Evaluating the Effectiveness of Cultural Competence Intervention in Improving Quality of Maternal Care Service among Women in Marakwet, Kenya

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: variances amongst the cultures of health care services providers and consumers are recognized as a fundamental obstacle for dignified quality maternal care. Few studies have exploited context specific innovations such as cultural competence to reduce health disparities for priority populations. Data in this field may provide clarity and pathways for its operationalization in achieving respectable and equitable quality health care.

Methods: This was a cluster randomized trial in Marakwet, Kenya. The study aimed at evaluating the effects of cultural competence intervention in improving quality of maternal care service. Data was collected through a client exit complemented by mystery client before and after the intervention. The sample size was 758 respondents proportional distributed per cluster and sample consecutively. Statistical Package for Social Science (SPSS) was used to analyze the data. The effect of the interventions was measured using standard mean difference and t-test.

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Results: The results showed that intervention improved quality of delivery rooms settings. The means of two groups were indifferent pre-intervention (749) = -0.380, p = 0.704 but significant thereafter t (756) = -5.214, p < 0.001. The intervention effect size was (F (1, 756) = 10.142, p = .001, ηp2 = 0.036). The score of trust in provider was insignificant before t (692) = -957, p = 0.339 but significant later t (690) = -6.137, p = 0.001. The mean of the intervention improved to 4.26±0.698 from 4.05±0.727. The effect size was significant (F (1, 756) = 6.395, p = 0.012, ηp2 = .018).

Conclusion: people first care intervention prompt facility and providers to make concerted efforts in provision of quality maternity services. Additionally, the concept of cultural competence prioritizes patients' needs for reengineering people centered services and provide ambiance for enhanced patient-provider relationship.

1. INTRODUCTION

Tremendous progress have been in made in the quest for higher childbirth in health facilities in developing countries World Health Organization (WHO), [1].   The proportion of deliveries attended by skilled health personnel has increased enormously yet the number of still births, women and newborns dying due to complications during pregnancy and childbirth remains high [2]. Evidence clearly indicates that increasing the number of facilities and number of skilled delivery are not sufficient to reduce maternal and neonatal mortality and morbidity unless quality of care is enhanced and maintained [3]. Quality of care (QoC) is also associated with enhanced patients' rights and equity [4] as well as improved user satisfaction [2]. The WHO defined quality of maternal and newborn health (MNH) care as "the degree to which maternal and newborn health services increase the likelihood of timely, appropriate care for the purpose of achieving desired outcomes that are both consistent with current professional knowledge and take into account the preferences and aspirations of individual women and their family"[3].

Conventionally, QoC encompasses service effectiveness, efficiencies, accessibility, acceptability, patient centeredness, equitability, and safety [5]. It also includes efficacy, comprehensiveness, timeliness, appropriateness, continuity, privacy, environment/cleanliness, and confidentiality. Behaviours and skills of the service provider and equipment are also important [5]. The WHO summarizes these constructs into a framework of eight critical elements for the quality of maternal and newborn health care [1]. These include evidence based practices for routine care and management of complications; actionable information systems; functional referral systems; effective communication; respect and preservation of dignity; emotional support; competency, motivated human resources and essential physical resources available [1]. To accelerate gain in health outcomes and adapt to changing demographic patterns of conditions, there is need to improve health system performance through innovative approaches that strengthen core health system functions with renewed efforts to implement people-centered solutions [6].

There is large variations in maternal health indicators across high-priority areas for action in maternal health, in Kenya [7]. These areas are distributed across Kenya, and cultural norms, access and coverage to health care, poverty and education levels are key barriers [7]. Accordingly, variances amongst the cultures of health care services providers and consumers are recognized as a fundamental obstacle for respectable and dignified maternal care, effective provider-recipient communication, bridging maternal expectations, and rights and access to social and emotional support during labour and delivery [8]. For instance, placenta management and birthing position remain key push factors for hospital childbirth among culturally endowed communities such as the Marakwet of Kenya [9]. Women in Marakwet community are frustrated by the way healthcare providers handle and dispose a placenta. An organ highly revered with genuine affection in the community [9,10].

Kenya has a number of policies and approaches that support maternal health and provide strategic direction [7]. Nonetheless, cultural competence remains a gray and underutilized concept in the quest for improved quality of care throughout the continuum of maternal and child care [11]. Additionally, the current health systems

are devoid of mechanism to account for clients perception and their opinion about the quality of care received [12]. Several studies have assessed the overall quality of care in maternal and child health in Kenya [13,14]. However, few have critically examined the import of integrated patient culturally centered package that needs to be exploited to anchor culturally appropriate maternity care service protocols.

2. MATERIALS AND METHODS

This was a cluster randomized controlled trial (CRT). The use of CRT design to evaluate non-drug research, such as policy and service delivery interventions is well documented [15]. The study was conducted in Marakwet East, Kenya, an area domiciled by Almoo, Sengwer, Endoow, Sombirir and Markweta territorials. Marakwet East population was 97041 as at 2019. Females constitute 50.7% of the population [16]. Various cultural themes are important in innumerable pedigrees across several territorials and clans [17]. The cultural themes include marriage, pregnancy, delivery, weddings, initiation, abortion, murder, death, oath, suicide, ageing, diseases, and hunger in the society. Three wards Endo, Sambirir and Embobut Wards were picked due to their valuable traditions on marriage, pregnancy and childbirth. There are twenty health facilities, fourteen of which provide maternity services.

2.1 Sampling

The study was cluster randomized control trial, with general maternal health clinic as the unit of randomization. Cluster randomization was primed to minimise the occurrence of contamination [18] and make the trial logistically simpler and ensure that health workers remained either in the intervention or control arm for the duration of the study [19].

2.2 Sample Size

At the time of designing the study, deliveries in health facilities was 14% less than the national rate of 58.3%[20]. To have a power level in the region of 80% at the 5% significance level and have minimum detectable differences, the study postulated to increase the rate by over 10% to close the gap with national rate assuming the lower estimated ICC (0.005) [19]. Using the sample sizes for hypothesis tests by Cohen's d and Power [21] it was deduced that the study needed 379 participants per study arm with an attrition rate of 10% to detect difference between the means of the target values between the experimental group and the control group. It was known that there are 14 available clusters, so the number of clusters per arm was fixed but cluster size and population served varied. This therefore meant adequate number of respondents were recruited in each cluster to make the clusters per arm sufficient for this design. The fourteen outlets were randomly assigned to each arm. It is advanced that cluster trials should have five or more cluster per arm and if cluster variability is anticipated, sample size should be increased [22]. Five clusters, Kaparon, Chechan, Kabetwa, Chemworor and Kamogo were the intervention sites while St cMichael, Mogil, Chesetan, Pirirwork, Chesoi, Endo, Tot, Maron and Chesongoch maternal service centre served as control. The sample size proportionally distributed.

2.3 Intervention

The intervention was integration of cultural competence care into maternity services by trained health workers to improve QoC. The service was in addition to the usual provided maternity care services. An explorative qualitative study focusing on indigenous cultural needs, which inform maternity health seeking behaviour amongst the Marakwet community was undertaken prior [23]. The research revealed continuous pregnancy and labor support and care, companionship, elective delivery methods, placenta interpretation, placenta disposal, newborn celebration, privacy and mother-child welfare services as key homogenous cultural maternal health care desired needs [23].These key themes were then developed into a cultural competence maternal service protocol.

The lead researchers initiated the process of developing materials for training using literature and qualitative data in consultation with experts in the field. Policy makers, medics, sub-county health management, anthropologist and renowned Marakwet cultural experts from the core sub clans and Marakwet open-source team reviewed and validated the cultural competence guidelines in an immersion session before use. This process is in tandem with the WHO task sharing recommendations [24]. This was a deliberate attempt to standardize and customize the contents. An all-inclusive consensus building process ensured that the team produced training materials that corresponds to the maternity needs of women in the community. The

approved guideline was first administered to 10 Marakwet Medical students to ascertain whether content could easily be understood.

The training materials were designed purposely to meet maternal healthcare needs as per the qualitative findings. The training materials were then used as a tool for conducting a competence-based training, which focused on the transfer of cultural knowledge and practical skills to health workers. A three days' cultural competence training workshop to train health workers in the intervention arm was undertaken. The duration of cultural competence training is not critical if core components ranging from knowledge, skills to awareness are taught in a number of contexts, by a number of methods, variety durations and active elements are beneficial [11]. For example, providers who attended three days' workshop were successful in a similar way to a semester of training [11]. The health workers training adapted the existing training approach for on-the-job training of health workers. Mixed methods approach of negotiation, role-play and activity was applied to avoid the Knowles' theory of andragogy. Local cultural experts facilitated the role-play session.

2.4 Surveys

A facility-based catchment survey in form of client exit was undertaken using consecutive sampling, before and after intervention. The target population consisted of women of reproductive age (15-49 years) exiting a maternal health care services outlet. Women outside the age bracket, refusal, emergencies and those who had come for other services were excluded. On fieldwork days, any woman exiting a service area were invited to participate in the study by trained research assistants. A screener helped to filter respondents with bias to maternal health care services only. The research assistants consisted of nurses and clinical officers with broad research experience. The research assistants were trained on the research protocol, study objectives, sampling process and questionnaire administration techniques. Conformity to the concept and practice of cultural competence care according to the study awareness package was validated through mystery clients.

Mystery client has been shown to be an effective method for assessing behaviour of health care providers, notably their adherence to standard agreed algorithm [25]. Provider behaviour can be monitored using observational studies; however, results are likely to be biased due to the observer effect (the Hawthorne effect). Bias is a particular concern when providers are exhibiting a behaviour they know it is undesirable, such as selling anti-malarial to a febrile patient-testing negative for malaria. Mystery client surveys do not require a robust sample size calculation and therefore 40 pregnant women/companions from the 758-study population were recruited and trained. The trained clients visited facilities and then reported on their visit by completing an interview about their experiences. The clients communicated with a research assistant after maternity visit, for an appointment to complete structured questionnaire. The trade-off between precision, confidence and the feasibility of finding an adequate number of participants willing to participate informed the sample distribution. The questionnaire was similar to client exit with focus on cultural competence. The data was combined with client exit data and analyzed.

2.5 Instrument used

A questionnaire was developed, translated into local language and back to English to ensure content validity. The questionnaire was pre-tested in Arror Health Centre, an area with similar characteristic to the study area. A sample of 5%% was adequate for the pre-test [26]. Internal reliability for each scale was evaluated by Cronbach's alpha. The coefficients of significance were 0.730, 0.867 and 0.888. The overall Cronbach's alpha coefficient was 0.831. Content and concurrent validity were undertaken. The study adopted Delphi technique in conjunction with equivalence approach in a chronological and complimentary manner to build consensus that study instrument would give reliable results. Delphi technique is a systematic forecasting method that involves structured interaction among a group of experts on a subject to elicit and refine judgments [27]. The method aimed at facilitating structured group communication in order to gather consensus in the face of complex problems, expensive endeavours, and uncertain outcomes. A nominal group made of public health experts, culturist, midwifes, traditional birth attendants and linguists participated in the Delphi process. The process included numerical iterations, consensus, confirmed dissensus, and stability of results.

2.6 Outcome Assessment

Quality of care for women and newborns is the degree to which maternal and newborn health

services increase the likelihood of timely, appropriate care for the purpose of achieving desired outcomes taking into account the preferences and aspirations of individual women and their families [1]. This definition is grounded on two components; the quality of the provision of care and the quality of care as experienced by women, newborns and their families [2]. These components are monitored using several quality measures however this study was biased to experience of care measured in four forms: environmental (perceived cleanliness, setting comfortability and staff grooming), reliability, efficiency and people centeredness (promptness, staff availability, respectfulness and attention to people beliefs), process (gentleness in examination, privacy and compassion) and interaction quality (trust, openness, politeness, and friendliness of the provider).

2.7 Data Analysis

The data was analyzed using Statistical Package for Social Sciences (SPSS, Inc., Apache Software Foundation, Chicago, IL, USA) version 25.0. The effect of support and companionship, placenta management, shared information, delivery options, staff friendliness and interaction, waiting and service time, privacy and room cleanliness were examined. The quality-of-care statements were elicited using a five-point (1-5) Likert Scale statements. One meant (strongly disagree) while five (strongly agree). Higher mean value closer to five-meant greater influence while close to one meant less. Effect of the interventions (magnitude of the differences between two groups) was measured using standard mean difference (Cohen's d). The use of average based statistics such as Cohen's d to evaluate change in intervention studies is well documented [28]. Analysis of variance (ANOVA) and t-test at alpha cut of 0.05 tested the hypothesis. Independent sample t test was employed to determine whether the outcome difference between the means of experimental and control groups was statistically significant. Whereas paired t-test was used to check statistically difference between before and after score for each group. Partial eta squared, ($\eta p2$) was used to measure effect size.

3. RESULTS

The general mean age of the respondents was 25.9± 8.0 years with baseline and end line means of 25.6± 7.4 and 26.3± 5.3 years respectively. No significant difference in marital status, religion and level of education were identified before and after intervention period among the two groups. Majority of the study subjects were married (89%) and Christians (99.1%) respectively. The predominant level of education was secondary at 325 (42.8%) and 333 (43.9%) for baseline and end line correspondingly.

3.1 Environmental Quality

Using an alpha level of 0.05, an independent t test was conducted to evaluate whether control and intervention arms differed significantly in regards to hospital cleanliness and comfortability. Table 1 shows that the test was significant pre t (752) = 4.458, p < 0.001 and post t (755) = 3.476, p < 0.001 intervention.

The mean of the intervention increased by 2.2 % compared to 0.68% for the control arm. The paired t-test between before and after results of experimental group (n = 379) was statistically significant t (378) = -3.956, p < 0.001 as tabulated in Table 2 whilst the control's was statistically insignificant t (378) = -0.505, p < 0.614 as shown in Table 3. Similarly, the mean score of staff grooming were statistically significant pre and post intervention. The independent test was t (756) = -4.143 p < 0.001 prior and t (756) = -17.200 p <0.001 after. Nonetheless, the intervention mean improved by 2.6 % while the control was steady. A statistically significant paired t-test was found between pre and post intervention staff grooming score for the experimental group t (378) = -6.598 p < 0.001 in contrast to the controls t (378) = -0.170, p=0.865. Nevertheless, the score of staff grooming between the control and intervention were statically indifferent before and after intervening.

3.1.1 Reliability, efficiency and people centeredness

There was no significant difference between the control and intervention in prompt provision (reliability) of maternity services prior to intervening but significant after intervention t (756) = -5.214, p < 0.001 as indicated in Table 1. The mean of the study arm increased by 6.1% while control reduced by 1.7%. The paired t-test of intervention arm was statistically significant (378) = -8.7000 p < 0.001 whereas the control was not. Two-Way ANOVA showed a significant effect of cultural competence training on prompt provision of maternity services (F (1, 756) = 10.142, p = .001, $\eta p2$ = 0.036). As revealed in

Table 1, the difference in the score of availability of staff when needed by women in labour between two groups was statistically significant after training t (756) = -4.687, p <0.001 as opposed to before. There was also no statistically significant difference between the two arms before and after in regards to respect for women in labour. However, the score for respect for women companion's was statistically significant post intervention t (756) =-2.515, p = 0.012 as opposed to pre-intervention t (756) =-1.258, p = 0.209 as Tabled in Table 1. The intervention mean increased by 4.5% while the control's remained unchanged.

The staff attention to the client's placenta beliefs was statistically significant between the two arms after training t (751) = -2.112, p = 0.035 as opposed to before as shown in Table 1.

The mean of the intervention increased by 8.3% and that control by 1.6%. The variance in the score of understanding of key maternity needs between the two groups was not statistically significant before significant thereafter t (645) = -5.053, p < 0.001. Two-Way ANOVA showed a significant effect of cultural competence training on staff understanding the specific maternity needs of women (F (1, 756) = 7.457, p = .006, $\eta p2$ = 0.010). The mean of the intervention increased by 4.4% Paired t-test of before and after score of the experimental group was significant t (378) = -6.602, p < 0.001 however that of control was not significant. The finding inferred that the intervention reinvigorated provider's perception on respondent maternity needs.

3.2 Interaction Quality

The mean score of perceived willingness of staff to help women in labour between the two groups was similar before t (755) = 3.170, p = 0.002 and after t (756) = 3.851 p < 0.001 intervention as shown in Table 4. Conversely, the score of trust in provider was statistically not significant before

Table 1. Effect of training health care providers in cultural competence care on environmental quality and people centeredness among women in Elgeyo- Marakwet

Variable and group	Pre intervention		Post intervention	
	M and SD	T (Test) df Sig	M and SD	T (test) df Sig
Cleanliness and comfortability of labour rooms				
Control	4.35±0.824	4.458 (752)0.000	4.38±0.812	3.476 (755)0.001
Intervention	4.08±0.886		4.17±0.839	
Better care setting in delivery rooms				
Control	4.21±0.851	0.106(741) 0.916	4.24±0.809	-1.959 (756)0.051
Intervention	4.13±0.738		4.41±0.674	
Staff dressing and grooming				
Control	4.00±0.815	-4.143 (756)0.000	4.01±0.863	-6.185(756)0.000
Intervention	4.25±0.726		4.38±0.714	
Prompt provision of maternity services				
Control	4.13±0.81	-0.380(749)0.704	4.06±1.107	-5.214(756)0.000
Intervention	4.15±0.716		4.41±0.683	
Staff are available when needed				
Control	4.2±0.756	-4.96 (756) 0.620	4.08±0.838	-4.687(756)0.000
Intervention	4.22±0.709		4.35±0.689	
Respect for pregnant/women in labour				
Control	4.23±0.782	1.813 (733) 0.070	4.22±0.778	-1.881(682)0.060
Intervention	4.13±0.655		4.31±0.553	
Respect for companions of women coming for delivery				
Control	4.15±0.705	2.515 (756) 0.012	4.16±0.700	-0.598 (756)0.550
Intervention	4.02±0.711		4.19±0.634	
Attention to the placenta beliefs				
Control	3.01±1.328	0.115 (749)0.909	3.06±1.283	-2.112 (751)0.035
Intervention	3.00±1.025		3.25±1.184	
Understanding key maternity needs to women				
Control	3.99±1.11	-1.043(695)0.297	4.02±0.981	-3.465 (756)0.001
Intervention	4.06±0.817		4.24±0.769	

Table 2. Paired T-test of before and after quality score of the experimental group (n = 379)

	Paired Differences				t	Sig.
	Mean diff.	SD	95% CI of the difference			
			Lower	Upper		
Staff are well groomed	-.150	.444	-.195	-.106	-6.598	.000
Hospital environment is clean	-.095	.467	-.142	-.048	-3.956	.000
Prompt provision of maternity services	-.261	.584	-.320	-.202	-8.700	.000
Willingness of staff to help	-.050	.724	-.123	.023	-1.348	.178
Staff are available when needed	-.121	.386	-.160	-.082	-6.116	.000
Trust in the provider	-.206	.577	-.264	-.148	-6.941	.000
Staff are polite and friendly	-.340	.684	-.410	-.271	-9.681	.000
Attention to the placenta beliefs	-.245	.774	-.324	-.167	-6.176	.000
Attention to the women in labour'	-.164	.586	-.223	-.104	-5.434	.000
Understanding of maternity needs	-.179	.529	-.233	-.126	-6.602	.000
Had positive feeling on provided M. service	-.338	2.836	-.624	-.051	-2.318	.021
Care during labour has improved	-.071	.382	-.110	-.033	-3.633	.000
Better care setting in delivery rooms	-.282	.652	-.348	-.216	-8.427	.000
Privacy is high in labour rooms	-.150	.618	-.213	-.088	-4.737	.000
Communication on procedures	-.179	.686	-.249	-.110	-5.093	.000
gentle clinical examination	-.277	2.670	-.547	-.007	-2.020	.044
Monitoring of women in labour	-.296	2.697	-.568	-.023	-2.133	.034
Compassion for women	-.201	.729	-.274	-.127	-5.357	.000
Respect for patients	-.179	.608	-.241	-.118	-5.744	.000
Respect for companions	-.172	.625	-.235	-.108	-5.339	.000
Openness to patients	-.256	.655	-.322	-.190	-7.607	.000

Table 3. Paired T-test of before and after quality score of the control group (n = 379)

	Paired Differences				t	Sig.
	Mean Diff.	SD	95% CI of the Difference			
			Lower	Upper		
Staff are well groomed	-.011	1.206	-.132	.111	-.170	.865
Hospital environment is clean	-.026	1.018	-.129	.076	-.505	.614
Prompt provision of maternity services	.066	1.056	-.041	.173	1.216	.225
Willingness of staff to help	-.077	.993	-.177	.024	-1.500	.134
Staff are available when needed	.113	.378	.075	.152	5.837	**.000**
Trust in the provider	-.074	.836	-.158	.011	-1.721	.086
Staff are polite and friendly	-.016	.192	-.035	.004	-1.607	.109
Attention to the placenta beliefs	-.045	.310	-.076	-.014	-2.820	.005
Attention to the women in labour'	.013	.313	-.018	.045	.822	.412
Understanding of Maternity needs	-.032	.911	-.124	.060	-.677	.499
Had positive feeling on provided Maternity needs	.087	.604	.026	.148	2.804	.005
Care during labour has improved	.032	1.061	-.076	.139	.581	.562
Better care setting in delivery rooms	-.040	.500	-.090	.011	-1.542	.124
Privacy in labour rooms	-.077	.433	-.120	-.033	-3.442	**.001**
Communication on procedures	-.008	.185	-.027	.011	-.832	.406
Gentle clinical examination	.026	.423	-.016	.069	1.213	.226
Monitoring of women in labour	.074	.544	.019	.129	2.643	.009
Compassion for women	-.013	.871	-.101	.075	-.295	.768
Respect for birthing women	-.032	.239	-.056	-.008	-2.577	**.010**
Respect for companions	-.013	.360	-.050	.023	-.714	.476
Openness to patients	-.037	.339	-.071	-.003	-2.120	**.035**

Table 4. Effect of training health care providers in cultural competence care on interaction quality and process quality among women in Elgeyo-Marakwet (n=756)

Variable and group	Pre M and SD	T (test) df Sig	Post M and SD	T (test) df Sig
Willingness of staff to help pregnant women				
Control	4.40±0.784	3.170 (755)0.002	4.47±0.867	3.851 (756) 0.000
Intervention	4.22±0.750		4. 27±0.760	
There is a sense of trust in the provider				
Control	3.99±0.997	-957 (692) 0.339	4.06±0.961	-3.245 (756)0.001
Intervention	4.05±0.727		4.26±0.698	
Staff are polite and friendly when dealing with patients				
Control	4.08±0.93	-873 (712) 0.339	4.09±0.896	-6.642 (688)0.000
Intervention	4.13±0.721		4.47±0.647	
There is attention to the women' emotions				
Control	3.87±0.889	-925 (737) 0.356	3.86±0.864	-4.0313(756)0.000
Intervention	3.93±0.756		4.09±0.714	
Had positive feelings about provided maternity service				
Control	4.3±0.685	3.910 (739)0.000	4.21±0.782	-1.484 (756)0.138
Intervention	4.09±0.797		4.42±2.692	
Privacy is high in labour rooms				
Control	4.06±0.986	0.470 (756) 0.638	4.14±0.849	-1.760 (756)0.079
Intervention	4.09±0.963		4.25±0.842	
Communication on procedures/ examination				
Control	3.84±0.908	-310 (756) 0.756	3.84±0.881	-3.066 (756)0.002
Intervention	3.86±0.963		4.04±0.847	
Care during labour has improved				
Control	4.22±0.784	1.321 (691) 0.187	4.18±0.846	-1.959 (756)0.051
Intervention	4.21±0.571		4.28±0.536	
Gentle clinical examination by providers				
Control	4.12±0.96	-0.323(756) 0.293	4.09±0.923	-1.755(756)0.080
Intervention	4.15±1.648		4.35±2.683	
Timely monitoring of women in labour				
Control	4.27±0.894	1.052 (736) 0.293	4.19±0.781	-2.141 (756)0.033
Intervention	4.21±0.758		4.50±2.670	
Compassion for women in labour				
Control	4.16±0.853	2.607 (756) 0.009	4.17±0.846	-0.423 (727)0.672
Intervention	4.00±0.874		4.20±0.690	
Openness to pregnant women/companions of labour and delivery				
Control	4.25±0.836	2.399(744) 0.017	4.28±0.798	-1.546 (726)0.122
Intervention	4.11±0.736		4.36±0.650	

but substantial after t (690) = -6.137, p = 0.001. The Two-Way Mixed ANOVA showed significant effect (F (1, 756) = 6.395, p = 0.012, $\eta p2$ = .018) on trust score. The mean of the intervention improved by 5.2%. The paired t-test for the intervention was t (378) = -6.941, p < 0.001 and that of control was t (378) = -1.721, p = 0.086. The study found dissimilar results in score of perceived staff politeness and friendliness between the two groups. The independent t- test was t (712) = -0.873, p = 0.339 prior but the mean change in the intervention altered t-test to t (688) = -6.642, p < 0.001. The Two-Way Mixed ANOVA showed significant effect (F (1, 756) = 79.002, p < 0.001, $\eta p2$ = .095) on staff friendliness. The mean of the intervention arm increasing by 8% but then control steadied. The intervention-paired t-test was t (378) = -9.681, p < 0.000 while that of control was t (378) = -1.607, p =0.109.

Similarly, the difference between the two groups in the score of staff attention to the women' emotions was not statistically significant prior to the intervention but significant thereafter t (756) = -4.0313, p < 0.001. The Two-Way Mixed ANOVA showed significant effect (F (1, 756) = 26.843, p < 0.001, $\eta p2$ = .034). The mean of the

experimental arm increased by 4.1%. The intervention-paired t-test was t (378) = -5.434, p < 0.001 while that of control was insignificant. Contrastingly, variation between the two groups in perception on maternity service provided was statistically significant t (739) = 3.910, p < 0.001 prior to intervention but insignificant later. The shift in the before and after metrics of feelings on maternity service provided, staff attention to the patients' emotions and perceived staff politeness and friendliness documents the effect of cultural competence intervention.

3.3 Process Quality

The score of provided privacy in labour rooms between the two groups remained statistically not significant before and after intervention. In contrast, variance in score of communication on medical procedures between the groups changed from statistically non- significant to significant t (756) = -3.066, p = 0.002 after intervention. Two-Way Mixed ANOVA showed significant effect (F (1, 756) = 22.088, p < 0.001, ηp2 = .028) on communication on provided medical procedures. The mean of intervention improved by 4.7%. The paired t-test for the experimental arm was t (378) -5.093, p <0.001 opposed to the control wing t (378) = -0.832, p = 0.406. Mean score of perceived quality of care during labour remained statistically indifferent pre and post intervention between the two groups. Equally, the score of perceived quality of clinical examination by providers between the groups was statistically indifferent before and after the study. Additionally, there was a significant difference in the score for timely monitoring of women in labour between the control and intervention group. Independent t-test was statistically significant t (756) =-2.141, p = 0.033 before but indifferent after intervening. There was parity however in the means of compassion for women in labour by staff after training compared to before training t (756) =2.607, p = 0.009. There was however, a statistically significant difference in openness to pregnant women/companions before intervening. The t-test was statistically significant pre-intervention (744) =-2.399, p = 0.017) but non-significant post.

4. DISCUSSION

4.1 Environmental Quality

The study demonstrated that provider's dressing and grooming had an impact on client's perception of environmental quality. The results inferred that notwithstanding standard dress code for health workers, the physical presentation of a provider stimulates the emotions and behavioral intentions of pregnant women and may affect judgment of projected services. The result insinuates that physical attractiveness is an important tool of promoting coordinated quality of care and self-esteem. The value of grooming and dressing is illustrated by Mlinac & Feng who found that when using a caregivers-report measure, grooming appeared first [29]. Meanwhile there was no significant difference in perceived hospital cleanliness and physical comfort between the groups despite the training. It is conceivable that health workers in the study scope recognize that cleanliness and comfort are essential environmental health standards and safety conditions to provide adequate health care hence the indifference. Patients' and providers' need for physical cleanliness and comfort is well described and theorized to support adaption, coping, acceptance, interaction, healing and promotes optimum health and well-being [30].

The study revealed that the setting of delivery rooms is a fundamental indicator of environmental quality. The results alluded that providing training tweaked the mindset of the trained providers to improve their settings. The study findings reaffirmed the results of a systematic review on qualitative evidence of facilitators and barriers to delivering at health facilities in low and middle-income countries that found inadequate facility infrastructure contributed to an overall perception of low quality of care[31]. It is however inconsistent with Sharma who did not find any relationship between facility setting and quality of care at birth in an observation studies in India [32]. Additionally, its recognized that the healthscapes can affect mothers' perceived quality of care [33] and overall birth experience [34]. Taking cues from the evidence that perceived quality of clinical care and personal safety are closely interlinked, healthcare institutions need to focus more on transformative quality of care in labour and delivery rooms with goal of changing the recipient voice.

4.1.1 Reliability, efficiency and people centeredness

The study established that staff responsiveness and reliability are significant environmental quality parameters for women centered maternity

services. This result is attributed to an increased awareness of client expectation of promptness and timeliness. The positive impact of training on health workers ecological abilities such as situational awareness is well documented [35]. The findings of this study are consistent with Nawaz who reported significant correlation on patient perceived quality with the responsiveness and reliability [36] but differs with Mensah who reported insignificant results [37]. Empathy for women in labour and compassion for companion were fundamental people centeredness quality parameters. Compassion for companion was significant before but indifferent later. Consultative and interactive process between the provider and the companion acting as a buffer may explain the variation in the two results. The finding of the current study corresponds with [38] and [9]. Kabakian-Khasholian & Portel advanced for mechanism of integrating companion seamlessly to minimize cross infections. While, Rono *et al.,* writes that provider-companion-mother interaction results to friendly and inclusive childbirth process and behaviour.

The study also shows that attention to the clients' placenta beliefs is a useful people centered factor. Human beings are endowed with values, beliefs and attitudes that help understand each other. The understanding helps build synergy and great working relationships. It is therefore plausible that the training aligned the values of the provider with that of client. This finding mirrors Mensah that had patient's beliefs and emotions as significant empathy issue [37]. Also results of Arab et al., which showed positive result to attention to patients' beliefs and emotions[39]. Additionally, empathy to women maternity needs was also central. The intervention may have helped workers to identify and describe cultures, behaviours, and apply this knowledge in service delivery. The evidence adduced that the concept of cultural competencies is therefore paramount. It is important to understand that childbirth is a very stressful yet joyous moment for both the mother, family and the service provider. Therefore, providers understanding of clients' maternity needs may dissuade disrespect and abuse both perceived or otherwise in labor and delivery process. This finding agrees with Coast et al., [8] and Gabrysch et al., [40] but contrasts with Chang et al., [41]. Coast et al., reported positive impact on uptake of skilled delivery while Gabrysch *et al.,* ascribed certain preferences to massive impact both on service quality, satisfaction and use. Chang et al., found no

evidence on effectiveness of training of maternity care. From the results and the literature improving services acceptability and appropriateness as per clients' angle is fundamental.

4.2 Interaction Quality

The study found that trust is one of the central features in provider-client interaction.

The results agrees with Charles 'who wrote that provider-mother dialogue is key to perceived quality and services use [42]. Similarly, politeness, friendliness and attention to women emotions were found to be powerful predictors for interaction quality. The finding on interaction quality are likewise similar to Arab *et al.,* who reported positive result with politeness and friendliness in dealing with patients by staff and attention to the patients' beliefs and emotions [39]. Friendliness informs good dialogue and dialogue is one of the best methods for delivering information as well as stirring people's spirits. Staff feelings and willingness to help were other sound interaction quality essentials. The issue of feelings of repulsion as mediator to perceived quality of maternity services is well documented [43]. The study hypothesizes that, the intervention provided a conducive and psychological enabling environment prompting philosophy change by providers. The finding concurs with Panaretto *et al.*, who reported that an intervention led to a culture of change among the services providers including greater staff willingness [44]. These results emphasize for a strong interpersonal relationship between provider, companion and patients.

4.3 Process Quality

In the current study, the variance on privacy in delivery rooms remained insignificant before and after intervention. Lack of adequate space and rooms for privacy may explain this result. The results are similar with who Kabakian-Khasholian & Portela who writes that crowding and unavailability of space hinder privacy for women and their companions in the labour ward [38]. However, openness to women companions and compassion to women in labour were found as key predictors for process quality. It is well reported that the success of maternity services is dependent on openness between provider-recipient [45]. The declaration by Langins & Borgermans that enthusiasm, compassion, openness, integrity and good relationships with

patients are key competencies for health worker [46] may justify this point. Communication on medical procedures and timely monitoring of women in labour were also found to be key parameters. Under normal circumstance, communication process affects the transfer of information. It is therefore plausible that the training triggered and reengineered the communication between mothers and skilled staff. The net effect of communication is documented [42]. The authors inscribed that effective communication is seen as an important quality dimension in personal interactions [42]. The timely monitoring results are congruent with Crawford et al., who inscribes that continuous monitoring affects high levels of participant perception, satisfaction and preference [47]. Quality of clinical examination by providers was indifferent before and after the study. The frequent and uncoordinated vagina examination by many staff may provide conceivable explanation and justification.

5. CONCLUSION

The study found that people's needs and expectation are essential components of improving quality of maternity services. These results provide evidence that cultural competence training is an important and integral health management aspect of improving people centered care and equity in health care. Thus, integration of the concept of cultural competence into maternal and newborn policies as well as in medical training curriculum is critical for mitigating cultural barriers in health care.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

The study was approved by Kenyatta University Ethical Committee (KU/ERC/APPROVAL/VOL.1 (164)), National Commission of Science, Technology and Innovation (NACOSTI/P/18/41197/21776) and the Elgeyo Marakwet County government (EMC/CDMS/GC/2018(39). Privacy and confidentiality were maintained. Study consent was obtained from facility gatekeeper and from respondents (written) after accepting voluntary participation. The purpose, risks, benefits and results use, were explained.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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