ORIGINAL ARTICLE

The Effect of Standardized Guidelines of Intra-Aortic Balloon Pump Care on Length of Stay in Cardiac Patients

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ABSTRACT

Length of stay in the Intensive care units is special as an outcome. The adverse outcome is defined as the length of stay ≥ 5 days that is 120 hours and the normal length of stay was defined as < 5 days. Standardized guideline developed for nurses practice to reduce the length of stay in cardiac patients durnning the of intra-aortic balloon pump support. This guidelinewas very helpful for nurse's practices to reduce the length of stay. heart transplantation is the gold standard management for cardiac patients with advanced congestive heart failure and myocardial infraction. Mechanical circulatory support devices have been gradually used as a 'bridge' in order to stand organ function and stabilizehemodynamics while patients remain on the transplant waiting list or undergo left ventricular assist device surgery. The intra-aortic balloon pump (IABP) is a myocardial assist device that was first introduced into clinical practice in 1968.The procedure of counter pulsation wasfirstlydesignated by Dr Adrian Kantrowitz in 1953.

Aim of study: To assess the effect of standardized guidelines of intra-aortic balloon pump care on the length of stay in cardiac patients. Study Design: Randomized control trial Sample: Randomly, 72 nurses were included in the current study. Setting: The research was conducted in cardiac intensive care units of the Punjab Institute of cardiology Lahore.

Keywords: standardized guidelines, intra-aortic balloon pump, length of stay, intensive care units.

INTRODUCTION

Length of stay in the Intensive care units is special as an outcome. The adverse outcome is defined as the length of stay ≥ 5 days that is 120 hours and the normal length of stay was defined as < 5 days. Outcomes prediction is a key point in intensive care units not only for prognosis assessment but also for cost-effective, health care management, monitoring, and new guidelines reduce the length of stay in Intensive care unit to provide high-quality care is being delivered by health care providers. (Barbini, Barbini, Furini, & Cevenini, 2014).

In specific models predictive models that estimate the length of stay in cardiac surgical intensive care units can be very useful for internal purposes. Reliable prediction of length of stay is the key for good management of cardiac theaters length of stay reduction is a vital and important component. Length of stay in intensive care units on improvement opportunities for enhanced patient experience, safety efficiency, and patient satisfaction and real saving from both reduce excess patient days in intensive care units and throughout the hospital stay. The patients' care effectively from admission through discharge depends on the level of care. A comparison of an intensive care unit's current performance with leading practices in hospitals and new standardized guidelines with decreasing the length of stay in incentive care units. (Grocott, Edwards, Mythen, & Aronson, 2019).

The continuous observation of care indicators and the pinpointing of risk factors that lower quality are necessary to improving patient care to better the sources and that length of stay should be addressed to improve the intensive care units' care. longer stay in intensive care unit is not only costly length of stay is a very important indicator of the quality of critical care for cardiac patients (Jiang et al., 2017).

According to the study of Richard patients with intra-aortic balloon pump in cardiac intensive units' major cause of acute kidney injury, age factor, and surgical complexity and also prolonged time to initiate extubation and length of stay. In predicting short time morbidity, increased the length of ventilation prolonged intensive care units stay and duration of total stay in hospital. Stat and RACHS were shown to have prognostic value for mortality major adverse effects and prolonged length of stay (Cheng et al., 2015).

Patients with Intra-aortic balloon pumpupon the degree of information factor affecting and care Practices among Nurses in the better outcomes for intra-aortic balloon pump patients the lack of standardized guidelines and practices of nurses can have a negative impression on patient outcomes (Neelavathi, Gnaarani, & Venkatesan, 2020).

In other studies, process outcomes for intra-aortic balloon pump have comprised length of stay quality of life in some patient organ failure and mortality rate in intensive care units' personal factor such as age gender smoking obesity in this study is defined as staying more than 3 days after coronary artery by-pass with assist intra-aortic balloon pump (Zheng et al., 2020).

Intra-aortic balloon pump is a support of the heart which increases oxygen perfusion and support the heart circulation in the time crisis of oxygen as it is mechanical devices which may be named as life-saving devices that's why nurses should have no proper knowledge and use the standardized guidelines to reduce complication and length of stay in hospital as it becomes the nurse's responsibility to provide care (Kuno et al., 2020).

Exceeding 23 million populations worldwide affects heart failure and fatal disease. A major improvement is the treatment and medical devices for heart failure in the last several decades. According to the American College of Cardiology. American heart association 260,000 patients suffer from advanced cardiac heart failure. The latest guidelines cardiac transplantation gold standard therapy for heart failure / myocardial infarction patients. Mechanical circulatory support devices have been used to continue organ function. Intra-aortic balloon pumps is mostly used for temporary circulatory support in cardiac patients (Naqvi, Salama, Yoruk, & Chen, 2018).

Intra-aortic balloon pumps are extensively used these days. This device is highly useful for patients with CABG in heart failure patient's 70% survival rate by many research another study 85% survival of 85% at four years a cohort of patients need post-operative supports. Intra-Aortic Balloon pump has proved to be the best option for maintenance cardiovascular system and excellent treatment after cardiopulmonary by-pass. This device passed in main femoral artery mostly complication arise but nursing care on Shorting the length of stay in intensive care units for awaiting surgery Use of Intra-Aortic Balloon Pump in diabetics that were 64% and also in hypertension was 86% elevated incidence (Ahmad, Islam, Rehman, & Khan, 2021).

In Pakistan the very high incidence of coronary artery disease. In 2002, 100,000 individuals suffered active myocardial

infractions. Pakistan is 2nd lowest headcount poverty rate in South Asia and patients who belong to a low economic group cannot afford bypass surgery. There has been rapid development in techniques and approaches of intervention cardiology for surgical intervention. Patient has high chance of hemodynamic instability require Intra-Aortic Balloon Pump support for improving quality of life of cardiac patients (Zakai, Pathan, Bangash, Siddiqi, & Rabbi, 2018).

Intense myocardial localized necrosis complicated by cardiogenic shock is related to significant morbidity and mortality. In spite of the fact that intravascular micro axial left ventricular help devices offer more prominent hemodynamic help as contrasted and intra-aortic balloon pump (Intra-aortic balloon pump), little is thought about clinical results related to intravascular micro axial left ventricular assist device use in clinical practice(Dhruva, Mortazavi, & Desai, 2020).

Among patients experiencing PCI for AMI complexity by means of cardiogenic shock from 2015 to 2017, usage of intravascular micro axial left ventricular assist device differentiated and Intra-aortic balloon pump was connected with higher changed threat of in-crisis center passing and critical reducing disorders, regardless of the way that review understanding is confined by the observational arrangement. Further assessment may be relied upon to appreciate ideal device choice for these patients(Dhruva, Ross, et al., 2020).

The contemporary patterns in the utilization of mechanical circulatory help (MCS) in patients with intense myocardial dead tissue and cardiogenic shock (AMICS). It is to assess perseverance benefit with early a use of Intra-aortic balloon pump to assess the patients completely and routine guidelines should be followed for preventing infection and reduce the length of stay in intensive care units and also stay at hospitals (Josiassen et al., 2021).

METHODOLOGY

The researcher to collect information on demographic variable for nurses such as age, gender, educational status, year of experience in ICU and previous experience taking care for patient with intra-aortic balloon pump.

RESULTS

Demographic information about nurses of study group. Seventy-two nurses were selected for this study, out of which 36(50%) nurses were allocated to control group and 36 (50%) nurses were allocated to intervention group.

Table 1: Demographic Information about Nurses Of Study Group

Variables	n	%	Mean±SD
Study Groups			
Control	36	50	
Intervention	36	50	
Age (years)			
21-25	8	11.2	
26-30	14	19.4	
31-35	25	34.7	
>35	25	34.7	
Education			
GNM	14	19.4	
Post Basic	58	80.6	
Experience Care unit			
≤2	8	11.1	
3-5	11	15.3	
6-10	33	45.8	
>10	20	27.8	
Experience with IABP			
Yes	67	93.1	
No	5	6.9	
Stay			4.99±2.24
≤2	12	16.7	
3-6	24	33.3	
6-10	36	50.0	

The majority of the nurses (69.4%) were above 30 years and 25(30.6%) nurses were below 30 years of age. Fifty-three (73.8%) nurses had experience of care unit of more than five years and 19(26.4%) nurses had experience of care unit of less than five years. Sixty-seven (93.1%) nurses had experience with IABP **(Table 4.1)**

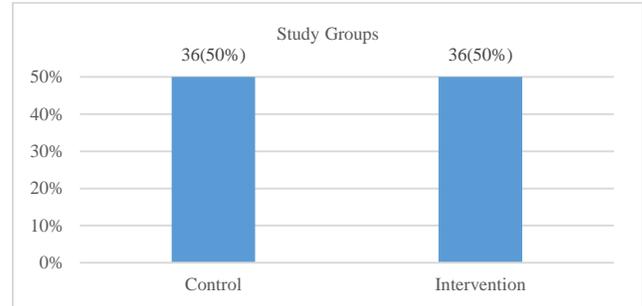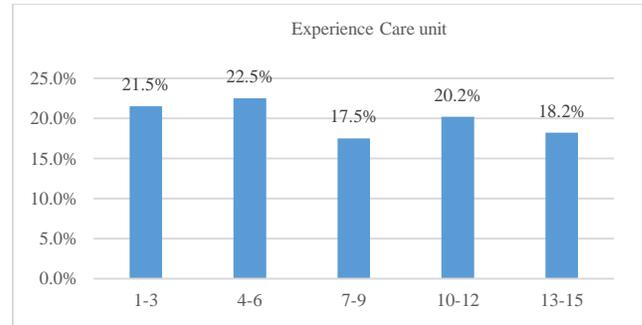Figure 1: Distribution of cardiac intensive care nurses' units on basis of education

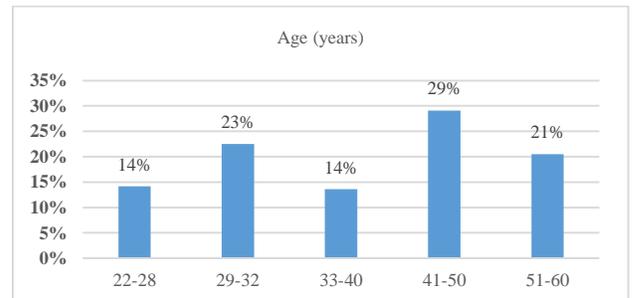Figure 2: Graph Shows The Experince Of Nurses In Intensive Care Unit

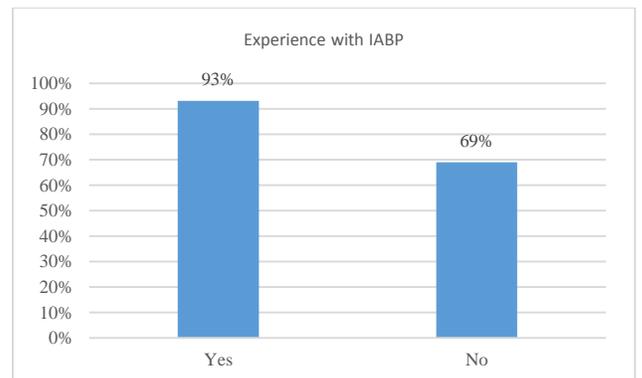Figure 3: Graph Shows the Age Of Cardiac Care Unit Nurses Who Participate In Study

Figure 4: Graph Shows The Nurses Experience With Intra-Aortic Balloon Pump Patient

DISCUSSION

The purpose of the study was to improve practices of nurses through special guiltiness in the form of intervention. Results of the study reflect that in some areas, nurses were already well aware and do their practices i.e. to keep the patient in spine position with HOB elevated no more than 30 degrees, monitor temperature, pulse, systolic, diastolic and mean hourly, Careful monitoring of renal function (the balloon sits above the bifurcation of the renal arteries-backward migration may compromise blood flow to the kidneys), check Intra-aortic balloon pump entry site hourly and observe any bleeding and /or hematoma formation, Monitor pain score hourly and ensure adequate pain control and Document hourly on ICU chart.

Analysis of data revealed that nurses of intervention group statistically significant improve their knowledge and practices as compare to control group i.e.

1 Monitor radial and pedal pulse hourly. In control groups no nurses were able to monitor radial and pedal pulse hourly while 25(69.4%) nurses of interventional group can monitor radial and pedal pulse hourly. Results of chi-square test for independence indicated association between control & intervention and performed & not performed status χ^2 (n=72) =38.30, p=<.001.

2 In control groups 31(86.1%) nurses were able to check urine output while 25(69.4%) nurses of interventional group can Check urine output. Results of chi-square test for independence indicated association between control & intervention and performed & not performed status χ^2 (n=72) =5.37, p=.02)

3 For statement Don't flex the legs with IABP catheter. If needed, apply a knee brace. In control groups 2(5.6%) nurses were able to monitor Don't flex the legs with IABP catheter. If needed, apply a knee brace. While 11(30.6%) nurses of interventional group can monitor the Don't flex the legs with IABP catheter. If needed, apply a knee brace. Results of chi-square test for independence indicated association between control & intervention and performed & not performed status χ^2 (n=72) =7.60, p=.006).

4 For statement log roll patient from side to side, in control groups 1(2.8%) nurses were able to log roll patient from side to side while 8(22.2%) nurses of interventional group can monitorthe insertion sight. Results of chi-square test for independence indicated association between control & intervention and performed & not performed status χ^2 (n=72) =6.22, p=.013).

5 For statement Check the backflow 4th hourly, in control groups 5(13.9%) nurses able to Check the backflow 4th hourly while 13(36.1%) nurses of interventional group can monitor the insertion sight. Results of chi-square test for independence indicated association between control & intervention and performed & not performed status χ^2 (n=72) =4.74, p=.029).

6 For statement check the rhythm changes, in control groups 16(44.4%) nurses able to check the rhythm changes 29(80.6%s) nurses of interventional group can monitor the insertion sight. Results of chi-square test for independence indicated association between control & intervention and performed & not performed status χ^2 (n=72) =10.20, p=.002).

CONCLUSION AND RECOMMENDATION

Practices of intensive care unit's nurses through carrying out continuing educational session about intra-aortic balloon pump strict observation of nurse's practice when caring for patients connected to intra-aortic balloon pump, and provision of standardized guidelines to correct of poor practices and replication this study on a larger sample of cardiac critical care nurses. According guidelines nurse's workload was minimizing and correct way to for un experienced nurses for expert care deliver to the patients saving money reduced hospital stress, and also overcome intensive care units'burden.

REFERENCES

1. Ahmad, I., Islam, M. U., Rehman, M. U., & Khan, B. (2021). Frequency of intra-aortic balloon pump insertion and associated factors in coronary artery bypass Grafting in a tertiary care hospital. Pakistan Journal of Medical Sciences, 37(2), 393.
2. Backhaus, T., Fach, A., Schmucker, J., Fiehn, E., Garstka, D., Stehmeier, J., . . . Wienbergen, H. (2018). Management and predictors of outcome in unselected patients with cardiogenic shock complicating acute ST-segment elevation myocardial infarction: results from the Bremen STEMI Registry. Clinical Research in Cardiology, 107(5), 371-379.
3. Barbini, P., Barbini, E., Furini, S., & Cevenini, G. (2014). A straightforward approach to designing a scoring system for predicting length-of-stay of cardiac surgery patients. BMC medical informatics and decision making, 14(1), 1-8.
4. Cheng, R., Hachamovitch, R., Makkar, R., Ramzy, D., Moriguchi, J. D., Arabia, F. A., . . . Azarbal, B. (2015). Lack of survival benefit found with use of intraaortic balloon pump in extracorporeal membrane oxygenation: a pooled experience of 1517 patients. J Invasive Cardiol, 27(10), 453-458.
5. Dhruva, S. S., Ross, J. S., Mortazavi, B. J., Hurley, N. C., Krumholz, H. M., Curtis, J. P., . . . Parzynski, C. S. (2020). Association of use of an intravascular microaxial left ventricular assist device vs intra-aortic balloon pump with in-hospital mortality and major bleeding among patients with acute myocardial infarction complicated by cardiogenic shock. Jama, 323(8), 734-745.
6. Grocott, M., Edwards, M., Mythen, M., & Aronson, S. (2019). Peri-operative care pathways: re-engineering care to achieve the 'triple aim'. Anaesthesia, 74, 90-99.
7. Jiang, X., Zhu, Z., Ye, M., Yan, Y., Zheng, J., Dai, Q., . . . Ma, H. (2017). Clinical application of intra-aortic balloon pump in patients with cardiogenic shock during the perioperative period of cardiac surgery. Experimental and therapeutic medicine, 13(5), 1741-1748.
8. Kanchi, M. (2018). Intra-aortic Balloon Pump—Current Status. Journal of Cardiac Critical Care TSS, 2(02), 071-078.
9. Kao, K.-D., Lee, S.-Y. K. C., Liu, C.-Y., & Chou, N.-K. (2021). Risk factors associated with longer stays in cardiovascular surgical intensive care unit after CABG. Journal of the Formosan Medical Association.
10. Neelavathi, D., Gnaarani, J. J., & Venkatesan, L. (2020). Effectiveness of a capacity building programme regarding care of patient with intra-aortic balloon pump (iabp) among nurses. TNNMC Journal of Medical & Surgical Nursing, 8(2), 12-15.
11. Naqvi, S. Y., Salama, I. G., Yoruk, A., & Chen, L. (2018). Ambulatory intra aortic balloon pump in advanced heart failure. Cardiac failure review, 4(1), 43.
12. Zakai, S. B., Pathan, I. H., Bangash, S. K., Siddiqi, T. A., & Rabbi, F. (2018). ASSIST DEVICES IN CARDIAC SURGERY; RE-STERILIZED INTRA-AORTIC BALLOON PUMP CATHETERS. Professional Medical Journal, 25(12).