Effect Of Entertainment On Adverse Donor Reactions During & After Blood Donation

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Abstracts: Background & objectives: Blood is lifesaving fluid that cannot be created artificially. So, Blood donors are the precious resources. Whole blood donation is generally considered to be a safe procedure but sometimes adverse donor reaction (ADR) may occur. Recognition and evaluation of the so called adverse donor reactions during and after whole blood donation has a great value for improving the supply of the blood donation. The present prospective study was carried out with an aim to estimate the frequency and severity of adverse events occurring in whole blood donors at our Regional Blood Transfusion Centre and to study the effect of entertainment as an anxiolytic on development of ADR. Material and Method:The present prospective study was carried out at the IHBT Department of B.J. Medical College, Civil Hospital Campus, Ahmedabad. The period of the study was 2 years ranging from 1st September, 2009 to 31st October, 2011. A total of 42,684 whole blood donations were accepted during the period either on replacement basis in house in blood bank or on voluntary basis in outdoor blood donation camps. On 22-02-2011 television set with entertaining channels was installed at the donor reception area and phlebotomy room of the blood bank. Result:It was noted that 632 (1.48 %) donors had developed one of ADR. Conclusion: Because of anxiety syndrome, the rate of ADR was very high in first-time donors (3.25 %) as compared to repeat donors. Television set with entertaining channels had anxiolytic effect on the donors and striking decline (0.81 % to 0.45 %) was noted in the adverse reactions in replacement donors at blood bank [Patel P et al NJIRM 2012; 3(4) : 102-108]

Key Words: Blood donors, Adverse Donor Reactions (ADR), Effect of Entertainment

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Introduction: Blood is the most precious and unique gift that one human being can give to another. Wake and Cutting[1] have postulated that blood demand will increase in future. Vehicular accident, urbanization, industrialization and development of new difficult surgeries, cardiac surgeries, maternal problems regarding pregnancy in developing countries are likely to increase in future. So, there is and there will be constant need for supply of blood. Blood is life saving fluid that cannot be created artificially. So, Blood donors are the precious resources.

South East Asia account for 25% of the world's population but collects only 9% of the world's blood supply. Only 7 million units of blood collected per year in South East Asia, but there is need of a total 15 million units of blood.[2] So We have to make optimum use of blood that is available. We have to increase blood donor pool by motivation, recruitment and retention of blood donor. Donor retention is directly linked with the donor services and donor care. It is important to provide total satisfaction to donor as customer, because only then they would become regular donor and remains loyal to the system. Donors are the brick of which the main structure of blood transfusion service is built. Because blood donors are altruistic volunteers, they should be protected as much as possible from adverse reactions. As among repeat donors adverse reactions are associated with decreased intentions to donate in future.[3]

Whole blood donation is generally considered to be a safe procedure. Normally, healthy adult male have 76 ml/kg of blood and healthy adult female have 66 ml/kg of blood. By the procedure of whole blood donation, we are taking only 8 ml/kg of blood. Human body requires only 50 ml/kg of blood to carry out its function. So, the blood donors normally tolerate blood donation very well and possibility of adverse reactions is very low. But, occasionally, adverse reactions of variable severity may occur during or after collection.

Occurrence of any unexpected, undesirable and unintended event before, during or after (within 30

minutes) donation of blood to the donor is called Adverse Donor Reaction (ADR).[4] The recognition and evaluation of the so called adverse donor reactions during and after whole blood donation has a great value for improving the supply of the blood donation.

Systemic surveillance of the first part of the transfusion service chain – the collection of blood from donor – is an essential element of hemo-vigilance and aims to secure and improve the safety of both the donor and the recipient. It should include registration of unexpected adverse event in whole blood donor and the action taken as a result. These events may be adverse reactions or complications resulting from donation or adverse events related to the selection and management of donors, which may directly harm the donor or influence the quality of the product, thereby harming the recipient.[5,6,7]

Blood transfusion centre is responsible for pre-testing the physical and psychological health of blood donors. The unremitting need and increasing demand for blood components constantly challenges blood transfusion Centre to maintain a safe and adequate supply of blood from a decreasing pool of eligible donors, at the same time reducing the frequency of adverse reactions associated with blood donation which will otherwise decrease the rate of repeat donation.[8,9,10]

Adverse reactions related to blood donation are well recognized and very serious problems for blood services and blood centres. It is our mission and responsibility to secure the safety of blood donation and to prevent damages to the health of donors as much as possible.

The present prospective study was carried out with an aim to estimate the frequency and severity of adverse events occurring in whole blood donors at our Regional Blood Transfusion Centre over 2 years from 1st September, 2009 to 31st October, 2011 and to study the effect of entertainment as an anxiolytic on development of ADR.

Material and Methods: The present prospective study was carried out at the Department of IHBT, B. J. Medical College, Civil Hospital Campus, Ahmedabad. The period of the study was 2 years from 01/09/2009 to 31/08/2011. A total of 42684 blood donations were accepted during that period.

Donors were received either on replacement basis (24,446) from the relatives and friends of the patients admitted at Civil Hospital, Ahmedabad or voluntary donors from blood donations camps (18,238). Each blood donor had to pass through the process of registration, pre-donation counseling and medical fitness examination for donating the blood. Medically fit donors from the age group of 18 to 65 years were considered for the blood donation. Rests were rejected. Collections from replacement donors were carried out in phlebotomy room at the IHBT department of B.J. Medical College, Civil Hospital Campus, Ahmedabad. Whereas the collection from voluntary donors through blood donation camps were carried out in the out fields, where the blood donation camp was organized as a joint venture with the social agencies.

The phlebotomy site is made sterile by spirit-betadine-spirit by concentric method. Qualified phlebotomist collected the blood in sterile blood collection bag by performing phlebotomy with 16 gauge needle in the vein of the ante-cubital fossa of either hand. During the entire process of blood collection, donor was taken care of for development of any adverse reaction (ADR). In case of any ADR, the patient was promptly treated symptomatically by the trained staff of IHBT Department. On completion of the blood donation, the donor was given light refreshment and discharged with post-donation advice if donor was comfortable.

The preliminary details of the accepted donors and ADR, if any, were recorded on specially designed proforma. The ADR were classified as mild, moderate or severe. The data so collected were analyzed and compared with similar studies by authors from different areas.

On 22-02-2011, television set with entertainment channels was installed at the donor reception area as well as phlebotomy room of IHBT Department that provided pleasant environment to pull out the

anxiety of the donors. The effect of entertainment (television) was checked on development of ADR in blood donors.

Observation and Discussion: As seen from table – 1, the study sample for the present study comprised of 42,684 accepted donors for whole blood which included 24,446 (57.27 %) replacement donors (in-house at blood bank) from the relatives & friends of the patients admitted at Civil Hospital, Ahmedabad and 18,238 (42.73 %) voluntary donors from outdoor blood donation camps. It can be seen that the incidence of ADR was only 0.71 % (174 cases) in inhouse donors as compared to 2.51 % (458 cases) in outdoor blood donation camp donors with an average of 1.48 % (632 cases).

This is in accordance with the various studies conducted all over the world in which the rate of adverse events associated with donations ranged from 0.3 % to 3.8 %.[11,12,13,14]

Age and sex wise distribution of in-house (blood bank) donors are described in table – 2. It shows that majority of the donors (99.51 %) were male and from the age groups between 21-40 years (81 %). Whereas the total number of female donors was 119, making just 0.49 % of total in-house donors. The proportion of female donors was 3.28 % as far as outdoor donors (camp) were concerned (table – 3).

Table 1: Adverse Reactions In Accepted Blood Donors With Respect To Place

Place of donation	Number of accepted donors	Adverse reactions
Blood-bank (in-house)	24446 (57.27 %)	174 (0.71 %)
Blood donation camps (outdoor)	18238 (42.73 %)	458 (2.51 %)
Total	42684 (100 %)	632 (1.48 %)

To maintain and to increase the blood donor pool, we should focus on repeat donor. So, repeat voluntary donor is mainstay of adequate as well as safe blood supply. But if adverse reaction occurs to blood donor, he/she probably not come again to donate blood or may require high degree of motivation to donate again. So, in this way, we lose valuable, potential donor. Also, this donor also discourages other donor about blood donation. So there is great loss to the donor pool.

Table 2: Age Groups And Sex Wise Distribution Of In-House (Blood Bank) Blood Donors

Age groups	Male		Female		Total	
	Number of donors	Adverse reactions	Number of donors	Adverse reactions	Number of donors	Adverse reactions
19-20	1167	14	11	0	1178 (4.82 %)	14 (5.11 %)
21-30	11579	106	41	1	11620 (47.53 %)	107 (61.49 %)
31-40	8137	38	46	1	8183 (33.47 %)	39 (22.41 %)
41-50	2967	13	19	0	2986 (12.21 %)	13 (7.47 %)
51-60	474	1	2	0	476 (1.95 %)	1 (0.57 %)
60-65	3	0	0	0	3 (0.01 %)	0 (0.0 %)
Total	24327 (99.51 %)	172 (98.85 %)	119 (0.49 %)	2 (1.15 %)	24446 (100 %)	174 (100 %)

Table – 4 shows the distribution of donors in accordance with the history of the previous blood donation. The risk of reaction was inversely proportional to number of prior donations. It can be seen that the donor with no previous history of blood donation showed the highest incidence of ADR (4.52 %).

Pathak C[15] described a greater tendency to develop an anxiety syndrome, in first time donors. In fact, a state of anxiety can be manifested even before the donor reaches the donation bed/chair, with premonitory signs, such as agitation and sweating, which in themselves form a condition predisposing to a state of distress. There was not a well-defined

pathophysiological cause for the vasovagal reactions, but rather a set of neuropsychological factors that the subjects had developed during their life, starting from first donation. In short, it can be said that agitation, pallor and sweating are the harbingers of a vasovagal reaction; indeed, these symptoms can be present already before the donation, being associated with the emotions that the donor accumulates during the reception at the donor site and while waiting to make the donation.

Table 3: Age Group And Sex Wise Distribution Of Outdoor (Camp) Blood Donors

Age groups	Male		Female		Total	
	Number of donors	Adverse reactions	Number of donors	Adverse reactions	Number of donors	Adverse reactions
19-20	2746	103	130	0	2876 (15.77 %)	103 (22.49 %)
21-30	6885	210	196	1	7081 (38.83 %)	211 (46.07 %)
31-40	4359	92	139	1	4498 (24.66 %)	93 (20.31 %)
41-50	2715	26	109	4	2824 (15.48 %)	30 (6.55 %)
51-60	920	21	24	0	944 (5.18 %)	21 (4.58 %)
60-65	15	0	0	0	15 (0.08 %)	0 (0.0 %)
Total	17640 (96.72 %)	452 (99.12 %)	598 (3.28 %)	6 (0.88 %)	18238 (100 %)	458 (100 %)

With the increase in the previous experiences, the anxiety syndrome as well as the incidence of ADR decreased. It was 1.32 %, 0.33%, 0.21 % and 0.18 % with history of 1, 2, 3 and 4 previous blood donations respectively. In subjects with history of 5 or more previous blood donations, the incidence was ADR was just 0.05 %.

Many other authors have also documented higher rate of ADR in first –time donors compared to repeat donors.[9,13,16,17,18,19] Rehman A[16] has reported an ADR at the rate of 0.62 % in first-time donors as compared to just 0.19 % in repeat donors. Whereas M Mahbub-ul-alam et al[13], recorded it at the rate of 5.04 % and 4.96 % respectively.

Table 4: Table Showing Adverse Reactions With Respect To Number Of Previous Blood Donations

Number of previous donations	Male		Female		Total	
	Number of donors	Adverse reactions	Number of donors	Adverse reactions	Number of donors	Adverse reactions
0	16952	552	134	4	17086 (40.03 %)	556 (3.25 %)
1	11060	53	441	3	11501 (26.94 %)	56 (0.49 %)
2	6487	12	119	0	6606 (15.48 %)	12 (0.18 %)
3	4252	5	23	1	4275 (10.02 %)	6 (0.14 %)
4	1104	1	0	0	1106 (2.59 %)	1 (0.09 %)
5 or more	2112	1	0	0	2112 (4.95 %)	1 (0.05 %)
Total	41967	624	717	8	42684 (100 %)	632 (1.48 %)

As described in table – 5, a large number of subjects (532 subjects forming 84.18 % of all ADR) from present study having ADR suffered from mild degree only that encompass either syncope or fainting, nausea or vomiting, hyperventilation, muscle spasm, twitching. These may be idiopathic or brought about by the sight of blood or by watching someone else give blood. 95 subjects (15.03 % of total ADR) suffered an ADR of moderate degree, means they suffered all the signs & symptoms described under the head of mild ADR but in addition they turned unconscious during the process of blood donation. Only 5 subjects (0.79 % of total ADR) suffered severe degree of ADR in the form of convulsions. Out of them only 2 subjects (0.32 %) developed severe vasovagal reaction and required hospitalization.

Table 5: Severity Of Reaction

Severity of reaction	Male		Female		Total		Grand Total
	In-house (blood bank)	Outdoor blood donation camps	In-house (blood bank)	Outdoor blood donation camps	In-house (blood bank)	Outdoor blood donation camps	
Mild	142	382	2	6	144 (82.76 %)	388 (84.72 %)	532 (84.18 %)
Moderate	28	67	0	0	28 (16.09 %)	67 (14.63 %)	95 (15.03 %)
Severe	2	3	0	0	2 (1.15 %)	3 (0.66 %)	5 (0.79 %)
Total	172	452	2	6	174 (100 %)	458 (100 %)	632 (100 %)
Grand Total	624		8		632		

Indeed, for many people, one of the uncertainties about giving blood derives from the psychological impact of the needle insertion. All these is in agreement with the literature, in which it is described that an anxiogenic stimulus represented by the strong emotion of giving blood or the donor's sight of his or her own blood, evokes fear and anxiety and the expectation that the phenomenon could be repeated has the same emotional significance.

From a purely psychological point of view, this phenomenon can be likened to what is technically defined, in psychology, as a "simple phobia", which is nothing other than a learned behavior associated with an anxiogenic stimulus.[19,20,21] This type of behavior, usually not conscious is maintained by a set of dramatic or catastrophic thoughts and by unpredictable cases. Here simple anti-shock position or intravenous infusion of crystalloids would be sufficient to control the symptoms.[18,19,22]

As can be seen from the therapeutic interventions carried out to resolve the clinical picture caused by "minor symptoms" in the present study, it was sufficient to put the subject in the "Trendelenburg position" (anti-shock position) to increase the afterload and thus provide adequate oxygenation of the brain. Besides putting the subject in the antishock position, in no case it required to administer fluid supplementation with infusion of crystalloids, and likewise, atropine was never necessary to restore the cardiac rhythm or for any other haemodynamic problems. These records are consistent with the therapeutic interventions carried out by Pathak C.[15,22,23]

Table – 6: Effect Of Entertainment (Television) On Adverse Reactions (Blood Bank)

	Male		Female		Total	
	Number of donors	Adverse reactions	Number of donors	Adverse reactions	Number of donors	Adverse reactions
Without entertainment	17643	142	101	2	17744	144 (0.81 %)
With entertainment	6684	30	18	0	6702	18 (0.45 %)
Total	24327	172	119	2	24446	174 (0.71 %)

Although, the number of donors who developed disturbances in relation to donating blood was very low, it is nevertheless desirable to reduce risks to a minimum, working not only with the maximum environmental safety, but also with complete medical assistance. Thus a series of

innovations have to be introduced to facilitate not only the work of the staff, but also safe donation by the volunteer blood donors. It has been reported that distraction techniques such as audiovisual entertainment have been reported to be effective at putting donors at ease during collection, based on reductions in self-reporting of reactions.[24]

On 22-02-2011, television set with entertainment channels was installed at the donor reception area as well as phlebotomy room of IHBT Department. It provided pleasant environment to pull out the anxiety of the donors. Donor attention was distracted from donation process to the entertainment by television. The effect of entertainment (television) on incidence of ADR has been described in table – 6. It can be seen that there is drastic reduction in incidence of ADR from 0.81 % to 0.45% as an effect of entertainment and distraction of mind of the donor while waiting for and at the time of blood donation.

Conclusion:

1. The incidence of ADR in donors of whole blood was 0.71 % at blood bank and 2.51 % at outdoor blood donation camps with an average of 1.48 %.
2. With increase in previous experiences of blood donation, the incidence of ADR decreased.
3. After installation of television set with entertainment channels at donor reception area and phlebotomy room of blood bank, the rate of ADR drastically reduced from 0.81 % to 0.45 %. Thus, distraction of patient's mind just before and at the time of blood donation has anxiolytic effect that helps to reduce the incidence of ADR.

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