N-1) + X^2 P(1-P)}$$

Table 1. List of municipalities, total number of barangays and number of sample barangays

Municipality	No. of barangays	Sample size		Municipality	No. of barangays	Sample size
Caramoan	49	24		Sangay	19	11
Garchitorena	23	13		San Jose	29	16
Goa	34	19		Siruma	22	11
Lagonoy	38	22		Tigaon	23	13
Presentacion	18	10		Tinambac	44	25
				Total	299	169

The DEA method took into account selected factors that affect a unit's performance to provide as bases for efficiency analysis. It determined the Relative Efficiency Ratio based on the input and output [13]. The inputs considered in the DEA calculation were the remuneration of BHW and the maintenance and other operating expenses (MOOE). The remuneration referred to the amount of money regularly received by the BHW per month. The MOOE is the budget allotted for the barangay health centre in the year 2019, as indicated on the records of the corresponding MHU or LGU accounting office. The outputs were the frequency of service, the coverage of service and the number of BHW. The frequency of service referred to the number of times the BHW

rendered services for each month, the coverage of service pertained to the number of zones covered by the BHW's services, and finally the number of BHW deployed in each barangay. In order to get one figure for each DMU, the median quantity was determined. The data for inputs were provided through the accomplishment of objectives 2 and 3 while that for outputs through objective 4.

Table 2 enumerates the data-gathering method, the source of data and the number of respondents. To enhance randomness in the selection of respondents for the survey, one BHW was selected at random from each of the sample barangays. Key informants were the persons in charge at the barangay and municipal levels.

Table 2. Data-gathering method, source of data and number of respondents

Method	Respondents	No. of respondents	Particulars
Survey	Barangay Health Worker	169	1 per sample barangay
Key Informant Interview	RHU Personnel	169	1 per sample barangay
Key Informant Interview	MHU Personnel	10	1 per municipality
Total Respondents		358	

RESULTS AND DISCUSSION

This section tackles in detail the findings of the study based on the objectives. It

starts with the first objective which was to survey the incidence of primary health problems in the study areas.

Incidence of Primary Health Problems

Table 3 discloses the percentage of the 169 barangays/villages with incidence of infant mortality, maternal mortality, premature birth, malnutrition, tuberculosis, tropical disease and water-borne disease. As revealed in Table 3, malnutrition was a problem in majority of the barangays or 81 percent of total. Additionally, there were incidences of tuberculosis at 72 percent of the areas studied. Other health problems that occurred in 2017-2019 were tropical disease at 33 percent, water-borne disease at 17 percent, and infant mortality at 15 percent. The percentage of barangays with incidence of maternal mortality and premature birth was relatively very low.

Table 3. Incidence of primary health problems in the barangays, 2017-2019, n=169

Cases of health problems recorded	% of RHU covered
Malnutrition	81
Tuberculosis	72
Tropical disease	33
Water-borne disease	17
Infant mortality	15
Premature birth	9
Maternal mortality	5

Budget Allocation of the Local Government Unit to the Rural Health Unit

The study’s second objective was to estimate the budget allocated by the LGU to the RHU, as indicated in the MOOE budget. Table 4 exhibits the amount of budget allotted to the barangay-level health units in 2019, as estimated by the personnel in charge at the MHU. The data were verified with the personnel in charge at the LGU’s finance office.

Table 4 demonstrates that 27 percent of the barangays/villages had no monetary allocation. Based on the KII, the personnel in charge at the barangay-level health center stated that they were provided supplies in kind directly

from the MHU or at times from the Department of Health (DOH). The compensation of BHW and other health personnel were released by the LGU. Additionally, 45 percent of the RHUs had a budget of Php3000.00-15000.00 while 14 percent had an allocation of Php15001-30000.

Table 4. Budget allocation to the RHU, 2019, n=169

Amount (PhP)	% of RHU covered
0	27
3000-15000	45
15001-30000	14
30001-45000	6
45001-60000	0
60001-75000	1
75001-90000	2
90001-105000	0
105001-120000	0
Above 120000	5

Remuneration Scheme of BHW

The next objective of the study was to appraise the remuneration scheme of the BHW. Table 5 discloses that in 2017-2019, the average compensation of 74 percent of the respondents ranged at Php451.00-1050.00 per month, most of whom (31 percent) received Php851.00-1050.00. This amount is way below the amount stipulated in Republic Act No. 6758 [14]. Based on this law, the lowest monthly compensation is Grade 1 or Php2000.00. Examining further the change in the remuneration of the respondents from 2017 to 2019, 44 percent of the BHW did not gain any increase in their compensation, while 25 percent obtained an increase of 1-20 percent.

Table 5. Average amount and increase in remuneration of BHW, n=169

Average remuneration of BHW per month (PhP), 2017-2019	% of BHW respondents	% Increase in remuneration of BHW, 2017-2019	% of BHW respondents
0	1	Negative	1

Below 251	3	0	44
251-450	12	1-10	10
451-650	23	11-20	15
651-850	20	21-30	9
851-1050	31	31-40	5
1051-1250	4	41-50	4
1251-1450	3	51-60	1
1451-1650	0	61-70	5
1651-1850	0	71-80	1
Above 1850	3	81-90	0
		91-100	1
		Above 100	4

This study highlights that, based on interviews, the BHW did not receive any hazard allowance nor subsistence allowance. They were not provided any legal advice or assistance and no loan services. They were not aware of any kind of civil service eligibility after serving for more than five years nor any kind of program for education and career enrichment. This condition of the BHW respondents is contrary to R.A.7883 which orders the provision of allowances, services and programs mentioned earlier.

Services Rendered by the BHW

Table 6 provide the data for the fourth research objective to trace the services by the BHW particularly the type of services rendered, frequency of service, and service coverage area. Majority of the BHW rendered services of monitoring blood pressure (90 percent), house to house visitation (69 percent), deworming (67 percent), and immunization (63 percent). Moreover, 46 percent worked four times a month, 40 percent worked on one zone only, while 32 percent covered the entire village.

Table 6. Type of service rendered, frequency of service and service coverage area of BHW, n=169

Indicator	% of BHW respondents	Frequency of service	% of BHW respondents
Service rendered		Daily	9

(multiple responses)			
Blood pressure monitoring	90	15 times per month	2
House to house visit	69	12	3
Deworming	67	8	16
Immunization	63	5	2
Vitamin A	56	4	46
Family planning	16	1	3
Operation Timbang Plus	5	No. of zones covered	
Feeding	1	1	40
		2	23
		3	5
		Whole barangay	32

Work-Related Background of the BHW

Table 7 is about the work-related background of the BHW. Out of the 169 BHWs studied, 57 percent replied that they had undergone training in 2017-2019 which means 43 percent had never had any, but kept on rendering health services to fellow residents. Out of the 57 percent or 96 respondents, 41 percent had only one training in a period of three years, 20 percent had two, while 39 percent had three. As to membership in the BHW federation, 98 percent answered to the affirmative either as member or officer. Furthermore, all respondents had no civil service eligibility, lived in the same barangay where they work. Around 74 percent were not accredited as BHW because their application was still in process. This was a vital information because it meant that majority of the BHWs were not entitled to the benefits, incentives and protection provided by R.A.7883.

Table 7. Work-related background of the BHW

Indicator	% of BHW respondents		% of BHW respondents
With health-related training, 2017-2019, n=169	57	Place of work	
No. of training attended, 2017-2019, n=96		Same as domicile	100
1	41	Different from domicile	0
2	20	No. of years as BHW, n=169	
3	39	Below 1 year	4
Member of BHW federation, n=169	98	1-5	42
Accreditation as BHW		6-10	14
Accredited	25	11-15	15
In process	74	16-20	7
None	1	21-25	9

Civil service eligibility		26-30	2
No	100	31 and above	7
Yes	0		

The investigation likewise found out that all respondents in the sample were women. More than half were aged 41-60, married, and born in the same barangay that they were working in. Majority either reached or graduated in high school and had no other jobs before becoming a BHW.

Efficiency of the Community Health Programs

The major objective of the study was to analyze the overall efficiency of the CHPs in the Partido District using the DEA method. Table 8 presents the letter code assigned to each DMU as mentioned under Materials and Methods. Table 9 presents the list of inputs, outputs and the corresponding figures for each DMU.

Table 8. Decision-Making Units in the DEA method

DMU code	Municipality
A	Caramoan
B	Garchitorea
C	Goa
D	Lagonoy
E	Presentacion
F	Sangay
G	San Jose
H	Siruma
I	Tigaon
J	Tinambac

Table 9. The calculated median quantity used in the DEA method

	DMU	A	B	C	D	E	F	G	H	I	J
INPUT	Remuneration	600	500	800	400	550	1000	648	550	1000	800
	MOOE	10000	1	5000	2500	1	39200	13500	2000	5000	5000
OUTPUT	Frequency	8	4	4	10	4	4	8	4	4	8
	Coverage	2	1.5	2	2	1	6	1	2	2	2
	No. of BHW	3	3	3	3	2	2	2	2	2	3

Table 10 shows the results of the DEA calculations. Based on the resulting figures of the RER (Relative Efficiency Ratio), the efficiency is relatively higher in the Municipality of Lagonoy in terms of remuneration and frequency of service at 2.50; remuneration and coverage of service at 0.50; remuneration and number of BHW at 0.75.

Caramoan is likewise among the efficient DMUs in terms of remuneration and frequency of service at 1.33; remuneration and number of BHWs at 0.50. Finally, another efficient DMU is Garchitorena in terms of remuneration and number of BHWs at 0.50; MOOE allocation and number of BHW.

Table 10. Relative Efficiency Ratios (RER) of selected inputs and outputs using the DEA method

DMU	A	B	C	D	E	F	G	H	I	J
RER of remuneration of BHW and frequency of service										
BHW remuneration	600	500	800	400	550	1000	648	550	1000	800
Frequency of service	8	4	4	10	4	4	8	4	4	8
Ratio	1.33	0.80	0.50	2.50	0.73	0.40	1.23	0.73	0.40	1.00
RER of remuneration of BHW and coverage of service										
BHW remuneration	600	500	800	400	550	1000	648	550	1000	800
Coverage of service	2	1.50	2	2	1	6	1	2	2	2
Ratio	0.33	0.30	0.25	0.50	0.18	0.60	0.15	0.36	0.20	0.25
RER of remuneration of BHW and number of BHW										
BHW remuneration	600	500	800	400	550	1000	648	550	1000	800
No. of BHW	3	3	3	3	2	2	2	2	2	3
Ratio	0.50	0.60	0.20	0.75	0.36	0.20	0.31	0.36	0.20	0.38
RER of MOOE allocation and number of BHW										
MOOE allocation	10000	1	5000	2500	1	39200	13500	2000	5000	5000
No. of BHW	3	3	3	3	2	2	2	2	2	3
Ratio	0.03	3.00	0.30	0.12	2.00	0.005	.015	0.10	0.04	0.06

CONCLUSION AND RECOMMENDATION

The primary health problems with the highest incidence in the study area were malnutrition, tuberculosis, and tropical disease. Malnutrition is generally an infant/child health problem while tuberculosis is basically adult. This discloses that the CHP may not have been effective in a relatively large section of the population because the problems cut across age groups. The budget allocation on health was significantly different among the barangays/villages and among the municipalities. Some villages had no monetary allocation, some had as much as PhP3000-15000 while a few had as much as PhP50000-75000.

Some key informants claimed that they did not receive monetary budget but only supplies provided in kind by the MHU and DOH. Some replied that the compensation of the health personnel were released by the municipal government.

This study revealed that the BHWs were paid poorly, way below the legal minimum wage as provided for by R.A.6758. Some did not receive any increase in 2017-2019. Additionally, majority remained unaccredited which meant that they were not entitled to the benefits stipulated under R.A.7883. The BHWs did not receive hazard allowance, no subsistence allowance, no legal advice or assistance and no loan services. They were not aware of any program for

education and career enrichment. They were not granted civil service eligibility after serving for more than five years.

Many BHW worked four times a month, covered one zone only, while a few covered the entire village. Majority rendered services of monitoring blood pressure, house to house visitation, deworming, and immunization. Majority had undergone training in 2017-2019 but there were many who had no training but kept on rendering health services. Almost all were either member or officer of the BHW federation.

Based on the DEA calculation, the efficiency was relatively higher in the Municipality of Lagonoy, Caramoan and Garchitorea. However, these were also the municipalities which allocated small amount of funds and resources on health, including the compensation for BHW. That is why the input-output ratio resulted in a relatively high value. In other words, the high Relative Efficiency Ratio fell on the shoulders of the BHW. Despite the meagre remuneration, they continued to render services to the community. The relatively high level of efficiency of the DMU may be at the expense of the interest and welfare of the CHP workforce.

The investigation discovered that many barangay health centers did not religiously keep records of budget and expenses. The records at the municipal office were not intact. It was likewise observed that the RHU and MHU lacked a comprehensive monitoring mechanism. The data-gathering was difficult because the key informants would refer the investigators to other offices which, after verification, the researchers were told that the data were unavailable. There were many municipal offices which claimed that there was no budget for Personnel Services (PS) at the barangay level. It can be inferred that the source of the BHW remuneration would depend on the decision of the chief executive. This may signify that the compensation and the amount of payment for the BHW may not be assured in the long term.

Recommendation

Based on the results of the efficiency analysis, it is recommended that more budget may be allocated for Lagonoy, Caramoan and Garchitorea. These DMUs performed relatively well in terms of economic efficiency given a meagre budget. The DMUs mentioned were able to render health services at the village level despite the low payment to BHWs and the low budget for the health program. Corollary to this finding, however, there were sectors that were short changed somewhere somehow. This study hereby asserts that one of the sectors that were unfairly compensated were the BHWs.

The municipal and barangay governments may seriously consider expediting the official accreditation of the BHWs and eventually ensure that the provisions of R.A. No. 7883 would be complied with. The national government and the DOH can monitor this compliance. Since majority were part of the BHW federation, the organization may be utilized as a conduit in promoting the welfare of the health workers. The federation may also serve as a source of information in further investigations to be conducted.

Aside from the BHWs rendering vital health services, they were also born and raised in the same village. They know the history, culture and background of the community. But they are inadequately compensated, and work with meagre resources. It is therefore imperative that the national down to the municipal and barangay governments put the interest and welfare of BHWs on top of the list. It is further recommended that the CHP be provided more attention and resources by the government.

For further research, it may be determined how a DMU sustained its operations at the barangay level given a zero allocation on Personnel Services (PS) and zero allocation on MOOE. Another area in the research that should be investigated is the costing of supplies and medicine which were donated by the LGU and DOH. There should be an extensive tracing and validation of data that will be utilized in the DEA calculation.

The study discovered that 100% of the sample happened to be women, majority were married, middle-aged, with low educational attainment and belonged to a poor household. It is therefore recommended that the CHP may be investigated from various perspectives of the Sustainable Development Goals (SDG) such as gender, education and poverty.

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