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PREVALENCE AND FACTORS INFLUENCING VASOVAGAL REACTIONS AMONG BLOOD DONORS

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ABSTRACT
Symptoms such as lightheadedness and fainting may be brought on by a rapid decrease in heart rate and blood pressure, which is known as VVR. Donors of blood can experience these symptoms either before or after the donation procedure. In 2020, 120 blood donations were part of a cross-sectional research. The blood bank database was queried for each donation in order to get the donor's demographic information as well as details pertaining to the donation itself. A t-test was used to examine blood pressure data, while a Chi-square test was used to assess qualitative data such as age group, sex, donation frequency, and location. The results of our research confirm that donating blood is a safe operation, and that stringent screening procedures prior to blood donation may further decrease the occurrence of VVR.
Keywords: Blood donation, Vasovagal Reaction, Pre-donation,Donors, Symptom

I. INTRODUCTION

Donating blood is an essential part of contemporary healthcare because it allows people to get transfusions, which may save the lives of many patients. Donating blood is often seen as a kind and unselfish way to help others and the community. Nevertheless, in the middle of the selfless acts of blood donors, a phenomena called Vasovagal Reaction (VVR) has caught people's attention due to the effects it has on donors and the process of blood donation itself. People who donate blood may have a variety of physiological responses, including vasovenous reactivity reactions (VVR), which may vary from modest pain to more serious reactions.

Despite its critical importance, blood donation is not a picnic. Among the most prevalent adverse effects seen by blood donors are Vasovagal Reactions, which include a rapid decrease in heart rate and blood pressure, causing nausea, dizziness, and, in rare cases, fainting. Donor demographics, psychological variables, and procedural characteristics all have a role in the occurrence of VVR, which in turn varies greatly. It is essential to delve further into the cognitive and emotional components of the donor experience in order to comprehend the frequency of VVR, since the psychological effect of blood donation is immense. Vasovagal responses may occur if a donor experiences worry or fear due to the prospect of needles, blood, or pain during the donation procedure. The significance of good communication and education in reducing VVR cannot be overstated, since donor anxiety might result from ignorance, preconceptions, or bad experiences in the past. Donors may have a more pleasant and comfortable experience as a result of psychosocial assistance and therapies aimed at reducing donor anxiety, which in turn may decrease the frequency of vasovagal responses.

There is a strong correlation between the frequency of VVR and the technical aspects of blood donation, such as the amount of blood obtained and the ease of needle insertion. The frequency of vasovagal responses has been investigated in relation to various donation methods, needle gauges, and collection volumes. An easier and more pleasant donation procedure with less likelihood of side effects may be possible with some fine-tuning of certain procedural details. Furthermore, it is crucial to swiftly recognize and manage VVR in the immediate post-donation period, hence post-donation care and surveillance play a key role. It is important to prioritize the well-being of blood donors and the effectiveness of blood donation programs by ensuring that they get proper post-donation care.

II. REVIEW OF LITERATURE

Thijsen, Amanda et al., (2021) Rationale To satisfy the demand for blood and blood-related products by healthcare services, blood collecting organizations continue to encounter persistent obstacles in maintaining voluntary donors. Having a vasovagal response (VVR) is a recognized way to discourage people from donating blood. Little is known about how donors feel about these responses or what variables impact their choice to return, which is crucial for developing measures to increase donor return. This article used the Transactional Model of Stress and Coping to investigate blood donors' perspectives and experiences with a VVR, focusing on how the response affected their return behavior. Among a cross-section of Australian donors who had just had a VVR, we administered 34 in-depth, semi-structured interviews throughout the months of February through April 2018. The Framework Method was used to analyze the transcripts. Final Product Social support, knowledge of the likelihood of having a VVR, and the result of the donation seemed to impact the emotional reactions evoked by the VVR. Thus, the VVR experience influenced the likelihood that participants would return; participants who had a more pleasant experience were more likely to indicate a strong desire to return. Donors were more inclined to come back if they thought the likelihood of a recurrence was low and if they had effective problem-and emotion-focused coping mechanisms. New ideas for getting blood donors back into the system after a VVR are presented in this article.

Wong, Hoi-kei et al., (2018) It is the dual duty of every blood center to provide a sufficient supply of safe blood while minimizing unwanted effects. Because they are frequent, may inflict harm, and serve as a significant deterrent to further donations, vasovagal responses need special attention. Finding the people who are most vulnerable is, thus, crucial. This research looks back at all whole blood donations that took place between 2012 and 2014. Stratification, logistic regression, and chi-square tests are used in statistical analysis. There were 1,504 cases of vasovagal responses out of 729,347 whole blood donations. The adjusted odds ratios for important predictors such as young age, first-time donation, female, and low body weight are as follows: 7•2 for age < 20 versus ≥50 (95% CI: 6•3, 8•3), 2•3 for first-time versus repeat donors (95% CI: 2•2, 2•4), 1•9 for female versus male (95% CI: 1•8, 2•0), and 1•8 for weight < 50 kg versus ≥70 kg (95% CI: 1•7, 2•0). People who have vasovagal responses are much less likely to return, according to this research. The odds ratio is 4•4 (95% CI: 4•2, 4•6). The identification of high-risk groups is advised since patients experiencing vasovagal responses have a much lower chance of returning. Benefits to donor safety, satisfaction, retention, and cost-effectiveness might accrue from a reduction in vasovagal responses. As part of the continuous endeavor to help provide safer and more sufficient blood supply, risk mitigation measures should be put into place.

Thijsen, Amanda & Masser, Barbara (2017) Vasovagal responses (VVRs) may happen before or after blood donation, and this narrative review looks at the latest information on what causes them, how to avoid them, and how to treat them. Blood donation safety, donor return rates, and the number of completed collections are all adversely affected by VVRs, making them crucial to blood collecting organizations (BCAs). With the identification of several risk factors, there has been substantial progress in the understanding and prevention of VVRs in blood donation in recent years. Donor age and weight limitations are two evidence-based procedures that many BCAs have implemented as a consequence. The characteristics of our most susceptible donors and the circumstances surrounding their donations that may prevent them from becoming victims of a VVR remain unknown, however. Even more encouraging is the fact that there has been a rise in the number of studies examining the efficacy of psychological and physiological preventative measures in the fight against VVRs, both acute and chronic. Finding effective ways to avoid VVRs continues to be a difficulty for practitioners due to the lack of methodological consistency in operationalizing treatments to do so. Also, collection centers still need to do research to figure out how to include management and preventative methods into their standard operating procedures. At this point in time, studies aimed at managing and reducing the impact of VVRs have simply provided suggestions on how to best care for donors who have symptoms and encourage them to give again. Donors and BCAs will benefit from studies examining these facets of VVRs, and blood donation will be safer as a result.

Fisher, S. et al., (2016) The occurrence of vasovagal responses (VVRs) among those donating blood has substantial consequences for the well-being of donors, the retention of donors, and the administration of donor sessions. In this study, we provide a comprehensive analysis of therapies that

have been developed with the aim of preventing or mitigating vasovagal reactions (VVRs) among individuals who donate blood. A comprehensive search was conducted in electronic databases to identify randomized trials that met the eligibility criteria up to March 2015. The data pertaining to research design and outcomes were retrieved and combined using random effects meta-analyses. A total of sixteen experiments were identified that satisfied the inclusion criteria. These trials consisted of five trials including 12,042 people that investigated the effects of pre-donation water, eight trials involving 3,500 persons that examined the effects of applied muscular tension (AMT), and one trial each that explored the effects of AMT coupled with water, coffee, audio-visual distraction, and/or social support. In individuals who received water prior to donation, the relative risk (RR) of experiencing vasovagal reactions (VVRs) compared to the control group was 0.79 (95% confidence interval [CI] 0.70-0.89, P < 0.0001). Additionally, the mean difference (MD) in the severity of VVRs, as measured by the Blood Donation Reactions Inventory (BDRI) score, was -0.32 (95% CI -0.51 to -0.12, P < 0.0001). After excluding studies that had a high risk of selection bias, the relative risk (RR) for vaccine-preventable viral respiratory infections (VVRs) was found to be 0.70 (95% confidence interval [CI] 0.45-1.11, p = 0.13). Among the recipients who were administered AMT, no significant disparity was seen in the likelihood of chair recline when exposed to donor distress compared to the control group (relative risk [RR] 0.76, 95% confidence interval [CI] 0.53-1.10, P = 0.15). However, the mean difference (MD) in BDRI score was -0.07 (95% CI -0.11 to -0.03, P = 0.0005). Insufficient data was available to conduct a meta-analysis for alternative therapies. The existing body of data for therapies aimed at preventing or mitigating vasovagal reactions (VVRs) in blood donors is still insufficient and does not provide robust endorsement for the use of pre-donation hydration or antecubital mechanical tension (AMT) during the donation process. Additional extensive studies are need to accurately assess the impact of these therapies, as well as others, in the prevention of VVRs.

Takanashi, Minoko et al., (2012) The most often seen adverse event at blood collection locations is the vasovagal response (VVR). In order to safeguard the interests of donors, an examination was conducted to analyze the many elements that contribute to voluntary venous return (VVR). The Japanese Red Cross Tokyo Blood Centre has documented and compiled instances of complications that arise as a result of whole blood and apheresis donations. To establish a control group, a dataset consisting of 43,948 donors who did not have any difficulties was created. This control group was formed by randomly picking days from each season during the fiscal years of 2006 and 2007. The study conducted an analysis of the factors that contributed to a total of 4924 VVR (Violent Video Rental) events during the fiscal years of 2006 and 2007. This analysis was carried out using both univariate and multivariate logistic regression techniques. The VVR group had significantly reduced age, weight, body mass index (BMI), predonation systolic and diastolic pressure, and circulating blood volume, while displaying a faster pulse rate, in comparison to the control group ($p<0.0001$). The VVR group had a higher proportion of female donors, a decreased duration of sleep, and a longer elapsed time since their last meal compared to the control group. In the context of multivariate analysis, many risk variables were shown to be statistically significant for 400ml whole blood donors, who constitute the majority of donors. These risk factors include being under the age of 50, identifying as female, having a body mass index (BMI) below 25, having a pulse rate of 90 or higher per minute, having a sleep duration of less than 8 hours, having a time interval of at least 4 hours after eating, being a first-time donor, and having a circulating blood volume below 4.3 liters. Research has shown that those who sleep for less than six hours per night are at a comparable risk of experiencing a vehicular virtual reality (VVR) incident as those who are donating blood for the first time. Based on our data, it is advisable to take into account the duration of sleep acquired on the preceding night during the receiving of donors.

Tomasulo, P. et al., (2010) Reducing donor injuries while increasing contributions, donation frequency, and donor satisfaction may be achieved by making the donation process safer. The selection of appropriate measures to decrease risk is supported by understanding the physiology of donor responses. Donor vasovagal syncopal reactions (VVS) can be better understood and mitigated if their temporal course is studied in order to identify peak reaction times. This will allow for the formulation of more accurate hypotheses regarding the reactions' causes and the implementation of preventative measures. Approach and Procedures The time course of VVS responses was investigated by evaluating the onset time of the reactions in a database that included over 900,000 donor

registrations and over 500,000 whole blood donation events. Based on the assumption that various elements in each time affect the risk of reactivity, the donor experience was separated into three parts. Frequency distribution counts were used to assess the time course, with each gender and donor status being treated independently. Final Product A total of 956,766 people signed up to donate blood, and 5,54,513. Of those people, 536,907 were able to finish the donation process, while 17,606 were unable to do so. Depending on whether the donation was full or partial, the average draw time ranged from 8.21 to 8.91 minutes (95% CI, 8.8-9.01). In the first period, which began before venipuncture, the response rate was 0.045/1000 registrations. In the second period, which began four minutes after venipuncture, and in the third period, which began four minutes after venipuncture and ended two hundred sixty-five minutes later, the reaction rate for women was 3.5/1000 and for males it was 1.5/1000. The response rate peaked just before the needle was removed during phlebotomy, although it increased steadily throughout the procedure. Five and nine minutes after the needle was removed, the VVS rate peaked. After then, the response rate dropped downhill progressively. Within a 10-minute window starting one minute prior to needle removal, the response rates reach their maximum. Donor responses with the highest potential for harm don't manifest until much later, usually after the donor has already left the donation location. It takes more than fifteen minutes after the needle is withdrawn for about ten percent of male donors and twenty-five percent of female donors to have VVS symptoms. According to reports, the most recent VVS response started around 4.5 hours after needle extraction. Prevention strategies for responses that happen during phlebotomy may vary differently from those that attempt to reduce risk to donors after they stand up straight. Relative hypovolemia becomes more important after the donor stands up, hence measures should be taken to avoid blood pressure fluctuations caused by hypovolemia during this time.

Rohra, Dileep et al., (2009) A frequent adverse event associated with blood donation is vasovagal response (VVR). There hasn't been any research in Pakistan that attempts to quantify the frequency of VVR in blood donors. Researchers in Karachi, Pakistan, set out to quantify the frequency of immediate VVR among blood donors. This research was performed in two different blood banks in Karachi. There was documentation of data pertaining to the development of instantaneous VVR. Donation of blood also affected other important metrics, such as heart rate, temperature, blood pressure (BP), and breathing rate. We were able to attract 674 blood donors. The only ones who gave their permission were men. Among the most prevalent symptoms mentioned by the participants, 91 (13.5%) reported weakness and 73 (10.8%) experienced dizziness. Of the 91 donors who showed indications of acute VVR, 55 (8.2% of the total) had a substantial reduction in systolic blood pressure (13.5 +/- 2.5 mmHg) and a decrease in pulse rate (13.3 +/- 3.6). Voiding volume reduction (VVR) was not correlated with demographic variables such as age, BMI, estimated blood volume, ethnicity, education level, occupation, or first-time donations. There was a statistically significant correlation between marital status and the likelihood of immediate VVR; specifically, donors who were married had a greater probability than those who were single. Two blood banks in Karachi have shown that 8.2% of blood donors had VVR. In addition, our community has a higher incidence of VVR among married males.

III. RESEARCH METHODOLOGY

In 2020, we used 120 blood donations for our cross-sectional research. The blood bank Database System was queried to get the following donor demographic and donation data for every donation: age, gender, pre-donation blood pressure, location, and frequency of donations. SPSS was then used for analysis. The descriptive presentation of demographic and VVR data is complemented with a chi-square test for characteristics such age groups, genders, locations, and donation frequency. The t test is used to compare the means of the blood pressure readings taken before a donation. With a 95% confidence interval, a P-value less than 0.05 was deemed statistically significant.

IV. DATA ANALYSIS AND INTERPRETATION

The demographic breakdown of the 2020 blood donors is shown in Table 1. Donors between the ages of 26 and 35 make up 30% of the total, while those between the ages of 56 and 65 account for the smallest percentage at 2% (Table 1). According to donors, the majority of them are men (65%). Although 38% of donors are new to the practice, regular donors continue to make up the bulk of the pool (62% of whom return to give blood again).

Table 1: Demographic data

	Percentage
Age (years)	
17-25	28.0
26-35	30.0
36-45	25.0
46-55	15.0
56-65	2.0
Gender	
Male	65.0
Female	35.0
Frequency	
First time	38.0
Regular	62.0

Lightheadedness, which accounts for 88% of the response, is the most prevalent VVR, as may be seen from Table 2. Paraesthesia (0.2%), nausea (4.8%), twitching of the muscles (4%), vomiting (1.5%), loss of consciousness within 30 seconds (1.5%), and so on follow.

Table 2: Vasovagal reaction signs and symptoms

Signs and symptoms	**Percentage**
Lightheadedness	88.0
Nausea	4.8
Vomiting	1.5
Loss of consciousness<30 s	1.5
Muscle twitching	4.0
Paresthesia	0.2

Statistical analysis revealed a substantial correlation (CI = 95%) between vasovagal response and blood pressure ($P < 0.05$) in Tables 3.

Table 3: Association between blood pressure and vasovagal reaction

Factor	**Mean**	**S.D.**	**t-test**	**P**
Systolic				
No VVR	125.39	15.20	4.37	<0.05
VVR	122.18	12.15		
Diastolic				
No VVR	82.92	9.79	2.90	0.003
VVR	81.55	8.88		
MAP				
No VVR	97.12	9.95	4.62	<0.05
VVR	95.15	8.76		

VVR = Vasovagal reaction, MAP = Mean arterial pressure, SD = Standard deviation

V. CONCLUSION

To improve the safety and comfort of donors, the procedure details, including needle insertion and post-donation care, should be carefully studied and refined. With the ever-increasing need for blood throughout the world, it is crucial to understand and reduce viral viral retransmission (VVR) to protect donors and provide a steady supply of blood for the many people who rely on it for survival. The continued success and sustainability of blood donation programs, which benefit both donors and recipients, depends on understanding and resolving the complexities surrounding VVR. This is crucial because blood donation is still an essential part of healthcare systems around the world.

REFERENCES: -

1. Thijsen, Amanda & Thorpe, Rachel & Davison, Tanya & Nguyen, Lilly & Masser, Barbara. (2021). The vasovagal reaction experience among blood donors: A qualitative study of factors that affect donor return. Social Science & Medicine. 282. 114142. 10.1016/j.socscimed.2021.114142.
2. Hasan, Mohamed Ilyas & Arshad, Anizah & Rahim, NorhazaAbdul& Soo, PengYen. (2020). Vasovagal reaction among whole blood donors in Hospital Pulau Pinang. A statistical-epidemiological study. Asian Journal of Transfusion Science. 14. 28. 10.4103/ajts.AJTS_111_17.
3. Wong, Hoi-kei& Chu, Cherry & Lau, Ching-wa& Leung, Jennifer & Lee, Idy & Lee, Cheuk-kwong. (2018). Vasovagal reaction in blood donors: prediction and its impact on donor return. ISBT Science Series. 13. 10.1111/voxs.12442.
4. Thijsen, Amanda & Masser, Barbara. (2017). Vasovagal reactions in blood donors: Risks, prevention and management. Transfusion Medicine. 29 Suppl 1. 10.1111/tme.12488.
5. Fisher, S. & Allen, Dave & Doree, Carolyn & Naylor, J. &Angelantonio, E. & Roberts, David. (2016). Interventions to reduce vasovagal reactions in blood donors: A systematic review and meta-analysis. Transfusion Medicine. 26. 15-33. 10.1111/tme.12275.
6. Philip, Joseph & Sarkar, R & Jain, Neelesh. (2014). A single-centre study of vasovagal reaction in blood donors: Influence of age, sex, donation status, weight, total blood volume and volume of blood collected. Asian journal of transfusion science. 8. 43-6. 10.4103/0973-6247.126690.
7. Takanashi, Minoko&Odajima, Takeshi & Aota, Seiko &Sudoh, Mitsuaki &Yamaga, Yoshio & Ono, Yuriko & Yoshinaga, Kentaro & Motoji, Toshiko & Matsuzaki, Koji & Satake, Masahiro & Sugimori, Hiroki & Nakajima, Kazunori. (2012). Risk factor analysis of vasovagal reaction from blood donation. Transfusion and apheresis science : official journal of the World Apheresis Association : official journal of the European Society for Haemapheresis. 47. 10.1016/j.transci.2012.04.002.
8. Gonçalez, Thelma & Sabino, Ester & Schlumpf, Karen & Wright, David & Leao, Silvana & Sampaio, Divaldo&Takecian, Pedro &Proitetti, Anna & Murphy, Edward & Busch, Michael & Custer, Brian. (2011). Vasovagal reactions in whole blood donors at three REDS-II blood centers in Brazil. Transfusion. 52. 1070-8. 10.1111/j.1537-2995.2011.03432.x.
9. Newman, Bruce & Siegfried, Barry. (2011). The quest to reduce vasovagal reactions in young blood donors. Transfusion. 51. 2061-3. 10.1111/j.1537-2995.2011.03306.x.
10. Rahman, Atiar& Biswas, Jolly & Islam, Md & Khatun, Ayesha & Shil, Nittyananda& Shaheen, Sheikh & Bhuiyan, Zillur. (2011). The Incidence of Vaso-vagal Reactions Among Whole Blood Donors During or Immediately After Donation. Bangabandhu Sheikh Mujib Medical University Journal. 4. 10.3329/bsmmuj.v4i2.8640.
11. Tomasulo, P. & Bravo, Marjorie & Kamel, Hany. (2010). Time course of vasovagal syncope with whole blood donation. ISBT Science Series. 5. 52 - 58. 10.1111/j.1751-2824.2010.01363.x.
12. Rohra, Dileep & Vikash, Fnu & Rai, Kelash & Azam, Iqbal. (2009). Prevalence of immediate vasovagal reaction in blood donors visiting two blood of Karachi. Transfusion medicine (Oxford, England). 20. 129-33. 10.1111/j.1365-3148.2009.00984.x.