One Health Journal of Nepal

Original Article Open Access

Knowledge and Practice on Blood Transfusion among Health Care Workers in Birtamode, Jhapa

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ABSTRACT

Introduction: Blood transfusion is the transfer of blood or blood component from donor to recipient. It is a vital and often life-saving procedure which needs proper knowledge and practice of health workers while performing. The main objective of the study was to assess knowledge and practice regarding blood transfusion procedure and its associated factors among healthcare workers working at P.T. Birta City Hospital and Research Center Pvt. Ltd.

Methods: Using a multistage sampling technique, a cross-sectional study was conducted involving 126 healthcare workers in Birtamod Municipality. A self-administered questionnaire was employed to assess their knowledge and practice of blood transfusion procedures, with data analysis conducted using SPSS version 23.

Results: The study revealed that 96% of healthcare workers exhibited satisfactory knowledge, and 79% demonstrated competent practices in blood transfusion procedures. On average, each health worker conducted 2 blood transfusions per week, with some performing up to 10. The study identified associations between compliance with unit protocol guidelines and knowledge/practices related to blood transfusion, as well as participation in training programs and the level of knowledge about blood transfusion.

Conclusions: The majority of healthcare workers exhibited satisfactory knowledge and moderate practices regarding blood transfusion, highlighting the need for targeted refresher training to enhance safe blood transfusion practices, addressing specific areas of deviation.

Keywords: *Blood; Blood Transfusion; Knowledge; Practice.*

INTRODUCTION

Blood Transfusion is a crucial life saving measure with limited human resources where blood and its components cannot be replaced. The WHO's recommendations place a strong emphasis on both a safe and sufficient blood supply as well as clinical transfusion practices in areas like appropriate blood use, sample collection, patient identification, compatibility testing and administration of blood adverse event reporting.[1]

The knowledge and skills of health workers is essential to administer blood components safely and efficiently. The objective of the study was to assess knowledge, practice and its associated factors on blood transfusion among healthcare workers working at P.T Birta City Hospital and Research Center Pvt. Ltd. The study acts as an input for designing appropriate training and as a reference for policy makers to develop appropriate policies and guidelines in response to knowledge and practice gaps on blood transfusion.

METHODS

This study was a descriptive cross sectional study conducted in P.T. BirtaCity Hospital and Research Center Pvt.Ltd. of Birtamode, Jhapa from 02-JUL-2023 to10-OCT-2023 . Ethical approval was given by Nepal Health Research Council (Ref no.179) and letter of approval for

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research conduction was given by P.T Birta City Hospital and Research Center Pvt. Ltd. Written informed consent form was signed by each participant before the start of data collection.

The study population was individual health care workers who were working in emergency and inpatient units of P.T Birta City Hospital and Research Center Pvt. The study included only health care workers performing nursing care at the hospital duty hours. Health workers who were on maternal, annual and sick leave were excluded in the study. Moreover, health care workers who are not at the bedside or who were not in direct clinical care such as nurse administrators, coordinators, and supervisors were excluded.

Sample size calculation and sampling technique

Multistage sampling technique (1st stage stratified sampling and 2nd stage convenience sampling)[2] was used for data collection.

Sample size was calculated using Taro-Yamane Formula[3]:

n=N/((1+Ne^2))(n= sample size; N= target population; e= sampling error) =183/((1+183*⟦(0.05)⟧^2);

Sample Size =126

Now, stratified sampling through proportionate formula,

n= (Total number of health worker in the cluster of working department *Sample Size(n=126)/Total number of health workers in the hospital (N)

Where (N1=29, N2=12, N3=17, N4=25, N5=26, N6=13, N7=23, N8=11, N9=27; n=126, N=193)

Using above formula;

Sample size of emergency ward (n1) = 20; pediatric ward(n2) =8; neuro ward (n3) =12; medicine ward (n4) =17; medicine and neuro ICU (n5) =18; gynecological ward (n6) =9; surgery ward (n7) =16 ;out- patient department (n8) =7; operation theater (n9) =19.

Sample was collected according to the above number stratified into different wards and then used convenience sampling technique.

Data collection tool and technique

For this cross-sectional study, data was collected in P.T Birta City Hospital and Research Center Pvt. Ltd from 15-Aug-2023 to 15-Sep-2023. The observational study used self-administered, pre-structured questionnaire (Cronbach's Alpha reliability coefficient 0.9; content validity 0.8 consulting 5 experts). One hundred twenty six (126) health care workers were assessed after signing the informed consent form through multistage sampling technique (1st stage stratified sampling and 2nd stage convenience sampling).[2]

Data Analysis

Data analysis was conducted using SPSS version 23. The analysis involved calculating percentages and frequencies to assess the knowledge and practices of healthcare workers regarding blood transfusion, along with associated factors. A Likert scale was employed for both knowledge and practice questions, where correct statements were assigned a score of 1 and incorrect ones a score of 0. The three-point Likert scale for knowledge was categorized as satisfactory if the mean score was 4 or above out of 8, and unsatisfactory if below 4. Similarly, the three-point Likert scale for practices was categorized as competent if the mean score was 15 or above out of 20, and incompetent if below 15. The association between independent and dependent variables was analyzed using the Pearson Chi-square test with a significance level of $p<0.05$ and a 95% confidence interval, performed using SPSS version 23.

RESULTS

Knowledge on Blood Transfusion

Ninety-six percent of health workers displayed satisfactory overall knowledge of blood transfusion, with deficiencies noted in specific areas, such as the transportation guide (86.5% lacking) and minimizing complications (55.0%). Despite these gaps, most demonstrated adequate understanding in the transfusion process, client screening, compatibility assessment, and post-transfusion measures.

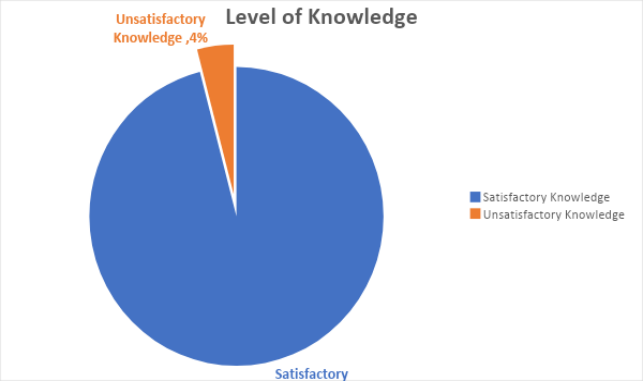

Figure 1. Level of knowledge of healthcare worker towards blood transfusion

Practices Associated with Blood Transfusion

The study showed that the majority of health workers had work experiences of 6 months-1 year. The mean blood transfusion performed by a health worker in the hospital was 2 transfusions per week within the range of 0 to 10 blood transfusions per week. The study found that only 12.0% of the health workers have participated in the specified training related to the blood transfusion although ninety two percent of health workers were well aware about protocol/ guideline and compliance to be followed during the blood transfusion procedure.

Table 1. Practices associated with blood transfusion

Variables	n(%) (n=126)
No. of Blood Transfusion per week by a health worker	
Below 5 transfusions	108(85.7%)
5-10 transfusion	18(14.3%)
Ever taken any training/program related to blood transfusion	
Yes	16(12.7%)
No	110(87.3%)
Compliance with unit protocol/ guideline of blood transfusion	
Yes	117(92.9%)
No	9(7.1%)

Practice on Blood transfusion

The overall practice of 78.0% of health workers was seen to be satisfactory and competent. They had good practice in the majority of aspects such as preliminary assessment of consent, vital signs, blood grouping and cross matching, inspection of blood bags, transportation of blood, monitoring signs, and symptoms after blood transfusion. There were also some incompetent practices of 21.0% health workers while returning blood which was not administered longer than 30 mins to the blood bank and in documentation of client tolerance to the transfusion process.

Figure 2. Level of Practice of health care worker towards Blood Transfusion

Factors associated with blood transfusion

The study revealed a significant association between blood transfusion knowledge and participation in related training programs ($p<0.001$, Pearson chi-square test). In addition, an association was observed between compliance with unit protocol/guidelines for blood transfusion and the practice and knowledge of blood transfusion, as determined by the Pearson Chi-square test ($p<0.001$, 95% confidence level).

Table 2. Association of Independent and Dependent Variables using Chi-square test

Variables	Knowledge (P-value)	Practice (P-value)
Ever participated in program and training related to blood transfusion	0.001*	0.094
Compliance with unit protocol/ guideline during blood transfusion	0.004*	<0.0001*
No. of blood transfusion per week	0.35	0.929
Years of experience	0.195	0.669

Socio-demographic of health workers on blood transfusion.

Majority of the health workers were of age 20-30 yrs. There was a high involvement of the female population. More than eight out of ten (88.1%) health workers were Hindu. More than half of health workers were staff nurses and health assistants. And the maximum health worker had work experience more than 6 months.

Table 3. Socio-demographic variable of health care workers participating in the study

Variables	n(%) (n=126)
Age	
20-30 yrs	112(88.9%)
30-40yrs	14(11.1%)
Sex	
Male	19(15.1%)
Female	107(84.9%)
Religion	
Hindu	111(88.1%)
Muslim	2(1.6%)
Christian	6(4.8%)
Buddhist	7(5.6%)
Marital Status	
Married	29(23%)
Single	97(77%)
Level of Education	
ANM/CMA	40(31.7%)
SN/HA	70(55.6%)
BSc. Nur/BN	16(12.7%)
Work experience	
Less than 6 months	34(27%)
6 months-1 yrs.	46(36.5%)
1yr-2yrs	12(9.5%)
2yrs and above	34(27%)

DISCUSSION

The study revealed that the majority of healthcare workers possessed satisfactory knowledge and a moderate level of practices regarding blood transfusion. Despite similarities to a study in a Malaysian university hospital, certain knowledge gaps were identified in the Nepalese context, particularly in aspects related to blood transfusion transportation and preventive measures for minimizing complications.[4] Notably, the study indicated a disparity between knowledge and practices, emphasizing the importance of proper education on blood transfusion to ensure patient safety. Furthermore, a significant portion (79%) of healthcare workers exhibited competent practices, highlighting the need for skill development training and educational programs to address various aspects of blood transfusion.

In summary, the study underscores the necessity of updated, skillful healthcare workers focused on patient safety in blood transfusion procedures. The identified knowledge-practice gap calls for in-service training tailored to address specific variables.[5] The findings, applicable to a similar setting in a private hospital in Nepal, emphasize the crucial role of training and updated guidelines in fostering patient safety during blood transfusions.[6] Organizational efforts, including regular refresher training and adherence to safe blood transfusion guidelines, can mitigate the identified gaps. Additionally, governmental changes in blood transfusion policies can contribute to more effective hazard mitigation during transfusion procedures.[7]

It is essential to recognize that the study focused exclusively on nursing care providers among the diverse range of healthcare workers.

CONCLUSIONS

This study revealed that health workers had a satisfactory knowledge level in the majority of aspects. The study showed the association of knowledge and practices of health workers who had participated in the training program related to the blood transfusion. This clarifies that in-service training and educational programs focusing on safe blood transfusion practices, refresher training on standard protocol of national guideline of blood transfusion are likely to update the health workers towards blood transfusion. The study result may help in designing the educational programs concerning the major deviated aspect of them to make health workers updated towards the practice of safe blood transfusion practices.

CONFLICT OF INTEREST

None

FUNDING

This study was funded by P.T. BirtaCity Hospital and Research Center Pvt. Ltd.

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