Effect of service integration on cervical cancer screening and family planning uptake: A uncontrolled before and after facility study in Mukono District, Uganda.

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Abstract

Background Cervical cancer (CACX) is the third most common cancer among women globally yet it is largely preventable. Uganda has one of the highest age standardized CACX incidence rates in the world yet it has a low screening rate ranging from 4.8 to 19% compared to the national target of 80%. Women using hormonal contraceptives over a long time are among the most at risk of CACX yet there is limited information about their screening status. In 2014, an integrated FP-CACX screening service model was implemented in Mukono district in Uganda to reduce this unmet need for both services. This study assessed whether an integrated model resulted into increased utilization of both services at health facilities in Mukono district.

Methods Integration was defined as the uptake of both FP and CACX screening services during the same visit. Monthly quantitative data on service utilization was collected retrospectively from records at 7 health facilities, 36 months before and 27 months after the integration intervention. The period 2011 to 2013 defined years before while 2014 to 2016 were years after integration. Descriptive analyses and tests of significance were carried out and results were expressed in percentages, means and mean differences.

Results Among 48595 women desiring FP or CACX screening in the 7 facilities for the period 2011 to 2016, 41374 (85%) opted to solely receive an FP service. CACX screening services were received solely by 937 (2%) women while 6284 (13%) received integrated services. There were significant increases in the services received solely and as a combination. Integrated services increased by 15 mean clients per month ($p<0.001$) from a mean number of 5 (SD±14.5) to 20 (SD±26.9) clients per month in 2016 after integration.

Conclusion Integrating CACX screening with FP service provision led to significant increases in the services received solely and as a combination after integration. More research on approaches including how and when to roll out integration in different settings is needed to inform future expansion efforts for better uptake of integrated services.

Background

Cervical cancer (CACX) is the third most common cancer among women globally yet it is largely preventable [1, 2]. Approximately every year 569,847 women are diagnosed with cervical cancer and 311,365 die from the disease [1]. More than 85% of CACX deaths occur in low income regions [3]. Uganda has the age standardized incidence rate of CACX at 54.8 per 100,000 ranking it in seventh position in Africa [1]. CACX is also the leading gynecological cause of death among Ugandan women yet it also has a low screening rate, ranging from 4.8 to 19 % compared to the 80% national target [4–6]. Women accessing Family Planning (FP) specifically those using hormonal contraceptives on a long term basis are among the most at risk yet there is limited information about their use of CACX screening services [1, 7]. The limited access to CACX screening is due to weaknesses in the health system such as having few trained health providers in CACX screening [3, 8].

Integrating the screen and treat approach using visual inspection of the cervix with acetic acid (VIA) and cryotherapy into routine services is a feasible approach that has been tried to improve CACX screening in some settings [9–12]. However, vertical programming in service delivery of most health services in Uganda has constrained this approach [10, 13, 14]. Uganda registered improvements in maternal health indicators such as contraceptive prevalence rate (CPR) from 23% to 39% and facility delivery from 53% to 73% [15]. These represent probable opportunities to integrate awareness about CACX screening and early diagnosis. CACX Screening prevents approximately 75% of cancer cases in women who attend regular screening [8].

Evidence regarding what works and does not work in integrating care such as CACX screening being integrated with FP in environments out of HIV context is limited [14, 16]. Integrating CACX screening into FP service provision in Zambia was reported to be feasible much as uptake of both services was low [11]. A systemic review using five databases of studies that had evaluated integration of FP with other health services also revealed that the evidence to support the integration of FP with other health services was still weak [17]. More research about the outcomes of health service integration has been recommended [11, 16, 18].

The service delivery integration intervention

In Uganda, the Program for Accessible Health Education and Education (PACE) implemented an integrated model [19]. In 2014, the integrated model was implemented initially in 7 facilities and later expanded to 11 health facilities in Mukono district. This integration at service delivery points involved providers counseling women about both CACX screening and FP during the same visit. Women seeking FP were offered information on cervical cancer screening and the vice versa for those seeking CACX screening by same provider. CACX screening was conducted using VIA and clients found positive were referred for cryotherapy.

The capacity of facilities was built to offer integrated services [19]. This included identifying those providers already trained in FP and these were trained in cervical cancer screening using visual inspection with 5% acetic acid solution (VIA) and cryotherapy. Each facility had at least one health provider trained in providing both cervical cancer screening and FP services. Interpersonal communication (IPCs) agents were trained in both CACX and FP messaging to enable them sensitize communities about benefits of screening and availability of both services. This raised awareness about the availability of integrated services, benefits of FP and CACX screening [19]. These services were provided based on the client's decision and recorded in registers that had integrated indicators for both FP and CACX screening [19].

Despite the potential of deriving important insights from implementing this intervention, the experiences emerging from this intervention in Mukono district have not been documented before. Therefore, this paper aimed to fill the information gap on the effect of integrating CACX screening with FP on uptake of both services after integration to inform policy and programming.

The Uganda Ministry of Health (MoH) has prioritized integration by having key strategic documents in place. These include; National policy on integrated reproductive health service delivery [20], National policy guidelines and service standards for Sexual Reproductive Health Rights, 2012 and National HIV Strategic plans 2011/2015 and 2015/2020. Further revisions to the strategic documents have been made to track implementation and monitoring. Therefore failure to integrate these services would impact on the utilization of CACX screening particularly undermining public health efforts to reduce CACX incidence in the country.

Methods

Study design

This was a before and after design without a control group. Records containing information on utilization of FP and CACX screening were reviewed retrospectively for the period 2011 to 2016. The period before was 2011 to 2013 and the period after was 2014 to 2016.

Study sites/setting

The study was conducted at seven health facilities in Mukono district, located in the central region approximately 27 kilometres East of Kampala, the capital city of Uganda. The district has an estimated population of 599,817 (291,890 males and 307,927 females) with an annual growth rate of 2.91% [21, 22]. This study site was selected because it is one of the districts where the PACE integration intervention had been implemented and also one of the districts with the highest CPR of 46.3% compared to national rate of 39% [15]. Only facilities that had implemented integration for 2 or more years from October 2014 to December 2016 were purposively selected. Hence, seven out of eleven health facilities were included. The facilities included four urban and three rural and of these facilities, three were government owned. Facilities were categorized as small if the facility received clients less than 100 and big if the facility received more than 100 clients per month. See Table 1 on next page.

Table 1: Selected Intervention Facilities in Mukono district, Uganda from 2011-2016.

Facility	Facility Location	Type of facility	Facility size /Out Patient Department (OPD) clients/month
Facility 1	Urban	Private for Profit (PFP)	Small
Facility 2	Rural	PFP	Small
Facility 3	Rural	PFP	Small
Facility 4	Urban	PFP	Small
Facility 5	Urban	Government/ Public	Big
Facility 6	Rural	Government/ Public	Big
Facility 7	Urban	Government/ Public	Big

Small - <100 clients per month Big ≥100 clients per month. All PFPs were small while all government were big facilities.

Data collection

The study field team comprised of the first author (MK) and two research assistants (RAs) with experience in conducting research. The RAs were oriented on the study objectives and study procedures. The duties of each were clarified and followed throughout the data collection process. Secondary data were collected retrospectively at the facilities using a data abstraction tool. Data was collected for 2 weeks in May 2017. The data abstraction tool was designed to extract secondary data on FP utilization disaggregated by FP method; pills, injectables, condoms, intrauterine devices (IUDs) and implants. The tool also captured number of CACX screening users and screening outcomes as well as those who received both FP and CACX screening during the same visit from 2011 to 2016.

Data Analysis

Data were entered in Microsoft excel version 10 and exported in STATA version 14 (Stata Corp LP, College Station, TX). Descriptive analyses and tests of significance were carried out. Results were expressed in percentages, mean values and mean differences. A trend analysis was also conducted, and results presented using tables and graphs. The period 2011 to 2013 defined years before integration while 2014 to 2016 defined the period after integration. Study variables analyzed included; trend in mean number of women utilizing CACX screening alone per month, trend in mean number of women utilizing FP alone per month and trend in mean number of women utilizing integrated services per month. Integration was defined as the use of both FP and CACX screening services on the same visit. Comparisons in mean number of women utilizing each service by period (before and after integration), location (rural vs urban),

facility type/ownership (government vs PFP) and facility size was done and mean differences in service utilization were computed. All PFPs were small while all government were big facilities as shown in Table 1. All analyses were made using paired t test at 95% confidence intervals.

Results

Service utilization patterns at health facilities from 2011 to 2016.

For the period (2011 to 2016), among 48,595 women requesting FP or CACX screening services, a total of 41,374 (85%) opted to receive an FP service solely (Figure 1). CACX screening with VIA services were received solely by 937(2%) of women. A total of 6,284 (13%) received integrated services (both FP and CACX screening on same visit) as well. Majority of women; 85% for FP, 63.4% for integrated services and 58% for CACX screening received services from government facilities.

Figure 1: A schema of FP and CACX service utilization at health facilities in Mukono, Uganda 2011 - 2016.

Change in CACX screening.

From Table 2, a total of 7221 (15%) women received CACX screening from 2011 to 2016. Almost two thirds, 4532 (63%) of these screened from government facilities. Majority, 7054 (97.7%) of women screened had negative VIA results while 167 (2.3%) had positive VIA results. CACX screening alone increased by 4 mean clients per month ($P<0.001$) following integration (Table 3).

Change in FP utilization

A total of 47,658 (98%) women received FP services across all facilities from 2011 to 2016. Majority, 38,983 (81.8%) received FP services from government facilities. Most women received injectables (35.9%) followed by implants (21.3%) and condoms (21%) (Table 2). FP services alone significantly increased by 26 mean clients per month ($p>0.002$) following integration (Table 3).

Table 2: FP and CACX screening patterns at health Facilities in Mukono, Uganda 2011- 2016.

Service utilization patterns/ characteristics	Frequency	Percentage
CACX screening utilisation (n=48595)		
Women screened for CACX	7221	15%
Women not screened for CACX	41374	85%
Total	**48595**	**100**
Facility where CACX screening was received (n=7221)		
Screened from Gov't facilities	4531	63%
Screened from PFP facilities	2690	37%
Total	**7221**	**100**
Outcome of CACX screening (n=7221)		
Women with positive VIA results	167	2.3%
Women with negative VIA results	7054	97.7%
Total	**7221**	**100**
Utilization of FP services (n=48595)		
Women who received FP services	47658	98%
Women who did not receive FP services	937	2%
Total	**48595**	**100**
Facility where FP service was received (n=47658)		
Received FP from Gov't facilities.	38983	81.80%
Received FP from PFP facilities.	8675	18.20%
Total	**47658**	**100**
FP method received (n=47658)		
Women who received pills	2742	5.8%
Women who received injectables	17155	35.9%
Women who received condoms	10031	21%
Women who received IUDs (inserted and removed)	7599	15.9%
Women who received implants (inserted and removed)	10131	21.3%
Total	**47658**	**100**

Key: Gov't; Government, PFP; Private for Profit, VIA; Visual Inspection with 5% Acetic Acid solution, IUDs; Intrauterine Device, FP; Family Planning.

Table 3: Comparison of service utilization by location, facility type and size, 2011- 2016.

Service utilization patterns	Before integration Mean (SD)	After integration Mean (SD)	Diff/mean change in utilization (After-Before)
CACX screening utilization alone (clients per month)			
Rural facilities	0±0	5 ±21.2	5 [xx]
Urban facilities	0±0	3 ±12.9	3 [xx]
Gov't facilities	0±0	5±21.9	5 [xx]
PFP facilities	0±0	3±11.9	3 [xxx]
Big facilities	0±0	5±21.9	5 [xx]
Small facilities	0±0	3±11.9	3 [xxx]
Screening across all facilities	0±0	4±16.9	4 [xxx]
FP utilization alone (clients per month)			
Rural facilities	54±81.9	73±83.9	19 [xx]
Urban facilities	80±99.2	112±162.9	32 [x]
Gov't facilities	140±101.1	184±169.2	44 [x]
PFP facilities	15±27.5	29±25.8	14 [xxx]
Big facilities	140±101.1	184±169.2	44 [x]
Small facilities	15±27.5	29±25.8	14 [xxx]
Utilization across all facilities	69±92.9	95±135.9	26 [xxx]
Integrated services utilization (clients per month)			
Rural facilities	1±3.8	14±21.1	13 [xxx]
Urban facilities	8±18.2	24±29.8	16 [xxx]
Gov't facilities	12±20.2	25±28.6	13 [xxx]
PFP facilities	0±0	16±24.9	16 [xxx]
Big facilities	12±20.2	25±28.6	13 [xxx]
Small facilities	0±0	16±24.9	16 [xxx]
Utilization across all facilities	5±14.5	20±26.9	15 [xxx]

[xxx] $p < 0.001$, [xx] $p < 0.01$, [x] $p < 0.05$, p value represent comparisons of means across categories within each variable. Gov't; Government, PFP; Private for Profit.

Change in service utilization at facility level before and after integration.

CACX screening only increased by 5% ($p<0.001$) from 0% to 5 % following integration at health facilities, highest increase observed in 2014 (figure 2). Furthermore, utilization of FP services only as a share of total number of women who received all services reduced over the years from 95% before integration to 70% after integration. However, the trend for women who received only FP services significantly increased from a mean of 69 (SD±92.9) before integration to 95 (SD±135.9) ($p<0.002$) clients per month after integration with a mean monthly increment of 26 clients. Additionally, the proportion of women who received integrated services increased by 20% ($p<0.001$) from 5% before to 25% after integration. Highest trend was in 2016 (figure 2).

Figure 2: Service utilization trends before and after integration at Facilities in Mukono, Uganda 2011–2016.

Change in service utilization by facility location, ownership and size following integration.

CACX screening solely increased by 5 mean clients per month at rural compared to 3 mean clients per month after integration at urban facilities. Additionally, the mean increment in CACX screening at government facilities was 5 compared to 3 mean clients per month at PFP facilities after integration. Also CACX screening solely increased by 5 mean clients per month at big compared to 3 mean clients per month at small facilities after integration, all $p<0.05$ (Table 3).

Table 3 further shows that FP utilisation alone at urban facilities increased by an average of 32 compared to 19 clients per month at rural facilities after integration ($p<0.05$). Furthermore, the mean increment at government facilities was 43 compared to 14 clients per month at PFP facilities after integration ($p<0.05$). The increment in bigger facilities was 43 mean clients per month versus 14 mean clients per month at small facilities after integration ($p<0.05$).

Overall, the utilization of integrated services increased by 13 mean clients per month at rural compared to 16 clients per month at urban facilities after integration. Similarly integrated services increased by 13 mean clients per month at government compared to 16 clients per month at PFP facilities after integration. Furthermore, integrated services increased by 13 mean clients per month at big compared to 16 clients per month at small facilities after integration as well, all $p<0.05$ (Table 3).

Discussion

In general, integrating CACX screening with FP service provision resulted into increased uptake of services at health facilities in Mukono District, Uganda from 2011 to 2016. CACX screening solely increased by 4

mean clients per month ($p<0.001$). Integrated services increased by 15 mean clients per month ($p<0.001$) and FP services only significantly increased by 26 mean clients per month ($p<0.002$) following integration. These findings are consistent with other studies that registered improvements in outcomes when CACX screening was integrated with other services although not all these studies highlighted significances of these improvements [11, 16, 17, 23–25]. A possible explanation for the increased service utilisation in our study could be due to the training provided to health providers and community mobilisation agents that led to improved awareness and created more opportunities for women to access integrated services unlike before [19]. Our study also contributes to bridging the gap in knowledge on integrated health services; outcomes of CACX screening being integrated with FP highlighted in literature [11, 14, 17, 18, 24, 26].

Our study also demonstrated that CACX screening alone was 5%, close to 4.8 % observed in another Ugandan study [4] and similar to the 5% prevalence of 5-year cervical cancer screening in developing countries [27]. However, the proportion highlighted above in our study excludes clients who opted for integrated services, who also received CACX screening and if included the proportion of women who utilised CACX screening overall would be higher than 5% reported above. However, the CACX screening rate in our study remains below the Ugandan screening target of 80% [6] and 27% reported in Zambia [11]. This could be explained by the fact that the Zambian study was conducted in public facilities which had free additional services; digital cervicography and HIV testing which might have led to increased screening uptake unlike our study which was conducted in the public as well as private facilities which required payment for both services hence a probable limitation to getting a dual service.

The VIA positivity rate in our study was almost similar to the 2.4% reported in Guinea [25] but much lower than positivity rates ranging from 4.3% to 30% reported in other studies in Uganda, Zambia and Malawi [23, 24, 28]. This low positivity rate could be possibly because our study was conducted in FP clinics which do not provide services specifically for HIV clients unlike the aforementioned studies [23, 24, 28] that were conducted in HIV focussed facilities.

This study also revealed that CACX screening did not vary much with respect to facility location, ownership and size. A slightly higher increment of 5 mean clients per month was noted at government which also served as big facilities compared to 3 mean clients per month at PFPs which were also small facilities. Probably because CACX is still a new concept that needs more comprehension by all women categories. Our study therefore highlights the importance of using intense multi-pronged approaches to sensitise all women to boost CACX screening.

A higher proportion of women utilised FP services only compared to CACX screening only. A similar trend was observed in a Zambian study where 68 % women received FP while 27% screened for CACX only [11]. We note however that the difference between FP only and CACX screening only in our study was much bigger than in Zambia. Although, not covered in our study, understanding why CACX screening was much lower than FP could be considered as potential area for future research. However, this difference in service uptake could be explained by the fact that FP services have clearly been around much longer and

are more likely to be taken up due to the level of awareness by clients unlike CACX screening. Secondly, differences in screening schedules vs. FP method refills could also probably present missed opportunities to screen for CACX. For example; HIV negative women in Uganda screen once every three years while those HIV positive screen once every year [6]. Such screening schedules may not be properly aligned to FP method resupply which range from a monthly menstrual cycle of pills to three month supply of injectables among other FP methods hence low screening pattern. Furthermore, costs of service, health facility related challenges, lack of time, not being at risk, fear of test outcomes, embarrassment associated with the screening procedure, unanswered myths and misconceptions about the disease among other factors could also possibly explain why CACX screening was lower than FP utilization [4, 29].

The proportion of women who received FP solely as a share of total women who received services at facilities reduced over the years. Consequently, the proportion of those who received CACX screening only and integrated services increased. This does not necessary mean that uptake of FP reduced but only shows the percentage uptake of each service area; FP only, CACX screening only and integrated services out of total population exposed to intervention. This could further be explained by the fact that clients who initially came for FP might have switched to get CACX screening instead and the vice versa. Secondly the aim of the intervention was to increase uptake of integrated services over the years rather than have clients take up single service which has been ascertained by this study. This further contributes to achieving the strategic priorities of the Ugandan Ministry of health towards having integrated services as highlighted in the strategic documents.

FP uptake was much higher at government compared to private facilities by a mean difference of 46 mean clients per month. This was possibly because government facilities which also served as big facilities had more trained providers, bigger space and offered free services unlike the private which at the same time were small facilities where clients had to pay for either services among other limiations. Furthermore, FP uptake was higher at urban compared to rural facilities by a mean difference of 31 mean clients per month. This could be because clients residing in urban settings have more exposure to information, communication campaigns and proximity to health facilities unlike their counterparts in rural settings [4]. These findings highlight the need to increase access to health information among populations in rural settings.

As for integrated services, utilisation significantly increased across all facilities by a much higher proportion than the 1% reported in Zambia [11]. This demonstrates that the integration approach was possibly better accepted in Uganda. The difference in uptake of integrated services between our findings and the Zambian study also raises questions on the need for more research on how integration can be rolled out in different contexts to inform future expansion efforts and better uptake of integrated FP and CACX services. Furthermore, utilisation of integrated services in our study did not vary much with respect to facility location, type and size. This finding also highlights utilisation trends of integrated services at both private and public facilities. It also shows the opportunity to increase uptake of CACX screening among FP users that access services through the private sector, which needs to be embraced broadly.

Limitations

Our study was conducted in 7 health facilities in only one district in Uganda, therefore these findings might not apply to the country generally due to their limited geographical scope. However, we purposely selected facilities that represented variations in location, ownership and facility size hence enriching the findings. Secondly, we used secondary data, which was specific for the intervention. This data might have had limitations such as incompleteness especially at the start of the intervention. However, data quality improved with the capacity building efforts made to boost reporting structures. This limitation is not peculiar to this study but would affect any study that used secondary data. It was also not possible to rule out other possible confounding factors and modifier effects for the observed changes in service utilization. Hence, our results may be an overestimation of the true effect of this intervention. Conducting an interrupted time series design would have been the ideal to confidently attribute the observed changes to the intervention. Another major limitation of our study is that we abstracted all women (15–49 years) eligible for FP who received FP services and those 25–49 years eligible for CACX screening who received screening. However, during analysis of the effect of integration, we considered the whole study population instead of focusing on only those eligible to screen. This could have underestimated the uptake of CACX screening and integrated services since we used a bigger denominator. Lastly, we did not explore further to understand why CACX screening only was much lower than FP uptake in our study but could be considered as potential area for future research.

Conclusions

This study demonstrates that integrating CACX screening with FP service provision is an acceptable approach that can boost uptake of CACX screening especially in resource constrained settings. Our findings also showed that integration led to increased utilization of CACX screening only and integrated services. These findings contribute to bridging the gap in knowledge on outcomes of health areas being integrated as highlighted in several literature. Furthermore, to ensure increased and sustained uptake of CACX screening services, it is important that multiple communication approaches are used to reach all categories of women including increasing access to health information. Embracing and involving the private sector in programming for health service delivery is also equally important as shown by the private sector contribution to service delivery in our study. Lastly, our results emphasize the need for more research on approaches including how and when to roll out integrated interventions in different settings to to inform future expansion efforts and better uptake of integrated FP and CACX services.

Abbreviations

CACX: Cervical cancer; FP: Family Planning; SRH: Sexual and Reproductive Health; VIA: Visual Inspection with 5% Acetic Acid solution.

Declarations

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Availability of data and materials

The data set used and analysed in the present study is available from the corresponding author on reasonable request through email.

Authors' contributions

MK conceived and designed the study, analysed the data and wrote the paper. SNK and AS contributed to the study protocol, provided guidance on the study, read and provided revisions of the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate

This study was approved by Makerere University School of Public Health Higher Degrees, Research and Ethics Committee in Uganda. Informed consent to extract data from facility records was obtained from the District Health Office and Health facility in charges. Personal identifiers were avoided during the data abstraction process.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Publisher's Note

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Figures

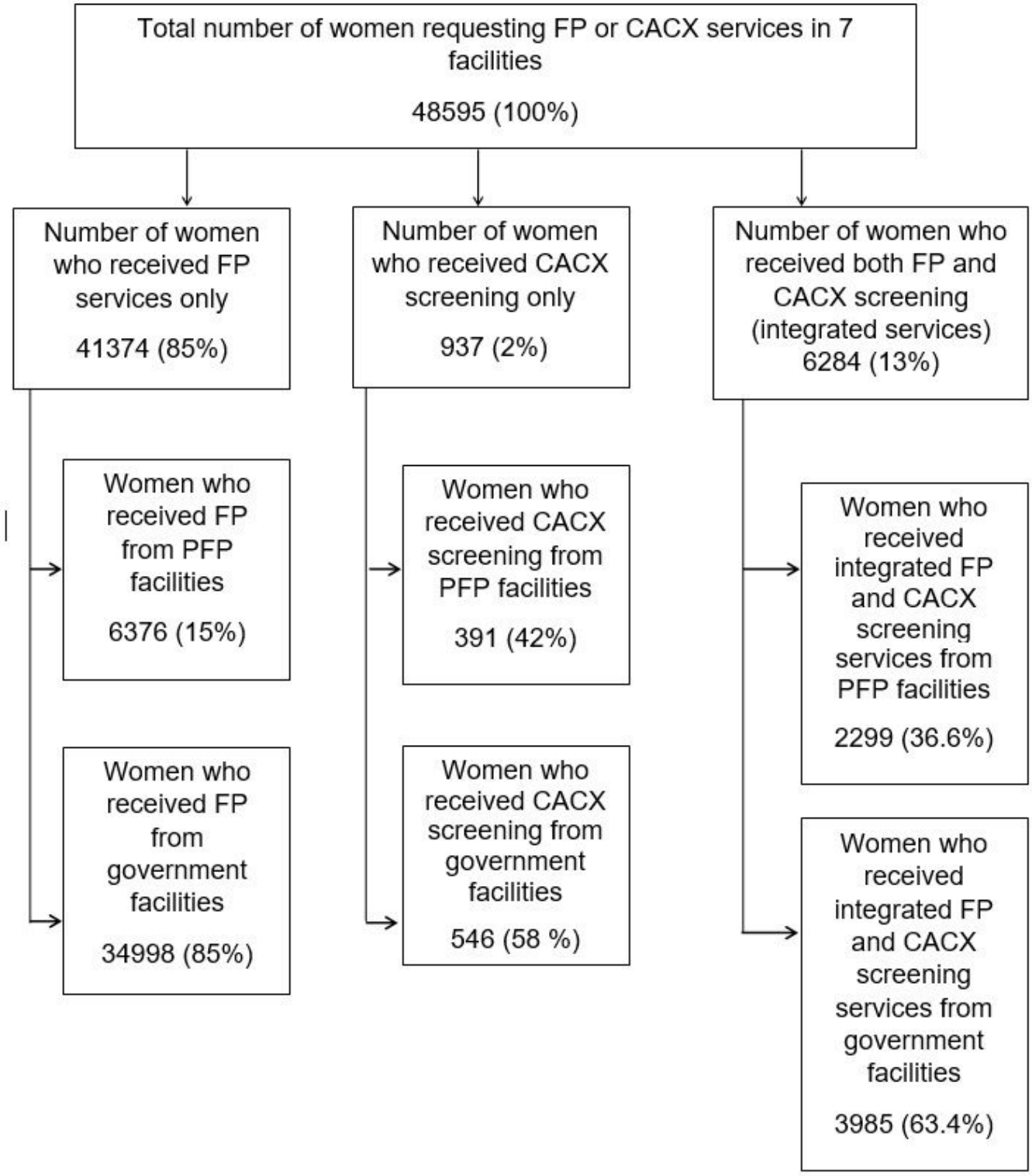

Figure 1

A schema of FP and CACX service utilization at health facilities in Mukono, Uganda 2011 - 2016.

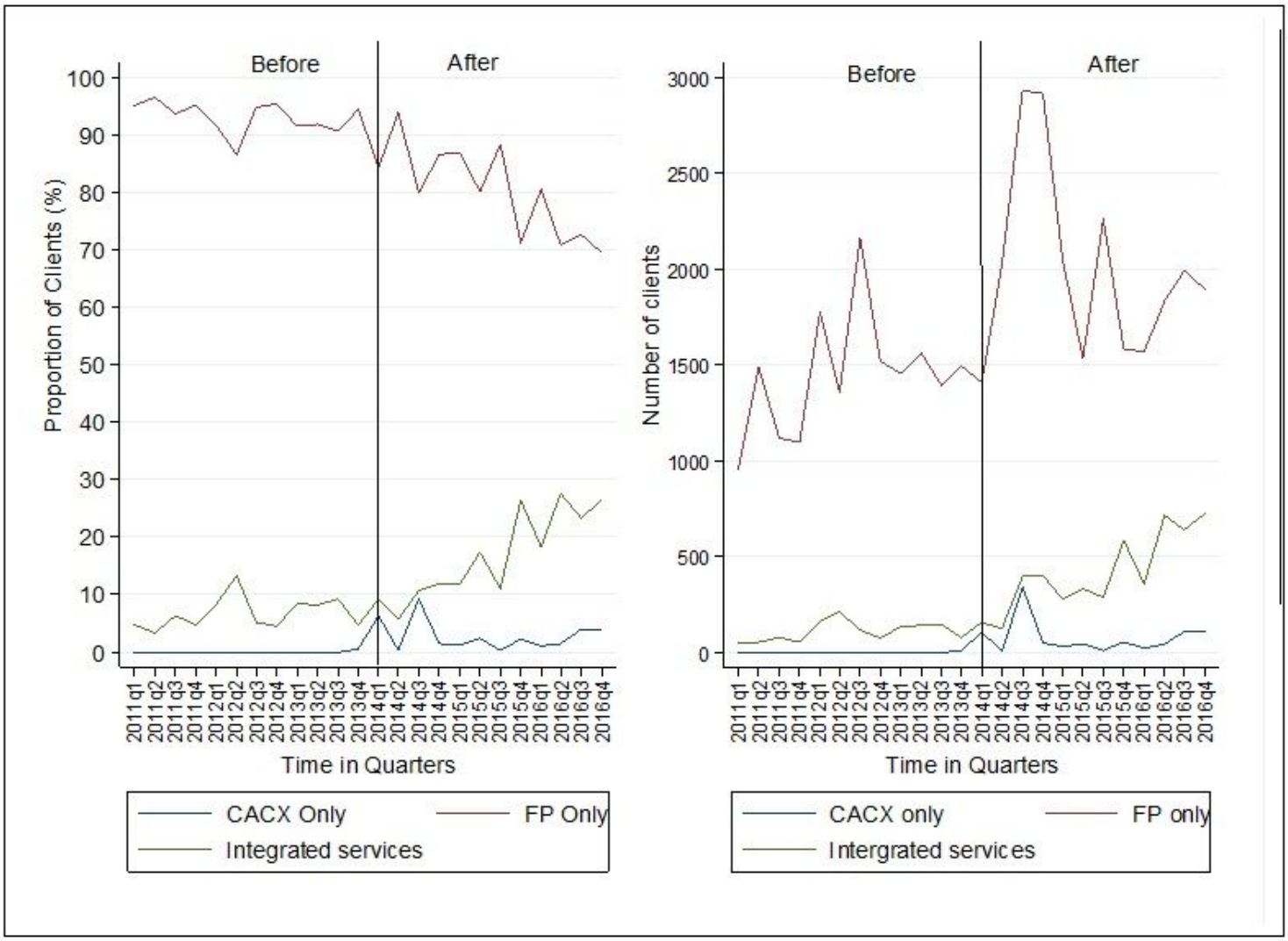

Figure 2

Service utilization trends before and after integration at Facilities in Mukono, Uganda 2011-2016.