e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(4); 712-719

Original Research Article

Knowledge, Attitude and Practice of Recipient Haemovigilance among Nurses in a Government Tertiary Care Hospital Chennai

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Received: 01-01-2026 / Revised: 15-02-2026 / Accepted: 21-03-2026

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Conflict of interest: Nil

Abstract

Aim: The primary aim of Haemovigilance Programmes in India is to improve the transfusion safety and quality by collecting, analyzing and disseminating information on a common arena of serious adverse reactions due to transfusion of blood and blood products. This study was designed to analyze the knowledge, attitude and practice of recipient haemovigilance (adverse reactions followed by blood transfusion) among Staff Nurses in a tertiary care hospital, Chennai.

Methods: This is a Quasi-experimental study conducted among 280 nurses in a tertiary care Hospital over one year (February 2023 - January 2024). Knowledge, Attitude and Practice was assessed based on the responses to the 20 questions. 9 questions regarding knowledge, 5 attitude based regarding reporting, 4 for practice, 1 related to reasons for underreporting and 1 possible ways to improve reporting of transfusion reaction.

Results: Knowledge about transfusion reactions was 40% (112 out of 280), Awareness regarding Haemovigilance programme of India (HvPI) was 17.55% (49 out of 280) of the Staff Nurses before intervention. After providing Information and Education, knowledge about transfusion reactions improved to 82.9% (232 out of 280) and awareness regarding Haemovigilance programme of India was 90% (252 out of 280). Attitude towards transfusion reaction reporting is a professional duty of a staff nurse was most notable from 38.2% (107 out of 280) to 68.9% (193 out of 280) after intervention.

Conclusion: Knowledge and awareness plays a vital role in shaping the attitude and practice of transfusion reaction reporting. Strategies like including topics about blood components, safe bedside transfusion practices, common transfusion reactions and transfusion reaction reporting in the Nursing curriculum, may pave the way to sensitize and strengthen the reporting system.

Keywords: Adverse Transfusion reactions (ATR), Haemovigilance, Transfusion Reaction Reporting.

DOI: 10.25258/ijcpr.18.4.117

Introduction

Blood transfusion is a lifesaving procedure but the risk of adverse reaction to transfusion is an untoward effect which varies from being relatively mild to lethal [1]. These reactions are mostly acute that occurs within 24 hours of transfusion and delayed occurring within days or months of transfusion.

The incidence of acute blood transfusion reactions is estimated to be 0.2-10% and is responsible for mortality in 1 per 250,000 [2]. The commonly encountered blood transfusion reactions include acute ABO Hemolytic reactions, allergic reactions, anaphylactic reactions, bacterial contamination, and Febrile Non Hemolytic Transfusion Reaction (FNHTR). At times, the prevailing disease condition in the transfusion recipient makes the definite diagnosis of transfusion reactions even more difficult. [3]

Knowledge of these ATRs helps not only in their easy identification and management but also it alerts us to prevent its occurrence by taking precautionary and adequate measures. The lack of

proper and strict haemovigilance systems throughout the country makes it difficult to assess the true and actual incidence of these reactions. The term haemovigilance was coined in France in the early 1990's. Since its inception, this system has been developed, adopted internationally, and now an integral part of transfusion practices. This is a systemic surveillance of ATRs and it aims to improve the safety of the transfusion process. Due to the under reporting of the minor adverse events by the medical staff, the actual prevalence of these ATRs is not known [4].

The primary aim of Haemovigilance Programmes in India is to improve the transfusion safety and quality by collecting, analysing and disseminating information on a common arena of serious adverse reactions due to transfusion of blood and blood products. It is also a continuous process of data collection and analysis of blood transfusion related adverse reaction to investigate their cause and outcome and prevent their occurrence or recurrence [5]. Haemovigilance programme has enrolled various centres including Medical colleges, Institutes, Hospitals, Blood Centres all across the country and have an oversight by the Haemovigilance Advisory Committee. Haemovigilance programme of India is now a part of the International Haemovigilance Network (IHN) which provides a global forum for sharing best practices and benchmark of Haemovigilance data [6].

The adverse transfusion reactions vary from minor to life threatening. Incidence in India of these reactions is variable ranging from as low as 0.27% to as high as 1.05% has been reported [7]. However, the true scenario may be different as reporting of transfusion reactions are less in India. This stems out of fact because our healthcare professionals are still not versant with reporting of these adverse effects. Moreover, the reporting of haemovigilance reports is still not mandatory and may contribute the under-reporting [8].

Indian reports on adverse transfusion reaction monitoring have been very low. This may be because monitoring is still evolving. Unfortunately, in India reporting of transfusion related adverse events are not mandatory.

In addition, studies had reported underreporting by the medical staff and thus most of the minor adverse events do not come in attention; therefore, the exact incidences of various types of transfusion reactions are not known. It is known that the medical practitioners like doctors, can report, but the awareness that a nurse and pharmacist can also do so is very low. This is one of the main reasons for the underreporting of transfusion [9]. The blood transfusion chain described aptly as 'vein to vein' is a series of multiple processes and procedures commencing with donor blood collection to its final aim recipient blood transfusion [10].

Aim & Objectives

Aim: To study the knowledge, attitude and practice of recipient haemovigilance (adverse reactions followed by blood transfusion) among Staff Nurses in a tertiary care hospital, Chennai.

Objectives:

1. To train the Nurses and to create awareness of adverse reactions following blood transfusion.
2. To promote and improve safe blood transfusion practice among Nurses.
3. To compare the Knowledge, attitude and practice among staff nurses before and after providing information and education about transfusion reactions and reporting.

Materials and Methods

Study Design: This is a Quasi-experimental study conducted among nurses in a tertiary care teaching hospital. Predesigned, structured and validated questionnaire as a study tool.

Study Area

- Government Kilpauk Medical College and Hospital, Chennai
- Government Royapettah Hospital, Chennai

Study Population:

- Nurses working in Government Kilpauk medical college Hospital, Chennai
- Nurses working in Government Royapettah hospital, Chennai

Study Period: Study was done from February 2023 - January 2024 (one year).

Sample Size: Sample size is calculated.

$$\frac{Z_{\alpha}^{2}PQ}{L^{2}}$$

Z_{α}- Level of significance = 5%

P - Prevalence = 7%

Q - 100-P = 93%

L –Allowable error = 3%

$$\frac{(1.96)^{2}X7X93}{3X3}$$

Minimum required sample size = 277

Informed Consent: All the study details will be explained to the participants and informed consent to be obtained.

Statistical Analysis: Data entry will be done in EXCEL and statistically analysed using SPSS software. Categorical data was expressed in

frequency and percentage. Chi Square test was used to assess the association between pre-test and post-test level of Knowledge, Attitude and practice among the participants. A p value of 0.05 is considered as statistically significant. Data will be expressed in mean + SD. Paired T test is used to compare levels of knowledge pre-test and post-test.

Description of Data Collection Tools:

Part A- Performa to collect the information on demographic variables from the staff nurses working in

Government Kilpauk Medical College and Hospital, Chennai

Government Royapettah Hospital, Chennai

Part B-consists of 20 Predesigned, structured and validated questions from knowledge, Attitude and Practice

Content Validity: Content validity of tool was done by submitting the tools to the experts in Transfusion Medicine, Research and statistics. Their suggestions and recommendations were included in the final version of the tool.

Materials:

1. Demographic data were collected including age, gender, education, marital status, and total years of clinical experience, professional cadre and present working area.
2. Pre and post Questionnaire was used to collect information about Knowledge, attitude and practice of Haemovigilance (adverse transfusion reaction reporting) among Nurses
3. Assessment of Knowledge, Attitude and Practice.

Knowledge, Attitude and Practice was assessed based on the responses to the 20 questions. 9 questions regarding knowledge, 5 attitude based regarding reporting, 4 for practice, 1 reasons for underreporting and 1 possible ways to improve reporting of transfusion reaction.

Knowledge: Knowledge was assessed based on the responses to the following 9 questions.

1. Blood is categorized as a drug, as per the Drug and Cosmetic Act?
2. Safe transfusion depends on the following?
3. Most common blood transfusion reaction is?
4. After receiving blood components, transfusion should be started within?
5. Pre-administration check should include all except?
6. If you suspect transfusion reaction, choose the correct answer
7. Samples to be sent to blood bank after transfusion reactions include?
8. Do you know about haemovigilance programme of India (HvPI)?
9. Do you know about Haemo-vigil software?

Attitude

Attitude was assessed based on the responses to the following 5 questions

1. Do you think transfusion reaction reporting is of benefit for patients?
2. Do you think transfusion reaction reporting is a professional duty?
3. Do you think Haemovigilance should be taught to nursing students?
4. Should there be a transfusion committee in every hospital?
5. Do you have difficulties in reporting transfusion reaction?

Practice: Practice was assessed based on the responses to the following 4 questions

1. Had you ever found any transfusion reaction during your professional practice?
2. Have you documented any transfusion reaction?
3. Have you attended any CME/Workshops/seminars on haemovigilance/Blood Bank training programme?
4. Have you ever been trained to report transfusion reactions?

Methodology

1. Staff Nurses who were willing to participate in the study were explained about the study, consent and demographic details were obtained.

2. A pre-questionnaire was given to a group of Nurses and the completely filled forms were collected.

3. Staff Nurses who completed the pre-questionnaire, were given Information and Education regarding Recepient Haemovigilance using an Educational module and Flash cards which includes:

a) Basics of blood grouping and compatibility testing
b) Pre-transfusion issues and bed side practices
c) Administration of blood and blood components
d) Safe transfusion practices
e) Common Transfusion reactions
f) Role and responsibilities of Nurse in Transfusion reaction workup
g) Prevention of Transfusion reactions
h) Transfusion Reaction Form
i) Steps to improve Transfusion reaction reporting
j) Haemovigilance Programme of India (HvPI)
k) Haemo-vigil software

4. After a time gap of 6 weeks post-questionnaire was given to the same group of Nurses who completed the pre-questionnaire and attended the Information and Education session.

5. Completed post-questionnaire forms were collected and evaluated.

Results

Demographic Statistics

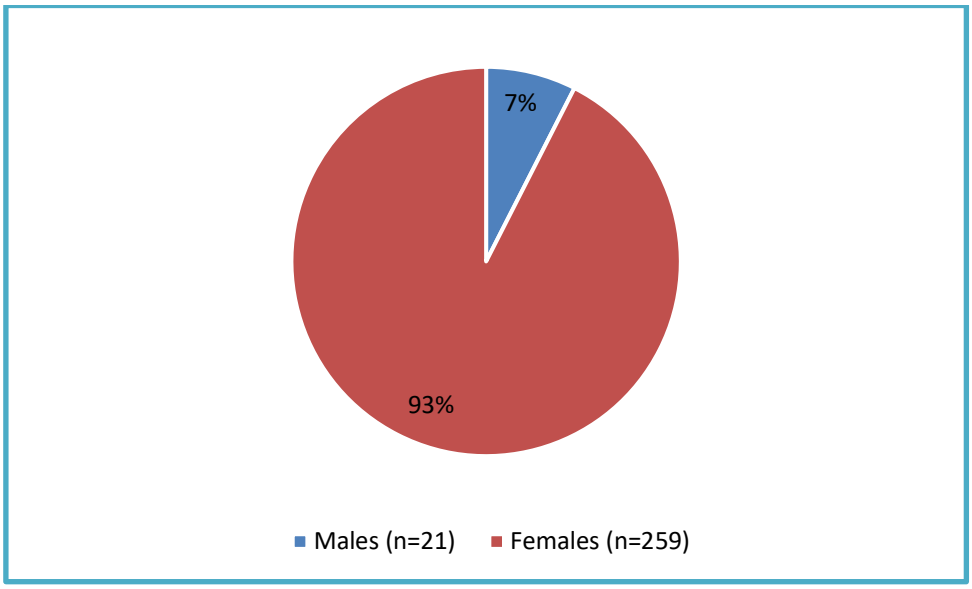

Figure 1: Gender Distribution among Study Participants

In this study 280 nursing professionals participated. Among which 259 (93%) were females and 21(7%) were males.

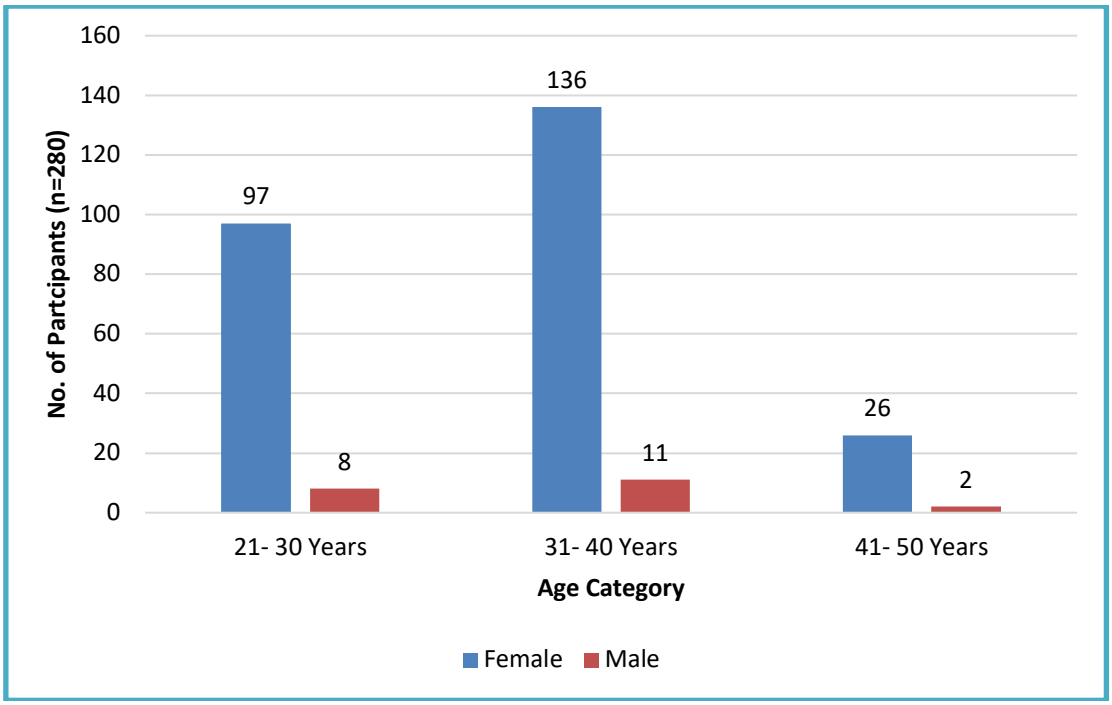

Figure 2: Age Distribution among Study Participants

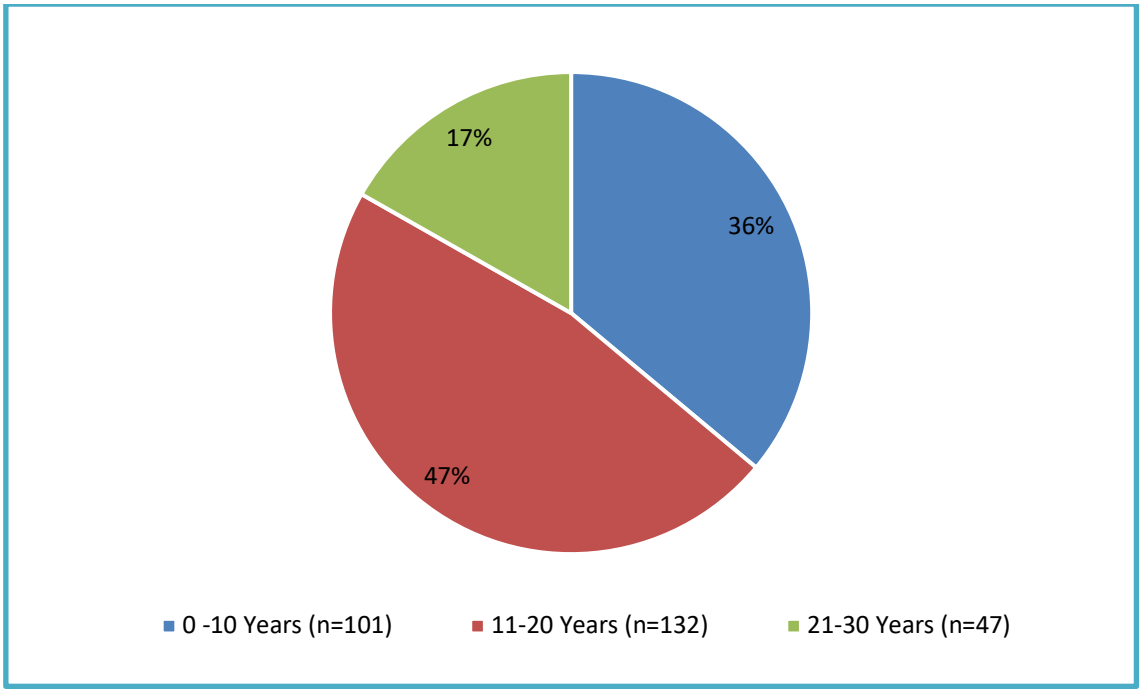

Figure 3: Years of professional and clinical experience among study Participants

Among the Nursing professionals participated in the current study, 101(36%) had professional experience of less than 10 years, 132(47%) had experience 11-20 years and 47(17%) had experience more than 20 years

Statistics on Knowledge: In this study population (N=280), 49 (17.55%) of the participants in pre-test and 252 (90%) of the participants in post-test knew about haemovigilance programme of India (p-value: <0.01).

In this study population (N=280), 23 (8.2%) of the participants in pre-test and 250 (89.3%) in post-test knew about Haemo-vigil software (p-value: <0.01).

Statistics on Attitude: In this study population (N=280), majority of the participants 193 (68.9%) agreed that transfusion reaction reporting is a professional duty after Information and Education regarding Recipient Haemovigilance compared to pre-test response 107 (38.2%) which was significant (p-value: <0.01) In this study population (N=280), majority of the participants 251 (89.6%) agreed that Haemovigilance should be taught to nursing students after Information and Education regarding Recipient Haemovigilance compared to pre-test response 51 (18.2%) which was significant (p-value: <0.01)

Statistics on Practice: In this study population (N=280), 191 (68.2%) participants encountered transfusion reaction during their professional practice before training and 201 (71.8%) encountered transfusion reaction after training, which had no statistical significance.

In this study population (N=280),there was an increase in documenting blood transfusion reaction before training (38.6%) and after training (42.1%), but this difference was not statistically significant.

Factors Discouraging From Reporting: In this study population (N=280), Post-test results show 50.7% respondents gave first preference to lack of knowledge on how and where to report. The other discouraging factors are 32.1% is lack of time to report,13.6% is fear of legal issue and 10% is reporting of known reaction is not required.

Discussion

Knowledge of Haemovigilance in Various Studies: In our study, among 280 Staff Nurses the level of knowledge about transfusion reactions was 40%, among them 68.2% found transfusion reactions during their professional practice and only 38.6% reported them which is comparable with Shivgunde et.al [11] among 220 Health care professionals in Nashik, Maharashtra, level of knowledge was 58% and 38.5% found transfusion reactions during their professional practice and 22.83% reported the reactions.

In the present study, awareness regarding Haemovigilance programme of India (HvPI) was 17.55% which is comparable to 9% reported in the study done by Shivgundeet.al [11] among 220 Health care professionals. In our study, among 280 Staff Nurses, 98 (35%) had knowledge about pre-administration checks before starting a transfusion which is comparable with 64% reported in study done by Binu KM et.al [13] among 100 Health care professionals in North Karnataka. In the present study, 23 (8.2%) knowledge about Haemovigil

software which is comparable with 11% among 100 Health care Professionals reported by Binu KM et.al [13].

In our study the level of knowledge had a significant improvement ($p<0.01$) after intervention with Information and Education among Nursing professionals.

Knowledge about transfusion reactions improved from 40% to 82.9%, 90% of the participants knew about Haemovigilance programme of India compared to 17.55% before intervention, 98 (35%) had knowledge about pre-administration checks before starting a transfusion which has been improved to 223(79.6%) after intervention and 250(89.3 %) knew about Haemovigil software compared to 23(8.2%) before intervention. There was also a significant ($p<0.01$) gain in knowledge about safe transfusion practices, time limit of transfusion to be started after receiving blood and blood products, samples to be sent to blood bank and laboratory after a transfusion reaction.

Attitude of Participants about Haemovigilance in Various Studies: In our present study, among 280 Staff Nurses attitude about transfusion reaction reporting benefits patients (Yes) was 30.4%, Transfusion reaction reporting is a professional duty (yes) was 38.2%, Haemovigilance should be taught to nursing students (yes) was 18.2%, every Hospital must have a Transfusion Committee (yes) was 28.2% which is comparable with other studies mentioned in the above table. The attitude towards difficulty in reporting reactions (yes) was 70.7% in the current study.

Attitude of Staff Nurses after Intervention: In our study, among 280 Staff Nurses there was a significant ($p<0.01$) change in attitude after intervention through Information and Education. There was also a significant ($p <0.01$) improvement in attitude regarding difficulties in reporting transfusion reaction (yes) from 70.7% to 37.5% in the current study.

Table 1: Practice of Haemovigilance in Various Studies

Parameters	Current Study (Pre-intervention)	Shivgunde et.al [11] (n=220)	Chowdhary et.al [14] (n=50)	Suvarna Khandade et.al [15] (n=100)
Found any transfusion reaction during your professional practice	68.2%	38.59%	20%	72%
Documented any transfusion reaction	38.6%	22.83%	22%	50%
Attended any CME/Workshops/ seminars on haemovigilance/ Blood bank training programme (yes)	7%	9.24%	4%	16%
Have you ever been trained to report transfusion reactions (yes)	8%			18%

The above table compares the practice of haemovigilance in various studies. In the present study, staff Nurses who have found transfusion reactions during their professional practice was 68.2% which is high comparable with Shivgunde et.al [11] in their study was 38.59% and Chowdhary et.al [14] in their study was 20%,while Suvarna Khandade et.al [15] in their study was 72% which was high compared to the current study.

Factors Discouraging Transfusion Reaction Reporting: In our study, response to factors discouraging transfusion reaction reporting among Staff Nurse after intervention was mainly due to lack of knowledge on how and where to report transfusion reaction was 50.7% which is low when compared to Chowdhary et.al [14] in their study was 72%, Binu KM et.al [13] in their study was 65% Shivgunde et.al [11] in their study was 57.6% and 77% in study done by Suvarna Khandade et.al [15] In the present study, response regarding lack of time to report was 32.1% which is high comparable with Suvarna Khandade et.al [15] in their study was 10% and low when comparable with other studies mentioned in the above table.

In our study, response regarding legal issues of transfusion reaction was 28.2% before intervention which is high comparable with SuvarnaKhandadeet.al15 in their study was 8% and low when comparable with other studies mentioned in the above table.

In the present study, response regarding single unreported case may not affect the data base was 6.8% before intervention which is high comparable with Suvarna Khandade et.al [15] in their study was 1% and low when comparable with other studies mentioned in the above table.

Possible Ways to Improve Transfusion Reaction Reporting: In our study, response regarding suggestions to improve transfusion reaction reporting was mainly, nursing professionals should be trained in reporting of Transfusion reactions by CME/ Blood bank Training programmes/Workshops/Seminars was 55.7% which is comparable with other studies mentioned in the above table.

In the present study, other suggestions were, reporting must be made easier 22.9%, reporting must be made compulsory 7.5% and development of a mobile application was 13.9% which is comparable with the other studies in the table given above.

Conclusion

The present study revealed the existing and post-interventional knowledge, attitude and Practice of adverse transfusion reaction reporting among Staff Nurses.

Knowledge and awareness plays a vital role in shaping the attitude and practice of transfusion reaction reporting and safe transfusion practices. Knowledge can be improved by interventional educational programs like CME/Seminars/ Workshops/Blood bank training programs for Staff Nurses.

Strategies like including topics about blood components, safe bedside transfusion practices, common transfusion reactions and transfusion reaction reporting in the Nursing curriculum, may pave the way to sensitize and strengthen the reporting system.

In a developing country like India with lack of awareness about Haemovigilance program among Health care professionals is a relative cause of under reporting compared to the developed nations, it is a high time for the policy makers to emphasize evidence-based learning and practice among Health care professionals and to take dedicated initiatives for improving the health care of our Country.

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