Chapter Three

Material and Methods

Materials and Methods

3.1 Study area:

Nursery unit.

3.2 Study designs:

Descriptive qualitative study.

3.3 Sample size:

Total coverage of neonate intensive care unit in river Nile state.

3.4 Inclusion Criteria:

All nursery inside river Nile state.

3.5 Exclusion criteria:

Nursery outside river Nile state.

3.6 Data collection tools:

Observational Checklists.

3.7 Material and method:

This study was carried out from march 2018 to July 2018 .

3.8 Data analysis:

After data collection, it was coded and transferred into especially designed formats so as to be suitable for computer feeding, following data entering, checking and verification process were carried out to avoid any error during data entry.

3.9 Data analysis method:

The data was analyzed by using statistical package of social science (SPSS), Chi-Square and excel program was used for figures and was presented in tables, figures presentation

3.10 Ethical consideration:-

Research proposal approved from Elshaikh Abdallah Elbadri University committee.

Permission from hospital director was taken.

Chapter Four

Results and Discussion

Result and discussion

Result:

Table 4-1shows Aldamer hospital performed 59.1% from ideal design, hand washing performance 89.5%,using of PPE is 66.7%, infection control of invasive procedure performed 100% ,isolation protocol was perform 11.1% while the application of sterilization 53.3% and linen handling method 35.7%. Figure 4-2-2shows availability of material for hand washing 75%, newborn feeding 100% and availability of PPE equipment is 66.7% .

Table 4-3 shows Alsalam hospital performed 63.6% from ideal designs ,hand washing performance 68.4% , using of PPE is 25%, infection control of invasive procedure performed 91.3%, isolation protocol was perform 55.6%, while the application of sterilization 60% and linen handling method 57.1% . Figure 4-4-4 shows availability of material for hand washing 100%,newborn feeding 100% and availability of PPE equipment 50% .

Table 4-5 shows Atbara hospital performed 54.5%from ideal designs ,hand washing performance 84.2%,using of PPE 25%, infection control of invasive procedure performed 82.6%,isolation protocol was perform 0%, while the application of sterilization 40%, and linen handle method 50% . Figure 4-6-6 shows availability of material for hand washing 100%, newborn feeding100% and availability of PPE equipment 83.3%.

Table 4-7 shows Military hospital performed 54.5% from ideal designs, hand washing performance 84.2%,using of PPE 25%,infection control of invasive procedure performed 73.9%,isolation protocol was 0%, while the application of sterilization 46.7%, and linen handling method 42.9%.

Figure 4-8-8 shows availability of material for hand washing 100% ,newborn feeding100% and availability of PPE equipment 33.3%.

Table 4-9 shows ALmak Nimer hospital performed 90.9% from ideal designs ,hand washing performance 100% using of PPE 66.7%, infection control of invasive procedure performed 82.6%, isolation protocol was 0%, while the application of sterilization60%, and linen handling method 85.7% . Figure 4-10-10 shows availability of material for hand washing 100% ,newborn feeding 100% and availability of PPE equipment 100%.

Table 4-11 shows Alshorta hospital performed 50% from ideal designs, hand washing performance 73.7%, using of PPE 25%, infection control of invasive procedure performed 95.7%, isolation protocol was perform 0%, while the application of sterilization 40%, and linen handling method 50% Figure 4-12-12 shows availability of material for hand washing 100%, newborn feeding 100% and availability of PPE equipment 100% .

Table (4-1): Quality of Infection Control in NICU Aldamer Hospital:

Aldamer Hospital:	Yes	No	Total
NICU designs	13	9	22
	59.1%	40.9%	100
Hand washing	17	2	19
	89.5%	10.5%	100
Use of PPE	8	4	12
	66.7%	33.3%	100
Invasive Procedure in NICU	23	0	23
	100%	0%	100
Isolation	1	8	9
	11.1%	88.9%	100
Sterilization	8	7	15
	53.3%	46.7%	100
Linen handling	5	9	14
	35.7%	64.3%	100

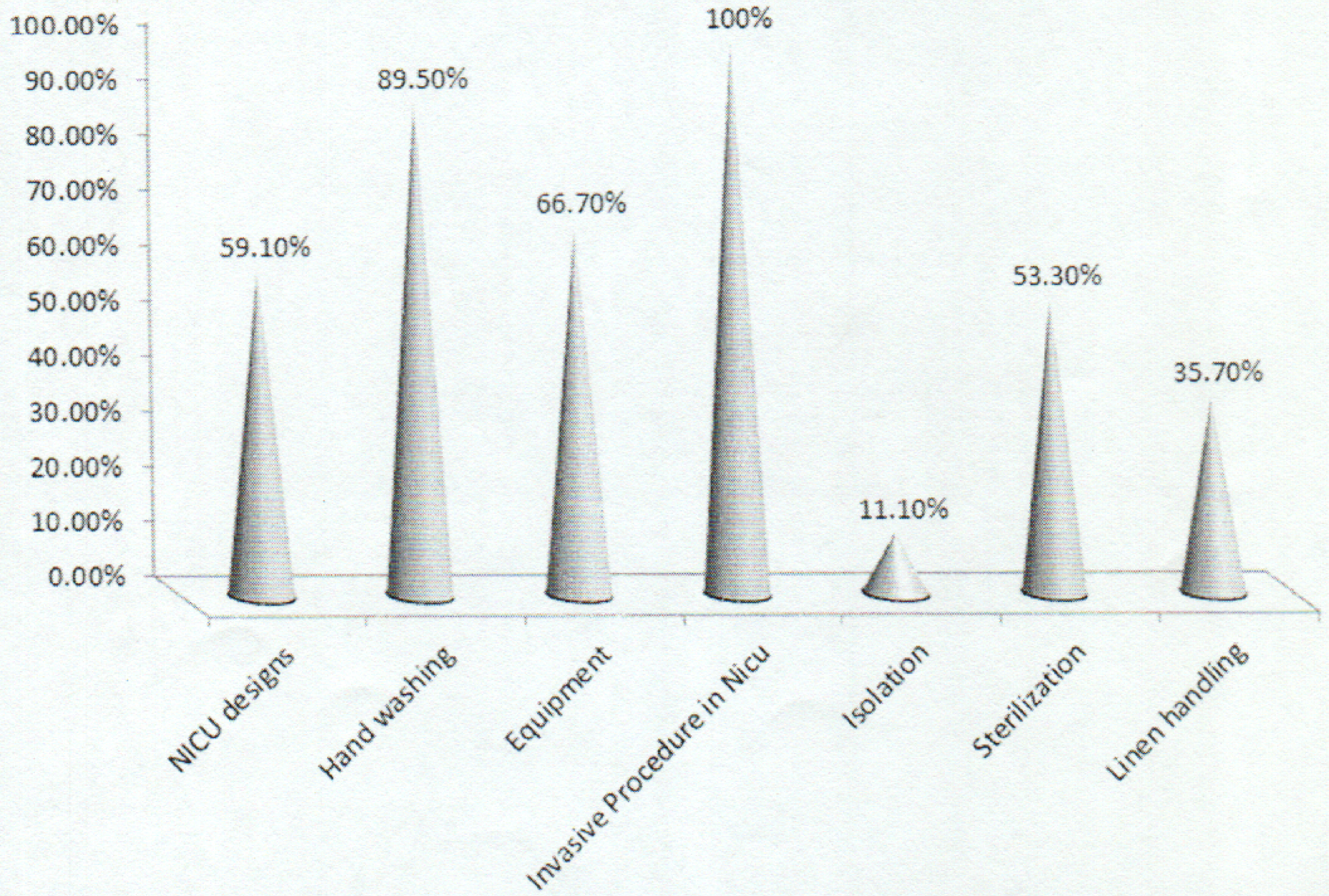


Figure (4-1): Quality of Infection Control in NICU Aldamer Hospital

Table(4-2): Quality of Infection Control in NICU Aldamer Hospital:

Aldamer hospital :	Available	Not Available	**Total**
Material for Hand washing	3	1	4
	75.0%	25.0%	100
PPE equipment	4	2	6
	66.7%	33.3%	100
New born feeding	8	0	8
	100%	0%	100

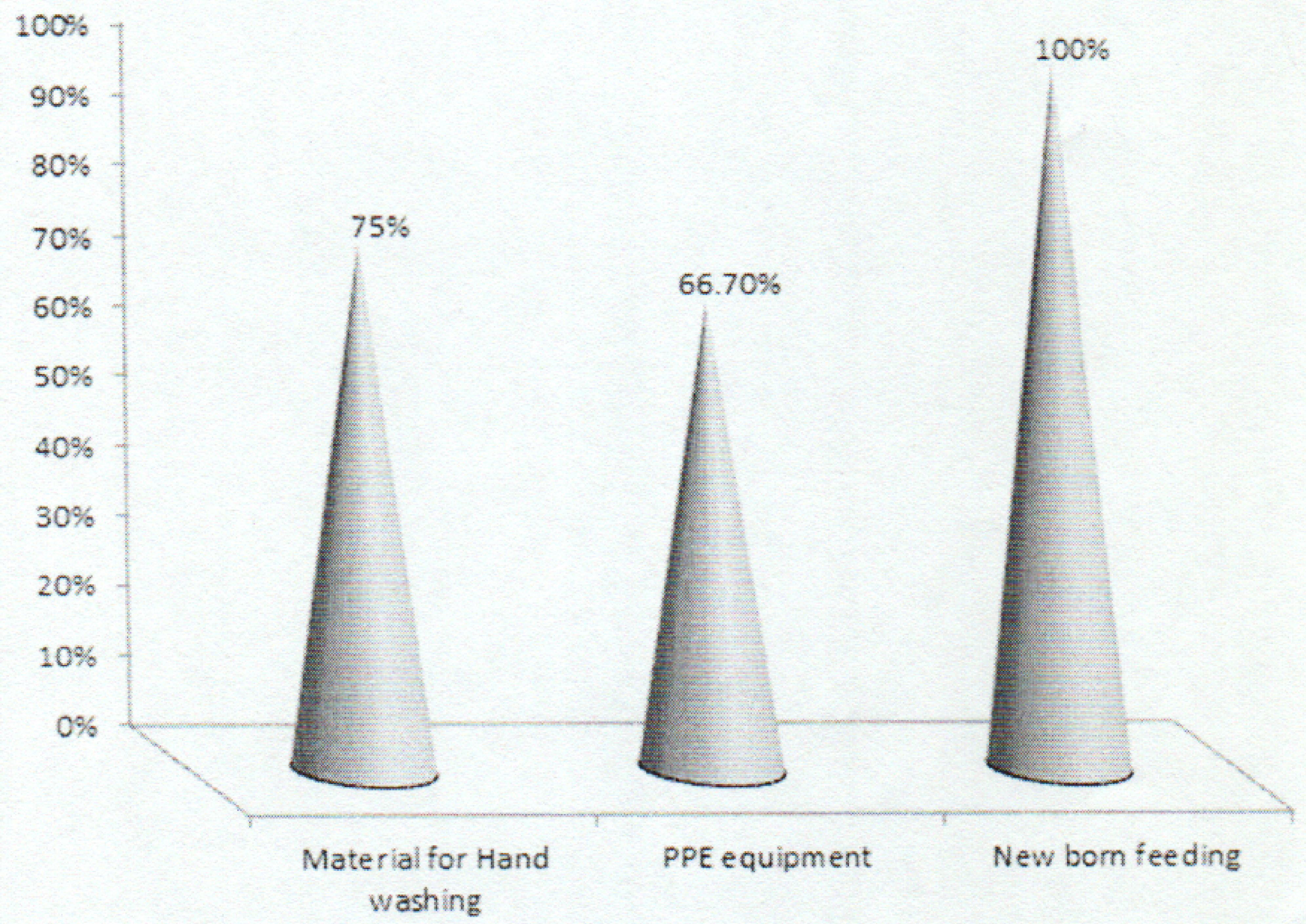


Figure (4-2): Quality of Infection Control in NICU Aldamer Hospital

Table(4-3): Quality of Infection Control in NICU Alsalam Hospital:

Alsalam Hospital:	Yes	No	Total
NICU designs	14	8	22
	63.6%	36.4%	100
Hand washing	13	6	19
	68.4%	31.6%	100
Use of PPE	3	9	12
	25.0%	75.0%	100
Invasive Procedure in NICU	21	2	23
	91.3%	8.7%	100
Isolation	5	4	9
	55.6%	44.4%	100
Sterilization	9	6	15
	60%	40%	100
Linen handling	8	6	14
	57.1%	42.9%	100

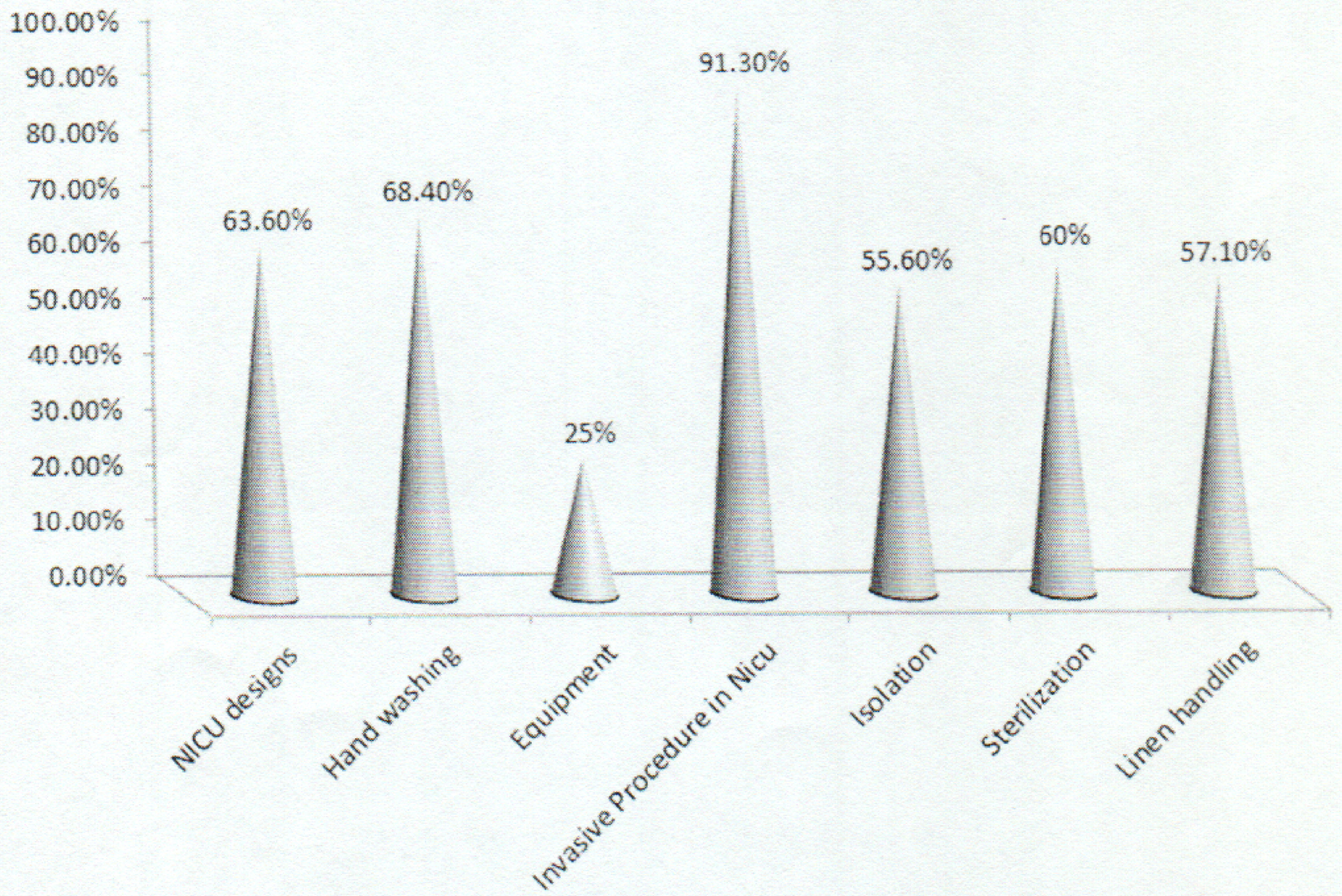


Figure (4-3): Quality of Infection Control in NICU Alsalam Hospital

Table(4-4): Quality of Infection Control in NICU Alsalam Hospital

Alsalam Hospital:	Available	Not Available	**Total**
Material for Hand washing	4	0	4
	100%	0%	100
PPE equipment	3	3	6
	50%	50%	100
New born feeding	8	0	8
	100%	0%	100

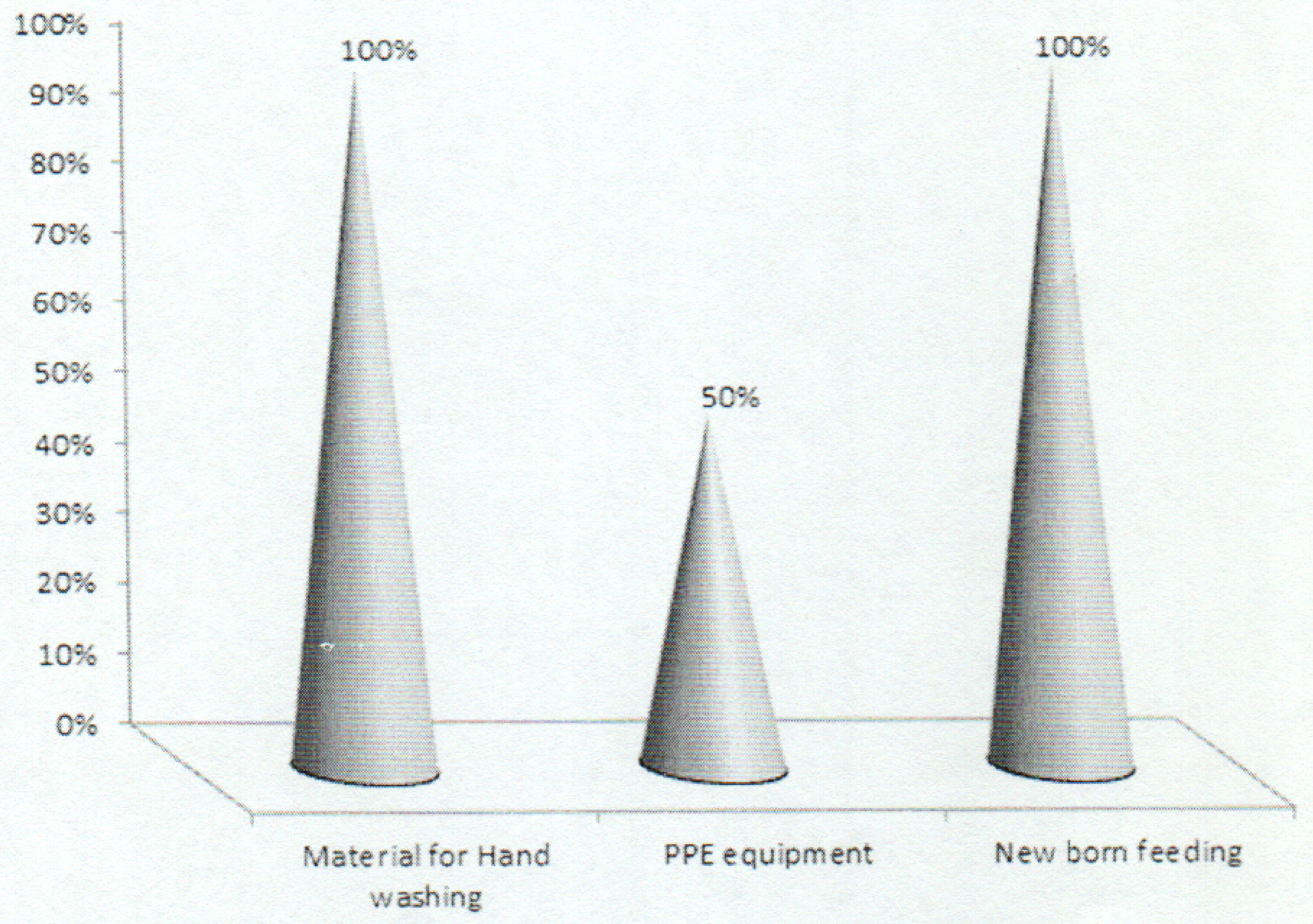


Figure (4-4): Quality of Infection Control in NICU Alsalam Hospital

Table(4-5): Quality of Infection Control in NICU Atbara Hospital:

Atbara Hospital:	Yes	No	Total
NICU designs	12	10	22
	54.5%	45.5%	100
Hand washing	16	3	19
	84.2%	15.8%	100
Use of PPE	3	9	12
	25.0%	75.0%	100
Invasive Procedure in NICU	19	4	23
	82.6%	17.4%	100
Isolation	0	9	9
	0%	100%	100
Sterilization	6	9	15
	40%	60%	100
Linen handling	7	7	14
	50%	50%	100

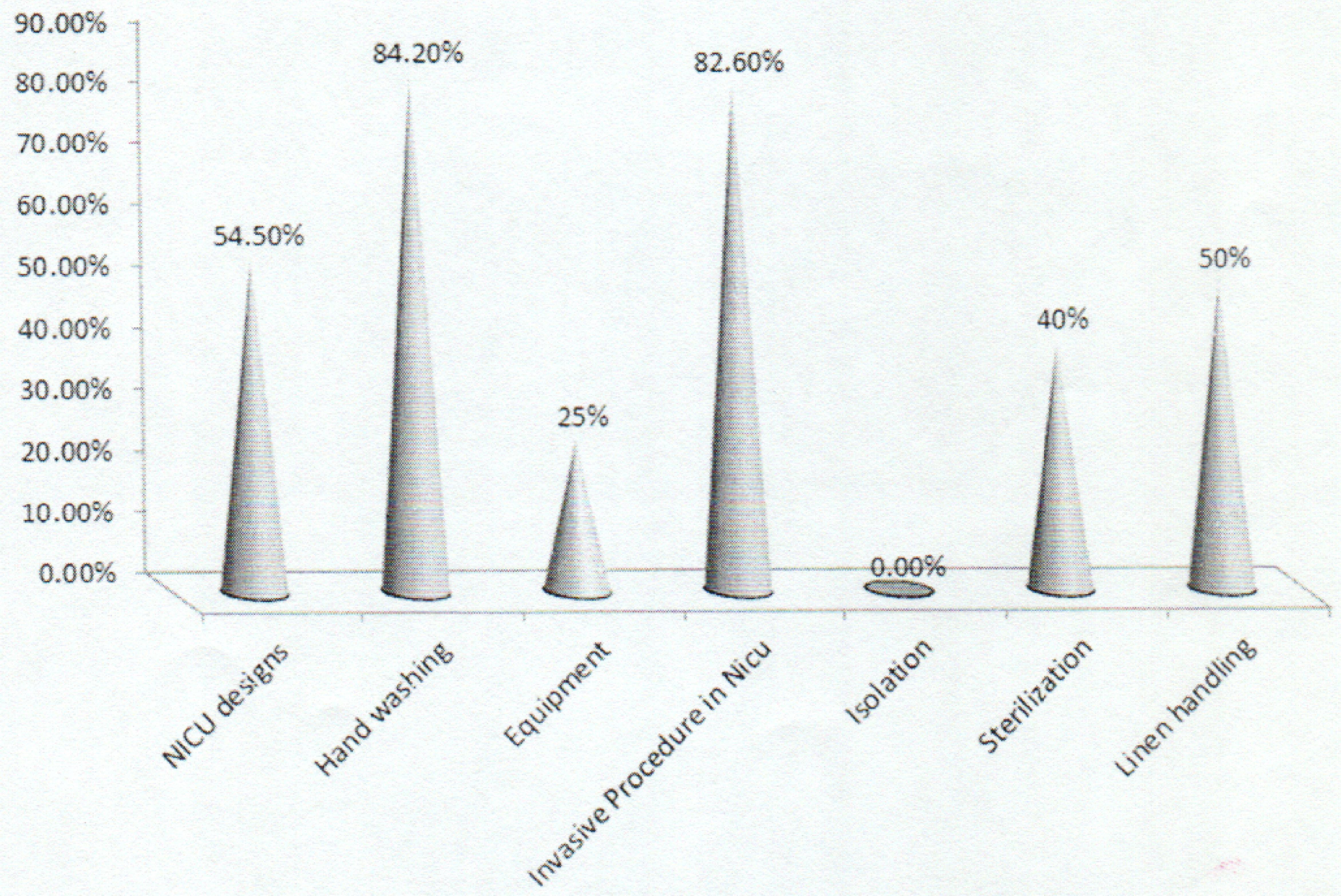
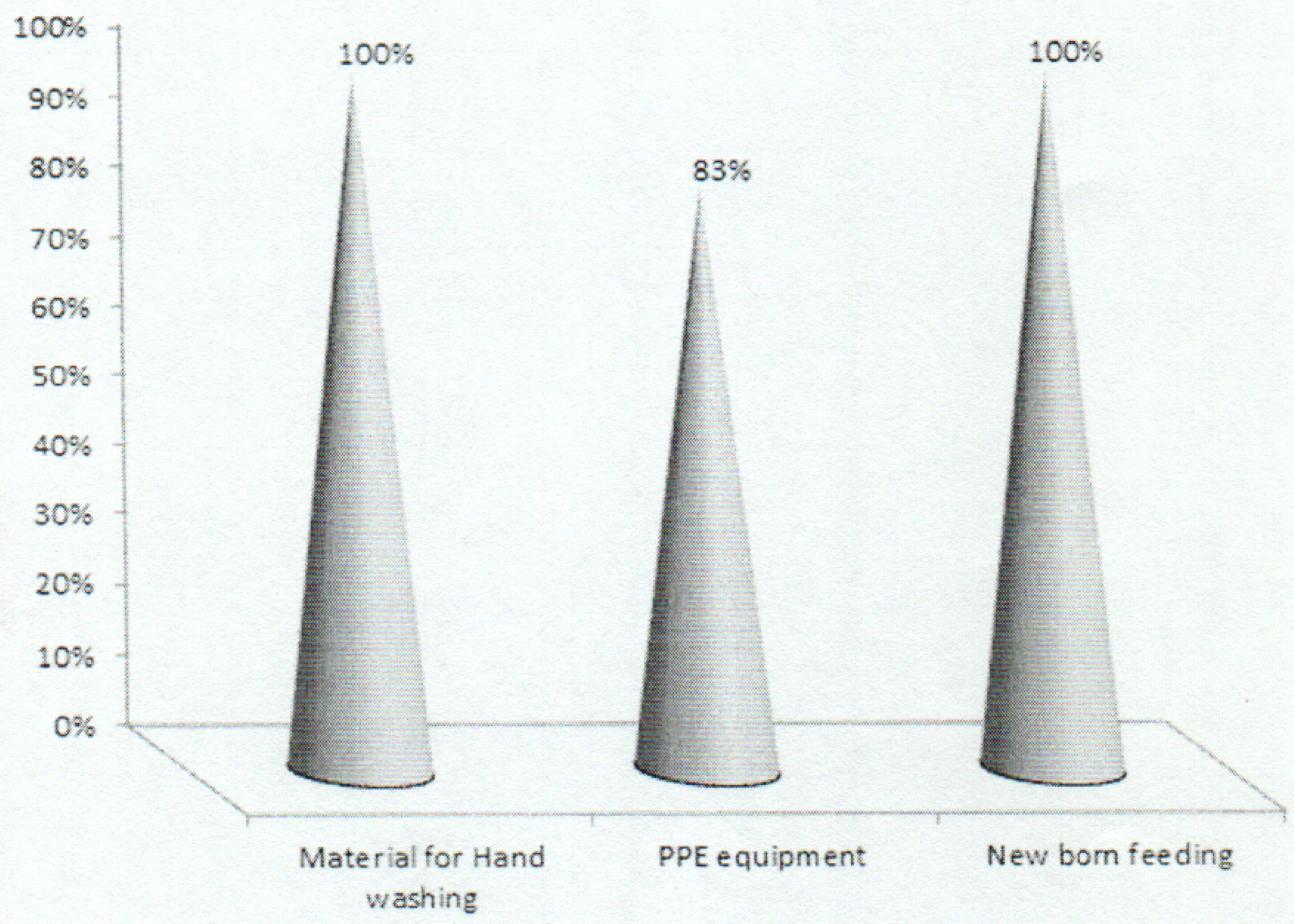


Figure (4-5): Quality of Infection Control in NICU Atbara Hospital

Table(4-6): Quality of Infection Control in NICU Atbara Hospital:

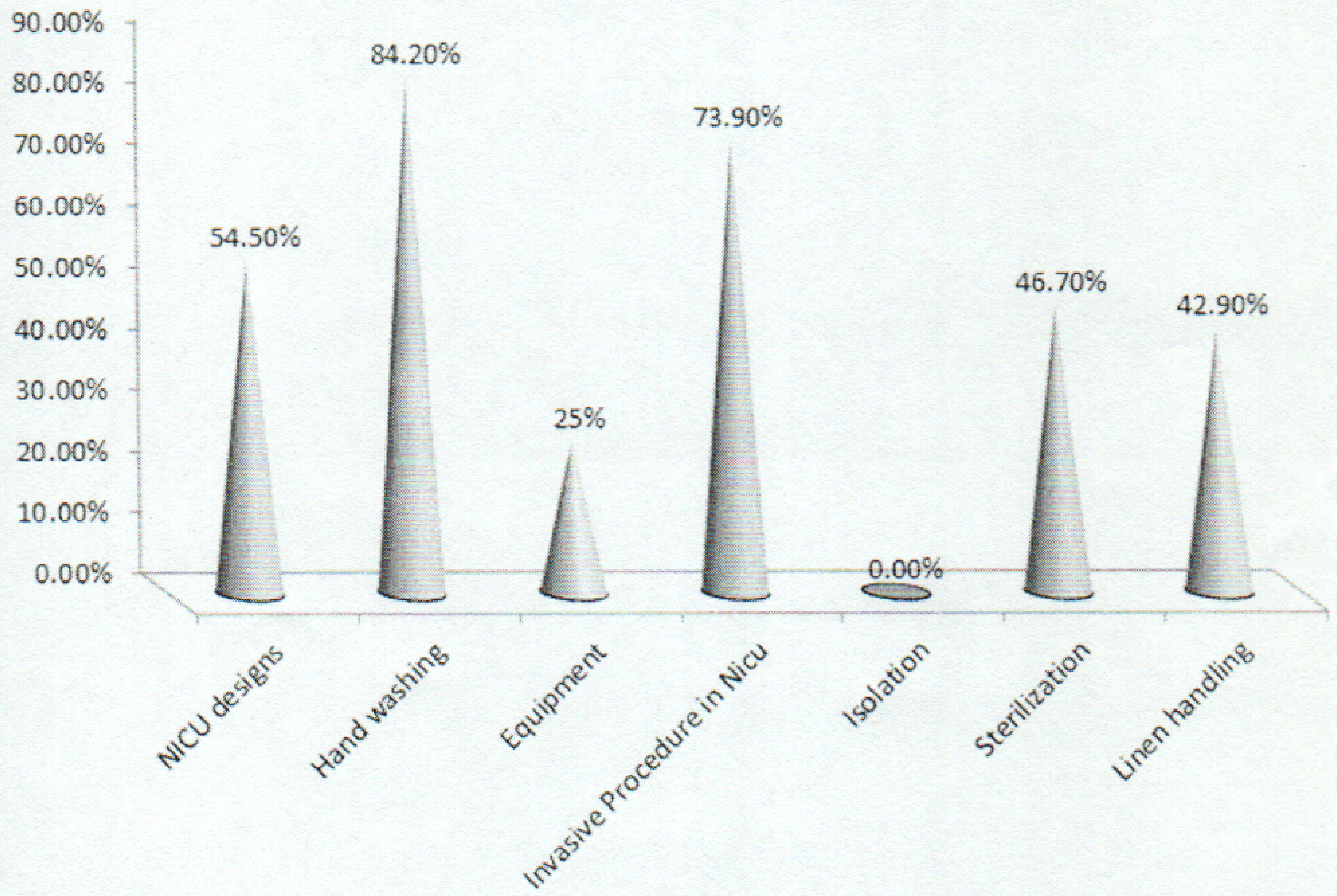
Atbara Hospital:	Available	Not Available	**Total**
Material for Hand washing	4	0	4
	100%	0%	100
PPE equipment	5	1	6
	83.3%	16.7%	100
New born feeding	8	0	8
	100%	0%	100



Figure(4-6): Quality of Infection Control in NICU Atbara Hospital

Table(4-7): Quality of Infection Control in NICU Military Hospital:

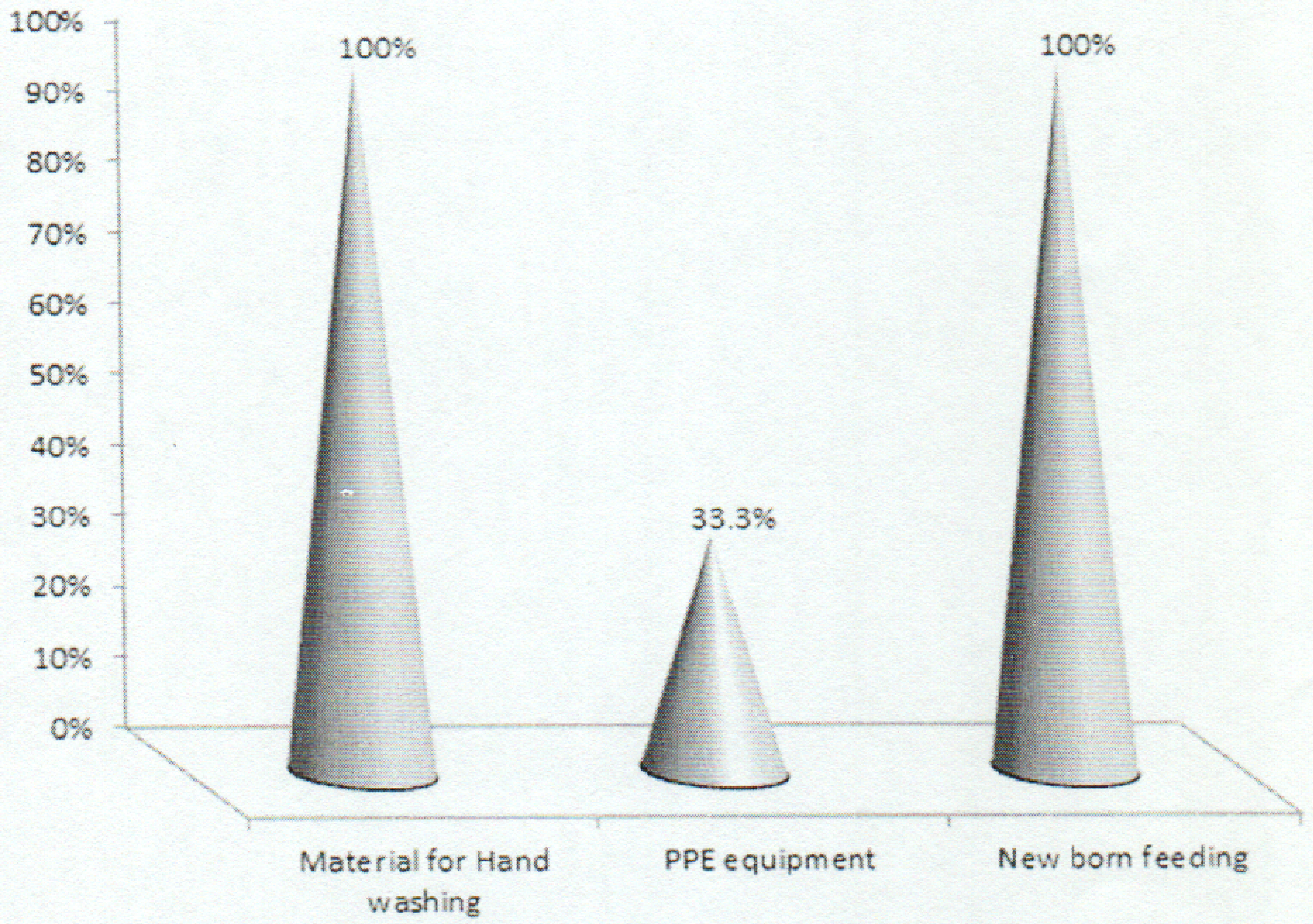
Military Hospital:	Yes	No	Total
NICU designs	12	10	22
	54.5%	45.5%	100
Hand washing	16	3	19
	84.2%	15.8%	100
Use of PPE	3	9	12
	25%	75%	100
Invasive Procedure in NICU	17	6	23
	73.9%	26.1%	100
Isolation	0	9	9
	0%	100%	100
Sterilization	7	8	15
	46.7%	53.3%	100
Linen handling	6	8	14
	42.9%	57.1%	100



Figure(4-7): Quality of Infection Control in NICU Military Hospital

Table(4-8): Quality of Infection Control in NICU Military Hospital:

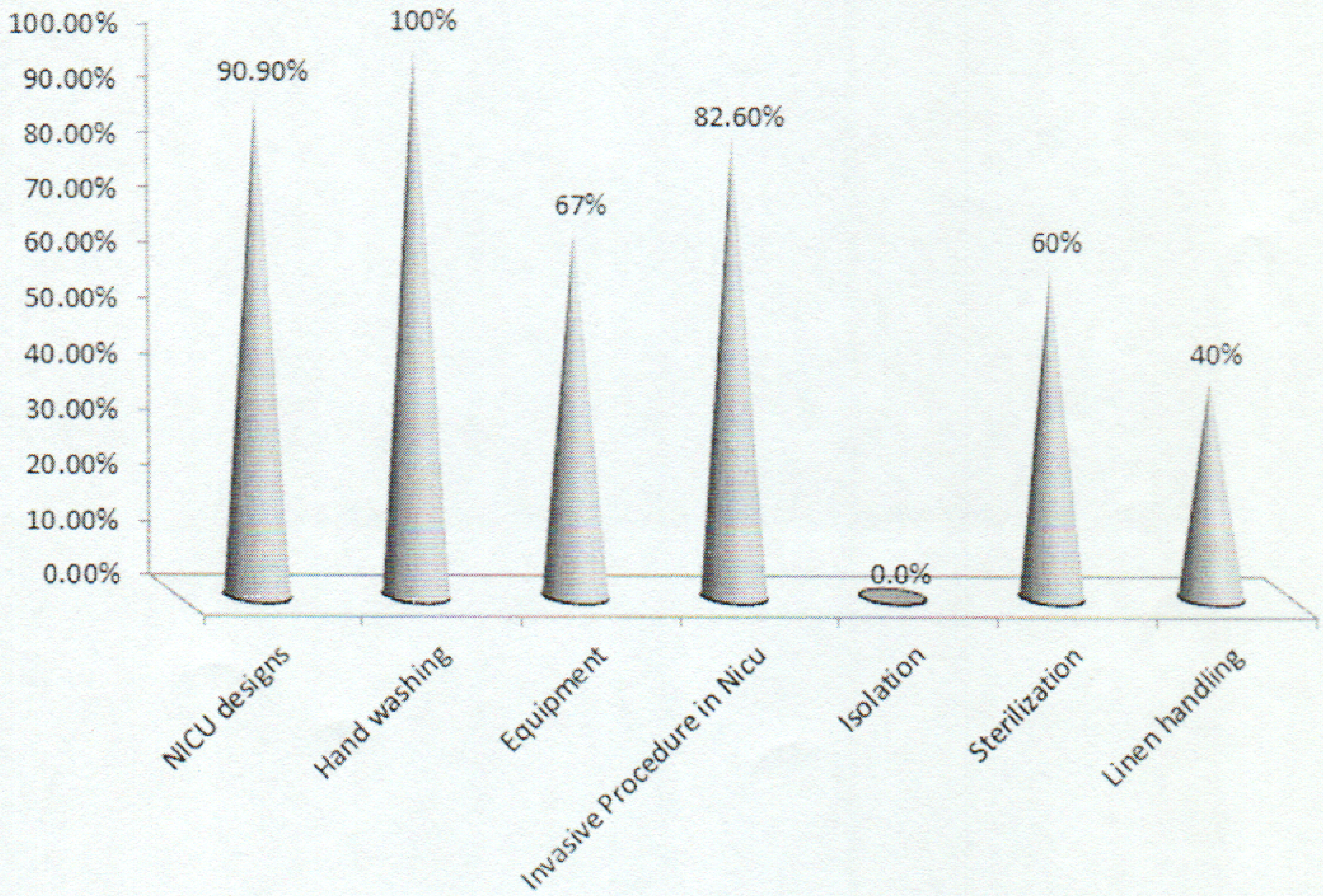
Military Hospital:	Available	Not Available	**Total**
Material for Hand washing	4	0	4
	100%	0%	100
PPE equipment	2	4	6
	33.3%	66.7%	100
New born feeding	8	0	8
	100%	0%	100



Figure(4-8): Quality of Infection Control in NICU Military Hospital

Table(4-9): Quality of Infection Control in NICU Almak Nimer Hospital:

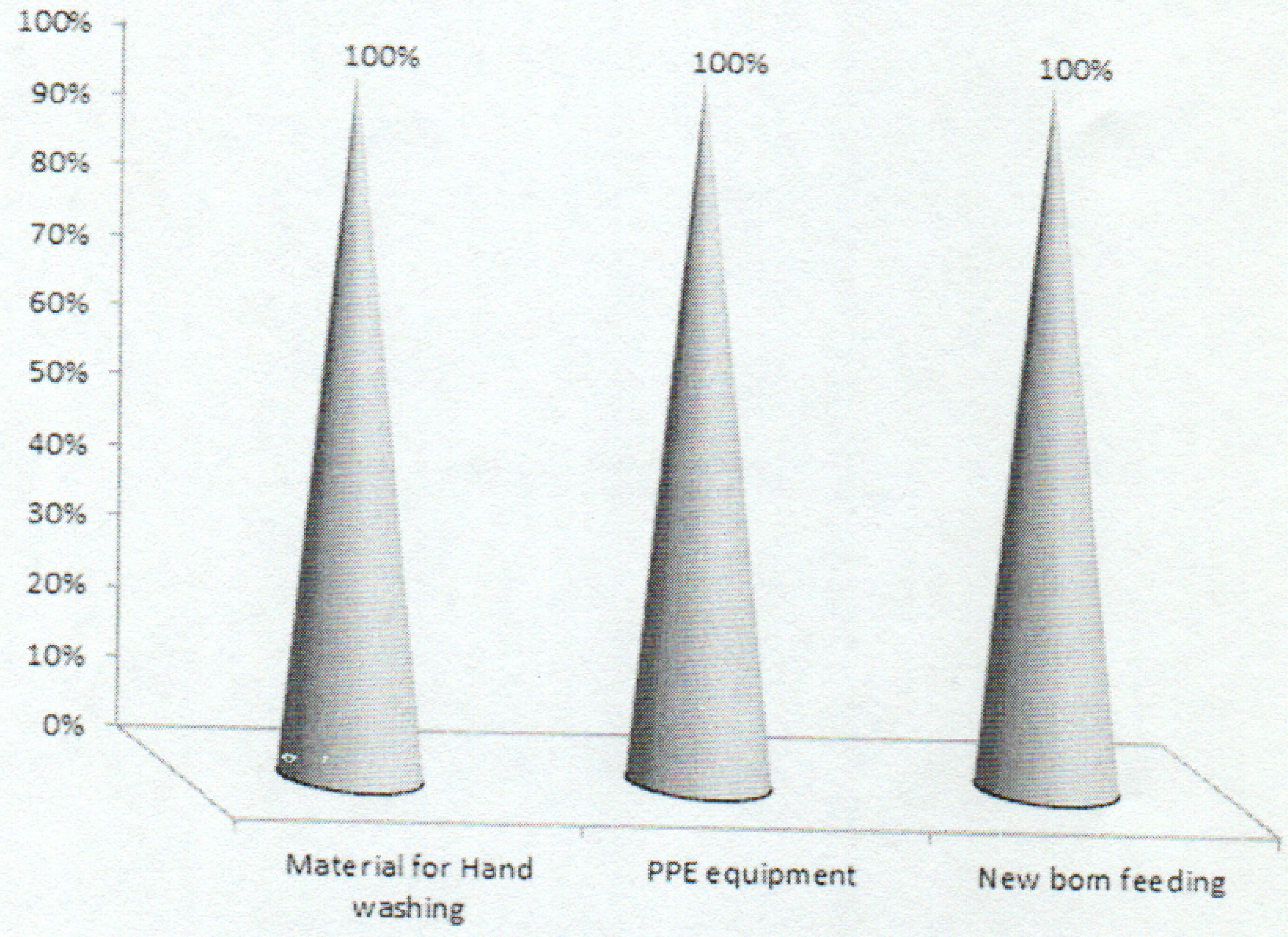
AlmakNimer Hospital:	Yes	No	Total
NICU designs	20	2	22
	90.9%	9.1%	100
Hand washing	19	0	19
	100%	0%	100
Use of PPE	8	4	12
	66.75%	33.3%	100
Invasive Procedure in NICU	19	4	23
	82.6%	17.4%	100
Isolation	0	9	9
	0%	100%	100
Sterilization	9	6	15
	60%	40%	100
Linen handling	12	2	14
	85.7%	14.3%	100



Figure(4-9): Quality of Infection Control in NICU AlmakNimer Hospital

Table(4-10): Quality of Infection Control in NICU AlmakNimer Hospital:

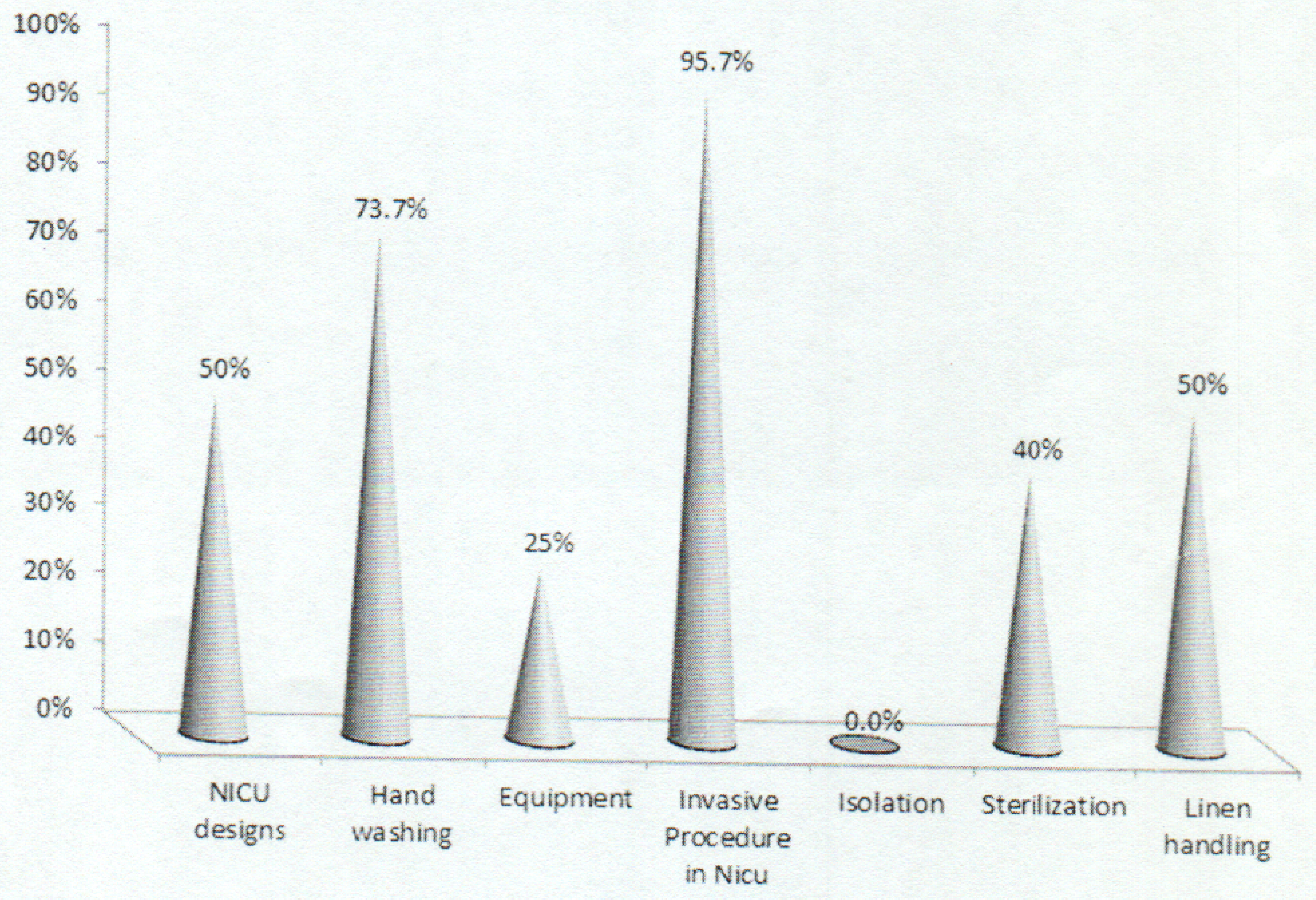
Almak Nimer Hospital:	Available	Not Available	**Total**
Material for Hand washing	4	0	4
	100%	0%	100
PPE equipment	6	0	6
	100%	0%	100
New born feeding	8	0	8
	100%	0%	100



Figure(4-10): Quality of Infection Control in NICU AlmakNimer Hospital

Table(4-11): Quality of Infection Control in NICU Alshorta Hospital:

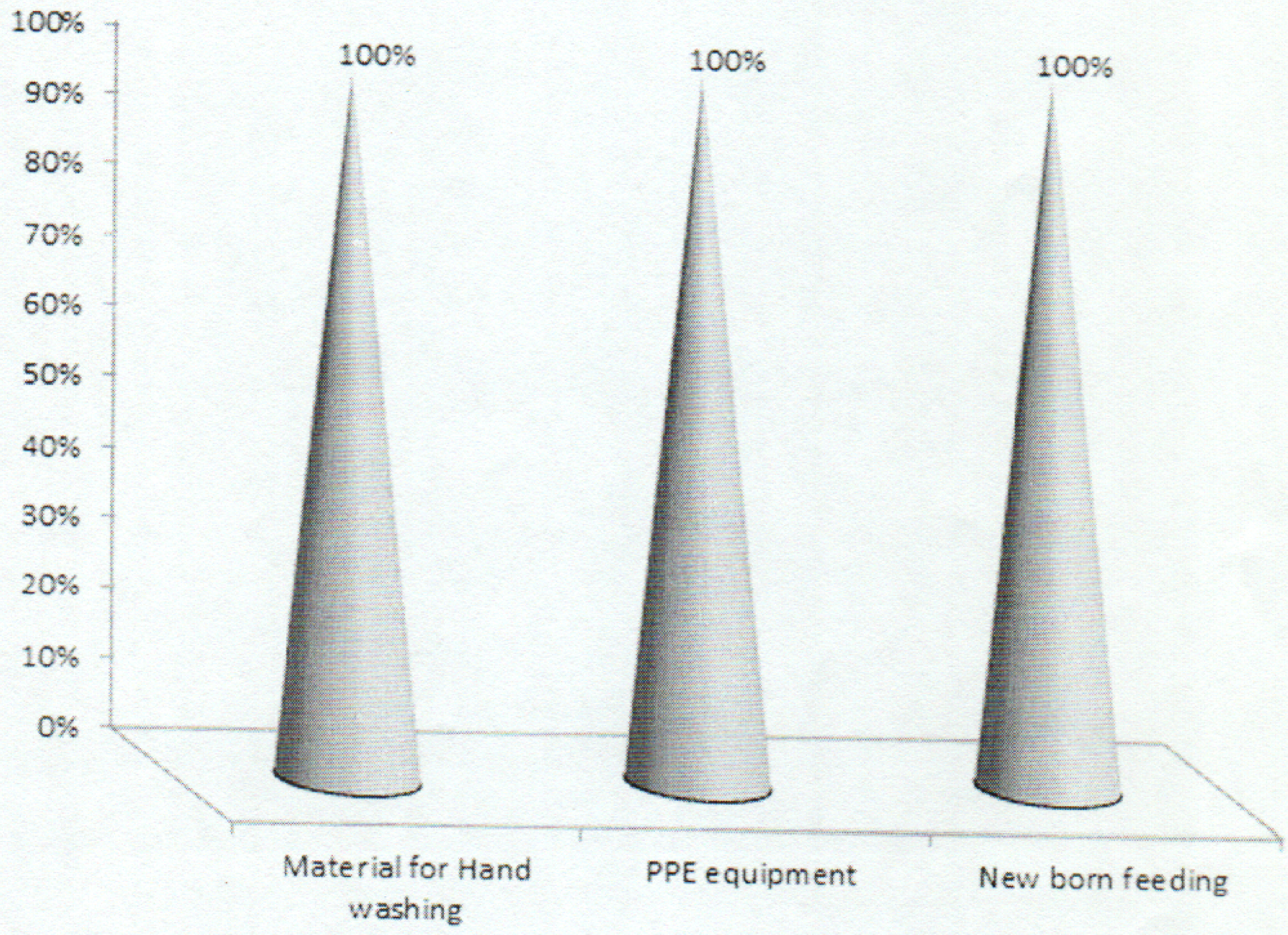
Alshorta Hospital:	Yes	No	Total
NICU designs	11	11	22
	50%	50%	100
Hand washing	14	5	19
	73.7%	26.3%	100
Use of PPE	3	9	12
	25%	75%	100
Invasive Procedure in NICU	22	1	23
	95.7%	4.3%	100
Isolation	0	9	9
	0%	100%	100
Sterilization	6	9	15
	40%	60%	100
Linen handling	7	7	14
	50%	50%	100



Figure(4-11): Quality of Infection Control in NICU Alshorta Hospital

Table(4-12): Quality of Infection Control in NICU Alshorta Hospital:

Alshorta Hospital:	Available	Not Available	**Total**
Material for Hand washing	4	0	4
	100%	0%	100
PPE equipment	6	0	6
	100%	0%	100
New born feeding	8	0	8
	100%	0%	100



Figure(4-12): Quality of Infection Control in NICU Al shorta Hospital

Table(4-13): Correlation Between Hospital:

Test Statistics						
	Aldamer	Alsalam	Atbara	Alaskary	Almak nimer	Alshorta
Chi-Square	1.200[a]	.800[b]	.800[b]	.800[b]	5.400[c]	2.600[c]
Df	7	8	8	8	6	6
P-Value	0.991	0.999	0.999	0.999	0.494	0.857

Discussion:

The study was investigate the quality of infection control at the River Nile state locality .

The result of current study reflect that the majority of NICU designed were performed goodly in majority of hospitals while few performed an excellent design.

The result of current study reflect that the majority of NICU hand washing were performed excellent in majority of hospitals while few performed as goodly hand washing **,our result is near to** study conducted by Yassin s. Ibrahim et al 2011 **aim** is to explore the Infection Control (IC) management system and practices at the implementation level by Health Care Workers (HCWs) results Embaba general hospital has well organized institutional system for IC The NICU setting has satisfactory resources Out of the total 291 observed patient-contacts 61% were done by nurses Performance in hand hygiene was scored as poor (67%) before patient contact and good (84%) after patient contact (p=0.00) Compliance to standard was scored as good in hand washing (82%) [30].

the result of current study reflect that the majority of NICU PPE were performed poor in majority of hospitals, while few performed good in PPE **Our result** is **disagree** to study conducted by Archena Lakshmi P.A et al November 2014 – October 2015 **aim** is to find gaps between use of PPE among the health care provider in tertiary centers Tamil Nadu the result HCPs included in the study were 1060.among them, there were 412(38.9%) doctor ,550(51.9%) nurses and 98(9.2%) technicians. Among 862 HCPs who work outside the operation theatre (OT)and ICU. Appropriate uses of PPE were only 156(18.1%). It was high among doctors 109(31.5%) followed by nurses 39(9.3%) and technicians

8(8.2%) which was statistically significant p=0.0001 HCPs working in OT and ICU were 423 and 183 receptivity, among HCPs working OT, appropriate use of gloves, mask, apron, gown and hair cover was 100%. But the use of goggles and hoe cover was very low, the reasons for inappropriate use of PP was non availability 562(78%) followed by not aware of the importance 77(11%) [31].

The result of current study reflect that the majority of NICU invasive procedures were performed excellent in majority of hospital ,while few of them were performed good **our result is near** to study conducted by Susan ,et al 2014 **aim** is to assess strategies use to prevent MRSA transmission and central line associated blood stream infections in NICUs The **result** from study is staff from 162 of 342 NICUs responded (response rate74.3%) most (92.3%) NICUS use central line insertion and maintenance bundles ,but maintenance practices varied including agents used for antisepsis and frequency of dressing changes Forty-two percent reported routine screening for all patients. Chlorhexidine glaciate (CHG) use for central line care for at least one indication (central line insertion ,dressing changes ,or port -cap antisepsis) was reported in 82 NICUs (51.3%) Among sixty-five NICUs responding to question on CHG use restrictions, 46.2% reported no restriction [32]

The result of current study reflect that the majority of NICU isolation were performed poor at all hospitals .

the result of current study reflect that the majority of NICU sterilization were performed poor in majority of hospital ,while few performed good sterilization.

The result of current study reflect that the NICU linen handling were performed poor in the majority of hospital s ,while few perform an excellent linen handling.

Chapter Five

Conclusion and Recommendations

Conclusion

The quality of infection control is low to moderate in majority of River Nile hospitals while it is high quality at the rest few hospitals .

Recommendations:

- Continues training program for NICU staff about infection control practice.

- Infection control leader should be available.

- NICU designs building should be change to be ideal.

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Appendix

Appendix:

- Preterm birth, also known as premature birth, is the birth of baby at fewer than 37 weeks of gestational age.

- Full term birth, is the birth of baby between 39 – 40 weeks of gestational age.

- Post term birth, is the birth of baby at 42 weeks and beyond.

Condition warranting additional empiric precaution to prevent transmission:-

- acute diarrhea.
- meningitis.
- measles.
- mycobacterium tuberculosis.
- bordetella pertussis.
- respiratory syncytial or parainfluenza virus.

Elshaikh Abdallah Elbadri Universit

Faculty of Health Science

Department of Nursing

…f Quality of Infection Control in Nurse… …e Hospital 2018

NICU designs

	Yes	No
* Location:		
- Close to the champers of birth operation.		
- Close to the lab our room.		
* Bed of NICU:		
- Bed with barriers.		
- For multiple bed room 1.5 m between bed.		
- The distance between each cot or incubator area $\geq$ 1.0 m		
* Room of NICU:		
- Single family room.		
- Breast feeding room.		
- Dressing room.		
- Immediate isolation room.		
- Dirty room.		
- Room for nurse station:		
- Inside nursery.		
- Outside nursery.		
* Number of door in NICU:		
- 1 door.		
- 2 door.		
- 3 door.		
* Photo therapy:		
- Inside incubator.		
- Separate from incubator.		
- Hand washing sink outside of the door of NICU.		
- Audio alarm.		
- Central oxygen.		
- Portable x-ray unit on separate unit.		

Hand washing

Material :	**Available**	**Not Available**
- Running water.		
- Solid or liquid soap.		
- Alcohol hand rubs.		
- Sink.		
Place of sink:	**Yes**	**No**
- Inside nursery.		
- Outside nursery.		
When washing hands:		
- Before entering nursery.		
- Before wearing gloves.		
- Before invasive procedure.		
- Between each patient treatment.		
- After removing gloves.		
- After invasive procedure.		
- After using bathroom, toilet latrine .		
Hand preparation:		
- Remove Jewelry (ring, watch)		
- Short nail and clean with blunt orange stick.		
- Perform procedure.		
- After procedure done dry with disposable towel.		

Open tap by:

Elbow ( ), knee ( ), assistance ( )

Close tap by:

Elbow ( ), knee ( ), assistance ( )

Equipment

Equipment:	Available	Not Available
- Gloves		
- Gown		
- Goggles		
- Mask		
- Head cap		
- Safety shoes		
Use PPE:	**Yes**	**No**
- Wearing the safety shoes before enter the nursery.		
- Wearing the gown before enter the nursery		
- Wearing the mask before enter the nursery		
- Wearing the gloves before any procedure		
- Wearing the mask before any procedure		
- Wearing the head cup before any procedure		
- Wearing the goggles before any procedure		
- Remove the gown after any procedure		
- Remove the mask after any procedure		
- Remove the head cap after any procedure		
- Remove the goggles after any procedure		
- Remove the safety shoes to exit the nursery		

Invasive Procedure in NICU

Medication Administration:	Yes	No
*Procedure:		
- Hand hygiene before injection.		
- Use sterile needle and syringe.		
- Disinfection vial with alcohol.		
- Use of sterile cotton or gauze the ampoules		
- Close storage of multi dose storage multi does use		
- A storage ampoule does.		
* Umbilical vein:		
- Remove any visible clots from lumen of vein with forceps.		
- Fluid ova umbilical vein under aseptic.		
* Catheter:		
- Foley catheter remove after 48-72 hours		
*Umbilical artery and venous catheter		
- The infant abdominal cord are clean with alcohol.		
- Tie piece of umbilical tube around the base of the umbilical cord tightly enough to minimize blood lose.		
* Peripheral intra venous device		
- Hand washing		
- Wear gloves clean site of insertion		
- Dressing to (piv) site are line of defense against infection.		
- Corer cannula site with sterile dressing.		
- Change the dressing only if the blood or fluid		
- Remove the cannula after 48-72 hours		
* Care venous blood sample:		
- Wash hand with soap and water.		
- Clean with alcohol.		
- Clean site of ample by and water.		
* care for chest tube:		
- Wash hand with soap and water.		
- Don sterile gloves and gown.		
- Changing chest tube under aseptic technique		

*** New born feeding:**	**Available**	**Not Available**
- Breast mother.		
- NG Tube.		
- Bottles.		
- Formula.		
* Milk formula preparation:		
- Clean area for preparation.		
* Bottles cleaning sterilization:		
- Boiling.		
- Steam.		
*Breast milk storage time		
< 24		
> 24		

	Yes	No
* Linen handling:		
- Wash linen in correct temperature to disinfect 93^{C} for infection linen.		
- Enough clean linen must be milk available.		
- Clean linen should be transport in laundry page to the nursery area. Garment to be first to the laundry prior the use of neonate.		
* Soiled line:		
- Should be discover into leak proof yellow page taken to the laundry .		
- Soiled diapers and medical waste should be collected 3 hours after every feeding.		
- Nappy change should be done wearing is possible rubber gloves to prevent heavy contamination and transient colonization.		
* Waste production:		
- Recovery and waste sorting plate forms.		
- Transfer soiled linen, nappy and medical waste to dirty room.		
- Put sharp object in safety box.		
Chemical waste, pathological waste, infection waste and pharmaceutical waste are put in to dirty room and single chamber.		
- Disposal sharp object in container.		
- Disposal liquid waste in general derange system		
- Micro biology waste if stored in proper collection.		
- Separate the waste container from clean and treatment containers.		

Isolation

	Yes	No
are the specific isolation precaution of the patient infected with the following pathogens:		
- Tb.		
- Measles.		
- Cholera.		
- Sudden acute respiratory syndrome infection.		
- Group (A) streptococcus disease.		
• Wearing of PPE:-		
- Inside isolation room.		
- Outside isolation room.		
- Not wear.		
• Remove of PPE:-		
- Inside isolation room.		
- Outside isolation room.		
• Isolation room staff:-		
- Separation.		
- Share patient outside.		
- Mother or entering.		

Sterilization

Sterilization method:-	Available	Not Available
- Autoclaved		
- High pressure steam.		
- Dry heat sterilization.		
- Moist heat sterilization.		
- Hot air oven.		
- Burning of incineration.		
- Radiation		
- Flaming.		
- Micro wave.		
- Moist heat sterilization:-		
- Water bath.		
- Boiling.		
- Steam sterilization.		
- Formalin.		
Material sterilization:-	Yes	No
- Plastic tube sterilization:-		
- Chemical : physical		
- Glutaraldehyde base formula.		
- Stabilized hydrogen peroxide.		
- Piratic acid.		
- Sodium hypocloride.		
Incubator care:-		
- Humidification.		
- Autoclaving in single pack.		
- Linen and gown sterilized:- - under pressure in the autoclave - steam heated		

بسم الله الرحمن الرحيم

سري

قيادة سلاح المدفعية
مستشفى عطبرة العسكري
عطبرة - تلفون ٠٩٩٠٠٢١٨
النمرة: م ع ع /سري /٤/١/
التاريخ :٣٠/ابريل٢٠١٨م

السيد/ عميد كلية العلوم الصحية

السلام عليكم ورحمة الله تعالى وبركاته

موافقة بحث تخرج

المرجع :

١. خطابكم بالنمرة بدون بتاريخ ٢٩/أبريل ٢٠١٨م .

٢. المستشفى لامانع لديها من تدريب وأجراء البحث للمذكورين أدناه وهم .

أ. ريا شمس الدين أبو القاسم .

ب. ريان إبراهيم حبوب .

٣. للتكرم بالاستلام وإجراء اللازم .

ونسيادتكم وافر الشكر والتقدير ....

عقيد طبيب/
أحمد علي حسين سليمان
قائد مستشفى عطبرة العسكري

سري