

East African Medical Journal Vol. 102 No. 7 July 2025

EFFECTIVENESS OF WORKSHOP AND MENTORSHIP TRAINING METHODS ON ORAL HEALTHCARE SERVICES DELIVERY AMONG KENYAN NURSES - A COMPARATIVE STUDY

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ABSTRACT

Background: The knowledge-practice translation of oral health training workshops amongst nurses is minimal, despite consistently improved knowledge scores. Conversely, mentorship is postulated to produce better knowledge-practice conversion. No study has compared effectiveness of these two training approaches in translating oral health knowledge to service delivery.

Objective; Compare effectiveness of workshop and mentorship training models on oral health services delivery among nurses.

Methodology: This was a quasi-experimental study using pre-post- test design among 67 nurses (33 intervention, 34 control). All nurses underwent one- day workshop. The intervention group underwent one- year mentorship program while control group had no other intervention. Service delivery was assessed at baseline, six and twelve- months using exit interviews among 1128 parents seeking child welfare services from the nurses (570 intervention and 558 control). Results compared pre-post proportions of parents receiving oral health education, proportion of children examined, and overall service delivery score. Chi square was used for significance testing set at $P < 0.005$.

Results: There was significant improvement in pre- post-proportions of parents receiving oral health education for intervention and control groups (0% to 66.3% and, 1.3% to 7.7%). Similar changes were observed in percentage of children examined for early oral health abnormalities (0% to 66.3% and, 0% to 9.6%) and, children reviewed at first contact below six months (0% to 68.5% and, 0% to 9.6%). In summative comparison, the intervention group exhibited significantly better improvement in individual and overall service score compared to the control group (0.4% to 62.4% and, 0.3% to 9.2%). However, the percentage of parents presenting child oral health complaint remained low across the two groups (0.5% to 1.1% and, 2.6% to 1%).

Conclusion: Mentorship was more effective in translating oral health knowledge to service delivery compared to workshop method. There is need to improve demand for child oral health services among parents.

INTRODUCTION

The World Health Organization manual for promoting oral health in Africa identifies training as precondition in delivery of basic package of oral care (BPOC) by non-oral health workers.¹ In-service training is particularly vital where primary health care workers without oral health backgrounds are expected to offer particular BPOC services within their package of care. In these cases, their individual competencies have been found to be poor or not ascertained. The nurse in Kenya is for example expected to offer oral health care services as part of their healthcare packages.² The nurses' have however reported limited oral health care training in their preservice training, inadequate to prepare them for oral health services delivery.³ Additionally, there are no standardized in-service oral health training programs for nurses in the country. Thus, there is need to develop a training that would be contextual to achieve the in-service nurses' oral health competency, and achieve desired oral health related outcomes.

There are more than 110,00 nurses in Kenya, who constitute approximately 58% of the health care work force in the both public and private sectors.⁴ The nurse is the principle service provider for the child welfare clinic services in Kenya.² They are involved in the immunization program, growth monitoring and integrated management of childhood illnesses. As part of health education, the nurse is expected to provide promotional and preventive oral health messages. They are further expected to provide some components of the oral urgent treatment to the children under their care.⁵ The implementation of BPOC services in the child welfare clinic is however unknown. Parents who seek child welfare services would however be a source of information on BPOC services being offered by the nurse. The nurse in the child welfare clinic has clearly defined and thus measurable BPOC roles presenting an apt

opportunity for piloting and assessing the effects of in-service oral health training program for nurses.

The workshop training method has extensively been used for in-service oral health care training for nurses.⁶ The method has recorded remarkable success but has been faulted for the inevitable decay in knowledge, confidence and competency.⁷⁻⁹ Conversely, mentorship has been suggested as the remedy for this decay. Mentorship would be expected to provide continued transfer of knowledge and, a constant presence of the mentor thus building better confidence in service delivery.¹⁰ There is however limited use of mentorship approach in nurses training for oral health despite these expected accruing benefits.

This study piloted the effects of workshop and mentorship training approaches among in-service nurses on the delivery of BPOC services in child healthcare. The study used exit interviews among parents accessing child welfare services to assess BPOC services provided by nurses. The baseline results reflected the pre-training oral health services while the post intervention results depict the effect of oral health training program on BPOC services among nurses working in the child welfare clinics. The study then compared the effects of a workshop-based training method to those of mentorship-based training method on nurses' oral health education to the parents, child oral examination (as part of early identification of abnormalities and, review at first contact below six months), child oral related treatment, referral for index visit and documentation of oral health services in relevant registers. The results of the study will inform on the structure and designing oral health training for nurses towards integration of oral health into child welfare services.

METHODOLOGY

Study design

This was a quasi-experimental study carried out for one year between February 2023 and January 2024. Evaluation was done using repeated cross-sectional assessments at 0,6 and 12 months.

Study population

The study was carried out amongst 67 nurses serving child's welfare clinic services from health facilities in Muranga county, Kenya. Two sub-counties of Muranga county were selected based on matching statistics. By a toss of a coin, one sub-county was allocated as the mentorship and workshop group (intervention) while the other was the workshop only (control) group.

The impact of the workshop training intervention as compared to the workshop plus mentorship method was determined by assessing oral health services as reported by parents who sought their child welfare services from the trained nurses working in health facilities drawn from the two participating sub-counties.

Sample size determination

All the primary health care nurses (67) who were in active duty, including those on short term leave during the workshop scheduled training dates, were included in the study.

Sample size for the parents in each assessment (0,6 and 12 months) was determined using the proportion formula; $\{n = Z^2 \times p(1p)/d^2\}$ using a confidence level (Z) of 95% (1.96), standard deviation (p) of 0.5, and margin error (d) of 0.05 for the unknown population. Therefore, the sample size for each of the assessments at baseline, mid- term and end term was set at 386 (193 parents per study group). The total number of parents targeted for the three assessments was thus 1128 (386*3).

Inclusion and exclusion criteria

All parents with children aged between 6 and 18 months attending the child welfare clinic were included in the sampling frame of the study. Six months correspond to the expected age of teeth eruption while 18 months is the final age for the normal immunization program in the country.¹¹ Informed consent was obtained verbally from the

participants. Any parents who would not give consent would be excluded from the study, all parents gave their consent.

Sampling

Participating parents were selected from the same population over the study period, with replacement. Probability proportion to size based on the number of 1-year-old children projected to receive child welfare services was used to allocate the number of parents recruited in the study from each facility. This selection allowed larger samples to be drawn from facilities with a large population of number of children and vice versa. This meant that each parent had an equal chance of selection irrespective of population size in the facility. Systematic random sampling was then used to identify the actual participants. Systematic random sampling ensured maximum dispersion of the parents throughout the population. This is particularly important since little was known of the study population. Secondly, multiple nurses could offer child welfare services to one child and/or one nurse could offer services to multiple children.

Training intervention

A similar baseline training (done in the form of a workshop) was done for all the nurses. Those allocated to the mentorship group was then followed-up with quarterly mentorship session for one year. Those allocated to the workshop group did not receive any other intervention. Mentorship program included quarterly visit by the dentist to the nurses in their workplace for a mentorship session. The dentist joined the sub-county management team in their quarterly support supervision visits to the health facilities. The dentist is usually not part of the team, and had joined this team for the purpose of the mentorship. The program also included provision of mouth model and toothbrush as an aid in oral health education. Tongue depressors, gloves and masks were provided and replenished monthly alongside other consumables during the study period. Details of the training development and content are discussed elsewhere.

Data collection

Data was collected using a researcher administered questionnaire to the parent. The

questionnaire collected data on the provision of oral services from the list of BPOC services expected of the nurses. Data collected was structured to cover five domains based on the balance score card design.¹²⁻¹³ Overall, the assessment was the oral health care services delivered by the nurse as part of child welfare services in their facilities. This was recorded from an exit interview with the child's parent. Services assessed were; oral health education to the parents, child oral examination (as part of early identification of abnormalities and, review at first contact below six months), child oral related treatment, referral for index visit and documentation of oral health services in relevant registers. Parents answered in the affirmative for oral health education given, referral for index visit. The mother child booklet was inspected for documentation of services offered. An overall score in service delivery was computed from the total number of affirmative answers representing the proportion receiving the service. Difference in proportion of parents and children receiving the services was compared for 0, 6- and 12-months evaluations.

Data analysis

Data was collected electronically using freely available Kobo collect tool. Data was collated and entered into STATA statistical package version 17. Data set were checked for missing

values, outliers or other inconsistencies, and appropriate remedial actions taken. Categorical data was coded accordingly. Chi square was used to test for significance. A P value of ≤ 0.05 was set for significance throughout the study.

Ethical approval

The study was approved by the University of Nairobi Kenyatta National Hospital Ethics and research committee via protocol number P648/17/2022.

Results

A total of 67 nurses (33 intervention group, 34 control group) served parents in the study area. By the end of the intervention period, 1128 parents (570 intervention and 558 control) seeking child welfare services from the nurses participated in the assessment of the services. As shown in table 1, over 95% of the parents were female. The mean age was 29.1 years. Majority of the parents (58.4%) had secondary school level of education. There was equal distribution of the children by sex. The children of participating parents had a mean age of 13 months. There was no significant difference found between social demographic characteristics of the workshop and mentorship group participating parents

Table:1 Social demographic characteristics of parent participants

Variable name	Workshop N=558	Mentorship N=570	Total 1128 (%)	p-value
Parent Sex				
Female	537 (96.2)	551 (96.7)	1088 (96.5)	0.696
Male	21 (3.8)	19 (3.3)	40 (3.5)	
Parent age (years)				
Mean	28.9 (6.7)	29.3 (7.2)	29.1 (7.0)	0.314
Median (Q1, Q3)	28.2 (24.4, 33.0)	29.0 (24.0, 34.5)	28.6 (24.1, 33.8)	
Parent education				
Primary/no formal schooling	154 (27.6)	168 (29.5)	322 (28.6)	0.051
Secondary schooling	317 (56.8)	342 (60.0)	659 (58.4)	
Post-secondary schooling	87 (15.6)	60 (10.5)	147 (13.0)	

Child Sex				
Female	261 (46.8)	275 (48.2)	536 (47.5)	0.621
Male	297 (53.2)	295 (51.8)	592 (52.5)	
Child age (years)				
Mean	1.1 (1.2)	1.0 (1.0)	1.0 (1.1)	0.441
Median (Q1, Q3)	1.0 (0.7-1.3)	0.9 (0.7-1.2)	0.9 (0.7, 1.3)	

Oral health Service delivery by nurses in the workshop group

Health education sessions were low in all the three assessment periods. Although the proportion that included oral health education in these sessions increased significantly ($p=0.004$) during the period of study, the numbers remained low. The number of children with reported oral health problems also remained low, nevertheless, all of them were examined. There

was however significant improvement of the proportion of parents to whom one- year index visit formed part of the nurses' oral health messaging. The proportion of children examined for early congenital abnormalities as well as examination by six months improved significantly ($p<0.001$). While these changes were significant, the growth in absolute numbers was still marginal with the overall service score improving from 0.3% to 9.2%.

Table: 2 *Oral health Service delivery by nurses in the workshop group*

Variable Name	N=558			p-value
	Baseline (N=183)	Mid-term (N=197)	End-term (N=208)	
Provision of health education on the review day				
Yes	11 (7.2)	15 (7.6)	23 (11.1)	0.339
No	142 (92.8)	182 (92.4)	185 (88.9)	
Inclusion of oral health education in the health education session on the review day				
Yes	2 (1.3)	5 (2.5)	16 (7.7)	0.004*
No	151 (98.7)	192 (97.5)	192 (92.3)	
Parent presented the nurse with child oral health-related complaint(s)				
Yes	4 (2.6)	2 (1.0)	2 (1.0)	0.353
No	149 (97.4)	195 (99.0)	206 (99.0)	
Child's mouth was examined on the review day				
Yes	3 (75.0)	2 (100)	2 (100.0)	
No	1 (25.0)	0 (0.0)	0 (0.0)	
Based on the oral-health-related complaints				
Child received treatment related to oral health complaint(s)				

Yes	2 (50.0)	0 (0.0)	0 (0.0)	
No	2 (50.0)	2 (100.0)	2 (100.0)	
Based on the oral-health-related complaints				
Nurse has ever informed parent of the need for child index visit to the dentist by the age of 1 year				
Yes				
No	0	9 (4.6)	21 (10.1)	<0.001*
	153	188 (95.4)	187 (89.9)	
	(100.0)			
Early identification of congenital abnormalities				
Information relating to other health systems was captured				
Yes	0	4 (2.0)	22 (10.6)	<0.001*
No	153	193 (98.0)	186 (89.4)	
	(100.0)			
Oral health-related information was recorded				
Yes	0	5 (2.5)	20 (9.6)	<0.001*
No	153	192 (97.5)	188 (90.4)	
	(100.0)			
Broad clinical review at first contact below 6 months				
Information relating to other health systems was captured				
Yes	0	4 (2.0)	20 (9.6)	<0.001*
No	153	193 (98.0)	188 (90.4)	
	100.0)			
Oral health-related information was recorded				
Yes	0	5 (2.5)	20 (9.6)	<0.001*
No	153	192 (97.5)	188 (90.4)	
	(100.0)			
Average service delivery score				
Service delivery Score				
Mean (SD)	0.3 (2.8)	3.0 (12.3)	9.2 (23.8)	<0.001*
Key * Significant				

Oral health Service delivery by nurses in the mentorship group

Health education sessions started low at baseline and improved exponentially by end term. Similarly, more than two-third (66.3%) of the health talks included oral health education registering a significant increase during the period of study ($p<0.001$). The proportion of parents who had a recommendation for the one-

year index dental visit also registered a significant growth ($p<0.001$). Proportion of children examined for early congenital abnormalities and at first contact below six months, and the findings recorded in the mother child booklet increased from zero to more than two-thirds by the end of the study period. The overall service score improved substantially from a mean of 0.4% to 62.4% as shown in table 3.

Table:3 Oral health Service delivery by nurses in the mentorship group

Variable Name	N=570			p-value
	Baseline (N=203)	Mid-term (N=189)	End-term (N=178)	
Provision of health education on the review day Yes No	1 (0.5) 202 (99.5)	94 (49.7) 95 (50.3)	119 (66.8) 59 (33.2)	<0.001*
Inclusion of oral health education in the health education session on the review day Yes No	0 (0.0) 203 (100.0)	74 (39.2) 115 (60.8)	118 (66.3) 60 (33.7)	<0.001*
Parent presented the nurse with child oral health-related complaint(s) Yes No	1 (0.5) 202 (99.5)	2 (1.1) 187 (98.9)	2 (1.1) 176 (98.9)	0.763
Child's mouth was examined on the review day Yes No Based on oral-health-related complaints	1 (100.0) 0 (0.0)	0 (0.0) 2 (100.0)	2 (100.0) 0 (0.0)	0.082
Child received treatment related to oral health complaint(s) Yes No Based on oral-health-related complaints	0 (0.0) 1 (100.0)	0 (0.0) 2 (100.0)	0 (0.0) 2 (100.0)	0.392
Nurse has ever informed parent of the need for child index visit to the dentist by the age of 1 year Yes No	3 (1.5) 200 (98.5)	48 (25.4) 141 (74.6)	84 (47.1) 94 (52.8)	<0.001*
Early identification of congenital abnormalities				
Information relating to other health systems was captured Yes No	0 (0.0) 203 (100.0)	126 (66.7) 63 (33.3)	133 (74.7) 45 (25.3)	<0.001*
Oral health-related information was recorded Yes No	0 (0.0) 203 (100)	76 (40.2) 113 (59.8)	118 (66.3) 60 (33.7)	<0.001*
Broad clinical review at first contact below 6 months				
Information relating to other health systems was captured Yes No	0 (0.0) 203 (100.0)	127 (67.2) 62 (32.8)	136 (76.4) 42 (23.6)	<0.001*
Oral health-related information was recorded Yes No	0 (0.0) 203 (100.0)	78 (41.3) 111 (58.7)	122 (68.5) 56 (31.5)	<0.001*
Overall service delivery score				
Service delivery Score Mean (SD)	0.4 (3.0)	39.4 (36.9)	62.4 (36.8)	<0.001*

Key *Significant				
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Comparison of end term service provision between workshop and mentorship groups

On comparing the two study groups as depicted in table 4, mentorship group performed significantly better for all variables assessed other than those relating to proportion with oral health related complaints, mouth examination and treatment which were generally poor for both

groups. Parents reported nurses examined all cases that presented with oral health related complaint. However, no treatment was recorded for these reported cases from both groups. The mean overall service delivery score for the mentorship group was 9.2% against 62.4% for the workshop group. This difference was found to be statistically significant ($p < 0.001$).

Table:4 Comparison of end term service provision of oral health care between nurses trained by workshop and mentorship methods

Variable name	Workshop (N=208)	Mentorship (N=178)	p-value
Provision of health education on the review day Yes No	23 (11.1) 185 (88.9)	119 (66.8) 59 (33.2)	<0.001*
Inclusion of oral health education in the health education session on the review day Yes No	16 (7.7) 192 (92.3)	120 (67.4) 58 (32.6)	<0.001*
Parent presented the nurse with child oral health-related complaint(s) Yes No	2 (1.0) 206 (99.0)	2 (1.1) 176 (98.9)	0.875
Child's mouth was examined on the review day Yes No	2 (100.0) 0	2 (100.0) 0	1.000
Child received treatment related to oral health complaint(s) Yes No	0 (0.0) 2 (100.0)	0 (0.0) 2 (100.0)	1.000
Nurse has ever informed parent of the need for child index visit to the dentist by the age of 1 year Yes No	21 (10.1) 187 (89.9)	84 (47.2) 94 (52.8)	<0.001*

Early identification of congenital abnormalities; Information relating to other health systems was captured Yes No	22 (10.6) 186 (89.4)	133 (74.7) 45 (25.3)	<0.001*
Oral health-related information was recorded Yes No	20 (9.6) 188 (90.4)	118 (66.3) 60 (33.7)	<0.001*
Broad review at first contact below six months; Information relating to other health systems was captured Yes No	20 (9.6) 188 (90.4)	136 (76.4) 42 (23.6)	<0.001*
Oral health-related information was recorded Yes No	20 (9.6) 188 (90.4)	122 (68.5) 56 (31.5)	<0.001*
Overall Service delivery Score Mean (SD)	9.2 (23.8)	62.4 (36.8)	<0.001*
Key * Significant			

DISCUSSION

Achievement of universal oral health care coverage requires full integration of oral health into primary health care.¹⁴ In the background of few and unequal distribution of available oral health care workers, full integration is only feasible with the use of non-oral health care workers.^{1,15} Nurses are at the core of service delivery in primary health care in Kenya. Any meaningful progress will require their involving, and once fully engaged, their contribution to the oral health care integration into primary health care will undoubtedly be monumental. The nurses' curriculum training is however limited in oral health content, and thus they require in-service capacity building to achieve desired competencies for BPOC provision.³ There is however no universal oral health care training

program for nurses. Still, there is no standardized oral health training programs for both preservice and in-services nurses in Kenya. This is compounded by paucity of information on integration of oral health services in to nursing care packages. This study thus sought to assess first, if there are any oral health services integrated in the nurse's child welfare clinic package. Secondly, the study sought to assess and compare the effect of workshop and mentorship training methods on oral health care services among the nurses. At baseline, the result of the study indicated poor oral health care service integration into child welfare services. There was however improved service provision by the nurses post- training. The nurses in the mentorship group exhibited significantly better scores for all service facets assessed.

Poor BPOC recorded at baseline in the current study was expected since almost all the participating nurses had reported the absence of pre-service oral health training. Poor practices are however not peculiar to nurses in this study setting. In a similar study in Kenya, nurses reported their lack of capacity for oral health services delivery due to lack of oral health training.³ Similarly, nurses in Nigeria, South Africa, and Uganda, have reported their inability to offer oral health services due to poor oral health knowledge as a result of inadequate oral healthcare training.^{9,16-18} While the previous Kenyan, Nigerian and South African studies were done prior to the manual for integrating oral health in Africa of 2016, the continued poor services depicted in this study, Nigerian and Uganda studies points to none- implementation of the call for capacity building among primary health care (PHC) workers.^{9,15-17,18} This highlights then, the need for continued advocacy on the development, piloting and roll out of oral healthcare training models for nurses and other non-oral health care PHC workers in the WHO Afro region.

The planning, and execution of the workshop training in this study exemplifies the targeted, reproducibility and simplicity of the method probably explaining the high traction by oral health care trainers for PHC workers.^{9,19,20} The workshop group in this study however registered marginal growth in oral health care services

highlighting the challenge in translating knowledge to practice through the limited contact of a workshop approach. These minimal gains by the workshop group further indicate the technical nature of oral health care delivery. The workshop method may not then be robust enough to build requisite capacity in oral health care delivery for non-oral healthcare providers, especially those who have not had prior training like in the current study.

However, educational outreaches like mentorship have been shown to allow for continued feed-back and help in execution of learnt concepts.^{21,22} This study thus hypothesized that a post workshop mentorship program would sustain gained knowledge and, better translate it to oral health care service delivery. The results of the mentorship group upheld this hypothesis, mentorship group had significantly better service provision than the workshop group for all facets assessed. The results thus embody the use of mentorship approach for oral health among in-service nurse, and calls for similar approach with other non-oral health care workers. The structure of such mentorship programs, like in this study, need to be contextual and embrace existing health structures and systems.

Both workshop and mentorship training methods were however unable to translate service availability and provision into increased demand for oral health services. The number of parents presenting child oral health complaints to the

nurse remained low throughout the study period. While this could be attributed to institutional norms where the nurse is not expected to offer oral health services, future studies should investigate the correlates of oral health seeking behavior in the study population and institute remedial actions to improve uptake.

The study was limited in scoping of the BPOC services to be provided by the PHC nurse. The study questionnaire was researcher formulated guided by this BPOC scoping. Moreover, the mentorship program was tailored to fit the health system structure at the county of implementation. These factors could limit the reproducibility of the trainings and training results in other jurisdictions. The scope and questionnaires were guided by the prescribed scope of oral health services for PHC nurses,² this was meant to contextualize the training, a key factor in success and sustainability of service provision.

Whereas matching of the baseline characteristics of the two participating sub-counties was done to ensure similar target populations, perfect matching could not be possible. The study acknowledges there could be possibility of a mismatch in number of nurses per health care facility thus may give a variability in oral health services provision. Health education microteaching sessions are usually done in the morning hours before clinical work. Selection of parents did not consider timing for clinical services which is a potential confounder in the

reported services by the selected parent. Some of the information given by the parents required them to remember either the review day's events or even earlier visits. This could have introduced recall bias. Long term recall questions were however kept to the minimum.

CONCLUSION

BPOC services among nurses working in the child welfare clinics is poor. Oral health training improved BPOC services among the nurses. The mentorship training method yielded more superior results compared to the workshop-based training method. The number of parents presenting their children for oral health care to the primary health care nurse remained low.

Recommendation for future studies

Mentorship method could be applied in oral health training for integration into other aspects of nursing care practice.

ACKNOWLEDGEMENT

The study acknowledges the management and staff of Muranga county for their support during the study period

Financial support

The study was self-funded

Conflict of interest

The authors declare no conflict of interest

Authors contribution

Conception, design, acquisition, analysis and interpretation of data: KG, RM, RA, KP, CM: Drafting of the article: KG; Critical revision of the article for important intellectual content RM, RA, KP, CM: final approval for submission and any revised version; KG, RM, RA, KP, CM

Parent consent

All parents gave verbal informed consent before commencement of their interview

Data availability statement

Not applicable

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