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Strengthening of the Contraceptive Logistic Management Information System in Jamaica

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Abstract: **The aim of this paper is to highlight the current status of the Contraceptive Logistics Management Information System (CLMIS) as it relates to the prevalence of contraceptive stock-outs in Jamaica. Contraceptive stock-outs have the potential to reverse, hinder and stagnate the progress of a country's socio-economic development. For the purpose of this survey, 50 survey sites were selected using stratified random sampling method. Data was collected by the National Family Planning Board (NFPB) through a 37 question Logistics Indicators Assessment Tool (LIAT). Interviews were conducted with the point person managing contraceptives at each facility. The findings points to a 17% stock-out on the day of the survey. This was mainly attributed to stock-out of the Male Condom. For the six months period leading up to the time of the survey, stock-outs of the three main accepted contraceptive methods (Depo-Provera, Microgynon and the Government issued Male Condom) were noted. The findings from the survey, along with subsequent clinic visits and monitoring encouraged initiatives for capacity building in contraceptive forecasting methodologies and techniques, adjustments to record-keeping materials and others which led to the strengthening of the CLMIS.**

Keywords: **National Family Planning Board, Contraceptive Stock-outs, Contraceptive Logistics Management Information System, Contraceptive Methods.**

1. INTRODUCTION

Millions of lives have been saved worldwide owing to the use of family planning methods. In essence, access to family planning methods have helped to reduce incidences of unintended pregnancies, maternal and child mortality and unsafe abortion in a significant way. According to the World Health Organization (2014), contraceptive use prevented 218 million unintended pregnancies in developing countries in 2012, and averted 55 million unplanned births, 138 million abortions (of which 40 million were unsafe), 25 million miscarriages and 118,000 maternal deaths.

A key way of ensuring that women have access to contraceptive supply is to reduce the prevalence of contraceptive stock-outs. This is referred to as the temporary unavailability of contraceptive commodities (or supplies) at a health facility or store where the method or services are offered. In order to address this problem or any other related sexual and reproductive health issues, some countries have assigned a particular agency or department to oversee and manage matters relating to Sexual and Reproductive Health. In the case of Jamaica, such agency is the Jamaica National Family Planning Board, which is a Statutory Body under the Ministry of Health. The key mandate of the NFPB is specifically in respect to population planning and HIV Prevention.

This agency, since its inception in 1967, also emphasised its commitment to ensuring a functioning contraceptive logistic management system that guarantees that every public service delivery point and its (NFPB) warehouse maintain an adequate supply of the necessary contraceptives to fulfill client needs, and at the same time, enable all Jamaicans to achieve optimum sexual health in an environment where their rights are respected and protected" (The NFPB's Vision Statement).

Over the past five (5) years, the NFPB has taken special note of the gaps in contraceptive supply and in an effort to address these issues, completed an assessment of the Contraceptives Logistics Management Information System (CLMIS) using the Logistics Indicator Assessment Tool (LIAT) in October 2013 and 2015.

Within the sphere of system strengthening continuity, the NFPB completed its second CLMIS in December 2015, and has subsequently made robust adjustment to the system island-wide, as per the findings, monitoring and reporting, in order to enable improvement.

2. LITERATURE REVIEW

Various schools of thought contended that the most commonly accepted contraceptive methods were the Male Condom, Oral Contraceptive Pills and the Injectable (depo provera). This resulted in reduction in incidences of unintended and unplanned pregnancies/births (218 million and 55 million respectively), unsafe abortion (40 million), miscarriages (25 million) and maternal deaths (118,000) (World Health Organisation, 2014).

In an effort to determine adequate access to, versus stock-out of contraceptive methods, surveys tend to assess the latter on the day of the survey and the six month period prior to the survey. According to the Nepal Development Research Institute (2014), on the day of the survey, 22.1% of health post (HP) had stock-out of contraceptives (mostly implants and IUD) while more than 90% of sub-health post (SHP), primary healthcare center (PHCC) and hospitals had no-stock outs of contraceptives that they were regularly offering. Likewise during the last six months preceding the survey while 80.6% of SHP, 90% of PHCCs and 84.6% of hospitals reported having no stock-outs, only 73.5% reported the same.

Another facility-based survey revealed that the percentage of service delivery points (SDPs) with stock-out of a modern contraceptive method at least for one day in the last six months was 93.1% (Ministry of Health and Sports Mongolia, 2015). The author further postulated that the large proportion of the facilities were stocked out of implants (52.1% of secondary and tertiary facilities), injectables (22.9%), oral pills (19%), male condoms (19%) and IUDs (16.1%).

This is why countries deem it imperative to leave no room for contraceptive stock-out, and so encourage that the six rights of its logistics system be obtained. These are “ensuring that the right goods, in the right quantities, in the right condition, are delivered to the right place, at the right time, for the right cost” (United States Agency for International Development, 2009, p. 3), as these steps provide scope for strengthening the contraceptive logistic system.

There are implications attached to contraceptive stock-out. According to the literature, some of these are stress or frustration on the client, increase in cost, unplanned and unwanted pregnancies, lower demand for provider service (Grindlay, Turyakira, Kyamwanga, Nickerson, & Blanchard, 2016); and the increased propensity for a state of powerless that is heavily influenced by cultural dictates, especially in the case of adolescent motherhood (Crawford, 2018). Of note too is that where pregnancies and/or births are unplanned, this is likely to cause conflict and failed relationships; persons are also likely to become unhappy, and could possibly develop mental health issues (Sonfield, Hasstedt, Kavanaugh & Anderson, 2013), as well as increase the potential for contracting HIV, and increase in fertility rate. According to the Joint United Nations Program on HIV/AIDS (2015), In Jamaica, eight in 10 people living with HIV are aware of their HIV status; and new HIV infections have decreased by 50% since 2000. In the past decade, the country has achieved a 46% decline in AIDS-related deaths and an 8% decline in the rate of HIV transmission from mothers living with HIV to their babies. In terms of total fertility rate (per 1,000 women), Jamaica continues to experience a decline, as stipulated by the Reproductive Health Surveys, which reflected 2.8 in 1997, 2.5 in 2002, and 2.4 in 2008 (National Family Planning Board, 2010). Of note, however is that majority of the households that are at the bottom of the social class hierarchy, tend to have large family size (Jamaica Survey of Living Condition 2015).

On the other hand, where there are adequate access to contraceptives, some key benefits are gender equality, reduction in poverty, “healthier and more productive lives of women, enjoyment of sexual reproductive health and rights”, decrease in unsafe abortion, reduction in maternal mortality, prevention of maternal morbidity, reduction in long-term illness and disability from complicated pregnancy and childbirth, reduction in economic strain on families and burden on the health care system, boost self-esteem of women and girls, “boost women’s status and increase their decision-making power within their households”, and create education and employment opportunities for both women and girls (Centre for Reproductive Rights, 2009).

In order for any country to experience the aforementioned benefits, they would need to "develop a high quality national policy on sexual and reproductive health, in cooperation with plural civil society organizations, providing comprehensive information concerning effective and responsible methods of family planning, ensuring equal access to all forms of high quality contraceptive methods; and ensure that people living in poverty have better access to reproductive and sexual health services and, in particular, to offer them the choice of contraception" (Resolution on Sexual and Reproductive Health, Eur. Parl. Doc. P5_TA(2002)0359, points 2 and 5, cited in Centre for Reproductive Rights, 2009). Besides, in considering the Supreme Court (United States of America) case of Planned Parenthood of Southeastern Pa. versus Robert P. Casey et al of 1992, the court, in its ruling stated, "the ability of women to participate equally in the economic and social life of the Nation has been facilitated by their ability to control their reproductive lives" (Cornell University Law School, n.d.).

3. METHODOLOGY

The CLMIS assessment was carried out using the Logistics Indicators Assessment Tool (LIAT), an instrument that was developed by the United States Agency for International Development (USAID), but tailored within the context of the NFPB's CLMIS Survey. The LIAT has been used to monitor the performance of certain processes involved in the logistics management of health commodities over time, to evaluate certain outcomes of logistics interventions, to provide ongoing supervision and performance monitoring, and to monitor commodity availability.

Sampling Framework

There are four regional health authorities (RHAs) across the 14 parishes in Jamaica. The RHAs are, the Southern, Southeast, Northeast and Western. The Southern Region comprises parishes such as Clarendon, Manchester and St. Elizabeth. For the Southeast Region, it is St. Thomas, Kingston, St. Andrew and St. Catherine. The composition of Northeast Region depicts Portland, St. Mary and St. Ann; while the Western Region comprises Trelawny, St. James, Westmoreland and Hanover. The initial sampling strategy used a recommended ratio of 15% of total applicable service delivery point facilities within these RHAs. While the health care facilities that directly provides family planning services were factored in, the family planning warehouses and suppliers were omitted from this survey exercise. Out of 311 health care facilities, 50 were selected as initial survey sites with input from public health nurses, regional nursing supervisors and other regional representatives. Using stratified random sampling, facilities of each type identified were selected for survey in each region. Due to the unavailability of some sites, a total of 47 of the 50 selected sites were surveyed. The surveyed sites represented 12 Type one, 4 Type two, 30 Type three and 1 Type seven health facilities. Within the context of Jamaica's Public Health Care System, Clinic Types are categories in Figure 1, according to the Ministry of Health (2016) and the Western Regional Health Authority (2018).

Figure 1. Clinic Type Definition

Type 7	This facility offers family planning services only.
Type 3	This is the headquarters of the Health District and may serve a population of 20,000 people through a number of types 1 and 2 health centers.
Type 2	This health centre provides a higher level of expertise than a Type 1 facility and is equipped with a resident staff nurse who is able to provide simple treatment for common illnesses. These are referred to as community health centres.
Type 1	These are the smallest units that provide services that are closely integrated to the community. It is staffed by one midwife and a community health aide who deliver basic maternal and child health, nutrition, family planning and immunization services. They are referred to as community health centres.

Data Collection

Data was collected by trained NFPB staff using the LIAT. Regional and parish representatives assisted NFPB field staff sporadically throughout the assessment period, so as to ensure facility access and to ease the data collection process. Prior to data collection, field staff comprising regional or parish healthcare providers and the NFPB team participated in a one-day training course on the use of the assessment tool and the objectives of the survey. Participants received a comprehensive set of guidelines on the CLMIS, tips for data collection, interviewing techniques and a comprehensive

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review of the LIAT instrument, which was tailored to suit the NFPB needs. Field work consisted of eight (8) teams (two to three persons per team), two (2) teams per region, comprising mostly NFPB staff. Fieldwork was conducted over 2 weeks (14 days) during the month of December 2015.

In order to understand the availability of contraceptive methods at each facility, field workers reviewed stock books regarding the incidence and frequency of stock-outs and the average duration of those stock-outs over the six month period leading up to the survey.

Data Analysis Procedures

Data was analysed using the Statistical Package of the Social Sciences 22.0. The techniques used were cross tabulation and descriptive statistics including central tendencies and frequencies. The analysis was disaggregated by facility types in order to give further clarity of data results. The data were illustrated in pictorial representation of bars and charts. From the analysis, a comprehensive report was generated, and officially disseminated throughout the Regional Health Authorities among health care professionals. Feedback was garnered, which led to further initiation for the strengthening of the CLMIS, in terms of record keeping (adjustment to the Contraceptive Registers and Logbooks); capacity building (Contraceptive Forecasting Training and Evaluation); and overall contraceptive management and planning.

Official dissemination of the survey was carried out with health care professionals and technocrats throughout the four RHAs, and the relevant recommendations from both the dissemination and the clinic site visits were taken into consideration. Some of these were the cruciality of adjusting the Contraceptive Registers and Logbooks so as to improve quality reporting; and the need for capacity building of health care professionals in contraceptive forecasting methodologies, followed by subsequent evaluation.

Note that there was manual count and recording of the qualitative component of the information captured during the official dissemination of the survey. This has been articulated accordingly in the Result section of this scholarly piece of work.

4. RESULTS

A. Store and Facility Information

A total of 47 facilities (all service delivery points) were visited during this assessment featuring health centres. From the initial sampling list of facilities, fewer than five (5) replacement facilities were selected during the data collection process due to the unavailability of some initially selected facilities. Each replacement site mirrored the original facility in parish and facility type to ensure accurate representation from the initial random sample. In all facilities, the contraceptive commodities being carried and assessed included Microgynon and/or another type of oral contraceptive pill (OCP), Jadelle contraceptive implants, Male Condoms identified by the categories 'Condoms-Family Planning Clients', 'Condoms HIV/STI Clients', Copper-T IUCDs and Depo-Provera or another type of injectable contraceptive.

All the four regions stocked Microgynon, Male Condoms and Depo Provera - the latter being the most popular hormonal method issued in each region, followed by Microgynon. Ten per cent of facilities in Southern Regional Health Authority (SRHA) stocked the IUCD. The Northeast Regional Health Authority (NERHA) was the only region carried the Jadelle contraceptive implant. It was noted in several facilities that methods in most cases were stocked based on availability, as stock was not usually representative of what was ordered (Figure 2).

Figure 2. Percentage of Facilities Managing Various Contraceptive Commodities by Region

PERCENTAGE OF METHOD MANAGED BY HEALTH REGIONS				
METHOD	SERHA	NERHA	SRHA	WRHA
Microgynon	100.0	100.0	100.0	100.0
OCP-Other	0.0	10.0	0.0	0.0
Jadelle	0.0	10.0	0.0	0.0
Condom-Family Planning	92.9	30.0	70.0	69.2
Condom-HIV/STI	21.4	60.0	50.0	15.4
IUCD	28.5	20.0	10.0	30.8
Depo-Provera	100.0	100.0	100.0	100.0
Other Injection	0.0	10.0	0.0	0.0

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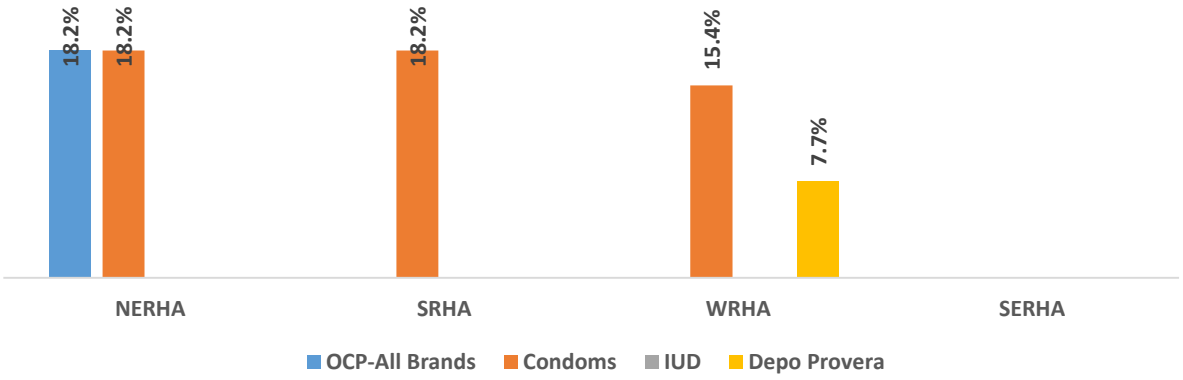
The survey found that the prevalence of stock-outs varied based on the different contraceptive method islandwide. Seventeen percent (17%) of facilities experienced a stock-out on the day of the visit. The Male Condom was the method most commonly reported as being out-of-stock on the day of the visit (11%) with the exception of the Southeast Region which reported no stock-outs. Stock-outs were also noted for the OCP (4.3%) and Depo-Provera (2%) contraceptive methods. Type 2 facilities (25%) had the highest reported stock-out on the day of the survey visit, followed by Type 3 clinics (16.7%).

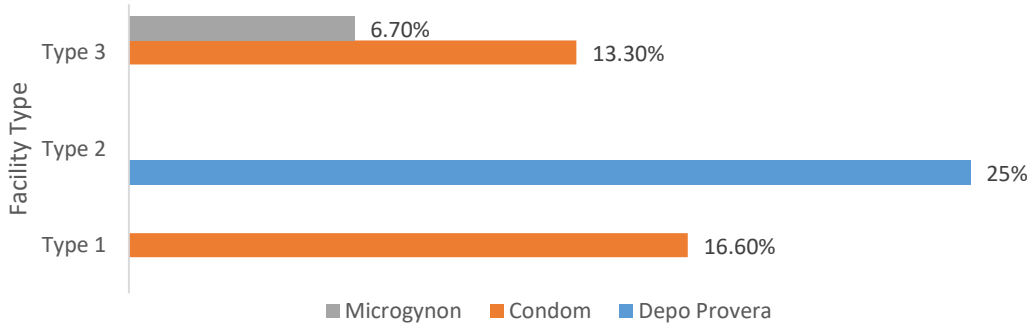
As seen in Figure 3, 18.2% of the facilities in NERHA were stocked out of both OCP and Male Condoms on the day of the survey, also 18.2% of the facilities in SRHA were stocked out of the Male Condom. In the Western Region, 15.4% of the facilities were stocked out of the Male Condom, and 7.7% of the facilities experienced stock-out of Depo-Provera.

Figure 3. Number of Facilities with Stock-out of Contraceptive Products on Day of Survey Visit by Region and Method



It was also important to examine the stock-out data by looking at method experiencing stock-out compared with facility type (1-7). According to Figure 4, Type 2 facilities were the only ones to have experienced a stock-out of Microgynon on the day of the survey. This also represents the highest frequency of stock-out when compared with the other facilities. Among Type 3 facilities, 6.7% and 13.3% of the facilities experienced a stock-out of Microgynon and the Male Condom respectively on the day. The Type 1 facilities that experienced stock-out of the Male Condom represented 16.6%.

Figure 4. Methods Experiencing Stock-out within Different Facility Types



To further understand the availability of contraceptive methods at each facility, field workers reviewed stock books regarding the incidence and frequency of stock-outs and the average duration of those stock-outs over the six month period leading up to the survey (July to November 2015).

Figure 5 shows the percentage of the facilities carrying a particular method and the percentage of those facilities that reported a stock-out for the six (6) months leading up to the time of the survey. All facilities carried the Microgynon and Depo-Provera contraceptives. Between those two methods, 30% and 34% of those facilities respectively reported a stock-out during the six months leading up to the time of the survey. The other notably methods were the silver packaged condoms (Government issued), and other colour packaged condoms (donor issued). Six months prior to the survey, there was 13% stock-out of the former, and 9% stock-out of the latter, as reported by the various facilities.

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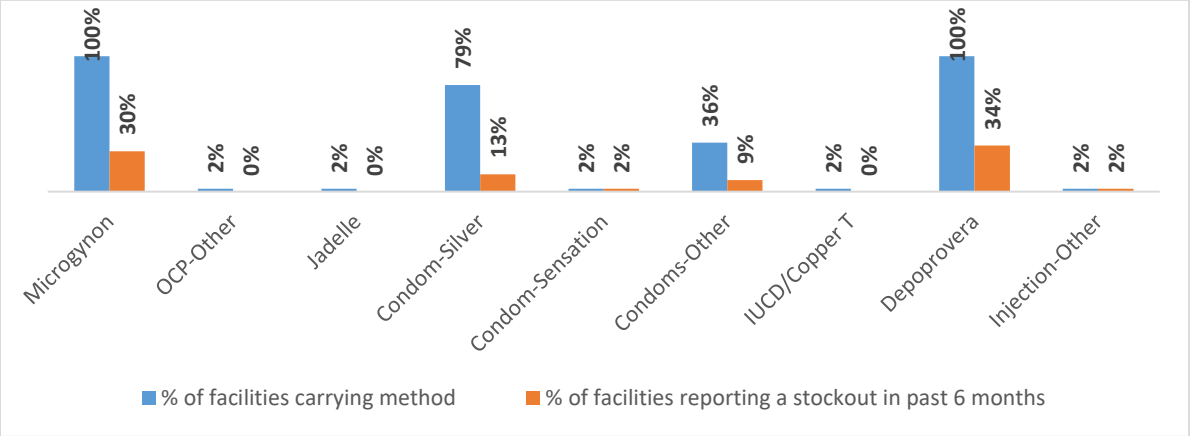
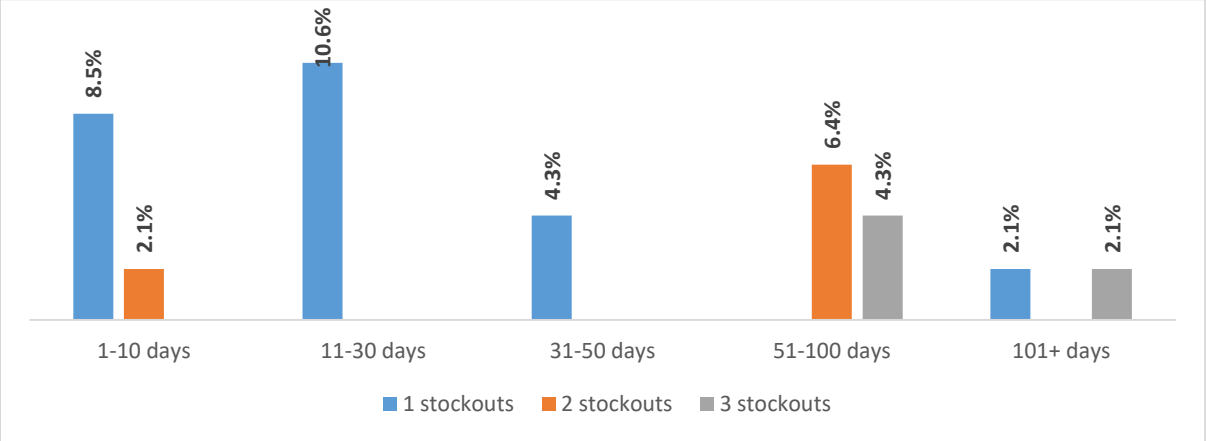
Figure 5. Methods Experiencing Stock-outs in Last 6 Months at All Facilities



As seen in Figure 6, the duration of stock-outs varied in the sense that 8.5% of facilities had a stock-out lasting between 1 to 10 days; 2.1% of the facilities had two (2) stock-outs lasting for the same time period, 10.6% of facilities had a stock-out lasting between 11 to 30 days, 4.3% of facilities had two (2) stock-outs lasting between 51 to 100 days and another 4.3% of facilities had three (3) stock-outs lasting for the same time period. For stock-outs lasting over 100 days, this was represented by 2.1% of facilities.

Figure 6. Number of Stock-outs and Days Lasting in Last 6 Months



B. Post-CLMIS Survey

Clinic site visits and reporting have been used as a monitoring mechanism throughout the RHAs – being part of the NFPB's Strategic Business and Operational Planning. It was revealed that when the clinic facilities experienced stock-out, clients expressed discomfort at having to choose an alternate contraceptive method. Take for instance, the absence of the depo provera, resulted in clients resorting to the pill, which they are likely to miss, hence the increased possibility of unplanned and unwanted pregnancies. The health care providers posited that there were times when the client became disgruntled at having to pay for an alternate method which they obtained from private facility, or becoming pregnant.

In taking into serious consideration, the importance of avoiding stock-out, more than 150 health care professionals were trained in the discipline of Contraceptive Forecasting Methodologies. This was executed by experts from the Monitoring, Evaluation and Research Unit of the National Family Board, who delivered the training, using the various forecasting techniques; namely, Qualitative Method (Delphi, Jury of Executive Opinion, Sales Force Composite, Consumer Market Survey); Time-Series Methods (Moving Average and Exponential Smoothing); and Causal Methods (Regression Analysis, and Multiple Regression).

The specific objectives of the training were to (a) provide an overview of forecasting and its importance to the efficient functioning of the Contraceptive Logistic Management System; (b) identify pertinent data sources for accurate foresasting; (c) highlight data process and collection procedures and the importance of accurate record-keeping; (d)

discuss current forecasting methodologies and their benefits and limitations; (e) and understand inventory control procedures and essential forecasting methodologies.

Response to the question as to whether these objectives were met was in the affirmative. This was evidenced by pre- and post-tests scores, as well as reports from clinic visit monitoring and feedback.

Approximately one year after the training, an evaluation was conducted in order to determine (a) the extent to which capacity was built; (b) applicability of knowledge to contraceptive management in the health centres; (c) the extent to which the application of contraceptive forecasting training resulted in the reduction of stock-out of contraceptives throughout the health care facilities. The Kirkpatrick Evaluation Model was used. This enabled measurement of the participant's reaction to gain understanding of the training; determine the level and amount of absorption of information with linkage to the training objectives; observance of participants behavior towards application of the information on the job; and analyse the extent to which the training had influenced the mode of operation at the facilities (Kirkpatrick & Kirkpatrick, 2015). The evaluation was very stimulating and entertaining, and like the training, Freire's (1970) Banking Concept Model was employed, reflective of democratic and dialogical modes of delivery within the context of the adult learner, as they were inclined to heighten the epistemological curiosity of learning, knowing and comprehension (Freire, 1970).

It was noted that while not all the four RHAs were on the same level regarding comprehension and application of forecasting methodologies and techniques, they all appreciated the various methodologies, and were putting same into affect at best. This resulted in improvement in the way the business of forecasting was being executed at both parish and regional levels, when compared with prior to the training, stringent monitoring and reporting.

C. The CLMIS System Strengthening

Overall improvement has been seen as an outcome regarding the strengthening of the CLMIS. This in regard to standardized record-keeping, data/reporting quality, standardization of forecasting, supervision/management (including ordering and storage), an understanding and appreciation of the various forecasting methodologies and techniques which were delivered during capacity building and monitoring sessions. The extent of the impact on the health care facilities is yet to be determined, as measurement of this nature takes time in the name of transparency.

5. DISCUSSION

Stock-outs of contraceptive could potentially reverse the gains made in the country's fight against HIV/AIDS, and increase in fertility rate, hence it is imperative to reduce such scope, so that Jamaica can continue on its trend of experiencing decline in AIDS-related deaths as indicated by the Joint United Nations Program on HIV/AIDS (2015) to be 46%.

Majority (41.6%) of the overall stock-outs were noted in Type 1 and Type 2 facilities. These facilities are located in small districts and communities across Jamaica. Most of the household in these communities are said to be at the bottom of the social class hierarchy and have larger family size when compared to non-rural communities (Jamaica Survey of Living Condition 2015). This finding brings to mind the literature which highlighted that adequate access to family planning could increase the potential for reducing poverty (Centre for Reproductive Rights, 2009), as well as reduces the female's scope for powerlessness within a culture that is not favourable to especially adolescent pregnancy (Crawford, 2018) .

From the literature, it is realized that the repercussion of long lasting contraceptive stock-out has the potential to reverse, hinder and stagnate the progress of a country's development, especially if close attention is not paid to the likely implications of limited or no access to contraceptive. The findings of this research showed that stock-out resulted in concerns shared by clients. These were cost regarding alternate method, resorting to method of least choice, and the possibility of unintended and unwanted pregnancies. This is not farfetched from the literature, which highlighted similar matters, and added that stress and mental health issues could also become an issue (Grindlay, et al 2016 & Sonfield, et al 2013).

6. CONCLUSION

The 2015 assessment of the Contraceptive Logistics Management Information System (CLMIS) in Jamaica confirmed that stock-out of contraceptive commodities was a weakness in the system. Widespread stock-outs were noted on the day of the survey and for the six (6) months prior to the survey. On the said day of the survey, stock-outs of the Male Condom

was most prevalent at Types 1 and 3 facilities, and for the six month leading up to the survey, there were considerable stock-outs of the three (3) most accepted contraceptive methods (condoms, pills and depo provera). The majority of the stock-outs in the six months leading up to the survey lasted for more than 10 days.

This led to serious consideration to tackle the issue by boosting initiatives such as clinic visits, monitoring and reporting, as part of the NFPB's Strategic Business and Operational Planning arrangements. This enabled strengthening of the Contraceptive Logistics Management Information System. The strategies that were put in place were capacity building, monitoring, evaluation and adjustments to boost quality record keeping, reporting and management.

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