



ORIGINAL ARTICLE

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Utilization of Hypertension Management Guidelines in Primary Healthcare Facilities in Tharaka Nithi County, Kenya

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ABSTRACT

Hypertension (HTN) is a leading contributor to the global burden of non-communicable diseases (NCDs). The effective management of hypertension constitutes an urgent need in developing countries, where its prevalence is on the rise. Available data shows that Tharaka Nithi County is one of the regions with high hypertension burden in the Kenya. Information on the adoption and implementation of HTN management guidelines is either limited or completely lacking. We evaluated the level of utilization of HTN management guidelines among primary healthcare facilities in Tharaka Nithi County. The study adopted a cross – sectional analytical design. Ninety-three healthcare facilities were sampled using a multi-stage sampling technique and data collected using the modified World Health Organization (WHO) Service Availability and Readiness Assessment (SARA) questionnaire. The data were analyzed using the Statistical Package of Social Sciences (SPSS) version 27 for both descriptive statistics and inferential statistics. Ethical approval was obtained from the Kabarak University Research Ethics Committee (KUREC) and data collection permit from the National Commission of Science, Technology and Innovation (NACOSTI). Most of the health facilities (96.8%) diagnose and manage HTN patients. Only a third (32.3%) of the facilities received a support supervision visit more than two years ago. A third (34.4%) of the health facilities had a guideline utilization score of two and a mean score of 2.11. The majority (64.5%, n=60) of health facilities reported unsatisfactory utilization of guidelines in the management of hypertension. Healthcare facility category was found to have a significant association with the availability of national guidelines ($P = 0.001$). ANOVA test showed a statistically significant difference in the mean guideline score based on the type of health facility. Health centres had the highest score while private medical clinics had the lowest score ($F = 5.270$, P value = 0.007). Statistically significant differences were noted in guideline utilization among dispensaries and health centres. The study reveals a notable deficiency in hypertension management guideline utilization (64.5% reporting suboptimal adherence), compounded by infrequent support supervision visits (32.3% without visits in over two years). The significant association between healthcare facility category and national guideline availability, along with variations in mean scores, highlights the need for targeted interventions to address existing disparities. We recommend implementation of a systematic support framework, ensuring regular support supervision visits for all health facilities, prioritizing those lacking oversight for an extended period. Tailored interventions, particularly for private medical clinics with lower guideline scores, are essential.

Keywords: Blood pressure, Guidelines utilization, Hypertension, Non-communicable diseases, Primary healthcare facilities,



INTRODUCTION

Non communicable diseases (NCDs) are a global health challenge and are responsible for a greater number of deaths than any other causes combined (Yan et al., 2017). The most common types of NCDs include hypertension, heart diseases, stroke, diabetes and cancer, all of which contribute significantly to mortality worldwide (WHO, 2017). According to the World Health Organization (WHO), an estimated 1.28 billion adults aged 30 to 79 years worldwide have hypertension, and approximately two-thirds of them live in low-and middle-income countries (WHO, 2022).

Hypertension, if not properly managed, can lead to serious health complications, including heart attacks, stroke, and kidney failure, among others (Juraev et al 2019). However, despite the availability of effective treatments, less than 30% of hypertensive patients under management have their blood pressure controlled (Adinan, 2019). This underscores the need for healthcare facilities to be better equipped to manage the increasing prevalence of hypertension. Health facilities, including hospitals, health centers, dispensaries, and private medical clinics, play a crucial role in providing quality healthcare services at all levels (Ministry of Health, 2015).

The disease is a major public health concern in Kenya with about 16,563 new cases yearly and an estimated 6,402 hypertension-related deaths per year (GOK, 2021). In 2020, Kenya was ranked 96th globally with the highest number of hypertension deaths (GOK, 2021). Tharaka Nithi County, in particular, has high rates of hypertension, making it a crucial morbidity factor and a known cause of mortalities in the County (Ngai et al., 2019). Studies have shown that a low level of preparedness in healthcare facilities is a contributing factor in the increasing cases of hypertension (Adinan et al 2019). Optimal utilization of hypertension management guidelines in primary health care facilities is key in the management of hypertension (Adinan et al 2019). Meiqari (2020) indicated that the management of hypertension is highly affected by the national guidelines for the diagnosis, supervision of the equipment, supply of medicines, and professional qualification of the healthcare providers. Kabir (2021) observed that hypertension management guidelines and essential medicines are potent factors influencing the treatment of non-communicable diseases such as hypertension. Therefore, there is a pressing need for governments to prioritize the development and implementation of effective hypertension management guidelines and ensure adequate provision of essential medicines, equipment and qualified healthcare providers. This will go a long way in reducing the prevalence of hypertension and hypertension-related mortalities.

Hypertension, identified by the World Health Organization (2021) as a leading global cause of mortality, raised significant concerns due to its associated complications. Effective management, particularly in primary healthcare facilities, was crucial for reducing hypertension-related mortality. Mbui (2015) emphasized the importance of aligning prescribing patterns of antihypertensive drugs with established treatment guidelines. Adherence to these guidelines was essential for accurate medication prescriptions and overall treatment efficacy. Despite the critical role of hypertension management guidelines, limited research has been conducted in Kenya to assess the level of their implementation in primary healthcare facilities. This knowledge gap prompted the current study, which aimed to investigate the utilization of hypertension management guidelines in primary healthcare facilities within Tharaka Nithi County, Kenya.

METHODOLOGY

Study Design

The study adopted a cross-sectional analytical study design (Lindell & Whitney, 2001). This design enabled the researcher to examine numerous characteristics at one point without the manipulation of variables (Spector, 2019).

Study Location

The study was conducted in Tharaka Nithi County, Kenya. The County is located in the central region of Kenya and borders Meru County to the North and North East, Kitui County to the East and 19 South East and Embu County to the South and South West. It covers an area of 2,564.4 km² (KNBS, 2019). Moreover, the County has a population of 393,177 people according to the 2019 Kenya Population and Housing Census and one of the counties with high hypertension burden in the country.

Study Population

The study involved healthcare workers (Officer in charge of facility) working at primary healthcare facilities in Tharaka Nithi County. The total number of facilities is 103 out of which 93 were sampled. A total of 93 officers-in-charge from healthcare facilities (health centres, dispensaries and private medical clinics) were interviewed between 28th July and 3rd September, 2023.

The study excluded all HCWs working at the levels 4 and 5 healthcare facilities and those offering specialized services only.

Sample Size Determination

The sample size determination was established using Cochran (1963) as cited by Fisher et al (1998) as shown; $N = (Z^2pq)/d^2$ which gave a sample size of 103 facilities

Data Collection Tools

Data were collected using the modified WHO Service Availability and Readiness Assessment (SARA) questionnaire. SARA is a health facility assessment tool designed to assess and monitor the service availability and readiness of the health sector to generate evidence to support the planning and managing of a health system (WHO, 2014).

This was a validated questionnaire that had been used in multiple studies globally. A pretest and suitability test were run by administering the questionnaires to HCWs from different facilities who were timed. The result was that the questions were understandable and could easily be filled.

Data Collection Procedures

Before data collection, the study was approved by the Kabarak University institution of Post graduate studies, KUREC, NACOSTI, department of health Tharaka Nithi County and facility owners. Research assistants were hired to help in data collection in the county among the sampled facilities. The facilities were selected from up-to-date sampling frame from the County Data base. Stratification of the facilities was done at three levels (Health Centres, Dispensaries and Private Medical Clinics). Generation of random numbers between one and maximum number per stratum was done and then simple random selection of the facilities from each stratum.

Facilities were selected proportionate to the strata until the allocated sample size of each stratum was reached (Health Centres 12, Dispensaries 58, and Private Medical Clinics 23).

Data Analysis

The collected data underwent initial cleaning to ensure its accuracy and integrity. Subsequently, a comprehensive analysis was conducted using both descriptive and inferential statistical methods. Descriptive statistics encompassed measures such as the mean, standard deviation, and frequencies, while inferential statistics involved Chi-square, ANOVA, and regression analysis. Results were presented through prose, tables, and graphs. To assess the preparedness of a facility for hypertension management, a criterion was established: a facility was deemed prepared if it reported at least half ($\geq 50\%$) of the items outlined in the WHO SARA questionnaire domains (guideline). The 50% threshold was determined based on recommendations from the SARA implementation guide.

Ethical considerations

Ethical clearance was sought from Kabarak University Research Ethics Committee (approval number *KUREC-030623*), Department of health Tharaka Nithi County government (ref no. *TNC/CDH/R/VOL.2/128*). The research licence was obtained from the National Commission of Science, Technology and Innovation (research license number *NACOSTI/P/23/27491*). After scrutinization of questionnaire for completeness, they were stored in labelled envelopes according to the respective facility. Subsequently, the data were entered into Microsoft Excel and stored in a password – protected computer whose access was only allowed to the lead researcher for management. After entry the filled questionnaire were stored in a lockable cupboard.

RESULTS

Hypertension Management Guidelines

The ninety-three healthcare facilities included fifty-eight dispensaries (62.4%), twelve health centres (12.9%) and twenty-three private medical clinics (24.7%). Notably, all facilities offered diagnosis of non-communicable diseases. The majority (62.4%) of the health facilities had national guidelines available while half (53.4%) only reported that the guidelines were present (Table 1). Additionally, most (96.8%) of the healthcare facilities diagnose and manage hypertension patients. A third (32.3%) of the healthcare facilities received a support supervision visit more than two years ago. Treatment of hypertension guided by national policies was done by 60.2% of the healthcare facilities. It's also worth noting that only 19.4% of the healthcare facilities adjusted swiftly to the required guidelines. The guidelines utilization category was based on five indicators, availability of national guidelines, facility diagnoses hypertension, frequency of facility supervisory visits, treatment of hypertension guided by national policies and the facility adjusts swiftly based on the guidelines required. A score of 3 and above out of 5 was satisfactory while a score of less than three out of five was unsatisfactory. A third (34.4%) of the health facilities had a guideline utilization score of two and a mean score of 2.11. Most (64.5%) of the health facilities scored unsatisfactory in the guideline utilization category (Table 1).

Table 1:
Hypertension Management Guidelines by Health Facilities

Hypertension management guidelines	N=93	
	n	%
Category of healthcare facility		
Dispensary	58	62.4
Health Centre	12	12.9
Private Medical clinics	23	24.7
Facility offers diagnosis of non-communicable disease		
Yes	93	100

		N=93	
Hypertension management guidelines		n	%
Availability of national guidelines			
Yes		58	62.4
If yes was the guideline reported or seen			
Observed		27	46.6
Reported		31	53.4
Facility diagnoses and manages hypertension in patients			
Yes		90	96.8
Last time the facility received a supervision visit			
Above 2 years		30	32.3
1-2 Years		29	31.2
Less than 1 year		9	9.7
Don't Know		25	26.9
Treatment of hypertension guided by national policies			
Yes		56	60.2
Facility adjusts swiftly based on the guidelines required			
No		75	80.6
Guideline utilization score			
Zero		4	4.3
One		24	25.8
Two		32	34.4
Three		24	25.8
Four		9	9.7
Mean (SD) Guideline utilization score	2.11±1.03		
Guidelines utilization category			
Unsatisfactory		60	64.5
Satisfactory		33	35.5

Association Between Health Facility Types and Guidelines Utilization

A *chi-square* test of independence was conducted to establish the association between health facility types and guidelines utilization. The health facility category was found to have a significant association with the guideline's utilization ($P = 0.001$) (Table 2).

Table 2:
Facility Category and Guidelines Utilization Category

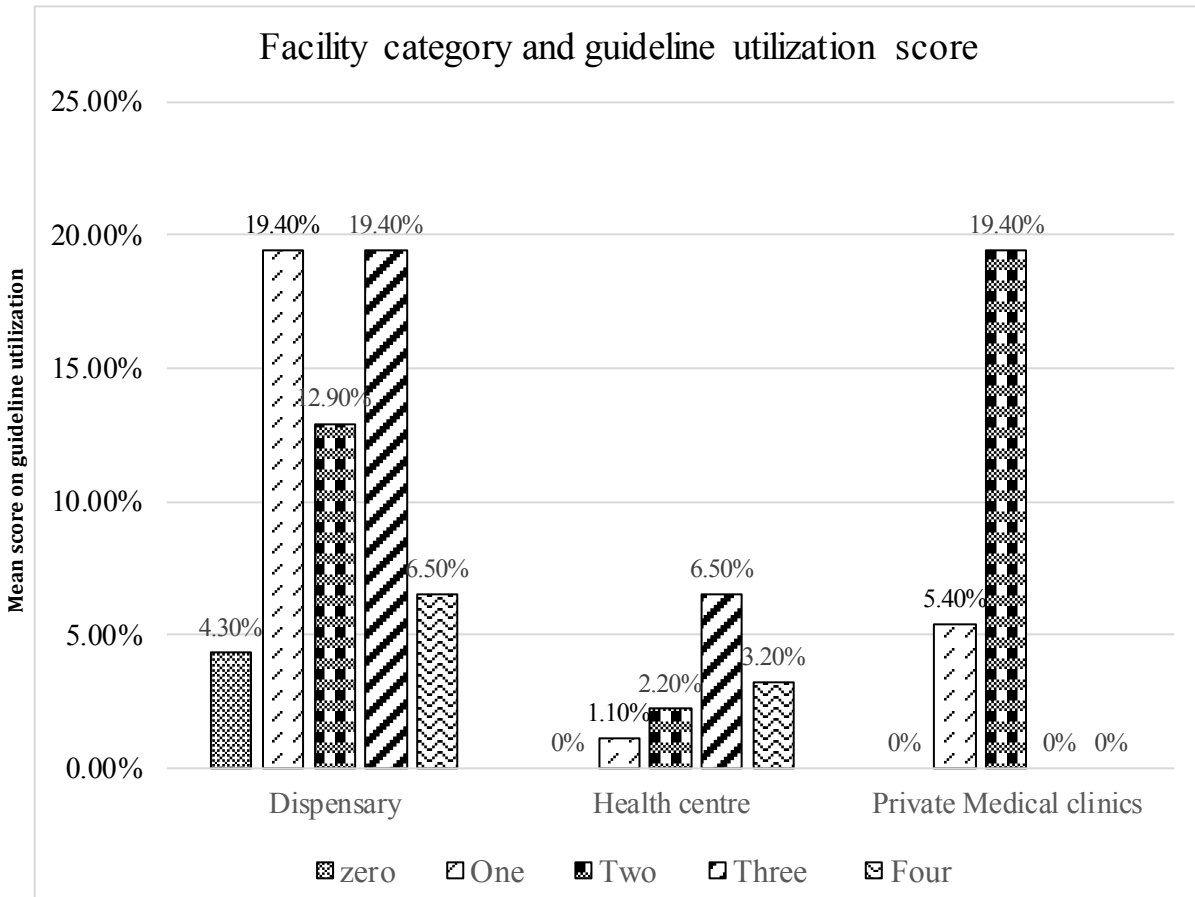
Facility category (n)	Unsatisfactory	Satisfactory	χ^2 P value
Dispensary (58)	34 (58.6%)	24 (41.3%)	0.001*
Health Centre (12)	3 (33.3%)	9 (66.7%)	
Private Medical Clinics (23)	23 (100%)	0 (0%)	

*Significant at $p \leq 0.05$

Guideline Utilization Score per Facility Category

Dispensary scored ‘one’ at 12.5%, indicating a low guideline utilization score. On the other hand, Private Medical Clinics received a score of ‘two’, which was only 4.9%. Notably, Health Centres had the lowest guideline utilization scores; with only 2.5% scoring ‘three’ points (Figure 1).

Figure 1:
Category of Sampled Healthcare Facilities



Guideline Utilization Score Based on the Type of Facility

Variance analysis was conducted to establish the differences in guideline utilization scores based on the type of facility. The results showed that statistically significant differences were observed in the mean guideline score based on the type of health facility. Health centres had the highest score while private medical clinics had the lowest score (F=5.270, P value = 0.007) (Table 3).

Table 3:
Guideline Utilization Score Based on the Type of Facility (ANOVA)

Facility category	N	mean	Subset for alpha = 0.05	
			F	P value
Dispensary	58	2.07	5.270	0.007*
Health Centre	12	2.92		
Private Medical Clinics	23	1.78		

*Significant at $p \leq 0.05$

Association Between Health Facilities and Guideline Utilization

A regression analysis was conducted to establish the association between health facilities and guideline utilization (Table 4). The study results revealed that dispensaries were 0.319 times less likely to have satisfactory guidelines utilization as compared to private medical clinics. Similarly, health centres were 0.198 times less likely to have satisfactory guidelines utilization as compared to private medical centres (Table 4).

Table 4:

Association Between Health Facilities and Guideline Utilization

Guideline utilization category ^a	B	P Value	COR	95% Confidence Interval for COR	
				Lower Bound	Upper Bound
Satisfactory					
Dispensary	-1.143	.035	0.319	0.104	0.975
Health Centre	-1.617	.037	0.198	0.044	0.904
Private Medical Clinics	0 ^b	.	.	.	.

a. The reference category is: Satisfactory

b. Baseline category

Association Between Health Facilities and Availability of National Guidelines

A chi-square test was conducted to establish the association between health facilities and the availability of national guidelines. The health facility category was found to have a significant association with the availability of national guidelines (P = 0.001) (Table 5).

Table 5:

Facility Category and Availability of National Guidelines

Facility category	No	Yes	χ^2
			P value
Dispensary	29 (31.2%)	29 (31.2%)	0.001*
Health Centre	5 (5.4%)	7 (7.5%)	
Private Medical Clinics	1 (1.1%)	22 (23.7%)	

*Significant at $p \leq 0.05$

Association Between Health Facilities and Availability of National Guidelines

Regression analysis was further conducted for parameters that had a significant association in the chi-square test of independence. The regression analysis revealed that dispensaries were 22 times more likely not to have national guidelines as compared to medical clinics. Moreover, health centres were 15.71 times more likely not to have national guidelines as compared to private medical centres (Table 6).

Table 6:

Association Between Health Facilities and Availability of National Guidelines

Availability of National guideline ^a	B	P value	COR	95% Confidence Interval for COR	
				Lower Bound	Upper Bound
No					
Dispensary	3.091	.003	22.000	2.779	74.182
Health Centre	2.755	.019	15.714	1.561	58.211
Private Medical Clinics	0 ^b	.	.	.	.

a. The reference category is: yes.

b. Baseline category

Association Between Health Facilities and Treatment of Hypertension Guided by National Policies

A *chi*-square test was conducted to establish the association between health facilities and the treatment of hypertension guided by national policies. The health facility category was found to have a significant association with the treatment of hypertension guided by national policies ($P = 0.001$) (Table 7).

Table 7:
Facility Category and Treatment of Hypertension Guided by National Policies

Facility category (n)	Yes	No	χ^2 P value
Dispensary (58)	29 (50%)	29 (50%)	0.001*
Health Centre (12)	6 (50%)	6 (50%)	
Private Medical Clinics(23)	21 (91.3%)	2 (8.7%)	

*Significant at $p \leq 0.05$

Association Between Health Facilities and Treatment of Hypertension Guided by National Policies

A regression analysis was conducted to establish the association between health facilities and the treatment of hypertension guided by national policies. The results showed that dispensaries were 0.095 times less likely to treat hypertension while following guidelines as compared to Private Medical Clinics. Similarly, health centres were 0.095 times less likely to treat hypertension while following guidelines as compared to private medical centres (Table 8).

Table 8:
Association Between Health Facilities and Treatment of Hypertension Guided by National Policies

Treatment of hypertension guided by national policies ^a	B	P Value	COR	95% Confidence Interval for COR	
				Lower Bound	Upper Bound
Yes					
Dispensary	-2.351	.003	0.095	0.020	0.444
Health Centre	-2.351	.012	0.095	0.015	0.599
Private Medical Clinic	0 ^b	.	.	.	.

a. The reference category is: no

b. Baseline category

Association Between Health Facilities and Adjusting Swiftly Based on Guidelines Required

A *chi*-square test was conducted to establish the association between health facilities and adjusting swiftly based on the guidelines required. The health facility category was found to have a significant association with adjusting swiftly based on the guidelines required ($P = 0.001$) (Table 9).

Table 9:
Facility Category and Adjusting Swiftly Based on Guidelines Required

Facility category (n)	Yes	No	χ^2 P value
Dispensary (58)	1 (1.72%)	57 (98.28%)	0.001*
Health Centre (12)	0 (0%)	12 (100%)	
Private Medical Clinics(23)	17 (73.91%)	6 (26.09%)	

*Significant at $p \leq 0.05$

Association Between Health Facilities and Adjusting Swiftly Based on Guidelines Required

A regression analysis was conducted to establish the association between health facilities and facilities adjusting swiftly based on the guidelines required. The results revealed that dispensaries were 0.006 times less likely to adjust swiftly based on guidelines as compared to private medical Clinics. Similarly, health centres were 0.072 times less likely to adjust swiftly based on guidelines as compared to private medical centres (Table 10).

Table 10:
Association Between Health Facilities and Adjusting Swiftly Based on Guidelines Required

Facility adjusts swiftly based on guidelines required ^a	B	P Value	COR	95% Confidence Interval for COR	
				Lower Bound	Upper Bound
Yes					
Dispensary	-5.085	.001	0.006	0.001	0.055
Health centre	-22.815	.001	0.072	0.034	0.082
Private Medical clinics	0 ^b	.	.	.	.

a. The reference category is: no

b. Baseline category

DISCUSSION

The study findings show that 62.4% (n=58) had a national guideline in their facilities. Only 60.2% (n=56) and 19.4% (n=18) reported using the guideline and adjusting swiftly based on the guidelines required, respectively. The results of this study are in agreement with another study conducted in Congo which reported that only 51.7 % of primary healthcare facilities had guidelines on the management of hypertension (Lulebo et al., 2015).

Furthermore, Lulebo et al. (2015) reported that only a few healthcare facilities declared having used the guidelines for the management of hypertension. A slightly lower (52.9%) extent of adherence to treatment guidelines by healthcare workers was reported in a study conducted in Tanzania (Adinan et al., 2019). The current study observed differences in adherence to guidelines based on the type of healthcare facility. This finding is in agreement with the study in Tanzania which reported that 60.0%, 41.7%, and 52.6% of hospitals, health centres and dispensaries, respectively, reported regular adherence to treatment guidelines (Adinan et al., 2019).

The low guidelines utilization observed in this study could be attributed to a lack of awareness of their availability and importance by the healthcare workers. This is depicted by the fact that only a few healthcare workers had been provided with on-job training/refresher training on hypertension. In agreement with this study's finding, Wiedenmayer et al. (2021) reported that approximately a third of healthcare workers diagnosed and treated patients incorrectly and not in accordance with the standard treatment guidelines. In the study, health care workers explained seeking alternative information sources to make clinical decisions such as personal or senior colleague experience.

The reasons given for alack of guideline usage included resource availability, limitations which were caused by supply challenges and lack of familiarity or availability of guidelines

(Wiedenmayer et al., 2021). This implies that the quality of care and patient outcome may be compromised in primary healthcare facilities. Standard treatment guidelines can play a vital role in ensuring consistency of care and improving health outcomes (Kataria Golestaneh et al., 2021). Adherence to these guidelines can help reduce the likelihood of costly and preventable mistakes and adverse events (Kredo et al., 2016; Wiedenmayer et al., 2021). Moreover, they provide a reference point by which practitioners can review, compare, and improve the quality of care they deliver (Wiedenmayer et al., 2021). Therefore, it is crucial to ensure that treatment guidelines are readily available and known to healthcare workers in all health provision facilities. Although some facilities reported the availability of guidelines, a number of them reported that they were not using the guidelines.

Implementation of the policies requires adequate funding for the healthcare facilities. In congruence with the present study, a study conducted in Ghana noted that the national policy and strategy for non-communicable diseases (NCDs) have been in place for many years, however, their implementation has been inadequate due to insufficient resources and funding (Laar et al., 2019). The study further reported that the country's current funding priorities are on maternal and newborn health, as well as other infectious diseases. The study findings imply that though non-communicable diseases (NCDs) are nationally recognized as a major public health challenge, they are not given enough priority with the necessary funding. Additionally, the high extent of not following hypertension guidelines highlights the need for interventions that promote their utilization to prevent, detect, treat and control hypertension.

CONCLUSION

The significant association between healthcare facility category and national guideline availability, along with variations in mean scores, highlights the need for targeted interventions to address existing disparities

RECOMMENDATIONS

We recommend implementation of a systematic support framework, ensuring regular support supervision visits for all health facilities, prioritizing those lacking oversight for an extended period. Tailored interventions, particularly for private medical clinics with lower hypertension guideline scores, are essential. Establish a streamlined distribution system for national guidelines and initiate continuous capacity-building programs and facility-specific strategies to foster improvement in adherence across diverse healthcare facilities.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

AUTHORS CONTRIBUTION

- EK:** Conceived and designed the study
Wrote the proposal and sought relevant ethical approvals
Collected and analyzed data
Wrote the manuscript
- PA:** Critical review of the work
Approval of the manuscript for publication
- JM:** Critical review of the manuscript draft
Approved the manuscript for publication

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