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RESEARCH ARTICLE

PERCEPTION OF BLOOD BANKS EMPLOYEE ABOUTCOMPUTERIZED BAR CODEBASED TRACKING SYSTEM FOR DETECTING AND PREVENTING MEDICAL TRANSFUSION ERRORS IN RIYADH CITY, SAUDI ARABIA

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ABSTRACT

Purpose: The specific objective addressed in this paper were assess the positive and the negative employee perceptions toward using the bar code to reduce the blood transfusion errors in the blood banks.

Method: The data were collected using a self-administrated questionnaire with simple random sampling to select the study samples. A sample of 110 employee from 4 blood banks in Riyadh city in Saudi Arabia. The study used a descriptive analysis to answer the research question.

Results: The results indicated that the employee participants agree regarding the barcode role in promoting the patient safety , reducing the medical errors, reduce the time spent in the manual documentations ,improving the operational efficiency, securing the right of the blood banks and make the workflow less complex through the elimination of a second employee to observe the transfusion processes. The participants employee disagree regarding the negative statements as reported in the answers. The educational degree hadn't effect on using the barcode techniques, the application of the technique will not be difficult , also the participants disagree regarding the difficulty of techniques.

Conclusion: The bar code computerized system detected and prevented the blood transfusion errors, thereby reducing the proportion of blood samples rejected and increasing the operational efficiency and patient safety.

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INTRODUCTION

A transfusion-transmitted infection risk is well identified and it is occurred commonly during transfusion processes in hospitals that contribute significantly in transfusion risk. In general, the term of blood transfusion safety refers to the overall perspective of delivering proper transfusion care. Also should be consider some factors of transfusion errors, for example : accurate patient identification & proper labeling of the pre-transfusion specimen, appropriate decision-making regarding the clinical use of blood components and accurate bedside verification in which the right blood has to be given to the right patient(Askeland *et al.,* 2008; Lepage *et al.,* 1992). According to study did by (Koshio *et al.,* 2009), to reduce transfusion risk there are three important factors achieved by auto identification and data capturing. The first one is securing rights of transfusion by auto identification at the point of care with right information. The second is securing right process of transfusion. Skipping the process of transfusion including cross matching might make transfusion harmful. The third one is traceability for checking information on adverse event of blood products that are prepared from same unit of blood. Bar Code application in blood banks is critical technology to improve patient safety during transfusion blood to the patients. To ensure transfuse blood products safely, must be consider blood bank specialists accurately identify patients data, blood samples parallel with patients data and the blood components. Bar Code based computerized tracking system was to identify and prevent transfusion errors that consider medical errors (Turne *et al.,* 2003; Franchini, 2010). Errors in blood transfusion are serious pattern of medical errors. Currently, especially in developing countries we need to concentrate on the substantial risk that human process errors have on patient safety during blood transfusion also Improve employee is serious part to do safe transfusion (Askeland *et al.*, 2008). In our country we need to assess perception of workers in blood banks about impact of computerized systems (bar-code

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system) with their daily work to ensure the safety and quality of the work performed. Also to examine the enhancement of the workflow in blood banks ensuring safe blood transfusion.

OBJECTIVES

The main aim of the study is to assess the positive and the negative employee perceptions toward using the bar code to reduce the transfusion errors?

MATERIALS AND METHODS

Research design

This study is descriptive, the Questionnaire distributed to employees in certain hospitals especially staff in blood banks.

Statistical treatment

Data was analyzed by using SPSS version 20(descriptive statistics).

Research sample

Research sample was drawn from four hospitals specified from blood bank sections in Riyadh region . Sample around 110 employees by using full survey.

Research tools

The Questionnaire instrument was distributed via one-to-one or bye-mail. Questionnaire divided into two parts:

Section I: Demographic information.
Section II: statements related to the perception of the employee toward the bar code applications in the laboratories.

Validity and reliabiality

Questionnaire was examined for validity and reliability by bring it to qualified person e.g. doctors .
Cronbach's Alpha= .853

RESULTS

The sample of this study was conducted through 110 paper questionnaires collecting from four hospitals.

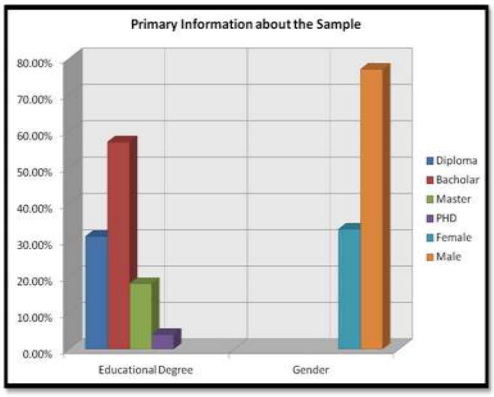

Figure 1. Shows the primary information about the sample that are educational degree and gender.

Results: Table 1

Positive employee perception toward the barcode application in reducing transfusion errors	N	Mean	Std. Deviation
Promoting Patient Safety	110	5.00	.000
Reducing Medical Errors	110	4.90	.288
The use of this technology will reduce time spent in manual documentation and allow the employee to make use of time more efficiently	110	4.90	.288
Improving Operational Efficiency	110	4.89	.313
I think Securing the right of the Blood Banks	110	4.86	.438
Using of barcode system technique is important specially in blood banks.	110	4.86	.344
Implementing a bar-coding technology for blood transfusion will reduce the ID related transfusion errors	110	4.86	.354
Implementing such a technology will make the work flow less complex through the elimination of a second employee to observe the transfusion process.	110	4.85	.363
Average mean		4.89	

We can see form the table above the positive perceptions of the employee toward the applications of the barcode in reducing the transfusion errors. The results mean average from 5 to 4.85 with the overall mean 4.89.(agree regarding the positive statements)

Table 2

Negative employee perception toward the barcode application in reducing transfusion errors	N	Mean	Std. Deviation
Educational degree had an effect on using this same technique	110	2.55	1.565
The use of this technology will be difficult because it is new and requires training.	110	2.41	1.016
This technology is too advanced and we don't need it at this point of time	110	1.08	.275
Average mean		2.01	

We can see form the table above the negative perceptions of the employee toward the applications of the barcode in reducing the transfusion errors. The results mean average from 2.55 to 1.08 with the overall mean 2.01(disagree about the statements)

Majority of the sample have Bachelor degree, then Diploma, Master and last degree is PHD. Also, it seems that the majority of the sample is male with 77% while female are 33%.

DISCUSSION

As we can see that the majority of the sample have Bachelor degree, then Diploma, Master and last degree is PHD. Also, it seems that the majority of the sample is male with 77% while female are 33%. The employee participants agree regarding the barcode role in promoting the patient safety and reducing the medical errors, also the barcode will reduce the time spent in the manual documentations, improving the operational efficiency, securing the right of the blood banks, reducing the blood transfusion, also the barcode implementation will make the workflow less complex through the elimination of a second employee to observe the transfusion processes. The results of the study is in agreement with the Dohnalek (2004) which result in that the barcode techniques will faster and optimum blood ordering during the transfusion process. (Koshi, 2009; Dohnalek, 2007) reported that the barcode techniques will reducing and prevent medical errors and the blood transfusion errors. Turner (2003) reported that the barcode techniques will increase the blood collections performance. the result of this study also in agreement with the Murphy (2012) result in that the implementation of a hospital electronic transfusion management system was shown to provide improvement in transfusion practice. Murphy (2013) The main challenges for the hospital transfusion laboratory are ensuring patient safety, the effective use of blood. Askeland (2008) result in that the Incident reports decreased after application bar codes. The participants employee disagree regarding the negative statements as reported in the answers. The educational degree hadn't effect on using the same techniques, the application of the technique will not be difficult, also the participants disagree regarding the difficulty of techniques . so there was no barriers with the application of the barcode techniques in the blood transfusion.

Conclusion

The bar code computerized system detected and prevented the blood transfusion errors, thereby reducing the proportion of blood samples rejected and increasing the operational efficiency and patient safety.

Recommendations

This study has several suggestions that are drawn from the above figures and results, which are:

1.The quality of the Bar-Code system is absolutely critical to the effectiveness of automated data collection.
2.Healthcare organizations have to have such systems to ensure their quality and reduce medical errors.
3.The need of such a system requires a qualified training courses to medical staff.
4.Further study should understand the effect of barcode application on reducing the blood transfusion errors.

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