

Community-Based Blood Donation Program: Sustainability and Local Capacity Building in these Changing Times of Demand in the Global Health

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Abstract

Blood's growing use in various therapies has led to new regulations governing its collection, use, and storage. Ensuring a sustainable blood supply remains a challenge especially in the Philippines. Conducted in Brgy. Poblacion, Ayungon, Negros Oriental, this study assessed how young residents' knowledge, attitudes, and practices relate to blood donation. Data was analyzed with SPSS and Excel 2010. The Chi-square Test of Independence assessed the KAP association, with $p < 0.05$ denoting statistical significance.

Out of 76 respondents, 63.16% had average knowledge, 72.37% held positive attitudes, and 86.84% were willing to donate. Actual donation rates were low (14.47%) due to lack of awareness (50%), fear of needles (28.95%), and preference to donate to family and friends (22.37%). Encouraging awareness, incentivizing donations, and rural blood donation camps can address the limited blood supply issue.

Keywords: blood, blood donation, young residents, knowledge, attitude, practice

Introduction

According to the World Health Organization (2015), 108 million blood donations are collected globally, and nearly 50% of these are collected from high-income countries that are home to less than 20% of the world's population. Moreover, an overwhelming 99% of the 500,000 women die each year during pregnancy and

childbirth worldwide due to hemorrhage which invariably requires blood transfusion. However, blood donation in the Philippines has been a constant problem as well. Blood supplies are still insufficient to provide the needs nationwide. In fact, the Philippine Red Cross (PRC) supplies 25 to 30 percent (%) only of the country's national blood requirements (Philippine Red Cross, 2013). Further, there has been a steady decline of blood donation, while the demand for transfusion continually rises (Siromani et al., 2015). To say that transfusion medicine has an increasingly important role in the life support of critically ill patients is an understatement since transfusion therapy has drastically intensified (Keener, 2013). In this respect, studies continue to be published from different countries exploring the attitude and motivations of young blood donors, yet no known studies have been published in a small-scale setting focusing on teenagers aged 18 to 22.

Thus, this study primarily aimed to establish a relationship between knowledge, attitude, and practices on blood donation through administering a self-structured survey questionnaire among selected residents in Brgy. Poblacion, Ayungon, Negros Oriental. Thus, to achieve these intentions, the study sought to answer the following questions:

1. What is the level of knowledge of the respondents regarding blood donation?
2. What is the attitude of the respondents towards blood donation?
3. What are the practices of the respondents towards blood donation?
4. What are the factors that would probably cause a low rate of blood donors?
5. Is there a significant relationship between knowledge, attitude, and practice on blood donation through a survey analysis?

Related Studies

In a study by Lakey and Cohen (2002) in a Palestinian Community, results revealed that majority (93%) of the respondents

were aware of blood donation; however, the level of knowledge resulted in below 30%. Concerning sources from where the interviewees heard about blood donation, the result showed that they knew about blood donation from relatives, friends, and mass media. In another study utilizing the Saudi population, the sample consisted of 335 males (55%), and 274 females (45%) and majority (65.84%) were categorized as non-donors (78.98%). These nondonors were between the ages of 15 and 30 years old. The 88.5% of the respondents who participated agreed that blood donation was not harmful, 20% of them stated that they would refuse blood transfusion even if they were in need because of the risk of acquiring infectious disease. Further, 84.5% preferred direct donation, 49% of the sample stated that they would accept blood donation only from relatives, and 55.1% believed that blood transfusion was safe. However, 11.6% claimed to have acquired infectious disease after blood transfusion, 58% female in addition to 11.34% male preferred to receive blood from female donors, and 69.5% did not know if the blood banks were in need of blood or not, and 17.4% believed that all surgical procedures require blood transfusion (Al-Drees, 2008).

Locally, studies were also conducted regarding voluntary blood donation. A study was conducted by the Occupational Safety and Health Center (1999) of the Department of Labor and Employment (DOLE) with the aim of determining the level of awareness on voluntary blood donation among residents and workers in the National Capital Region; and the quality of current information campaign on voluntary blood donation. Moreover, the study provided inputs on blood donation promotion for information campaigns. This study was done in cooperation with the Quezon City Science Council and the Voluntary Blood Donation Program of the Department of Health. The goal was to ensure that workers and their families in the locality could have safe blood when needed since there was a high prevalence of injuries in several work sectors including in construction and agriculture work. With 300 respondents, the study found that fifty percent (50%) of the respondents were aware of the Voluntary Blood Donation Program and got the information from radio and television, while of the 300 respondents, eighteen percent (18%) had donated blood previously. The majority of the

respondents perceived that the quality of current information on voluntary blood donation was not adequate and sufficient, albeit the respondents were found to be highly concerned with and receptive to voluntary blood donation information campaign. Moreover, another significant finding was that respondents had several misconceptions regarding the process of blood donation. Thus, a need for a continuing effort and sustaining information dissemination on voluntary blood donation is very important in order to protect Filipino workers and their families who may need safe blood in the future.

In another study by Pingoy, et al. (2004) at the University of the Philippines – Philippine General Hospital, Taft Ave., Manila, with 2,470 respondents, the leading personal positive motivating factors identified were general altruism, duty as a citizen, pressure from family, friends or peer, knowledge of one's blood type or an undisclosed illness during screening, having recipients who are family or friends, blessing from God, personal invitation from a physician, and admiration of others. Other non-personal reasons for blood donation included examples by family or friends, knowledge that general good is promoted when more people donate blood, peace of mind, influence of mass media, and results of seminars and educational campaigns. On the other hand, fear was almost the only source of donors' anxiety (i.e., the negative influencing factors) caused by awareness of an undisclosed illness, getting sick, loss of blood, needles, and sight of blood.

Lastly, according to the Visayan Daily Star (2014), an ordinance was formed and authored by Hon. Lani Ramon, a city councilor of Dumaguete City, to combat the insufficient supply of blood in the province and city. The said ordinance includes bloodletting activity conducted by the City Health Office of Dumaguete every six months. The 30 barangays of Dumaguete City identify at least one percent of its population, who are 18 years old and above, to undergo blood typing, every six months. Potential donors' information (i.e., name, blood type, location, and contact number) are entered into the databank for easy access. The city government has allotted Php 200,000 for the program.

Theoretical Framework

Demographic statistics demonstrate that a majority of the volunteer work force was composed of women and highly educated individuals (Rokach & Wanklyn, 2009). In general, women seemed to be more inclined to engage in volunteerism. In several studies concerning gender differences in volunteer motivation, researchers have found that women scored higher on most, if not all, functions than men (Chapman & Morley, 1999). On the contrary, several researchers have found that men tend to favor instrumental motivators, such as the career function, while women tend to favor concern-related motivators, such as values (Prentice & Carlsmith, 2000; Switzer, Switzer, Stukas, & Baker, 1999). Another important demographic divide in volunteer motivation is age. Numerous researchers have demonstrated that older volunteers tend to be motivated principally by altruistic motives, otherwise known as the values function (Finkelstein, Penner & Brannick, 2005; Frisch & Gerrard, 1981; Okun, 1994; Okun et al., 1998; Omoto & Snyder, 2000). Younger volunteers, although also strongly motivated by altruistic motives, often ranked the career, social, and understanding functions higher than do older volunteers (Clary & Snyder, 1999; Finkelstein et al., 2005; Frisch & Gerrard, 1981; Omoto et al., 2000; Planalp & Trost, 2009; Roessler, Carter, Campbell, & MacLeod, 1999). These results have been widely replicated both in studies utilizing volunteers from hospices and volunteers from other nonprofit organizations.

Intrinsically motivated behavior involves engaging in an activity for the satisfaction, or enjoyment inherent in performing the activity. On the contrary, extrinsic motivation involves performing an activity to obtain a separable outcome (Finkelstien, 2009). An individual motivated by extrinsic motivators engages in an activity because it contains instrumental, instead of intrinsic, value (Ryan & Deci, 2000).

Strategies that best fit intrinsically oriented individuals de-emphasize tangible rewards and emphasize intrinsic rewards. Deci (1972) found that in a population of intrinsically motivated individuals, external rewards such as money, awards, and prizes tend

to decrease intrinsic motivation. Verbal reinforcements, on the other hand, increase intrinsic motivation (Deci, 1972). Another study by Deci et al., (1999), a meta-analysis of 128 experiments exploring the effects of extrinsic rewards on intrinsic motivation, yielded similar results. These researchers found that tangible rewards had a significant negative effect on intrinsic motivation, while verbal rewards had a significant positive effect on intrinsic motivation (Deci et al., 1999). These findings suggest that intrinsic motivation may be reduced by rewards that depend on task rather than performance. In the context of volunteerism, individuals may prefer praise when deserved rather than monetary rewards based on completion of tasks. On the contrary, extrinsically oriented individuals are not affected by extrinsic rewards or intrinsic rewards, such as verbal reinforcements. The defining factor in extrinsically motivated individuals is the possibility of achieving external goals such as career advancement and stronger social ties (Deci et al., 1999).

Although there are differences in functional motives among different genders and age groups, individuals commonly report the values function as the most salient motivating factor. Research suggests that in order to observe an increase volunteerism act regardless of age and gender, etc., proper orientation and education among individuals before conducting the said act. In addition, motivational orientation should be taken into account when rewarding existing volunteers. While counterintuitive, intrinsically motivated volunteers should not be rewarded by extrinsic rewards, such as monetary compensation or awards, as these rewards often reduce their intrinsic motivation. Extrinsically motivated volunteers, on the other hand, can be motivated to volunteer further by extrinsic rewards such as career advancement. To prevent further deterioration of the volunteer work force, organizations should seek to prevent mandatory volunteerism in schools and universities as these policies tend to decrease future intentions to volunteer (Widjaja, 2010).

Methods

Study Area

Brgy. Poblacion, Ayungon, Negros Oriental was selected as

blood donation-related awareness campaigns resulting perhaps to ignorance among the residents; (2) no authorized documentation of potential blood donors has been established at present; (3) there was poor volunteerism among the residents as blood donation mostly happened only when the need would arise; and lastly, (4) no study had been conducted regarding the diverse influences affecting individuals' decision to donate blood.

Research Design

The study is a cross sectional descriptive type which involved one-time interaction with groups of people through survey analysis.

Pre-Data Collection

A formal written letter was sent to the Ethics Committee of Silliman University or to any department/s is/are responsible for this matter. They were informed of the conduct of this study, their permission was sought and obtained, and a memorandum of agreement was formulated. Another set of letters were sent to the Local Government Unit of the Municipality of Ayungon and Brgy. Poblacion. The letters were properly addressed to the municipal mayor and barangay captain respectively, asking permission and informing their respective offices that a study would be conducted in the said places. Moreover, pilot testing was conducted prior to the conduct of the study in a neighboring barangay. Fifteen percent (15%) out of the computed respondents took the test and commented on it mechanics. The primary purpose of the pilot was to construct an initial picture of the test validity and reliability with the aid of an SPSS computer application which employed the Cronbach's α . Results from this test were excluded from the final data analysis.

Sampling Procedure for Data Collection

In the absence of available information regarding the data of inhabitants belonging to the 18-22 age bracket in Brgy. Poblacion, Ayungon, Negros Oriental, this study opted to employ total

enumeration. The researcher decided to only include such age range of individuals since (1) they were the ones who were readily available when the need for blood donation would arise, most especially if the need for donation was in Dumaguete City; (2) they were less likely to have illnesses, such as hypertension, diabetes, anemia, and the like; and (3) they were more capable and willing to perform the said action.

The respondents were required to fill out a four-part structured written questionnaire. To avoid non-response bias and to ensure that the respondents could easily contribute responses, the researcher designed the questionnaire in a way that is not too long or would not take too much time to complete.

Ethical Considerations

Nonetheless, the study ensured as much as possible that the respondents' privacy was maintained throughout the study. Anonymity was therefore guaranteed. The participants were informed that any data provided would be kept in strictest confidence and data gathered would be disposed after two (2) years. In addition, the respondents were provided with adequate information regarding the research and were ensured that they had the power of free choice, enabling them to consent or decline participation voluntarily. Furthermore, it was emphasized by the researcher that failure to volunteer would not result in any penalty or loss and that even after giving their consent, they still had the right to withdraw from the study and refuse to provide any specific piece of information.

Procedures for Data Analysis

1. Scoring on surveys (Knowledge, Attitude, and Practices [KAP]). Method for scoring the surveys was adapted and modified from the study of Alfouzan (2014). Firstly, for knowledge, each right response was given a score of 1 while a wrong or unsure response was scored 0. Total knowledge scores ranged between 0-10. Knowledge scores from 0 to 3 were considered as poor, while knowledge scores ranging 4 to 7 were considered average, and knowledge scores of

more than 7 were considered as excellent knowledge regarding blood donation patients was assessed using an 8-item questionnaire where attitude scores of 0 to 5 were considered as negative attitude and scores from 6 to 8 were considered as positive attitude. Thirdly, practice was evaluated using a questionnaire where respondents could possibly get a total score of 7. Practice scores from 0-3 were considered as unwillingness to donate blood and scores more than 3 indicated willingness to donate blood. An additional question (i.e., number 8) was added to the last portion of the questionnaire for respondents who had not yet experienced blood donation.

2. Test for associations. Correlation analysis, specifically the Chi-square Test of Independence, was also utilized to determine the relationship between two categorical variables. Statistically significant differences were considered at $p < 0.05$ at 95% confidence level.

Results and Discussion

Pilot Test

The researcher conducted a pre-test in the neighboring barangay, Brgy. Tampocon II, Ayungon, Negros Oriental. Total enumeration sampling was used due to the unavailability of data regarding the number of young residents aged 18 to 22 years old. The same considerations were made when choosing the respondents to participate in the pre-testing. Only minimal changes were made on the questionnaires, such as correction of typographical errors, revision of formatting and incorrect translations to the vernacular. The researcher believed that the questionnaire was functional since its Cronbach's α was over 0.651. In practice, a Cronbach's α above 0.6 is acceptable, which means that the level of reliability of the questionnaire is within the acceptable range.

Demographic Profile of the Respondents

Table 1

Demographic Characteristics of the Participants (n = 76)

CHARACTERISTICS	DISTRIBUTION (n = 76)	
	FREQUENCY (f)	PERCENTAGE (%)
Age		
18	27	35.53
19	13	17.11
20	6	7.89
21	15	19.74
22	15	19.74
Gender		
Male	35	46.05
Female	41	53.95
Civil Status		
Single	73	96.05
Married	3	3.95
Religion		
Roman Catholic	32	42.11
Born Again	2	2.63
Aglipay	39	51.32
Protestant	3	3.95
Others	0	0
Level of Education		
Elementary	0	0
High School	8	10.53
College	67	88.16
Others	1	1.32

All respondents voluntarily participated in answering the written questionnaires, and data gathered were subjected to statistical analyses. As disclosed in Table 1, majority of the participants belonged to the age group of 18 years old which were mostly female and single in terms of civil status, accounting for 35.53%, 53.95%, and 96.05%, respectively, of the overall number of study participants. In terms of religion, only 3 (3.95%) were Protestants, 2 (2.63%) were Born Again, while the rest claimed to be Roman Catholics (42.11%) and Aglipayans (51.32%). As regards the educational attainment of the participants, most of them were enrolled in college at the time of the study or have already finished college, having a percentage of 88.16%.

Table 2*Level of Knowledge, Attitude and Practices on Blood Donation*

Variable	Category	Distribution (n=76)	
		Frequency (f)	Percentage (%)
Knowledge	Poor	8	10.53
	Average	48	63.16
	Excellent	20	26.32
Attitude	Positive	55	72.37
	Negative	21	27.63
Practices	Willingness to donate	66	86.84
	Unwilling to donate	10	13.16

Knowledge about Blood Donation

As tabulated in Table 2, majority of the participants were classified as having an average knowledge, accounting for 63.16% of the total population, while 10.53% and 26.32% were poor and excellent, respectively. The study conducted by Nigatu and Demissie (2014) yielded the same results as this present study where the study population tended to be relatively more knowledgeable about blood donation. This could also be attributed to the fact that most of the participants were in the college level or have finished tertiary education, so they were already cognizant of these matters.

It is also noteworthy to point out that most of the participants did not know the amount of blood to be collected, minimum weight and age, and appropriate duration of blood donation as defined in Table 3. On the other hand, in the same study by Alfouzan (2014), about one third of the participants (33.2%) answered correctly about the minimum age, while 40.1% and 43.6% of them correctly recognized the minimum weight and the minimum interval between two times for blood donation, respectively. Thus, it can be deduced that due to poor knowledge in terms of the aforementioned items, participants were hesitant to volunteer; lack of knowledge in other words can be a possible factor of hindering them to donate.

Attitude towards Blood Donation

Among the 76 participants, 55 (72.31%) indicated a positive attitude, while 21 (27.63%) of them were identified as having a negative attitude towards blood donation. Correspondingly, as

described in Table 5, most of the participants believed that blood donation was good (85.53%), voluntarily blood donation was the best source of donor blood (81.58%), and blood donation was a lifesaving act (98.68%). This result was in congruence with the study conducted at University of Benin Teaching Hospital, Benin City, Nigeria by Ngowoh, Aigberadion and Nwannadi (2013) in which majority of the participants had a positive attitude and preferred voluntary blood donation. It is also important to emphasize that participants responded positively to the questions on whether relatives could be asked to donate and whether they would donate blood if a family, relative, or friend needed transfusion as tabulated in Table 5 with a percentage of both 88.16%.

Practice of Blood Donation

As shown in Table 2, 66 (86.84%) of the population were willing to donate blood once encouraged or reminded and when emergencies occur. This is a positive perception most especially to the residents of Brgy. Poblacion, Ayungon towards establishing a blood donor’s list corresponding to their individual blood type and contact number for easy access in cases of emergencies and when need arises.

Table 3

History of Blood Donation among the Study Population (n = 76)

HISTORY OF BLOOD DONATION	DISTRIBUTION (n = 76)	
	FREQUENCY (f)	PERCENTAGE (%)
Yes	11	14.47
No	65	85.53

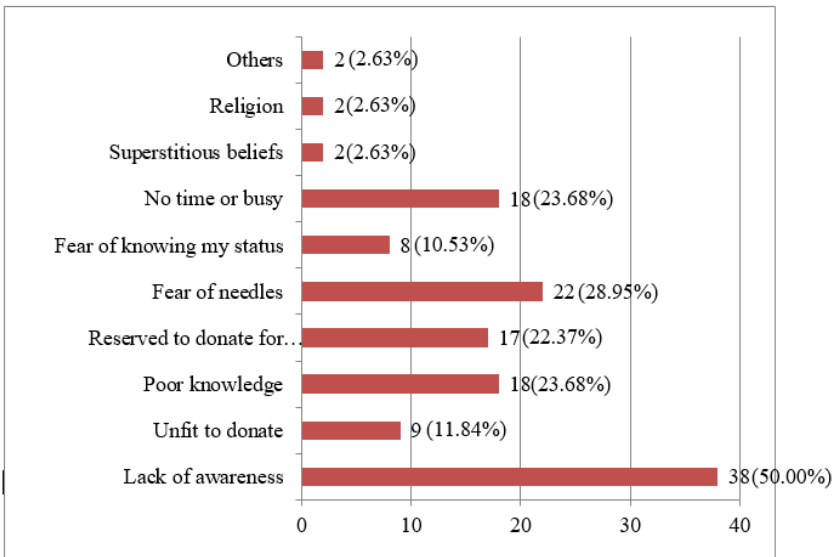
Additionally, the data presented in Table 7 reveals that only 11 (14.47%) of the total population had a history of blood donation, while the majority were classified as non-donors. This simply implies that awareness programs about blood donation must be implemented, and regular consultations must be conducted to properly follow up these participants. These results are greatly associated with the different factors preventing the participants from donating blood as illustrated in Figure 1. In the present study, lack of awareness (50.00%) ranked first as the top reason why non-donors

had not experienced blood donation. This could be due to the fact that the Philippine National Red Cross (PNRC) and other blood donation-related agency had not visited and conducted bloodletting activities and awareness campaigns in this barangay, according to the municipal nurse on duty during the interview.

Next to deficiency of awareness was fear of needles (28.95%). In another study published by Nwogoh, Aigberadion and Nwannadi (2013) and Pinngoy et al. (2004) at the University of the Philippines – Philippine General Hospital, Taft Ave., Manila, fear was almost the only source of donors' anxiety, with the emphasis on the fear of needles, sight of blood, and fear of knowing one's health status. Nonetheless, according to an article entitled "Overcoming Your Fear of Needles" (2013), constant exposure could somewhat help eliminate one's anxiety. Lastly, reserving donation for family and friends (22.37%) is another deterrent factor among non-donors.

Figure 1

Distribution of Non-donor Respondents according to the Reasons They Consider Why They Have Not Donated Before



Association of Knowledge, Attitude, and Practice (KAP) with Blood Donation

Table 4

Association between Knowledge, Attitudes, and Practices on Blood Donation

Knowledge	Practice		x ²	df	p-value
	Unwillingness	Willingness			
Poor	5	6	12.3	2	*0.002
Average	6	37			
Excellent	0	32			

Practice	Attitude		x ²	df	p-value
	Positive	Negative			
Unwillingness	4	6	6.03	1	*0.014
Willingness	51	15			

Knowledge	Attitude		x ²	df	p-value
	Positive	Negative			
Poor	5	3	0.780	2	0.677
Average	37	12			
Excellent	13	6			

Legend: (*) with significant p-value result (p < 0.005)

As presented in Table 4, a significant association between knowledge about and practice on blood donation was observed, where p < 0.005 (p = 0.002). In other words, an ample amount of knowledge can lead to an increase in blood donation rates or possibilities of an individual to donate blood. It can therefore be recommended that healthcare professionals and other concerned blood donation-related agencies should include programs that could enrich and augment the knowledge aspect of individuals regarding blood donation. These findings are similar to those in the study of Kowsalya et al. (2012) that led the researchers to conclude that good or sufficient knowledge may lead to a higher desire for blood donation.

On the other hand, another significant realization was that actual blood donation is suggestively dissimilar from willingness to donate. As mentioned previously, participants were mostly knowledgeable and were classified as willing to donate, yet very low blood donation act has been generated. This finding can be explained through the Theory of Planned Behavior (TBP) by Ajzen (1971) and can be further expounded by the study of Tscheulin and

Lindenmeier (2005). Based on the theory, attitude, subjective norm, self-efficacy, moral norm, anticipated regret, donation anxiety from prior blood donations, and self-identity as a blood donor predicted experienced donors' intentions; and that intentions, self-efficacy, moral norm, and anticipated regret may have an impact on people's actual blood donation behavior. In other words, actual blood donation greatly depends on the intention of an individual to donate blood; an example in this case is reserving donation for family and friends, as discussed earlier. In other words, people tended to be more certain that their donated blood would preferably be transfused to their loved ones, as also explained in the study of Tscheulin and Lindenmeier (2005). Likewise, individuals due for blood transfusion preferred their family member or relatives as donors. The former idea could possibly explain why lack of awareness among non-donors ranked first on the list. Such awareness may refer to the existing program by the Philippine National Red Cross (PNRC) that if one contributes blood to the bank, a donor card will be given to ensure a bag of blood would be donated when the need arises. Thus, this certain program can post potential blood donors regularly, regardless who the recipient will be.

Moreover, another significant association was found between practice in and attitude towards blood donation, as indicated by the value of $p = 0.014$, as presented in Table 12. This certain result supports the findings of Kowsalya et al. (2012) that positive attitude mattered in improving practices in blood donation. Although positive attitude was similarly observed in both genders, performance in blood donation was still truncated. Thus, regular blood donation camps must be conducted to sustain an adequate supply of blood, as suggested by Amatya (2013) in her study that involved students from different colleges in Kathmandu, Nepal.

It can also be noted that no significant relationship was established between knowledge and attitude, as indicated by the value of $p = 0.677$. This result implies that even if one is highly knowledgeable about blood donation, this does not guarantee willingness to donate blood, yet educational campaigns are still encouraged in order correct the misconceptions about blood donation.

Conclusion

Summing up the results, it can be concluded that majority of the participants were classified as having an average knowledge, accounting for 63.16% of the total population, while 10.53% and 26.32% had poor and excellent knowledge, respectively. While approximately three-fourths (72.31%) of the respondents indicated a positive attitude towards blood donation a positive, 27.63% were found to have a negative attitude towards it. As for the practices, only 11 (14.47%) of the total population had a history of blood donation, whereas the majority were classified as non-donors. Factors such as lack of awareness (50.00%), fear of needles (28.95%), as well as not having the time or being busy and having poor knowledge (23.68%) ranked as the top three reasons for being non-donors. Further, significant relationships were established and observed statistically between knowledge and practice ($p = 0.002$) as well as between practice and attitude ($p = 0.014$), all of which are essential factors to be considered in order to increase the rate of blood donation. Meanwhile, no significant relationship was found between knowledge and attitude ($p = 0.677$); however, educational campaigns were highly encouraged in order to correct the misconceptions on blood donation.

Recommendations

Based on the foregoing findings and as far as the results of this study are concerned, the following recommendations are offered:

- launching of blood donation-related educational programs with the aim to enrich knowledge and to heighten awareness predominantly in rural areas;
- massive information dissemination of the existing blood donation programs by the Philippine National Red Cross (PNRC) and other blood donation-related agencies, emphasizing the incentives and benefit a donor ought to have;
- creation of more opportunities for individuals to donate blood in order to sustain the availability of all blood

- products whenever necessary;
- conduct a free blood typing activity among the general public, most especially in rural places in order for the people to be aware of their blood types;
 - creation of an official list of potential donors and their corresponding blood type, address, and contact number for easy access and monitoring;
 - regular organization of blood donation camps to increase blood supply and combat the demand of blood products. Moreover, the following are highly recommended for future similarly studies and investigations.
 - Adequate and lengthier time should be spent on data collection. The exact time, date, and activities of the data collection must be properly scheduled to prevent attrition and delays in the conduct of the study.
 - A more comprehensible self-structured questionnaire is suggested to specifically identify and gather the necessary data to meet the aims of the study. It is also highly recommended to explore other methods of collecting data.

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