

DONOR CARE SERVICE FOR DEFERRED DONORS DUE TO ANEMIA OR LOW HEMOGLOBIN IN NATIONAL BLOOD CENTER, THAI RED CROSS SOCIETY

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ABSTRACT: This cross sectional study was conducted with the aim of identifying the characteristics of anemic donors and their satisfaction with donor care service in National Blood Center, Thai Red Cross Society (NBC/TRCS) and its related factors. Data based on a self-administered questionnaire was collected from 382 deferred donors due to anemia who received the blood donor care service from 1st February to 4th March 2011. The result showed anemia was more prevalent among female group (87.2%) than male group and most affected age group among female and male was from 25-44 (61.5%). Most of the respondents had visited the donor care service for the first time (83%). The study revealed that 76.4% of the respondents expressed “high satisfaction” with the service. Almost all of the respondents showed positive perception about the donor care service and accessibility, at the rate of 97.9% and 95.8% respectively. Low level of satisfaction was observed mainly in relation to “space of service room”, “public awareness of the service”, “distance to reach the service” and “cost to reach the service”. Chi-square and logistic regression analysis revealed that age, employment state, perception about service effectiveness and satisfaction with other services in NBC were associated with satisfaction level of the donor care service. The age group between 25-44 years was more likely to be satisfied with donor care service than the other two age groups (<24 years and >45 years) ($p=0.045$). The service clients who had jobs were more likely to be satisfied with donor care service than those who were student or did not have jobs ($p=0.012$). The factors significantly related to the satisfaction were perception about the accessibility and satisfaction with other services of NBC ($p<0.05$). Based on the finding of this study, it is recommended to develop the service further as an essential part of national blood donor retention program and explore possibility to expand the service in the way of protecting and expanding current pool of potential blood donors who are deferred due to anemia or other conditions.

Keywords: anemia, donor care service, patient satisfaction, perception, accessibility

INTRODUCTION

The donor care service in NBC is the intervention devised for protection of blood donors from being deferred permanently for medically controllable condition, the anemia or low hemoglobin. According to the data of period of 2004-2010, around 209,849 volunteer donors in Bangkok were rejected from donation for mere reason of low hemoglobin, which amounts to 40.42% of total deferred donors in the NBC/TRCS [1]. Higher deferral rate due to anemia has been universal issue faced by the blood collection society of the world with the fact that 25% of new blood donors were not accepted to undergo blood donation in 2006 in Norway [2] and 71.9% of blood donors in American Red Cross Blood Services where approximately 45% of blood need of the USA was covered had been deferred, only due to low hemoglobin [3]. These studies have given impetus to intensify the effort to control the increasing number of deferral due to anemia which is the

predominant factor of temporary deferral. In this regard the donor care service of the NBC deserves to attract the attention of the global blood collection agencies as it provides medical service to the anemic donors in three aspects: medication, Lab testing, and medical consultation. To our best knowledge, few studies were observed to measure satisfaction of the donor care service which aimed at protection of our valuable donors from being deferred for mere avoidable conditions such as anemia, and to put out optional interventions that blood collection agencies could adapt to its specific setting for implementation.

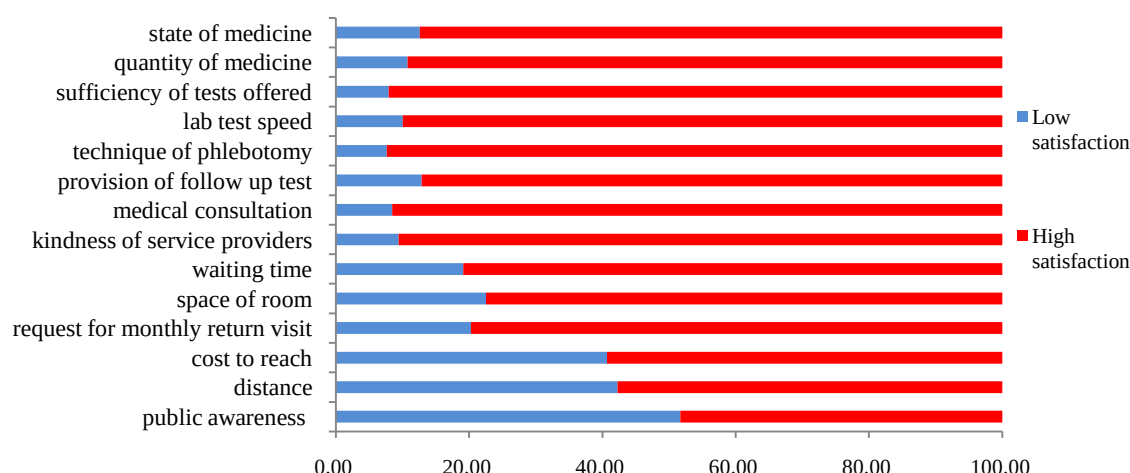
The study aimed to measure the satisfaction level of the service users and assess the association between independent variables and satisfaction with the service.

MATERIALS AND METHODS

A cross sectional study was undertaken in the National Blood Center, Thai Red Cross Society (NBC/TRCS), Bangkok, Thailand. According to the database of NBC, 22,626 donors were deferred due to anemia in one year from 1 October 2009 to 30

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Figure 1 Satisfaction with the blood donor care service (n=382)

September 2010 in the NBC/TRCS and this number was taken into account for decision of sample size of this study, which came up to be 378. The study period was defined from 1st February – 4th March 2011 and included were all deferred donors due to anemia who received the blood donor care service during operating days, Monday to Friday and excluded from the study were those who were already exposed to the questionnaire during questionnaire pretesting period in January 2011.

For measurement of hemoglobin level, Beckman Coulter, the automated complete blood cell counter was used and for measurement of variables, a questionnaire composed of 5 parts was used. The questionnaire was restructured referring to questionnaires used in previous studies [4, 5]. The satisfaction level was measured on 5-point rating scale and perception level on 4 point rating scale ranging from “very disagree” as negative and “very agree” as positive. Age groups were categorized into three based on WHO blood donor age distribution table [6]. Occupation was grouped into three: with job, without job and student and income status was divided into low, middle and high income. Number of donations was also classified into three types: never donation (first time donor), 1-5 times donation and more than 5 times donation.

Data were analyzed using SPSS software version 16. Descriptive statistics was used to describe what was observed in the study population. Chi-square test of association between the independent variables (socio-demographic characteristics and perception about effectiveness of the service) and the dependent variable (satisfaction with the service) was used with significance level of $p \leq 0.05$. However, independent variables at $p \leq 0.25$ such as age, occupation, time to NBC, intention to advocate and change in Hgb level were also included for logistic regression analysis to identify factors independently associated with the satisfaction. The study assessed statistical significance of each analysis against α value of 0.05.

Table 1 Age and sex distribution of anemic donors (n=382)

Age group	Frequency by sex (%)		Valid frequency (%)
	M	F	
< 24	5 (6.1)	77 (93.9)	82 (21.5)
25-44	30 (12.8)	205 (87.2)	235 (61.5)
>45	15 (23.1)	50 (76.9)	65 (17.0)
Total	50 (13.1)	332 (86.9)	382 (100)

Table 2 Employment status of anemic donors (n=382)

Occupation	Frequency	Valid Percent
Unemployed	79	20.1
Student	76	20.8
Employed	224	59.1
Total	379	100
Missing system	3	0.8

RESULTS

During the study period, 407 donors visited the donor care service section, of which 319 (78%) cases were anemic and 63 (16%) cases were second time visitors for follow-up and 25 (6%) were not found anemic at Lab control.

The distribution of age and sex among anemic donors (382) is presented in Table 1 with the employment status shown in Table 2.

Singles were about two fold greater than the number of other marital status groups. Majority of anemic donors were graduated or post-graduated at university level (73%) and lived on middle or lower income level (76%). Around 47.1% of subjects had anemia after more than 5 times of donation and 73.2% reached the NBC in an hour or less. High satisfaction with other services than the donor care service of the NBC was expressed in 88.4% of the subjects. Among 84.1% of subjects, Hgb level was improved after the first visit to the service. However, 42.3% of female and 63.6% of male clients only fully recovered to or exceeded the

Table 3 Logistic regression analysis of factors independently associated with satisfaction with donor care service of the NBC (n=333)*

Independent variables	B	Adjusted OR	95.0% C.I.		p-value
			Lower	Upper	
Group with job	0.656	1.927	1.156	3.214	0.012
Group with positive Perception about accessibility	1.317	3.734	2.097	6.648	<0.001
Group with high satisfaction about other services in NBC	1.736	5.674	2.561	12.573	<0.001

*Non-significant variables not presented in this table were age, travelling time, intention to advocate to others and change in Hgb level.

Table 4 Multivariable analysis of age groups independently associated with satisfaction of donor care service components (excluding accessibility (n=333))*

Independent variables	B	Adjusted OR	95.0% C.I.		p-value
			Lower	Upper	
Age					
25-44	0.719	2.052	1.017	4.141	0.045
>45	1.020	2.773	0.951	8.091	0.062
Constant	1.322	3.750			<0.001

* In relation to age group ≤ 24

normal level. The Hemoglobin level was improved in 84.1% of second time visitors for follow-up service, which indicated positive effect of the service on recovery of clients'. A large minority (42.3%) of female clients reached and exceeded the normal Hgb level following one month of service while male clients had the same effect at 63.6%. Overall satisfaction with the donor care service was appreciated in high level among 76.4% of the service users and only 23.6% manifested low satisfaction. The items that received relatively lower level of satisfaction are shown in detail in Figure 1.

Perception about the effectiveness of anemic donor care service was positive among 97.9% of respondents while only in 2.1% was negative.

In order to avoid distortion of results in bi- and multi- variable analysis, 49 questionnaires were excluded from analysis their missing answers, which were considered as drop-out rate. The drop-out rate of 12% is unlikely to have introduced bias [7]. Chi-square test showed that relationship with satisfaction of donor care service was statistically significant in occupation ($p=0.038$), perception about service components and accessibility ($p<0.001$) and satisfaction with other services in NBC ($p<0.001$). Age ($p=0.21$), traveling time to NBC ($p=0.229$), intention to advocate to others ($p=0.058$) and change in hemoglobin level ($p=0.132$) were also taken into consideration in logistic regression analysis. Age was found almost significant in association with satisfaction of service components (medication, lab testing, and counseling) at $p=0.062$.

While adjusting for other variables and employing a

0.05 criterion of statistical significance, the modeled odd ratios for satisfaction with donor care service were presented in Table 3.

Anemic donors with jobs were about 2 times more likely to be satisfied with the donor care service than those with no jobs when age, traveling time, intention to advocate and change in Hgb were controlled. The anemic donors with positive perception about accessibility were about 3.7 times more likely to be satisfied with the donor care service than those with negative perception. Also those who were highly satisfied with other services of NBC were 5.6 times more likely to express high satisfaction with the donor care service than those with low satisfaction about other services of NBC.

Table 4 shows that anemic donors whose age was between 22-44 years were about 2 times more likely to be satisfied with the service components than other age group when traveling time, intention to advocate, change in Hgb, perception about effectiveness of the service and satisfaction with other services were controlled. However there was no significant difference between negative and positive intention to advocate to others, between improved and not improved Hgb levels and between within an hour and more than an hour travelling.

DISCUSSIONS

Anemia is more prevalent among donors aged between 22-44 years and female, which is consistent with other studies in which mean age of anemic cases was 34 for females and 32 for males and proportion of female anemic cases was 82.9% [8]. The higher rate of anemia among the female

donors of child bearing age in blood donor society is related to physiological losses of blood (menstruation) [9]. There are no published data that showed linkage between age and the satisfaction with blood donor care service. However, previous studies on satisfaction with the medical services offered evidence that age was a factor influencing difference in satisfaction level [10, 11].

The majority of donors (59%) had a job for living and it was consistent with income level in which 77% of subjects were at or above middle income level. There is no immediate explanation to link anemia prevalence with higher income status and low hemoglobin level is mostly rooted in iron-lacking vegetarian diet.

The higher rating of satisfaction among the employed compared to that of the unemployed is contrary to the finding of a study to measure satisfaction of deferral system of NBC [5]. The reason of different results of both studies can be explained with their different objectives. In Subhachaturas's study [5], the measurement was occupation and satisfaction with every one of the three steps of the deferral system. The donor care service, studied in this research, may be felt more essential by people with jobs who are having difficulties in finding time to take care of themselves. Therefore, the service may have been viewed as an opportunity for them to look after themselves and more favored by them than those who have no job.

The gradual increasing rate of developing anemia by times of donation observed in the study was a common outcome in other studies in which anemia is more prevalent among repeated donors compared to new donors [12]. Other studies recommended regular check up and provision of iron tablets to protect regular donors from deferral due to mere low hemoglobin [13].

The result of slower progress in recovery of Hgb among the female group compared to the male group is common to other studies [2, 12, 13]. Items related to space of service room received low score of satisfaction. The room which is used for the service is often overcrowded with several clients receiving counseling and testing for blood at the same time. Accessibility, cost and distance to reach the service and public awareness of the service did not reach high level of satisfaction, which underlines the importance of bringing the service closer to the clients.

The study found that perceptions about the components of the service were generally positive though a few items still needed improvement like explanation about the test result and medical advice by nurses and reduction of discomfort felt during lab testing. The finding of this study agrees with a study on delivering quality service balancing customer perceptions and expectations in New York

that found that once medical staffs are able to meet the customers expectations in the provision of treatment, customers rate that service of high quality [14].

Perception about the accessibility was found to be one of the important factors that impact on satisfaction with the donor care service, which is consistent with outcomes of previous studies [15-17].

Other services of NBC includes the services preceding the donor care services like reception, physical examination, Hgb screening, history checking of blood donation by computer system, the blood collection and refreshment services. The study identified that the satisfaction with other services of NBC affected the level of satisfaction with donor care service and it supported by the findings of other study in which satisfaction with diagnosis service and treatment service were correlated. The quality of related services should not be ignored in terms of increasing quality and satisfaction of all services [14, 18]. In conclusion the study shows that there is high satisfaction among deferred blood donors about the services they received from the donor care service.

RECOMMENDATION

Higher prevalence of anemia in female group highlights the need of anemia prevention program more focused on this group of donors. The blood donor retention program should consider about regular check-up of Hgb or serum ferritin level for blood donors with history of more than five times of blood donation, as a protective measure for this kind of donor from iron depletion. The effort to bring the donor care service closer to the blood donors needs to be intensified by potential availability of the donor care service at the mobile site or complemented by e-based procedures. The regular training of nurses on lab result interpretation should be pursued. Separation of rooms for phlebotomy and lab testing from counseling area is also recommended for further heightening satisfaction of blood donors with the donor care service.

At policy level, the donor care service should be viewed as an essential part of donor retention program as it contributes to reduce number of blood donors excluded from donation due to anemia. Cross-sectional study should be conducted on regular basis to identify newly emerging areas that may require improvements and to measure progress in service delivery.

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