Institutional Related Determinants Influencing Teamwork Among Healthcare Professionals Working In Intensive Care Unit At A Tertiary Referral Hospital In Kenya.

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Abstract
Introduction: Institutional factors are organizational measures that foster a collaborative environment. Effective healthcare delivery relies on clear structures that promote change and staff commitment. Leadership must balance authority with inclusivity to achieve patient-centered goals. Poor coordination undermines care delivery, especially in high-stakes settings like the intensive care unit (ICU), which demands efficient, well-supported systems.
Study objectives: The aim of this study was to assess the institutional related determinants that influence teamwork among healthcare professionals working in Intensive Care Unit at Kenyatta National Hospital, Kenya.
Methods: This was a mixed methods design study integrating quantitative data from a cross-sectional survey and qualitative data from Key Informant Interviews (KII). Structured questionnaires with closed and open-ended questions were used to collect data from a stratified sample size of 126 participants that included nurses, doctors, laboratory technologists, pharmacists, nutritionists and physiotherapists. Key Informant Interviews included eight in-charges and team leaders. The Team STEPPS Teamwork Perception Questionnaire (T-TPQ) was used to measure teamwork. Content analysis was done to identify key themes from qualitative arm. Significance was considered at p<0.05. SPSS version 26.0. was utilized for data analysis.
Results: The mean age was 37.8 (SD±8.7) years with majority 69% being female healthcare workers. Assessment of teamwork established that 58.7% rated teamwork in the intensive care unit as effective. Professionals who perceived effective teamwork reported significantly higher scores across all institutional-related factors compared to those who perceived ineffective teamwork. These included leadership support (30.45 ± 3.6 vs. 25.40 ± 6.2), situation monitoring (29.19 ± 2.9 vs. 24.85 ± 4.3), mutual support (29.9 ± 3.5 vs. 26.08 ± 4.7), and communication (31.74 ± 2.8 vs. 27.56 ± 3.9).
Conclusion: Teamwork in ICU was moderate which warrants the need for regular interprofessional training sessions that bring together healthcare providers from different disciplines to enhance collaboration and communication skills and implementation of training programs that empower healthcare providers to take on additional responsibilities and tasks, considering the limited workforce.
Keywords: *Teamwork, Institutional related determinants, Health care professionals*

I.   Introduction

Teamwork is defined as a set of interaction between two or more people who share an ideology or focus on achieving a common goal. Institutional factors are measures put in place by the organization to create a highly interactive environment.

Healthcare workers in ICU context work in extremely emotionally charged atmosphere which needs to be controlled to ensure that they remain focused to delivery of quality care (Aldawood et al., 2020;Fiske, 2018). Having a strong organization within any setting requires development of clear structures aimed at improving change and commitment of everyone within the setting. Thus, leadership is expected to develop a balance between authority and inclusivity aimed at meeting the set goals in delivery of patient centered care (Masten et al., 2019). ICU team leaders must openly address mistakes and challenges to build a culture without fear of reprisal for open and transparent discussion about potential problems (Blake & Prins, 2019).

A study in Uganda revealed that leadership approach influences the quality of teamwork among health care workers. Transformational leadership was positively correlated with motivation, job satisfaction, and team work, while transactional leadership was positively correlated with job satisfaction and teamwork (Musinguzi et al., 2018).

In Kenya, a recent study at KNH established that poor coordination among providers at various levels of the organization appears to affect the quality and safety of patient care. Lack of sync among providers causes delays in testing or treatment, conflicting information. Therefore, teamwork has become a focus of system-based interventions to improve patient safety and of medical education standards (Oliech, 2016).

The functionality of teamwork within ICU is fundamental to improved level of care although attaining effective team work is sometimes difficult. Key focus on the efficacy of care and the ability to achieve higher level of success presents improved level of focus (Ervin et al., 2018). Most health facilities do not have clear collaborative engagement structures which define teamwork and engagement (Oliech, 2016). The intensive care unit is an intense environment with very sick patients who more often than not require medical reviews by different specialties. Kenyatta National Hospital being a national referral facility receives many patients with variety of diagnoses for specialist care. Thus, this study will assess the institutional related determinants that influence teamwork among healthcare professionals working in Intensive Care Unit at Kenyatta National Hospital.

Lack of administrative support, coordinated leadership, lack of adequate resources and supplies among other factors can adversely interrupt teamwork among healthcare professionals which may contribute to long stays among patients, high hospital (Aldawood et al., 2020) (Chen, Y.,.2022). Kenyatta national hospital has implemented teamwork as a core quality measure in care delivery across different departments as well as multidisciplinary meetings which are organized regularly. However, as part of continuous quality improvement there is a need for evaluating the efficiency of these engagements. Therefore, this study presents the basis in identifying better processes that can be integrated within ICU workplace environment to improve efficiency and quality of care through teamwork.

II.   Materials And Method

Research Design

This was a mixed methods design study integrating quantitative data from a cross-sectional survey and qualitative data from Key Informant Interviews (KII).

Study Area

The study was conducted at Kenyatta National Hospital Intensive Care Unit. The hospital has a bed capacity of 2,400 beds and attends an annual number of 949,000 inpatients and 800,000 outpatients annually. With 50 wards, 24 out-patient clinics, 26 theatres, 82 ICU beds and an Accident & Emergency department. There various ICU spaces at Kenyatta National Hospital are designed to address the specific needs of critically ill patients across different age groups and medical conditions.

Target Population

The target population comprised of doctors, nurses, laboratory technicians, pharmacists, nutritionists and physiotherapists working at the main and medical ICUs. There are 131 healthcare professionals actively working in the intensive care units at any one time.

Sample Size Determination and Sampling Procedure

A complete enumeration approach was used for the quantitative survey, whereby all 131 healthcare providers working in the ICUs at the time of the study were targeted for inclusion. The distribution of healthcare workers in ICUs was as follows: Doctors (n=30), Nurses (n=80), Pharmacists (n= 5), Lab technologists (n=8), Nutritionists (n=4), Physiotherapists (n=4). All healthcare workers were approached and invited to participate if they met the inclusion criteria. The use of complete enumeration in the quantitative component allowed for maximal representation of ICU healthcare providers, enhancing the generalizability of the findings within this setting.

For the qualitative component, purposive sampling was used to recruit, 8 key informants, including team leaders: 2 nurses, 2 doctor team leaders and 1 lead representative each from the-physiotherapy, nutrition, pharmacy and laboratory cadres. Purposive sampling for the qualitative component ensured the inclusion of individuals with supervisory roles and specialized perspectives, which enriched the contextual understanding of ICU functioning.

After obtaining ethics approval from ethics and permission from KNH administration, the researcher and trained research assistants approached health care workers in the ICUs during their free periods or shift transitions to minimize disruption and maximize participation.

Selection Criteria
Inclusion Criteria
- Doctors, Nurses, Lab Technologists, Pharmacists, Nutritionists, Physiotherapists working in the Main and medical ICU at KNH
-Resident physicians working in the ICU
-Those who gave consent

Exclusion Criteria
-Healthcare providers who have joined ICU in the last three months

Research Instruments
The study used both quantitative and qualitative research methods. Qualitative data provided an opportunity for the in-depth analysis in regard to the study questions.

Team STEPPS Teamwork Perception Questionnaire (T-TPQ) is a tool developed by the Agency for Healthcare Research and Quality (AHRQ) in collaboration with the Department of Defense. The T-TPQ is a survey instrument designed to assess healthcare providers' perceptions of teamwork within their healthcare units or organizations.

The T-TPQ consists of 35 items that measure various dimensions of teamwork, such as communication, leadership, mutual support, and situational awareness. It is designed to be completed by healthcare providers, including physicians, nurses, and other staff members who work in interprofessional teams. The questionnaire gathers information about individuals' perceptions of teamwork and provides valuable feedback to identify areas of strength and areas that need improvement.

The T-TPQ has undergone rigorous psychometric testing and validation in various healthcare settings, demonstrating good reliability and validity. It has been used in research studies and quality improvement initiatives to assess and enhance teamwork in hospitals and other healthcare organizations.

The Key informant guide consisted of questions to guide in depth discussions on teamwork among the healthcare professionals in the ICU. These included questions on perceived barriers and facilitators of teamwork in the ICU.

Validity and Reliability
Validity of Instruments
Criterion validity ensures that measured variables are what's intended. The tool to be used – the teamwork perception questionnaire to be used is a validated tool for measuring teamwork. In addition, my supervisor, a field specialist, verified the instrument's validity to see if it matches the study's objective and if the question represents the desired response. A pre-testing study altered the questionnaire for efficiency. Cronbach's Alpha of 0.87 was obtained hence the tool was found to be reliable. A Cronbach alpha score of 0.7 is an acceptable coefficient, even though a higher number indicates a more trustworthy scale.

Reliability of Instruments
Reliability helps standardize research tools, which allows study results to be generalized. The researcher tested and retested research tools before application, analysis, and presentation.

The instrument's reliability was tested using half-split. Content-matched test items was separated into two parts and scored individually. The two halves correlated well (Cohen et al., 2007).

$$Reliability\ of\ the\ overall\ test = \frac{2\ x\ reliability\ for\ \frac{1}{2}\ tests}{1 + reliability\ for\ \frac{1}{2}\ tests}$$

Thus, the reliability in this study was obtained using the Pearson product moment correlation coefficient at 0.75 where it was deemed reliable.

Methods of Data Collection
Pre-testing of Instruments
Pretest is essential in providing a basis within which the questionnaire is assessed and evaluated. Pre-testing of the questionnaire was done to 10% (15) respondents at Prime Care intensive care unit. Doing the pre-testing study in another similar setting ensured that this sample was not included in the actual study. It enabled checking for any ambiguities and unclear questions in the questionnaires so they could be corrected.

Recruitment and consenting
Recruitment began after approval from KNH-UoN Ethics Review Committee, Permission from Kenyatta National Hospital administration. The principal investigator approached healthcare workers in ICU during the resting hours. Those who met the inclusion criteria were selected and issued with an informed consent form. The

principal investigator explained the consent form in details to eligible participants. This included, risks, benefits and the purpose of the study. Those who agreed to participate in the study were required to sign the consent form and enrolled into the study.

Data collection procedure

Only those who consented participated in the study. A structured questionnaire was employed as data collection tool. The study questionnaire was self-administered although research assistants were available to help incase respondents have any challenge while filling the questionnaire. Respondents were targeted at their free time in the resting room to ensure that they are not busy while filling the questionnaire. Re-appointments were made for those nurses that will not be available or busy. However, only those healthcare care workers who presented at the hospital on the days of data collection and willing to partake in the study were included in the study. The team leaders and in-charges were also approached for scheduling key informant interviews which were administered by trained research assistant using the interview guide once recruited.

Data Analysis

Data analysis was done objectively:

Quantitative data was coded, cleaned, and analysed using SPSS version 26.0. Descriptive data was presented as percentages for discrete variables, while continuous variables were presented as mean and standard deviation.

To assess the effectiveness of teamwork, the Team STEPPS Teamwork Perception Questionnaire was utilized. Negatively worded items were reverse-coded so that higher scores reflected stronger perceptions of teamwork. Total scores for each construct were calculated, summed, and converted into percentages. Participants scoring above 50% were classified as having effective teamwork. The team function was investigated using a Likert scale where 1 = strongly disagree, 2 = disagree, 3 = Neutral, 4 =agree and 5 = strongly agree.

Institutional related determinants of teamwork was analyzed inferentially. Student t-test and logistic regression analysis was also be done to explain the determinants of teamwork. The odds ratio was determined to determine the extent of the association between independent and teamwork using logistic regression. Content analysis was done to analyze the qualitative data which was developed into themes.

Ethical Considerations

Ethical clearance was sought from KNH-UoN Ethics Committee and Mount Kenya University Ethics committee prior to data collection. Participation of subjects was on voluntary bases and written informed consent was obtained from all respondents prior to participation in the study. Confidentiality was maintained at all times. An anonymous study numbers were assigned to each study subject. This was the only identification appearing on the study questionnaire. Participation in the study was voluntary, and no coercion was done. All the study participants had a right to withdraw at any time. Completed questionnaires were stored securely at all times.

III.   Results

A total of 131 healthcare professionals were targeted, a total of 126 questionnaires were completed and returned for analysis representing a 96% response rate. This included 63.5(80) nurses, 23.8% (30), lab technologists 6.3% (8), physiotherapist 3.2% (4) and nutritionists 3.2% (4).

The mean age among the healthcare providers was 37.8(SD±8.7) years with 55.6% (70) of providers being aged between 31 and 49 years. Majority 69% (7) of the providers were female while 51.6% (65) had undergraduate degree as their highest level of education. The average years of experience in the hospital was 10.0(SD±8.9) years while in ICU, the mean years of experience was 5.7(SD±4.5) years as shown in Table 1.

Table 1: Characteristics of healthcare professionals working in intensive care unit at a Tertiary Referral Hospital

	Frequency or Mean ±SD	Percent
Age (Mean ±SD)	**37.8±8.7**	
≤30 years	36	28.6
31 - 49 years	70	55.6
≥50 years	20	15.9
Gender		
Male	39	31.0
Female	87	69.0
Education level		
Degree	65	51.6
Diploma	10	7.9
Higher Diploma	45	35.7
Masters	6	4.8

Cadre		
Nurses	80	63.5
Doctors	30	23.8
Lab technologists	8	6.3
Physiotherapists	4	3.2
Nutritionists	4	3.2
Years of experience_general (Mean ±SD)	**10±8.9**	
≤1 year	15	11.9
2 - 5 years	49	38.9
6 - 10 years	11	8.7
>10 years	51	40.5
Years of experience in ICU (Mean ±SD)	**5.7±4.5**	
≤1 year	30	23.8
2 - 5 years	54	42.9
6 - 10 years	21	16.7
>10 years	21	16.7

Source: Field Data (2023)

Institutional related determinants that influence teamwork among healthcare professionals working in Intensive Care Unit at a Tertiary Referral Hospital

The overall mean score for teamwork was 29.4 (SD ± 4.2) and 58.7% (n=74) of participants classified as perceiving effective teamwork. Teamwork was assessed using the TeamSTEPPS Teamwork Perception Questionnaire (T-TPQ), scored on a 5-point Likert scale (total score 35 items- minimum 35, maximum 175), with negative items reverse-coded so higher scores reflected more positive perceptions. The overall mean was obtained by averaging these scores across participants. Composite scores were calculated by summing item responses and converting them to percentages; scores above 50% indicated effective teamwork.

Cultural aspects of teamwork were explored through both quantitative and qualitative components of the study. The T-TPQ included items reflecting accountability, information sharing, conflict resolution, and supervisory practices—dimensions that align with organizational and professional culture within Kenyan ICU settings. Additionally, key informant interviews with unit leaders provided context-specific insights into team dynamics, hierarchical structures, and communication norms shaped by local cultural expectations. These culturally influenced findings are integrated into the subsections on "Team Function," "Leadership," and "Institutional Factors."

Providers strongly agreed 48.4% (61) with the statement that, staff within their unit share information that enables timely decision making by the direct patient care team. Further, 48.4% (61) of the providers also strongly agreed with the statement that staff understand their roles and responsibilities. In Investigating whether the skills of staff overlap sufficiently so that work can be shared when necessary, 25.4% (32) strongly agreed with the statement as shown in Table 2.

Table 2: Team function among healthcare professionals

Team function	Strongly disagree n(%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)	Mean	SD
The skills of staff overlap sufficiently so that work can be shared when necessary	1(0.8)	3(2.4)	11(8.7)	79(62.7)	32(25.4)	4.10	0.7
Staff are held accountable for their actions	2(1.6)	2(1.6)	14(11.1)	57(45.2)	51(40.5)	4.21	0.8
Staff within my unit share information that enables timely decision making by the direct patient care team	1(0.8)	2(1.6)	8(6.3)	54(42.9)	61(48.4)	4.37	0.7
My unit makes efficient use of resources (e.g., staff supplies, equipment, information).	3(2.4)	4(3.2)	10(7.9)	55(43.7)	54(42.9)	4.21	0.9
Staff understand their roles and responsibilities.	1(0.8)	1(0.8)	13(10.3)	50(39.7)	61(48.4)	4.34	0.8
My unit has clearly articulated goals.	1(0.8)	4(3.2)	19(15.1)	52(41.3)	50(39.7)	4.16	0.9
My unit operates at a high level of efficiency.		10(7.9)	22(17.5)	49(38.9)	45(35.7)	4.02	0.9

Source: Field Data (2023)

Almost half of the providers 48.4% (61) strongly agreed with the statement that that their supervisor/manager considers staff input when making decisions about patient care. The findings also revealed that 26.2%(33) of the health works strongly agreed with the statement that their supervisor/manager takes time to meet with staff to develop a plan for patient care (M =3.91, SD =0.9) as shown in Table 3.

Regarding resource adequacy, 73% of participants agreed or strongly agreed that their supervisor/manager ensures the availability of adequate resources (e.g., staff, supplies, equipment, information),

while 11.9% disagreed or strongly disagreed, and 15.1% remained neutral. The mean score for this item was 3.95 (SD ± 1.0), suggesting a generally positive perception (Table 3). Nonetheless, the variation in responses highlights that perceived resource constraints—particularly in staffing or essential supplies—may still pose challenges to efficient team functioning and collaboration. While the survey did not specify which resource types were most limited, the inclusion of this item underscores the critical role of resource adequacy in enabling effective teamwork in ICU settings. Qualitative findings further reinforced this, with team leads citing high workload as barriers to effective collaboration and timely patient care.

Table 3: Leadership among healthcare professionals working in Intensive Care Unit

Leadership	SD n (%)	D n (%)	N (%)	A n (%)	SA n (%)	Mean	SD
My supervisor/manager considers staff input when making decisions about patient care.	2(1.6)	3(2.4)	13(10.3)	47(37.3)	61(48.4)	4.29	0.9
My supervisor/manager provides opportunities to discuss the unit's performance after an event.	2(1.6)	5(4.0)	23(18.3)	53(42.1)	43(34.1)	4.03	0.9
My supervisor/manager takes time to meet with staff to develop a plan for patient care.	3(2.4)	8(6.3)	19(15.1)	63(50.0)	33(26.2)	3.91	0.9
My supervisor/manager ensures that adequate resources (e.g., staff, supplies, equipment, information) are available.	4(3.2)	11(8.7)	19(15.1)	45(35.7)	47(37.3)	3.95	1.0
My supervisor/manager resolves conflicts successfully.	2(1.6)	5(4.0)	20(15.9)	60(47.6)	39(31.0)	4.02	0.9
My supervisor/manager models appropriate team behaviour.	4(3.2)	4(3.2)	21(16.7)	53(42.1)	44(34.9)	4.02	1.0
My supervisor/manager ensures that staff are aware of any situations or changes that may affect patient care.	3(2.4)	4(3.2)	13(10.3)	59(46.8)	47(37.3)	4.13	0.9

Source: Field Data (2023)

An independent sample t-test was done to investigate whether there are differences in teamwork across key institutional related factors, leadership, situation monitoring, mutual support and communication. The findings showed that there was statistically significant difference among professionals who perceived effective teamwork vs professionals who perceived ineffective teamwork in all institutional related factor, leadership [(30.45±3.6) vs 25.40±6.2)], situation monitoring [(29.19±2.9 vs 24.85±4.3)], mutual support [(29.9±3.5 vs 26.08±4.7)] and communication [(31.74±2.8 vs 27.56±3.9)]. The differences were statistically significant as shown in Table 4.

Table 4: Institutional related determinants of influence teamwork among healthcare professionals working in Intensive Care Unit

Institutional factors	Teamwork		t-statistic	P-value
	Effective	**Ineffective**		
Leadership	30.45±3.6	25.40±6.2	5.735	<0.001
Situation monitoring	29.19±2.9	24.85±4.3	6.775	<0.001
Mutual support	29.9±3.5	26.08±4.7	5.275	<0.001
Communication	31.74±2.8	27.56±3.9	7.044	<0.001

Qualitative analysis of institutional related determinants of teamwork

The findings from qualitative analysis established that institutional factors play a fundamental role in influencing teamwork within critical care unit. The key institutional related factors influencing teamwork as identified by the key informants who were included in the study included policies and standard procedures, coping with complex multi-disciplinary patient cases.

Sub-theme 1: Policies and standard procedures

Most of the healthcare providers 60(%) affirmed that the hospital has integrated policies and standard procedures that have been crucial in enhancing teamwork.

"In critical care, we work with professionals from different disciplines. Having guidelines for interdisciplinary collaboration ensures that we leverage each other's strengths effectively. It promotes a sense of unity among different specialties." **KII Participant 1.**

"Having clear communication protocols is crucial. It ensures that everyone knows how and when to communicate important information. This is particularly vital in a critical care unit where timely and accurate information can make a significant difference." **KII Participant 3.**

"Regular team training sessions are beneficial. Policies that mandate ongoing training help us stay sharp. It's an opportunity to practice communication, simulate scenarios, and refine our teamwork skills, so we're better prepared for real-life situations." **KII Participant 6.**

"Conflict is inevitable, but having guidelines for resolving conflicts constructively is essential. It prevents disagreements from escalating and ensures that conflicts are addressed in a way that doesn't undermine the overall teamwork and patient care." **KII Participant 8.**

However, some of the participants 30(%) stated that even though there have been policies and procedures aimed at shaping teamwork, most of them are not overly utilized which create a major gap limiting quality of care.

"While we have communication protocols in place, there's resistance to using them consistently. Some team members 10(%) find them too rigid, and as a result, crucial information doesn't always get communicated as efficiently as it should." **KII Participant 3.**

"The idea of shared decision-making is great, but not everyone is on board. Some providers, especially those with more experience, still prefer a more traditional top-down approach to decision-making. It creates a divide in the team." **KII Participant 5.**

"We have policies for conflict resolution, but they don't seem to be working. There's hesitancy to address conflicts head-on, and when conflicts do arise, they often linger without a clear resolution. It's impacting team dynamics." **KII Participant 6.**

"Mandatory debriefings are in place, but not everyone adheres to them. Sometimes, due to time constraints or perceived urgency, we skip these sessions. It means missed opportunities to learn from our experiences and improve as a team." **KII Participant 8.**

"When we're overwhelmed with a heavy workload, communication suffers. There's less time for team huddles or updates, and critical information might get lost in the chaos. This breakdown in communication can compromise patient care." **KII Participant 6.**

Subtheme 2: Coping strategies with ineffective teamwork

Despite these challenges in attaining effective teamwork, the participants identified varied coping measures that can be employed and some of which they have been using to improve efficiency and commitment to patient cantered care. The common coping strategies that were identified include open communication channels, utilize team-based approach to care, encourage peer support and have regular debriefing sessions.

"I find that open communication is key. When things get tough, I encourage team members to speak up about their challenges or concerns. It creates a supportive environment where we can address issues before they escalate." **KII Participant 3.**

"I've learned to appreciate the power of a team-based approach. Rather than trying to handle everything on my own, I actively seek input from other team members. It promotes collaboration and ensures that we're leveraging everyone's strengths." **KII Participant 5.**

"Encouraging peer support is a coping strategy I've found valuable. We've established a culture where team members can lean on each other for emotional support. It helps us navigate the emotional toll that critical care can take." **KII Participant 6.**

"After particularly challenging cases, we make it a point to have debriefing sessions. It's a time for reflection and allows us to share our thoughts and emotions. These sessions help us process difficult situations together." **KII Participant 8.**

IV. Conclusion, Discussion, & Recommendations
Characteristics of healthcare professionals working in intensive care unit at a Tertiary Referral Hospital

The study investigated the determinants of teamwork among healthcare professionals working in intensive care unit at Kenyatta National Hospital. Teamwork plays a fundamental role in helping streamline the delivery of patient centered care. The findings revealed that the average age of healthcare providers in ICU was 37.8 years with majority of them aged between 31 and 49 years. Majority of the healthcare providers in ICU were female (69%). These findings are comparable to a descriptive study in Iran which revealed that the average age of healthcare workers in ICU was32.7 years and 79% of the healthcare workers in the ICU were female (Nobahar et al., 2023). Healthcare workers in the age range of 31 to 49 years may represent a group with a mix of experience and expertise. They may have gained valuable clinical skills and knowledge through years of practice. The higher proportion of women among healthcare workers in ICU could be due to the assertion that women have historically been well-represented in healthcare professions, and this trend continues. In many countries, women constitute a significant portion of the healthcare workforce, including those working in critical care (Low et al., 2018).

Teamwork among healthcare professionals working in Intensive Care Unit

The study revealed that 59% of the healthcare providers in ICU perceived effective teamwork while 41% perceived ineffective teamwork. The major aspects that were well understood and formed key basis of teamwork among healthcare providers included understanding key roles and responsibilities, information sharing within their unit, provision of supplies and accountability. However, it is worth noting that considering the sensitive nature of ICU environment, higher level of teamwork would be vital in improving the wellbeing of patients. These findings are comparable to those from a study in Greece which revealed that responders, in general, valued teamwork as crucial for the performance of ICU. However, the study revealed a relative low consensus regarding the level of teamwork within each unit and inadequate collaboration between certain departments and ICU (Kydona et al., 2010). Further, these findings are consistent with those from a study in United States which established that information sharing and decision making processes are key in team work within the critical care environment (Ervin et al., 2018).

However, these findings from the study present a better teamwork rating among healthcare providers compared to those from a study in United States which established that there was a disjoint and diverse opinion regarding the level of teamwork and collaboration in Intensive care between healthcare providers. Nurses consistently gave more negative responses on every survey question than junior doctors. While nurses said that the amount of collaboration was inadequate, junior doctors were satisfied and views between groups were most divergent on questions about overall satisfaction with team decisions (Nathanson et al., 2011). The difference could be due to the set operational guidelines regarding shared decision making for improved patient wellbeing. Inability to integrate shared decision-making limits the overall commitment to patient needs which are highly compromised in a disorganized ICU environment.

Institutional related determinants that influence teamwork among healthcare professionals working in Intensive Care Unit

Institutional factors are essential in streamlining the workplace environment. The findings from present study showed that leadership, situation monitoring, mutual support and communication were determinants of effective teamwork among healthcare providers. Higher rating of existing leadership, situation monitoring, mutual support and communication are fundamental in maintaining a high level of teamwork. Strong and effective leadership is crucial for guiding the healthcare team in the ICU. Leaders set the tone for collaboration, decision-making, and overall team dynamics. Shiundu et al. (2019) maintained that leadership help build a strong teamwork because every individual within the team understood what need to be done and promote efficiency. Another study in Saudi Arabia established that trust and accountability are key components of situational monitoring which enhance teamwork (Babiker et al., 2014). These findings illustrate that building a cohesive team where members provide mutual support is essential. This involves collaboration, shared responsibilities, and a culture where team members look out for one another. Thus, it is important for healthcare organizations to prioritize and invest in training programs, leadership development, and a culture that promotes effective teamwork in the ICU (Etherington et al., 2021). Regular assessments and feedback mechanisms can help identify areas for improvement and ensure ongoing excellence in patient care.

Policies and underlying standard procedures have been imperative in helping build a more cohesive and stronger environment which help create a highly effective working environment. Ervin et al (2019) emphasized that professional guidelines recommend intensivist-led care for all ICU patients, although not all ICUs in the United States conform to this standard. The intensivist's role seems to be diminishing in light of the growing acceptance of the interprofessional care model, as interprofessional providers have acquired specialized knowledge and are assuming a more involved role in patient care, thereby distributing medical decision-making responsibilities among the members of the care team. Furthermore, the heightened utilization of protocols and various communication platforms has diminished the necessity for treatment directed by intensivists.

Although a majority (73%) of participants agreed that their supervisors ensured the availability of adequate resources, nearly one in four expressed neutrality or disagreement (mean = 3.95, SD ± 1.0), signaling that perceived resource constraints still affect team functioning. This interpretation is supported by qualitative findings, where team leads described high workloads affecting collaboration in the ICU. These findings align with broader literature indicating that staffing shortages and excessive workload impair teamwork and hinder implementation of new practices in healthcare settings (McGuier EA et al., 2024, Zajac S et al.,2021).

Conclusion

Institutional factors were identified to have major influence on teamwork among healthcare workers with leadership, communication, situation monitoring and mutual support being key determinants of effective teamwork in intensive care unit.

Recommendations

Implement training programs that empower healthcare providers to take on additional responsibilities and tasks, considering the limited workforce.

Utilize simple and effective communication tools that are accessible even in low-resource settings. This might include standardized checklists, handover forms, or communication boards.

Encourage a culture of shared leadership, where responsibility and decision-making are distributed among team members.

Data availability:

The data that was generated to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

Declarations: Ethical clearance was sought from KNH-UoN Ethics Committee and Mount Kenya University Ethics committee prior to data collection.

Consent for publication- not applicable

Competing interests

Authors declare that they have no competing interests

Authors contributions

All authors read and approved the final manuscript

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