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Original Article

Effect of Universal Health Coverage on the Availability of Medicines in Public Health Facilities in Kisumu County, in Kenya

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Abstract

Background

Stock outs of medicines and unaffordable cost are two major barriers of access to healthcare. Universal Health Coverage (UHC) seeks to ensure that all people have access to quality essential health services without suffering financial hardship.

Objective

The main objective of the study was to determine the effect and challenges of UHC program on the availability of medicines in public health facilities in Kisumu County.

Methodology

The study used a Pretest - posttest research design. The study was carried out in twenty-nine health facilities that were selected using stratified random sampling. Data was collected using key informant interviews with a health worker in each facility. Participants also involved four hundred and forty-four patients selected from the chosen facilities using consecutive sampling. Data from patients was collected using researcher administered questionnaires.

Results

The availability of medicines improved by 3.4% for 20 tracer medicines since the introduction of the pilot UHC in Kisumu County. This was also supported from the patient's perspective (*n*= 444; 79.5%). However, in spite of this, health workers experienced challenges which included inadequate supply, delays and stock out of some medicines. Other challenges were overworking, shortage of qualified staff and inconsistent supplies.

Keywords: medicines availability, universal health coverage, stock outs

Background

Universal Health Coverage means that all people have access to essential quality health services without suffering financial hardship.[1] According to the World Bank and the World Health Organization, over 100 million individuals worldwide are driven into extreme poverty due to expenditure on health.[2] In September of 2015, world leaders meeting at the UN Summit in New York adopted the sustainable development agenda and its 17 Sustainable Development Goals (SDGs) to build on the successes of the Millennium Development Goals and go even further in ending extreme poverty.[2] One of the goals is Good health and wellbeing.

Health insurance coverage in Kenya is low at 19% although there has been a slight increase over the years.[3] According to the Kenya Household Health Expenditure and Utilization Survey Report 2013, only 17.1% Kenyans were covered by health insurance. [4] On the other hand, 6.21% of Households incurred catastrophic expenditure on health. That is, they spend more than 40% of their budget on non-food items to meet the cost of health care. This is an improvement over the previous measurements in 2007, with the health insurance coverage increasing from 10% and catastrophic expenditure falling from 11.4% respectively.[4] However, as the population grows, thousands of households continue to be driven to extreme poverty through spending on health.

In December 2018, Kenya launched a pilot program for Universal Health Coverage to improve access to healthcare with an aim to achieve 100% coverage by the year 2022. [5] A system strengthening approach with input financing was used, where the government funds procurement of commodities through KEMSA, which then distributes to the health facilities where patients and clients can access services and the products without being charged user fees.[6] The success of this approach was hinged to a great degree on the performance of the entire supply chain system in place to deliver on the promise of UHC for all. This study investigated whether the roll out of UHC improved the availability of medicines in the public health facilities. The specific objectives of the study were: (1) to determine the availability of tracer medicines in public health facilities in Kisumu County before and after the roll out of Universal Health Coverage; (2) to determine the patient perception on availability of medicines in the health facilities in Kisumu; and (3) to investigate the supply chain challenges faced by public health facilities in Kisumu County after the roll out of UHC. The study addressed issues that touch on preparedness and performance of the supply chain system which in turn determine access to quality health care services for effective universal health coverage.

Methods

Research site and Research Design
The study was conducted at twenty-nine public health facilities in Kisumu County which lies in the Lake Basin and western region of Kenya.

The study used a pretest posttest study design. The exposure was UHC. The data of interest was collected before and after the introduction of UHC in Kisumu County. This design was appropriate because it enabled assessment of the effect of the program. This type of study is useful where the researcher has no control over the intervention due to political, practical or ethical barriers. As such, the study is designed to measure the performance before and after the intervention in the same study site and the changes are then attributed to the intervention.[7]

Target and study population
The study populations were health workers and patients from selected health facilities.

Inclusion and exclusion criteria
All the patients who were at least 18 years of age attending the selected facilities on the day of the study and who were willing to participate were included. The study also included a health worker in the sampled facility involved in management of medicines and willing to participate.

Sample size and sampling technique
Twenty-nine health workers who were managing medicines at the health facilities were interviewed (one participant per facility). The sample size for the patients was 444. The sample size for the patients was determined through the use of Cochran's formula for large populations with a 15% addition to cater for non-responses and incomplete questionnaires.[8] Two sampling techniques were used for the study. A stratified random sampling was used to select the health facilities where each category in the level of care was represented. Within the selected health facilities, Consecutive sampling was used to select patients. This technique involves interviewing all eligible patients at a health facility until the sample target is met.[9]

Data collection methods
The data was collected using different methods. Researcher administered questionnaires were mainly used after pre-testing. The pilot testing was conducted at selected facilities not used for the actual study. Three types of data collection tools were used. These were the key informant guide and the tracer medicines questionnaire that were administered to health workers who are involved in management of medicines at the facility. The third one was the patient assessment questionnaire that was administered to patients as they exited the facilities.

Data processing and analysis
The quantitative data were collected through the mobile CommCare® application and imported into STATA® version 14 for analysis.

Descriptive statistics were computed on proportions. Availability of adequate tracer medicines before and after the roll out of UHC was analyzed using means, proportions and difference in differences, which is a statistical approach that compares changes in

outcomes before and after an intervention.[10] Presentation of the data was in form of charts and tables. Qualitative data were also analyzed and reported using percentage and frequencies. These included challenges experienced by health workers and perceptions of the patient on availability of medicines.

Ethical considerations

The approval to conduct the research was granted by the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee (Ref KNH-ERC/A/336) and all provisions were adhered to. Confidentiality and anonymity of the respondents was upheld throughout the research process. Approval was also obtained from the Department of Health, Kisumu County (Ref GN 133.VOLIII/834). The study only included consenting persons.

Results

Sociodemographic characteristics of the healthcare workers

There was female predominance at 55.2% and most of them were between 25-34 years old (55.2%) as shown in table 1. All the interviewed healthcare workers had attained at least a minimum of diploma level of education and majority of them were nurses (51.7%). About a third (31.1%) had worked at the respective facilities for less than one year.

Table 1. Socio-Demographic Characteristics of Health workers (n=29)

Variables	Frequency	Percent
Gender		
Male	13	44.8
Female	16	55.2
Age Category		
25-34 years	16	55.2
35-44 years	9	31.0
45-54 years	3	10.3
55 years and over	1	3.5
Education level		
Graduate	6	20.7
Diploma	23	79.3
Cadre of health worker		
Pharmacist	7	24.1
Nurse	15	51.7
Pharmaceutical technologist	4	13.8
Other	3	10.4
Duration worked in the facility		
Less than 1 year	9	31.1
1-5 years	7	24.1
6-10 years	5	17.2

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11-15 years	4	13.8
16+ years	4	13.8

Sociodemographic characteristics of patients

The Table 2 below shows the socio-demographic characteristics of the patients involved in the study. One hundred and sixty-five (37.2%) patients were between 25 to 34 years old and about a half (205, 46.2%) had attained primary education. A majority (271,61%) of the participants walked to the health facilities to get services offered. A large proportion took less than 30 minutes to get to the facilities.

Table 2. Socio-Demographic Characteristics of patients (n=444)

Variables	N	%
Age Category		
18-24	90	20.3
25-34	165	37.2
35-44	85	19.1
45-54	46	10.4
55+	58	13.1
Education level		
No education completed	30	6.8
Primary	205	46.2
Secondary	148	33.3
Tertiary and above	60	13.5
Don't know	1	0.2
Mode of transport		
On foot	271	61.0
Own bicycle	22	5.0
Own car/Boat	4	0.9
Paid transport	138	31.1
Other	9	2.0
Distance to health facility		
Less than 15 minutes	107	24.1
15-30 minutes	189	42.6
31 minutes-1hour	111	25.0
More than 1 hour	36	8.1
I don't know	1	0.2

The availability of tracer medicines before and after roll out of UHC

A list of 20 tracer medicines was used to determine their availability before and after the roll out of UHC in public health facilities in Kisumu County (Table 3). The was an increase in the availability of Amoxicillin 250mg capsules, Amoxicillin dispersible 250mg tablets, Cetirizine 10mg tablets, ORS / Zinc tablets Co-pack, Oxytocin Injection 5 IU/ml ampoule, Hydrocortisone 100mg injection and Enalapril 5mg tablets. However, a decrease in the availability of Paracetamol 500mg tablets, Co-trimoxazole 480mg tablets, Albendazole 400mg tablets, Metronidazole 200mg/5ml Suspension, Gentamicin sulphate 80mg injection, Benzylpencillin 5MU injection, Adrenaline (epinephrine) Injection 1mg/1ml, Chlorhexidine 4% cord care gel and Suxamethonium chloride Inj 50mg/ml, 2ml amp was observed. The availability of Tetracycline eye ointment 1%, Insulin Biphasic 30/70, Clotrimazole 1% cream and Sodium Chloride IV 0.9% infusion showed no change. Overall, there was an average increase in the availability of tracer medicines on average by 3.4% since the roll out of UHC.

Table 3. Availability of adequate amount of tracer medicines

Item description (Name/form/Strength)	Pack size	Before UHC n (%)	After UHC n (%)	% DID(aUHC-bUHC)
Amoxicillin 250mg capsules	1000s	23(79.3)	26(89.7)	10.4
Amoxicillin 250mg tablets (Dispersible)	Pack of 20s	10(34.5)	22(75.9)	41.4
Paracetamol 500mg tablets	100's in Blisters	26(89.7)	24(82.8)	-6.9
Co-Trimoxazole 480mg tablets	100's in Blisters	26(89.7)	23(79.3)	-10.4
Albendazole 400mg tablets	100's in Blisters	25(86.2)	16(55.2)	-31.0
Cetirizine 10mg tablets	Pack of 20s	9(31.0)	15(51.7)	20.7
Metronidazole Suspension 200mg/5mL	100ml	27(93.1)	25(86.2)	-6.9
Gentamicin sulphate 40mg/ml injection, 2ml	amp	25(86.2)	22(75.9)	-10.3
Benzylpenicillin 5mu Inj	vial	26(89.7)	24(82.8)	-6.9
Adrenaline (epinephrine) Inj 1mg/1ml	amp	27(93.1)	25(86.2)	-6.9

Co-pack of 4 satchets of low osmolarity ORS (500ml formulation) + 10 tablets of dispersible zinc sulphate tablets 20mg	Co-Pack	25(86.2)	27(93.1)	6.9
Tetracycline eye ointment 1%, 3.5g	tube	27(93.1)	27(93.1)	0
Clotrimazole cream 1% 20g	tube	26(89.7)	26(89.7)	0
Oxytocin Inj 5 IU/ml ampoule	amp	26(89.7)	27(93.1)	3.4
Hydrocortisone 100mg injection	vial	24(82.8)	25(86.2)	3.4
Insulin biphasic 30/70 100 IU/ml. 10ml	vial	7(24.1)	7(24.1)	0
Enalapril 5mg tablets	100s	20(68.9)	23(79.3)	10.4
Chlorhexidine 4% cordcare gel	tube	12(41.4)	9(31.0)	-10.4
Sodium chloride IV infusion 0.9%, 500ml (Normal Saline)	bottle	27(93.1)	27(93.1)	0
Suxamethonium chloride Inj 50mg/ml, 2ml amp	amp	4(13.8)	3(10.3)	-3.5
% Total				**+3.4**

Patients' perception on availability of medicines in Kisumu County

A larger proportion (353, 79.5%) of patients were of the opinion that there was improved availability of medicines after UHC launch compared to the period before (Figure 1).
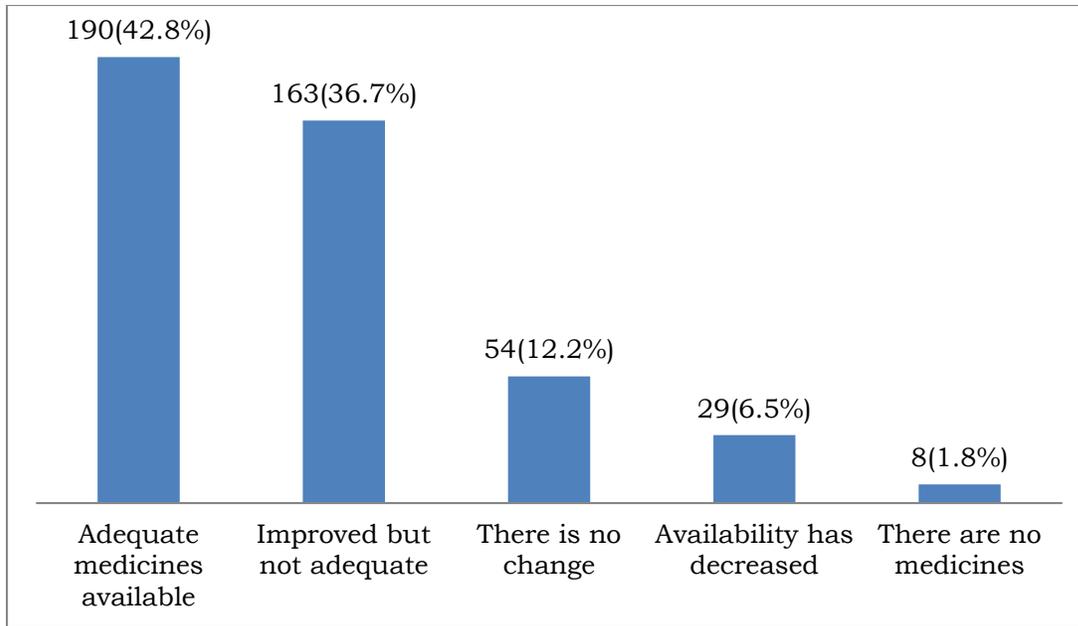
Figure1. Perceptions of patients on availability of medicines

A majority of the participants (309, 69.6%) reported that they received all the drugs prescribed at the health facility while 129 (29.1%) had failed to get all the prescribed medicines. Six (1.4%) respondents did not give their perception.

Most (56.6%) of the participants who didn't get all the drugs revealed that they were going to buy drugs from community pharmacies while 22.5% indicated they would go back to the health facility and check later (Figure 2)
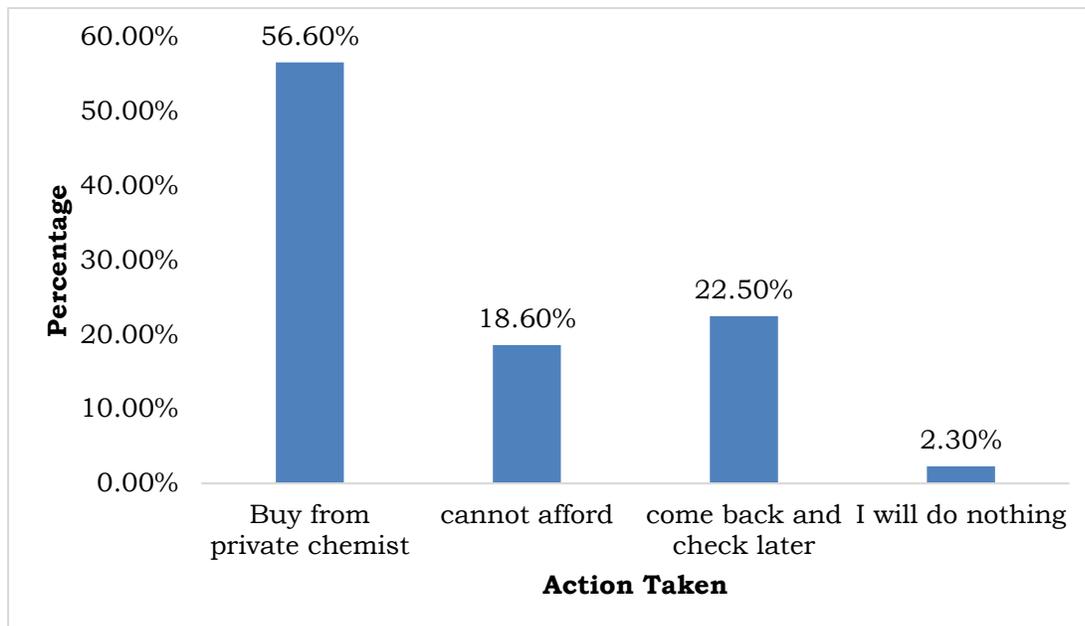
Figure2. Patient intended actions on medicines missed

Supply chain challenges

Eight main challenges were identified from the key informant interviews with health workers (Table 4). Inadequate

supply of medicines (37.9 %) and delays experienced in the supply of medicines (24.1%) were the most cited challenges across the health facilities.

Table4. Supply chain challenges

		Health facility levels			
Factors	Overall N (%)	Level 2	Level 3	Level 4	Level 5
Delays in supply of medicines	7(24.1)	1(14.3)	3(42.9)	3(42.9)	0(0.0)
Inadequate supply of medicines	11(37.9)	5(45.5)	4(36.4)	2(18.2)	0(0.0)
Inconsistent drug supply	2(6.9)	0(0.0)	2(100.0)	0(0.0)	0(0.0)
Increased work load	2(6.9)	1(50.0)	1(50.0)	0(0.0)	0(0.0)
Not all medicines needed supplied	1(3.5)	1(100.0)	0(0.0)	0(0.0)	0(0.0)
Poor mode of delivery	1(3.5)	0(0.0)	1(100.0)	0(0.0)	0(0.0)
Shortage of staff	2(6.9)	0(0.0)	1(50.0)	1(50.0)	0(0.0)
Stock out of medicines	3(10.3)	1(33.3)	1(33.3)	0(0.0)	1(33.3)

Discussion

The findings from the study indicated that there was a general improvement (3.4%) in the availability of tracer essential medicines following the implementation of the UHC pilot. The information provided by the health care workers resonated with that of the patients during exit interviews. This observation concurred with that from Ghana where there was an increase in accessibility and utilization of medicines following implementation of their National Health Insurance Scheme.[11]

The launch of the UHC improved the availability of medicines which was among the intended objectives. Under the model piloted in Kenya, the county governments are required to incrementally increase their allocation on health spending, therefore more

resources than previously granted would be available for health services including provision of medicines.[6]

The patients reported an improvement in the availability of medicines. This can have the positive effect of leading to greater uptake of health services in the roll out of UHC. The lack of medicines and exorbitant fees charged in public health facilities has been cited as one of the reasons for the disaffection by the public that resulted in some countries adopting some form of health insurance scheme for their populations. The key pillar of UHC is access to all that need health services without them suffering financial hardship. In a study on the effects of UHC, it is therefore imperative to get data from the patients accessing the health services at the facilities covered under the program.

Several studies conducted in Kenya have looked at the issue of Catastrophic Health Expenditures (CHE) for the poor. In a study by Buigut S, et al, between 1.52 -28.38% of Kenyan households in informal settlements face this problem and cannot afford quality health care.[13] In another study by Kimani D, et al, the finding was that 11.7% of those who utilize health services face CHE while 4% were impoverished by out of pocket payments.[8] The findings from the two studies compare well with our findings of 18.6% of patients who cannot afford to buy the medicines from other sources. The implication of this is that a significant percentage of the population has no access to quality healthcare without the intervention of government and therefore would face a health catastrophe in the absence of a functioning UHC scheme.

From the study the main challenges that were experienced by the health facilities in Kisumu after the roll out of the UHC pilot was inadequate supply of medicines. This is in line with the findings from patient exit interviews where 36.7% of the respondents said that although the medicines supply had improved after UHC, it was not adequate. This may result from the supplier (KEMSA) not delivering the required supplies or inaccurate forecasting of needs by the health facilities. The inability to supply all the medicines is consistent with findings of a study conducted in Embu County. [9] On the other hand, various reports from the MOH and supporting partners have identified lack of skills in forecasting and quantification as one of the main challenges faced by public health facilities.[16]

Stock out of medicines was another identified challenge (10.3%) that affected all the levels with the exception of level 4 hospitals. 4.3% of the patients interviewed did not receive any medicines at the facilities. This would be a hindrance to the attainment of UHC as it goes against offering quality health services and financial risk protection. A study of the systematic review of factors that affect the uptake of community based insurance in middle and low income countries, stockout of medicines is identified as one of the factors that hinder enrolment and attainment of UHC.[10]

The health facilities also experienced delays in the supply of the medicines. This can be postulated to be the long lead times between making an order and receiving the supplies. Under the UHC pilot program, orders were made online by the health facilities and then approved at Sub County and County levels before they are submitted to KEMSA which required MOH approval before it processed the order and delivered to the health facility.[11]

Shortage of qualified staff which includes nurses, pharmaceutical staff and clinicians was also identified as a challenge by the health workers which contributed to increased workload. According to Kenya Health Facility Assessment (KHFA), the service availability index score for infrastructure was quite high but the score for health workforce and service utilization were quite low.[12] Thus

shortage of staff may be a barrier to utilization of health services and therefore attainment of UHC.[13] This challenge is not unique to Kenya and Africa alone, and a study in China documenting the challenges in the journey to UHC recommended the use of health information technology such as mobile health and telemedicine to address the shortage of staff particularly in low income and remote areas.[14]

Limitations of the study

Due to resource constraints the study did not involve all the facilities in Kisumu County. The sample size may not allow the generalization of the findings to all the UHC implementing facilities in the country. Other factors both observed and non-observed may have an effect on the availability of medicines despite the roll out of UHC. The findings may therefore overestimate the effect of the intervention.

Conclusion

The rollout of UHC generally improved the availability of medicines in Kisumu County. Several challenges were encountered by the healthcare facilities which were not unique.

Conflict of interests

The authors wish to declare there was no conflict of interest

Acknowledgement

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