# ENHANCING MOTIVATION OF FAMILY PLANNING SERVICE PROVIDERS

## AS A LEVER TO AVOID STOCK-OUTS AND INCREASE QUALITY OF SERVICE

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# SUMMARY

Good progress is being made towards ensuring universal access to family planning services, mainly through tackling logistic and financial barriers to service provision, building health worker capacity, and educating potential users.. However, stock-outs continue to jeopardize the quality of family planning services and hence the satisfaction of users. While guidelines and procedures are often in place, another crucial building block in optimizing supply management that is seldom considered is the human factor, in particular the degree to which health workers are motivated and feel responsible for monitoring supply and delivering quality services that meet users' needs and expectations. Poor motivation of health workers has been identified as an important problem by the Mozambican Ministry of Health. We therefore explored how and to what extent motivation can be optimized, and the impact this can have on avoiding stock-outs and improving service quality and client satisfaction.

Several activities were implemented during 10 months at 15 health facilities in Maputo Province (Manhiça and Marracuene districts), with the aim of monitoring and improving health workers' motivation and supply management of 6 family planning methods (microlut pill, microgynon pill, implant, IUD, depo-provera and female condom):

1. Monthly audits - In all 15 health facilities, data from supply registers (stock cards) were collected and stock-counts were carried out for the 6 contraceptives;  as such these audits could be perceived as quality controls of their supply management.
   The information was also used to assign credits, under a system that was set up to evaluate the health centres' performance, enabling us to monitor changes in supply management during the entire intervention period: health centres earned credits by having a stock card for all 6 contraceptives, by having no errors in the calculations made on the card, and by not reporting a stock-out during the month.

2. Monthly evaluation reports - Among 10 of the 15 health facilities, feedback was provided on the  credits they earned, which helped them to identify their weaknesses or encouraged them to continue good practices regarding monitoring contraceptives. These health facilities also took part in a motivational training exercise that involved team-building and identification of problems and solutions related to contraceptive supply management.

3. Material incentives – Five out of the 10 health centres that received a monthly evaluation report were able to use the obtained credits to buy small items for the health facility such as furniture or medical equipment.

Data of the monthly audits were complemented with motivational surveys and focus group discussions with health workers. Supply management improved in all health care facilities, mainly as a result of the monthly audits which were perceived as motivating and supportive. Health facilities receiving a monthly evaluation report tended to improve more rapidly, indicating the importance of acknowledgment and recognition of health staffs' accomplishments. The motivational training exercise was also reported as having a positive impact, particularly through encouraging a team-approach at facility level and improving communication between team members (such as nurses and pharmacists). Finally, health care workers who obtained material incentives reported that they were extra motivated to acquire these extra benefits, although the data did not show a significant difference in this group in comparison to the others. Stock-outs did not disappear during the intervention

period, although the 10 health centres that received monthly evaluation reports had less frequent stock-outs. In general, stock-outs occurred more for those family planning methods that are less used or have lower demand: there were very few stock-outs of the pill and depo-provera (the two most popular methods), while implants, IUDs and especially female condoms were often not available in the health centres.

Our research showed that supportive supervision is key in improving health care providers' motivation and supply management skills. Continuous coaching, pointing out strengths and identifying problems with potential solutions, may have a major impact on health workers' motivation to reduce stock-outs and increase the quality of family planning services more generally. Extra attention should go to preventing stock-outs of family planning methods that are less used, given that these include the highly effective longer-acting methods, and that these stock-outs could be contributing to the lower demand.

# RESUMO

Bom progresso está a ser feito no sentido de garantir o acesso universal aos serviços de planeamento familiar, principalmente através da eliminação das barreiras logísticas e financeiras para a prestação de serviços, a capacitação dos profissionais de saúde, e educação dos potenciais utentes. No entanto, as rupturas de stock continuam a comprometer a qualidade dos serviços de planeamento familiar e, consequentemente, a satisfação dos utentes. Enquanto existem normas e procedimentos, um outro elemento crucial na optimização da gestão do sistema de abastecimento raramente considerada é o factor humano, em particular o grau em que os trabalhadores de saúde estão motivados e sentem-se responsáveis pela gestão de stock e a prestação de serviços de qualidade que atendam as necessidades e expectativas das utentes. A fraca motivação dos profissionais de saúde foi identificada como um problema importante pelo Ministério da Saúde de Moçambique. Por isso, exploramos como e em que medida a motivação pode ser optimizada, o impacto que pode ter para evitar as rupturas de stock e melhorar a qualidade dos serviços e satisfação do cliente.

Várias atividades foram implementadas durante 10 meses, em 15 centros de saúde na Província de Maputo (distritos de Manhiça e Marracuene), com o objectivo de monitorar e aumentar a motivação dos profissionais de saúde e a gestão do sistema de abastecimento de métodos de planeamento familiar (pílula microlut, pílula Microgynon, implantes, DIU, depo-provera e preservativo feminino):

1.      Auditorias mensais - Em todas as 15 unidades sanitárias, os dados de registos de abastecimento (fichas de stock) foram solicitados e a contagem de stock foi realizada para os 6 contraceptivos; como tal, estas auditorias poderiam ser percebidos como um controlo de qualidade da gestão do sistema de abastecimento de cada unidade sanitária.

A informação também foi usada para atribuir créditos, no âmbito de um mecanismo que foi criado para avaliar o desempenho das unidades sanitárias, o que permitiu monitorar as mudanças na gestão do sistema de abastecimento durante todo o período de intervenção: as unidades sanitárias ganharam créditos por ter um ficha de stock para todos os 6 contraceptivos, por não ter erros nos cálculos feitos no ficha de stock, e por não relatar uma ruptura de stock durante o mês.

2.      Relatórios mensais de avaliação – Em dez (10) dos 15 centros de saúde, o feedback foi fornecido sobre os créditos que ganharam, o que os ajudou a identificar os seus pontos fracos ou os encorajou a continuar as boas práticas em matéria de monitoria de contraceptivos. Estas unidades sanitárias também participaram em um exercício de treinamento motivacional que envolveu a consolidação de equipa e a identificação de problemas e soluções relacionados à gestão de contraceptivos.

3.      Incentivos materiais – cinco (5) dos 10 centros de saúde que receberam um relatório de avaliação mensal tiveram a possibilidade de usar os créditos obtidos para comprar pequenos itens para a unidade de saúde, tais como móveis ou equipamentos médicos.

Os resultados foram avaliados utilizando os dados de auditoria mensais, e de inquéritos e entrevistas qualitativas com profissionais de saúde. A gestão da oferta melhorou em todas as unidades sanitárias, principalmente como resultado das auditorias mensais, que foram percebidos como motivadores e de suporte. As unidades sanitárias que receberam um relatório de avaliação mensal tenderam a melhorar mais rapidamente, indicando a importância do reconhecimento das conquistas dos profissionais de saúde. O exercício de treinamento motivacional também foi relatado como tendo um impacto positivo,

especialmente por ter incentivado uma abordagem de equipa ao nível das unidades sanitárias, e por ter melhorado a comunicação entre os membros da equipa (tais como enfermeiros e farmacêuticos). Finalmente, os profissionais de saúde que obtiveram incentivos materiais relataram que eles tiveram uma motivação adicional para adquirir esses benefícios adicionais, embora os dados não mostram uma diferença significativa neste grupo em comparação com os outros.

As rupturas de stock não foram eliminadas durante o período de intervenção, embora os 10 centros de saúde que receberam relatórios de avaliação mensais tinham rupturas de stock menos frequentes. Em geral, a falta de stock ocorreu mais com os métodos de planeamento familiar que são menos utilizados ou que tinham menor demanda: havia muito poucas rupturas de stock da pílula e depo-provera (os dois métodos mais populares), enquanto os implantes, DIU, e especialmente, os preservativos femininos estavam muitas vezes indisponíveis nos centros de saúde.

O nosso projecto mostrou que a supervisão de apoio é fundamental para melhorar a motivação e as habilidades de gestão de stock dos profissionais de saúde. A formação e mentoria contínua, apontando pontos fortes e identificando problemas com soluções potenciais, pode ter um grande impacto sobre a motivação dos profissionais de saúde para reduzir a ruptura de stock e aumentar a qualidade dos serviços de planeamento familiar em geral. Atenção especial deve ir para prevenir rupturas de stock de métodos de planeamento familiar que são menos utilizados, uma vez que estes incluem os métodos de longa duração altamente eficazes, e dada que essas rupturas de stock podem estar a contribuir para a demanda reduzida.

# INTRODUCTION

## Family planning services

### Low uptake of contraceptives

Major efforts have been done in sub-Saharan Africa to improve access to contraception and to raise awareness about the health risks of untimely or too numerous pregnancies. Progress has been made, but contraception prevalence rate remains low and unmet need remains high. In 2011, almost 1/4 women (28%) in Mozambique reported an unmet need for family planning. The national Total Fertility Rate (TFR) was 5.9 children per woman and the total modern contraceptive prevalence rate was only 11.6% (7.4% in rural areas and 21.6% in urban areas). This very low coverage can be explained by a number of factors, such as lack of knowledge and awareness of contraception at community level and socio-cultural factors (Ministry of Health 2012).

### Low quality of health services

Another important factor that hampers further progress with regard to family planning usage is the often poor quality of services due to understaffing and health care workers who lack skills and commitment (resulting in poor counselling).  Also, health centres are not always properly equipped to guarantee safe family planning services, and supply management is often sub-optimal leading to stock-outs of contraceptives. This situation entails a high risk of ill-informed choice of contraceptive methods, improper use and discontinuation.

In order to improve health services and to increase access to family planning, various efforts are undertaken, including tackling logistic and financial barriers, training of staff, and providing information and advocacy. A factor that is however seldom considered in programmes to improve contraceptive and family planning service delivery, and more particularly stock monitoring, is motivation of health care workers.

## Motivation of health care workers

Poor motivation of health workers was identified as an important problem by the Mozambican Ministry of Health (Ministry of Health 2008) and also WHO highlights in its 2006 report on the human resources crisis in health, the importance of workers' motivation (WHO 2006). In addition, many researchers have stated that health worker motivation has the potential to affect the quality of health systems (e.g. Mutale 2013, Mbilinyi 2011, Franco 2002, Mathauer 2006, Rowe 2005,

Chandler 2009). There are indeed indications that motivation may be of paramount importance and could even be the key to leaping to a much higher level of quality of services. Low motivation is for example not only likely to impact the quality of services directly, but also indirectly among others through affecting the working atmosphere and increasing staff turnover.

*Motivational factors*

While salaries and benefits are generally considered as key determinants of (de)motivation, non-financial incentives also play an important role. When health care workers perceive that their needs are being accommodated (e.g. more work instruments) or that someone is willing to invest in them (e.g. training and development), they are likely to reciprocate with improved performance. This is confirmed by various studies based on surveys and interviews with health care workers: in Mali, for example, health workers reported that their main motivators were related with responsibility, training and recognition, next to salary (Dieleman 2006). Health care providers in Adventist health facilities in Malawi on the other hand, found spiritual nourishment and working conditions with long term benefits motivating (Kasenga 2014).

A study by the German Technical Cooperation among health workers in Benin and Kenya also identified non-financial incentives and human resource management tools as important factors with respect to increasing health care providers' motivation (Mathauer 2006).

Besides identifying and recognizing the importance of non-financial incentives, some interventions have actually tested the impact of non-financial incentives on motivation and quality of care. In Uganda, better job satisfaction was observed, as an indirect measure of provider motivation, after implementing the 'Yellow Star Programme' which was based on the possibility for providers to obtain awards linked to improving quality of care (Okullo et al. 2003).

Studies trying to increase the motivation of health care providers involved in family planning services are however still rare, especially in sub-Sahara Africa. Innovative methods are urgently needed to improve family planning services, including health products supply chains, and human resources and motivation are among the factors that could potentially help (Wagenaar 2014).

# OBJECTIVES

## MAIN OBJECTIVE:

*To investigate the role of motivation in ensuring quality of family planning service*

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## SPECIFIC OBJECTIVES:

*Specific objective 1a:*
*To design and implement interventions on motivation of staff involved in family planning services*

*Specific objective 1b:*
*To design and implement interventions on good supply management of family planning methods*

*Specific objective 2:*
*To investigate the effect of the interventions on health care workers' motivation and on supply management*

*Specific objective 3:*
*To investigate the relation between motivation and supply management among health care workers of family planning services*
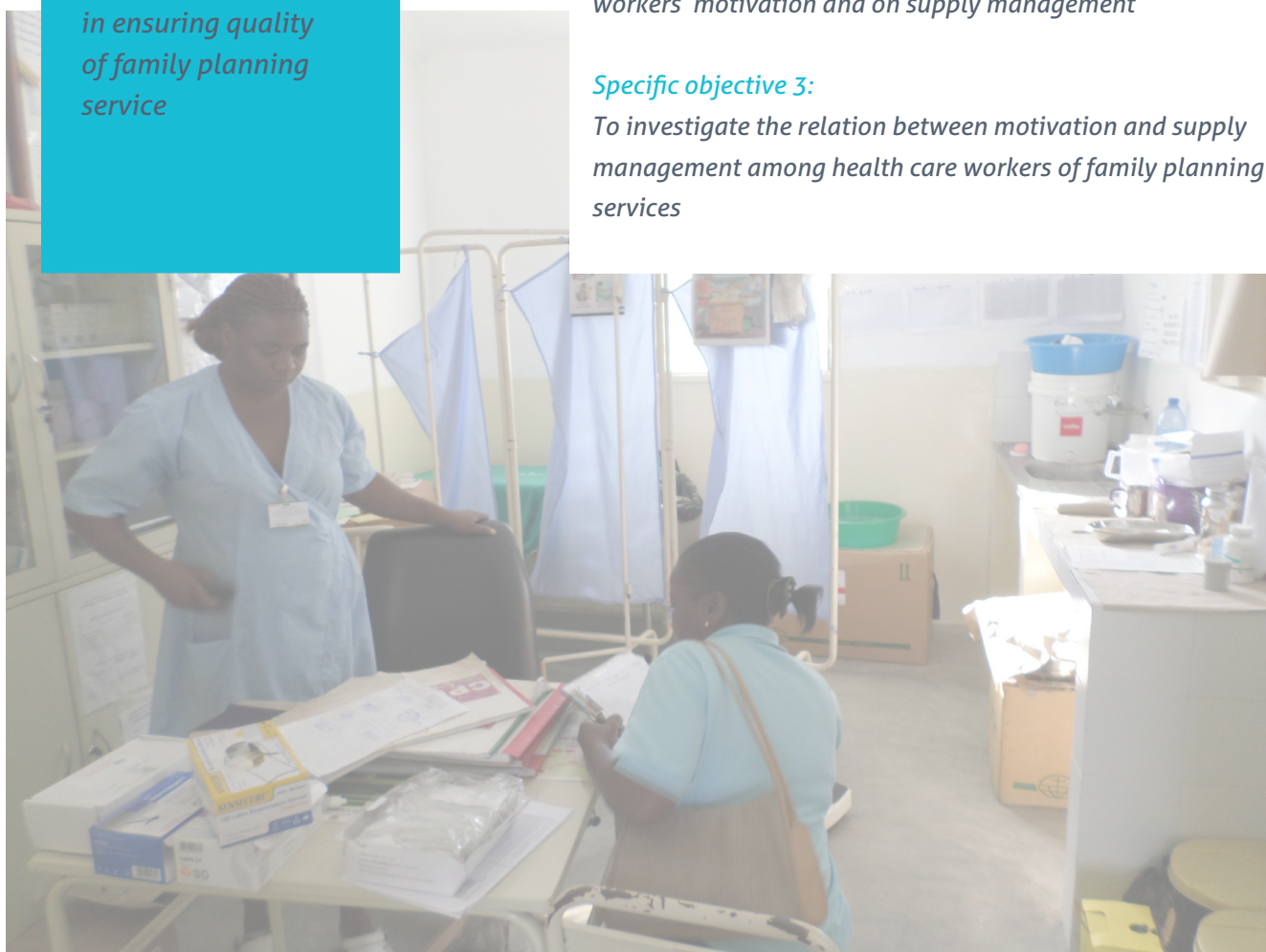
# METHODOLOGY

## *The interventions*

### *The study site*

Two districts in Maputo province are included in the study, Manhiça and Marracuene. In 2014, a prospective situation analysis showed that out of the 21 health centres, 2 were closely linked with larger health facilities, 2 did not offer family planning services and another 2 were very hard to reach, which would be problematic in view of the monthly visits we planned on doing (described below). As a result, 15 health centres were selected for this study and were randomly allocated to 3 groups (5 health centres in each group), of which the 3rd group was the control group.



Figure 1: Overview of the research activities carried out

June 2015      March 2016

**DATA COLLECTION**

Baseline, 1st and 2nd follow-up measurement:
- Survey on motivation of health care providers (0, 1, 2)
- Focus group discussions with health care providers (1, 2)

0    1    2

10 monthly facility audits assessing supply management

1  2  3  4  5  6  7  8  9  10

**INTERVENTIONS**

Motivational training

Group 1: monthly evaluation report + motivational training

Group 2: incentives + monthly evaluation report + motivational training

Group 3: control group

All of the 15 facilities are expected to offer family planning methods and the International Centre of Reproductive Health of Mozambique (ICRHM), in charge of all field work, trained staff before the onset of the project, focussing on insertion of IUDs and implants, as to assure that all health care facilities could provide these methods

### *Monthly evaluation of supply management through awarding credits*

In order to increase the motivation of the health care providers, an evaluation system was rolled out in 10 health centres, i.e. intervention group 1 and 2 of each 5 health centres (figure 1). The core idea behind this intervention was rewarding health facilities for good supply management. Specifically, health centres could earn credits based on their monthly performance. Each month health centres could earn a maximum of 3

credits by i) having stock cards of the 6 family planning methods (fichas de stock (FdS) of microgynon, microlut, depo, implant, IUD and female condom), ii) filling them in correctly (no calculation mistakes), and iii) not reporting a stock out for any of the methods. The system was punitive for missing a stock card since without a card there was no control in terms of calculation mistakes or stock-outs, meaning that 1 missing stock card immediately led to 0 credits. Hence, health centres were incited to keep a stock card for each of the 6 family planning methods, an essential first step of good supply management. Similarly, a stock card with a calculation mistake was considered unreliable and thus the credit for not having a stock-out could not be earned anymore.

Table 1: Example of the evaluation system used to monitor supply management in health centres and to motivate health care providers in group 1 and 2 to improve supply monitoring

| | Female condom | Implant | IUD | Depo | Microlut | Microgynon | Credits |
|---|---|---|---|---|---|---|---|
| Stock card | x | x | x | x | x | x | 1 |
| Calc error | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Stock out | 0 | 0 | 0 | . | 0 | 0 | 0 |
| TOTAL | | | | | | | 1 |

Each month, health centres received a report (see example in table 1) with their results of the previous month with the aim to motivate them to improve their supply management or to continue their good practices. Before the start of the programme, staff members from each health facility were trained in filling out the stock cards in order to ensure that all health centres had the capacity to correctly monitor their supply.

## Incentives

Besides being awarded credits and obtaining a report, the 5 health centres in group 2 could use the credits to buy small items for the facility (figure 1). They could save their credits and order small furniture items and medical equipment or material, such as chairs, fans, cleaning material, cupboards, sterilizers, etc.,. The more expensive the asset, the more credits the health centres had to earn to obtain it. A list with possible incentives and their value expressed in credits was distributed among the health centres of group 2 at the start of the project.

## Motivational training

Health care workers from group 1 and 2 were invited to participate in a motivational training (2 afternoons) (figure 1) during which they were asked to reflect on their own work and motivation and to evaluate the functioning of their health centre, in particular the family planning services and the work at the level of the pharmacy. SWOT analyses helped participants to identify challenges and areas for improvement or potential solutions, while also recognizing the work they were already doing, the services they offer, and the results they obtain. Through this training we also aimed at improving team work and communication in the health centres, as these are important factors in creating a motivating working environment.

# Data collection

## Monthly facility audits

In order to evaluate the health centres each month in function of the first intervention (i.e. awarding credits), 10 field visits were carried out during 10 months, one per month (figure 1). Also the 5 health centres of the control group were visited in order to collect data to compare their results with these of the intervention groups. During these facility audits, photos of the stock cards of the 6 family planning methods were taken, if the cards were available, and field workers also counted the actual stock.

## Survey on motivation

The motivation of health care providers of all 15 health centres was measured by a 23-question tool, developed by Mutale (2013, Zambia) including 7 outcomes of motivation: i) general motivation; ii) burnout; iii) job satisfaction; iv) intrinsic job satisfaction; v) organisational commitment; vi) conscientiousness; and vii) timeliness and attendance. Participants had to agree or disagree with the statements through a 5-point Likert scale.

A cohort was set up to measure motivation 3 times through a face-to-face questionnaire, at baseline, after 5 months as a first follow-up, and after 10 months, at the end of the project (figure 1). Through this we aimed to identify changes in motivation over time. The questionnaire also included questions about the socio-demographic characteristics.

## Focus group discussions

In order to evaluate the interventions from the perspective of the health care providers, 3 focus group discussions were organized gathering participants of each of the 3 groups separately (figure 1). Health centres were invited through the district health authority to attend the training and were asked to send as many health care providers as possible. The focus groups were organized after 5 months to collect information on the implementation of the interventions, potential effects but also to detect problems or dissatisfaction among the participants. At the end of the project, again 3 focus group discussions were held in order to evaluate the interventions and their impact, and to gather recommendations and identify strengths and weaknesses of the project.

## Patient files

Patient files of the health centres were collected in order to improve our understanding of the services offered and the family planning methods used by the clients of these centres. Especifically, we copied the monthly overview reports that health centres have to send to higher levels, and which include information about the number of consultations they had in the last month and the types of family planning methods they prescribed. This data was collected retrospectively from January 2014 up until one month before the end of the project, i.e. March 2016.

## Recruitment of participants

The project was explained to the heads of the 15 health centres during a monthly meeting of the districts; they were asked to inform their staff about the upcoming project. Afterwards, each of the health centres was visited and the project was once again explained, this time to the entire staff. At that point, health care providers received general information on what the study contained, such as the monthly facility audits and the surveys on motivation. Each of the providers was then asked personally whether he or she wanted to participate in the project (i.e. enrolling the health centre in the interventions and participating 3 times in the survey).

Information about the incentives was only given to centres in group 2, once they accepted to be part of the study, as to avoid coercion to participate or disappointment in centres that did not belong to group 2. In each of the health centres, field workers tried to include a minimum of 3 and maximum of 5 providers, preferably the nurse in charge of family planning services, the pharmacy technician and the head of the health centre.

Ethical approval for the study was obtained by the National Bioethics Committee of Mozambique.

## Data analysis

### Monthly facility audits

The data of the stock cards was entered in Microsoft Access and transferred to Stata13 for further analysis. While the centres of the intervention groups received a monthly evaluation, i.e. whether they had earned 0 to 3 credits, the data was further analysed breaking the information down in 18 points, standing for showing the 6 stock cards, each of them flawless in terms of calculations, and each of them with no calculation errors, and each of them without reporting stock-outs. This allowed us to analyse the data for each family planning method separately.

Calculation errors and stock-outs were identified on the stock cards for each consecutive month. Results were expressed as percentages, i.e. the percentage of available stock cards with 1 or more calculation error each month, or the percentage of stock cards with 1 or more reported stock-out in the last 4 weeks.

When certain stock cards were not available in a health centre, 2 analyses were conducted. In a first analysis, missing stock cards lead to missing data with regard to making calculation mistakes or reporting stock-outs. The results of this analysis represent 'lowest estimations' since not having a stock card does not lead to any repercussion. This approach also favours centres with less stock cards given that they have simply less chance to make a calculation error or report a stock-out. In a second analysis, an 'upper estimation' is presented: when a stock card is not available, we assume that if the health centre did have a card they would have made a calculation error. Similarly, a missing stock card is interpreted as having a stock-out. In addition, a stock card with a calculation mistake is considered unreliable and therefore considered as reporting a stock-out.

Finally, also the data gathered by counting stock on the day of the assessment was also entered, through epi-info and Access, and after transferring, analysed in Stata13. The number of stock-outs for the 6 family planning methods together, over the 10 months, was deducted by health centre and by group. The information was also analysed by calculating the percentage of health facilities stocked out, by family planning method, on the day of the assessment as well as averaged over the 10-month intervention period.

### Survey on motivation

Data was entered in Epi-info 7 and transferred, through through Microsoft Access, to Stata13. Negative statements were coded in opposite direction; as such higher scores were always suggestive of higher motivation. The score of each motivational outcome, i.e. the sum of the scores of the individual questions, was brought back to a scale of 1 to 5 in order to facilitate comparisons.

In a first step, descriptives of respondents and non-respondent (i.e. those lost to follow-up) were compared by chi square analyses and Wilcoxon-Mann Whitney tests to verify whether or not respondents differed from the non-respondents in certain characteristics. In a next step, differences between group 1, 2 and 3 were identified, using a Kruskal Wallis test to compare the 3 groups and a Wilcoxon Mann-Whitney to compare the 2 intervention groups with the control group. Finally, in order to detect changes of time, a Wilcoxon signed ranks test was applied to compare baseline results with results of the first and second follow-up round. All statistical tests were performed at the 0.05 significance level.

### Focus group discussions

Focus group discussions were transcribed and analysed in Portuguese; quotes were translated in English. Selective coding was used to identify the impact of the interventions on motivation, supply management and stock-outs, and on team work. In addition, special attention was given to reporting unintended effects such as extra work load or coercion as a result of the project.

### Patient files

Data was entered in Epi-info 7 and transferred, through Microsoft Access, to Stata13. Descriptives were derived regarding the family planning services offered in each of the health centres during 26 months (January 2014 - February 2016): number of consultations, number of new patients, number of pill users, number of depo users, number of IUDs inserted, and number of female condoms distributed.

# RESULTS

## *Participation*

All 15 health centres invited to the study accepted the invitation. At baseline (June 2015), 55 health care providers of 15 health centres were interviewed. During the first (October 2015) and second follow-up (March 2016), motivation was measured again among 40 and 39 providers respectively. Of 1 health centre, the only staff member who participated at baseline was lost in the 1st follow-up (but retrieved in the 2nd), resulting in only 14 health centres in the 1st follow-up sample (table 2).

Table 2: Participation of health care providers at baseline, 1st and 2nd follow-up

| PARTICIPATION | baseline | 1st follow-up | 2nd follow-up |
|---|---|---|---|
| **Group 1** | **17** | **12** | **10** |
| Health centre 2 | 2 | 2 | 2 |
| Health centre 3 | 4 | 2 | 2 |
| Health centre 10 | 5 | 3 | 1 |
| Health centre 11 | 5 | 5 | 4 |
| Health centre 12 | 1 | 0 | 1 |
| | | | |
| **Group 2** | **16** | **12** | **12** |
| Health centre 1 | 2 | 2 | 1 |
| Health centre 4 | 2 | 1 | 2 |
| Health centre 8 | 2 | 2 | 1 |
| Health centre 14 | 5 | 2 | 3 |
| Health centre 15 | 5 | 5 | 5 |
| | | | |
| **Group 3** | **22** | **16** | **17** |
| Health centre 5 | 4 | 2 | 3 |
| Health centre 6 | 5 | 4 | 3 |
| Health centre 7 | 7 | 6 | 6 |
| Health centre 9 | 3 | 2 | 2 |
| Health centre 13 | 3 | 2 | 3 |
| | | | |
| **Total** | **55** | **40** | **39** |

In table 3, socio-demographic characteristics of the participants are presented, as well as for respondents and non-respondents of the 2nd follow-up separately. For none of the variables a significant difference was found ($p < 0.05$), meaning that the final sample did not differ from the initial baseline participants with regard to the socio-demographic variables.

Table 3: Characteristics of the participants; comparison of respondents and non-respondents by chi square analyses

| CHARACTERISTICS PARTICIPANTS | Baseline (n= 55) | Respondents 2nd Follow-up (n=39) | Non-respondents (n=16) | chi square |
|---|---|---|---|---|
| | N (%) | N (%) | N (%) | p-value |
| Sex | | | | |
| Men | 20 (36) | 13 (33) | 7 (44) | |
| Women | 35 (64) | 26 (67) | 9 (56) | 0.46 |
| Age | | | | |
| Younger than 25 years | 16 (29) | 12 (31) | 4 (25) | |
| 25-35 years | 24 (44) | 15 (38) | 9 (56) | |
| Older than 35 years | 15 (27) | 12 (31) | 3 (19) | 0.46 |
| Civil state | | | | |
| In relation | 19 (35) | 13 (33) | 6 (37.5) | |
| Single | 36 (64) | 26 (67) | 10 (62.5) | 0.77 |
| Education | | | | |
| Basic (high school) | 16 (29) | 11 (28) | 5 (31) | |
| Medium (bachelor) | 39 (71) | 28 (72) | 11 (69) | 0.82 |
| Functions | | | | |
| Health agents | 11 (20) | 10 (26) | 1 (6) | |
| Family planning nurse & midwife | 20 (36) | 14 (36) | 6 (38) | |
| Health technicians & general nurse | 24 (44) | 15 (38) | 9 (56) | 0.28 |
| Head of facility | | | | |
| No | 42 (78) | 28 (72) | 14 (93) | |
| Yes | 12 (22) | 11 (28) | 1 (7) | 0.09 |
| Providing family planning | | | | |
| No | 7 (13) | 4 (10) | 3 (19) | |
| Yes | 48 (87) | 35 (90) | 13 (81) | 0.39 |
| Services in pharmacy | | | | |
| No | 23 (42) | 16 (41) | 7 (44) | |
| Yes | 32 (58) | 23 (59) | 9 (56) | 0.85 |

# Baseline results

## *Family planning services*

Patient files collected at the 15 health centres showed that the median number of monthly consultations varies greatly among the health centres. Depo is by far the most prescribed method in almost all health centres, followed by the pill (figure 2).
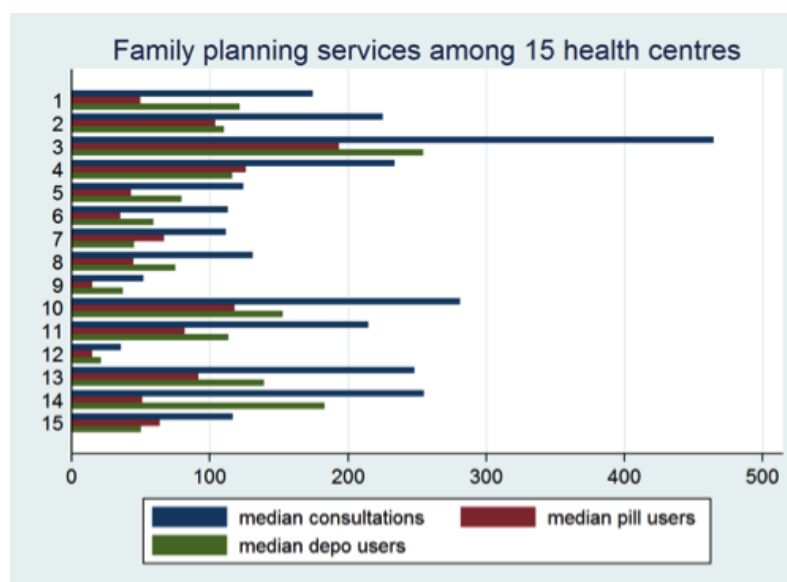


Figure 2: Family planning services over 16 months before the interventions (Jan 2014 – April 2015): Median number of consultations, and pill and depo users per month

IUDs on the other hand are only offered in some health centres and the number of users is limited. Whether this is because of the fact that demand is non-existent in some health centres or whether health care providers in certain centres simply do not offer the method is unknown. All health facilities are expected to offer IUDs and all health centres had at least 1 staff member trained to insert them (data not shown). In addition, the median usage of IUDs per month is often 0, also in health centres that offer IUDs, meaning that the IUDs are inserted at certain moments in time and that there are many months when no IUDs are inserted at all (figure 3a).

The usage of female condoms is similar to that of IUDs: while all centres do offer female condoms, they are offered at certain moments instead of continuously (the median is again often 0) (figure 3b). For both IUDs and female condoms, no trend in time could be identified to explain the peaks in usage.

Information about the use of implants is lacking given that this method is new in Mozambique and usage is not yet registered in the current patient files. During the many contact moments in the field and during the focus group discussions, health care providers did describe implants as more acceptable to their clients compared with the IUD.

Figure 3a-b: Family planning services over 16 months before the interventions (Jan 2014 – April 2015):

Median per month and sum of IUD and female condom usage
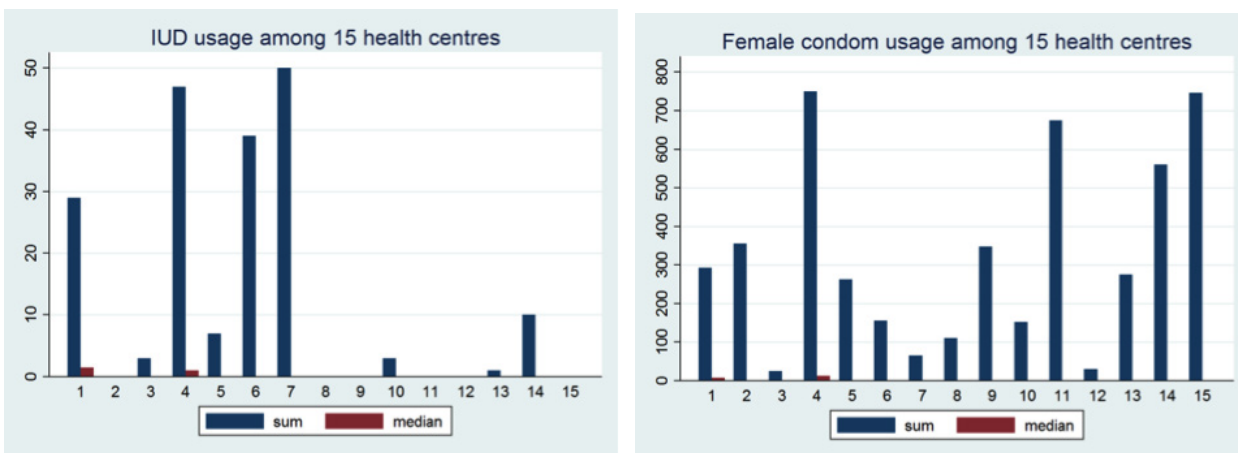


Figure 4: Family planning services over 26 months including the interventions (Jan 2014 – Feb 2016): Number of first consultations, i.e. new patients, among the 15 health centres
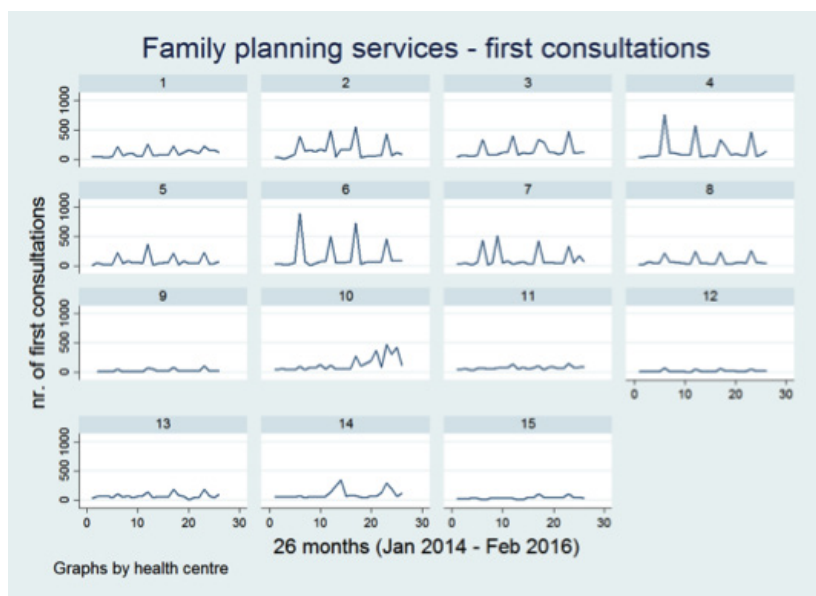


When comparing the monthly number of consultations of new patients among the 15 health centres during a period of 26 months (January 2014 – February 2016), a cyclic pattern is noted in some health facilities with peaks every 6 months. These peaks correspond with National Health Weeks organized in Mozambique by the Ministry of Health. As can be seen in figure 4, in some health centres these peaks are not or hardly noticeable, while in other centres the number of consultations almost reaches 900 a month (e.g. health centre 6 month 6).

## *Motivation*

While the questionnaire on motivational outcomes contained 23 questions, we only took 21 questions into account since 2 questions were unreliable due to misinterpretation and errors in translation. As presented in figure 2 and table 3, the reported baseline motivation was very high with a median score of 88.5/105. Answers of respondents and non-respondents were similar for all questions except for 'intrinsic motivation', which was slightly lower among those who were lost to follow-up (table 3). Regarding the subcomponents, the highest median score was found for 'conscientiousness' (5/5) and the lowest median score was found for 'burn-out' (3.5/5 – this is the reversed score meaning that a low score corresponds with higher chance on burn-out) (figure 5-table 3). Given the harsh circumstances in which health staff in Mozambique work, with high workload and poor infrastructure, it is not surprising that people feel tired and despondent. At the same time, people who do take up a job in these circumstances need to be willing and able to handle difficult situations and as such be very motivated and have a hands-on attitude, hence the high motivation and 'conscientiousness'.
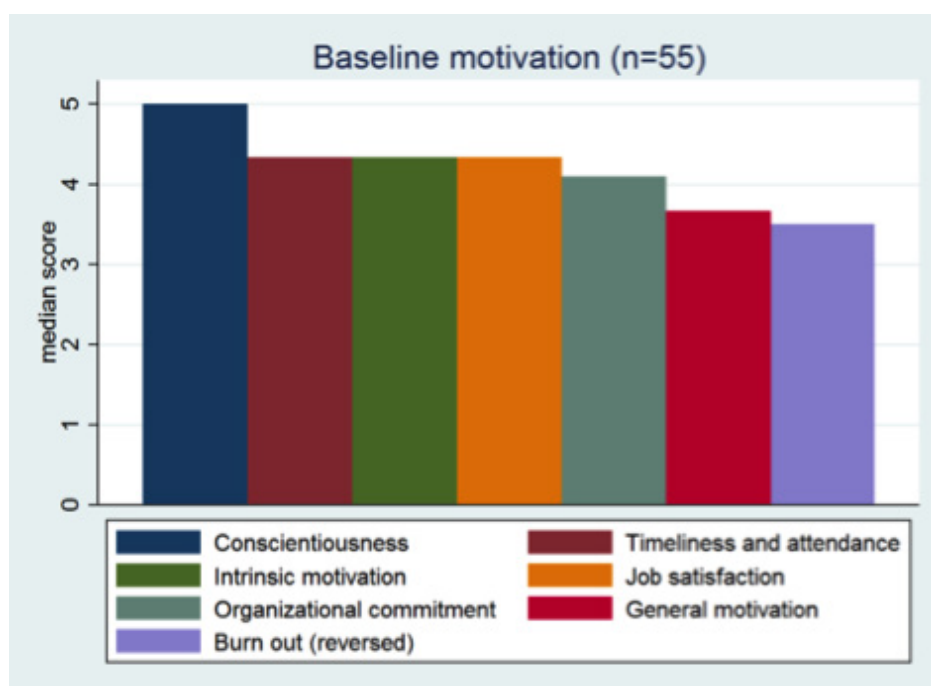


Figure 5:

Baseline motivation:

7 outcomes of motivation

Table 3: Baseline motivation of the participants; comparison of respondents and non-respondents by Wilcoxon Mann-Whitney test

| BASELINE MOTIVATION PROVIDERS | Baseline (n= 55) | Respondents 2nd Follow-up (n=39) | Non-respondents (n=16) | Wilcoxon Mann-Whitney |
|---|---|---|---|---|
| | Median (IQR) | Median (IQR) | Median (IQR) | p-value |
| OVERALL MOTIVATION (max 105) | 88.5 (80-93) | 89 (84-94) | 85.5 (76-90) | 0.13 |
| General motivation | 3.7 (3.3-4.3) | 3.7 (3.3-4.3) | 3.7 (3.3-4.3) | 0.61 |
| Feel motivated to work hard | 4 (3-5) | 4 (3-5) | 4 (3-5) | 0.79 |
| Only do this job to get paid* | 5 (4-5) | 5 (4-5) | 4 (4-5) | 0.41 |
| Do this job to have long-term security | 3 (2-4) | 3 (2-4) | 3 (2-4) | 0.81 |
| Burn out (reversed) | 3.5 (3.0-4.5) | 3.5 (3.0-4.5) | 3.7 (3.0-4.5) | 0.53 |
| Feel emotionally drained at end of day* | 4 (2-4) | 4 (2-4) | 4 (4-4) | 0.38 |
| At times, you dread facing a day at work* | 4 (2-5) | 4 (2-5) | 4 (2-5) | 0.89 |
| Job satisfaction | 4.3 (3.7-5.0) | 4.3 (4.0-5.0) | 4.3 (3.5-4.7) | 0.55 |
| Overall, I am very satisfied with my job | 5 (4-5) | 5 (4-5) | 5 (4-5) | 0.31 |
| Not satisfied with my colleagues* | 4 (4-5) | 4 (4-5) | 4 (4-4.5) | 0.66 |
| I am satisfied with my supervisor | 4 (4-5) | 4 (4-5) | 4 (3.5-5) | 0.37 |
| Intrinsic motivation | 4.3 (4.0-5.0) | 4.7 (4.0-5.0) | 4.0 (3.5-4.5) | 0.01 |
| Satisfied with opportunity to use abilities | 5 (4-5) | 5 (4-5) | 5 (4-5) | 0.27 |
| Satisfied with accomplishing something | 5 (4-5) | 5(4-5) | 4 (4-4.5) | 0.01 |
| My work is not valuable these days* | 4 (4-5) | 4 (4-5) | 4 (2-4) | 0.05 |
| Organizational commitment | 4.1 (3.6-4.6) | 4.2 (3.6-4.6) | 4.0 (3.4-4.4) | 0.39 |
| Proud to work for this health facility | 4 (4-5) | 4 (4-5) | 4 (4-5) | 0.83 |
| My values and this facility's are similar | 4 (4-5) | 4 (4-5) | 4 (3.5-4) | 0.24 |
| Glad to work for this facility | 4 (2-4) | 4 (2-5) | 4 (2-4) | 0.41 |
| Feel little commitment to this facility* | 4 (4-5) | 4 (4-5) | 4 (2.5-4) | 0.15 |
| This facility inspires me to do my best | 4 (4-5) | 5 (4-5) | 4 (4-5) | 0.76 |
| Conscientiousness | 5 (4.5-5.0) | 5 (4.5-5.0) | 4.7 (4.5-5.0) | 0.53 |
| I am a hard worker | 5 (4-5) | 5 (4-5) | 5 (4-5) | 0.74 |
| Do things without being asked or told | 5 (4-5) | 5 (5-5) | 5 (4-5) | 0.31 |
| Timeliness and attendance | 4.3 (4.0-5.0) | 4.7 (4.0-5.0) | 4.3 (4.0-5.0) | 0.92 |
| I am punctual about coming to work | 5 (4-5) | 5 (4-5) | 4.5 (4-5) | 0.93 |
| I am often absent from work | 5 (4-5) | 5 (4-5) | 4 (4-5) | 0.36 |
| Not a problem if I sometimes come late* | 5 (4-5) | 5 (4-5) | 4 (4-5) | 0.54 |

*reversed: a high score shows disagreement with a negative statement and is therefore suggestive of higher motivation.

Figure 6a-b:
Total baseline motivation among 15 health centre : median score per health
centre (a) and motivation per person per health centre (b)
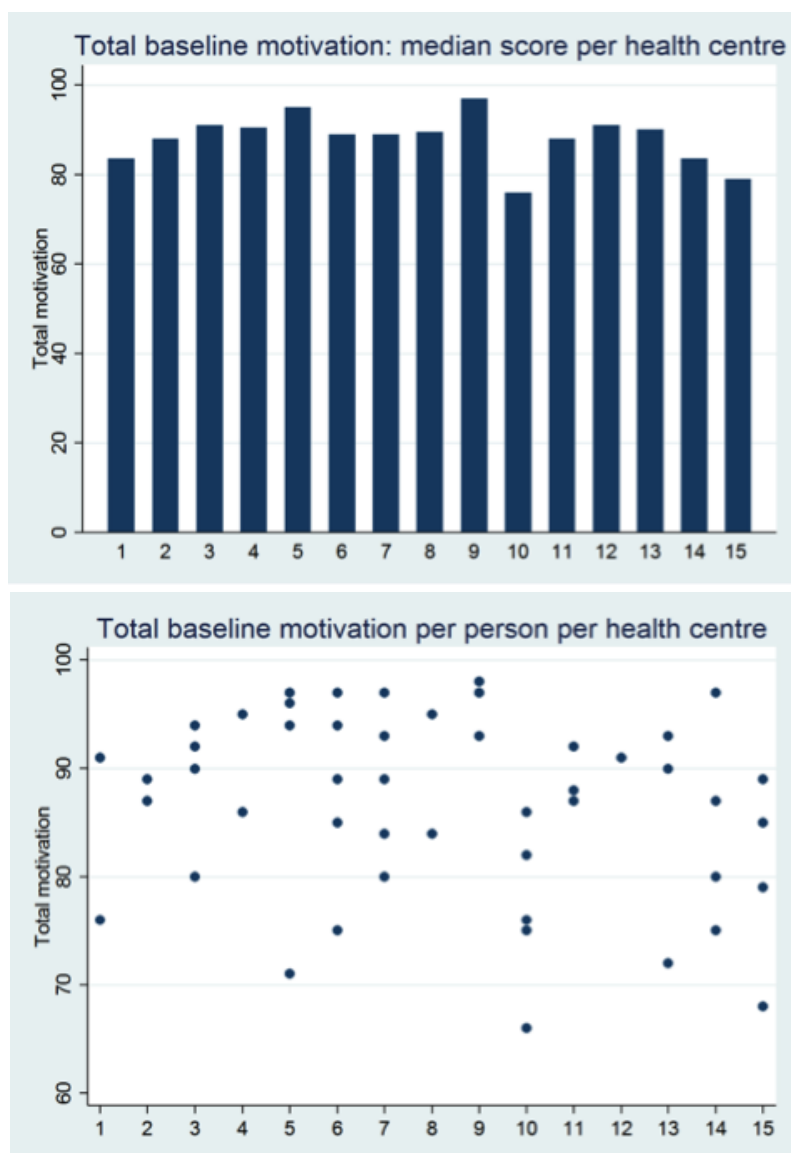


At baseline, no difference in motivation was found between the groups (appendix 1) or between the health centres (figure 6a). However, when looking at a personal level, we notice that motivation can vary among health staff of the same health centre.

In Figure 6b, the motivation of each participant is presented clearly showing the inter-personal variance of motivation per health centre. For example, 3 staff members of health centre 5 have high reported motivation (above 90) while 1 member reported a motivation of just above 70. When taking median scores or averages, this variation is lost while the effect of 1 very highly motivated or 1 very unmotivated staff member might affect the working of a health centre greatly.

Figure7a-b: Motivational factors as reported by health care providers at baseline
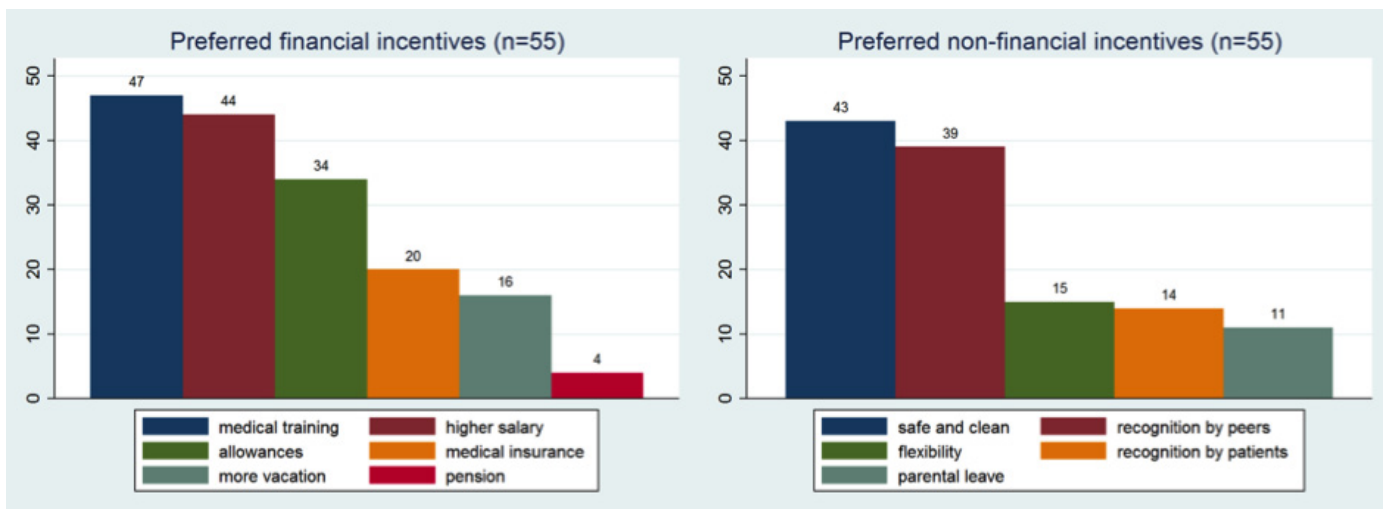


During the baseline motivational survey, participants were asked what would motivate them. Potential motivators were suggested, dividing those with a financial value from those that are less linked with monetary values; participants could choose up to 3 motivators of each type. Regarding the material incentives, the health staff preferred medical trainings and a higher salary the most, followed by allowances (i.e. housing or clothing). Medical insurance, more vacation days and definitely a higher pension were less appreciated (figure 7a). Given that our project included training in supply management, we can presume that this training, also received by staff members of the control group, was a first motivator to improve the supply management of the health centres.

Among the non-financial incentives, a safe and clean environment and recognition by peers were mostly and almost exclusively chosen (figure 7b). This emphasized the potential effect of the material incentives offered to health centres in group 2, conditional on good supply management (i.e. earning credits), given that the list of incentives out of which they could choose included material and furniture to upgrade the health centres in terms of safety and hygiene. In addition, also peer recognition could be earned through our project: by earning credits, the work of staff members responsible for pharmacy and family planning services, can be more easily recognized by their colleagues. Again, this confirmed the potential impact that our project could have on the motivation of the health staff.

## Supply management

Fichas de stock - At baseline, out of the 90 stock cards that were requested to the health centres (i.e. 6 stock cards in each of the 15 facilities), 73 were available. The stock cards of female condoms were missing in 8 health centres, while the cards for IUDs, implants and microgynon were missing in 5, 3 and 1 health centre respectively (data not shown). Variance between the health centres was substantial given that some health centres had all the requested stock cards while 1 centre could only provide 2 (figure 8).

Figure 8: Stock cards of 6 family planning methods available at each of the 15 health centres at baseline



Calculation errors – The percentage of stock cards with at least 1 calculation error at baseline varied from 0% to 60% according to the 'lowest estimations', and from 17% to 67% in the analysis that punished for not having a stock card (i.e. the upper estimations). The results show that among all health centres stock cards needed to be filled out more precisely (figure 9a-b) Stock outs – Of the stock cards available, 9/15 stock cards of depo reported at least 1 stock-out, 3/15 and 3/14 of microlut and microgynon respectively, and 2/7 and 2/12 of female condom and implant respectively (data not shown).

Among the health centres, the minimum percentage of stock cards reporting a stock-out was 0% and 17% according to the lowest and upper estimations respectively, while the maximum percentage was 60% and 83% respectively. This baseline analysis shows that stock-outs and inaccurate updating of stock cards was rather widespread.  (figure 9a-b).

Figure 9 a-b: Percentage of stock cards with calculation mistakes and reporting stock-outs for each of the 15 health centres at baseline: without repercussion for not having a stock card (lowest estimations) (a) and interpreting the missing card as a calculation mistake/stock-out (upper estimations) (b)
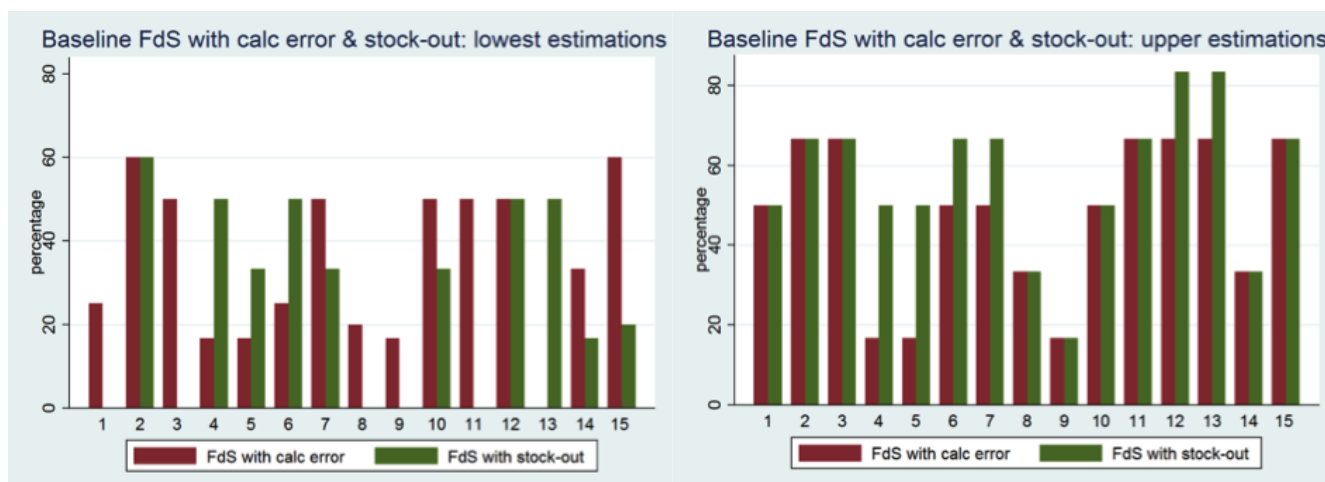
Figure 10a-b: Supply management per group at baseline: without repercussion for not having a stock card (lowest estimations) (a) and interpreting the missing card as a calculation mistake/stock-out (upper estimations) (b)
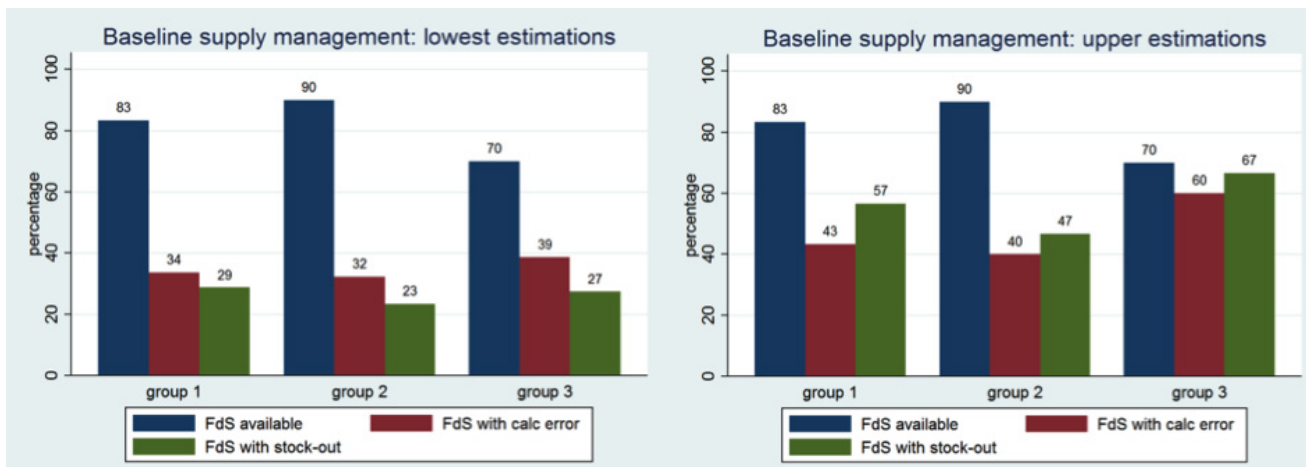


Comparing baseline supply management among the 3 groups shows that on average the 3 groups are comparable when it comes to monitoring supply, with the 3rd group, i.e. the control group, a bit lagging behind.

As can be seen in figure 10a-b, group 3 has on average less stock cards (70%, i.e. 21/30, versus 83% (25/30) and 90% (27/30) in group 1 and 2 respectively), but more stock cards had a calculation error.

As a consequence, the 'upper estimations' of reported stock-outs were considerably higher for group 3, given that in that analysis a missing stock card as well as a calculation mistake was considered as a stock-out due to unreliable information. Overall however, in all groups supply management was imperfect and could still improve significantly.

# *Impact of the interventions*

## *Motivation*

Given that motivation was in general high at baseline, it was difficult to detect measurable improvement. Indeed, no significant difference was detected among the groups neither in each group comparing baseline with 1st and 2nd follow-up (figure 11 – appendix 1).

Figure 11: Total motivation for each of the 3 groups at baseline, 1st follow-up and 2nd follow-up
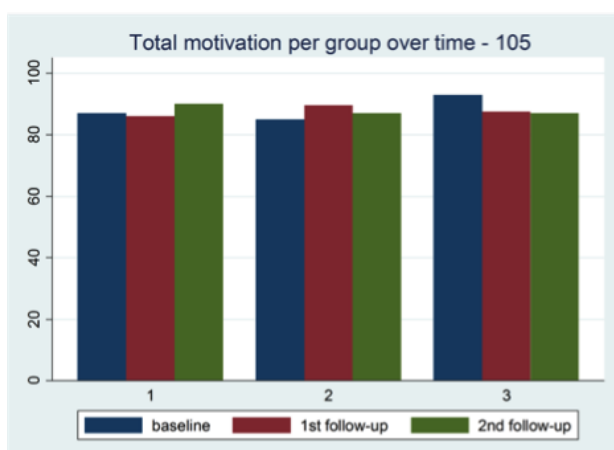


Motivation is generally not static but changes from day to day. When looking at the difference in motivation at a personal level, we do indeed see these fluctuations.

In figure 12, the difference between reported motivation at the end of the project and motivation at baseline is showed per person per health centre. As such, those above zero have increased in motivation, those with a difference below zero have less motivation than at baseline. In some health centres, all staff members who participated in the surveys have higher motivation

Figure 12: Changes in total motivation over time per person per health centre: the difference between 2nd follow-up and baseline
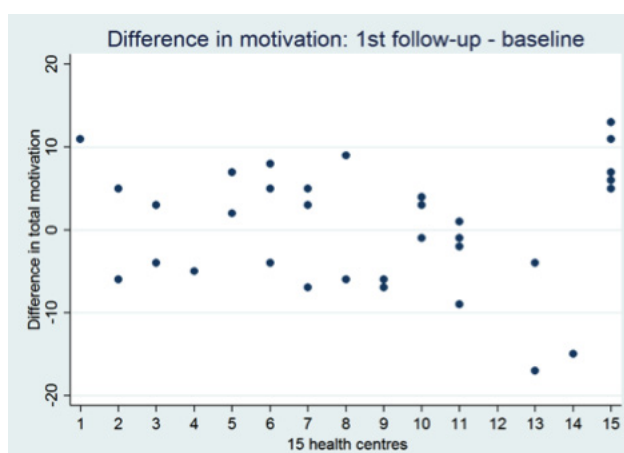


(e.g. health centre 15) and in other centres health care providers dropped in motivation by the end of the project (e.g. health centre 5). In several health centres, some participants are more motivated and some are less motivated at the 2nd follow-up survey. This variation at personal partly explains again why no changes are detected: at the level of the health centres or the groups, this variation disappears as high and low cancel each other out.

## *Supply management*

In figure 13a, the sum of the credits earned by each group in each month is represented. Given that each health centre could earn up to 3 credits per month and that each group consists out of 5 health centres, means that the maximum of credits to be earned per month per group was 15. In group 2 however, data from 1 health centre during month 4 is missing, meaning that the group could only earn 12 credits that month.

*"When you started visiting our clinic, we learned how to fill in stock cards and we became motivated to use them and to win the credits. This made us realize that...we are pleased with the work we are doing, it is a beautiful job. group 1"*

Group 2 is the first group to obtain the maximum amount: in month 6 all health centres could show the 6 stock cards without calculation mistakes and without any reported stock-out. Besides a drop back in month 8, they continue to reach the maximum number of credits.

Also in group 1 and 3 an improvement in supply management is visible, but the health centres in group 1 tend to respond faster to the interventions as compared the those in group 3, i.e. the control group.

Since the credit system was punitive for not owning a stock card, it did not allow for health centres to obtain good results even though they had the majority of the stock cards, a first essential step for good supply

Figure 13a-b: Evaluating supply management per group over 10 months: credits earned (a) and points earned (b)
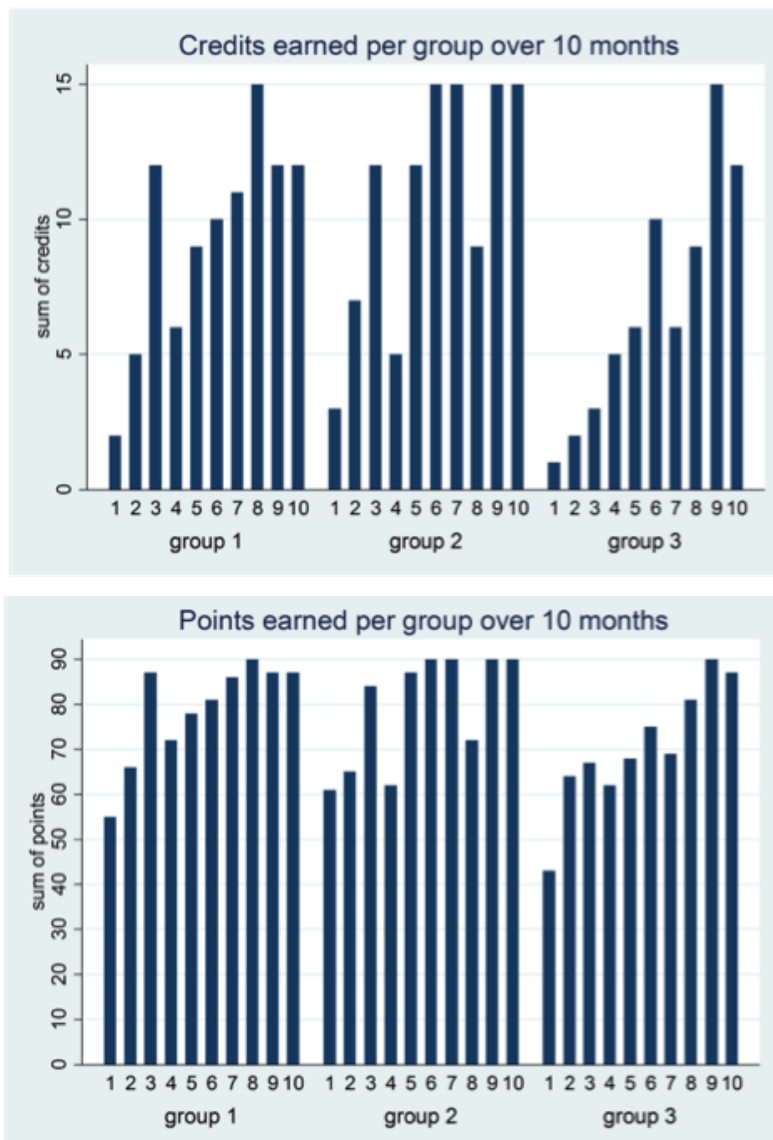


management. If evaluating the health centres per family planning method, i.e. 6 points to be earned by showing 6 stock cards, 6 for not making calculation mistakes and another 6 for not reporting a stock-out in each of the stock cards, the difference between the health centres becomes smaller (figure 13b), but the main trends remain the same: group 1 and 2 improve rapidly, with some drop back from group 2 in month 8, and group 3, the control group, improves at a slower pace. It is also remarkable that group 1 reacts promptly given that for these health centres the credits were not linked with any material rewards.

*Number of stock cards*

A first requirement for the health centres to obtain credits was to have a stock card for each of the 6 family planning methods included in this project: microlut, microgynon, depo, implant, IUD and female condom. Also in the control group these stock cards were requested each month, although this was not linked with any evaluation system. In figure 14, we see the number of stock cards that each of the groups could show during the 10 health facility assessment carried out. The results resemble the results of the entire evaluation system - through credits and/or points - in that all groups improve and that group 1 and 2 do so more rapidly than the control group. Given that group 3 started with less stock cards at baseline also give them more room for improvement of course.

Figure 14: Stock cards of 6 family planning methods available among the 3 groups over 10 months
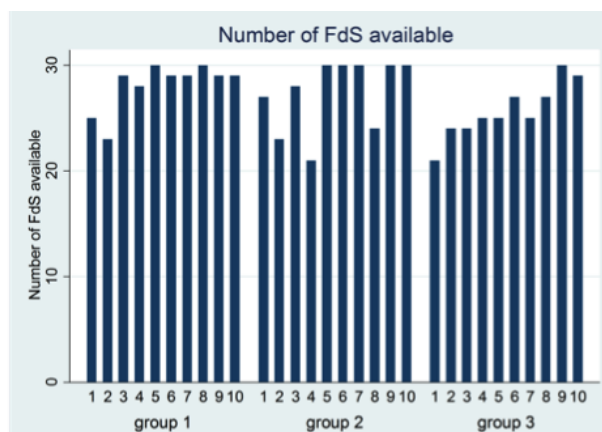


*Percentage of stock cards with calculation mistakes*

Besides having a stock card for all family planning methods, health centres were required to use them correctly and to fill them in precisely. Hence, reducing the number of calculation mistakes on stock files was a goal of this project and was linked with earning a credit for group 1 and 2. Changes over time among the 3 groups are represented in figures 15 a-b, showing how in both analyses (lowest and upper estimations) group 3 continues to have more stock cards with calculation mistakes compared to group 1 and 2. Group 2 does best in that they reach more months without any stock card with a calculation mistake compared to group 1 and 2.

*"For example, I did not have a stock card of female condoms, but the visits helped me realize that I need a stock card and that even if I don't have stock, I need to fill in the stock card. control group"*

The stock card that was most missing among all 15 health centres and over the 10 months – info of 1 health centre during month 4 is missing - was the card for monitoring the supply of the females condoms (34/149), followed by the card of the IUD (24/149) and implant (18/149). Stock cards of microlut, microgynon and depo were hardly ever missing (4/149, 2/149, 1/149). Especially in health centres in the control group, the stock card of female condoms continued to be lacking throughout the project (data not shown).

*"In my clinic, I can say that the incentives are helping a lot, all my colleagues came to talk to me already ... "nurse, have you filled in the stock cards?" (laughs) Even when I am busy they always remind me. My assistant for example, already handles the stock cards and says "nurse, please sign ..." (laughing) So the incentives are helping!" group 2*

Figure 15a-b: Percentage of stock cards with a calculation mistake among the 3 groups, over 10 months; without repercussion for not having a stock card (lowest estimations) (a) and interpreting the missing card as a calculation mistake (upper estimations) (b)
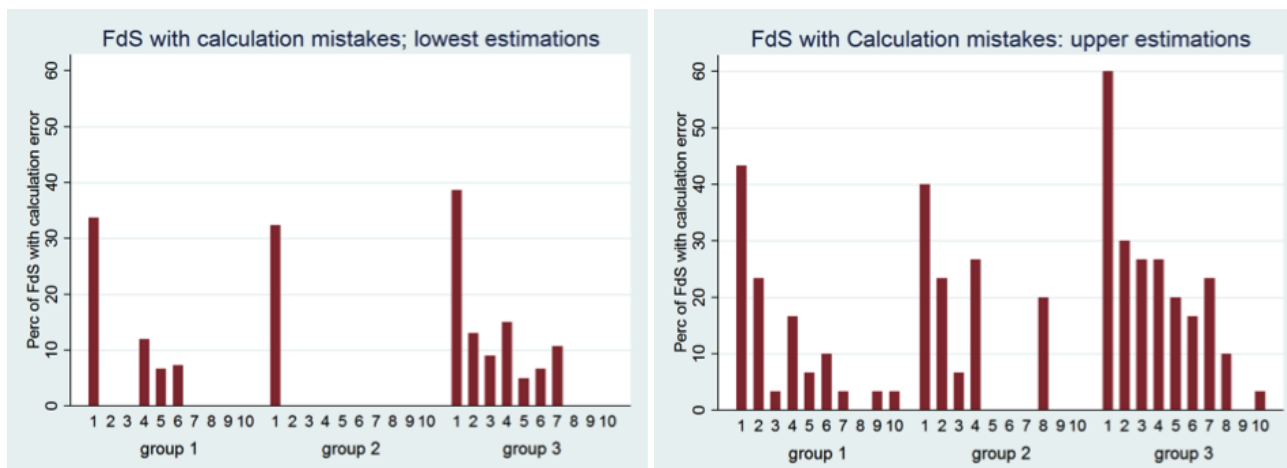


## Percentage of stock cards reporting a stock-out

A 3rd point of evaluation was the number of stock cards reporting a stock-out. Again, group 1 and group 2 make fast improvement and practically eradicate stock-outs from the second half of the project on. Group 3 eliminates stock-outs during the final 3 months but only in the analysis that does not consider a missing stock card as a stock-out (i.e. the lowest estimations). In the upper estimations, group 3 continues to report stock-outs up until the end of the project (figures 16a-b).

*"Before the project, I had frequent stock-outs of contraceptives and I did not understand why, but now I think it is lack of communication between the pharmacy and the nurse...because of the project we no longer have stock-outs of both contraceptives and other drugs, it improved the way of working. group 1"*

Figure 16a-b: Percentage of stock cards reporting a stock-out among the 3 groups, over 10 months; without repercussion for not having a stock card (lowest estimations) (a) and interpreting it as a stock-out (upper estimations) (b)
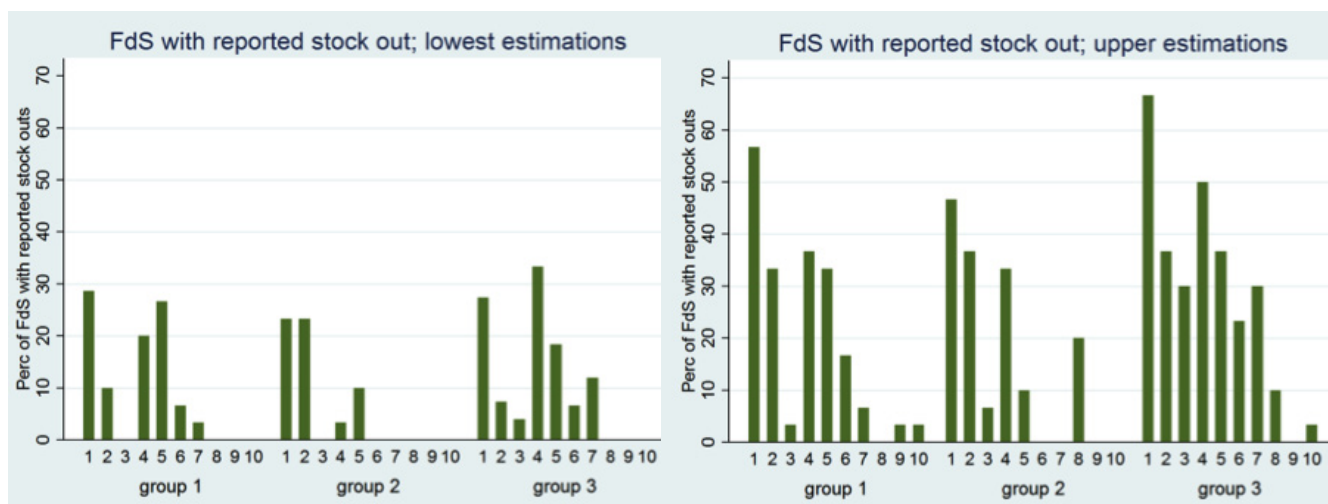
## *Stock-outs on the day of the assessment*

During the first follow-up survey on motivation, participants were additionally asked what the main reasons for stock-outs are. Among the participants, 72% agreed with the statement that stock-outs are caused by stock-outs in district facilities and warehouses, while 40% also reported that these higher levels don't distribute on time. In addition, during the focus group discussions participants also reported that they don't always receive the amounts they have ordered.

Another 40% did admit that they don't always order at time but only 10% believed that stock-outs were caused by filling in the supply registers correctly. Finally, again 40% reported that sudden increases in demand lead to stock-outs and 32% added that transport issues are at the basis of the problem (table 4).

Every month, supply of the 6 family planning methods was counted during each of the health facility audits. Through this we were able to define 'stock-outs at the day of the assessment'. In figure 15, an overview of counted stock-outs is presented per month per group. Given that each group contained 5 health centres and that 6 family planning methods were verified, the maximum number of stock-outs per month is 30.

During most months, group 1 and 2 don't have more than 5 stock-outs; group 3 on the other hand had often close to 10 stock-outs a month.

During the entire project, only group 2 had 1 month when no stock-out occurred. This is in contrast with the results derived from the stock cards which showed that even according to the 'upper estimations' group 2 reached 4 months without reported stock-outs (figure 16a-b). The discordance between the results of the 2 methods to detect stock-outs reflects the limitations of both methods which will be discussed below.

Figure 17: The number of stock-outs counted at the day of the assessment, per group over 10 months
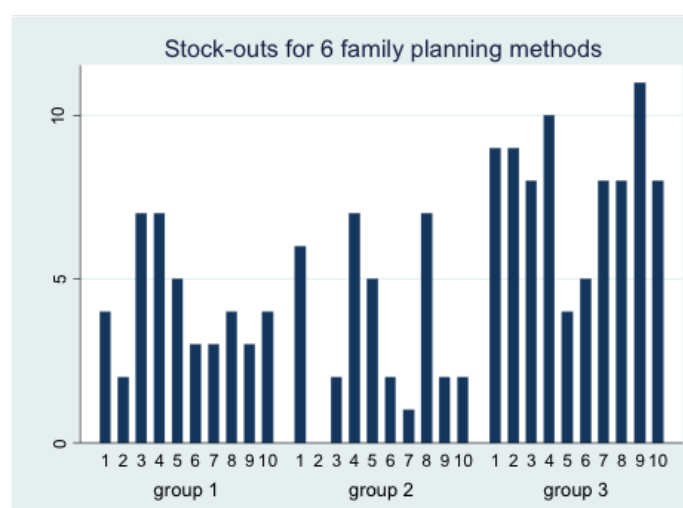


Group2: Only 4 centres assessed during round 1 and 6, instead of 5

Table 4: Reasons for stock-outs as reported by health care providers during the 1st follow-up survey

| THE THREE MOST IMPORTANT REASONS FOR STOCK OUTS | 1st FOLLOW-UP (n=40) |
| --- | --- |
| Errors in files (e.g. stock cards) | 4 (10%) |
| Stock out at higher levels | 29 (72%) |
| Higher levels don't distribute on time | 16 (40%) |
| You don't ask supplies on time | 16 (40%) |
| Sudden increase of patient number | 16 (40%) |
| Transport problems | 13 (32%) |

Figure 18 shows the percentage of health centres stocked out during the 10 months for each of the 6 family planning methods verified. The control group tended to have more stock outs for female condoms, IUDs and implants but not for the other FP methods. The difference between the control group and the intervention groups is however only statistical significant for female condoms (appendix 2). Overall, stock-outs occurred more for those methods that are less used (female condom, IUD and implants). The question arises whether these methods are less offered due to stock-outs (at higher levels) or whether the stock-outs occur because there is less demand and health care providers don't prioritize them when in it comes to ordering supply. In any case, both situations may occur and may lead to a vicious circle of low demand and poor supply monitoring.

Finally, differences among health centres were investigated. While no major trends were detected at the level of the groups, 3 types of health facilities were identified:

1) those with hardly any stock-out for any method during the intervention period (i.e. sporadic stock-outs),

2) those with sudden peaks of stock-outs of several family planning methods (i.e. epidemic stock-outs),

3) and health facilities that constantly lacked 1 or more methods during the 10 months of the project (figure 19 - appendix 2).

No link with motivation was found to explain these different types of stock-out occurrence. Given that several types of patterns were found in each group, it is also unlikely that the interventions induced these patterns. More likely, the pattern reflects a mix of structural problems combined with motivation and skills of the health care providers, and demand of the users.

Figure 18: Percentage of stocked out health centres, per method per group (over 10 months)
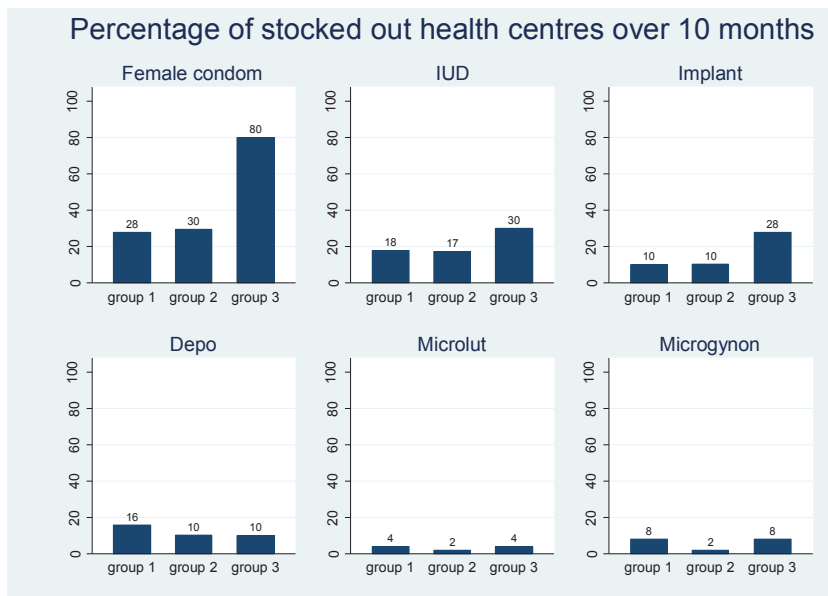


Figure 19: Patterns of stock-outs identified among the 15 health centres during the intervention period of 10 months: examples of 'sporadic', 'epidemic' and 'endemic' stock-outs
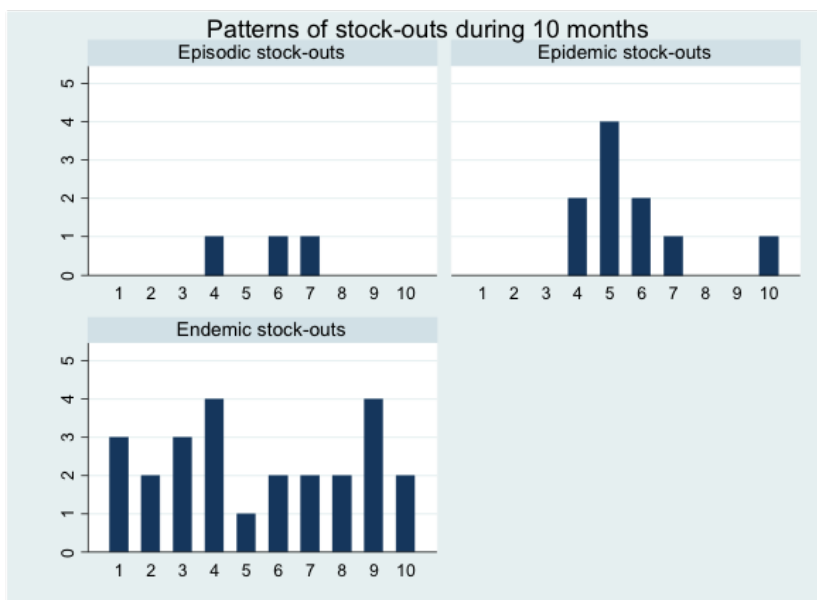
## *Challenges in the field*

The greatest difficulty in rolling-out the research activities, especially in conducting focus group discussions or organizing the motivational training, was to bring together health providers from the 2 districts, because some health facilities are far from the district headquarters and health centres have few human resources so replacements are hard to find. Similarly, interviewing health providers or asking them to present their stock cards and supply was sometimes challenging because they were busy with consultations. The solution found by the team was to hold meetings and facility audits in the afternoons, when less patients visit the facilities. Also, at the beginning the team had to always ask for the stock cards, which took some time for the health worker team to gather these documents. After 3-4 months, it became easier to work with all health centres at each monthly visits since providers started to be more organized and prepared the documents for the ICRHM team.

Another point to mention is that at first all health centre teams in group 1 and 2 found it difficult to understand the scoring system (i.e. the credits they could earn) and its meaning: the errors identified in the stock cards and why they were considered a mistake. In addition, stock-outs of stock cards even occurred, meaning that health providers were no longer able to monitor their supply. Nevertheless, health centres adapted and improvised stock cards, for example writing on pieces of cardboard or A4 sheets. Once the stock cards were again distributed to all heath facilities they then copied over the information. And finally, even though there are norms and standards for the dispensing and storage of drugs and contraceptives and other supplies, in the field we found in practice that each health centre has its own internal arrangements, which sometimes make it difficult to standardize approaches and interventions.

# CONCLUSIONS AND
## LESSONS LEARNED

# Quantifying motivation and stock-outs

## Measuring motivations

Motivation cannot be measured in a direct way, it can only be derived from behaviour (e.g. absenteeism) or from questioning individuals on their perceptions. Both approaches have considerable limitations: behaviour can be influenced by many confounders other than motivation, and assessing perception of individuals is very subjective. However, instruments for measuring workers' motivation have been developed, mostly in industrialised country settings, but efforts have been made to transfer them to other contexts such as Georgia and Jordan, but also South-Africa and Kenya (Bennett 2001, Penn-Kekana 2005, Prytherch 2012, Mbindyo 2009). All this pioneering work resulted in a validated questionnaire measuring motivational outcomes, i.e. 7 constructs (through 23 questions): i) general motivation; ii) burnout; iii) job satisfaction; iv) intrinsic job satisfaction; v) organizational commitment; vi) conscientiousness; and vii) timeliness and attendance. The tool was used for a baseline assessment for a health strengthening system intervention in Zambia and showed variation in motivation by sex, training and time in post inter alia, and no problems with the tool were reported (Mutale 2013).

The questionnaire described above is the one applied in this study, yet we did not find any variation by socio-demographic characteristics and neither could we link changes in motivation with the interventions implemented. A first important remark is that the questionnaire was self-administered in previous occasions, while in this project it was administered through a face-to-face interview. The presence of the interviewer and attempts of the participants to answer in a socially desirable way may have led to more positive answers, taking away any of the variation. Furthermore, Mutale et al. used mean scores which are, as opposed to the median scores used in this study,

more sensitive for outliers and thus capture more variation. Finally, our sample size was very limited which made it more difficult to detect significant differences.

Other techniques than surveys, such as qualitative interviews, might help to determine motivation. However, if looking for quantitative estimations, studies might want to focus on only 1 component of motivation in order to increase the validity of the measured item. For example, Kruse et al. measured burn-out among health workers in Zambia and found that 51% of health workers had feelings of burnout, 38% didn't manage to go to work at least once per month because of burnout feelings, and 11% reported to be harsh against patients at least once per week (Kruse 2009).

## Measuring stock-outs

Stock-outs reported by the stock cards and stock-outs identified by counting stock do not always lead to the same results. According to the first method, several health centres had months without stock-outs while the stock-counting data did not confirm this (figure 16a-b versus figure 17). One explanation is that the stock cards were not filled in correctly and that they did not represent the stock actually present in the health facility. Besides this 'under-reporting', it might also be that the counted stock has errors, if for example supply is not kept in the pharmacy, where stock was mainly counted, and providers who helped the field worker did not show all supply. Both measurements clearly have their limitations and researchers should carefully choose their data collection method of preference depending on the aim of the study and the context in which it is carried out.

While there is a certain discrepancy between the results of the 2 stock-out measurements, the data also show similarity: stocks cards were mostly missing for female condoms, IUDs and implants, which are also the methods that were mostly stocked out according to the count data. Also the number of stock-outs were less in group 1 and 2 compared with the control group according to the 2 types of stock-outs observed. However, estimating accurately the occurrence of stock-outs and especially the duration of each stock-out remains difficult in settings where stock is badly registered. Better storage and electronic registration systems would not only improve supply monitoring significantly but would also give more insight in the causes and frequency of stock-outs.

# Motivational training

The impact of the motivational training on stock-outs is not described in the result section yet we do consider it an important part of the project. The reason why the effect of the training is not presented is two-fold. Firstly, the results were not truly measurable (e.g. the training did not include a test to detect any improvement), and neither did we estimate desirable outcomes such as more team work and communication. Secondly, while aiming at participation of several staff members of each of the health centres of group 1 and 2, some centres did only send 1 health care provider to the training and of some facilities the provider only participated in 1 of the 2 afternoons of training. As such, only a limited number of health care providers received the full training.

Nevertheless, the ICRH-M team as well as the participating health workers evaluated the training as very positive. The type of training was something new for all participants, and was a positive surprise for many. Providers are used to training on technical skills and not to a dynamic kind of meeting to identify the individual and collective difficulties faced by health workers and seek for solutions together.

Health professionals learned various individual relaxation techniques, and skills for communication, understanding and sharing, but also learned to analyse their own health centre with the introduction of the SWOT analysis (identifying strengths, weaknesses, opportunities and threats). This exercise brought an immeasurable gain in the extent that they could see the positive things of their health facility and not only problems. They also saw the opportunities that they could grasp and improve their working conditions and technical skills.

The training also created interaction between health care providers from different health centres, allowing them to learn more about the difficulties and potentialities of professionals from other health facilities. It was also, and most importantly, an opportunity to improve cohesion within each health facility team between different sectors, linking the nurses in charge of family planning services, the pharmacy technician and the head of the health centre together as a team and encouraging them to work together and to improve the management and work quality of the facility on stock management. Another gain was the fact that health professionals from different health centres presented and reflected on their problems and moved towards potential solutions together as a group.

The ICRH-M team at first noticed some resistance of the health workers, who were not used to a workshop of this nature. However, on the second day of training we noticed an opening up of the participants and greater collaboration between them and a certain unity and trust. At the end of the training the participants were amazed at the self-discoveries that had been made and the improvements that had been identified. In the months following the workshop, health professionals requested a follow-up workshop with enthusiasm. While we were not able to make a connection between the training and improvements in motivation or stock management, the team did observe a better greater connection and collaboration between members of health centre teams.

# Impact of the interventions

## The relation between stock-outs and demand

Comparing the usage of family planning methods with the observed stock-outs of each of the contraceptives, we found that the less a method is used, the more stock-outs were identified. This is an important conclusion since it may point at stock-outs being the cause of low uptake, rather than or in addition to low demand. This requires further research.

## The causes of stock-outs

In our study setting the long-acting reversible family planning methods (IUDs and implants) were often stocked out. Reasons behind these stock-outs need to be investigated in order to identify potential solutions. Stock-outs might occur due to stock-outs at the level of the warehouse, or logistic problems, but health workers might also order less of a certain contraceptive for various reasons: they might have moral problems with it or think of it as unsafe, they might not feel confident to insert an IUD or implant, or they might perceive a method as unpopular and hence stop ordering it. According to the stock-counting data, some health centres indeed lacked a certain family planning method at each of the assessments made during the 10 months of the interventions (referred to as 'endemic stock-outs'). This indicates a more structural problem at the level of the health centre as opposed to stock-outs that occur once in a while, which might be more rooted in more temporal problems such as peaks in demand (cfr. the national health weeks) or inaccessible roads during the rain season. This also suggests that different approaches are needed to solve these different types of stock-outs.

## *Importance of supportive supervision*

Given that improvement in stock management was noted among the 3 groups and based on how participants described the impact of the programme during the focus group discussions, we can conclude that the monthly visits were crucial in changing providers' effort to monitor stock. Besides detecting progress in stock registration and observing a decline in stock-outs, also other important changes were noted in the field. For example, at the beginning of the project the team saw that nurses were making the request for family planning methods verbally to the pharmacist, who then provided the methods without filling any forms; in some health facilities the nurse in charge of family planning methods had no stock cards. With the implementation of the project these issues were overcome with monthly visits, and each sector in the health facility began to complete their records more accurately. Moreover the ICRHM team played a big role initially in helping with the corrections and explaining how to fill in the stock records. After a while, the health centre teams started working together better as a team, the pharmacists began to take the

initiative to explain to the nurses their errors and how they should fill in the records, and ensure that they filled in the stock records. As such, they took over the role of the ICRHM team and provided supervision for other members in the team. While participants of the focus group discussions confirmed that the contact moments had the most impact, also the evaluation reports that were distributed among group 1 and 2 were valued, as well as the material incentives for group 2. However, it is important to note that what initially was not considered an intervention but rather a data collection activity, turned out to lead to a most valuable conclusion: by asking providers for their stock registration forms, and by discussing with them the problems they face and providing solutions, health care workers felt recognized and appreciated which stimulated them to improve the quality of their services.

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# APPENDICES

# APPENDIX 1: MOTIVATION

## Motivation – differences among the 3 groups

In the following 3 tables (1.1 – 1.3), motivation measured at baseline and during the 1st and 2nd follow-up is compared among the 3 groups. Using the Kruskal Wallis test, the total motivation as well as the subcomponents of the motivational scale are compared. For none of the measurements, a statistical difference was detected (i.e. the p-value was always higher than 0.05). This means that at no point in time and for none of the measured components the groups differed significantly in motivation.

**Table 1.1: Motivation reported by health care providers at baseline;**
**comparing the 3 groups by use of a Kruskal Wallis test** (n=39; i.e. not lost in follow-up)

| | Group 1 (n=10) | Group 2 (n=12) | Group 3 (n=17) | Kruskal Wallis |
|---|---|---|---|---|
| | Median (IQR) | Median (IQR) | Median (IQR) | p-value |
| **OVERALL MOTIVATION (max 105)** | **88.5 (87-92)** | **84.5 (79-93)** | **93 (86.5-95)** | **0.23** |
| General motivation | 3.7 (3.0-4.3) | 3.8 (3.5-4.2) | 3.7 (3.3-4.3) | 0.91 |
| Burn out (reversed) | 3.5 (3.0-4.5) | 3.3 (2.5-4.3) | 3.5 (3.0-4.0) | 0.65 |
| Job satisfaction | 4.7 (4.3-5.0) | 4.3 (3.7-4.8) | 4.3 (3.7-5.0) | 0.37 |
| Intrinsic motivation | 4.7 (4.3-4.7) | 4.2 (3.8-5.0) | 4.7 (4.7-5.0) | 0.18 |
| Organizational commitment | 4.2 (4.2-4.4) | 3.9 (3.2-4.4) | 4.4 (3.8-4.8) | 0.37 |
| Conscientiousness | 5.0 (4.0-5.0) | 5.0 (4.3-5.0) | 5.0 (4.5-5.0) | 0.93 |
| Timeliness and attendance | 4.3 (4.0-4.7) | 4.5 (4.0-5.0) | 4.7 (4.0-5.0) | 0.64 |

**Table 1.2: Motivation reported by health care providers at 1st follow-up;**
**comparing the 3 groups by use of a Kruskal Wallis test** (n=39; i.e. not lost in follow-up)

| | Group 1 (n=10) | Group 2 (n=12) | Group 3 (n=17) | Kruskal Wallis |
|---|---|---|---|---|
| | Median (IQR) | Median (IQR) | Median (IQR) | p-value |
| **OVERALL MOTIVATION (max 105)** | **87 (83-88)** | **90 (86-93)** | **86 (83-91)** | **0.69** |
| General motivation | 3.7 (2.7-4.0) | 3.7 (3.3-4.0) | 3.3 (3.3-4.0) | 0.92 |
| Burn out (reversed) | 3.0 (3.0-4.0) | 4.5 (2.5-4.5) | 3.0 (2.0-4.0) | 0.66 |
| Job satisfaction | 4.0 (4.0-5.0) | 4.3 (4.0-4.7) | 4.3 (4.3-4.7) | 0.98 |
| Intrinsic motivation | 4.7 (4.3-4.7) | 4.5 (3.7-5.0) | 4.3 (4.0-5.0) | 0.65 |
| Organizational commitment | 4.0 (3.8-4.6) | 4.0 (4.0-4.2) | 4.0 (3.6-4.6) | 0.99 |
| Conscientiousness | 4.5 (4.5-5.0) | 5.0 (4.5-5.0) | 5.0 (4.5-5.0) | 0.27 |
| Timeliness and attendance | 4.7 (4.3-4.7) | 5.0 (4.7-5.0) | 4.7 (4.7-5.0) | 0.17 |

**Table 1.3: Motivation reported by health care providers at 2nd follow-up;**
**comparing the 3 groups by use of a Kruskal Wallis test** (n=39; i.e. not lost in follow-up)

| | Group 1 (n=10) | Group 2 (n=12) | Group 3 (n=17) | Kruskal Wallis |
|---|---|---|---|---|
| | Median (IQR) | Median (IQR) | Median (IQR) | p-value |
| **OVERALL MOTIVATION (max 105)** | **90 (88-90)** | **87 (83-90)** | **87 (83-90)** | **0.24** |
| General motivation | 4.0 (3.3-4.3) | 3.8 (3.3-4.3) | 3.7 (3.3-4.0) | 0.89 |
| Burn out (reversed) | 3.5 (3.0-4.0) | 3.0 (3.0-4.5) | 4.0 (2.5-4.5) | 0.68 |
| Job satisfaction | 4.3 (4.3-4.7) | 4.8 (4.3-5.0) | 4.7 (3.7-4.7) | 0.12 |
| Intrinsic motivation | 4.7 (4.3-5.0) | 4.3 (4.0-4.3) | 4.7 (4.3-4.7) | 0.15 |
| Organizational commitment | 4.1 (4.0-4.4) | 4.0 (3.8-4.3) | 4.0 (3.6-4.4) | 0.70 |
| Conscientiousness | 4.8 (4.5-5.0) | 5.0 (4.5-5.0) | 5.0 (4.5-5.0) | 0.87 |
| Timeliness and attendance | 4.7 (4.3-5.0) | 4.2 (4.0-4.8) | 4.7 (4.3-5.0) | 0.44 |

# *Motivation – differences between group 1 and 2 versus group 3*

In the following 3 tables (1.4 – 1.6), motivation measured at baseline and during the 1st and 2nd follow-up is compared between the intervention groups (group 1 and 2) and the 3rd group (the control group). Using the Wilcoxon Mann-Whitney test, the total motivation as well as the subcomponents of the motivational scale are compared. For none of the measurements, a statistical difference was detected (i.e. the p-value was always higher than 0.05). This means that at no point in time and for none of the measured components health centres in group 1 and 2 had higher or lower motivation compared with the health centres in the control group.

**Table 1.4: Motivation reported by health care providers at baseline; comparing group 1 and 2 versus group 3 by use of a Wilcoxon Mann-Whitney test** (n=39; i.e. not lost in follow-up)

|  | Group 1 & 2 (n=22) | Group 3 (n=17) | Wilcoxon Mann-Whitney |
|---|---|---|---|
|  | Median (IQR) | Median (IQR) | p-value |
| **OVERALL MOTIVATION (max 105)** | **87.5 (80-92)** | **93 (86.5-95)** | **0.10** |
| General motivation | 3.7 (3.3-4.3) | 3.7 (3.3-4.3) | 0.93 |
| Burn out (reversed) | 3.5 (3.0-4.5) | 3.5 (3.0-4.0) | 0.68 |
| Job satisfaction | 4.3 (4.3-5.0) | 4.3 (3.7-5.0) | 0.41 |
| Intrinsic motivation | 4.3 (4.0-5.0) | 4.7 (4.7-5.0) | 0.06 |
| Organizational commitment | 4.1 (3.6-4.4) | 4.4 (3.8-4.8) | 0.32 |
| Conscientiousness | 5.0 (4.0-5.0) | 5.0 (4.5-5.0) | 0.78 |
| Timeliness and attendance | 4.3 (4.0-4.7) | 4.7 (4.0-5.0) | 0.37 |

**Table 1.5: Motivation reported by health care providers at 1st follow-up; comparing group 1 and 2 versus group 3 by use of a Wilcoxon Mann-Whitney test** (n=39; i.e. not lost in follow-up)

|  | Group 1 & 2 (n=22) | Group 3 (n=17) | Wilcoxon Mann-Whitney |
|---|---|---|---|
|  | Median (IQR) | Median (IQR) | p-value |
| **OVERALL MOTIVATION (max 105)** | **88 (83-92)** | **86 (83-91)** | **0.79** |
| General motivation | 3.7 (3.0-4.0) | 3.3 (3.3-4.3) | 0.93 |
| Burn out (reversed) | 3.5 (3.0-4.5) | 3.0 (2.0-4.0) | 0.46 |
| Job satisfaction | 4.3 (4.0-5.0) | 4.3 (4.3-4.6) | 0.85 |
| Intrinsic motivation | 4.7 (4.3-5.0) | 4.3 (4.0-5.0) | 0.35 |
| Organizational commitment | 4.0 (3.8-4.4) | 4.0 (3.6-4.6) | 0.99 |
| Conscientiousness | 5.0 (4.5-5.0) | 5.0 (4.5-5.0) | 0.29 |
| Timeliness and attendance | 4.7 (4.3-5.0) | 4.7 (4.7-5.0) | 0.94 |

**Table 1.6: Motivation reported by health care providers at 2nd follow-up; comparing group 1 and 2 versus group 3 by use of a Wilcoxon Mann-Whitney test** (n=39; i.e. not lost in follow-up)

|  | Group 1 & 2 (n=22) | Group 3 (n=17) | Wilcoxon Mann-Whitney |
|---|---|---|---|
|  | Median (IQR) | Median (IQR) | p-value |
| **OVERALL MOTIVATION (max 105)** | **89 (85-90)** | **87 (83-90)** | **0.36** |
| General motivation | 4.0 (3.3-4.3) | 3.7 (3.3-4.3) | 0.63 |
| Burn out (reversed) | 3.0 (3.0-4.0) | 4.0 (2.5-4.5) | 0.91 |
| Job satisfaction | 4.5 (4.3-5.0) | 4.3 (3.7-4.7) | 0.11 |
| Intrinsic motivation | 4.3 (4.0-4.7) | 4.7 (4.3-4.7) | 0.64 |
| Organizational commitment | 4.0 (3.8-4.4) | 4.0 (3.6-4.4) | 0.67 |
| Conscientiousness | 5.0 (4.5-5.0) | 5.0 (4.5-5.0) | 0.88 |
| Timeliness and attendance | 4.5 (4.0-5.0) | 4.7 (4.3-5.0) | 1.00 |

## *Motivation – changes over time*

In table 1.7, motivation measured at baseline and during the 1st and 2nd follow-up is presented. Using the Wilcoxon signed ranks test, the total motivation as well as the subcomponents and the individual questions are compared: for the entire cohort of participants, baseline results were compared with the results of the 1st follow-up, as well as with the results of the 2nd follow-up. As such, changes in time could be verified. For few measurements, a statistical difference was detected (i.e. the p-value was lower than 0.05), but no clear trend could be detected. This means that in general, motivation, reported by the participants, did not change in time.

**Table 1.7: Motivation reported by health care providers at baseline, 1st and 2nd follow-up; comparing baseline results with 1st follow-up as well as with 2nd follow-up by use of a Wilcoxon signed ranks test (n=39; i.e. not lost in follow-up)**

| MOTIVATION PROVIDERS: | Baseline (n=39) Median (IQR) | 1st Follow-up (n=39) Median (IQR) | 2nd Follow-up (n=39) Median (IQR) | Wilcoxon signed ranks test (baseline – 1st follow-up) p-value | Difference 1st follow-up - baseline IQR*** | Wilcoxon signed ranks test (baseline – 2nd follow-up) p-value | Difference 2nd follow-up - baseline IQR** |
|---|---|---|---|---|---|---|---|
| **OVERALL MOTIVATION (max 105)** | **89 (84-94)** | **88 (83-91.5)** | **87.5 (85-90)** | **0.97** | **-6 – 5** | **0.89** | **-6 – 4** |
| **General motivation** | **3.7 (3.3-4.3)** | **3.7 (3.3-4.0)** | **3.7 (3.3-4.3)** | **0.80** | **-0.7 – 0.3** | **0.86** | **-0.7 – 0.7** |
| Feel motivated to work hard | 4 (3-5) | 4 (4-5) | 4 (2-4) | 0.98 | -1 – 1 | 0.39 | -1 – 0 |
| Only do this job to get paid* | 5 (4-5) | 5 (4-5) | 4 (4-5) | 0.46 | 0 – 1 | 0.12 | -1 – 0 |
| Do this job to have long-term security | 3 (2-4) | 2 (2-4) | 4 (2-4) | 0.39 | -1.5 – 1 | 0.08 | 0 – 2 |
| **Burn out (reversed)** | **3.5 (3.0-4.5)** | **3.0 (3.0-4.0)** | **3.5 (3.0-4.5)** | **0.32** | **-1 – 0.5** | **0.99** | **-0.5 – 1** |
| Feel emotionally drained at end of day* | 4 (2-4) | 2 (2-4) | 4 (2-4) | 0.02 | -2 – 0 | 0.14 | -2 – 0 |
| At times, you dread facing a day at work* | 4 (2-5) | 4 (3-5) | 4 (4-5) | 0.75 | -1 – 1 | 0.40 | -1 – 1 |
| **Job satisfaction** | **4.3 (4.0-5.0)** | **4.3 (4.0-4.7)** | **4.3 (4.0-5.0)** | **0.32** | **-0.3 – 0.7** | **0.54** | **-0.3 – 0.3** |
| Overall, I am very satisfied with my job | 5 (4-5) | 5 (5-5) | 5 (4-5) | 0.70 | 0 – 0.5 | 0.61 | 0 – 0 |
| Not satisfied with my colleagues* | 4 (4-5) | 4 (4-5) | 4(4-4) | 0.29 | 0 – 1 | 0.30 | -1 – 1 |
| I am satisfied with my supervisor | 4 (4-5) | 4 (4-5) | 4 (4-5) | 0.23 | 0 – 1 | 0.93 | -1 – 1 |
| **Intrinsic motivation** | **4.7 (4.0-5.0)** | **4.3 (4.0-5.0)** | **4.3 (4.0-4.7)** | **0.37** | **-0.5 – 0.3** | **0.38** | **-0.7 – 0.3** |
| Satisfied with opportunity to use abilities | 5 (4-5) | 5 (4-5) | 5 (4-5) | 0.46 | -1 – 0 | 0.09 | -1 – 0 |
| Satisfied with accomplishing something | 5 (4-5) | 5 (4-5) | 4 (4-5) | 0.88 | -.5 – 0 | 0.08 | -1 – 0 |
| My work is not valuable these days* | 4 (4-5) | 4 (4-5) | 4 (4-5) | 0.36 | -1 – 0 | 0.56 | -1 – 1 |
| **Organizational commitment** | **4.2 (3.6-4.6)** | **4.0 (3.8-4.6)** | **4.0 (3.8-4.4)** | **0.97** | **-0.4 – 0.4** | **0.38** | **-0.4 – 0.2** |
| Proud to work for this health facility | 4 (4-5) | 5 (4-5) | 4 (4-5) | 0.87 | 0 – 0 | 0.58 | 0 – 0 |
| My values and this facility's are similar | 4 (4-5) | 4 (4-4) | 4 (4-4) | 0.05 | -1 – 0 | 0.32 | -1 – 0 |
| Glad to work for this facility | 4 (2-5) | 4 (2-4) | 4 (2-4) | 0.79 | -1 – 1 | 0.53 | -1 – 0 |
| Feel little commitment to this facility* | 4 (4-5) | 4 (4-5) | 4 (4-5) | 0.36 | 0 – 1 | 0.22 | -1 – 0 |
| This facility inspires me to do my best | 5 (4-5) | 5 (4-5) | 4 (4-5) | 0.54 | 0 – 0 | 0.79 | -1 – 1 |
| **Conscientiousness** | **5 (4.5-5.0)** | **5 (4.5-5.0)** | **5 (4.5-5.0)** | **0.96** | **0 – 0** | **0.84** | **0 – 0** |
| I am a hard worker | 5 (4-5) | 5 (4-5) | 5 (4-5) | 0.56 | 0 – 0 | 0.62 | 0 – 0 |
| Do things without being asked or told | 5 (5-5) | 5 (5-5) | 5 (5-5) | 0.16 | 0 – 0 | 0.02 | 0 – 0 |
| **Timeliness and attendance** | **4.7 (4.0-5.0)** | **4.7 (4.7-5.0)** | **4.7 (4.0-5.0)** | **0.01** | **0 – 0.7** | **0.72** | **-0.3 – 0.3** |
| I am punctual about coming to work | 5 (4-5) | 5 (4-5) | 5 (4-5) | 0.03 | 0 – 0 | 0.05 | 0 – 1 |
| I am often absent from work | 5 (4-5) | 5 (4-5) | 5 (4-5) | 0.15 | 0 – 1 | 0.80 | -1 – 0 |
| Not a problem if I sometimes come late* | 5 (4-5) | 5 (5-5) | 5 (4-5) | 0.06 | 0 – 1 | 0.33 | -1 – 0 |

*reversed score: the higher the score, the higher the motivation

*** inter-quartile range

# APPENDIX 2:
# STOCK-OUTS ON THE DAY OF THE ASSESSMENT

**Stocked out health centres for each of the family planning methods, averaged over the 10 month intervention period**

In tables 2.1 and 2.2, the average number of stock-outs per family planning method over 10 months is presented. The stock-outs are defined by counting stock on the day of the facility audits. Additionally, results are also expressed as the percentage of health facilities stocked out for each of the contraceptives during the intervention[1]. In table 2.1, results for the 3 groups are shown, while in table 2.2, the results of group 1 and 2 are combined. Using the Wilcoxon Mann-Whitney test, the number of stock-outs among the groups are compared for each of the family planning methods. Only for the number of stock-outs of female condoms a statistical difference was detected (i.e. the p-value was always lower than 0.05). This means that health centres in the control group had more female condom stock-outs during the intervention period compared with the 2 intervention groups.

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[1] The RHSC developed a set of indicators to help prevent inconsistent measurements of stock-outs across organizations. *The percentage of facilities stocked out at the end of reporting periods, averaged over a 12-month period (reported by family planning product or method offered),* is one of the suite of indicators to measure point-Reproductive Health Supplies Coalition. 2015. Harmonized Suite of Indicators to Measure Stockouts and Availability of Contraceptives, version 1.0. Arlington, Va.: JSI Research and Training Institute,Inc. B.. Harmonized Suite of Indicators to Measure Stockouts and Availability of Contraceptives

**Table 2.1: Average number of stock-outs and percentage of stocked out health centres for each method per group (over 10 months); comparing results of group 1 and group 2 versus the control group by use of a Wilcoxon-Mann Whitney test**

| Method | Total # of assessed HC for which info is available on whether the method is offered (denominator) | | | # of assessed HC that were stocked out of the FP method at day of the facility assessment | | | % of HC stocked out, by FP method offered on day of assessment | | | Wilcoxon-Mann Whitney test (group x vs control) - p-value | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 |
| Female condom | 5 | 5 | 5 | 1.4 | 1.5 | 4.0 | 28% | 30% | 80% | 0.03 | 0.02 |
| IUD | 5 | 5 | 5 | 0.9 | 0.9 | 1.5 | 18% | 17% | 30% | 0.74 | 0.50 |
| Implant | 5 | 5 | 5 | 0.5 | 0.5 | 1.4 | 10% | 10% | 28% | 0.26 | 0.46 |
| Injectable - Depo | 5 | 5 | 5 | 0.8 | 0.5 | 0.5 | 16% | 10% | 10% | 0.52 | 1.00 |
| Pill - Microlut | 5 | 5 | 5 | 0.2 | 0.1 | 0.2 | 4% | 2% | 4% | 1.00 | 0.51 |
| Pill - Microgynon | 5 | 5 | 5 | 0.4 | 0.1 | 0.4 | 8% | 2% | 8% | 1.00 | 0.19 |

**Table 2.2: Average number of stock-outs and percentage of stocked out health centres for each method per group (over 10 months); comparing results of group 1 + 2 versus the control group by use of a Wilcoxon-Mann Whitney test**

| Method | Total # of assessed HC for which info is available on whether the method is offered (denominator) | | # of assessed HC that were stocked out of the FP method at day of the facility assessment | | % of HC stocked out. by FP method offered on day of assessment | | Wilcoxon-Mann Whitney test (group 1+2 vs control) - p-value |
|---|---|---|---|---|---|---|---|
| | Group1+2 | Control | Group1+2 | Control | Group1+2 | Control | Group1+2 |
| Female condom | 10 | 5 | 2.9 | 4.0 | 29% | 80% | 0.01 |
| IUD | 10 | 5 | 1.8 | 1.1 | 18% | 23% | 0.56 |
| Implant | 10 | 5 | 1.0 | 1.4 | 10% | 29% | 0.28 |
| Injectable - Depo | 10 | 5 | 1.3 | 0.4 | 13% | 9% | 0.70 |
| Pill - Microlut | 10 | 5 | 0.3 | 0.3 | 3% | 6% | 0.71 |
| Pill - Microgynon | 10 | 5 | 0.5 | 0.3 | 5% | 6% | 0.45 |

**Stocked out health centres for each of the family planning methods, for each month of the 10 month intervention period**

In the following tables and figures, the number of stock-outs as well as the percentage of health centres stocked out is showed per family planning method for each group in each month (or round) of the intervention period[2]. Again the results are based on stock-counting performed during the monthly facility audits. The tables and figures allow us to see whether or not stock-outs occurred more at the beginning of the 10 months, for each of the contraceptives, and whether they occurred more in the control group as opposed to the intervention groups. The latter was tested by applying the Wilcoxon-Mann Whitney test.

At baseline, i.e. round 1, no statistical difference was found between the groups with regard to the occurrence of stock-outs of female condoms. From round 2 onwards, group 1 and 2 had significantly less stock-outs than the control group, with a drop-back during months 5 to 8 (table 2.3).

Stock-outs of other contraceptives did not happen more or less in groups 1 and 2 compared with the control group, except for implants during round 1 and 3 (table 2.5). Given that these difference occur in the beginning of the project, it is difficult to consider them as a results of the interventions.

Besides reporting the number of months that health centres had stock-outs of each of the 6 contraceptives, figures 2.1 b to 2.6 b, give also insight in how the number of stock-outs per method varies among the health centres. For example, figure 2.1 b shows how in the control group 3 health centres had a stock-out of female condom during 9 months of the intervention and 1 centre during the entire intervention period. This clearly shows that health centres in group 3 were either not willing or capable to obtain female condoms. In the case of IUDs, 1 centre in group 3 is responsible for the fact that not 1 month is without an observed stock-out (figure 2.2 b). Also stock-outs of implants were mainly caused by 1 health centre in the control group (figure 2.3 b), while for the other contraceptives (depo-provera, microlut and microgynon), the limited number of stock-outs were detected in various health centres of both the intervention groups and the control group (figures 2.4 b – 2.6 b).

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[2] The RHSC developed a set of indicators to help prevent inconsistent measurements of stock-outs across organizations. The *percentage of facilities stocked out, by family planning product or method offered, on the day of the assessment (reporting day or day of visit)*, is the universal and primary indicator to measure point-in-time stock-outs (indicator B1).
Reproductive Health Supplies Coalition. 2015. Harmonized Suite of Indicators to Measure Stockouts and Availability of Contraceptives, version 1.0. Arlington, Va.: JSI Research and Training Institute, Inc. B.. Harmonized Suite of Indicators to Measure Stockouts and Availability of Contraceptives

## FEMALE CONDOM

**Table 2.3: Number of stock-outs and percentage of stocked out health centres for female condoms, per group and per month; comparing results of the intervention groups versus the control group by use of a Wilcoxon-Mann Whitney test**

| | # of assessed HC that were stocked out of the FP method at day of the facility assessment (=numerator; denominator=5)* | | | % of HC stocked out, by FP method offered on day of assessment | | | Wilcoxon-Mann Whitney test (group x versus control) p-value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 | Group1+ |
| round 1 | 2 | 4 | 4 | 40% | 100% | 80% | 0.22 | 0.37 | 0.61 |
| round 2 | 2 | 0 | 5 | 40% | 0% | 100% | 0.05 | 0.00 | 0.01 |
| round 3 | 2 | 1 | 5 | 40% | 20% | 100% | 0.05 | 0.01 | 0.01 |
| round 4 | 1 | 1 | 4 | 20% | 20% | 80% | 0.07 | 0.07 | 0.03 |
| round 5 | 1 | 2 | 3 | 20% | 40% | 60% | 0.22 | 0.55 | 0.28 |
| round 6 | 1 | 1 | 3 | 20% | 25% | 60% | 0.22 | 0.32 | 0.17 |
| round 7 | 2 | 1 | 4 | 40% | 20% | 80% | 0.22 | 0.07 | 0.08 |
| round 8 | 1 | 2 | 4 | 20% | 40% | 80% | 0.07 | 0.22 | 0.08 |
| round 9 | 1 | 1 | 4 | 20% | 20% | 80% | 0.07 | 0.07 | 0.03 |
| round 10 | 1 | 1 | 4 | 20% | 20% | 80% | 0.07 | 0.07 | 0.03 |

*Group2: Only 4 centres assessed during round 1 and 6

**Figures 2.1 a-b: Percentage of stocked out health centres for female condoms in the interventions groups and the control group (a); Number of months with stock-out of female condoms for each health centre in the intervention groups and the control group (b)**

## IUD

**Table 2.4: Number of stock-outs and percentage of stocked out health centres for IUDs, per group and per month; comparing results of the intervention groups versus the control group by use of a Wilcoxon-Mann Whitney test**

| | # of assessed HC that were stocked out of the FP method at day of the facility assessment (=numerator; denominator=5)* | | | % of HC stocked out, by FP method offered on day of assessment (Indicators B1) | | | Wilcoxon-Mann Whitney test (group x versus control) p-value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 | Group1+ |
| round 1 | 1 | 1 | 1 | 20% | 25% | 20% | 1 | 0.87 | 0.93 |
| round 2 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 3 | 1 | 0 | 1 | 20% | 0% | 20% | 1.00 | 0.32 | 0.60 |
| round 4 | 1 | 2 | 1 | 20% | 40% | 20% | 1.00 | 0.51 | 0.69 |
| round 5 | 1 | 1 | 1 | 20% | 20% | 20% | 1.00 | 1.00 | 1.00 |
| round 6 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.37 | 0.18 |
| round 7 | 1 | 0 | 2 | 20% | 0% | 40% | 0.51 | 0.13 | 0.19 |
| round 8 | 1 | 2 | 2 | 20% | 40% | 40% | 0.51 | 1.00 | 0.71 |
| round 9 | 1 | 1 | 3 | 20% | 20% | 60% | 0.22 | 0.22 | 0.13 |
| round 10 | 2 | 1 | 2 | 40% | 20% | 40% | 1.00 | 0.51 | 0.71 |

*Group2: Only 4 centres assessed during round 1 and 6

**Figures 2.2 a-b: Percentage of stocked out health centres for IUDs in the interventions groups and the control group (a); Number of months with stock-out of IUDs for each health centre in the intervention groups and the control group (b)**

## IMPLANT

**Table 2.5: Number of stock-outs and percentage of stocked out health centres for implants, per group and per month; comparing results of the intervention groups versus the control group by use of a Wilcoxon-Mann Whitney test**

| | # of assessed HC that were stocked out of the FP method at day of the facility assessment (=numerator; denominator=5)* | | | % of HC stocked out, by FP method offered on day of assessment (Indicators B1) | | | Wilcoxon-Mann Whitney test (group x versus control) p-value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 | Group1+ |
| round 1 | 0 | 1 | 3 | 0% | 25% | 60% | 0.05 | 0.32 | 0.06 |
| round 2 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 3 | 0 | 0 | 2 | 0% | 0% | 40% | 0.13 | 0.13 | 0.04 |
| round 4 | 1 | 2 | 3 | 20% | 40% | 60% | 0.22 | 0.55 | 0.28 |
| round 5 | 1 | 0 | 0 | 20% | 0% | 0% | 0.32 | / | 0.48 |
| round 6 | 1 | 1 | 0 | 20% | 25% | 0% | 0.32 | 0.26 | 0.27 |
| round 7 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 8 | 1 | 1 | 2 | 20% | 20% | 40% | 0.51 | 0.51 | 0.43 |
| round 9 | 1 | 0 | 2 | 20% | 0% | 40% | 0.51 | 0.13 | 0.19 |
| round 10 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |

*Group2: Only 4 centres assessed during round 1 and 6

**Figures 2.3 a-b: Percentage of stocked out health centres for implants in the interventions groups and the control group (a); Number of months with stock-out of implants for each health centre in the intervention groups and the control group (b)**
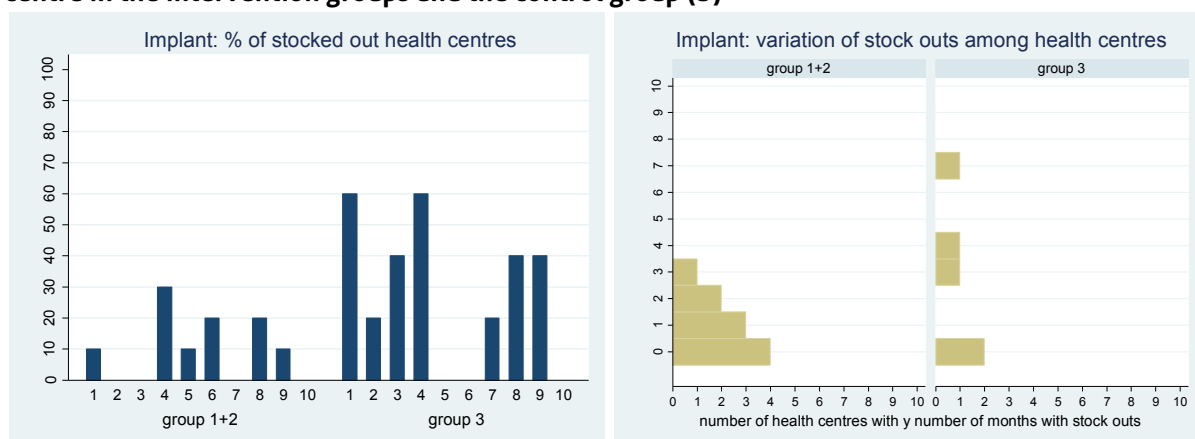
## DEPO

**Table 2.6: Number of stock-outs and percentage of stocked out health centres for depo-provera, per group and per month; comparing results of the intervention groups versus the control group by use of a Wilcoxon-Mann Whitney test**

| | # of assessed HC that were stocked out of the FP method at day of the facility assessment (=numerator; denominator=5)* | | | % of HC stocked out, by FP method offered on day of assessment (Indicators B1) | | | Wilcoxon-Mann Whitney test (group x versus control) p-value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 | Group1+ |
| round 1 | 1 | 0 | 0 | 20% | 0% | 0% | 0.32 | / | 0.46 |
| round 2 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 3 | 2 | 1 | 0 | 40% | 20% | 0% | 0.13 | 0.32 | 0.19 |
| round 4 | 2 | 2 | 2 | 40% | 40% | 40% | 1.00 | 1.00 | 1.00 |
| round 5 | 1 | 1 | 0 | 20% | 20% | 0% | 0.32 | 0.32 | 0.30 |
| round 6 | 1 | 0 | 0 | 20% | 0% | 0% | 0.32 | / | 0.46 |
| round 7 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 8 | 1 | 1 | 0 | 20% | 20% | 0% | 0.32 | 0.32 | 0.30 |
| round 9 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 10 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |

**Group2: Only 4 centres assessed during round 1 and 6

**Figures 2.4 a-b: Percentage of stocked out health centres for depo-provera in the interventions groups and the control group (a); Number of months with stock-out of depo-provera for each health centre in the intervention groups and the control group (b)**
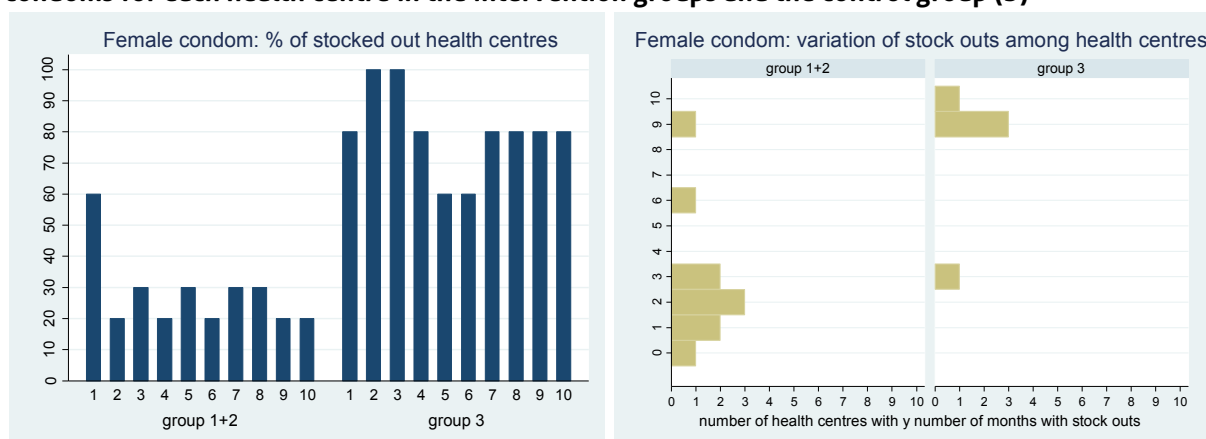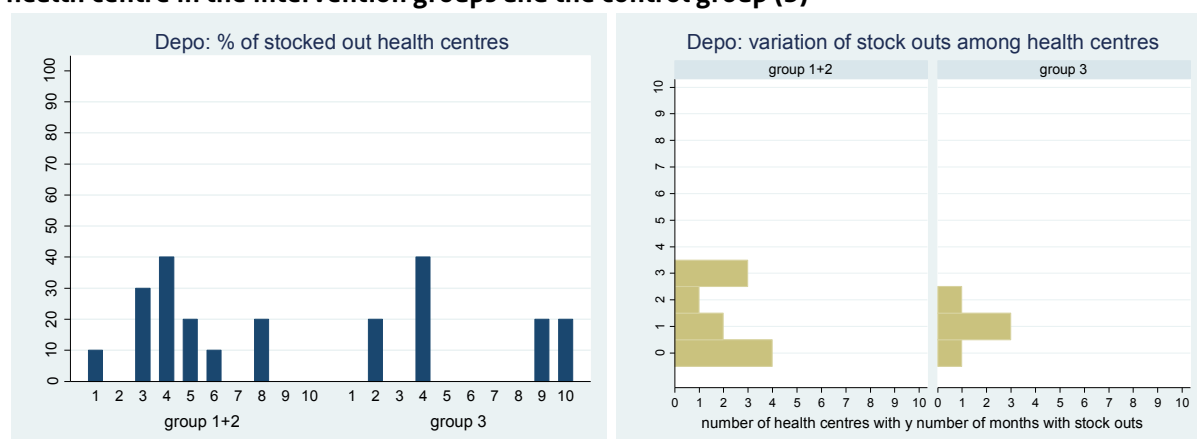
## MICROLUT

**Table 2.7: Number of stock-outs and percentage of stocked out health centres for microlut, per group and per month; comparing results of the intervention groups versus the control group by use of a Wilcoxon-Mann Whitney test**

| | # of assessed HC that were stocked out of the FP method at day of the facility assessment (=numerator; denominator=5)* | | | % of HC stocked out, by FP method offered on day of assessment (Indicators B1) | | | Wilcoxon-Mann Whitney test (group x versus control) p-value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 | Group1+ |
| round 1 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.37 | 0.18 |
| round 2 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 3 | 1 | 0 | 0 | 20% | 0% | 0% | 0.32 | / | 0.48 |
| round 4 | 1 | 0 | 0 | 20% | 0% | 0% | 0.32 | / | 0.48 |
| round 5 | 1 | 1 | 0 | 20% | 20% | 0% | 0.32 | 0.32 | 0.30 |
| round 6 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.37 | 0.18 |
| round 7 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 8 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 9 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 10 | 1 | 0 | 1 | 20% | 0% | 20% | 1.00 | 0.32 | 0.60 |

*Group2: Only 4 centres assessed during round 1 and 6

**Figures 2.5 a-b: Percentage of stocked out health centres for microlut in the interventions groups and the control group (a); Number of months with stock-out of microlut for each health centre in the intervention groups and the control group (b)**
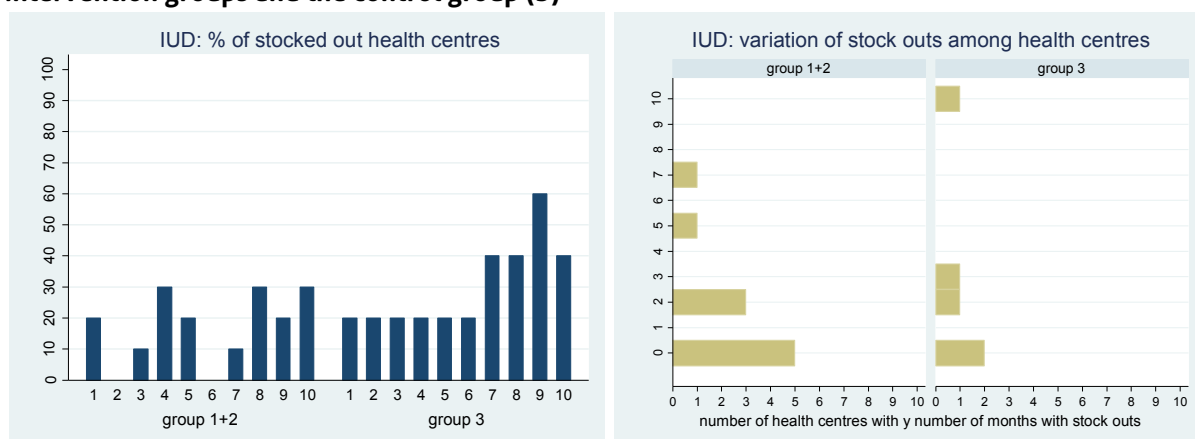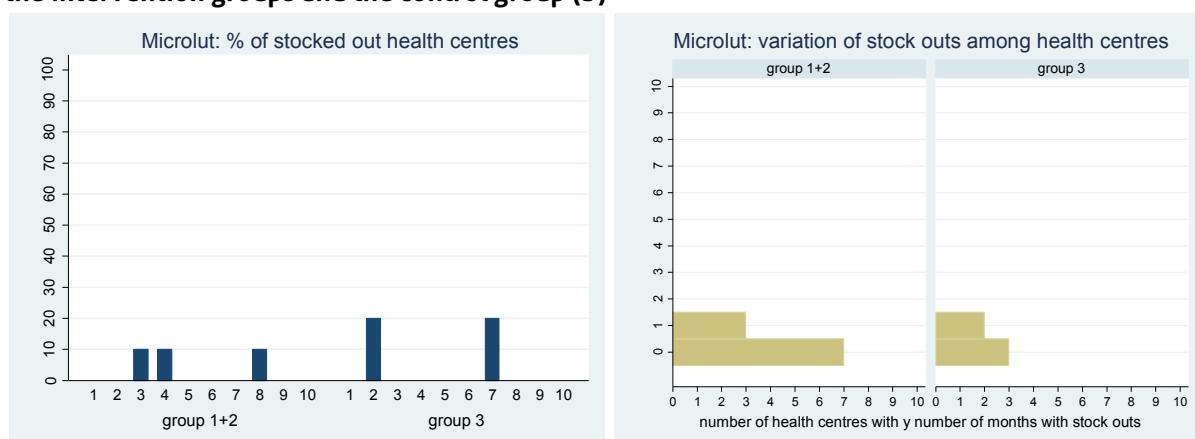
## MICROGYNON

**Table 2.8: Number of stock-outs and percentage of stocked out health centres for microgynon, per group and per month; comparing results of the intervention groups versus the control group by use of a Wilcoxon-Mann Whitney test**

| | # of assessed HC that were stocked out of the FP method at day of the facility assessment (=numerator; denominator=5)* | | | % of HC stocked out, by FP method offered on day of assessment (Indicators B1) | | | Wilcoxon-Mann Whitney test (group x versus control) p-value | | |
|---|---|---|---|---|---|---|---|---|---|
| | Group1 | Group2 | Control | Group1 | Group2 | Control | Group1 | Group2 | Group1+ |
| round 1 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 2 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 3 | 1 | 0 | 0 | 20% | 0% | 0% | 0.32 | / | 0.48 |
| round 4 | 1 | 0 | 0 | 20% | 0% | 0% | 0.32 | / | 0.48 |
| round 5 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 6 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 7 | 0 | 0 | 1 | 0% | 0% | 20% | 0.32 | 0.32 | 0.16 |
| round 8 | 0 | 1 | 0 | 0% | 20% | 0% | / | 0.32 | 0.48 |
| round 9 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |
| round 10 | 0 | 0 | 0 | 0% | 0% | 0% | / | / | / |

*Group2: Only 4 centres assessed during round 1 and 6

**Figures 2.6 a-b: Percentage of stocked out health centres for microgynon in the interventions groups and the control group (a); Number of months with stock-out of microgynon for each health centre in the intervention groups and the control group (b)**

**Stock-outs identified in each of the 15 health centres during the 10 monthly visits (rounds) for each of the 6 contraceptives**

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| Implant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IUD | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Implant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Health centre in group 1 – episodic stock-outs**

Stock-outs for 6 family planning methods over 10 months

**Health centre in group 1 – no stock-outs**

Stock-outs for 6 family planning methods over 10 months

Health centre in group 1 – endemic stock-outs



Stock-outs for 6 family planning methods over 10 months
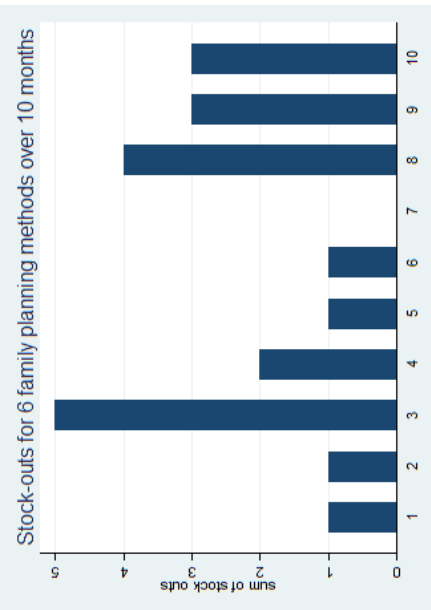
|  | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 9 |
| Implant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| Depo | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| IUD | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 5 |
| Microgynon | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| Microlut | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

Health centre in group 1 – epidemic stock-outs



Stock-outs for 6 family planning methods over 10 months
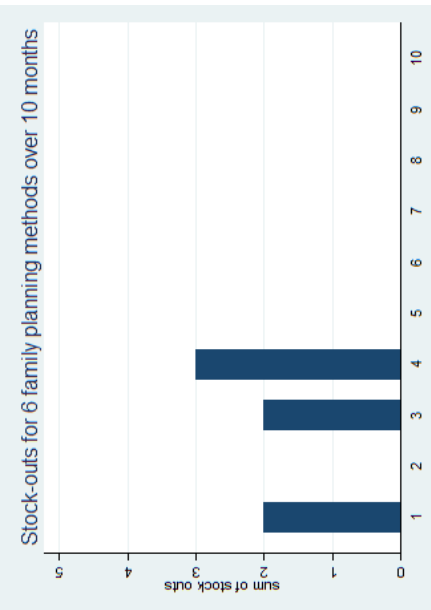
|  | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Implant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depo | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microgynon | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Microlut | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Implant | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| Depo | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| IUD | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| Microgynon | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 0 | 0 | 0 | 1 | | 0 | 1 | 1 | 1 | 5 |
| Implant | 1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 1 |
| Depo | 0 | 0 | 0 | 0 | 1 | | 0 | 0 | 0 | 0 | 1 |
| IUD | 1 | 0 | 0 | 1 | 1 | | 0 | 1 | 1 | 1 | 6 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
| Microlut | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
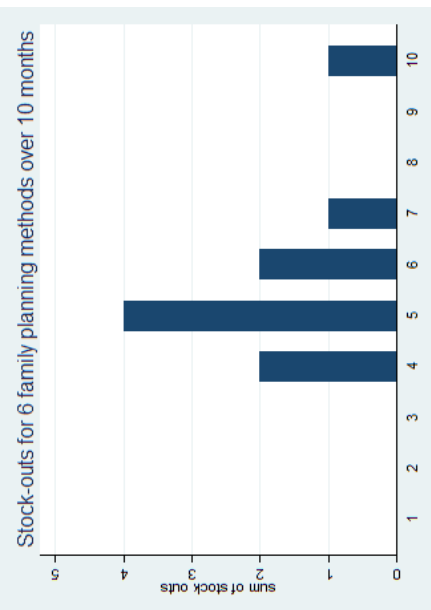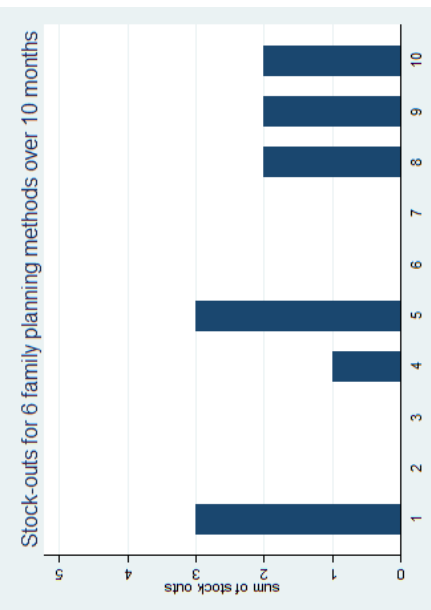
Health centre in group 1 – epidemic stock-outs



Stock-outs for 6 family planning methods over 10 months

Health centre in group 2 – epidemic stock-outs



Stock-outs for 6 family planning methods over 10 months

Health centre in group 2 – epidemic stock-outs

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|----|----|----|----|----|----|----|----|----|-----|-------|
| Female condom | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| Implant | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| Depo | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| IUD | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| Microgynon | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |



Health centre in group 2 – episodic stock-outs

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|----|----|----|----|----|----|----|----|----|-----|-------|
| Female condom | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| Implant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|  | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom |  | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| Implant |  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Depo |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IUD |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microgynon |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microlut |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|  | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Implant | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Depo | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Health centre in group 2 – episodic stock-outs



Stock-outs for 6 family planning methods over 10 months

Health centre in group 2 – episodic stock-outs



Stock-outs for 6 family planning methods over 10 months

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| Implant | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 4 |
| Depo | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 3 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 9 |
| Implant | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 7 |
| Depo | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microlut | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

Health centre in group 3 – endemic stock-outs



Stock-outs for 6 family planning methods over 10 months

Health centre in group 3 – endemic stock-outs



Stock-outs for 6 family planning methods over 10 months

## Health centre in group 3 – endemic stock-outs

|  | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 9 |
| Implant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microgynon | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |



Stock-outs for 6 family planning methods over 10 months

## Health centre in group 3 – episodic stock-outs

|  | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Implant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IUD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



Stock-outs for 6 family planning methods over 10 months

# Health centre in group 3 – endemic stock-outs



Stock-outs for 6 family planning methods over 10 months

| | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Female condom | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 9 |
| Implant | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Depo | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| IUD | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| Microgynon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Microlut | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |