Policy Implementation Analysis on the Utilization of General Practitioners at Community Health Centers in Kemayoran From January 2013 to June 2014

Indah Raksi Padmasari*, Amilia Megraini**

*Department of Health Central Jakarta, FL. GK, BLK. C, Kantor Walikota Central Jakarta, 10160
**Department Health Administration and Policy, Building F 1st Floor, Faculty of Public Health Universitas Indonesia, Depok 16424

Email: inrapadmas@yahoo.com

Abstract. Community Health Centers (CHCs) take the frontline position of health services in Indonesia. To be able to perform their functions properly, CHCs require human resources (HR) as a driving force. One of the human resources required is a general practitioner. The policy of utilization GP sat CHCs in Jakarta provides flexibility for sub-district health centers as the implementing agency in the management of human resources. One of the variables that influence the process of policy implementation is the capability of the implementing agencies indicated through their management capabilities. This study aims to describe the policy implementation on the utilization of general practitioners at Kemayoran sub-district health centers. The research was conducted using a mixed method combining qualitative and quantitative approach. The results confirm that there has been an imbalance proportion between the workload of general practitioners at village health centers and sub-district health centers, due to the absence of standardized rules regarding the placement of general practitioners, in addition to lower capacity of the human resources available. One of the recommendations proposed is the improvement of management using a simulation model of general practitioners based on balanced workload forecasting.

Keywords: policy implementation, utilization of general practitioner, forecasting, simulation model

INTRODUCTION

Community Health Centers (CHCs) take the frontline position of health services in Indonesia. To be able to perform their functions properly, CHCs require human resources (HR) as a driving force. One of the human resources required is a general practitioner. The problem faced is the low number of GPs as well as the distribution of GPs.

In Central Jakarta, Kemayoran Sub-district health centers shows quite high statistic in terms of patients visits, as many as 313,409 in 2013 (Kemayoran Sub-district health centers). Kemayoran consists of one sub-district and eight villages served by one sub-district health center, seven village health centers, and three health centers moving around villages.

There were as many as eleven general practitioners in Kemayoran sub-district CHCs, and one GP for each CHCs in each village. Five among the seven general practitioners in village CHCs also served as the Head of CHC.

The number of visits varies in each CHC. The highest recorded patient visits in Kemayoran sub-district CHC in 2013 during the opening hours, from 7:30 AM to
12:00 PM, were 256 patients (data dated March 11, 2013). As for the village CHCs, the highest patient visits during the same hours of service reached 136 patients (data from Kebon Kosong I CHC, dated January 28, 2013). Therefore, it can be seen that the workload of general practitioners in villages is higher than the workload of general practitioners in sub-district CHCs.

HR formation policy for GP (Pergub No. 4 of 2011) regulates that CHCs are assigned with as many as 12 GPs, while village CHCs are assigned with 1 GP each. However, Kemayoran sub-district health centers have become a full Public Service Facility (BLUD) since 2012 that they have the authority to carry out management in accordance with the Regulation No. 23 Year 2005. In the Pergub No. 4 in 2011, it has also been mentioned that the Head of sub-district CHCs has the authority to transfer employees in the work area covering the sub-district and village health centers.

General practitioners of CHCs have been assigned to provide services in village CHCs once in 2 weeks on Saturday to help GPs at the village CHCs since 2013. Kemayoran CHC also sends a GP to Kebon Kosong I CHC every Monday and Thursday from 7:30 AM to 12:00 PM. It also sends a GP to the moving CHC at the airport and South Gunung Sahari area every weekday except Thursday during the opening hours from 07:30 AM to 12:00 PM. The last policy is to send a GP to help the moving CHCs every Wednesday and Friday during the opening hours from 07:30 AM to 12:00 PM. Enevitably, one GP may take care 2-3 facilities in 2-3 different areas in particular day. To some extent, this PG’s daily arrangement with multi tasking requirement will eventually irritate the HR utilization in CHCs and services in the long run. Having information on the workload at each facilities every day, the disarray will be avoided and anticipated.

Taking into consideration of CHC roles in terms of GP utilization to support services in different areas, I suggest to develop a model or simulation using forcasting of CHCs and the GP workload. The simulation will help to come up with an appropriate number of GP in particular facility every day. Simulation models can be used as an operational tool to match the availability of hospital and patient needs, reports the performance of the system, and as a planning tool to compare the effectiveness of each policy alternative (Everett, JE, 2002).

THEORETICAL REVIEW

- Policy Implementation

Policy objectives can be achieved if the policy is implemented. The implementation stage is often referred to as an important step in realizing policy objectives, as it bridges concept and reality (Grindle in Purwanto, EA, & Sulistyastuti, DR, 2012). According to Cheema and Rondinelli, performance and the impact of the implementation refers to the degree to which the program can achieve the goals that have been set, the changes in the administrative capacity of local organizations, as well as various outputs and other results (Subarsono, AG, 2008).

Organizational resources can be any control over the source of funds; the balance between budget and program activities; the accuracy of budget allocation; balanced income with expenditure; support from national political leaders; support from local political leaders; bureaucracy commitment (Subarsono, A.G., 2008).

- Management of Human Resource (HR)

In terms of human resources planning, workforce must be able to meet the needs of the company so that it can work effectively and efficiently to help the realization of the company’s goals (Hasibuan, MSP, 2013). Good human resource planning can predict (forecasting) the future by projecting the results of the analysis on information collected (Hasibuan, MSP, 2013).

Forecasting is “the practice of making a prediction or estimation about the future” (Makridakis in Langabeer, JR, 2008). It includes modeling of past activities to define the future. Forecasting the demands of patients is the first step to gain understanding of the level of activity changes within a certain period. Without understanding the demand, it is impossible to align resources and capacity with the demand (Langabeer, JR, 2013).

One of the methods in univariate quantitative forecasting method is by using a multiplicative decomposition time series (Fogarty, DW, Blackstone, JH, & Hoffmann, TR, 1991). This method can decipher components in time series data. Predicting the number of patient visits can be done using this forecasting method. Data patterns in the past are assumed to be repeated in the future. Time series can be used when there are enough observations series. In the literature, it is stated that at least we have 48 observation data to conduct this method (Fogarty, DW, Blackstone, JH, & Hoffmann, TR, 1991).

The steps in multiplicative decomposition time series are as follows: (Fogarty, DW, Blackstone, JH, & Hoffmann, TR, 1991):

a. Calculating centered moving average for the period of time to be measured;
b. Estimating the seasonal index by using the ratio between the actual demand with centered moving average calculated previously;
c. Creating a trend line that is adapted to deseasonalized data;
d. Conducting extrapolation of the data generated in the third step into the future;
e. Multiplying each deseasonalized forecast value with the seasonal index to obtain the final.
Simulation

Simulation is an imitation of a process or an operation or a system in the real world (Banks, J., 1998). Simulation is a methodology to conduct experiments using a model of a real system (Rangkuti, A., 2013). A model is a representation of an actual system. The model should be complex enough to answer the existing questions but shall not be too complex. The model used in the simulation can illustrate more details about the system, whether a model is complex or not, depending on the purpose of the simulation.

Simulation modeling and analysis aims to provide deep understanding on the operation of a system, to create an operating policy or resources to improve the performance of a system, to test a concept or a new system before it is implemented, and to get information without disturbing the actual system (Chung, CA, 2004).

RESEARCH METHODS

The study employed mixed methods of quantitative and qualitative approach. The method chosen was exploratory design, in which the study was started with qualitative approach followed with quantitative approach. Interpretations were made based on the results of the qualitative and quantitative stages.

The step was initiated with descriptive quantitative method, by the calculation of patient visits in each health center in Kemayoran using the data from daily patient visits in 2013; this was the forecasting method. Patients visits included in the forecasting were the ones served by GP on a weekday service hours from 7:30 AM to 12:00 PM. Patient visit data on which to base the calculation was the 60 latest data to predict visits during the next 5 days. Forecasting calculations were done using the method of multiplicative decomposition time series.

The step was continued with forecasting on the workload of GPs in general by multiplying the number of patient visits (the forecasting result) with the standard patient examination time (Ilyas, Y., 2013). Simulation on the distribution of workload of GPs was done with the technique of trial and error with a target of the smallest variation coefficient as the best simulation model. The execution of quantitative research data was done using Microsoft Excel™.

Qualitative stage was conducted through in-depth interviews to informants related to the issues on the policy implementation for the utilization of general practitioners at Kemayoran Community Health Center from January 2013 to June 2014, by adopting implementation process proposed by Cheema and Rondinelli.

RESULTS

In Kemayoran in 2013, there were eight CHCs, namely sub-district CHC Kemayoran, village CHC Kebon Kosong I, Utan Panjang, Harapan Mulia, SumurBatu, Cempaka Baru, and Kebon Kosong II. For areas with no CHC building, there were three moving CHCs, namely CHC Gunung Sahari Selatan, Bandara, and Kemayoran.

On weekdays, GPs at sub-district CHCs served nine clinics: general treatment, integrated management of Childhood Illness (IMCI), non-communicable diseases (NCDs), elderly (Elderly), sexually transmitted infections (STIs), methadone, voluntary counseling and testing (VCT), and 24-hour service. Some clinics are not open every day. In the village CHCs, GPs only served general treatment.

| CHCs | Annual Visits | Number of GPs |
|------|---------------|---------------|
| Kemayoran Sub-District (CHC KK I) | inside CHC: 77,063 | 11 |
| Harapan Mulia Village (CHC HM) | Outside CHC: 6,748 | 1 |
| Cempaka Baru Village (CHC CB) | 18,075 | 1 |
| Sutarut Baru Village (CHC SB) | 18,991 | 1 |
| Sertang Village (CHC SRD) | 14,570 | 1 |
| Utan Panjang Village (CHC UP) | 19,074 | 1 |
| Kebon Kosong I Village (CHC KK I) | 24,064 | 1 |
| Kebon Kosong II Village (CHC KK II) | 12,067 | 1 |

Source: CHC Sub-District Kemayoran "re-processed"

CHCs Kemayoran Workload and the Forecasting

From the data of daily visits at Kemayoran CHCs in 2013, there was 60 complete data. The data analyzed was on patient visits from August 12 to November 1, 2013. Calculation was done to the data on the workload of GPs in each health center and it has been revealed that there was imbalance workload among health centers in Kemayoran. The workload of GPs in the internal CHC buildings of Kemayoran sub-district was the lowest in all weekdays. The workload GPs in Utan Panjang CHC was the highest on Monday and Thursday. The workload of GPs in Kebon Kosong I was the highest on Tuesday, Wednesday, and Friday.

Workload

Then, forecasting on patient visits in each health center was done for the period of November 4 to November 8, 2013 using the multiplicative decomposition time series.

Table 2. The Results of Forecasting Analysis on Patient Visits at Each CHC in Kemayoran from November 4th to November 8th, 2013

| CHC | CHC KK I | CHC Sub-District |
|-----|---------|------------------|
| Tuesday/Nov 5, 13 | 117 | 103 |
| Wednesday/Nov 6, 13 | 90 | 77 |
| Thursday/Nov 7, 13 | 88 | 81 |
| Friday/Nov 8, 13 | 82 | 68 |

The forecasting results were validated by calculating the mean absolute percentage error (MAPE) between the actual data and the forecasting results.
Forecast Error = Actual Value – Forecast

\[ \text{MAPE} = \frac{\sum |e_i|}{n} \times 100 \]  

Note: \( e_i \) = forecast error
\( x_i \) = actual value
\( n \) = number of data

From the data on Table 3, the MAPE is 10.83% from November 4 to November 8, 2013; this means the forecasting is good showing insignificant differences between actual and the forecasting.

From the data on Table 4, the MAPE is 15.86% from November 4 to November 8, 2013; this means the forecasting is good showing insignificant differences between actual and the forecasting.

From the data on Table 5, the MAPE is 15.78% from November 4 to November 8, 2013; this means the forecasting is good showing insignificant differences between actual and the forecasting.

From the data on Table 6, the MAPE is 21.21% from November 4 to November 8, 2013; this means the forecasting is reasonable.

From the data on Table 7, the MAPE is 28.82% from November 4 to November 8, 2013; this means the forecasting is reasonable.

### GP Formation

The simulation or model will calculate workload data and propose how many GP should be available in particular facility. Currently, GP was distributed to provide services without any justification, simply regular circulation. Table 8 below shows how many GP available at certain sub district CHC, while table 9 presents how many patient should be taken care every day in these sub district CHC.

#### Table 8. Formation of GPs based on the Mechanism from Kemayoran Sub-District CHC's before Simulation

| Day       | CHC KK I | CHC UP | CHC HM | CHC SB | CHC CB | CHC SRD | CHC KKH | CHC KEC | JD | Average | Variation Coef. |
|-----------|----------|--------|--------|--------|--------|---------|---------|---------|----|---------|-----------------|
| Monday    | 2        | 1      | 1      | 1      | 1      | 1       | 1       | 1       | 8  |         |                 |
| Tuesday   | 1        | 1      | 1      | 1      | 1      | 1       | 1       | 1       | 9  |         |                 |
| Wednesday | 1        | 1      | 1      | 1      | 1      | 1       | 1       | 1       | 8  |         |                 |
| Thursday  | 2        | 1      | 1      | 1      | 1      | 1       | 1       | 1       | 10 |         |                 |
| Friday    | 1        | 1      | 1      | 1      | 1      | 1       | 1       | 1       | 8  |         |                 |

#### Table 9. Forecasting on Workload of GPs in Kemayoran and Coefficients of Variation from November 4 to November 8, 2013 based on Existing Condition

| Day       | CHC KKI | CHC UP | CHC HM | CHC SB | CHC CB | CHC SRD | CHC KKH | CHC KEC | JD | Average | Variation Coef. |
|-----------|---------|--------|--------|--------|--------|---------|---------|---------|----|---------|-----------------|
| Monday    | 283     | 405    | 390    | 370    | 281    | 280     | 280     | 280     | 64 | 172.50  | 287.11          |
| Tuesday   | 450     | 320    | 360    | 335    | 220    | 220     | 175     | 220     | 45 | 211.63  | 259.72          |
| Wednesday | 440     | 315    | 325    | 285    | 260    | 250     | 180     | 250     | 51 | 114.27  | 260.70          |
| Thursday  | 220     | 325    | 305    | 290    | 215    | 250     | 165     | 250     | 40 | 92.10   | 226.19          |
| Friday    | 410     | 315    | 260    | 310    | 210    | 195     | 140     | 195     | 45 | 114.38  | 235.31          |

Note: The simulation or model will calculate workload data and propose how many GP should be available in particular facility. Currently, GP was distributed to provide services without any justification, simply regular circulation. Table 8 below shows how many GP available at certain sub district CHC, while table 9 presents how many patient should be taken care every day in these sub district CHC.
Simulation on distribution of GPs was then made based on balanced workload by using trial and error technique. Constraint was calculated in which the number of GPs in sub-district CHCs was five, as there were more clinics to serve in sub-district CHCs.

In terms of how the relationship among organizations affects CHC policy toward HR formation, the interview revealed that there has been lack of common understanding between CHC and the sub district or village health centers about reasonable proportion of the number of civil servant versus non civil servant recruited. The division of authority is clear, that sub-district health centers have the authority to manage their human resources covering sub-district health centers and village health centers. In addition, problems are also including poor planning process indicating lack of communication inappropriate goal setting, an absences of HR placement, monitoring standards.

Resource availability point of view seems restrained. Government of Jakarta has the capability to provide adequate budget and enough political support from the central and local government.

While capacity of the implementing agency remained inadequate which may turn into serious difficulties if not recover in this coming short terms. Problems for HR in CHC mostly includes limited number of GP to cover higher number of visits during working days (no substitution when a GP is unable to perform the task); less trainings; and double tasks of some GPs—as a doctor who is responsible for providing services while performing as a Head of CHC. CHCs of Kemayoran sub-district, afterall, should take significant action in order to anticipate growing number of demand. Management needs to set aside managerial weaknesses and implements strategic actions such as, provides training for GP and other staffs, improve quality of leadership, and communication. In doing so, CHCs Kemayoran should arrange HR formation plan in accordance with CHCs work load to avoid discrepancies of workload between GPs at sub-district district health centers and village health center.

**DISCUSSION**

Based on the existing data, there is imbalance proportion of GP workload at sub-district CHCs and GPs at village CHCs during service hours from 07:30 AM to 12:00 PM. Simulation model is conducted in an effort to proportionally distribute GPs at CHCs in Kemayoran. This model can be used as a decision support tool at the operational level.

While, other variables which may affect the services exist, for example environmental conditions. The target groups are not involved in the planning of GPs needs resulting in different description of the activities of GPs. In the literature, it is stated that with the involvement of all parties will result in stronger planning and proposals generated will even better (Burby, RJ, 2003).²⁰

At the time of the study, shortage of GPs happened. However, by adopting one of the principles of management of using limited resources as efficiently as possible, then each sector of the business will be

### Table 10: Formation of GPs in Kemayoran Sub-District CHCs based on Forecasting of Workload Balance Variation from November 4 to November 8, 2013

| Day/Date       | CHC KKI | CHC UP | CHC HM | CHC SB | CHC CB | CHC SKD | CHC KK II | CHC Sub-District |
|----------------|---------|--------|--------|--------|--------|---------|-----------|-----------------|
| Monday/Nov 4, 13 | 2       | 2      | 2      | 1      | 1      | 1       | 1         | 5               |
| Tuesday/Nov 5, 13 | 2       | 2      | 2      | 1      | 1      | 1       | 1         | 5               |
| Wednesday/Nov 6, 13 | 2      | 2      | 1      | 1      | 1      | 1       | 1         | 5               |
| Thursday/Nov 7, 13 | 2      | 2      | 1      | 1      | 1      | 1       | 1         | 5               |
| Friday/Nov 8, 13 | 2      | 1      | 1      | 1      | 1      | 1       | 1         | 5               |

### Table 11: Forecasting Each GP Workload in Each CHC and Coefficients of Variation from November 4 to November 8, 2013 after Simulation

| Day      | CHC KKI | CHC UP | CHC HM | CHC SB | CHC CB | CHC SKD | CHC KK II | CHC Sub-District |
|----------|---------|--------|--------|--------|--------|---------|-----------|-----------------|
| Monday   | 295     | 203    | 195    | 185    | 295    | 280     |           |                 |
| Tuesday  | 225     | 160    | 150    | 168    | 235    | 220     |           |                 |
| Wednesday| 220     | 158    | 163    | 285    | 260    | 230     |           |                 |
| Thursday | 147     | 163    | 153    | 145    | 215    | 125     |           |                 |
| Friday   | 205     | 158    | 260    | 155    | 210    | 195     |           |                 |

**Utilization of GP at CHC in Kemayoran**

With regard to have more information on the GP formation policy from other sources, this study interview some informants as well as observe the organization to have better understanding on the implementation of the policy. Variables which are searched includes environmental condition, relationship among organization, resource availability as well as the capacity of the organization.

Pergub No. 4, 2011 is not aligned with the existing policy implemented these days in which the utilization of GPs is based on Job analysis and workload analysis. The purpose of the policy is for structuring human resources in order to obtain appropriate human resources in terms of quantity, quality, composition, and proportional distribution (Regulation of the Head of State Personnel Agency No. 37 of 2011). So far, calculation of HR needs at CHCs in Jakarta based on work analysis and workload analysis is only up to the level of sub-district health centers. The formation of human resources for village health centers must be put into the formation of human resources at sub-district health centers as the parent organization.

According to Pergub No. 4 Tahun 2011³, The CHC adopts a hierarchical structure where the village health centers are under the coordination of sub-district health centers. Up to June 2014, the number of GPs in Kemayoran sub-district health centers was still insufficient; yet, in the future, there will be additional candidates of civil servants as GPs as many as eight people.

### Table 11: Forecasting Each GP Workload in Each CHC and Coefficients of Variation from November 4 to November 8, 2013 after Simulation

| Day      | CHC KKI | CHC UP | CHC HM | CHC SB | CHC CB | CHC SKD | CHC KK II | CHC Sub-District |
|----------|---------|--------|--------|--------|--------|---------|-----------|-----------------|
| Monday   | 295     | 203    | 195    | 185    | 295    | 280     |           |                 |
| Tuesday  | 225     | 160    | 150    | 168    | 235    | 220     |           |                 |
| Wednesday| 220     | 158    | 163    | 285    | 260    | 230     |           |                 |
| Thursday | 147     | 163    | 153    | 145    | 215    | 125     |           |                 |
| Friday   | 205     | 158    | 260    | 155    | 210    | 195     |           |                 |
able to achieve success (Singla, RK, 2010). Thus, the key to overcome the problem is to deal with limitations of human resources.

In terms of the relationship among organization, there seems to be no standards on placement and monitoring of GPs. Therefore, this raises the diverse interpretations of the implementing agencies. The purpose of formation of GPs is not comprehensively socialized to the target group.

In terms of organizational resources, there has not been any constraint in terms of financial and political support from the national and local government. Organizations can achieve success in implementation, as they show positive and supportive environment, management support for innovation, and availability of financial resources and orientation to learning (Klein, KJ, & Knight, AP, 2005). Although management capabilities of organizations do not directly affect the performance, successful implementation innovation has a positive impact on organizational performance (Gresham, TM, 1999).

CONCLUSION

a. The formation of GPs according to Governor Regulation No. 4 Year 2011 is not in line with the existing policy which refers to work analysis and workload analysis.

b. There is an imbalance workload between GPs in village CHs and sub-district CHCs.

c. Environmental conditions describes that organizational structure adopts hierarchical structure in which village CHCs are under the coordination of sub-district CHCs. There is no involvement of target groups to determine the formation of GPs at CHCs making few descriptions of activities in the planning of GPs needs do not correspond with the reality; the number of GPs today is not sufficient, if it refers to the planning of GPs needs in Kemayoran sub-district CHCs.

d. In terms of relationship among organizations, the target GPs formation and the division of authority is quite clear from the level of the Department of Health up to the level of sub-district CHCs. There has been no standard on the placement of GPs to the village level. Monitoring standard does not exist. Communication among organizations is not good enough, mainly related to report on employment data. Socialization about the purpose of formation is not fully understood by the implementing agencies.

e. Organizational resources are adequate both financially and in terms of central and local government support.

f. In terms of characteristics and capabilities of Kemayoran sub-district health centers, work ethics and culture has been well developed, where internal communication, leadership and commitment of officers has been running well. However, HR management capabilities at Kemayoran sub-district CHCs are not good enough and management should be made more transparent and flexible. There needs to be a tool to assist management in distributing GPs in Kemayoran. GPs that also play the role as Head of CHC violate the rule set up in the Governor Regulation No. 4 Year 2011. Policy on GPs formation has not been socialized well to the target group.

g. The system of GPs assignment in Kemayoran CHCs is not following the existing regulation, resulting in an imbalance of the workload of GPs at sub-district CHCs and village CHCs. Assignment system shall be made based on the simulation model proposed as a recommendation in this study.

SUGGESTIONS

a. Revision on the Governor Regulation No. 4 Year 2011 on formation of GPs at CHCs must be done.

b. GPs must be involved in setting up formation of GPs at CHCs, such as in surveys on the activities of GPs and patient examination time.

c. Standardization on the placement of GPs up to village level must be made based on the number of visits.

d. A monitoring standard must be made through employee data collection related to the number of human resources (civil servants and non-civil servants) regularly once in every 6 months.

e. Communication among organizations and socialization on the objectives of the policy (GPs formation) must be improved, and the information must be delivered to sub-district CHCs.

f. There is a need for human resource management training for CHCs staff.

h. GPs must be functioned as they should be, that is to serve patients.

i. The use of simulation model on the distribution of GPs at CHCs in Kemayoran is done by balancing workload forecasting as a tool to support the policy at the operational level.

j. There is a need to integrate data input on daily patient visits at the village CHCs and sub-district CHC online.

k. Officers must be trained to perform data input and to operate the simulation model.

l. Further researchers are suggested to forecast patient visits by using other time series methods. Thus, the models can be compared with the lowest MAPE value as the best forecasting models. To adopt a range of variables that can affect the number of patient visits, further investigation on all the factors that influence patient visit must be done. Once it is done, forecasting for multiple variables, by adopting the method of multiple
regression, can be performed. The simulation model can be developed further for long-term human resource planning by making modifications.

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