Implementation and effectiveness of free health insurance for the poor pregnant women in Tanzania: a mixed methods evaluation

Abstract

Demand side financing strategies have been a popular means of increasing coverage and availability of effective maternal and child health services in low and middle income countries (LMIC). However, most research to date has focused on the effects of demand side financing on the use and costs of care with less attention being paid to how they work to achieve outcomes. This study used a mixed methods evaluation to determine the effect of a targeted health insurance scheme on access to affordable quality maternal and child care, and assess implementation fidelity and how this affected programme outcomes.

Programme effects on service access, affordability and quality were evaluated using difference in difference regression analysis, with outcomes being measured through facility, patient and household surveys and observations of care before the intervention started and eighteen months later. A simultaneous process evaluation was designed as a case study of the implementation experience. A total of 90 in-depth interviews (IDIs) and five focus group discussions were conducted during three rounds of data collection among respondents from management, facility and community. The scheme achieved high coverage among the target population and reduced the amount paid for antenatal and delivery care; however, there was no effect on service coverage and limited effects on quality of care. The lack of programme effects was partly due to the late timing of first ANC visits and registration for the scheme together with limited understanding of entitlements among beneficiaries and providers.

Better communication of programme benefits is needed to enhance effects together with integration of such schemes within existing purchasing mechanisms and in financially decentralised health systems.

Keywords: demand-side-financing, insurance, access to care, affordable, equity, Tanzania

Introduction

While notable progress has been made in reducing maternal and newborn mortality rates, many low and middle income countries (LMIC) still fall short of targets (Cohen et al., 2014). Inequity in coverage of essential health services during pregnancy and the postpartum period remains a key factor impeding progress in maternal outcomes. Access to and use of maternal and child health care services is often constrained by demand and supply side barriers. On the demand side, the costs of seeking and receiving care can limit access, and in the case of deliveries, can be unpredictable and potentially catastrophic (Storeng et al., 2008). On the supply side, poor quality of care at facilities, and the limited choice available to women in rural areas also constrains access (Macha et al., 2012).

In recognition of these constraints, LMIC governments have implemented a range of strategies to improve care delivery at the facility and to incentivise users to seek timely care. Demand side financing, or strategies to incentivise the use of specific services by reducing financial barriers to care seeking (Bowser, Gupta, & Nandakumar, 2016), include selective removal of user fees (McKinnon, Harper, Kaufman, & Bergevin, 2015), the distribution of vouchers (Bhatia & Gorter, 2007), conditional cash transfers (Lagarde, Haines, & Palmer, 2007) and health insurance (Morgan et al., 2013). Voucher schemes and health insurance can increase patient choice by removing financial barriers to care seeking, whilst also potentially incentivising providers to deliver better quality care (Grainger, Gorter, Okal, & Bellows, 2014).

Evaluations of voucher schemes in LMIC have found they can be successful in increasing coverage of facility-based deliveries and reducing the costs of care seeking for the services

covered (Ahmed & Khan, 2011; Bellows, Kyobutungi, Mutua, Warren, & Ezeh, 2013; Bhatia & Gorter, 2007). Similarly evaluations of the impact of user fee removal have generally found evidence of increased coverage of institutional deliveries (Hatt, Makinen, Madhavan, & Conlon, 2013; Leone, Cetorelli, Neal, & Matthews, 2016; McKinnon et al., 2015). Health insurance has also been associated with increased service coverage and financial protection in many low income settings (Bhageerathy, Nair, & Bhaskaran, 2016; Habib, Perveen, & Khuwaja, 2016; Spaan et al., 2012), including in relation to maternal health services (Comfort, Peterson, & Hatt, 2013).

However, most research to date has focused on the effects of demand side financing on the use and costs of care with less attention to how they work to achieve outcomes (causal pathway) (Gopalan, Das, & Mutasa, 2014), and how the design and implementation of these programmes affects outcomes (Grainger et al., 2014). Understanding how implementation affects the way the programme works and eventual outcomes can support the optimisation of programme design (Blamey & Mackenzie, 2007). The aim of this study was to evaluate the effect of a targeted health insurance scheme on access to affordable quality maternal and child care, and to assess implementation fidelity and how this affected programme outcomes in Tanzania.

Methods

Study Setting

Tanzania made substantive progress in reducing mortality for children aged 1–59 months between 2000 and 2012, but progress for neonatal and maternal mortality was much slower (Afnan-Holmes et al., 2015), with less than seventy percent of births in health facilities (TDHS, 2016).

The Tanzanian health sector is highly dependent on out-of-pocket payments accounting for 28% of total health expenditure (MoHCDGEC, 2018). Care for pregnant women and children under five years of age is officially free at public facilities; however, in practice, exemptions for these groups are not systematically implemented (Kruk, Mbaruku, Rockers, & Galea, 2008). The Tanzanian government is committed to ensuring greater access to affordable care through the expansion of health insurance in the country. There are two main insurance schemes providing coverage for the population. The National Health Insurance Fund (NHIF) is a mandatory scheme for the formal public sector which also allows other individuals to opt into the scheme with varying premium payments in exchange for free outpatient and inpatient care and surgeries at all government facilities and accredited faith-based and private for profit facilities meeting pre-defined quality standards. Less than 10% of the population are covered by the NHIF (MoHCDGEC, 2018).

Scheme Description

In 2010 the NHIF with technical support from GFA Consulting group and funding from the German Development Bank, KfW, Institute for Health and Social Research (Institut für Gesundheits und Sozialforschung GmbH, IGES) and Mennonite Economic Development Associates (MEDA) began providing free NHIF cards to poor women during pregnancy and for up to three months after delivery in Mbeya and Tanga regions. While KfW was intending to finance a voucher scheme, national level stakeholders in Tanzania were committed to work through health insurance rather than introducing a new system. The scheme is a form of demand side financing as the intention was to stimulate demand for maternal and child care services by removing financial barriers associated with care seeking among these groups. Similar to vouchers, the scheme was also intended to increase consumer choice over providers of these services. The scheme was entitled 'The Helping Poor Pregnant Women

Access Better Health Care Project' hereafter referred to as the 'KfW scheme'. Initially the scheme adopted individual targeting to identify the poor (Borghi et al., 2015). However, the scheme subsequently shifted to geographic targeting (Borghi et al., 2015).

The KfW scheme was intended to work as follows. First, health workers were to inform women about the scheme, which was also advertised through posters at health facilities. To benefit from the scheme, women had to complete a registration form at the facility, which was transferred to the district level by health workers and then submitted to the NHIF zonal office. The NHIF was to issue cards for the women, however, as this process took time, in mid-2012, it was decided that women should have immediate access to benefits, and for her insurance number to be written on her ANC card by the health care provider at the time of registration. Health care facilities were to claim and get reimbursed from the NHIF based on the services used by the beneficiaries. In turn health care facilities would use the revenue generated from the project to improve facility infrastructure, procure medical supplies and drugs to improve the quality of care.

Figure 1 presents our theory of change for how the KfW scheme would improve access to affordable quality care in Tanzania. By providing free care from non-public providers, the scheme was intended to improve choice and demand for care during pregnancy and the postpartum, improving maternal and child health outcomes. On the supply side, the scheme was intended to generate more revenue for public providers, by reimbursing services that are typically provided for free, which would lead to improvements in quality of care, if these additional resources are invested in service delivery.

A variety of assumptions underpinned the theory. Notably, that the intervention would be implemented according to the program design and adjusted to local realities (Damschroder et al., 2009). Beneficiaries needed to understand the benefits of the scheme and providers

needed to understand the process involved in registration of women, offering free care and claiming reimbursements. In order to obtain reimbursements, providers had to complete and submit claims, and revenue needed to be appropriately invested to deliver better quality care for the increasing volume of clients. Additional demand from pregnant women could also have had a knock on effect on other patient's care seeking, in terms of longer waiting times. The theory of change assumed that the costs and choice constraints were the main barriers to care seeking.

Outcome evaluation

Study Design

We used a controlled before and after study to assess the impact of the KfW scheme on access to affordable and effective health care in one intervention district, Mbarali, in Mbeya region, and one comparison district, Kilolo, in Iringa region (Borghi et al., 2015). The study methods and study design are explained in detail elsewhere (Borghi et al., 2015). In brief; the districts were selected as they had similar baseline coverage of a community based health insurance scheme, the Community Health Fund (CHF), and similar poverty and literacy rates, population density and population per health facility. A baseline survey was carried out in April and May 2012 and a follow-up survey was carried out between January and February 2014. The intervention started in Mbarali district in the last quarter of 2012.

Data Sources

The health facility was our primary sampling unit. We sampled from all facilities accredited by the NHIF within the selected districts. All government and faith based hospitals and health centres in each district were automatically selected. A random sample of 22 dispensaries which offer reproductive and child health (RCH) services were selected from each district. A

total 49 facilities were sampled (25 in Mbarali and 24 in Kilolo), representing over 60% of all facilities in both districts. The aim of the sampling procedure for the health facility survey was to seek district representation; therefore, no sample size calculation was carried out.

We collected data using four sets of tools. A facility survey assessed the availability of drugs, medical supplies, equipment, and utilities at the facility. At each facility we undertook twelve exit interviews and observations of client-provider interactions with patients receiving ANC or PNC. The exit interviews were used to estimate out-of- pocket payments while the observations of care done by medically trained interviewers estimated waiting and consultation time and health worker adherence to national clinical care guidelines.

Interviews with women who had delivered a child in the past 12 months were conducted with households in the catchment areas of selected facilities (n=60 per facility catchment area, stratified in terms of wealth) (Borghi et al., 2015).Women's surveys collected data on the costs and quality of antenatal and delivery care and care seeking during pregnancy, delivery and the postpartum as well as household socio-economic characteristics. A total 1,500 households were sampled in each study arm per survey round.

Outcome Measures

We measured the effect of the scheme on the share of women having any ANC (ANC) and 4 or more visits, the timing of ANC, and institutional deliveries, the timing of postnatal care (PNC), and family planning, and the share of children under 1 having had three childhood immunisations (diphtheria, tetanus and pertussis [DPT], measles and polio). We measured the effects of the scheme on the likelihood of paying for antenatal, postnatal or delivery care, and the average amount paid, as well as giving gifts and the value of gifts. We generated indices of content of care for ANC and PNC based on observations of care, comprising 12 and 9

items respectively. An index of content of care for ANC was also generated from the household survey based on care provided over all ANC visits received during pregnancy, based on 20 items. An index of interpersonal care for ANC and PNC were generated from exit interviews, based on 13 items, and an index of interpersonal care for delivery care was generated from the household survey based on 11items. An index of facility quality based on drug and supply availability was generated based on 6 items from a facility survey. The indices were generated as a mean score across items included in the index ranging from a minimum of 0 to a maximum of 1.

To assess equity in outcomes, a wealth index was generated based on ownership of household assets and housing particulars. Three terciles of equal size were generated from the wealth index: poorest, middle and least poor.

Data Analysis

We identified the effects of the KfW scheme on outcomes using a linear difference in difference regression analysis with facility and year fixed-effects, as shown in Equation 1.

Equation 1:

$$Y_{ijt} = \beta_0 + \beta_1(KfW_j \times \delta_t) + \beta_2\delta_t + \beta_3 X_{ijt} + \gamma_j + \varepsilon_{ijt}$$

We also controlled for individual-level characteristics (education, religion, marital status, occupation, age, number of pregnancies) and household characteristics (insurance status, number of household members, household head education, and wealth based on ownership of household assets and housing particulars) that are known to affect outcomes (X_{ijt}).The effect of the scheme on outcomes is estimated by β_1. To assess whether the scheme had differential effects by socio-economic status, we interacted the intervention variable with the time

dummy and the household wealth terciles. The difference-in-difference approach relies on the parallel trends assumption. While this assumption can never be formally tested, we verified that trends in a number of outcomes were similar between the intervention and comparison areas prior to the introduction of the scheme.

Process evaluation

The process evaluation was designed as a mixed methods case study of the process of implementation in Mbarali district. We examined implementation fidelity, which we defined as implementation of /adherence to the essential steps in the theory of change, positing that the outcomes of the program were dependent on achieving each of these.

Population enrolment by socio-economic status and duration of exposure as well as knowledge of the intervention among the population was measured through the household survey described above. Evidence on implementation in relation to these and other steps in the theory of change were generated through qualitative data. We conducted 90 in-depth interviews (IDIs) and five focus group discussions during three rounds of data collection: in May 2012; after one year of implementation in November 2013; and in May 2014. Respondents comprised of: women beneficiaries of the scheme, men from beneficiary households, community leaders, health facility managers and staff at three health facilities (a government hospital, health centre and dispensary), council health management team members, and regional officials, as well as NHIF managers at zonal and national levels (S2 File). Sampling was carried out as follows: three facilities were chosen to represent different levels of care and with high caseload of deliveries and from different parts of the district. Community level respondents were sampled from the poorest village in the catchment area of sampled facilities. Community leader contact information was provided by district managers and community leaders identified other community respondents. Interviews were carried out

in privacy near respondent homes/workplaces. Focus group discussions were conducted at the village office or dispensary veranda.

Guides for the qualitative interviews/focus groups were developed in English with questions relating to the implementation of the programme and key steps on the theory of change. They were subsequently translated into Swahili by the bi-lingual Tanzanian researcher who was involved in data collection. Interviews and focus groups were conducted by two research assistants (RA) (including senior researchers), fluent Swahili speakers with previous experience conducting qualitative research who received training on the topic, the guides and research ethics. Respondents were informed about the study and written consent was obtained prior to conducting the interview. Interviews and focus groups were digitally recorded and subsequently transcribed and translated into English

After data collection, all data were cleaned by two of the researchers. Analysis was conducted to determine implementation fidelity in relation to the theory of change and reasons for implementation variation. After conducting axial coding using NVIVO, summaries and indicative quotes were analysed through framework analysis comparing the respondent level/type and time period for each of the codes (Bradley, Curry, & Devers, 2007; Carroll et al., 2007; Damschroder et al., 2009). While a number of themes were explored in the analysis, the results in this paper focus on the findings related to implementation fidelity for selected essential steps in the theory of change.

Results

Outcome evaluation

Demand-side effects

The characteristics of women and households across intervention and comparison sites were generally similar (S1 File).

The KfW scheme had no effect on the utilisation of ANC, deliveries, postnatal care or childhood immunisation or family planning (Table 1.1). While there was an increase in the proportion of women having four or more antenatal visits, postnatal visits within two months of birth and deliveries taking place in a facility in the intervention area, there was a similar increase in the comparison area. Additional deliveries were more likely to take place in public than non-public facilities in the intervention area. Coverage of immunisation and family planning reduced in the intervention district within the period of evaluation with no evidence of intervention effect.

There was no evidence of a programme effect on the probability of paying for ANC, but the amount paid reduced by TZS 95.72 (95% CI: -205.9; +14.5; p=0.087) (1 USD was equal to 1600 TZS in 2013); (Table 1.2). The probability of paying for delivery care halved as a result of the intervention but the effect was not statistically significant (Table 1.2). There was a reduction in the amount paid for deliveries by TZS 6,237 (95% CI: -10429.8, -2043.1; p=0.004). There was no evidence of programme effect on the probability of paying for PNC or of giving a gift or the value of the gift (Tables 1.2).

Supply-Side Effects

There was a positive effect of the KfW scheme on the overall PNC content of care score, driven by history taking, tests and examinations performed on the mother, and interpersonal care (Table 1.3). However, PNC content of care scores reduced over time in both intervention and comparison areas, but to a lesser extent in the intervention than the comparison area. There was no evidence of programme effect on the ANC content of care index or on waiting

time or consultation time for antenatal or PNC. However, there was a significant reduction in the proportion of women from intervention areas indicating that waiting time was too long. The KfW scheme had no effect on women's satisfaction with interpersonal care, facility opening hours or the stock our rate of drugs and medical supplies (Table 1.3).

There were no differential wealth effects noted for any of the significant outcomes.

Process evaluation

Implementer awareness

Qualitative data revealed that, district managers were responsible for ensuring that the scheme was rolled out according to the design. Health care providers received no official training and often did not fully understand the scheme.

> *"We were late to understand that once we have filled the form, we have already generated money; but after being educated we realized that as we continue filling the forms we are increasing the facility income."* (Health facility in-charge)

District and facility level respondents felt the lack of awareness was due to a lack of leadership. The District Medical Officer was on study leave at the scheme's launch. Upon his return a year later and the arrival of a new NHIF coordinator, informal on-the-job training was conducted during routine supervision visits to health facilities, helping to reduce errors and misunderstandings over time. Levels of knowledge of the scheme were strongest at the district hospital, closer to district management, and weakest at dispensaries further from the headquarters.

Population awareness

Providers and district managers reported that women were briefed about the scheme during ANC. However, many of the women in qualitative interviews were not able to describe the scheme nor the services covered. Some women described the scheme as: 'helping people with HIV' or as 'covering the baby until one year'. Fathers confused the programme with standard exemptions and other long running programs such as *hati punguzo* (free bed nets) and had differing understanding of the length of insurance coverage. None of the women or men interviewed mentioned that the card enables free care from any facility, including private facilities.

"What they do is they take the form, as they fill the form they write the number. Now if you just write the number without telling the woman its benefit, it is true that she will not see the benefit." (District respondent)

While the original design included engagement of community leaders, it was only after a year and a half of implementation that the district team elicited their support in increasing enrolment.

Registration process

Qualitative interviews with all respondents revealed that there were initially numerous errors in completing enrolment forms and failures to assign an insurance number to the woman's ANC card. As a result, when women went to other health facilities, they were sometimes enrolled again, or providers were unable to submit claims.

In facilities with a high case load, the forms initially tended to run out very quickly creating shortages. Furthermore, in smaller facilities with limited staffing, providers were not always able to devote the necessary time for enrolment.

"Yes, it leads to overwork because normally you need to spend about 40 minutes with a mother, but there are about fifty women to be attended and you are alone. How are you going to attend to patients and at the same time there is the enrolment for the KfW program?" (RCH health provider)

Over time, the district was able to resolve many of these challenges, and consequently 87% of household survey respondents were able to show their ANC card proving they had been enrolled in the KfW scheme. According to NHIF records, 14,440 women were enrolled in the scheme in the year 2013/2014 (1st April 2013 to 31st March 2014), which when considered against 2012 population census data, corresponds to approximately 100% coverage.

Women could have up to 11 months of coverage with the scheme if their first ANC visit occurred after one month gestation. However, in practice, the household survey found women went for their first ANC visit at 27.5 weeks, limiting their coverage to 6.9 months.

Officials at district and regional levels focused on ignorance and cultural beliefs as the main reasons that some women might not have benefited to the full extent rather than implementation challenges.

Receipt of free services

Community members reported they were generally not required to pay when they sought maternal and newborn care services, whereas they had previously paid for a number of items.

"In the past… The nurse advised us to prepare money for transport, gloves, thread to tie the baby's cord, plastic to cover the bed, a bucket to keep water… But now they are just telling us to prepare clean clothes for when the baby is born and we do not buy those medicines." (Woman who delivered in the last six months)

Some women perceived that insurance card holders received services more quickly, spent less time queuing at facilities and appreciated the lower costs of care.

> *"once you arrive and when they see this card you will be treated very well."* (Woman who delivered in the last twelve months)

One woman reported that some women were yelled at for not having the card and were charged. Other women and men interviewed said that the attitudes of the providers remained poor.

> *"The service is good but the service provider brings a bad impression on the service."* (Male FGD participant)

Providers explained that women often "shift" or "disappear" during the pregnancy and delivery period to be with a relative or due to the agricultural seasons. Several providers focused on the movements of the semi-nomadic Sukuma population who may move in and out of the region.

Reimbursement

Provider interviews revealed that the process for submitting reimbursement claims was the same as the usual NHIF claim process. The only variation was that KfW provided funding to the NHIF to pay these claims. Health providers indicated that they were familiar with the claim forms and felt it was part of the job they were used to doing; however, claims were not always filled out where there were limited staffs, or staffs were unaware of the scheme.

> *"You can find yourself bringing someone to the theatre and at the same time another one is in labour so we can sometimes forget to fill the forms. If there were enough staff there would be no problem."* (Health provider)

"…last week, I looked at the register book. I found there were about 30 women who gave birth, but only 10 forms were filled for the KfW claims. So I learned that people were not well instructed." (Health Facility In-Charge)

District respondents reported that there were mistakes in reimbursement forms, such as not including all services provided, which may mean that the claim will be rejected. They are now processing many more forms, which creates more opportunity for error. Some facilities may not see NHIF clients frequently, especially in remote areas.

Staff were also unclear whether funds had been received and how funds from reimbursements could be used. They felt that additional tasks had been taken on by the facility with no perceived benefit.

"More money is coming but we do not know where they are going. They promised they will give us some allowances but we wait in vain." (Health provider)

They also expressed concerns about increased demand for services, without the ability to respond to the demand, due to a lack of sufficient medicines and supplies. Many providers and district level respondents felt the most important problem to address was the availability of 'working tools.'

While the reimbursements were intended to address these issues, at end-line the KfW funds had not yet been disbursed to health facilities and were being retained, though not spent, at district level. In addition, concerns about spending the extra finances wisely and following appropriate accountability mechanisms delayed spending, and thus the expected quality improvements did not occur.

Discussion

The study aimed to evaluate the effect of a targeted health insurance scheme on access to affordable and effective care and to assess implementation fidelity. Intervention and comparison sites experienced similar increases in maternal care service use. However, deliveries were more likely to take place in public facilities as a result of the intervention. The lack of effects on utilisation was partly due to the late timing of women's' first ANC visit and registration for the scheme. A lack of understanding of entitlements among beneficiaries meant the scheme was unable to extend provider choice. This was compounded by a lack of understanding among providers about the scheme, due to limited training.

However, the scheme reduced the amount paid for antenatal and delivery care. There was very limited programme effect on quality of care, likely due to inconsistent completion of claim forms due to a lack of training, and lack of time. Furthermore, NHIF reimbursements were held at district level and these had not been passed on in cash or in kind to facilities at the time of the study.

The KfW scheme achieved much higher coverage among the target population than reported elsewhere (Njuki et al., 2015; Pilasant et al., 2016). This was partly linked to a simple enrolment process not requiring documentation or photographs from the beneficiary. Geographic targeting helped ensure all women were covered, limiting exclusions , political capture of the programme (Hunter & Murray, 2017), and stigma linked to being identified as poor (Pilasant et al., 2016).

Our finding of no programme effect on maternal health service coverage is comparable to studies of demand-side financing in India, which used a similar quasi-experimental design to our own (De Costa et al., 2014; Mohanan et al., 2014). However, studies from Bangladesh

(Ahmed & Khan, 2011; Nguyen et al., 2012), Pakistan (S. Agha, 2011; Sohail Agha, 2011) and Uganda (Ekirapa-Kiracho et al., 2011) reported positive effects on antenatal, delivery and postnatal care use. Studies in Cambodia and Kenya reported mixed effects (Bellows et al., 2013; Van de Poel, Flores, Ir, O'Donnell, & Van Doorslaer, 2014) (Amendah, Mutua, Kyobutungi, Buliva, & Bellows, 2013; Bellows et al., 2013; Francis Obare, Warren, Abuya, Askew, & Bellows, 2014). However, these were mostly observational studies and were unable to fully control for potential confounders.

Although the KfW programme targeted the poor, we found no evidence of differential effects by socio-economic status, possibly due to the geographic targeting. Evidence from voucher programmes elsewhere have generally reported higher use of vouchers among the poor (Ahmed & Khan, 2011) (Eva, Quinn, & Ngo, 2015; Grainger et al., 2014).

Our finding of partial programme effect on financial protection contributes to a limited evidence base on this issue and is consistent with findings from a voucher scheme Kenya (F. Obare, Warren, Kanya, Abuya, & Bellows, 2015) and reviews of targeted health insurance schemes for the poor (Dror, Chakraborty, Majumdar, Panda, & Koren, 2016; Habib et al., 2016). Other studies have found that demand side financing programmes have been ineffective in covering the full set of costs (Hunter & Murray, 2017).

Ours is one of the few studies to examine the effect of demand side financing on quality of care (Hunter, Harrison, Portela, & Bick, 2017) with only one quasi-experimental study identified reporting improvements on postnatal quality in Kenya (Watt et al., 2015).

One of the factors explaining the lack of programme effect on utilisation in our study was the limited awareness of the programme among clients and providers, an issue also reported in Kenya and Myanmar, (Abuya et al., 2012; Njuki et al., 2015; Pilasant et al., 2016). While the

KfW scheme had no specific awareness raising activities, other than posters at facilities, studies have found that radio spots were an effective means of raising awareness (Bua, Paina, & Kiracho, 2015) and networks of women's or community groups (Powell-Jackson et al., 2009). Such measures would be important to ensure maximum future programme effectiveness. The lack of provider training in the KfW scheme was a further constraint, in some cases this also affected capacity to complete insurance claims for scheme beneficiaries. However, providers were familiar with the insurance claim process as the scheme was integrated within an existing insurance scheme, rather than introduced as a standalone programme as is typically the case for vouchers, where more problems were experienced by providers with submitting claims (e.g. (Abuya et al., 2012)). The integration of the scheme within an existing insurance scheme may have helped to limit fraud, an issue reported with voucher schemes (Bua et al., 2015), as the insurance agency has systems in place to ensure compliance on the demand and supply side. Our findings suggest that the governance structures around funding flows for demand-side schemes can impact their effectiveness. In this case, there was a lack of financial autonomy at facility level with reimbursements linked to the scheme being retained at district level and subject to strict spending rules. As a result, funds remained largely unspent and providers were not able to access and use the additional resources to improve quality of care. Where facilities have their own bank accounts, providers may be able to better access programme resources and improve quality.

Smaller facilities were less able to manage additional workload associated with registering women on the scheme, similar to a study in Kenya (Njuki et al., 2015). Increased demand also resulted in long waiting times, and stock outs in the Uganda study (Bua et al., 2015), though this issue was not raised by respondents in our study.

The study suffered from a number of limitations. The time frame of the evaluation was relatively short, implementers were learning over time and effects were likely to improve further going forward. We were unable to assess to what extent a lack of improvement in supply side factors limited uptake by women, though this has been reported as a factor constraining the effect of vouchers (Rob, Rahman, & Bellows, 2009). Our assessment of process quality relied on observations of care, which may suffer from the Hawthorne effect, though this effect would have been the same in both study arms. The use of community leaders to identify respondents in communities may have shaped how the respondents understood the purpose of the research, and therefore what they told the researchers. Lastly, we were unable to test some of the assumptions underpinning the theory of change, nor how context may have affected implementation, which would be important areas for future research.

In conclusion, limited awareness among providers and beneficiaries limited the impact of the programme on service use, and its revenue generating potential. Structural factors such as the lack of financial autonomy for primary care providers limited their ability to benefit from the additional resources generated by the scheme and to further invest them in quality improvements. The recent national roll out of bank accounts at primary care level in Tanzania will go some way to alleviating this problem and increasing the potential of the scheme to improve quality going forward (Kuwawenaruwa et al., 2018).

The experience of this programme has also shown that embedding financial incentive programmes within existing purchasing arrangements (such as social health insurance in this case) is advantageous in terms of facilitating provider compliance with programme implementation and ultimately ensuring longer term sustainability. Going forward, demand side financing schemes should ensure an adequate communication strategy for providers and

beneficiaries is embedded within the programme design, and careful attention should be given to the financing architecture surrounding the implementation of such schemes. Schemes may be more likely to improve the supply side if they are integrated within existing purchasing mechanisms and in financially decentralised health systems.

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Table 1.1: Effect of the KfW scheme on use of maternal and child health services (1212)

	Initial Survey			Follow up Survey			Difference in Difference, impact			
	Intervention	Comparison	Difference	Intervention	Comparison	Difference	n	Fixed Effects β [95% CI]	P-value	% share of baseline
ANC										
Any ANC visit at facility (%)	99.2	99	0.2	99.5	99.1	0.4	4949	0.0[-0.0, 0.2]	0.953	0.0
Received 4 or more visits (%)	57.2	53.7	3.5*	63.6	59.3	4.3**	4924	0.0 [-0.1, 0.1]	0.952	0.0
Timing of first ANC visit, weeks mean	33.9	32.4	1.6***	27.5	24.7	2.8**	4924	0.1[-2.6, 2.8]	0.948	0.27
Intrapartum Care										
Facility birth (%)	79.6	88	-8.4***	86.5	94.1	-7.6***	4949	1.0[-0.0, 0.1]	0.739	1.3
Public facility birth (%)	63.6	71.3	-7.7	71.9	73.5	-1.6	4949	4.0[-0.1,0.1]	0.440	6.3
Non-public facility birth (%)	16.0	16.6	-0.6	14..6	20.6	-6.0	4949	-2.9[-0.1,0.1]	0.450	18.1
Postpartum Care										
PNC in facility<2 months of birth (%)	16.9	18.8	-1.9	29.2	36.6	-7.4***	4949	-3.0[-0.2-0.1]	0.641	17.8
No. of PNC visits, mean	1.5	1.6	-0.1	2.0	1.9	0.1	590	0.5[-0.5-1.5]	0.381	30.7
Timing of first PNC in days post-delivery,	17.1	12.9	3.8***	14.4	11.3	3.1***	1205	1.2[-5.0, 7.4]	0.699	7.0
Vaccination										
DPT - all 3 doses – card (%)	73.3	75.5	-2.2	61.2	61.4	-0.2	4949	-1.0[-0.1-0.1]	0.890	1.4
Measles – card (%)	15.1	14.9	0.2	12.2	13.6	-1.4	3998	-5.0[-0.1-0.0]	0.118	33.3
Polio – all 4 doses – card (%)	81.3	81.8	-0.5	70.4	68.9	1.5	4949	-2.0[-0.1-0.1]	0.680	2.5
Family Planning										
Family planning current use (%)	31.9	28.6	3.3*	26.0	25.7	0.3*	4871	-3.0[-0.1 -0.1]	0.538	9.3

*** denotes significance at 1%, ** at 5%, and * at 10% level.

Table 1.2: Effect of the KfW scheme on Out-of-Pocket Payments for Health

	Initial Survey			Follow up Survey			Difference in Difference, impact			
	Interventi	Comparis	Differen	Interventi	Comparis	Differe	n	Fixed Effects β	p-value	% share of
ANC										
Paid something (%)	5.2	3.4	1.8**	4.0	3.4	0.6	4949	-0.7[-3.2, 1.8]	0.564	13.5
Paid something public facility (%)	3.4	2.9	0.5	3.7	2.0	1.7**	4139	0.5[-1.7, 2.6]	0.668	14.7
Amount paid in TZS, mean	144.2	66.5	77.8	73.5	190.1	-	4949	-95.7[-205.9, 14.5]	0.087	66.4
Amount paid public in TZS, mean	76.3	51.9	24.4	61.6	115.5	-53.9	4139	-34.7[-141.6, 72.2]	0.518	45.7
Paid a gift (%)	1.4	1.0	0.6	0.9	0.9	0.0	4949	-0.00[-0.01, 0.02]	0.878	0.0
Value of gift in TZS, mean	62.8	19.6	43.2**	66.8	28.6	38.2	4949	0.1[-71.5, 71.7]	0.998	0.2
Intrapartum Care										
Paid something (%)	21.4	19.3	2.1	10.5	19.6	-9.1***	4949	-8.2[-19.2, 2.8]	0.141	38.3
Paid something public facility (%)	9.4	9.3	0.1	6.7	7.5	-0.8*	4949	0.9[-4.2, 6.2]	0.707	9.6
Amount paid in TZS, mean	8836.5	3123.4	5713.1*	2527.9	3336.2	-808.3*	4949	-6236.5[-10429.8,	0.004	70.6
Amount paid public in TZS	1414.8	1491.8	-77.0	1481.3	1367.9	113.4	4949	85.4[-1070.6,	0.883	6.0
Gave gift (%)	15.5	13.3	2.2	14.7	16.2	-1.5	4949	-1.6[-8.2, 4.9]	0.623	10.3
Value of gift in TZS, mean	915.6	560.4	355.2**	1070.4	907.4	163.0	4949	-6.1[-457.8, 445.6]	0.979	0.7
Postpartum Care										
Paid something (%)	1.0	1.0	0.0	1.0	1.4	0.4	4949	0.0[-1.3, 1.4]	0.944	0.0
Paid something public (%)	0.2	0.4	-0.2	0.8	0.5	0.3	4949	0.6[-0.2, 1.5]	0.183	300.0
Amount paid in TZS, mean	90.9	37.6	53.3	86.7	120.1	-33.4	4949	-3.9[-198.0, 190.1]	0.967	4.3
Amount paid public in TZS, mean	19.7	27.1	-7.4	47.7	24.6	23.1	4949	74.0[-39.6, 187.6]	0.197	375.6
Gave gift (%)	0.3	0.2	0.1	1.0	1.0	0.0	4949	-0.1 [-1.2, 1.0]	0.878	33.3
Value of gift in TZS, mean	9.2	9.0	0.2	0.0	0.0	0.0	4949	-1.7[-17.8, 14.4]	0.831	18.7

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level.

Table 1.3: Effect of KfW Programme on Quality of Care

	Initial Survey			Follow up Survey			Difference in Difference, impact			
	Intervention	Comparison	Difference	Intervention	Comparison	Difference	N	Fixed Effects β	P-value	% share
ANC - Content and experience of care –	0.42	0.41	0.01	0.43	0.36	0.07	388	0.09 [-0.10, 0.27]	0.339	21.4
ANC - Content of ANC care index (mean),	0.69	0.77	-0.08***	0.73	0.79	-0.06	4949	0.01[-0.03, 0.04]	0.669	1.4
PNC - Maternal care – overall	0.19	0.27	-0.08	0.17	0.15	0.02	387	0.18 [0.06, 0.30]	0.002	94.7
PNC - Infant care – overall	0.72	0.68	0.04	0.51	0.48	0.03	387	0.19 [-0.11, 0.48]	0.217	26.4
PNC - Interpersonal care	0.71	0.75	-0.04	0.69	0.72	-0.03	387	0.24 [0.03, 0.46]	0.025	33.8
PNC - Overall	0.54	0.57	-0.03	0.45	0.45	0	387	0.20 [0.02, 0.39]	0.028	37.0
Time for services										
ANC Consultation time -minutes	25.21	22.55	2.66	26.24	25.30	0.94	343	-3.40 [-13.7, 6.87]	0.509	13.5
PNC Consultation time -minutes	21.96	19.98	1.98	15.21	14.89	10.32**	377	6.05 [-5.93, 18.0]	0.314	27.6
Facility quality Index (mean)	0.67	0.64	0.03*	0.72	0.75	-0.03	942	-0.04 [-0.09, 0.02]	0.147	6.0
Medicines and supplies										
Index drugs	0.31	0.29	0.01	0.36	0.45	-0.09	98	-0.10 [-0.35, 0.14]	0.398	32.3
Contraceptives	0.34	0.41	-0.07	0.24	0.22	0.02	98	0.09 [-0.21, 0.39]	0.562	26.5
Medical Supplies	0.28	0.26	0.03	0.22	0.20	0.02	98	-0.01 [-0.26, 0.25]	0.969	3.6
Equipment with problem < 90 days	0.02	0.06	-0.03*	0.06	0.06	-0.01	98	0.03[-0.06, 0.11]	0.556	150.0
Facility function										
Electricity (%)	28	50	-22	48	50	-2	98	0.17[-0.3, 0.6]	0.459	0.6
Water (%)	84	100	-16.0**	72	45.8	26.2*	98	0.46[0.1, 0.9]	0.034	0.5
Toilet (%)	96	100	-4	96	95.8	0.2	98	0.04[-0.2, 0.3]	0.694	0.0

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level.