Intensive care Nurses' Perception and Practice Regarding Key Performance Indicators

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Abstract

Background: Intensive care nurses' performance is defined, measured, and indicated by key performance indicators, which also help identify areas of weakness. The key performance indicators for intensive care is a clear performance metric used to track, evaluate, and improve all pertinent nursing care procedures for the highest quality of patient care. Aim: asses intensive care nurses' perception and practice regarding key performance indicators. Design: descriptive research design was used in the current study. Setting: the study was conducted at Tanta International Teaching Hospital. Subjects: All (120)registered nurses. Tools: Two tools were used; Tool I: Intensive Care Nurses' perception Questionnaire about key performance indicators, Tool II: Key Performance Indicators' observational checklist were used to collect the data. **Results:** none (0.0%) of the nurses had a high level of perception regarding Key performance indicators. Similarly, none (0.0%) of the nurses had a satisfactory level of overall practice regarding Key performance indicators. **Conclusion:** there was a statistically significant positive correlation between intensive care nurses' and their practice regarding key performance indicators. perception Recommendations: Periodically in-service training program was required enhance intensive care nurses' perception and practice regarding key performance indicators.

Keywords: Key performance indicators, Intensive care nurses, Perception, Practice.

Introduction

Intensive care nurses serve as primary caregivers for critically ill patients. Throughout patient care, they must be able to evaluate all the information that is offered, make decisions, and swiftly administer appropriate and workable treatments. A registered nurse with specific training in critical care is referred to as an intensive care nurse, or critical care nurse. These highly qualified individuals care for patients who have life-threatening illnesses or need ongoing monitoring and intervention in the intensive care unit (Yang, Huang & Chen, 2019).

Intensive Care Units are specific hospital units created to offer patients with serious or life-threatening illnesses and disorders with care and close observation. For patients in need of life-saving treatment, such a unit is open around-the-clock. Intensive care units are vital, complex, and everchanging settings. Intensive care nurses must have extraordinary abilities and the capacity to make well-informed decisions prompt. since the intensive care unit is a very stressful environment. In fact, these advanced units have medical equipment and qualified nurses to continually monitor and care for critically ill patients. It is crucial to regularly monitor and measure the performance indicators of care offered in intensive care unit since it offers vital services that can save the lives of critically ill patients (Jebraeily, Hasanloei, & Rahimi & Saeideh, 2019).

The performance of the intensive care unit was evaluated by analyzing clinical outcome indicators and resource utilization, including mortality, infection, duration of stay, and expenses, re-admission. are analyzed to assess the functioning of the intensive care unit. To enhance the quality of care and patient safety, nurse leaders and practitioners must obtain pertinent information quickly. are numerous tools and There techniques available for precise and ongoing performance evaluation in various healthcare organization units. These tools and methods can compare unit performance with predetermined performance and detect goals performance deviations. Kev indicators are one of these tools (Nouira et al., 2018).

To monitor and enhance the quality of care, Key Performance Indicators have become an essential component organizations, healthcare of particularly intensive care units. Key performance indicators are essential instruments in this regard, providing quantifiable figures that demonstrate the efficacy, efficiency, and caliber of treatment provided (Ismail, Ahmed, & Youssef, 2024). The measurement provides a chance to track actual performance rather than indicating the existence of a performance issue. Thus, the foundation of ongoing process and system performance improvement in intensive care units is a culture of monitoring and continual measurement (Alhabdan, Alyaemni, Aljuaid, Baydoun, & Hamidi, 2023). These Key performance indicators are crucial instruments that help nurses and nurse administrators make better decisions, allocate resources more effectively. and ultimately enhance the health of

patients (Wunsch, Osborn, & Rowan, 2020).

A variety of metrics are included in the Key performance indicators, ranging from operational efficiency indicators like bed utilization and number of nurses to clinical outcomes indicators like deaths and duration of stay. Intensive care nurses can identify patterns, pinpoint areas that need improvement, and put plans into action to improve patient outcomes and intensive care unit performance by methodically analyzing these Key performance indicators. (Fernando, 2018; Rewa et al., 2018).

To guarantee the highest level of care, performance assessment and evaluation are essential due to the intricacy and high stakes of intensive care unit care. Intensive care units' performance can be methodically evaluated and improved by Performance incorporating the Assessment Tool for Quality Improvement in Hospitals framework. This will match the intensive care unit the highest standards with of healthcare delivery by emphasizing specific dimensions such as clinical effectiveness, health efficiency, patientresponsive governance. centeredness, patient safety, and staff professional development (Mesarić et al., 2011).

Firstly. clinical effectiveness emphasizes dimension which achieving favorable patient health outcomes as measured by rates of readmission, death rates, and duration of mechanical ventilation (Seyfert, Friedrich-Rust, Koster-Hale, & Von der Hardt, 2020). Secondly, health efficiency implies making efficient and prudent use of resources while obtaining the best results for patients. dimension's This Kev performance indicators include tracking resource utilization rates and expenditures per patient stav (Birkhoff, Smith, Cherniw, & 2020). Thirdly, responsive governance, sustainable success is built on a foundation of great leadership and continual a improvement of culture. Nurse satisfaction, incident reporting rates, and the promptness of action taken following unfavorable incidents are the main Key performance indicators here (Kim, Park, & Bae, 2021).

Fourthly. centeredness patient highlights how to identify and incorporate patient values, needs, and preferences into therapeutic decisionmaking. This dimension's Key performance evaluate indicators things like family participation in decision-making, communication styles, and patient satisfaction (Shah, Zimmerman, & Ely, 2022). Fifthly, patients' safety refers to the avoidance of patient injury during the delivery of This dimension's Key care. performance indicators cover а variety of procedures, such as proper medicine delivery, preventing hospital-acquired infections, and lowering healthcare errors (Carson, Ely, Hopkins, Martin, & Smith, 2019). Finally, staff professional development focuses on assisting nurses in gaining new information and abilities that will improve their performance and allow them to progress in their careers. Kev performance indicators in this area evaluate prospects for ongoing learning, competency assessment, and

nursing education (**Pronovost**, **Marsteller**, & Goeschel, 2017) Significant of the study

Many healthcare professionals often overlook factors such as prolonged length of stays, frequent complaints service receivers. from and readmissions shortly after discharge. Even when faced with service quality complaints, most hospital management teams dismiss them, believing their organization is errorfree, and their response is often slow. This issue arises because they lack a sufficient understanding of care indicators that help identify manage, track. weaknesses and modify, monitor. evaluate. and healthcare transform process performance. This understanding is crucial to ensure safety, efficiency, effectiveness, quality, and increased satisfaction for both patients and providers, ultimately leading to better clinical outcomes. Key performance indicators can help hospital management visualize both quantitative and qualitative data, operational aiding in both and strategic decision-making. (Fallahnezhad, Langarizadeh, &

Vahabzadeh, 2023).

Therefore, assessing intensive care nurses' perception and practice regarding key performance indicators is of paramount importance.

Aim of the study

Assess intensive care nurses' perception and practice regarding key performance indicators

Research questions

1. What are the levels of intensive care nurses' perception regarding key performance indicators?

2. What are the levels of intensive care nurses' practice regarding key performance indicators?

Subjects and method Study design

Descriptive research design was utilized to accomplish the aim of the present study.

Setting

The present study was conducted at Tanta International Teaching Hospitals, which affiliated to Minister of Higher Education and Scientific Research in Intensive Care Units including (Anesthesia, Neonates, Medical, Cardiac, Pediatric and Burn). Bed capacity was 465 beds.

Subjects

The study's subjects consisted of all (n = 120) intensive care nurses who worked in the previously mentioned settings at time of data collection.

Tools

Three tools were used to accomplish the aim of this study including:

Tool I: Nurses' Key Performance Indicators' Perception This tool **Ouestionnaire** was developed by the researcher guided by Veillard (2013); Alraimi, & Shelke (2023); Cariniet al., (2020) this tool was used to assess the intensive care perception nurses' about kev performance indicators. It included the following two parts:

Part one: Intensive care nurses' personal data included age, gender, marital status, years of experience and unit name, levels of education, receive training before about key performance indicators.

Part two: It included 91 items. It was divided into six dimensions as follows; clinical effectiveness dimension (13items), health

efficiency (15 items), responsive governance (19 items), staff orientation (15 items), patient centeredness (15 items), and safety (14 items).

Scoring system

Responses of intensive care nurses were measured on five points Likert Scale ranging from strongly agree= (5), agree = (4), Neutral= (3), disagree = (2) to strongly disagree = (1) which concluded to three points where strongly agree, agree equal agree and strongly disagree, disagree equal disagree. The total score was calculated by summing all categories and classified into levels according to cut-off points as follows:

- High perception about key performance indicators $\geq 75\%$
- Moderate perception about key performance indicators > 60 % 75%
- Low perception about key performance indicators ≤60%

Tool II: Nurses' Key PerformanceIndicatorsObservationalChecklist

This tool was developed by researcher Schwirian guided by (1981), Battersby, Hemmings (2000) & Cariniet al, & Specchia, (2020). It used to assess the intensive care nurses' practice for key performance indicators. It included 111 items. It was divided into six dimensions as follows: clinical effectiveness dimension (26items), health efficiency (21 items), responsive governance (13)items). staff orientation (16 items). patient centeredness (17 items), and safety (18 items).

The scoring system

Intensive care nurses' practice of key

performance indicators was measured on a two points Likert scale ranging from done = 1 to not done = 0. The total scores were calculated by summing all categories and classified into levels according to cut-off points as follows:

- Satisfactory practice $\geq 80\%$.
- Unsatisfactory practice < 80%.

Method

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- 1. Official permission outlining the study's purpose was obtained from the Faculty of Nursing and submitted to the responsible authorities at Tanta International Teaching Hospital to secure approval for conducting the study.
- 2. The purpose of the study was explained and made clear to the intensive care nurses to gain their cooperation.
- 3. Ethical consideration
- Approval of the Faculty of Nursing scientific research ethical committee was obtained, (Code. No: 107/10/ 2022).
- The researcher introduced herself to the participants, a comprehensive explanation of the study's purpose and methods was done to obtain their acceptance and cooperation as well as their informed consent.
- Participants were assured of their right to withdraw from the study and terminate their participation at any time, with full respect for their decision.
- The researcher ensured that the nature of the study did not cause any harm to any of the participants.
- Assuring the nurses about privacy and confidentiality of collected data.

- **4.** Tools of the study were developed by researcher based on related literature and translated into Arabic language.
- 5. Tools were tested for their content validity and relevance by Jury of seven experts and their comments were taken into consideration. The seven experts were four professors and one assistant professor of Nursing Administration, Faculty of Nursing, where two professors of Critical Care Nursing, Faculty of Nursing, Tanta University.
- 6. The experts' responses were represented in four points rating scale ranging from (1-4); 1=not relevant, 2= little relevant, 3= relevant, and 4=strongly relevant. Necessary modifications were including made clarifying, simplifying certain words, excluding certain questions and others. adding The content validity index value for tool (I) =99.3% and tool (II) = 99.7%
- 7. A pilot study conducted on 10% (n=12) of intensive care nurses for clarity and applicability of tools. They weren't excluded from the total study subjects to ensure that the data collected is comprehensive and reflective of the entire sample. The time taken for completing each tool was 20-30 minutes. A pilot study was carried out after the experts' opinion and before starting the actual data collection.
- 8. The reliability of tools was tested using Cronbach Alpha Coefficient test, its value for tool (I) = 0.988, and tool (II) = 0.983, indicating high reliability of the study tools.

- **9.** The tools (I, II) distributed by researcher on the subjects in their work setting, the subjects answered the questionnaires in the presence of the researcher.
- **10.**Data collected within six months from the beginning of August 2023 to the end of January 2024.

Statistical analysis of the data

The data analysis was conducted using IBM SPSS software version 20.0 (Armonk, NY: IBM Corp, released 2011). Categorical data were presented numbers and as percentages. For continuous data, normality was checked using the Kolmogorov-Smirnov test. Quantitative data were described using the range (minimum and mean, maximum), and standard deviation. Results were considered significant at the 5% level. The tests used included the student's t-test for comparing two groups with normally distributed quantitative variables, the F-test (ANOVA) for comparing more than two groups with normally distributed quantitative variables, and the Pearson correlation coefficient for assessing the relationship between two normally distributed quantitative variables.

Results

Table (1) Shows the distribution of nurses according to their personal characteristics. Regarding age, more than half (56.7%) of nurses fell within the 26-30 age range and 28.3% were older than 30. The average age of the nurses was 28.87 ± 2.90 years, with the youngest being 24 years old and the oldest 35 years old. Regarding sex, the majority (89.2%) of them were female. Regarding marital status, 79.2% of the nurses were married.

Nearly two thirds (65%) of the nurses had between 3 and 8 years of experience and 24.2% had less than 3 years. The mean years of experience was 5.10 ± 2.84 years, with the least experienced nurse having 1 year and the most experienced nurse having 11 years. Considering the unit they worked in, the largest group (40.8%)worked in the neonatal unit, followed by the cardiac unit (16.7%), while smaller numbers worked in the pediatric (14.2%),Medical ICU (12.5%), anesthesia (12.5%), and burn units (3.3%). All (100%) nurses didn't receive training before about Key performance indicators.

Table (2): Displays mean scores, standard deviation, and ranking of nurses' perception regarding key performance indicators dimensions. noticed. the highest mean As perception score is for responsive governance, with a mean score of 32.04 ± 5.39 , ranking first. On the other hand. the lowest mean perception score for clinical is

effectiveness, with a mean score of 21.64 ± 4.56 , ranking sixth.

Table (3): Displays mean scores, standard deviation, and ranking of nurses' practice regarding key performance indicators dimensions. It was observed that the highest mean score is for clinical effectiveness, with a mean score of 8.07 ± 2.13 , ranking first. Conversely, the lowest mean score is for Staff Orientation, with a mean score of 3.48 ± 1.79 , ranking sixth.

Figure (1): Illustrates that none (0.0 %) of nurses had a high level of perception regarding key performance indicators.

Figure (2): presents that none (0.0 %) of nurses had satisfactory level regarding overall practice regarding key performance indicators.

Figure (3): Shows that there was statistically significant positive correlation between intensive care nurses' perception and their practice regarding key performance indicators $(P = 0.045^*, r = 0.183^*)$.

Personal data	No.	%			
Age (years)					
<26	18	15.0			
26 - 30	68	56.7			
>30	34	28.3			
Min. – Max.	24.0 -	35.0			
Mean ± SD.	28.87 ±	2.90			
Gender					
Male	13	10.8			
Female	107	89.2			
Marital status					
Married	95	79.2			
Unmarried	25	20.8			
Years of experience					
<3	29	24.2			
3 – 8	78	65.0			
>8	13	10.8			
Min. – Max	1.0 – 1	1.0			
Mean ± SD	5.10 ± 2.84				
Unit Name					
Medical ICU	15	12.5			
Anesthesia	15	12.5			
Pediatric	17	14.2			
Burn	4	3.3			
Cardiac	20	16.7			
Neonate	49	40.8			
Level of education					
Baccalaureate degree	102	85.0			
Postgraduate studies	18	15.0			
Receive training before about Key					
performance indicators					
No	120	100.0			
Yes	0	0.0			

Table (1): Distribution of nurses according to their personal characteristics and work-related data (n = 120)

SD: Standard deviation

Table	(2):	Mean	scores,	standard	deviation,	and	ranking	of	nurses'
perception about key performance indicators dimensions (n=120)									

Intensive care nurses' perception		Score range	Total score		Average score	
regarding key performance indicators dimensions	No of items		Min. – Max	Mean ± SD	Mean ± SD	Ranking
Clinical effectiveness	13	(13 - 65)	14.0 – 35.0	21.64 ± 4.56	1.66 ± 0.35	6
Health efficiency	15	(15 – 75)	15.0 - 40.0	25.04 ± 4.68	1.67 ± 0.31	4
Responsive governance	19	(19 - 95)	20.0 - 54.0	32.04 ± 5.39	1.69 ± 0.28	1
Staff orientation	15	(15 - 75)	17.0 - 44.0	28.28 ± 5.31	1.89 ± 0.35	2
Patient-centeredness	15	(15 - 75)	18.0 - 52.0	26.90 ± 5.19	1.79 ± 0.35	3
Safety dimension	14	(14 – 70)	15.0 - 39.0	24.37 ± 4.86	1.74 ± 0.35	5
Overall	91	(91 – 455)	129.0 – 251.0	158.27 ± 16.46	1.74 ± 0.18	

Table (3): Mean scores, standard deviation, and ranking of nurses' practice about key performance indicators dimensions (n=120)

Intensive care nurses' practice			Tota	l score	Average score		
regarding key performance indicators dimensions	No of items	lo of Score tems range	Score range	Min. – Max	Mean ± SD	Mean ± SD	Ranking
Clinical effectiveness	26	(0-26)	4.0 – 13.0	8.07 ± 2.13	0.31 ± 0.08	1	
Health efficiency	21	(0-21)	0.0 - 11.0	3.74 ± 2.12	0.18 ± 0.10	4	
Responsive governance	13	(0-13)	1.0 – 9.0	4.38 ± 1.52	0.34 ± 0.12	3	
Staff orientation	16	(0-16)	0.0 - 9.0	3.48 ± 1.79	3.48 ± 1.79	6	
Patient- centeredness	17	(0-17)	0.0 - 10.0	3.49 ± 1.91	3.49 ± 1.91	5	
Safety dimension	18	(0-18)	1.0 – 13.0	5.59 ± 1.78	0.31 ± 0.10	2	
Overall	111	(0-111)	19.0 - 57.0	28.76 ± 5.12	0.26 ± 0.05		



Figure (1): Levels of intensive care nurses' overall perception regarding key performance indicators (n = 120)



Figure (2): Levels of intensive care nurses' overall key performance indicators practice (n = 120)



Figure (3): Correlation between intensive care nurses' perception and practice regarding key performance indicators (n = 120)

Discussion

The evaluation of key performance indicators for nurses in intensive care units is essential to guaranteeing excellent patient care and maximizing clinical outcomes. Key performance indicators including infection rates, duration of stay, fatality rates, and evidence-based adherence to offer important treatments information about how well nursing interventions work and how well the ICU performs overall. These metrics useful for both comparing are performance against predetermined standards and pinpointing areas that require improvement. Kastrup et al., (2024) key performance indicators are intended to assist healthcare organizations assessing in their performance in relation to their goals and objectives. Healthcare organizations may find areas for improvement, make wise decisions,

and monitor their success over time by routinely monitoring key performance indicators. **Sreedharan, et al., (2024)**. Therefore, the study aims Assess intensive care nurses' perception and practice regarding key performance indicators.

Regarding intensive care nurses' perception of key performance indicators, none of nurses had a high level of overall perception regarding key performance indicators. This may be because they haven't received enough instruction on the value and use of Key performance indicators in their day-to-day work. Furthermore, there is a lack of knowledge on key performance indicators and how they affect hospital performance and patient care. Activities related to patient care are frequently given administrative precedence above measures by nurses. Additionally, leadership there is lack of a

communication regarding the significance of key performance indicators and how nursing practice include them. should Finally. opposition and resistance to new procedures or changes, including the use of key performance indicators. Key performance indicators haven't been a part of nurses' everyday tasks. This result is similar to the result of the study done by Ngxongo and Masondo (2022); Gu & Itoh (2016) who reported that nurses had a low perception key performance of indicators.

Regarding intensive care nurses' practice of kev performance indicators. nurses had none of satisfactory level regarding overall practice regarding dimensions of key performance indicators. This may be due to a lack of a theoretical base of nurses. necessary resources and support and time constraints for nurses to successfully implement Key performance indicators. This finding is supported by Ghofrani., et al Key (2023)found that while performance indicators were recognized, their practical application was often lacking as a result of insufficient training and unclear guidelines. Besides, Hakami, (2023) found that there were shortcomings in their use of care indicators in practice, which affected the standard level of nursing care. Also, Ngxongo and Masondo, (2022) revealed that nurses faced challenges with the utilization of Key performance indicators. In addition. Gray, McCance, and Brown, (2021) found that nurses did apply the key performance not indicators and there was a shortage of resources and support. Moreover, **Parmenter (2020),** found that the process of advancing Key performance indicators is intricate, which can be very tough for most organizations and practical guidelines are not readily accessible.

Conversely, **Patrick et al., (2023)** was against the current results and found that nurses had Key performance indicators in place related to the work performed by the staff members.

Correlation between intensive care nurses' perception and practice about key performance indicators

The findings of the current study showed that statistically significant positive correlation was detected among nurses' perception about key performance indicators and their practice, this may be justified nurses perceive Key performance indicators positively, they are more likely to be engaged and motivated, leading to better adherence to protocols and higher quality of care. And when nurses understand and agree with these indicators, they can align their efforts more effectively, resulting in improved performance. Additionally, perceptions positive of Kev performance indicators often stem from viewing them as tools for feedback and improvement rather than mere evaluation, encouraging continuous learning and professional development. This result agrees with the study done by Ghofrani et al., (2023)found that а better understanding of these indicators among nurses positively influenced overall performance. Also, Gray, McCance, and Brown, (2021) found a statistically significant positive correlation between nurses' understanding of Key performance indicators and their practical application in healthcare settings. **Conclusion**

Based on the findings of the present study it was concluded that none (0.0%) of the nurses had a high level perception regarding of kev performance indicators. Similarly, none (0.0%) of the nurses had a satisfactory level of overall practice performance regarding key indicators .There was a statistically significant positive correlation between nurses' intensive care perception and their practice regarding key performance indicators.

Recommendations

On the line of the findings of the current study the following recommendations are suggested for:

Hospitals administrators

- Arrange an orientation program for the preparation of newly hired nurses about performance measurement methods.
- Conduct frequent key performance indicators training sessions for ICU nurses to ensure understanding the significance, measurement, and application of key performance indicators in clinical settings.
- Implement Key performance indicators into quality improvement initiatives and hospital practices.

Nurse Manager

- Holding regular seminars and workshops to educate IC nurses about the significance of key performance indicators for improving patient outcomes.
- Involve experienced nurses or mentors to help nurses in comprehending key performance indicators and implementing them in their daily work.

- Provide nurses with constructive feedback on their performance in relation to key performance indicators by reviewing them regularly.

Nursing education

- Integrate key performance indicators education into the nursing curriculum, emphasizing their role in quality care and patient safety.
- Establish partnerships with hospitals to impart Key performance indicators -driven practices during clinical rotations.

Further research is needed on:

- Study the specific barriers that prevent nurses from acquiring knowledge and implementing key performance indicators in the ICU.
- Study how hospital policies, leadership, and organizational culture influence nurses' adoption and implementation of key performance indicators.
- Study the relation between key performance indicators and quality of care.

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