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MONITORING AND ASSESSING OF KNOWLEDGE, ATTITUDE AND PRACTICE OF HAEMOVIGILANCE PROGRAMME IN MANAGING BLOOD TRANSFUSIONS

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ABSTRACT

Background: Blood transfusions, while life-saving, carry inherent risks. To ensure patient safety, a robust haemovigilance system is vital. This system involves monitoring the entire transfusion process, from donation to post-transfusion follow-up. Healthcare professionals play a crucial role in this system, as their knowledge and timely reporting of adverse reactions are indispensable.

Aim & Objective: This study aimed to evaluate the knowledge, attitudes, and practices of healthcare professionals regarding haemovigilance and blood transfusions. It also sought to assess the prevalence and characteristics of transfusion reactions and develop strategies to improve haemovigilance practices.

Methodology: A prospective observational study was conducted at KIMS Al Shifa Hospital. A validated questionnaire was administered to 87 healthcare professionals to assess their knowledge, attitudes, and practices. Patients who underwent blood transfusions were monitored for adverse reactions. Educational initiatives were developed to enhance awareness and understanding of haemovigilance.

Results: A study of 72 patients who underwent transfusions found that 17 experienced transfusion reactions. The most common reactions were non-haemolytic allergic, occurring in 41.2% of cases, followed by febrile and non-haemolytic transfusion reactions (FNHTR) at 29.4%. The majority of reactions occurred within the first 3 hours of transfusion, with a significant proportion occurring within

the first 30 minutes. Packed red blood cells (58.8%) were the most common blood product involved in reactions, followed by fresh frozen plasma (35.3%).

While many participants were aware of transfusion reactions, many were unfamiliar with reporting systems in India. Despite lacking personal experience with transfusion reactions, many had not received training on how to report them. Several challenges to reporting were identified, including difficulty in assessing reactions, time constraints, uncertainty about reporting channels, and fear of repercussions.

Conclusion: This study underscores the importance of improving haemovigilance practices in healthcare settings. While awareness of transfusion reactions is high, many healthcare professionals lack knowledge of reporting systems and training on how to report reactions. This contributes to underreporting, hindering efforts to identify and prevent transfusion reactions. To enhance haemovigilance, education and training on haemovigilance systems are crucial.

Keywords: Haemovigilance, Adverse transfusion reactions, Febrile Non-Haemolytic Transfusion Reactions, Educational initiatives

INTRODUCTION

Blood transfusions, a globally recognized and practiced medical intervention, have played a critical role for decades in saving lives [1]. Among hospital procedures, blood transfusions rank as one of the most frequently performed. Each year, approximately 100,000 lives are preserved through this crucial medical procedure [2]. Blood transfusion involves a multidisciplinary approach, requiring collaboration among different healthcare professionals and stakeholders throughout the hospital. Guaranteeing the safe and successful delivery of blood products relies on a collaborative effort – from the blood centre transfusion medicine team to nurses, doctors, and all other healthcare professionals involved in patient care [3].

A transfusion reaction refers to any adverse event experienced by a patient during or following a blood product administration,

where another cause can't be identified. Complications following transfusions are typically categorized based on several factors: origin, timing, cause, and severity [4].

Haemovigilance for blood transfusion entails a comprehensive system of monitoring procedures that oversee every stage of the transfusion process. It starts with blood donation and processing of components, continues through delivery and administration to patients, and concludes with patient follow-up. This system actively tracks, reports, investigates, and analyses adverse events associated with any stage – from donation to transfusion. Ultimately, haemovigilance aims to prevent future occurrences or repetitions of these negative events by developing and implementing preventive measures [5, 6].

Active participation of healthcare professionals in haemovigilance programs is crucial for guaranteeing safe blood transfusions and improving patient outcomes. Proper knowledge and execution of haemovigilance procedures by these professionals can significantly reduce the likelihood of transfusion-related complications [7]. Healthcare professionals hold a significant responsibility in reporting adverse transfusion reactions as they are in close proximity to the patient and possess a thorough understanding of the symptoms associated with such reactions.

Without a haemovigilance program, accurately assessing transfusion risks becomes difficult, hindering healthcare professionals' ability to assess the benefit over risk and effectively counsel patients before transfusions. This study aims to evaluate healthcare professionals' awareness of these programs to improve reporting rates of adverse transfusion reactions [3].

MATERIAL AND METHODS

A prospective observational study was conducted from October 2023 to October 2024 at KIMS Alshifa Hospital, encompassing multiple departments including Orthopaedics, Gynaecology, Urology, General Medicine, General Surgery, Nephrology, Gastroenterology, Neonatology, and Emergency.

The sample size for this study includes 72 transfusion recipients. Additionally, the

sample size for healthcare professionals is determined to be 87.

This study was approved by the ethical committee of the institution and official consent was also given for the purpose of performing the study. It was then certified by the institutional Ethics Committee and approved the proposal of the study as per letter no KAS:ADM: IEC:0109F:23 approved on 27/11/2023.

The study includes patients of all age groups who have received blood or blood products, encompassing those with various medical conditions and excludes late incidents or notifications about signs and symptoms reported in outpatient settings, as well as certain events or situations unrelated to blood transfusions.

The study comprised six phases. In Phase 1, the knowledge, attitude, and practice of the haemovigilance program among healthcare professionals were assessed using a predesigned, validated KAP questionnaire with 34 questions. Phase 2 involved identifying and systematically monitoring patients who underwent blood transfusions or received blood products within the study period, with data recorded in patient observation records. In Phase 3, transfusion-related adverse events were identified in a prospective observational framework. During Phase 4, relevant adverse occurrences related to blood transfusions were noted and recorded using a

predesigned, validated haemovigilance data collection form. Phase 5 focused on reporting all types of adverse events related to blood transfusions at KIMS Alshifa Super Specialty Hospital, irrespective of their nature, using a standard haemovigilance reporting form. Finally, Phase 6 aimed at enhancing communication and awareness about the haemovigilance program among healthcare professionals through comprehensive educational initiatives, including department-specific group classes, and by providing a haemovigilance guide titled "Optimizing Blood Transfusions: A Haemovigilance Guide."

Statistical analysis was conducted to identify the prevalence and characteristics of adverse transfusion reactions using frequency and percentage. To assess the knowledge and attitudes of healthcare professionals regarding haemovigilance, descriptive statistics, including frequency and percentage, were utilized. Data was analyzed using SPSS software (SPSS Inc.; Chicago, IL) version 29.0.10.

RESULTS:

A validated KAP questionnaire was administered to 87 healthcare professionals to evaluate their knowledge, attitudes, and practices regarding haemovigilance. In addition, 72 patients who underwent blood transfusions or received blood products during the one-year study period were systematically monitored, with data

recorded using a standardized Patient Observation Record. During the study, 17 (23%) Transfusion-Related Adverse Events (TRAEs) were identified and recorded using a validated data collection form, with all types of TRAEs reported in a standard haemovigilance reporting form.

Results of transfusion reactions;

In the study the out of a total of 17 respondents, age distribution was diverse. Each of the age groups 18-30, 31-40, 41-50, and 51-60 consisted of 2 participants, making up 11.8% of the total for each group. The 61-70 age group included 4 participants, representing 23.5% of the overall respondents. Notably, the 71-80 age group had the highest representation, with 5 participants, accounting for 29.4% of the total.

In terms of gender distribution, out of the 17 participants, 8 were female (47.1%) and 9 were male (52.9%). This balance reflects a relatively equal representation of genders in the study.

Among the 17 respondents, the distribution of blood groups varied significantly. The most common blood group was A+VE, with 6 participants, accounting for 35.3% of the total. This was followed by O+VE, represented by 4 participants (23.5%). B+VE had 3 participants (17.6%), while O-VE included 2 participants (11.8%). The Bombay phenotype RH +VE and AB+VE were the least common, each comprising 1 participant (5.9%).

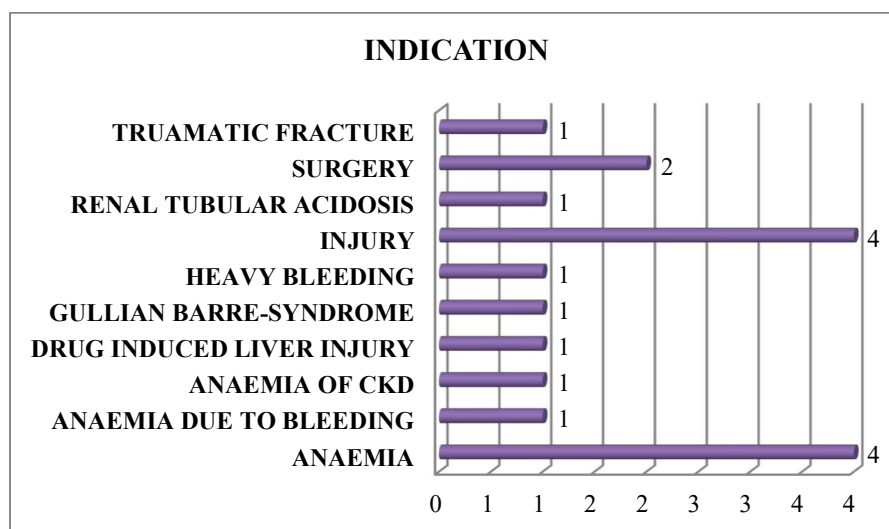


Figure 1: Indication Wise Distribution

Out of a total of 17 respondents, the most common indications for blood transfusion were anaemia and injury, each accounting for 23.5% (4 participants). Anaemia due to bleeding, anaemia of CKD, drug-induced liver injury, Guillain-Barré syndrome, heavy bleeding, renal tubular acidosis, traumatic fracture, and surgery were also

indicated but occurred less frequently. Specifically, anaemia due to bleeding, anaemia of CKD, drug-induced liver injury, Guillain-Barré syndrome, heavy bleeding, and renal tubular acidosis each represented 5.9% (1 participant), while surgery was indicated by 2 participants (11.8%).

Table 1: Impact on Vital Signs

Pairs	Mean	SD	p-value
Pre-transfusion Temp - Temp on reaction	-0.882	0.993	0.002*
Pre-transfusion Pulse - Pulse on reaction	-0.294	0.686	0.096NS
Pre-transfusion BP - BP on reaction	-0.294	0.588	0.056NS
Pre-transfusion RR - RR on reaction	-0.235	0.562	0.104NS
Pre-transfusion SPO2 - SPO2 on reaction	-0.176	0.393	0.083NS

*: Significant at 0.05 (p-value<0.05)

NS: Not Significant at 0.05 (p-value>0.05)

The paired t-test results revealed significant physiological changes associated with transfusion reactions. The comparison of pre-transfusion temperature and temperature during the reaction showed a mean difference of -0.882 (SD = 0.993) with a p-value of 0.002, indicating a statistically significant decrease in temperature. However, no significant differences were

found in pulse (mean difference = -0.294, p = 0.096), blood pressure (mean difference = -0.294, p = 0.056), respiratory rate (mean difference = -0.235, p = 0.104), or oxygen saturation (mean difference = -0.176, p = 0.083), though trends toward significance were observed for blood pressure and oxygen saturation.

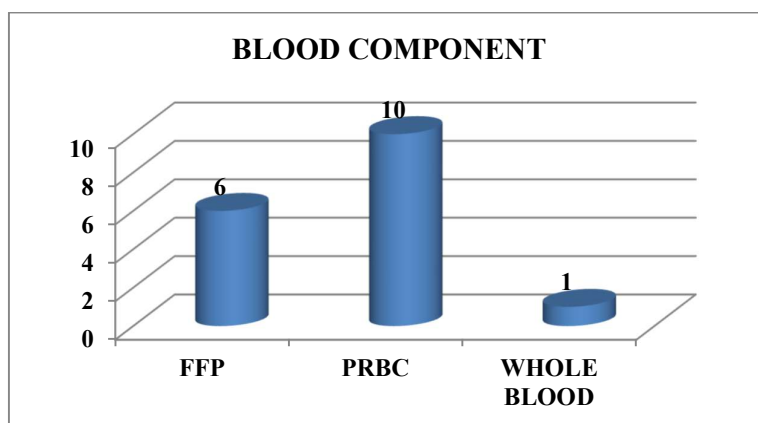


Figure 2: Blood Component

Out of a total of 17 respondents, the majority received packed red blood cells (PRBC), accounting for 58.8% (10 participants).

Fresh frozen plasma (FFP) was given to 35.3% (6 participants), while only 5.9% (1 participant) received whole blood.

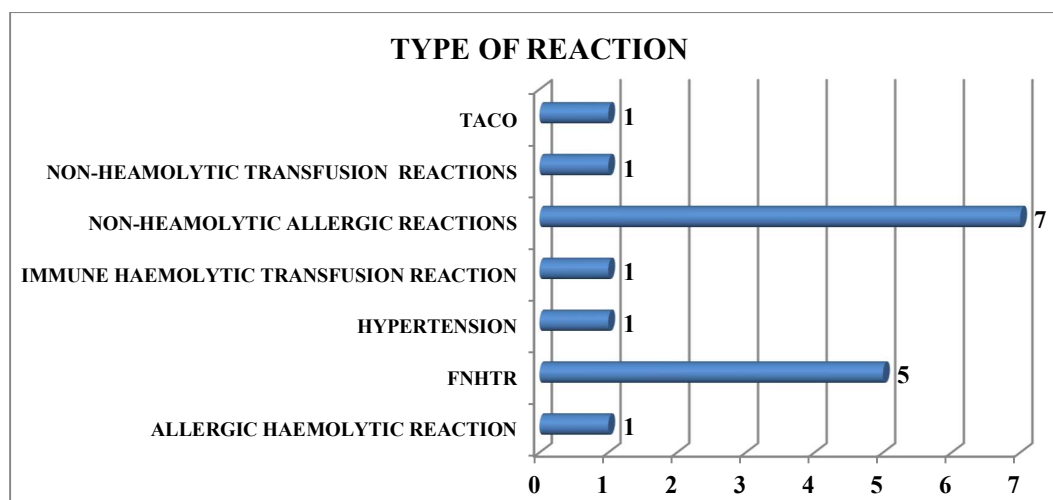


Figure 3: Type of Transfusion Reaction

Out of a total of 17 respondents, non-haemolytic allergic reactions were the most common, reported by 41.2% (7 participants). Followed by fever and non-haemolytic transfusion reactions (FNHTR), which accounted for 29.4% (5 participants). Allergic haemolytic reactions, hypertension, immune haemolytic transfusion reactions, non-haemolytic transfusion reactions, and

TACO were each reported by 5.9% of participants (1 participant each).

Results of knowledge, attitude and practice study:

Out of a total of 87 participants, the majority (89.5%, or 78 participants) had knowledge about transfusion reactions, while 10.5% (9 participants) did not.

Out of 87 participants, 42.9% (38 participants) were aware of the suspected transfusion reaction reporting system in India, while 58.1% (50 participants) were not familiar with it.

The attitude towards the transfusion risks vary—31.4% are neutral, 30.2% disagree, and smaller percentages agree or strongly agree. There is broad agreement that reporting is both a professional obligation (85.4% agree or strongly agree) and mandatory (88.7% agree or strongly agree). Opinions on the necessity of reporting each transfusion are more divided, with 37.2% strongly disagreeing, indicating they support comprehensive reporting, while 33.7% agree it may not be essential every time. Institutional enrolment in haemovigilance programs is widely supported (98.1% agree or strongly agree), as is integrating haemovigilance into healthcare curricula, with 86.5% endorsing this. The need for professional haemovigilance education receives near-universal support, with 99.2% agreeing or strongly agreeing.

The results on practice aspects of healthcare professionals regarding transfusion reactions and reporting shows mixed engagement levels. A 66.6% of professionals report not having experienced a transfusion reaction in practice, while 33.7% have encountered one, indicating some exposure to such events. Only 24.4% have reported these reactions, leaving a

substantial 75.8% who have not, suggesting underreporting of transfusion incidents. Participation in continuing medical education (CMEs), workshops, or seminars related to transfusion practices is minimal, with 98.8% indicating no attendance, and only 2.2% having participated. Additionally, while 29.1% have received training on reporting, a majority (71.2%) have not, highlighting a gap in structured training and professional development on reporting protocols in transfusion practices.

The primary obstacle, reported by 36.0%, is a lack of knowledge on "how and where to report" reactions, while 14.0% feel that reporting is restricted to blood banks. Additionally, 12.8% find it challenging to determine whether a transfusion reaction has actually occurred, and 10.4% struggle with both uncertainty in assessment and knowledge of reporting procedures. A smaller proportion, 8.1%, fear potential consequences of reporting. Barriers such as lack of time, absence of incentives, belief that a single report may have limited impact, and concerns about report accuracy also emerge but are less common.

The data highlights several proposed strategies to enhance transfusion reaction reporting among healthcare professionals, with a strong focus on training and accessibility improvements. The top suggestion, supported by 37.2% of respondents, includes a combination of

training, conducting CMEs/workshops, and simplifying the reporting form. Additionally, 17.4% advocate for training alone, while 8.1% emphasize the need for more educational sessions. Other suggestions involve integrating training with electronic submission options (7.0%) or ensuring that reporting forms are readily available in wards (5.8%). Some respondents also recommend making reporting mandatory (3.5%) and offering remuneration as motivation (3.4%). Overall, the recommendations indicate a need for clearer reporting processes, convenient access to reporting tools, and ongoing educational efforts to foster a culture of reporting among healthcare professionals.

DISCUSSION

Despite the benefits of blood transfusion, it is associated with a risk of adverse events, commonly referred to as transfusion reactions. These reactions can range from mild to severe and can occur during or after the transfusion. While the overall prevalence of transfusion reactions is relatively low, at around 1%, it is important to minimize their occurrence through effective haemovigilance practices.

This prospective observational study was conducted at KIMS Alshifa Hospital, a multi-specialty tertiary care hospital, located in Perinthalmanna. The study involved multiple departments, including Orthopaedics, Gynaecology, Urology,

General Medicine, General Surgery, Nephrology, Gastroenterology, Neonatology, and Emergency.

A predesigned, validated KAP questionnaire was administered to 87 healthcare professionals to assess their knowledge, attitude and practice regarding hemovigilance. Patients who underwent blood transfusions or received blood products during the one-year study period were identified, monitored systematically and data recorded in patient observation record. Transfusion-related adverse events were identified and recorded using a predesigned, validated data collection form. All types of adverse events were reported in a standard haemovigilance reporting form.

To enhance communication and awareness about the haemovigilance program, comprehensive educational initiatives were developed, including department-specific group classes and a haemovigilance guide.

The age distribution of the respondents was diverse, with a significant proportion falling into the older age groups. While each of the 18-30, 31-40, 41-50, and 51-60 age groups had only 2 participants, representing 11.8% each, the 61-70 age group accounted for 23.5% with 4 participants, and the 71-80 age group had the highest representation at 29.4% with 5 participants. This finding not consistent with study conducted by Sonia Shormin Miah *et al* 2021 [20]. Age may not correlate with transfusion reactions due to

factors like individual health conditions, immune responses to mismatched antigens, and pre-existing sensitization from prior transfusions or pregnancies. Study sample diversity also affects findings, as reactions often depend more on health, medications, and transfusion specifics than age alone.

Out of 17 participants who developed reactions after blood transfusion, 8 (47.1%) were female and 9 (52.9%) were male. This finding closely related to study conducted by Sonia Shormin Miah *et al* 2021[20]. While the data shows a slight difference in reaction rates between genders, it's not conclusive that gender is a significant factor in determining the likelihood of experiencing a transfusion reaction. Further research is needed to establish a definitive understanding of this relationship.

The diverse blood group distribution among the 17 respondents revealed A+ as the most common type, accounting for 35.3%, followed by O+ (23.5%), B+ (17.6%), and O- (11.8%), with Bombay phenotype Rh+ and AB+ each at 5.9%. These findings indicate a heterogeneous blood group distribution similar to those reported by Avisek Dutta *et al.* in their study "Haemovigilance in India: corrective action towards safety of blood transfusion" published in Journal of Preventive Medicine and Holistic Health, 2020 [5]. The higher incidence of transfusion reactions among A+ individuals can be attributed to their

prevalence in the population, leading to more transfusions and increased likelihood of reactions. Additionally, A+ blood carries specific antigens that heighten sensitivity to minor incompatibilities, and individuals may develop antibodies from previous transfusions, further raising their risk. A skewed representation of A+ individuals in the study may also amplify the observed reaction rates.

The study found that the most common indications for blood transfusion among the 17 respondents were anaemia and injury, each accounting for 23.5%. Other indications included anaemia due to bleeding, anaemia of CKD, drug-induced liver injury, Guillain-Barré syndrome, heavy bleeding, renal tubular acidosis, traumatic fracture, and surgery, which occurred less frequently, with each representing between 5.9% and 11.8% of the sample. These findings highlight the diverse medical conditions that can necessitate blood transfusions and emphasize the importance of a comprehensive assessment of patients requiring this procedure. This finding resembles with findings of "Hemovigilance: the experience of transfusion reaction reporting in a Teaching Hospital" by Grandi J, *et al* in 2018 [1].

The paired t-test analysis revealed significant changes in temperature following blood transfusion, with a mean decrease of 0.882 degrees Celsius (SD =

0.993, $p = 0.002$). However, no significant differences were observed in pulse rate, blood pressure, respiratory rate, or oxygen saturation between pre-transfusion and reaction measurements. These findings suggest that while temperature elevation is a common physiological change associated with transfusion reactions, other vital signs may remain relatively stable in the majority of cases. This finding closely related to study conducted by Aneke J *et al* titled Blood Transfusion Reactions and Institutional Hemovigilance Protocols: A 2-Year Retrospective Single Centre Audit, 2023 [2].

The results show that 58.8% of respondents received packed red blood cells (PRBCs), making them the most commonly needed blood component, followed by fresh frozen plasma (35.3%) and whole blood (5.9%). The high percentage of FFP transfusions may indicate a significant need for clotting factor replacement. These findings align with Dr. Sukanta Sen *et al* 2014 study titled “haemovigilance and transfusion safety [32]. The increased incidence of transfusion reactions with PRBCs is largely due to their frequent use, leading to greater exposure. Risks such as contamination and immunological responses to foreign antigens may arise during processing. Additionally, the concentration of red blood cells can trigger febrile non-haemolytic reactions, particularly in patients with pre-

existing antibodies. Even leuko reduced PRBCs may still contain leukocytes that contribute to reactions, while transfusion protocols and patient health conditions further impact the risk of PRBC-related reactions.

The predominance of non-haemolytic allergic reactions as the most common type of transfusion reaction, occurring in 41.2% of cases, underscores the need for vigilant monitoring and management. These reactions may arise due to various factors, including the presence of allergens in blood components, sensitivity to donor plasma proteins, or other immune responses. The high incidence of febrile non-haemolytic transfusion reactions (FNHTR), accounting for 29.4% of cases, further emphasizes the challenges associated with transfusion safety. The relatively low occurrence of other reactions, such as immune haemolytic reactions or TACO, each at 5.9%, suggests that while they are serious, they are less common. The results of this study, closely related to the work by Bhattacharya *et al.* on Transfusion-related adverse events at the tertiary care centre in North India [31].

The results of this study indicate that the majority of participants (89.5%) had knowledge of transfusion reactions. This is a positive finding, suggesting that awareness of potential complications associated with blood transfusions is relatively high among the study population. However, 10.5% of

participants demonstrated a lack of knowledge, highlighting the need for continued education and awareness campaigns to ensure that all individuals receiving blood transfusions are informed about potential risks. This finding is similar to the study conducted by Dhanushka *et al*. Knowledge, attitudes, and practices of hemovigilance among doctors in a Sri Lankan tertiary care centre, 2023 [15].

The results of this study highlight a significant gap in awareness regarding transfusion reaction reporting systems in India. Only 41.9% of participants were familiar with the suspected transfusion reaction reporting system, and a smaller proportion (32.6%) were aware of the transfusion reaction reporting centre. This results resemblance with Masror Roudasri D *et al* study titled “Nurses’ hemovigilance knowledge and performance after teach-back, concept map, and lecture: A quasi-experimental study” in 2021 [7].

The study results show mixed attitudes among healthcare professionals regarding blood transfusion risks and haemovigilance. Only 16.3% agree and 6.8% strongly agree that transfusions pose risks to patients, with many remaining neutral (31.4%) or disagreeing (30.2%), indicating a need for better education on these risks. However, a majority recognize the importance of reporting transfusion reactions, with 49.4% strongly agreeing that it is a professional

obligation and 62.0% viewing it as mandatory. Despite this, 11.6% remain neutral on reporting requirements, suggesting a need for more clarity. Opinions on whether every transfusion needs to be reported are divided, with 33.7% agreeing and 37.2% strongly disagreeing, reflecting a lack of understanding about underreporting consequences. Additionally, 63.2% support enrolling all institutions in haemovigilance programs, and 57.4% advocate for including haemovigilance training in healthcare education. Lastly, 67.8% believe healthcare professionals need more education on haemovigilance, highlighting a training gap. Overall, while there is recognition of the importance of reporting and haemovigilance, the mixed views on transfusion risks suggest the need for focused education to improve patient safety. This finding is similar to the study conducted by Amit P. Date *et al*. 2016 [12]. The study results reveal significant insights into the practice aspects of healthcare professionals regarding blood transfusions. A majority (66.6%) reported that they have not experienced a transfusion reaction during their professional practice, while 33.7% have encountered such reactions. Regarding reporting, 75.8% indicated they have not reported any transfusion reactions, compared to 24.4% who have reported them. The data also highlights a lack of participation in continuing medical

education (CME) or training, with 98.8% of respondents stating they have not attended any relevant workshops or seminars. Furthermore, 71.2% reported receiving no training on reporting transfusion reactions, while only 29.1% indicated they have received such training. These findings suggest a need for increased education and training opportunities to enhance the awareness and reporting practices related to transfusion reactions among healthcare professionals.

The results of this study highlight several significant barriers to transfusion reaction reporting among healthcare professionals. The most frequently cited barriers include the difficulty in assessing whether a transfusion reaction has occurred (12.8%), lack of time to report (14.0%), uncertainty about how and where to report (36.0%), fear of consequences (8.1%), and the belief that a single reported case may not have a significant impact (1.2%). Additional barriers identified include concern that a report may be wrong (1.2%), lack of remuneration or incentives for reporting (2.3%), and the perception that only the blood bank can report reactions (14.0%). This finding similar to the study by Rani Kasukurthi S, *et al* “Assessment of knowledge, attitude, and practice of haemovigilance among post-graduates at a tertiary care teaching hospital in

Hyderabad—a Cross-sectional study” in 2022 [19].

The results of this study identify several potential ways to improve the frequency of transfusion reaction reporting. The most frequently cited strategies include providing education and training through CMEs/workshops/seminars (8.1%), training healthcare professionals in reporting procedures (17.4%), making reporting mandatory (3.5%), providing electronic forms for submission (2.3%), making the reporting form easier (37.2%), and keeping reporting forms readily available in wards (5.8%). This finding similar to the study by Rani Kasukurthi S, *et al* “Assessment of knowledge, attitude, and practice of haemovigilance among post-graduates at a tertiary care teaching hospital in Hyderabad—a Cross-sectional study” in 2022 [19]. These findings highlight the need for a multifaceted approach to improving reporting frequency, combining education, training, and process improvements.

Strengths of the study

This study represents the most recent and comprehensive assessment of blood transfusions and associated adverse events within the institution. Patients receiving blood transfusions were systematically monitored, and their data were recorded in observation records. Those experiencing adverse events were closely monitored to ensure prompt identification and resolution

of issues. The blood bank was encouraged to report these events, which is vital for recognizing and addressing potential problems. As an initial step, the study evaluated the knowledge, attitudes, and practices of healthcare professionals regarding blood transfusions, offering valuable insights. Based on these findings, the study implemented educational initiatives, including department-specific group classes, a haemovigilance guide, and a haemovigilance newsletter, aimed at enhancing the knowledge and skills of healthcare professionals.

Limitations of the study

The study was conducted in a single institution. This limits the generalizability of the findings to other healthcare settings with different patient populations, practices, and resources. Furthermore, the study did not monitor donors to assess potential reactions, which could provide valuable information on the safety of blood donation practices. The follow-up period may have been insufficient to assess long-term outcomes and delayed complications related to blood transfusion.

CONCLUSION

The study aimed to assess the knowledge, attitudes, and practices of healthcare professionals regarding hemovigilance and blood transfusions. This was done to enhance patient safety and improve the effectiveness of the hemovigilance program.

Specifically, the study sought to evaluate the existing hemovigilance systems, determine the prevalence and characteristics of adverse transfusion reactions, enhance the safety and quality of blood transfusions through systematic monitoring and reporting, and assess the knowledge, attitudes, and practices of healthcare professionals. Additionally, the study aimed to develop and implement educational programs to improve awareness and skills among healthcare professionals.

The study found that the most commonly transfused blood component was packed red blood cells (PRBCs), followed by fresh frozen plasma (FFP). Non-haemolytic allergic reactions were the most common type of transfusion reaction, followed by febrile and non-haemolytic transfusion reactions.

Despite a high awareness of transfusion reactions, many participants were unfamiliar with the reporting systems in India. Most participants viewed reporting transfusion reactions as a professional obligation, and there was strong support for enrolling every institute under hemovigilance and integrating hemovigilance training into healthcare curricula. While most participants had no experience with transfusion reactions, many had not received training on reporting them. Despite this, most participants expressed a willingness to report reactions. Several barriers to

reporting were identified, including difficulty in assessing reactions, lack of time, uncertainty about reporting channels, and fear of consequences. Potential strategies to improve reporting include providing education and training, making reporting mandatory, and making the reporting process easier.

To improve communication and raise awareness about the hemovigilance program, comprehensive educational initiatives were implemented. These initiatives included department-specific group classes, and a hemovigilance guide, providing healthcare professionals with the necessary information and training to enhance their understanding and participation in the program.

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