Exploring Possible Open Data Opportunities in Maternal Health and Child Care in the Philippines

Michelle Renee D. Ching and Sherwin E. Ona

Abstract—Maternal Health and Child Care (MHCC) concerns have figured prominently in both international and local health initiatives. However, there are numerous challenges that beset MHCC, one of which is the apparent mismatch between the services being implemented and community needs.

In the Philippines, despite the increase in public health allocations, indicators have shown an increase in maternal deaths and teenage pregnancies. These have also resulted in the Philippines missing its Millennium Development Goals (MDG) on MHCC. These realities point to the need to rethink the current approaches with the intention of addressing the mismatch and increase the efficacy of MHCC programs.

This paper explores the existing literature on MHCC practices and Open Data (OD) techniques. In particular, the paper will present results collected from City of Sta. Rosa Province of Laguna on maternal practices and possible causes which hinders the fulfillment of Philippines MDG targets and implications of open data to the local community health practices.

Index Terms—Information and communications technology, local government units, maternal health and child care, open data.

I. INTRODUCTION

Philippines has been addressing its Maternal Health and Child Care (MHCC) challenges for the past decade and 2 of its Millennium Development Goals (MDG) are targeting it [1], [2]. It has been continuously increasing its public health allocation [3] and devolving the public health programs to the local communities [4], [5]. However, the maternal and child mortality rates are still far from achieving its MDG on MHCC?

A. Background of the Study

According to a study by the Philippine Health Information Network, this is due to the inefficient and ineffective health and management information system that points to the informatics-related problems of Pons and Schwefel, Jayasuriya, and Marcelo [4], [10]. Hence, based on World Health Organization (WHO), the informatics-related problems and participatory factors are vital in understanding the MHCC challenges [11].

In addressing the continuous increase of maternal and child mortality rates, the Philippine government provides various public health programs [12] and devised a comprehensive reform program in health, which are the Universal Health Care of the Aquino Health Agenda: National Health Plan (AHA) [13], Fourmula One for Health (F1), and the Health Sector Reform Agenda [7]. These were formulated to achieve the 8 MDG targets.

Our paper presents the potentials of Open Data (OD), participation, and the possible avenues for ICT use to overcome the informatics-related problems [11], [14]. By examining the MHCC practices of City of Sta. Rosa Province of Laguna, our paper highlights the existence of datasets and its current use.

B. Overview of Related Literatures

What is OD and how will it be a tool to increase citizen participation and government transparency to be able for developing countries, such as the Philippines, improve its public services, especially on MHCC?

OD is a concept of making data available for public use, reuse, and redistribution without any restrictions [11], [15] and the data to be published should be raw [11]. Open Government Data (OGD) is under this concept, where the data comes from the government-produced information that is in a standard and reusable format [11], [16]. This entails citizens to manipulate the data available and come up with newer information that can help them and the government on delivering and formulating public services more efficiently and effectively. Hence, discussion / concept of OD is often linked to good governance especially in increasing citizen participation, and encouraging the government to be more transparent and be accountable [11], [15].

Examples of OD in health are vest in developed counties, such as the UK, which started to adopt the idea of openness since 2007 [3] and had joined the Open Government Partnership (OGP) on September 2011 [17], where one of their plans is to publish the Success Rates of H eart Surgeries from their hospitals [1] despite the myth that surgeons will be more likely to refuse risky cases [18]. The Society of Cardiothoracic Surgery published the 400,000 operations data and citizens were able to compare the factors on the skills of the surgeons and his unit as well as the health of his previous patients and the death rate of Coronary Heart Surgery and Aortic Valve Replacement had improved even though the patients’ conditions are becoming more complex [18]. Furthermore, in China, a study conducted by Min He, they’ve given an open-access about their doctors and nurses data. Their findings generated new information that there are few health policies for doctors and nurses concluding that there are more of them have poor health stressing the need for the attention of the policy-makers [19].

There are provisions for government transparency, citizen
participation, and ICT innovation that can be intertwined in these initiatives. Because of this, exploring OD opportunities in addressing the informatics-related problems of the Philippine government should be done.

C. Objectives and Scope of the Study

The objective of this study is to uncover OD opportunities in MHCC. Our study examined the existing MHCC practices in City of Sta. Rosa Province of Laguna and focused on how datasets are used to support these practices. In line with the concept of OD, these datasets were studied in relation to their format / type, accessibility, and its storage.

II. METHODOLOGY

As part of the research study of the Center of ICT for Development (CITe4D) of De La Salle University on OD in MHCC, the area of City of Sta. Rosa Province of Laguna has been selected as part of the 4 areas to be studied, which are Bacolod, Iligan, and Ilo-ilo.

This research is an ongoing process and focused on the community-based health center, locally known as the barangay health center. Key informant interview sessions were done with center’s midwife. Direct observations on women availing the pre-natal check-ups were conducted together with the collection of forms and other related documents. Documentation of the interviews and direct observations were made through photos, videos, and audio records.

III. FINDINGS

The tables (Table I and Table II) below summarize how public health programs are being dispensed to local citizens.

<table>
<thead>
<tr>
<th>Day(s)</th>
<th>Health Program</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mondays, Tuesdays,</td>
<td>Morbid</td>
<td>A doctor is stationed every Tuesday.</td>
</tr>
<tr>
<td>and Fridays</td>
<td>Morbid</td>
<td>Sick patients are accommodated in the afternoon.</td>
</tr>
<tr>
<td>Wednesdays</td>
<td>Well Baby - Child Immunization</td>
<td></td>
</tr>
<tr>
<td>Thursdays</td>
<td>Pre-Natal</td>
<td></td>
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</tbody>
</table>

Although, not all of the Barangay Health Stations (BHS) have doctors on duty every Monday, Tuesday, and Friday.

<table>
<thead>
<tr>
<th>Phases</th>
<th>Activity</th>
<th>Form</th>
</tr>
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<tbody>
<tr>
<td>Targeting and Service Delivery</td>
<td>Spot Mapping and Service Delivery</td>
<td>Diagrams and Boards</td>
</tr>
<tr>
<td></td>
<td>Catchment Area</td>
<td>Pre-Natal Record, Monthly</td>
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<tr>
<td></td>
<td>Visitation,</td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>Information</td>
<td>Monitoring for Child Care.</td>
</tr>
<tr>
<td></td>
<td>Gathering through</td>
<td>Social Networks, and creation of Case Records</td>
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<td>Social Networks,</td>
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<td></td>
<td>Case Records</td>
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<tr>
<td></td>
<td>Coordination,</td>
<td></td>
</tr>
<tr>
<td>Service Delivery</td>
<td>Validation, and</td>
<td>To be explored</td>
</tr>
<tr>
<td></td>
<td>Consolidation</td>
<td></td>
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</table>

The schedule of centers is followed nationwide. However, some sick health seekers go to the BHS even if it’s not the schedule. The midwives accommodate them after they have accomplished their scheduled task.

On health dissemination phases, health workers do a spot mapping wherein they visit the different areas of their barangay to look for patients such as pregnant women and children. Fig. 1 is an example of a spot map.

Once they identified their patients they inform them to come by the center so that they can receive the necessary health services. Monitoring happens when patients had been distinguished and house-to-house visits are done if they are not availing of their follow-up check-ups and their cases are being recorded for compliance of submitting the Filed Health Service Information System (FHSIS) Annual Report to the Department of Health (DOH). These patients carry with them their public health program record, as shown in Fig. 2 and Fig. 3 that is presented to the midwife upon check-up. In addition to this, social networks play a large role for getting information from local citizens.

Furthermore, service evaluation is conducted through
meetings, spot visits, and special programs such as medical missions and feeding programs. Validation occurs through Random Coverage Assessment and Target Client List (TCL) that are used in the center for record keeping, as shown in Fig. 4 and Fig. 5. Moreover, consolidation is done through center reports and supply inventory.

Issues raised during the interviews and direct observations were inadequacy of medicines such as vitamins and supplements for pregnant women, pregnant women still avail hilot or home birthing as an alternative for getting health services, automating the record keeping is a challenge due to limited computer skills of the Barangay Health Workers (BHWs), transients or transfers to barangays are sometimes neglected of their right to avail the public health programs due to the reason that they were not counted as residents of the barangay, which means they were not considered on the distribution of medical supplies, transportation is also a problem because it’s expensive, especially to those who resides in the relocation, and lastly, health seekers are intimidated of the midwife when they are being lectured on the do’s and don’ts.

Aside from these, there is an existing process being done in the centers on collecting information, thus leading to the creation of datasets. Such datasets are used for the purpose of FHSIS Annual Report for DOH, which is generated from the TCL that is for statistical purposes only and the method of collecting and storing of these information varies depending on the strategy of the midwife but are all in physical form, as shown in Fig. 6 and Fig. 7. There are cases in which they encounter problems on retrieving information of the health seekers, which are caused by inadequate skills on data and information management [20]. Furthermore, once the FHSIS Annual Report had been submitted to DOH, the data used were no longer pulled out and reused.

<table>
<thead>
<tr>
<th>Datasets</th>
<th>Contents</th>
<th>Nature</th>
<th>Open Data Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Record Booklet</td>
<td>Patient’s Personal Information</td>
<td>Physical</td>
<td>Machine-Readable Format / Open Format</td>
</tr>
<tr>
<td>Log Sheet / Record Book</td>
<td>Patient’s Personal Information</td>
<td>Physical</td>
<td>Machine-Readable Format / Open Format</td>
</tr>
<tr>
<td>TCL</td>
<td>Patient’s Personal Information</td>
<td>Physical</td>
<td>Machine-Readable Format / Open Format</td>
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</table>

Based on the literatures and findings, there are existing information gaps [10], where health seekers have limited knowledge on the public health programs [21], limited participation of the Civil Societies in local planning due to the information are not updated and late submission of reports [22], there is inadequate skills on data and information management [20], and government focusing only on the supply side [20], causing underutilization of data [10] and poorly integrated health information system [4].

As shown from the Table III above, there is a high potential of opportunity for OD in public health for better provision of services through ICT wherein it can collate all the datasets produced by the health workers, monitor demands and supplies [20], and make it available for everyone to come up with new information and help in decision-making processes provided that the datasets are in a machine-readable format such as CSV and that it can be accessed for free by anyone.
IV. RECOMMENDATIONS

Future study on the validation of the initial findings in City of Sta. Rosa Province of Laguna and replication of the research study on different areas in the Philippines to be able to find out patterns for OD opportunities, explore possible ICT tools that can be used to harness datasets, and explore possible Capacity Building for rural health.

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REFERENCES


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