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Original Research Article

## Hemovigilance: knowledge, attitude and practice among postgraduates and interns of a tertiary care hospital

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### ABSTRACT

**Background:** Adverse reactions due to transfusion of blood and blood products should be reported for the betterment of patients health and to minimize such effects in the future. A Program was initiated to report and reduce incidence of adverse reactions to blood products which is hemovigilance program of India. Aim was to evaluate the knowledge, attitude and practice of haemovigilance among postgraduates and interns.

**Methods:** This was a cross-sectional questionnaire-based study conducted among 159 participants of a tertiary care hospital for a period of 1 month.

**Results:** Results obtained were analysed using descriptive and qualitative statistics. About 83.6% of the participants were aware about the concept of Haemovigilance. Only 23 out of the 159 had reported transfusion reactions in the past but the attitude towards this concept was satisfactory.

**Conclusions:** Overall the participants had a less satisfactory overview of this concept and hence educational interventions can aid in serving the purpose.

**Keywords:** Haemovigilance, Adverse transfusion reactions, Reporting, Postgraduates, Interns

### INTRODUCTION

One of the intervention in various conditions being blood and blood products transfusion which is life- saving but can likely to cause adverse reactions like fever, rashes, acute immune hemolytic reactions and others. It can also transmit blood borne pathogens and cause infections.<sup>1</sup> Blood is categorized as a drug, as per the Drug and Cosmetic Act. The safest blood transfusion concept has gained interest after the incidence of public outcry following the contaminated blood scandals and legal cases of the 1980s and 1990s.<sup>2</sup> The signs and symptoms commonly seen during transfusion reaction are fever, chills, itching and urticaria. Some symptoms may resolve

with little or no treatment while other symptoms like respiratory distress, high fever, hypotension, and hemoglobinuria may indicate a more serious reaction. All cases of suspected reactions should prompt immediate discontinuation of the transfusion and notification of the blood bank and treating clinician.<sup>2,3</sup>

This created an immediate need for developing a surveillance system for transfusion safety. Now this surveillance system is commonly known by the name of Haemovigilance.<sup>4</sup> The word “haemovigilance” (hemovigilance in French) was coined in France in 1991, derived from the Greek word “haema” blood and the Latin word “vigilans” watchful.<sup>5,6</sup> “Haemovigilance” is the set

of surveillance procedures covering the entire blood transfusion chain, from donation and processing of blood and its components, through to their provision and transfusion to patients and include their follow-up. It includes monitoring, identification, reporting, investigating, and analyzing adverse events related to entire blood transfusion chain. It is a quality system for blood transfusion. It implies methods for identifying errors, adverse events and reactions including alert systems, investigation of complaints, traceability systems, notification systems and audits of practice. Haemovigilance programme of India was launched in December, 2012 in 90 medical colleges under Pharmacovigilance program of India for monitoring adverse reactions associated with blood transfusion and blood products administration.<sup>7,8</sup> Presently, 226 centers, located in blood banks, medical colleges/institutions, Govt/private hospitals are enrolled under this program. National institute of biologicals (NIB), NOIDA is the National coordinating centre (NCC) for the haemovigilance programme of India (HvPI).<sup>9</sup> The data in respect of adverse reaction associated with blood transfusion & blood product administration is being collected from various Centres enrolled under HvPI in Transfusion Reaction Reporting Form (TRRF) via Haemo-Vigil software. Till date, 2737 Adverse Transfusion Reaction Reports have been reported by the Centers under HvPI all over the country.<sup>8,9</sup>

Main intention of current study was to monitor transfusion reaction, Create awareness among health care professionals and Trace adverse reactions associated with blood transfusion and blood donations.<sup>15</sup> Reporting transfusion reactions is of paramount importance for the success of a haemovigilance program of a country for generating data on the transfusion reactions occurring. The information thus collected would facilitate corrective and preventive actions to be taken to minimize the potential risk associated blood collection processing and transfusion to patients.<sup>11,12</sup> 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, underreporting by the medical staff have been seen in studies being conducted regarding the topic and thus many of the minor adverse events do not come in attention, therefore, the exact incidences of various types of transfusion reactions still remain unknown.<sup>13,14</sup> Though there is constant support from pharmacovigilance programme of India in inculcating ADR reporting culture still underreporting is prevalent due to lack of knowledge and attitude among health care professionals.<sup>15</sup> Since the involvement of postgraduates (PGs) and interns in Haemovigilance programs is considered very important and in ensuring safe blood transfusion, Considering the deep concern over the underreporting prevailing among the doctors & in order to improve the reporting rate, it is important to improve the knowledge, attitude and practice of the healthcare professionals with regard to the adverse transfusion

reaction reporting and the hemovigilance .The present study is undertaken to assess the knowledge, attitude and practice towards haemovigilance among them.

## METHODS

### *Study design, location, population, duration and sample size*

Prospective cross-sectional study was conducted at Sri Siddhartha Medical College, Tumkur, Karnataka on 159 Postgraduates and Interns from October 2022 to December 2022. Confidentiality of participants was maintained

### *Inclusion criteria and exclusion criteria*

Participants (postgraduate residents and interns) who were willing to participate in the study were included. Participants with incomplete questionnaires were excluded.

### *Procedure*

A total of 159 participants (81 post graduate residents and 71 interns) was given the structured pre-validated survey e-Questionnaire which contained 21 questions which was taken from a pre-existing Literature.<sup>1</sup> The questionnaire was uploaded to Google forms and distributed among participants and were requested to fill out the form after giving informed consent. This questionnaire consisted of Demographic data of postgraduate students about the branch (clinical/nonclinical/Para-clinical) and the year of MD/MS and also interns. Total of 21 questions: 10 questions regarding knowledge, 6 attitude based regarding reporting, 5 for practice of reporting questions were there.

### *Statistical analysis*

Analysis was carried out using the SPSS software (Version-20). Categorical variables like age and sex were presented by frequencies and percentages. Association of Knowledge, attitude and practice between three groups of participants were tested using Chi-square test, p value less than 0.05 was set statistically significant.

## RESULTS

A total of 159 participants responded to the Questionnaire. Out of these, 71 (45%) were interns, 59 (37%) were 1<sup>st</sup> year post-graduates, 29 (18%) were 2<sup>nd</sup> year Post-Graduates. Total 93% of the interns and an average of 98.3% of the Post graduates had knowledge about Transfusion reaction. 83% of Interns and 88.1% of 1<sup>st</sup> year Post graduates and 75.9% of 2<sup>nd</sup> year Post graduates were aware of the concept of Haemovigilance. Only 49.1% of the participants were aware about the Haemovigilance programme of India. Total 95.6% of the participants agreed that reporting of Adverse transfusion reaction is necessary.

**Table 1: Number of participants who had knowledge about hemovigilance (n=159).**

Knowledge	Year of study N (%)			Total N (%)	Chi-Square, p value
	Interns (N=71)	1st Year PG (N=59)	2nd Year PG (N=29)		
Know about transfusion reactions.	66 (93.0)	59 (100.0)	28 (96.6)	153 (96.2)	4.411, 0.110
Aware of the concept of Haemovigilance	59 (83.1)	52 (88.1)	22 (75.9)	133 (83.6)	2.170, 0.338
Know transfusion reactions can be prevented	68 (95.8)	57 (96.6)	26 (89.7)	151 (95.0)	2.143, 0.343
Know that blood transfusion reaction can be reported	54 (76.1)	51 (86.4)	25 (86.2)	130 (81.8)	2.800, 0.247
Know where to report these reactions	34 (47.9)	35 (59.3)	17 (58.6)	86 (54.1)	1.990, 0.370
Aware about the Haemovigilance Programme of India	33 (46.5)	30 (50.8)	15 (51.7)	78 (49.1)	0.347, 0.841
Aware of the existence of the Toll-Free number reporting transfusion reactions	21 (29.6)	9 (15.3)	10 (34.5)	40 (25.2)	5.149, 0.076
Know the full form of TRRF?	30 (42.3)	19 (32.2)	16 (55.2)	65 (40.9)	4.344, 0.144
Know about 3 phases explaining targets of Haemovigilance programme of India	26 (36.6)	9 (15.3)	7 (24.1)	42 (26.4)	7.662, 0.022
Have knowledge about Haemo-vigil and Donor-vigil software	27 (38.0)	10 (16.9)	10 (34.5)	47 (29.6)	7.289, 0.026

P value <0.005 is statistically significant.

**Table 2: Response to attitude-based questions.**

Attitude	Scale	Year of study N (%)			Total	Chi-Square, p value
		Interns	1st Year PG	2nd Year PG		
Reporting of Adverse transfusion reaction is necessary	Strongly agree	24 (33.8)	29 (49.2)	23 (79.3)	76 (47.8)	17.784, 0.001
	Agree	44 (62.0)	27 (45.8)	5 (17.2)	76 (47.8)	
	Neutral	3 (4.2)	3 (5.1)	1 (3.4)	7 (4.4)	
	Disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
	Strongly disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Reporting of each transfusion reaction is mandatory.	Strongly agree	38 (53.5)	26 (44.1)	17 (58.6)	81 (50.9)	3.721, 0.445
	Agree	28 (39.4)	29 (49.2)	12 (41.4)	69 (43.4)	
	Neutral	5 (7.0)	4 (6.8)	0 (0.0)	9 (5.7)	
	Disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
	Strongly disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Every institute should enroll under Haemovigilance	Strongly agree	20 (28.2)	23 (39.0)	16 (55.2)	59 (37.1)	8.162, 0.086
	Agree	44 (62.0)	32 (54.2)	13 (44.8)	89 (56.0)	
	Neutral	7 (9.9)	4 (6.8)	0 (0.0)	11 (6.9)	
	Disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
	Strongly disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
One Haemovigilance center enough for a city	Strongly agree	11 (15.5)	5 (8.5)	3 (10.3)	19 (11.9)	23.245, 0.003
	Agree	24 (33.8)	30 (50.8)	3 (10.3)	57 (35.8)	
	Neutral	19 (26.8)	11 (18.6)	11 (37.9)	41 (25.8)	
	Disagree	17 (23.9)	12 (20.3)	9 (31.0)	38 (23.9)	
	Strongly disagree	0 (0.0)	1 (1.7)	3 (10.3)	4 (2.5)	
Reporting of Adverse Transfusion Reaction benefits patients	Strongly agree	40 (56.3)	16 (27.1)	10 (34.5)	66 (41.5)	18.600, 0.017
	Agree	27 (38.0)	34 (57.6)	18 (62.1)	79 (49.7)	
	Neutral	3 (4.2)	7 (11.9)	1 (3.4)	11 (6.9)	
	Disagree	0 (0.0)	2 (3.4)	0 (0.0)	2 (1.3)	
	Strongly disagree	1 (1.4)	0 (0.0)	0 (0.0)	1 (0.6)	
Concept of Haemovigilance should be included in UG curriculum	Strongly agree	36 (50.7)	19 (32.2)	12 (41.4)	67 (42.1)	6.927, 0.140
	Agree	29 (40.8)	29 (49.2)	15 (51.7)	73 (45.9)	
	Neutral	6 (8.5)	11 (18.6)	2 (6.9)	19 (11.9)	
	Disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
	Strongly disagree	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	

Total 88% of the participants believed that concept of Haemovigilance should be included in UG curriculum.

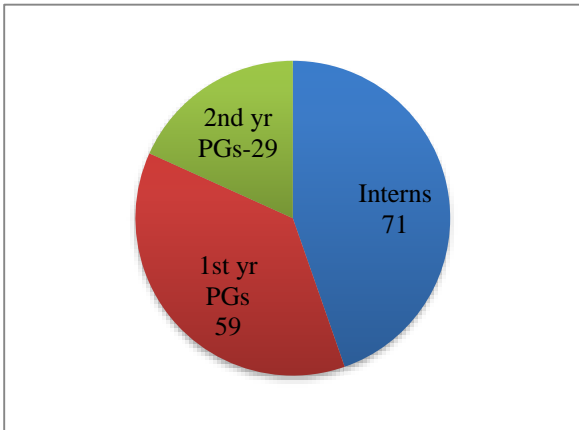


Figure 1: Academic year of study participants.

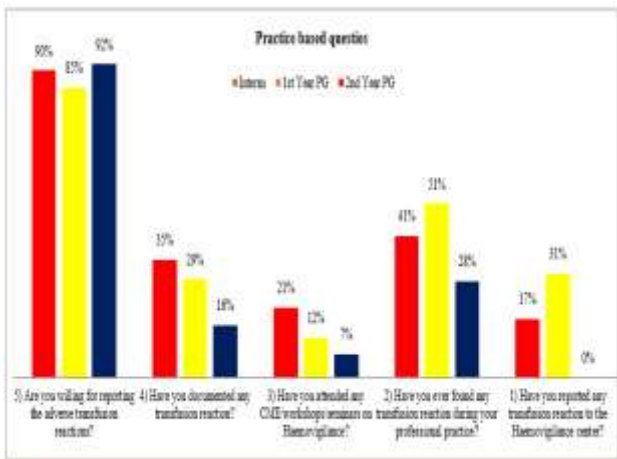


Figure 2: Number of participants who practiced hemovigilance activity.

Most of the participants showed positive attitude towards the concept of Haemovigilance. An average of 89% of the participants were willing to report the adverse transfusion reactions and about 40% of the participants have come across transfusion reaction during their professional practice. But only 48% has reported transfusion reactions to the haemovigilance centre.

## DISCUSSION

The response rate of study participants was found to be much higher as compared to the similar studies conducted in other places like in Nagpur by Amit et al (75%), in South India by Rani et al (59%).<sup>1,3</sup> This indicates the curiosity towards a fairly new concept of hemovigilance. After analysis, it was found that total of 133 among 159 participants were aware about the concept of Haemovigilance which is a good factor. About 76 of the participants (33.8% among Interns, 49.2% among 1st year PGs and 79.3% among the 2nd year PGs) have strongly

agreed that reporting of each transfusion reaction is mandatory and about 145 have collectively agreed that reporting of adverse reactions benefits the patients similar to a study by Shivagunde et al.<sup>3</sup> From the responses of the practice based questions, it was found that only 18 participants had attended CME/Workshops on Haemovigilance. And about 39% of the participants (28.2% among Interns, 50.8% among 1st year PGs and 41.4% among 2nd year PGs) have come across adverse transfusion reaction during their professional practice. It was also observed that about 11.3% of the participants responded that they would not report the transfusion reactions they encounter in the future. The comparison with the results of the published studies from India demonstrated that knowledge and attitude towards hemovigilance is gradually improving among healthcare professionals, but unfortunately the actual practice of ATR reporting is still deficient among them which is recognised in similar way in a study by Suvarna et al.<sup>6</sup>

## Limitations

Limitation of the study: Among respondents, interns were more in number compared to postgraduates. That may be the reason why results had showed good knowledge, practice among them. And the study was done only in one tertiary hospital, so results are not generalisable.

## CONCLUSION

Our study has shown that majority of the participants had knowledge but it was less satisfactory and had positive attitude towards Haemovigilance. Many had never reported any transfusion reactions as there is less awareness about practice of Haemovigilance. Hence, our study insists that educational interventions like CME/Seminars/Workshops should be conducted among Health care Professionals to strengthen the Haemovigilance system and impart information to enhance patient safety and health.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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