

Training of Health Units Management Committees (HUMCs) and Performance of Health Centers in Eastern Uganda

Muwanguzi David Gangu, Dr. Otieno George Ochieng, Dr. Keneth Rucha Kibaara, Prof. John Francis Mugisha, Muluya Khalim Mwebaza

Department of Health Management and Informatics, Kenyatta University, Kenya

Corresponding author: davidmuwanguzi@yahoo.com

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Abstract: Community participation has been emphasized internationally as a way of enhancing accountability, as well as a means to enhance health goals in terms of coverage, access and effective utilization. As a result, countries have embraced and supported introduction of Health Unit Management Committees in rural health facilities (Goodman and Apwora, 2011). This study was conducted to establish the relationship between training of Health Unit Management Committees (HUMCs) and performance of health centers in Eastern Uganda. This study employed a mixed methods approach within a pre-post randomized community trial study design to explain how training of HUMCs triggers improved performance of health centres. The unit of analysis in the study was the response of the performance of Health Centres to training of the members of HUMC. Clinical outputs like Out-Patient Department (OPD attendances, deliveries in health facilities, immunization coverage). Twelve health centres were selected for in-depth intervention study in the experimental arm and twelve health centres were selected in the control arm for this study on training of HUMCs to stimulate productivity of the health centres. This study, established that training increases level of trust between HUMCs and health workers thereby leading to a highly motivated workforce. Their motivation was shown in the significantly high level of dedication to their duty; positive correlation values despite the myriad challenges facing their facilities such as drug stock-outs, high demand for services against a thin workforce, and limited facility resources. The study recommends that for effective performance of Health Unit Management Committees, the central government, through Ministry of Health should organize training sessions at District levels so that each year, there are new skills they receive.

Key Words: Health Unit Management Committees, Training, Performance, Health Centers

1. Introduction

According to Starks (2015), performance is the achievement of desired goals. High hospital performance should be based on professional competences in application of present knowledge, available technologies and resources; efficiency in the use of resources; minimal risk to the patient; satisfaction of the patient; and desirable health outcomes (Yuen & Ng, 2012). Within the health care environment, high hospital performance should further address the responsiveness to community needs and demands, the integration of services in the overall delivery system, and commitment to health promotion (Gauld, et al., 2011). High hospital performance should be assessed in relation to the availability of hospitals' services to all patients irrespective of physical, cultural, social, demographic and economic barriers (Dischoeck, et al., 2012).

Health centres are an important part of any health system: they provide complex curative care that, depending on their capacity, acts as a first referral,

secondary or last referral level curative care facility; they also provide emergency care for the severely injured or the critically ill; they are centres for the transfer of knowledge and skills; they constitute an essential source of information and power; and generally spend the major part of national health resources (El-Jardall, Saleh, Ataya, & Jamal, 2011).

According to Kirkpatrick (2016), global priorities to reform management of health services started among European Countries in the 1980s. the intention is always to co-opt professionals themselves into the management of services, taking on full time or part time (hybrid) management or leadership roles. In Africa and other less developed countries, the initiative to introduce HUMCs owed to various challenges in the health sector, which include, but not limited to; gaps in ensuring effective, efficient healthcare services for communities, shortages of nurses and other healthcare workers, concern for the safety and quality of healthcare services, rising healthcare costs, an aging population and rapidly changing medical terminology and practice (Hamilton, 2019). The need for continuous capacity building for the

health sector has seen the ministries of health in developing countries, like Uganda, effectively responding to the increasing need for continuous professional development of health care workers and managers. The MOH in Uganda established the Health Manpower Development Centre (HMDC) in 1984 as a national in-service training centre. The centre is mandated to develop evidence-based training courses for professional development and health services management (MOH, 2017). However, the degree to which HUMC members have benefited from this training structure is both limited in documentation and sustained trainings are limited since HUMC members are rotational office bearers. This presentation seeks to stress the value of training HUMCs by among other approaches, providing documentation so that more resources are put into this initiative to harvest a health care system which benefits all people without any form of discrimination.

2. Literature Review

According to Buscar (2018), Health centres are the epitome of health service provision and are important structures being close to community they serve as points of reference for prevention of ailments and curing ailments. Health centres are close to the community or rather within the community. Health Unit Management Committees are reportedly introduced to enhance community participation in health services and to contribute towards better Health Service Delivery in Health centers. According to Goodman, et al. (2011), HUMCs serve the role of improving health services in terms of accountability, coverage, access and effective utilization, especially owing to the fact that the central government currently makes direct funding to health facilities. This means that HUMCs ought to be equipped with necessary skills and techniques of handling people and data required to further better health service delivery at health centers.

As already stated, since the early 1980s all European countries have given priority to reforming the management of health services. In Kenya, they are called Health Facility Committees (HFCs) and they play an active and important role in health facility management, particularly where they have control over some facility level resources. However, to optimise their contribution, efforts are need to improve their training, clarify their roles, and improve engagement with the wider community (Goodman and Apwora, 2011).

This trend is heavily influenced by ideas of the new public management (NPM) and the wider goal of increasing convergence between the practices of public organisations and private firms. This influenced the expansion of HUMCs in other countries, Uganda, inclusive. Known to have started in the 1980s, the initiative to introduce HUMCs for effective and quality health care system spread to African countries. HUMCs are established at facilities at the different levels of care, except at Health Center I, which is constituted by Village Health Teams (VHTs) and consist of

representatives of community within which the health facility is located. Ministry of Health guidelines require that the committee is chaired by a prominent educated public figure of high integrity and not holding any political position (Adi, 2012). However, even with HUMCs in Uganda, out-puts and out-comes from the HUMCs have not been clear. It was taken for granted as though the Health Units Management Committees had been inducted and trained to execute their mandates bearing that view as being true, the effectiveness of that training has not been examined nor has the performance of health centres been analysed in respect to efforts put in by HUMCs (Smith & Papanicolas, Health system performance comparison: an agenda for policy, information and research. Policy Summary, 2012).

Training is a fundamental and effectual instrument in successful accomplishment of the firm's goals and objectives, resulting in higher productivity (Ssenkooba, 2010). Training builds a team that is effective, efficient and well motivating, thereby enhancing the confidence and self-esteem of stakeholders (Grip & Saverman, 2010). The employees' knowledge and skills are thus developed to adapt to new technologies and other organizational changes and task requirements. The benefits of training are innumerable (Ssenkooba, 2010). This implies that for any organization to succeed in achieving the objectives of its training program, the design and implementation must be planned and systematic, tailored towards enhancing performance and productivity. Training consists of planned programs designed to improve performance at the individual, group and/or organizational levels (Dhamodharan et al., 2010).

The functions of training include increased productivity, improved quality of work; improved skills, knowledge, understanding and attitude; enhanced use of tools and machine. It also leads to reduced waste, accidents, turnover, lateness, absenteeism and other overhead costs. Training leads to, elimination of obsolescence in skills, technologies, methods, products, capital management among others (Burroughs, Dahl, Moreau, Gorn, & Chattopadhyay, 2011). The objectives of training a worker are to be better equipped to adjust to the changes in the nature of his work, to widen the trainee's understanding of the society in which he lives and develop him as a confident person, and to afford the staff the opportunity of changing their schedules of duties and to be able to perform equally well on them (Campbell, Kryscynski, & Coff, 2012). This also raises optimism that if trained stakeholders in East-central Uganda, especially members of HUMCs and their health workers, performance of the health centres should therefore improve.

Stakeholder training and manpower development is very vital to job productivity and organization performance since the formal educational system does not adequately provide specific job skills for a position in a particular organization. Thus there is no particular module in formal education that primes HUMCs in the role of monitoring health service delivery in Uganda. Yet this is the job that they should perform and show

results to both their arms of supervision (community and government). While, few individuals (HUMC Members) may be having the requisite education and skills, knowledge, abilities and competencies needed to fit into a specific job function, some others require extensive training to acquire the necessary skills to be able to fit in a specific job function and also make significant contribution to the organization's performance (Dhamodharan et al., 2010).

In the real world, organizational growth and development is affected by a number of factors. In light with the present research, during the development of organizations, employee training plays a vital role in improving performance as well as increasing productivity (Campbell & Kryscynski, 2012). This in turn leads to placing organizations in better positions to face competition and stay at the top. This, therefore, implies an existence of a significant difference between the organizations that train their employees and organizations that do not (Abor, 2015). Existing literature presents evidence of an existence of obvious effects of training and development on employee performance. Some studies have proceeded by looking at performance in terms of employee performance in particular (Soucat & Scheffler, 2013). Others have extended to a general outlook of organizational performance (Klassen, et al., 2010). In one way or another, the two are related in the sense that employee performance is a function of organizational performance since employee performance influences general organizational performance.

In South Africa, one study by Garma (2012) shows that one in 322 South African women does not survive pregnancy or childbirth, and one in 25 babies die before his or her first birthday. Many of these deaths can be prevented through evidence-based, cost effective health interventions. The introduction of the HUMCs also Clinical Committees (CCs) was introduced to these statistics and challenges such as: limited or delayed uptake of essential MNCH services, especially by population groups that are historically disadvantaged, and limited capacity and motivation of health workers to adhere to national protocols and standards. UNFPA (2012) thus indicates that effective training on the roles and functions of committees targeted at CC members should be given priority and capacity building and mentoring be integrated into a training programme for CCs. Ensuring health workers (facility based and outreach) are included in this training will contribute to ensuring that CCs develop relationships at health facility level and therefore promote access, transparency and accountability.

3. Methodology

3.1 Research Design

This study employed a mixed methods approach within a pre-post randomized community trial study design to explain how training of HUMCs triggers improved performance of health centres. The unit of analysis in the study was the response of the performance of health centres to training of the members of HUMC. Clinical

out puts like (OPD attendances, deliveries in health facilities, immunization coverage), Perceptions, behaviours, practices and decision processes were the basis for assessing the response. The analysis sub-units embedded in this randomized community trial included the interaction between hospital actors i.e. HUMC members, managers and clinical staff in relation to prerequisites for health centre performance improvement. These relationships i.e. nature of strategic control (governance) by HUMCs, and performance surveillance, feedback mechanisms and technical assistance provided by the trainers of HUMC members shed light on the mechanisms that training might elicit and provide the causal pathways to explain the response to the training.

3.2 Study Area

The study was conducted in randomly sampled health facilities in the East Central Region of Uganda. Uganda is a low developed country in Africa. It is bordered by Kenya in the East, South Sudan in the North, Democratic Republic of Congo in the West, Rwanda and Tanzania in the south. Uganda is land locked country. The proportion of the population in Uganda that lives within 5kms of a health facility is 78% up from 49% in 2000 and in Eastern Central Region of Uganda; it is 72% (MOH, 2012).

3.3 Study Population

Twelve health centres were selected for in-depth intervention study in the experimental arm and twelve health centres were selected in the control arm for this study on training of HUMCs to stimulate productivity of the health centres. The selection of the health centres was random and was guided by the desire of seeking validity of and generalizability in the pre-post community trial study approach.

This pre-post experimental study of establishing the effect of training HUMCs on performance of HCs in East-Central Uganda covered health facilities in five (out of 16) districts in the East Central Uganda. The health centres were selected using a simple random approach. The study questions in this research were best addressed at hospital or sub-hospital-level (HC IV) as opposed to smaller health facilities.

The major reasons for seeking to study the effectiveness of training HUMCs on performance of HCs at hospital-level was that hospitals represented complex organizations and findings from these hospitals provoked greater theoretical and operational generalization to guide policy and practice for performance enhancement in HCs of the Uganda's Health System. Furthermore, hospitals, as opposed to smaller health centres, have several organisational structures such as departments, skilled managers, and diverse mix (cadres) of workforce that were essential for the exploration of the theoretical propositions and conceptual framework for this study.

A baseline to assess health centre performances, skills and knowledge in reviewing and monitoring capacities by HUMCs in the intervention and control arms of the

study was conducted (Ifakara 2011). The HUMCs with limited skills and knowledge were subjected to training on governance for period of two weeks. Each health centre had a trainer from Ministry of Health of Uganda and one Research Assistant. After the training, which ended with in the first month of intervention period, then follow up was done three months after the training and then six months after the training to ascertain the improvement in performance in the intervention health centres that were compared with those in the control. This enabled explaining the impact and outcomes. The study population included general hospitals (thus health centres at level of HC IV and HC V) in all the districts of East Central Uganda from which a sample of 24 that was randomly drawn. The subjects of the study included sampled participants selected from the Members of HUMCs, Managers of District Health Services, Managers of Hospitals, Managers of Health Centres IVs (Sub Hospitals), and the Health Care Workers.

3.4 Sampling procedure

- Participants for the study included purposively sampled respondents from the District Health Teams, the District Administrators for the baseline in both the intervention and control arms
- Participant also included members of the HUMC and must have served for at least one year from the time of the study.
- It also included sampled health workers, managers in those selected health centers, and sampled members of HUMCs who were willing to participate.
- Member of the HUMC who had served for less than one year were excluded in the study.
- Any member of HUMC in the region who did not belong to any of the selected health centre HUMC was excluded in the study.

3.5 Sampling procedure

For the study area, the East Central Region of Uganda was purposively selected for the study. Purposive sampling is where the sample is arbitrarily selected because characteristics, which they possess, are deemed important for the research. This was because the East Central Region of Uganda has been having most districts grouped among the districts with poor performance in the Districts League Table (MOH, 2017). Health centres that were selected for the study were those at the level of health centre IV and health centre V that carry out admission of patients. Therefore a sampling frame of 67 health centres was drawn from all health facilities in the East-Central Region of Uganda that offer in-patient services and were found to be at level of sub-hospital/hospital. Selection of the 24 health centres to participate in the study was done after all the 67 hospitals in the sampling frame had been coded with three digit numerals beginning from 001. The selection was made using the random number table using the table to draw the first coded health centre and continuing until all 24 required health centres had been drawn. The coding followed alphabetical nomenclature taking into account the first letter for the name of the health centre. This excluded selection bias since the naming of these

centres was done randomly and independently of each other. Hospitals coded with odd numbers were placed in intervention arm and those coded with even numbers were placed in the control arm of the study.

3.6 Sample size for Health Centres

James Schlesslman (1982) states that in case-control studies the number of subjects to be selected in case-control study depends on the specified values below;

1. Estimated exposure rate (proportion exposed) among controls = P_0
2. A hypothesized relative risk (estimate by odd ratio) associated with exposure that would have sufficient biological/public health importance to warrant its detection R which is assumed to be 2.
3. Z_α = Standard normal value corresponding to the required level of significance for 0.05 = 1.96
4. Z_β = Standard normal value corresponding to required power of study for 80% = 0.84
5. n = number of the required sample size of the case
6. The desired level of significance for this study α was 5%
7. The desired power of this study β was 80%
8. P_0 = The probability of success among the unexposed group
9. P_1 = The probability of success among the Intervention group
10. C = 1 (the number of controls per case)

For every case sampled, we took 1 control so the ratio was of 1:1, cases: controls respectively

Using the formula

$$n = (1 + 1/C) P_1 Q^1 (Z_\alpha + Z_\beta)^2 / (P_1 - P_0)^2$$

$$P^1 = (P_1 + CP_0) / (1 + C), \text{ but } Q^1 = 1 - P^1$$

$$P_1 = P_0 R / [1 + P_0(R - 1)]$$

$$C = 1 \text{ (the number of controls per case)}$$

$P_0 = 46.3\%$ (Carl May, 2006: A rational model for assessing and evaluating complex interventions in health care, UK)

$P_1 = 79\%$ (Carl May, 2006: A rational model for assessing and evaluating complex interventions in health care, UK).

By substituting the figures into the equation;

$$n = 1 \times 1 \times 0.79 \times 0.21 (1.96 + 0.84)^2 / (0.79 - 0.463)^2 =$$

$$n = 1 \times 0.79 \times 0.21 \times 7.84 / 0.107 =$$

$$n = 1.300656 / 0.107 =$$

$n = 12$, Therefore we used 12 intervention health centres and 12 control health centres for this study.

3.7 Data Collection

In the intervention Health Facilities, the training components identified were set on training workshop for members of these health unit management committees. The HUMC members were trained in the different skills to enhance their roles as managers of the health facilities. This was expected to improve the overall performance of the health facilities which was the specific target indicators for this trial or intervention.

The training consisted of a mixture of adult learning methodologies, including short lectures, questions and answers, small group discussions, plenary presentations, video shows and role plays. In the course of training, participants from the same HUMC developed their own Action Plan together, which was presented to the class and discussed. The Action Plan was meant to enable participants to analyse their health centre and district health care systems, prioritize certain problems for corrective interventions and redirect available resources to address these problems. Participants particularly reviewed and assessed the values, goals and objectives for relevance, critical problems to be addressed and the primary strategic options that might lead to accomplishment of the objectives. There was constructive feedback session in which other participants and the facilitators gave their inputs on the Action Plans. This was aimed at achieving a refined and well discussed action plan/project for each health centre. At the end of the course, each HUMC team was required to implement their Action Plan when they returned to work.

The participants were involved in assessing the cost of the project for appropriateness during the training course. Additional information collected during trainings included necessary costs for actions considered or to be taken, the time-frame, and the staff responsible for implementation of the projects.

3.8 Validity of instruments

Validity means efforts to do with how accurately the data obtained in the study represents the variables of the study. To ascertain content validity the instruments were thoroughly discussed with experts in the subject matter but more especially with the supervisors. The Data collection instruments were designed in such a way that the issues that they were seeking information about were those that had been considered relevant to the study objectives and as such, were able to guarantee their validity. The researchers discussed the interviewer administered questionnaire with the research assistants for clarity before time of interview. The researcher also carried out a pre-test to leaders of Mukono District as a neighbouring Central Region to the study area structures. The purpose of this was to be able to see whether it would be easy to understand by respondents. According to Teijlingen van et al. (2001), pilot testing is important in the research process because it reveals vague questions and unclear instructions in the instrument. It also captures important comments and suggestions from the respondents that will enable the researcher to improve efficiency of the instrument, adjust strategies and approaches to maximize the response rate.

3.9 Reliability

Reliability is a measure of the degree to which research instruments yield consistence results or data after repeated trials. Reliability is inversely proportional to random errors and high validity ratios reduce error due to random sampling techniques (DeVon HA *et al.*, 2007). The degree of validity attained ensures a level of

consistence to the tools so that even when applied to more than one respondent and for more than once, they are able to retain their reliability. The reliability of measured values was ensured by using internal and external quality control strategies. As applied by Grellety E, Golden MH (2016), the Cronbach's alpha estimation was used to test the reliability of research tools and instruments and this Cronbach's alpha was calculated using SPSS Software.

3.9 Data analysis

Quantitative data was analysed according to research objectives and emerging themes using SPSS computer package. After recording the responses to the questionnaires, interviews and observation, the researcher categorised and tallied the responses into each category in order to draw relevant conclusions. Percentages were used to analyze responses of structured questions while responses from the unstructured (open-ended) questions helped to enrich the answers given in the structure. The results have been presented in form of tables, graphs, charts, percentiles and texts.

While qualitative data was analysed using a computer based qualitative data analysis software atlas Ti 7. This involved in-depth analysis of each of the main categories of data. The analysis facilitated teams to be able to describe the range of the HUMC member's skills, training and health centre performance. During analysis, each category was considered for further assignment into subcategories. Using these subcategories gave more insight into the details of the mentors' and trainers' activities in each category.

4. Results and Discussion

4.1 Performance of Health Centres in East Central Uganda prior to the training of HUMCs

The study was intended to describe and document the performance framework in the Uganda Health system as a whole but with more focus on health centres in East central Uganda. The objective was to show how the performance in the entire National Health Systems impacted on the individual performance of health centres especially for health centres in the study area. The researchers demonstrated the use of organizational control mechanisms to manage individual health centre performance at a system and network level by the Ministry Of Health of Uganda, the Decentralized District Health management authorities and the Health Centre Management Teams as they work in synergy or otherwise with their HUMCs.

While health centres were required to satisfy several objectives from multiplicity of stakeholders, the health policy put in place a number of indicators to assess the performance of the national health system. Some of the objectives have intrinsic motivating mechanisms for

performance and productivity, while others as explained above would curtail performance of these health centres. This perspective was likely to have both enhancement and constraints to performance of health centres

following the training of the HUMCs. Table 1 below shows the performance of the health sector at national level for the five previous financial years.

Table 1: Performance trends in health sector in East-Central Uganda

Indicator	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Baseline Values
OPD Utilization	75%	68%	75%	78%	80%	80%	81%
Immunization coverage (DPT3)	60%	73%	70%	65%	60%	63%	66%
Delivery at Health Facility	25%	33%	38%	38%	41%	54%	54%
Availability of supplies	60%	60%	64%	63%	63%	63%	63%
Degree of perception on governance	58%	50%	60%	57%	42%	60%	60%

From the Annual Health sector, Performance Report of Uganda Ministry of Health for the year 2013, the East Central Uganda was bedeviled with many performance challenges such as health worker shortage, low salaries, sub-optimal functioning of the infrastructure, inadequate drugs budgets and problematic procurement processes of medical goods (MOH, 2014). National level procurement of drugs and other medical products, regardless of the needs at the HCs, was a prominent issue provided by the respondents as to be causing under-performance.

Overall, the performance expectations at the national health sector level reflected a need to build and strengthen the support systems at local level such as strengthening and empowering the HUMCs, building more capacity of the human resources, improving the medical supplies procurement/delivery, increase financing and expand provision of infrastructure. These were more prominently expressed in the HCs in the study area (East Central Uganda).

4.2 Stimuli for performance of HCs at District Level

Districts were subjected to performance assessments and monitoring of implementation of essential national programmes (Kiwunuka & Rutebemberwa, 2011). There have been the Local government national Performance assessments and its assessment tool that ranks districts overall performance. In the health sector, they have been having a districts performance league table. The “performance” measures included in the league table have been made simplified by the ease of data availability at the district level in the DHIS II system. The individual district performance, after analysis of data from DHIS II, was being disseminated at the Annual National Health Assembly where stakeholders in the running of health services have been

invited. Districts in the first fifteen positions have been rewarded and the districts in the last fifteen positions have been named on their shame list. The incentives for performance that accrue from a good league table position have been having gradual trend in improving performance of HCs, although for East Central Region, some officers seemed indifferent. For example, views expressed during the interviews with some DHOs in the region indicated that bad performance on the league table was not hell after all but a blessing in disguise. It was a major factor for attracting partners to support the district and an attraction for more resources.

Never the less, some DHT members felt very much inspired to improve performance of HCs in the region so that they could have a better position on the league table. This was mainly because of the pressure that was being exerted by the political leaders. Because of these pressures, DHOs and their health systems were forced to improve their efforts.

4.3 The Changes in HC Performance after training of HUMC Members

The perceptions of the health centre staff and extraction of absolute numbers for some out-puts gave insight on changes in the performance of the health centres after the training of members of the HUMCs. From the perceptions of staff, important factors responsible for motivation and performance improvement that were examined included the views on governance, job security and availability of supplies. In addition to these, proxy variables for Performance were extracted and these were described as: “Delivery in health facilities”, “OPD Utilizations”, “Immunization coverage”, “Antenatal Attendances”, “HUMC meetings”, and “Absenteeism of HCWs”. Table 2 shows changes in means for the extracted factor data between the baseline in 2018 and post intervention in 2019.

Table 2: Mean changes in Variables: Baseline (2018) and post intervention (2019)

Arm	Variable	Survey Round	N	Mean Change	SD	t-test for equality of means			
						Mean Diff	SE	T	P Value
Intervention Arm	Good Governance	2019.	299	0.27	0.94	0.25	0.10	2.83	0.012
	Availability of Supplies	2018 (BL)	143						
	Deliveries in HCs	2019.	302	0.32	1.07	0.68	0.09	2.75	0.008
		2018 (BL)	122						
	Immunization Coverage	2019.	1591	0.31	0.87	0.52	0.10	2.20	0.003
		2018 (BL)	1147						
	OPD Utilization	2019.	346	0.19	1.04	0.45	0.13	4.60	0.000
		2018 (BL)	268						
	ANC Attendances	2019.	3806	0.22	1.02	0.33	0.05	3.22	0.001
		2018 (BL)	2224						
	Absenteeism of Staff	2019.	1707	0.15	1.13	0.20	0.08	1.98	0.048
		2018 (BL)	1001						
	HUMC Meetings	2019.	53	-0.45	0.79	0.40	0.09	-3.25	0.001
		2018 (BL)	98						
Control HCs	Good Governance	2019.	12	0.53	0.93	0.32	0.05	2.33	0.021
	Availability of Supplies	2018 (BL)	4						
	Deliveries in HCs	2019.	278	-0.02	1.04	0.00	0.10	-0.05	0.958
		2018 (BL)	322						
	Immunization Coverage	2019.	143	-0.11	1.08	-0.15	0.10	-1.42	0.154
		2018 (BL)	254						
	OPD Utilization	2019.	1356	0.12	0.92	0.01	0.05	-0.18	0.858
		2018 (BL)	1288						
	ANC Attendances	2019.	228	-0.14	1.11	-0.13	0.05	1.51	0.131
		2018 (BL)	346						
	Absenteeism of Staff	2019.	1209	-0.02	1.07	-0.02	0.10	-0.15	0.885
		2018 (BL)	1221						
	HUMC Meetings	2019.	829	-0.11	1.01	-0.05	0.05	-0.51	0.608
		2018 (BL)	851						

Perceptions on governance improved significantly for health centres in the intervention arm health centres but declined significantly among health centres in the control arm. The perception on governance factor had positive and statistically significant correlation ($t=2.83$ and p Value $=0.012$). The findings on perception on governance imply that members of HUMCs and other managers in the intervention arm were perceived by their staff as providing better and improved performance governance than those in the control arm health centres. This was in turn improving the performance in those health centres.

The other perception factor measuring availability of medical supplies also showed a strong significant relationship between training of members of the HUMC and improving performance of health centres in the intervention arm. This variable showed improvement in performance markedly especially in health centres where members of their HUMCs had been trained (t -test 2.73, p . value 0.008) and instead reduced perceptions/performance in the health centres in the control arm (t -test -0.15 p . value 0.154). The change in the level of satisfaction/performance in the health

centres in the control arm was negative implying that whereas there was improved performance in health centres in the intervention arm where members of HUMCs were trained, there was decline in performance in the control arm HCs whose members of HUMC had not been trained.

The number of deliveries at baseline for intervention arm was 1147 and this improved to 1591 post intervention ($t=2.20$, P value $=0.003$) whereas this showed a small improvement from 1288 at baseline to 1356 post baseline ($t=-0.18$ and P value $=0.858$ post-intervention). The improved out-puts for immunization coverage in 2019 for the intervention health centres had a statistically significant relationship between training members of HUMCs and improvement in performance of HCs. Statistics for immunization gave ($t=4.60$ and P value 0.0000) for health centres in the intervention arm as compared to ($t=1.51$ and P value $=0.131$) in the control arm. The mean percentage change after training HUMCs for immunization coverage in HCs in the intervention arm was 0.19 as compared to -0.14 for the HCs in the control arm.

The OPD utilization improved from 2224 at baseline in intervention arm to 3806 post training of members of the HUMCs (mean change 0.22, t = 3.22 and P value 0.001). In the control arm OPD utilization dropped from 1221 at baseline in 2018 to 1209 in 2019 (t=-0.15 and P value=0.885). The ANC attendance improved from 1001 at baseline in 2018 to 1707 post intervention in 2019 in the intervention arm (t=1.98 and P value = 0.048) where as it declined from 851 in 2018 at baseline in control arm to 829 in 2019 (t=-0.51 and P value=0.608). Compared to the baseline, staff absenteeism reduced in the intervention arm from 98 in 2018 to 53 in 2019 post intervention (t=-3.25, and P value=0.001) where as in the control arm, it increased from 78 at baseline to 149 in 2019. The number of

management committee meetings increased from 4 at baseline in the intervention health centres to 12 post intervention (mean change 0.53, t = 2.33 and P value=0.021) whereas the meetings reduced from 5 at baseline in the control health centres to 4 in 2019 (mean change -0.18, t = -0.60 and p value = 0.552).

4.5 Training of HUMCs as a driver of improving performance of health centres

Regression analysis was used to find out to what extent the training of members of HUMCs in the intervention arm accounted for improvement in performance of these health centres.

Table 3 Results of the best fitting model for improving performance of HCs

Variable	coefficient	Adjusted OR	95% CI	p- value
Age of respondent				
Less than 35yrs	3.112	8.56	3.19- 25.52	0.001*
More than 35yrs				
Economic status of respondent				
Low	2.239	4.41	1.47 – 13.24	0.005*
High				
Education Level				
Low	2.878	9.43	2.49 -35.33	0.003*
High				
Support supervision				
No	3.113	12.12	7.01 – 35.44	0.001*
Yes				
Training of members of HUMC				
Not trained	8.175	164.22	42.60 -988.45	0.000*
Trained				
Availability of supplies				
Not Available	2.110	5.19	1.89 – 22.10	0.009*
Available				
Improved Remuneration				
Not satisfied	1.996	26.16	2.69- 51.44	0.002*
Satisfied				
Job Security				
Not assured	1.889	5.05	1.61 - 10.22	0.011*
Assured				
Sex				
Female	-2.015	0.03	0.0001 -0.049	0.126
Male				
Marital Status				
Not married	-3.532	0.125	0.009 -0.167	0.098
Married				

* Statistically significant

Backward stepwise log likelihood ratio was used to control for confounding. All the motivating factors for performance identified during bivariate analysis, all plausible factors and potential confounders for performance enhancement were entered into the model.

Table 3 above displays results of the best fitting model. After a log likelihood ratio test, all the variables extracted for the 12 health centres in the intervention

arm and 12 health centres in the control arm were included in the analysis. Overall, 88.8% of the dependent variable was correctly predicted by the variables in the model with a specificity of 94.6% and sensitivity of 78.3%. The -2log-likelihood was 340.642, and the Nagelkerke R square was 74.5%. The Hosmer and Lemeshow test revealed a significant chi-square (chi-square $\chi^2= 212.45$; df =8; p-value = 0.004).

After adjusting for confounding and testing for effect modification, the variables that remained significantly associated with improving the performance of health centres included: Age of respondent, (OR=8.56, 95% CI: 3.19- 25.52). Economic status of respondent (OR= 4.41, 95%CI: 1.47 – 13.24). Education level of respondent (OR=9.43, 95%CI: 2.49 -35.33). Improving on support supervision (OR= 12.12, 95% CI: 7.01 – 35.44). Training of HUMCs (OR=164.22, 95%CI: 42.60 -988.45). Availability of supplies (OR=5.19, 95%CI 1.89 – 22.10). Improved remuneration (OR=26.16, 95% CI: 2.69- 51.44). Job security (OR = 5.05, 95% CI 1.61 - 10.22). The findings show that training of members of HUMCs had the strongest effect on improving performance of health centres.

Sex of respondent (OR=0.03 95% CI 0.0001 -0.049) and marital status (OR=0.125 95% CI 0.009 -0.167) were not statistically significant.

Following multiple linear regression, collinearity problem was identified in only 1 variable namely: improved support supervision being carried out. This variable had tolerance values less than 0.1 (Creswell & Plano, 2011). Creswell et al (2011) also suggests that a VIF (variance inflation factor) value greater than 10 is cause for concern, and this variable that showed collinearity had 15.3 as its VIF. This variable still had very high variance proportions of 94% against a very small Eigenvalue 0.021; which is also an indication of collinearity. The remaining variables of interest did not exhibit collinearity problems.

The literature did not contain studies that explicitly analysed the effectiveness of training HUMCs on performance of HCs. Nonetheless, data gathered about the functioning of Health Unit Management Committees overlapped considerably with many studies that described the impact of HUMCs and the factors that influence performance of the HUMCs without consideration for the ultimate performance of health centres. HUMCs were observed to be ubiquitous health centre management mechanism at the peripheral level of health facilities in Uganda. Their main purpose was ensuring accountability. However in this study we bring them in the mix for performance of health centres and discover that they are vital in all aspects of managing health care services if only they were trained. In this study, trained HUMC members in the intervention arm account for the improvement in performance of HCs when other factors were held constant like in HCs in the control arm. This finding was similar to that discovered by Sebastian, A. (2010) in a study on effective management of faith based organisations in Ghana and also by Abor, P. (2015). Other mechanisms included

patients' rights charters, community groups, suggestion boxes, and in some cases, citizen report cards.

5. Conclusion and Recommendations

5.1 Conclusion

The main mechanisms for stimulating performance improvement in the intervention arm health centres were the training given to HUMC members. Although there were suggestion boxes and patient rights charters, these had been available in these health centres, were still available and used in HCs in the control arm and therefore could not explain improvement in performance observed in the intervention arm HCs. Training empowered HUMC members to have significant powers over the management of the health centres. All the respondents in the intervention arm reported that their HUMC members had recently been trained in health facility and management and were reminded on the objectives of the health facilities and performance targets. However, many of them also felt that they were greatly lacking skills, especially in the area of community engagement and performance targets prior to the training. Respondents in the intervention arm attributed improvement in attitudes and performance of their health centres to the training of their HUMCs.

The results of this training were an increase in level of trust between HUMCs and health workers thereby leading to a highly motivated workforce. Their motivation was shown in the significantly high level of dedication to their duty; positive correlation values despite the myriad challenges facing their facilities such as drug stock-outs, high demand for services against a thin workforce, and limited facility resources.

5.2 Recommendations

Although training HUMCs did not specify the quality of services, its objectives overlapped significantly with those espoused by programmes like the Score Card and the Clients Charter that had a focus on quality. At best training HUMCs would provide a synergistic effect by pushing targets based on service volumes while other programmes push the quality dimension. From the evaluation perspective, however, the attribution of performance improvements to training HUMC can be difficult among health centres subjected to multiple interventions. The range of mechanisms for enforcing performance expectations in a decentralised system of government call for careful designs of financing arrangements and incentives to ensure complementarities and synergy among different agencies that seek to influence the improvement in performance of same service provider organisations like health centres.

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