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Research Article

The Assessment of Nurses' Knowledge and Practices about Fluid and Electrolytes Monitoring and Administration among Cardiac Surgery Patients: A Case of Punjab Institute of Cardiology

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Abstract

Background: In order to maintain the health, the homeostasis dynamics and balance process is most important. Among the critically ill cardiac surgery patients the homeostasis is imbalance and results in insufficient tissues perfusion and many organs of the body lead to the failure condition. It is necessary to monitor actively the intake and output during electrolytes administration in the cardiac surgery patients. **Objectives:** To assess the knowledge and practice of the registered nurses about fluid and electrolytes monitoring and administration in the cardiac surgery patients. **Methodology:** This study is of descriptive and cross sectional study design. The questioner of knowledge and practices regarding fluid and electrolytes administration was adopted from the article of Vijayan (Vijayan, 2011) which is based on 5-point Likert scale. The data was collected from 208 nurses of Punjab Institute of Cardiology, Lahore, Pakistan. **Conclusion:** The findings of the current study show that the nurses have poor knowledge and practices of nurses, so, public hospital's administration should focus on the strategies and activities which become helpful to increase the knowledge and practices of nurses regarding fluid and electrolytes administration.

Key Words: Knowledge, Practices, Fluid and electrolytes, Cardiac Surgery patients.

Introduction

Water is the chief component of the body accounting for 45-80% of the body weight. The percentage varies with age , sex and body build (Ellis, 2000). The balance between input and output is known as fluid balance which is the essential to perform the metabolic function effectively (Welch, 2010).

In cardiac surgery patients, crystalloids solution is infused to restore the circulating volume. After cardiac surgery, the patient will pass a large amount of diluted urine within the first 2-6 hours and will excrete the large amount of potassium. Cardiac surgery patients frequently required potassium supplementation to maintain the S/K+ (serum potassium) and its normal range is 3.5 - 4.5 mEq/l (Shen *et al.*, 2011). As per protocol after cardiac surgery the patient potassium level needs to frequently monitor and replace as per patient condition. The knowledge and practices of nurses about fluid monitoring and electrolytes administration is necessary to provide the good quality of patient care and this is the responsibility of all registered nurses to closely observe and monitoring the all parameters of cardiac surgery patients (Vijayan, 2011).

The fluid therapy may be in oral intake form, medication administered form, the output include urine, vomit, stools, bleeding and drainage (Scales & Pilsworth, 2008). Proper and accurate documentation of intake fluid and output is essential to prevent the complications of fluid imbalance in critically ill patients. Inaccuracy in monitoring and recording of fluid and electrolytes may lead to the poor management (Diacon, 2012) .

However, during cardiac surgery a huge amount of blood loss occurs (Repine, Perkins, Kauvar, & Blackborne, 2006). Cardiopulmonary bypass can cause many physiological abnormalities like electrolytes abnormalities, acid base imbalances etc. In nursing the concept of a framework is applied for the best practices and evidence base practices. These concepts links to research with practice to enhance

patient care (Diacon, 2012). Best practices mainly develop through experience (Vijayan, 2011).

Furthermore, knowledge and practices of nurses about fluid monitring and electrolyte administration in cardiac surgery patients is necessory to provide the good quality of care and helps to reduce the morbidity and mortality rate. Morever, the evidence base practices can be applied if nurses have knowledge and practices to provide the quality of care to the patients. In addition, there is need to investigate the knowledge and practices of nurses about fluid and electrolytes monitoring and administration among cardiac surgery patients due to the poor healthcare services among the public hospitals. Thus, current study examines the level of knowledge and practices of nurses about fluid and electrolytes monitoring and administration among cardiac surgery patients due to the poor healthcare services among the public hospitals.

Objectives

1) To assess the knowledge of registered nurses about fluid and electrolytes monitoring and administration in the cardiac surgery patients
2) To assess the practices of registered nurses about fluid and electrolytes monitoring and administration in the cardiac surgery patients.

Literature Review

To assess the patient status about fluid balance intake and output a fluid balance chart has been organized to document the record on it. It is easier and noninvasive strategy to measure the fluid balance. Fluid balance sheet is like a chart that document the patient intake and output in 24 hours. The fluid balance chart recorded as necessary to guide the decisions making about medical and surgical interventions. The accurate fluid balance monitoring is required for the effective management of the patients. Inaccurate fluid balance monitoring or inaccurate documentation may lead to the complication and patient condition may become worse.(Scales & Pilsworth, 2008).

Moreover, health professionals like doctors, nurses, surgeons and dieticians etc. requires accurate fluid balance record to make the further plan of patient's treatment. It is necessary to know the exact measures of urine, drainage and vomiting output for quality treatment. Such information is also important to prevent the patients from complications like fluid overload (Jeyapala, Gerth, Patel, & Syed, 2015). Similarly, the study noted that fluid monitoring improves the practices of accurate fluid balance documentations (Scales & Pilsworth, 2008). The nurses knowledge about the administration of fluid and electrolytes is most important to prevent the patient from the complication and assurance of the quality of care among the cardiac surgery patients (Eastwood *et al.*, 2012).

However, lack of education and inadequate training is a significant factor that impair the fluid balance documentation. Novice nurses, new graduate nurses and student nurses may become the reason of inaccurate fluid balance documentations. The nurses should be allocated for the accurate fluid balance monitoring who is expert in documentation of the accurate information about fluid balance and patient's status. Time should be calculated as per shift to complete and accurate the fluid balance documentation and handover to the next shift staff. However, time is required for accurate fluid balance documentation and insufficient time may lead to inaccurate documentations and thus patient's safety may be compromised (Scales & Pilsworth, 2008).

Methodology

This study is of descriptive and cross sectional study design. The questioner of knowledge and practices regarding fluid and electrolytes administration was adopted from the article of Vijayan (Vijayan, 2011) which is based on 5-point Likert scale. The self-administered questionnaire (Section 1: Demographics, Section 2: Knowledge and Practices) was distributed to 208 nurses. The data security was ensured to the study participants. SPSS 21 was used to do the analysis of the data

Results

Demographics

Gender

Table 1 shows that 100% (208) participants were females.

Table 1: Sample distribution by gender

Sex	Frequency (n)	Percentage (%)
Female	208	100
Total	208	100

Age

Table 2 shows that n = 31(14.90%) nurses were belong to the age group of 20-25 years, n = 82 (39.42%) were belong to group 26-30 years, n= 80 (38.46%) were belong to the group of 31-35years, n= 15 (7.21%) nurses were belong to the group of 36-40.

Table 2: Sample distribution by age of the male and female nurses

Age group	Frequency (n)	Percentage (%)
20-25 years	31	14.90
26-30 years	82	39.42
31-35 years	80	38.46
36-40 years	15	7.21
Total	208	100

Marital Status

Table 3 shows that n=112 (53.85%) nurses were belong to the group of married people and n= 96 (46.15%) were belong to the group of unmarried people.

Table 3: Sample distribution by marital status

Marital status	Frequency (n)	Percentage (%)
Married	112	53.85
Unmarried	96	46.15
Total	208	100

Qualification

Table 4 shows that the qualifications of nurses that n= 161 (77.40%) nurses did General nursing diploma, n = 25 (12.02%) nurses did Post RN BSN, n = 21 (10.10%) have completed specialization and n = 1 (0.48%) have done MSN.

Table 4: Sample distribution by qualification

Qualification	Frequency (n)	Percentage (%)
General Nursing Diploma and Midwifery	161	77.40
BSN/POST RN	25	12.02
Specialization	21	10.10
MSN	1	0.48
Total	208	100

Job Experience

Table 5 shows that n=20 (9.62 %) nurses had experience of less than 1 year, n=98 (47.12 %) were having 1-5 years' job experience, n=72 (34.62%) were having 6-10years job experience and n=18 (8.65%) were having above 10 years of job experience.

Table 5: Sample distribution according to job experience

Years of Experiences	Frequency (n)	Percentage (%)
Less than 1 year	20	9.62
1-5 years	98	47.12
6-10 years	72	34.62
Above 10 years	18	8.65
Total	208	100

ICU Experience

Table 6 shows that n=38 (18.27%) nurses were having less than 1 year of ICU experience, n=76 (36.54%) were having 1-5 years of ICU experience, n=77 (37.02%) were having 6-10% ICU experience and n=17 (8.17%) were having above 10 years ICU experience.

Table 6: Sample distribution according to ICU experience

Years of Experiences in ICU	Frequency (n)	Percentage (%)
Less than 1 year	38	18.27
1-5 years	76	36.54
6-10 years	77	37.02
Above 10 years	17	8.17
Total	208	100

Knowledge

Recording the intake and output is important as other patient care activities

Table 7 shows that n=34 (16.35%) nurses were having the knowledge about intake and output recording were strongly disagree, n=64 (30.77%) nurses were disagreeing, n=7 (3.37%) nurses were uncertain, n=66 (31.73%) nurses were agreeing and n=37 (17.79%) were strongly agree.

Table 7: Knowledge about intake and output recording

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	34	16.35
Disagree	64	30.77
Uncertain	7	3.37
Agree	66	31.73
Strongly Agree	37	17.79
Total	208	100

Fluid assessment is important to guide nursing care in critically ill patients

Table 8 shows that n = 40 (19.23%) nurses responded regarding knowledge about fluid balance assessment as strongly disagree, n=61 (29.33%) were disagree, n=6 (2.88%) were uncertain, n=47 (22.60%) were agree and 54 (25.96%) were strongly agree.

Table 8: Nurses knowledge about fluid balance assessment

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	40	19.23
Disagree	61	29.33
Uncertain	6	2.88
Agree	47	22.60
Strongly Agree	54	25.96 %
Total	208	100 %

Inaccurate fluid balance calculation can be a risk for the critically ill patient

Table 9 shows that n=37 (17.79%) nurses responded regarding as having the knowledge about inaccurate fluid balance calculation as strongly disagree, n=76 (36.54%) were disagree, n= 8 (3.85%) were uncertain, n=44 (21.15%) were agree and n=43 (20.67%) were strongly agree.

Table 9: Nurses knowledge about inaccurate fluid balance calculation

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	37	17.79
Disagree	76	36.54
Uncertain	8	3.85
Agree	44	21.15
Strongly Agree	43	20.67
Total	208	100

Responsible persons for fluid balance monitoring.

Table 10 shows that n=37 (17.79%) nurses responded regarding knowledge about responsible persons for fluid monitoring as strongly disagree, n=56 (26.92%) were disagreeing, n = 4 (1.92%) were uncertain, n=53 (25.48%) were agree and n=58 (27.88%) were strongly agree.

Table 10: Nurses knowledge about responsible persons for fluid monitoring

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	37	17.79
Disagree	56	26.92
Uncertain	4	1.92
Agree	53	25.48
Strongly Agree	58	27.88
Total	208	100

The nurses are the only person responsible for a correct fluid balance calculation

Table 11 shows that n=37 (17.79%) nurses responded regarding knowledge about nurse responsible for fluid monitoring as strongly disagree, n= 66 (26.92%) were disagree, n=12 (1.92%) were uncertain, n=42 (25.48%) were agree and n=51 (27.88%) were strongly agree.

Table 11: Nurses knowledge about nurse responsible for correct fluid balance calculation

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	37	17.79
Disagree	66	26.92
Uncertain	12	1.92
Agree	42	25.48
Strongly Agree	51	27.88
Total	208	100

Too many people fill in one patient's fluid balance chart.

Table 12 shows that n=25 (12.02%) nurses responded regarding knowledge about too many people fill in one patient fluid chart as strongly disagree, n=79 (37.98%) were disagree, n= 8 (3.85%) were uncertain, n = 54 (25.96%) were agree and n= 42 (20.19%) were strongly agree.

Table 12: Nurses knowledge about more than one people to fill one patient fluid chart

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	25	12.02
Disagree	79	37.98
Uncertain	8	3.85
Agree	54	25.96
Strongly Agree	42	20.19
Total	208	100

Nurses are satisfied with the design of the fluid balance chart sheet

Table 13 shows that n=52 (25.0%) nurses responded regarding knowledge about satisfaction regarding the design of fluid chart as strongly disagree, n=55 (26.44%) were disagree, n=6 (2.88 %) were uncertain, n=49 (23.56%) were agree and 46 (22.12%) were strongly agree.

Table 13: Nurses knowledge about satisfaction regarding the design of fluid balance chart sheet

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	52	25.0
Disagree	55	26.44
Uncertain	6	2.88
Agree	49	23.56
Strongly Agree	46	22.12
Total	208	100

The space to write the fluid numbers on the chart is adequate.

Table 14 shows that n= 45 (21.63%) nurses responded regarding having the nurses about the space to write the fluid number on the chart is adequate as strongly disagree, n=76 (36.54%) were disagree, n= 16 (7.69%) were uncertain, n =38 (18.27%) were agree and n=33(15.87%) were strongly agree.

Table 14: Nurses knowledge about the space to write the fluid numbers on the chart is adequate

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	45	21.63
Disagree	76	36.54
Uncertain	16	7.69
Agree	38	18.27
Strongly Agree	33	15.87
Total	208	100

Fluid balance information is recorded in too many different places on critical care observation and patient records.

Table 15 shows that n=39 (18.75%) responded regarding knowledge about the fluid balance recorded in too many different places as strongly disagree, n=62 (29.81%) were disagree, n=36 (17.31%) were uncertain, n=31 (14.90%) were agree and n=40 (19.23%) were strongly agree.

Table 15: Nurses knowledge about fluid balance recorded in too many different places

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	39	18.75
Disagree	62	29.81
Uncertain	36	17.31
Agree	31	14.90
Strongly Agree	40	19.23
Total	208	100

Nurses may be responsible for more than one patient, so it is difficult to supervise all the fluid balance activities.

Table 16 shows, n=38 (18.27%) nurses responded regarding knowledge about nurses that sometimes is responsible for more than one patient to supervise the fluid balance monitoring which may cause difficulties for to calculate the accurate fluid balance as strongly disagree. Whereas, n=58

(27.88%) were disagree, n=35 (16.83%) were uncertain, n=32 (15.38%) were agree and 45 (12.63%) were strongly agree.

Table 16: Nurses knowledge about more than one patient in fluid balance monitoring

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	38	18.27
Disagree	58	27.88
Uncertain	35	16.83
Agree	32	15.38
Strongly Agree	45	21.63
Total	208	100

The 24 hours' fluid balance is correctly calculated all the time

Table 17 shows that n=54 (25.96%) nurses responded regarding nurses having the knowledge about the 24H fluid balance is correctly calculated all the time, were strongly disagree, n=54 (25.96%) were disagree, n=16 (7.69%) were uncertain, n=46 (22.12%) were agree and 38 (18.27%) were strongly agree.

Table 17: Nurses knowledge about 24H fluid balance calculation

Likert scale	Frequency (n)	Percentage (%)
Strongly Disagree	54	25.96
Disagree	54	25.96
Uncertain	16	7.69
Agree	46	22.12
Strongly Agree	38	18.27
Total	208	100

Practice

There are many other patient care activities that are more important for me to attend than recording the intake and output every hour

Table 18 shows that n=33 (15.87%) nurses responded regarding nurses having the practices to monitor the fluid in post-operative cardiac patients as strongly agree, n=52 (25%) were agree, n=24 (11.54%) were neutral, n=56 (26.92%) were disagree and n= 43 (20.67%) were strongly disagree.

Table 18: Many other patient care activities that are more important for me to attend than recording the intake and output every hour

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	33	15.87
Agree	52	25.00
Neutral	24	11.54
Disagree	56	26.92
Strongly Disagree	43	20.67
Total	208	100

There are too many people who fill in one patient's fluid balance chart

Table 19 shows that n=57 (27.40%) nurses responded regarding nurses having the practices to monitor the fluid in cardiac surgery patient that there are many people who calculate the one patient's fluid chart as strongly agree, n=43 (20.67%) were agree, n=58 (27.88%) were neutral, n= 31 (14.90%) were disagree and n=19 (9.13%) were strongly disagree.

Table 19: Too many people who fill in one patient's fluid balance chart

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	56	26.92
Agree	54	25.96
Neutral	13	6.25
Disagree	57	27.40
Strongly Disagree	28	13.46
Total	208	100

As a registered nurse, I am responsible for more than one patient and so it is difficult to supervise all the fluid balance activities

Table 20 shows that n=20 (9.62%) nurses responded regarding nurses having the practices to monitor the fluid in cardiac surgery patient that nurse responsible for more than one patient and so it is difficult to supervise all the fluid balance activities as strongly agree. On the other hand, n=71 (34.13%) were agree, n=24 (11.54%) were neutral, n= 41 (19.71%) were disagree and n=52 (25%) were strongly disagree.

Table 20: As a registered nurse, I am responsible for more than one patient and so it is difficult to supervise all the fluid balance activities

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	20	9.6 2
Agree	71	34.13
Neutral	24	11.54
Disagree	41	19.71
Strongly Disagree	52	25.00
Total	208	100

I am satisfied with the design of the fluid balance chart sheet, it is straight forward to complete

Table 21 shows that n=41 (19.71%) nurses responded regarding nurses having the practices to monitor the fluid in cardiac surgery patient that nurses satisfaction the design of fluid balance chart sheet, were strongly agree, n= 94 (45.19%) were agree, n=13 (6.25%) were neutral, n=35 (16.83%) were disagree and n=25 (12.02%) were strongly disagree.

Table 21: I am satisfied with the design of the fluid balance chart sheet, it is straight forward to complete

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	41	19.7 1
Agree	94	45.19
Neutral	13	6.25
Disagree	35	16.83
Strongly Disagree	25	12.0 2
Total	208	100

Fluid balance assessment is important to guide nursing care in critically ill patients

Table 22 shows that n=52 (25%) nurses responded regarding having the practices to monitor the fluid in cardiac surgery patient that fluid balance assessment is important to guide nursing care in critically ill patient as strongly agree, n = 75 (36.06 %) were agree, n=18 (8.65%) were neutral, n= 33 (15.87%) were disagree and n=30 (14.42%) were strongly disagree.

Table 22: Fluid balance assessment is important to guide nursing care in critically ill patients

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	52	25.00
Agree	75	36.06
Neutral	18	8.65
Disagree	33	15.87
Strongly Disagree	30	14.42
Total	208	100

Inaccurate fluid balance calculation can be a risk for the critically ill patient

Table 23 shows that n=64 (30.77%) nurses responded regarding having the practices to monitor the fluid in cardiac surgery patient that inaccurate fluid balance calculation can be a risk for the critically ill patient, were strongly agree, n=71 (34.13%) were agree, n = 12 (5.77%) were neutral, n= 37 (17.79%) were disagree and n=24 (11.54%) were strongly disagree.

Table 23: Inaccurate fluid balance calculation can be a risk for the critically ill patient

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	64	30.77
Agree	71	34.13
Neutral	12	5.77
Disagree	37	17.79
Strongly Disagree	24	11.54
Total	208	100

Fluid balance information is recorded in too many different places on critical care observation and patient

Table 24 shows that n= 63 (30.29%) nurses responded regarding having the practices to monitor the fluid in cardiac surgery patient that fluid balance information is recorded in too many different places as were strongly agree, n=71 (34.13%) were agree, n=22 (10.58%) were neutral, n= 31 (14.90%) were disagree and n=21 (10.10%) were strongly disagree.

Table 24: Fluid balance information is recorded in too many different places on critical care observation and patient

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	63	30.29
Agree	71	34.13
Neutral	22	10.58
Disagree	31	14.90
Strongly Disagree	21	10.10
Total	208	100

The final 24 hours' fluid balance is correctly calculated all the time

Table 25 shows that n=43 (20.67%) nurses responded nurses having the nurses practices to monitor the fluid in cardiac surgery patient that the final 24 hours fluid balance is correctly calculated all the time as strongly agree, n= 65 (31.25%) were agree, n=25 (12.02%) were neutral, n=47 (22.60%) were disagree and n=28 (13.46%) were strongly disagree.

Table 25: The final 24 hours' fluid balance is correctly calculated all the time

Likert scale	Frequency (n)	Percentage (%)
Strongly Agree	43	20.67
Agree	65	31.25
Neutral	25	12.02
Disagree	47	22.60
Strongly Disagree	28	13.46
Total	208	100

Observational Check List

Table 26 shows the observational checklist analyzed which shows that n=135 and 64.90% met the criteria to check the amount, type of fluid against doctor's prescription and 35.10% do not met the criteria. n = 133 (63.94%) met the criteria to accurately adjust the flow rate and 36.06% do not met the criteria, n = 162 (77.88%) met the criteria to document the prescribe fluid on chart. However, 22.12% do not met the criteria, n = 135 (64.90%) document the time started and 35.10% not met criteria, n = (134) 64.42 % met the criteria to at the end of administration of electrolytes flush the tubing with heparinized normal saline. Similarly, 35.58% do not meet the criteria, n =160 (76.92%) met the criteria to mentioning the amount of fluid infused but 23.08% not met the criteria and n =177 (85.10%) met the criteria but 14.90% do not meet the criteria.

Table 26: Distribution of samples according to the meeting of criteria in the observational schedule

S. N.	CHECK LIST	MET		NOT MET	
		Frequency(n)	%	Frequency(n)	%
1	Check the amount, type of fluid against doctors Prescription	135	64.90	73	35.10
2	Accurately adjusts the flow rate	133	63.94	75	36.06
3	Document the prescribed fluid on chart	162	77.88	46	22.12
4	Document the time started	135	64.90	73	35.10
5	At the end of administration of electrolytes flush the tubing with heparinized normal saline	134	64.42	74	35.58
6	Mentioning the amount of fluid infused	160	76.92	48	23.08
7	Document the additives which added to the fluid	177	85.10	31	14.90

Validity and Reliability Measurement

Table 27 Cronbach's alpha scale is commonly use to analysis the reliability. It is simple and easier method to measure the reliability (Cortina, 1993). Table 27 shows that Cronbach alpha value meet the standard value is > 0.7 is consider more acceptable values indicator of internal consistency reliability (Santos, 1999; Bryman & Cramer, 2005; Pallant, 2007; Hair *et al.*, 2006). The variable knowledge having Cronbach's alpha value is 0.710 and second variable practice having Cronbach alpha value .637 are more than 0.70% that is near to 1 and it shows that these variables are strongly reliable

Table 27 Reliability of Knowledge and Practices

Variable of study	No. of items	Cronbach's alpha
Knowledge	12	0.710
Practices	9	0.637

Validity

Convergent was established by applying factor analysis. Factor analysis was performed by using principle component analysis with varimax rotation. Each of the dimensions was analyzed by performing factor analysis.

Table 28 shows that KMO value is .50 and Bartlett's test is significant. The results of this study shows that knowledge and practices has KMO values .567 and .628 respectively and Bartlett's test of Sphericity is also significant.

Table 28: KMO Bartlett's analysis Test

Variable		Bartlett's Test		
	KMO	Approx	Df	Sig
Knowledge	.567	124.292	55	.000
Practice	.628	201.347	28	.000

Discussion and Conclusion

The objectives of the study were to assess the knowledge and practices of registered nurses about fluid and electrolytes monitoring and administration in cardiac surgery patients. Table no. 2.1 to table 2.11 depicts that knowledge of nurses is lacking among the nurses of Punjab Institute of Cardiology as majority of the nurses disagree regarding the questions of the knowledge. Similarly, table 3.1 to 3.8 show the results of the nurse's practices regarding fluid and electrolytes management and administration after cardiac surgery. The results in table 3.1 to 3.8 also determine that the nurses' practices also lacking from moderate to high level regarding the fluid and electrolytes administration after the cardiac surgery. In addition, the table 4.1 shows that nurses ignore the protocols and criteria low to moderate level which may be dangerous for the patients' safety.

Therefore, the knowledge and practices of nurses' regarding fluid and electrolytes administration among the nurses is overall low which should be considered to alleviate the quality care among the public hospitals. The administration of Punjab institute of Cardiology and other public cardiac institutes should emphasize on the awareness, education and training of the nurses regarding fluid and electrolytes after cardiac surgery.

The study was conducted to investigate the changes in serum electrolytes levels and its effect to cause the atrial fibrillation in cardiac surgery among 12 patients. Patients were distributed in groups and namely was Group 1 and Group 2. The Group 1 was included the patients with cardiac surgery atrial fibrillation and Group 2 included the patients who were having the sinus rhythm after the cardiac surgery. After analysis of the both groups the results shows that overall incidence of atrial fibrillation was 26.83%. The study depicts that the incidence of atrial fibrillation is higher due to serum electrolytes imbalance in cardiac surgery patients. These electrolytes may varies after the cardiac surgery mainly phosphate and lower calcium levels may lead to cardiac dysrhythmias (Svagzdiene, Sirvinskas, & Benetis, 2006). Thus, fluid and electrolytes monitoring is compulsory for the effective management of the patients. Inaccurate fluid balance monitoring and inaccurate fluid balance recording can become critical for survival of patient (Elliott *et al.*, 2007). Similarly, the study noted that inaccurate fluid balance monitoring and recording may

interrupt in nursing management and results in complications e.g. dysarthmias hypotension (Stevens, 2004).

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