Effect of Health Insurance on Quality of care among households Affected by Non-communicable diseases in Busia County, Kenya.

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Abstract- Non-Communicable Diseases (NCDs) are increasingly becoming important agents of illness and death worldwide. With the rising burden of NCDs in LMICs, Universal health coverage (UHC) has emerged as a priority intervention central to improving access to quality essential health services without suffering financial hardships among households and communities. NCDs deepen inequality and are the major drivers of poverty that is passed from generation to generation. World leaders agreed to deal with the devastating consequences of NCDs as a developmental challenge under the 2030 Sustainable Development Goals. Kenya successively reformed NHIF to include a comprehensive set of services that address the blight of NCDs and transform it as the primary enabler for achieving UHC. In spite of high quality of care being an overarching goal for performance of health systems and critical to achievement of UHC, current evidence suggests that quality of care is suboptimal particularly for people affected by NCDs. This study sought to examine the effect of HI on Perceived quality of care among households of people with NCDs in Busia County.

Methods. A quasi experimental – (Pretest- posttest Non-equivalent control group) design using Propensity Score Matching method was conducted among eligible households with HI cover (intervention group) and those without (comparison group), involving a total representative sample of 350 households. Interviewers conducted face-to-face interviews at baseline and after one year among household heads. Ethical approval was obtained from Moi University Institutional Research and Ethics Committee.

Results. Insured households reported a slightly higher level of overall satisfaction; however the difference was not significant. Adjusted mean gap score for insured households was -0.522 (SE 0.013), 95% CI (-0.547 to -0.496) while that for uninsured was -0.588(SE 0.013), 95% CI (-0.613 to   -0.563), p value = 0.062. Insured households expressed a higher level of satisfaction with Tangibles and Assurance dimensions.

Conclusion. The National government should ring fence funding for Primary health care facilities so as to improve efficiency and health system performance. County government to ensure availability of NCDs care commodities, train more care givers on NCDs management to match the rising demand and prioritize mentorship of health care providers in key areas of quality care. This will improve efficiency, build patients confidence and thus improve quality of care.

Index Terms- Busia County, Health Insurance, Quality of care, NCDs care.

I. Introduction

Non-Communicable Diseases (NCDs) are increasingly becoming important agents of illness and premature deaths worldwide, killing up to 41 million people annually most of which occur in low and middle income countries (LMICs) [1]. In Kenya, the major NCDs are cardio-vascular diseases (CVDs), diabetes, chronic respiratory diseases (CRDs) and cancers. These four diseases are responsible for more than 50% of all hospital admissions and 39% of hospital deaths [2]. With the rising burden of NCDs, Universal health coverage (UHC) has emerged as a priority intervention central to improving access to quality essential health services without suffering financial hardships among households [3].

In a move towards attainment of UHC, Kenya made deliberate policy decision to attain this goal by widening the mandate of the National health insurer – NHIF. Reforms aimed at building the capacity of NHIF to provide HI cover to all households in Kenya were executed. These reforms entailed expanding the benefits package, where a

new package dubbed– 'the Supa cover' that address NCDs care needs including outpatient, inpatient and specialized services was ratified [4]. All Kenyans are eligible to enroll into the scheme with a fixed monthly household premium of Kshs. 500 for the informal sector. For the formally employed, a monthly premium graduated based on salary level is deducted from salary. The NHIF contracts public and private health care facilities and practitioners to provide health care services to its members and reimburse them using capitation and case based systems [5]. In 2018, the Government through NHIF initiated and rolled out a Pilot HI program in Kisumu, Machakos, Nyeri and Isiolo Counties targeting 3.2 million residents, with an aim of using the lessons learned to further scale up the program to all counties in Kenya [6]. Under this program, the County governments abolished user fees levied at level 4 and 5 government owned facilities while the national government refunded them the lost revenues. All residents of the 4 counties including those enrolled in other HI programs were eligible for registration [6]. Many other Kenya's counties with their development partners experimented with various HI models, extending financial and social protection to the poor and vulnerable populations [7]. There is however evidence suggesting that quality of care is suboptimal, particularly in LMICs, where poor quality of care remains a significant setback that explains the persistently high levels of mortality [8]. Kruk et al. established that up to 5 million avoidable NCDs deaths each year are attributable to low quality care [9]. Furthermore, the WHO's UHC cube inordinately emphasizes only three dimensions; - financial risk protection, service coverage and population coverage, leaving out quality of care [10]. Achieving UHC will require a more deliberate focus on quality of care across all its various dimensions [11].

Most studies in LMICs have examined perceptions of quality of care from the perspective of patients in general, without placing emphasis on disease types or HI status [10, 12–15]. Despite the epidemiologic transition in disease burden and the ambitious health sector reforms to achieve UHC, no study has examined whether HI improves quality of care among households with the four major NCDs in Kenya. This study seeks to fill this gap by examining perceptions of quality of care between insured and uninsured households among the growing population of people living with NCDs in Kenya's health care system.

II.   METHODS

Study Setting

Kenya is among the LMICs in the sub-Sahara Africa region with up to 36.1% of citizens spending less than US dollar 1.9 per day- described as the international poverty line [16].The country is divided into two major levels of governance, the National government and 47 devolved units (County governments) which are semi-autonomous [17]. The hierarchy of Health delivery structure in Kenya is organized into three sub-systems: 1). Private for-profit institutions, 2). Government institutions which include facilities operated by County governments and those manned by the National Government, 3). Private not-for-profit institutions.

The governmental category are efficiently arranged in a hierarchical form beginning with the community level being the lowest, while level six are the highly specialized referral hospitals [18]. In the year 2013, upon the coming into effect of the Country's new constitution, delivery of health services was devolved to the County governments. The state department of health however retained the health policy and regulatory functions as well as overseeing delivery of service in all the specialized referral hospitals [18].

Study site

The study was implemented in Busia County where the Ministry of Health and the County Government have partnered so as to strengthen primary care services and the health system [19]. Busia County is situated in the western part of Kenya and serves as the gateway for Kenya to the republic of Uganda. Fishing is the most dominant economic activity since part of Lake Victoria extends to the County. Other complementing economic activities include rice farming under irrigation and subsistence farming [20]. According to Kenya National Bureau of statistics [21], Busia County with an area of 1,696 km2, has a population of 893,653 of which 426,252 are male and 467,401 are female.

Study Objectives

Our work is part of a study that evaluates the effects of HI on Health service utilization and Economic burden of NCDs in Busia County using 4 objectives. This publication is however limited to one specific objective; to assess the effect of HI on quality of care among households of people with NCDs.

Study Design

We conducted a quasi-experimental – (Pretest- posttest non-equivalent control group) design. Using a household register created during registration of beneficiaries, the study recruited households to an intervention group and a comparison group based on their HI status. The intervention group was interviewed for pretest before being enrolled for HI then a posttest was done after 1 year. At the same time, there was a non-equivalent comparison group which comprised households that had been enlisted to receive the NHIF cover but had not received the cover during study period. This group was also interviewed for pretest and posttest.

Study population

Study population comprised households that had at least one member living with at least 1 among the 4 common NCDs in Kenya. Participants needed to have met the following inclusion criteria: - (1). Be a household head of either an enrolled or enlisted household for the HI program and having at least one household member living with one of the 4 common NCDs in Kenya. (2). The household needed to have sought at least one outpatient hospital visit in the 4 weeks preceding the baseline survey or to have had at least one case of hospitalization 12 months preceding the survey (3). Household head should be willing to voluntarily consent to participate in the study. (4). Household head should be 18 years or older and (5) Household reside within the study area and would be available for the next 1 year.

Creation of comparison group

Non-randomization can introduce selection bias where intervention subjects can be systematically different in baseline characteristics from comparison subjects [22]. PSM technique provides a solution for researchers whose objective is to estimate the effect of a program by controlling for variables related to self- selection into that particular program [22].

We used PSM to create a comparison group by matching each intervention unit to a non-intervention unit of similar baseline characteristics based on calculated propensity scores. Using logistic regression, control variables which included household demographics before introduction of the HI program was used to calculate propensity score of each household. These variables were selected following extensive literature review of similar studies as recommended by Stuart [23]. The study used Nearest Neighbor Method with caliper adjustment to create matches from propensity scores. Households were only matched whenever their propensity scores felt within the designated caliper distance or otherwise discarded. As recommended by other studies [22, 24-27], quality of matches was assessed by comparing the absolute Standardized Mean Differences (SMD) and the Variance Ratios (VR) of the 2 groups. Similar to other studies [27 & 28], we considered covariate balance as an absolute SMD value less than 0.1 and a VR close to 1

Sample size and sampling

Using a formula suggested by Sullivan [29], the study estimated that a minimum sample size of 175 households per group would have power of 80% using a 2 sided alpha of 0.05 and a medium effect of 0.3. Power of 80% or greater is appropriate to establish a statistically significant difference [30]. To ensure the total sample size of 350 was available for analysis at 12 months, an additional 15% was added to each group to cater for those that would be lost during follow up. Systematic sampling was used to select participating households in each group.

Study variables

Effect of HI on quality of care was examined using the SERVQUAL (SQ) model developed by Parasuraman, Zeithaml & Berry [31]. According to Babakus and Mangold [32], SQ is appropriate, reliable and valid when used to examine quality of care in the healthcare sector. Likewise, AlOmari [33] stated that the five dimensions of SQ scale are reliable in measuring and analyzing quality of healthcare service. Pai and Chary reviewed hospital service quality studies and found that SQ model had been used as an instrument in 49% of studies [34].

Data collection and analysis.

Data was collected by trained research assistants using the SQ questionnaire with a five-point Likert scale that ranges from 1 = strongly disagree, to 5 = strongly agree. The questionnaire assessed households' agreement on five SQ dimensions based on their expectation (before meeting the care giver) and perception (after meeting the care giver). The SQ scale consisted a set of 22 items that relate to households expectations and a corresponding second set of 22 items related to households' perceptions based on the 5 dimensions. Level of satisfaction was determined by analyzing the SQ gap, (Perception minus Expectation). We computed descriptive analysis so as to summarize data using percentages, means and standard deviation. Under inferential analysis, we run ANCOVA on gap scores to test whether the means of posttest gap scores, while adjusting for pretest gap scores between households in the intervention and comparison groups were different.

Study approval

Ethical approval was obtained from Institutional Research and Ethics Committee (IREC). Approval to conduct research was obtained from Jomo Kenyatta University of Agriculture and Technology and the National Commission of Science, Technology.

<center>III.   RESULTS.</center>

Socio-demographic and Economic Characteristics of Households

Table 1 illustrates households' socio-demographic characteristics after matching.

Table 1. Households' socio-demographic characteristics.

COVARIATE	LEVEL	INTERVENTION		COMPARISON	
Dichotomous		**Freq.**	**%**	**Freq.**	**%**
Gender	Male	109	29.9	111	30.5
Marital status	Married	107	29.4	103	28.3
Education level	Not attained secondary	100	27.5	94	25.8
Residence location	Rural	140	38.5	138	37.9
NCD Morbidity	More than ONE in HH	14	4	13	3.7
NCD Comorbidity	Present in HH	33	9.4	34	9.7
Wealth quintiles	5,000 and below (Poor)	80	22.7	79	22.6
(Monthly income in	> 5,000 - 9,000 (Middle)	62	17.7	67	19.1
Ksh.)	> 9,000 (Rich)	33	9.4	29	8.3
Continuous	LEVEL	**Mean**	**SD**	**Mean**	**SD**
Age	Household head	55.40	12.61	56.0	12.25
No of people	Household	4.82	1.33	5.0	1.23
Monthly income	Household	6198.9	3033.87	6105.71	2643.36

Characteristics of NCDs affecting households in study area

Table 2 outlines characteristics of NCDs affecting households in the study area.

Table 2: Characteristics of NCDs Affecting Households in the Study Area.

S/N	NCD TYPE	Intervention	Comparison	Total (%)	
		Frequency	Frequency	Total	%
1.	Cancer	11	10	21	6
2.	Diabetes	29	30	59	16.9
3.	CVDs	55	55	110	31.4
4.	CRDs	33	33	66	18.9
5.	Diabetes with CVDs	28	28	56	16
6.	CVDs with CRDs	11	11	22	6.3
7.	Diabetes with CRDs	5	5	10	2.8
8.	Cancer with CVDs	3	3	6	1.7
	TOTAL	175	175	350	100

Household Quality of NCDs care.

Overall, the study recorded an improvement of 1.3% on quality of care during the study period however all gap scores were negative indicating that the perceived quality did not match the expectation of households across all the SQ dimensions.

Effects of HI on Quality of NCDs care.

Table 3 outlines the adjusted mean gap scores for intervention and comparison groups across all SQ dimensions. Intervention group households reported a lower mean gap score compared to comparison group households. The adjusted mean gap score for intervention group was -0.522 (SE 0.013), 95% CI (-0.547 to -0.496) while for comparison group was -0.588(SE 0.013), 95% CI (-0.613 to -0.563), p value = 0.062.

Generally, households were most dissatisfied with the responsiveness dimension (highest gap scores) and were most satisfied with empathy dimension (lowest gap scores). These findings were however not significantly different between the groups.

Table 3. ANCOVA output for adjusted mean gap scores for intervention and comparison groups.

SERVQUAL Dimensions	Intervention Group		Comparison Group		ANCOVA	P-value
	Adjusted Mean (SE)	95% CI	Adjusted Mean (SE)	95% CI		
Tangibles	-0.531(0.02)	-0.577 -0.485	-0.618 (0.02)	-0.664 -0.572	0.657	0.009
Reliability	-0.522(0.02)	-0.572 -0.472	-0.547 (0.03)	-0.597 -0.497	0.055	0.489
Responsiveness	-0.595(0.03)	-0.654 -0.535	-0.654 (0.03)	-0.714 -0.594	0.308	0.166
Assurance	-0.523(0.02)	-0.570 -0.475	-0.647 (0.02)	-0.695 -0.600	1.341	0.001
Empathy	-0.435(0.02)	-0.481 -0.390	-0.476 (0.02)	-0.522 -0.431	0.142	0.216
All	-0.522(0.01)	-0.547 -0.496	-0.588(0.01)	-0.613 -0.563	0.383	0.062

IV. DISCUSSION.

This study presents an analysis on the effect of HI on quality of care among households with NCDs using a pretest and posttest non-equivalent control group, followed up for one year using the SERVQUAL model.

First, the study established that insured households reported a slightly higher level of overall satisfaction compared with uninsured however, the difference was not significant. This finding is consistent with those of other studies in Ghana [35] and in Kenya [36, 37]. For instance, the government of Ghana established the National Health Insurance Scheme (NHIS) with a principal aim of improving access to and quality of primary health care services [38]. Abuosi et al., [35] however established that there was no significant difference in quality of care between insured and uninsured groups in Ghana. A related study in Kenya established that insured patients with NCDs are sometimes discriminated against by care providers thus lowering the level of quality to NCDs care that they receive [36].

Secondly, the study found evidence that insured households were more satisfied than uninsured with the Tangibles dimension. Tangibles entails availability of essential drugs supplies, equipment and weather physical facilities are visually appealing. This finding is consistent with that of Yanful et al.,[10] that insured households were more satisfied than uninsured in maters to do with Tangibles dimension due to associated better outcomes linked with availability of diagnostic equipment and medical commodities. Kiragu and colleagues in their study concluded that UHC increased availability of free NCDs medicines in public hospitals where NCDs management primarily takes place in Kenya [39].

Thirdly, Assurance dimension relates with staff knowledge to perform service and their ability to convey confidence by giving satisfying answers to questions, keeping patients informed in a language they understand, having required skills to perform service and attitude that instills confidence. The study found evidence that insured households were more satisfied than uninsured in aspects of assurance. This finding was consistent with that of Zun and colleagues. The authors argued that low-income households are more concerned with cost of care and easily get satisfied with a service provided at low cost [15].

Fourth, in relation to reliability dimension which deals with accuracy of treatment and consistency of performance, the study did not find evidence that perceived quality was better for insured households than for uninsured. This finding was consistent with that of Daramola et al., that certain behaviors and attitudes by care givers may not be specifically targeted to any particular group [40].

Fifth, the study established that households in both groups were most dissatisfied with responsiveness dimension. Responsiveness entails willingness to help patients and provide prompt services like taking a shorter time before being attended to. Although long waiting time is a major concern in the current study, we did not find evidence that insured households were treated differently as compared to uninsured households. This finding was in contrast with Abuosi et al., [35] that reported long waiting time as causing dissatisfaction among insured patients in Ghana. A plausible explanation for the contrast could be the differences in health care delivery process for the two countries. Whereas in Ghana insured patients go through HI process in a different queue attended by providers with no incentives [41], in the current study area, insured patients went through the same queues with uninsured.

Similarly, we did not find evidence that insured households were more satisfied than uninsured in respect to empathy dimension. Empathy entails giving patients' individualized attention and knowing their specific requirements. The fact that patients generally experience varying levels of healthcare quality, as suggested by other studies [35], could explain the finding. Zun et al., also reported that heterogeneity of services in different facilities affects patient's expectation and perception levels differently. Even within the same setting, level of satisfaction may differ from one patient to another and from time to time [15].

Based on our findings, the study made the following recommendations. First, the National Government should come up with a legislation to ring fence funding for Primary Health Care facilities. Such funds will be used to improve health system performance through ensuring constant supply of essential commodities and medical equipment. Secondly, the county government should prioritize mentorship of health care providers in key areas of quality care. This will improve efficiency, build patients confidence and thus improve quality of care.

V. CONCLUSION.

With the rising burden of NCDs in LMICs, health systems have increasingly recognized UHC as a crucial avenue for financial risk protection and improving access to quality essential healthcare services in communities. Kenya Government has made deliberate

policy reforms at NHIF, aimed at building its capacity to provide HI cover to all households including those afflicted by NCDs. Insured households reported a slightly higher level of overall satisfaction compared to uninsured however, the difference was not significant. National Government should ring fence funding for health system improvement while the County government should prioritize mentorship of health care providers.

Strengths and limitation

The study utilized a pretest and posttest design, capable of capturing the effect of HI on quality of NCDs care over time. Selection bias was statistically eliminated using study design - propensity score matching.

There could be minimal measurement errors since most responses were based on self-reporting by respondents, which could have led to recall bias. Effort was however made to minimize bias by requesting respondents to maintain a diary of care seeking events during the study period.

ABBREVIATIONS

CRDs.   Chronic Respiratory Diseases.
CVDs.   Cardio-vascular diseases.
HI.   Health Insurance.
LMICs.   Low and Middle Income Countries.
NHIF.   National Health Insurance Fund.
OOPE.   Out of Pocket Expenditure.
PSM.   Propensity Score Matching.

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