ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 7| July 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

EFFECT OF TRAINING HEALTH WORKERS ON IMPROVING HEALTH SYSTEM RESPONSIVENESS AMONG CHRONIC CARE CENTERS IN TIER THREE HOSPITALS, KENYA

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Article DOI: https://doi.org/10.36713/epra23031
DOI No: 10.36713/epra23031

ABSTRACT

This study determined the effect of training health workers in improving health systems responsiveness within diabetic and hypertensive clinics in tier three hospitals in Kenya. Responsiveness, defined as meeting non-health improving expectations, is fundamental to a well-functioning health system. The study used a quasi-experimental design with baseline survey, a training intervention on responsiveness and client interaction skills for health workers, and an end-line survey. A sample of 323 respondents was selected from a sampling frame of 853 using fisher's formula. The end-line survey included 258 participants. Data were collected using an interviewer-assisted structured questionnaire, with responses rated on a five-point likert scale and then dichotomized into favorable and unfavorable categories using a demarcation threshold formula. Responsiveness levels increased from 63.7% to 67.4%, while proportion of favorable responsiveness rose from 38.3% to 52.7% between baseline and end line. The odds of favorable responsiveness nearly doubled from 0.620 to 1.114 between baseline and end line. A paired samples t-test indicated significant ($p<0.05$) positive deviations across all responsiveness domains. In conclusion, responsiveness, improved following the training intervention. We recommend that health systems managers and Training institutions and hospital management should integrate responsiveness training across all levels from training to practice to enhance sensitivity to client needs in healthcare.

KEYWORDS: *Health System Responsiveness, Training, Intervention, Chronic Conditions, Diabetes Mellitus, Hypertension, Kenya*

1.0 INTRODUCTION

This study examined effect of training health workers on improving health system responsiveness, a key healthcare goal(Ibeneme et al., 2020),which involves meeting legitimate non-medical needs of a people as they interact with the health system(Achstetter et al., 2022).According to World Health Organization framework, the concept of responsiveness is dichotomized into client experience with the facets for respect for persons such as dignity, autonomy, communication, and confidentiality, and client orientation domains such as promptness, quality amenities, choice, and social support(Adhikari et al., 2024; Khanpoor et al., 2025).It's a complex construct reflecting health systems governance, and overlapping greatly with the quality of care, coverage, and satisfaction elements(Woodward et al., 2024). It goes beyond the facility to encompass responsiveness to public health services, community based education and community health research(Khanpoor et al., 2025). This study focuses on outpatient diabetes and hypertension clinics in tier three/primary hospitals in Kenya.

Diabetes mellitus, affecting over 10% of the global population with some studies estimating that over 800 million adults had diabetes by the year 2022 up from 683 in the year 1990;the increase fueled by increases in low and middle income countries largely due to increased urbanization and sedentary lifestyle(Kumar et al., 2024; Zhou et al., 2024).In Kenya, prevalence estimates range from 2.4% to 4.2%, with higher rates in urban areas and wealthier populations (Kiarie et al., 2023; Mohamed et al., 2018; Otieno et al., 2023) while one study estimate over 1.8 million Kenyans had diabetes in the year 2019(Karugu et al., 2024).Hypertension, affecting 22% of adults worldwide and 27% in Africa, shares risk factors with diabetes, necessitating integrated care(Mogaka et al., 2022; Pengpid & Peltzer, 2020).

The Kenyan government has introduced patient rights charters, improved information systems, and complaint procedures to enhance client engagement(Kagwanja, 2023; Njuguna, 2020) However, limited adherence by clients and providers undermines accountability and responsiveness(Kagwanja, 2023; Khan et al., 2021; Lusambili et al., 2020).

Poor quality unresponsive care can be a barrier to universal health coverage(Corscadden et al., 2018).Factors that undermine provider patient relations like attitude have been demonstrated in literature where health care providers show bad attitude due to various reasons(Genberg et al., 2019).

To achieve high quality health systems requires a reorientation to make the systems people and patient centered, and transform the health workers through training in respectful and ethical care(Jemal et al., 2022; Kruk et al., 2018).This begets changing the behavior of providers which is critical to improving health

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outcomes(Harriet et al., 2024; Meesala & Paul, 2018). However, there are no systematic evaluations of how such interventions can achieve outcomes on responsiveness domains in chronic care centers. There is little information regarding the investigation of improvement interventions in chronic care centres in Kenya. This study particularly examines changes in perceptions of health systems responsiveness following a training of health workers on responsive care.

2.0 MATERIALS AND METHODS

This quasi-experimental study was conducted in three primary hospitals: Gatundu (urban), Uasin Gishu (peri-urban), and Kimilili (rural) (Macharia et al., 2021). It included a baseline survey, an intervention, and a follow-up survey. Using a one-group posttest-only design, the dependent variable was measured before and after the intervention without a control group.

The intervention involved training healthcare providers on responsive diabetes and hypertension care through a two-day workshop with interactive methods. Core teams ensured sustainability. Baseline data were collected (September - December 2020), and the endline survey followed (February - May 2022).

Sample Size

The sampling frame was 853 patients enrolled in care for diabetes mellitus, hypertension or both. Sample size was determined using the Cochrane formula(Taherdoost, 2017);

$n=z^2pq/d^2$

Where;

n= is sample size

z =is the standard normal deviate at the required confidence level

p= is the proportion in the target population estimated to have characteristics being measured, 50% was chosen for maximum variability.

q=1-p

d=the level of statistical significance set, being 5%, confidence level of 95% as commonly applied in social surveys.

$n=1.96^{2*}0.5*0.5/0.5^2=384.16$

The sample sizes for the finite population

nf=n/ {(1+n)/N} =384/ {1+(384/853)} =266.

A 10% addition for non-retention and non-response (Fetene et al., 2022) set the sample size at 323. The endline survey included baseline participants. Response rates were 95.35% (baseline) and 83.7% (endline), deemed satisfactory (Sileyew, 2019). The results are in table 1

Table 1

Table showing sample size distributions and response rate for both baseline and end line surveys

Hospital	Sample size	Duly filled baseline	Duly filled end line
	N	n (%)	n (%)
Kimilili (Rural)	81	80(98.7%)	69(85.1%)
Uasin Gishu (Periurban)	108	98(90.7%)	89(82.4%)
Gatundu (Urban)	134	130((97.0%)	100(74.6%)
Total	323	308(95.3%)	258(83.7%)

Sampling and sampling procedures

Systematic random sampling was used where every other patient (853/323) among consenting adults in diabetes or hypertension care were selected.

Data Collection tools

Data was collected using a structured questionnaire with a 5-point Likert scale, assessing responsiveness across nine indicators, including Promptness, Respect, Involvement, Communication, Choice, Confidentiality, Amenities, Social Support, and Trust in care processes and outcomes.

Validity and Reliability

Data collection tools were reviewed, pretested, and revised for validity. Randomization reduced bias, and reliability was assessed using Cronbach's alpha(Amirrudin et al., 2021; Coleman, 2022; Noble & Smith, 2025)..

Ethical approval

Approval was obtained from the Research Ethics Committees of Kenya Methodist University (Approval No: KeMU/SERC/HSM/4/2020) and Moi University (Approval No: 0003643). A research license was obtained from NACOSTI (License No: NACOSTI/P/20/5650). Permissions were obtained from hospital managements teams while written informed consent was obtained from all participants, who were informed of their right to withdraw at any time.

3.0 RESULTS AND DISCUSSION

Descriptive Analysis for Responsiveness Levels at Baseline and End Line

Responsiveness was measured using 31 questions covering domains of Promptness, Respect, Involvement, Communication, Choice, Confidentiality, Amenities, Social Support, and Trust in care outcomes with Scores expected to range from 31 to 155. Scale reliability, assessed using Cronbach's alpha coefficient was 0.936.

Responsiveness was measured using 31 questions across the nine domains, with scores expected to range from 31 to 155. Reliability measure (Cronbach's alpha) was 0.936. Descriptive statistics assessed agreement levels, with means above 3.4 indicating good agreement(Owino, 2019; Wanjohi & Syokau, 2021).Scores ranged from 59–149 (mean 98.8, 63.7%) at baseline and 62–149 (mean 104.55, 67.5%) at end line. The results are shown in table 2 and figure 1.

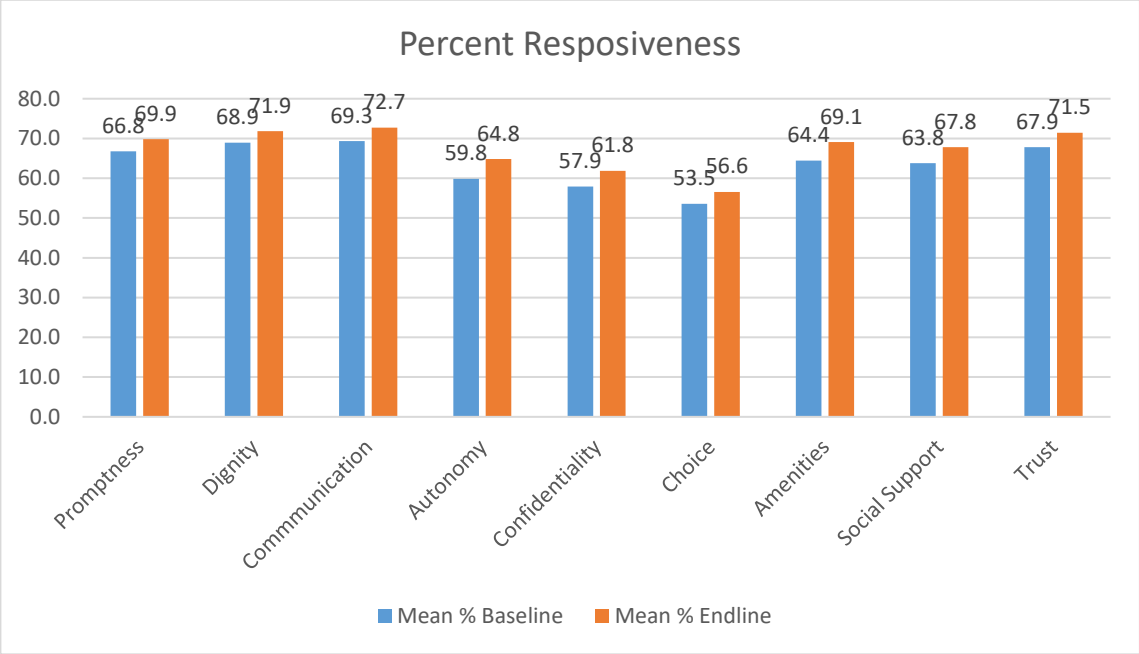
ISSN (Online): 2455-3662
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Summary Statistics for Responsiveness Levels at Baseline and End Line

Statistics	*Baseline*	*End line*
Mean	98.80(63.7%)	104.55(67.5%)
Median	98.00	106.000
Mode	106	115.0
Std. Deviation	18.799	18.2445
Range	90 (59-149)	87.0 (62-149)

Figure 1

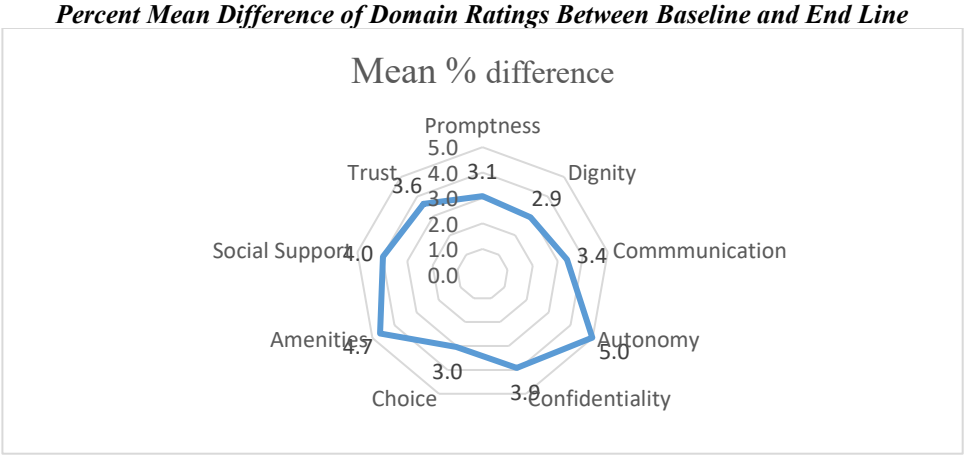
Comparing Rating of Domains Between Baseline and End Line by Mean Percentage



Communication ranked highest (69% baseline, 72.7% endline), followed by dignity (68.8% baseline, 69.9% endline). Choice was lowest (53.3%), with confidentiality second last (57.9%). All domains improved from baseline to endline. Percentage mean changes ranged from 2.9 (dignity) to 5 (autonomy) as shown in figure 2.

Figure 2

Percent Mean Difference of Domain Ratings Between Baseline and End Line



These study findings that communication was the leading domain agree with those of a study in Germany ambulatory care, where most clients generally rated communication as good during their last visit to the doctors (Tille et al., 2019) and in Thailand among women during delivery, where over 80% rated communication as good alongside dignity prompt attention and autonomy (Liabsuetrakul et al., 2012).Similar results were noted in Spain where communication was the best performance among the patients with mental illnesses (Coronado-Vázquez et al., 2022).

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The findings on the leading domains however differ with several studies. For instance (Ahmadi et al., 2017) noted the best performing as quality of amenities, while the worst was choice more like in this study. Further, Ebrahimipour et al. (2013) observed the best performing domain was social support, Najafi et al. (2016) found the best rated domain was dignity while the worst was autonomy. Peltzer & Phaswana-Mafuya (2012) observed amenities were the best rated responsiveness domain while the worst was prompt attention.In a study in Nigeria, communication was rated among the least responsive domains in actual experiences (Mohammed et al., 2013).

A better scenario than our results is obtained in Tanzania where all the domains were rated relatively highly with communication leading at over 53% rating it as either good or very good (Amani et al., 2020).Similarly, in Nigeria, Adesanya et al noted that in both private and public hospitals, the domain of communication had the best and comparable ratings (Adesanya et al., 2012).

This study findings that choice was rated the worst reflects a trend seen in many other studies across the globe. Choice performance across different contexts shows a fluctuating but generally low pattern. Similar to this study, one study in Nigeria observed that choice of care provider (scored at 80.0%) was the lowest perceived responsiveness domain compared to prompt attention (scored at 89.2%) which was rated highest (Ughasoro et al., 2017).Similar results were noted in a study in Ethiopia whereby poor results were noted in the domain of choice and prompt attention compared to confidentiality and dignity domains, where only about 26% of the respondents rated choice as good while 83% rated respect as good (Asefa et al., 2021).

A similar trend of low performance in the choice domain was noted in Iran where choice was noted among those that received low ratings and thus needed more attention for improvement of health systems responsiveness (Bazzaz et al., 2015). Other studies that noted poor performance in the domain of choice include Tille et al. (2019) in Germany, Kapologwe et al. (2020) in Tanzania, Adesanya et al. (2012) in Nigeria and Negash et al. (2022) in Ethiopia.

To accord choices of providers and or facilities for health care means there ought to be variety. Probably this may be the explainer to a consistently low trend of performance in choice domain as it requires huge investment to diversify the providers and the range of facilities available for customers to choose from. Further, the notion of getting a second opinion as embedded in choice especially from specialists is a pipe dream for many generally because most of the specialists are concentrated in urban centers, are few compared to the demand and costly to afford their private practice.

Further, for chronic or specialist services, the aspect of choice demands of the health system to avail many specialists at the disposal of the clients, a fact that is heavily constrained by the thin resource parcel in low- and middle-income countries. Similarly clients may exercise limited choice because they don't wish to, or are not well informed and activated (Victoor et al., 2012).

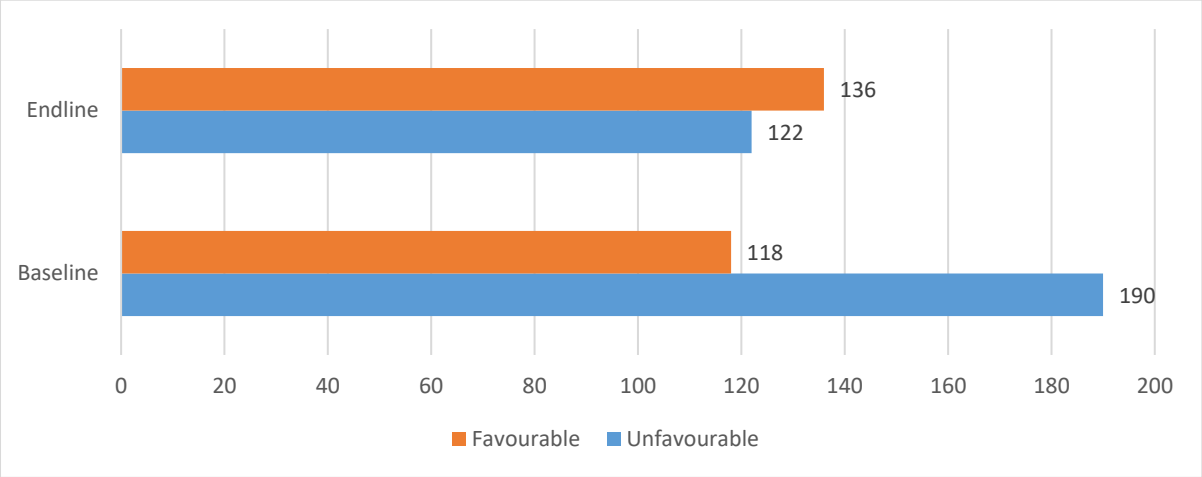
The mean responsiveness levels were similar to findings in south Africa where Mean responsiveness level was 69% for outpatient (Peltzer & Phaswana-Mafuya, 2012),in an Ethiopian study that found mean responsiveness at about 62% (Negash et al., 2022) and in another in Tanzania that noted responsiveness to be 69% (Kapologwe et al., 2020). This results reveal a poor picture compared to studies in developed countries that noted overall good responsiveness for instance in Spain, where 77% of clients rated responsiveness as good(Coronado-Vázquez et al. (2022), in Qatar a study noted high levels of responsiveness,82%(Ali et al., 2015) and in Thailand where 80% of women rated responsiveness domains as good (Liabsuetrakul et al., 2012).

Significance of the Change between Baseline and End Line Responsiveness

Using the demarcation threshold formula by Fetene et al. (2022) – [(highest rating – lowest rating)/2] + lowest rating – responsiveness was categorized as favorable or unfavorable. Scores equal to or above the threshold (104) at baseline and 105.5 for end line were considered favorable. Only 118 (38.3%) had favorable responsiveness at baseline while this improved to 136(52.7%) at end line survey. The odds of experiencing favorable responsiveness improved from 0.620 at baseline to 1.114 at endline.

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Figure 3
Distribution Of Responsiveness



A paired samples t-test showed significant changes in all domains and overall responsiveness from baseline to end line. The results are shown in table 3

Table 3
Significance Of Change in Responsiveness Domains and Responsiveness Levels Between Baseline and End Line

	Mean deviation	T	d.f	P value
Promptness	-.17829	-3.802	257	.000
Dignity	-.384	-4.179	257	.000
Communication	-.403	-3.951	257	.000
Autonomy	-.612	-5.265	257	.000
Confidentiality	-.709	-5.935	257	.000
Choices	-.457	-4.986	257	.000
Amenities	-.585	-5.560	257	.000
Social support	-.302	-4.089	257	.000
Trust	-.089	-3.424	257	.001
Responsiveness Levels	-3.7209	-6.920	257	.000

The training intervention significantly improved responsiveness domains and overall levels, supporting Kruk et al. (2018) and Jemal et al. (2022) on training's impact on healthcare quality. It aligns with Anderson et al. (2019) on communication improvement but acknowledges Conti et al. (2024) that training effects vary. As Chen et al. (2024) found, interactive methods like debates enhance ethical decision-making more than passive lectures.

4.0 CONCLUSION

All responsiveness domains improved, with changes from 2.9% (dignity) to 5% (autonomy). Choice scored lowest, while communication ranked highest. The intervention significantly boosted responsiveness levels and favorable responses experiences.

5.0 RECOMMENDATIONS

To improve healthcare responsiveness, policymakers should integrate training into guidelines, fund continuous development, and establish monitoring. Managers should institutionalize training and support leadership. Trainers should use interactive methods and refresher courses, while practitioners should apply responsive care and engage in peer learning. Researchers should conduct longitudinal studies to assess patient outcomes and guide on evidence-based improvement approaches for health systems responsiveness

Study Contribution

This study highlights the impact of training on healthcare responsiveness, advocating for investment in training to enhance system responsiveness and overall efficiency.

Conflict of interest

The authors state that they have no conflict of interest.

Author contribution

The study conceptualization and design were conducted by all authors. Kibiriti Hillary performed data collection, analysis, interpretation, manuscript drafting, and revision. Study supervision and manuscript review were carried out by Wanja Tenambergen and Mapesa Job. All authors have reviewed and approved the final manuscript.

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Volume: 11| Issue: 7| July 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

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ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 11| Issue: 7| July 2025|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2025: 8.691 || ISI Value: 1.188

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