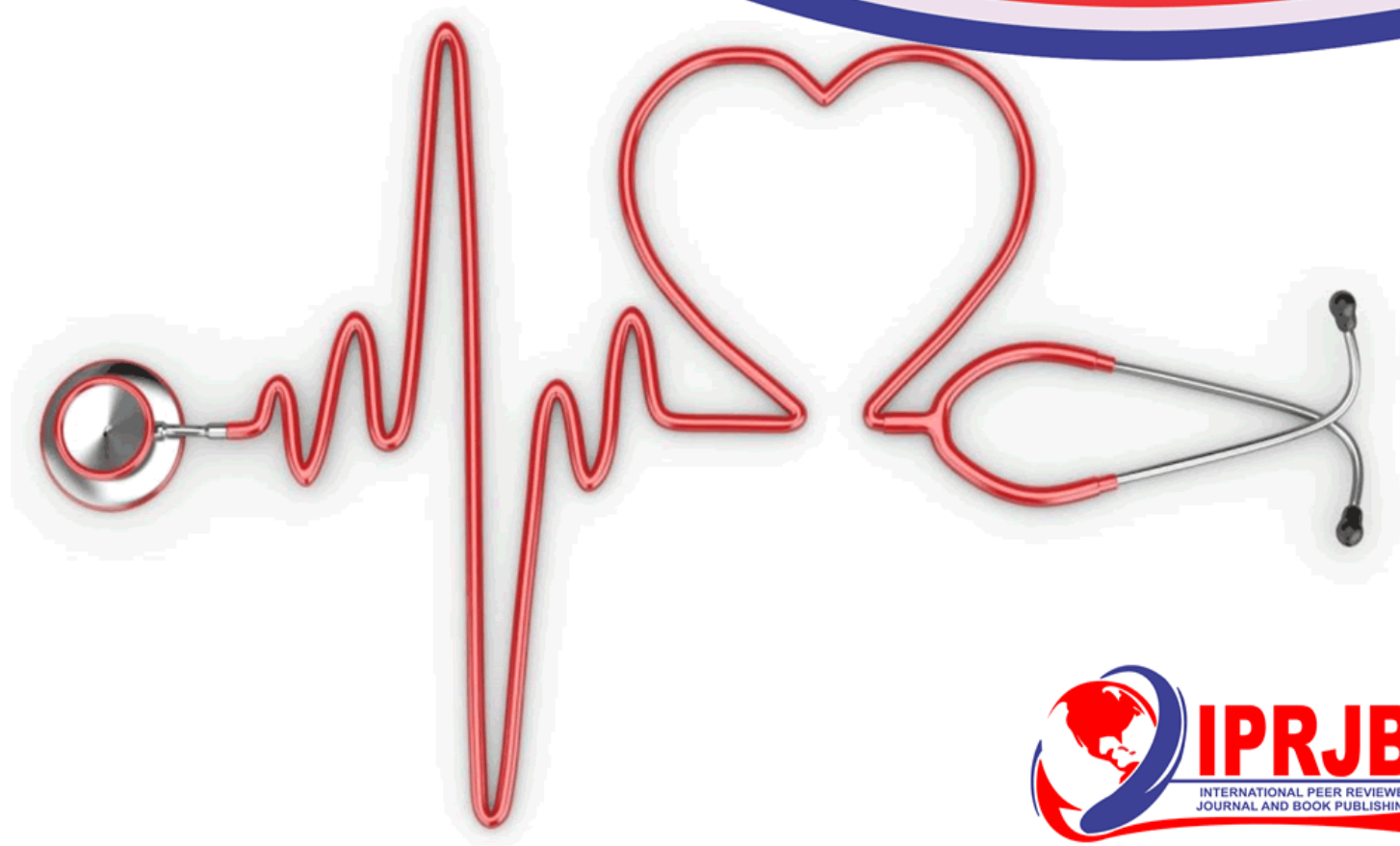


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FACTORS INFLUENCING COLLECTION OF BLOOD DONOR TEST RESULTS IN NAIROBI COUNTY – A CASE STUDY OF NAIROBI REGIONAL BLOOD TRANSFUSION CENTER

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Abstract

Background: The Kenya National Blood Transfusion Services screens all donated blood for HIV, Hepatitis B&C and syphilis with each blood donor being informed of testing of his or her donated blood and availability of test results for collection at the Regional Blood Transfusion Centers. The study-assessed factors influencing collection of blood test results by blood donors as only less than 10% blood donor's return to collect their test results.

Method: The study utilized descriptive cross-sectional study approach employing a mix of both quantitative and qualitative approach. 385 blood donors and seven key informants interviewed using a pre-designed questionnaire and Key informant respectively. Quantitative data was analyzed using Epi info 6.04 while qualitative data was transcribed and analyzed using content thematic framework approach.

Results: 95% of participants did not return to collect their test results with 90% not being aware that test results are available for collection. 50% of those who had not collected their test results would not have collected even after being adequately informed. 93% would not collect their test results in presence of friends fearing stigmatization and would not share the outcome of the test even with their families.

Conclusion: The study concluded that the collection of donor test results is greatly influenced by knowledge, location of result collection sites, working hours of collection sites, stigma and cultural beliefs. The Study recommends mass sensitization on availability of test results, where to collect results and demystify social cultural beliefs.

Key words: Blood donor, Blood donor test results, Organizational factors, Regional Blood Transfusion Center, individual factors

1.0 Background

The health system produces a lot of health information mostly not used by clients to make informed decisions about their health and next course of action. In Sub-Saharan Africa, each year there more than 56 million blood donations with average TTI prevalence rate of 10%. East and central Africa contributes to 87% of blood donors who do not return to collect their blood test results (WHO, 2008)¹

The Kenya National Blood Transfusion Services collects over 200,000 donated blood each year however, only less than 10% collected blood test results despite the test results made available and accessible for collection (KNBTS, 2010)². In Kenya, only less than 10% of donors return to collect their test results obtained from screening of their donated blood (KNBTS, 2010)². Failure of the blood donors to collect their test results allow disease to progress to late stage the cost of managing it become very high. If the blood test results are collected on time and those infected seeks medical attention, most of transmissions and deaths could be avoided or reduced.

There is lack of knowledge and low perception of own risk to infections increases lack of commitment to individuals collecting their medical information (Hausain et al, 1997)³. Fear of ones results appear to significantly predict donor return to collect their test results (Hollingsworth B. et al, (2004)⁴. Stigma influences access to health particularly for people living with HIV (Jeremiah et al, (2013)⁵ Since HIV is one of the infections screened, most blood donors fear to go for their test results due to the stigma that comes with positive results. Organizations may prioritize strengthening data quality management while forgetting on the use of such information. The study aimed to assess factors influencing the collection of test results with the findings and recommendation geared toward increasing the collection of blood test results. Policy and decision makers will use the findings to design sensitization messages to inform blood donors and the general population on blood donation and collection of test results will use the findings.

2.0 Methods

The study utilized a cross-sectional descriptive study approach employing a mix of both quantitative and qualitative approach. The study design was to collect and analyses data from representative subset of a population at a specific point in time. The sample size was calculated using Cochran method of sample size determination (Cochran 1963:75). Using 95% level of confidence and a precision of + or - five the sample size was arrived at 385 randomly sampled and interviewed blood donors who had donated blood from the calendar year 2014 and recorded in using a pre designed questionnaire. Seven key informants were purposely identified and interviewed using key informant guide. A pre-designed questionnaire and Key informant schedule were used as research instruments.

Prior to the study, a pilot was done to test the suitability of quantitative data collection tool. Acknowledging that any research instrument with correlation coefficient between 0.7 upwards is accepted as reliable enough, the finding of a correlation coefficient of 0.75 in this pilot was satisfactory. Quantitative data was entered into Epi info 6.04 and analyzed using chi-square while qualitative data was analyzed per thematic area and its findings utilized to make inferences as well as contributing to study discussion. Ethical clearance on the study was sought from Kenya Methodist University Scientific and Ethical Review Committee (SERC), the National Commission for Science Technology and Innovations (NACOSTI).

Written informed consent was obtained from each respondent before administration of questionnaire and respondents were allowed to withdraw from participating at any point during the interview for any reason whatsoever.

Limitations of the study: This study was conducted in Nairobi County and the findings may not necessarily be generalizable to other counties.

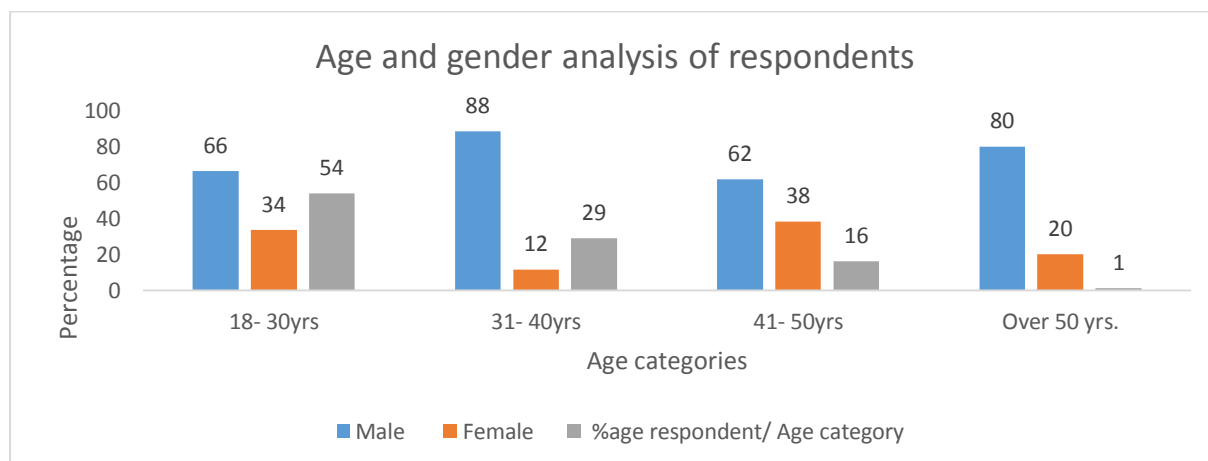
3.0 RESULTS AND DISCUSSION

3.1: Individual factors influencing the collection of test results in Nairobi County.

3.1.1 Age and gender of respondents

The study assessed age and gender as one of the blood donor demographics. The age was categorized into four; 18 -30 years, 31-40 years, 41-50 years and over 50 years. The four categories were further segregated into male or females and the results are presented in table 1 below.

Figure 1: Distribution of study respondent by age and gender.



Among the 208 (54%) of the blood donors interviewed were between 18 – 30 years followed by 112 (29%) aged between 31-40 years. Respondents with more than 41 years constituted 65 (17%) of the respondents. 278 (72%) were males while 107 (28%) were females. In every age category majority of donor’s populations were males aged between 18-30 years.

This agrees with S. A Glynn et al, (2006) in his study, which found out that, there are more Male blood donors than female blood donors. From Glynn study, males only attend health care facilities only when sick and relating this to the low collection rate of blood donor test results. The study indicate that 72% of blood donors are male while female are 18%. It also shows that 54% of all blood donors are ag’ *We record more male blood donors than females year in year out Key informants code 1ed 18-30 years.*

3.1.2 Education Level of Blood Donor

The study assessed education background of blood donors and the results were presented in the pie chart below

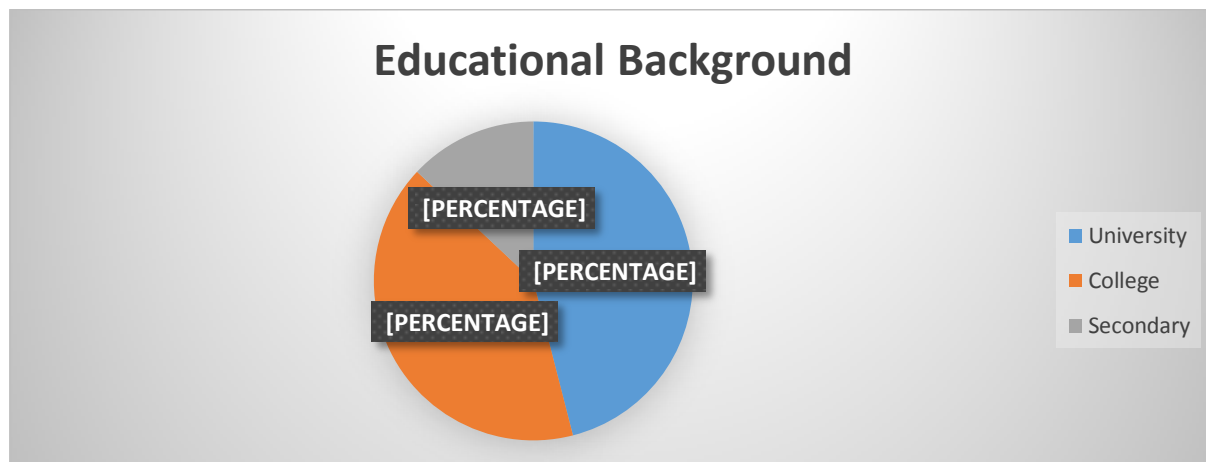


Figure 2: Respondent's educational background.

Respondents with university education were 177 (46%) constituting majority followed by 158 (41%) college education level and 50 (13%) with secondary level of education. No respondent who had lower education background than secondary level. The study location hosts most universities and learning institutions and is within the capital city of Kenya where the majority of educated young men and women flux in to look for white-collar jobs or are pursuing their education, may be a contributing factor.

This shows that over 335 (87%) of respondents had a college education and above. This also coincides with the respondent's age group as the majority were within 18-30 years of age, which is the age group for college and university students and or those who have just completed their school and newly employed.

In a similar study done by M. Bani *et al*, (2014) showed that majority of those donating blood were youths mostly in colleges. It is expected that well-educated individuals would have known the importance of knowing their test results compared to those not well educated. However, this is not the case here as all blood donors interviewed had secondary education and above. The Kenya National Blood Transfusion Services collects most of its blood from learning institutions and this explains the respondent's age group. From the analysis, most of this age group cited that when they are free from classes during weekends, the time they could collect the test results all collection centres are closed.

‘‘Most of our successful blood donations are from colleges and universities’’ Key respondent code 3

3.1.3 Marital Status

The study assessed marital status of the blood donor as either married, single, divorced or widowed and the results are presented in figure 3 below.

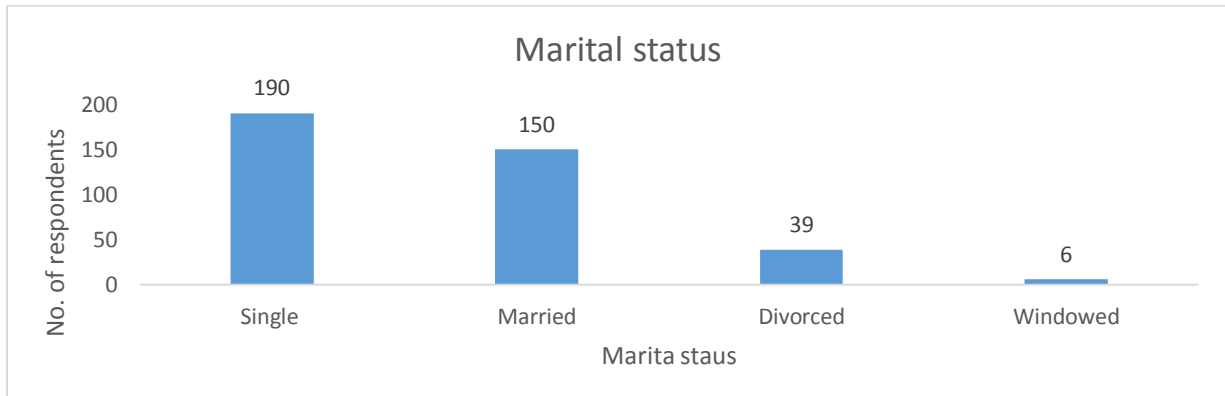


Figure 3: Respondents marital status

Marital status results showed that 190 (49%) were not married, 150 (39%) were married, 39(10%) were divorced while six (2%) of the respondent were windowed. The high percentage of single blood donors coincides with the respondent's age group as 53% of the respondents were between 18- 40 years. This age group and more so majority being single men seems not interested to find out their health status from their donated blood.

3.1.4 Religion

The study assessed religion of respondents and the results are presented in figure 4.3 below;

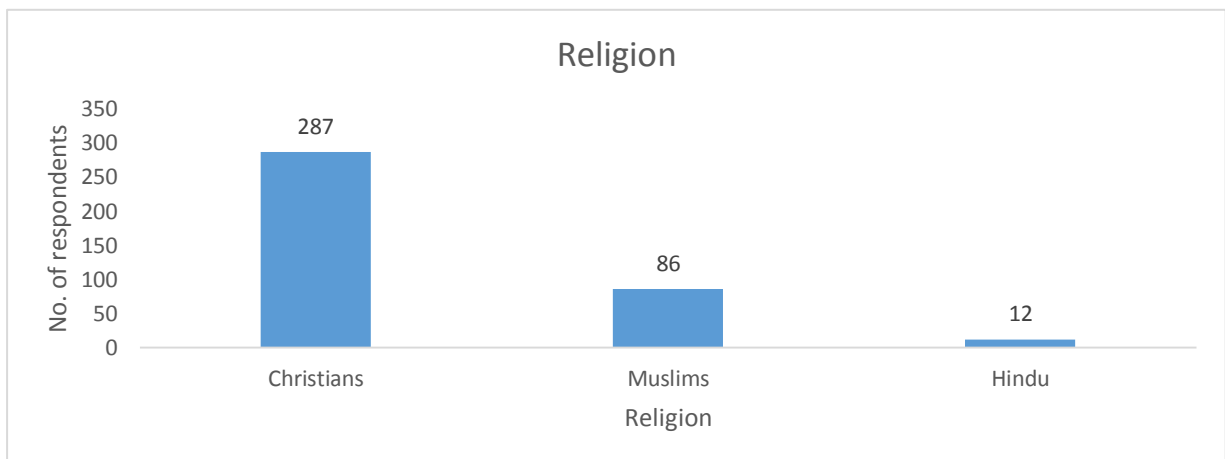


Figure 4: Respondents analysis by religion

Majority of respondents were Christians with 150 (39%), followed by Muslims with 86 (22%), Catholics 137 (36%) and Hindu community 12 (3%). Respondents were from different religious faith. The study did not encounter respondents whose religion is against blood donation like Jehovah witness and other religious groups who do not embrace blood donation. Religion does not seem to contribute significantly to collection of test results by blood donors. Various denominations have respective days of worships and these days may not be very suitable for the collection of test results as majority of them are attending their services. This disagree with Sharma et al, (2011) study who demonstrated that religion play a great role in blood transfusion.

3.1.5 Blood donor knowledge

The study assessed blood donor knowledge of their knowledge about testing of each donated blood and availability of test results for the collection and use by blood donors as demonstrated in table 1 below.

Table 1: Knowledge on testing and availability of test results for use by blood donor

Knowledge status	No. of respondents	
	Adequate	Not adequate
How adequate was information given to you on screening of your donated blood for HIV, Hepatitis B& C and Syphilis	107 (28%)	278 (72%)
How adequate was information on availability of your blood test results for your collection for use	38 (10%)	347 (90%)

Majority blood donors 278 (72%) admitted not having adequate information on screening of donated blood with only 107 (28%) of blood donors having knowledge on the screening of their donated blood for HIV, Hepatitis and Syphilis. Three hundred and forty seven (90%) respondents did not have adequate information on availability of test results for the collection at the regional blood transfusion. This coincided with Hausain et al, (1997) in his study that found out that majority of blood donors interviewed were not aware that blood banks were supposed to inform them of their TTI results.

“There is a need for the National Blood Transfusion Services to invest in donor education and educate the general population on the screening of donated blood and importance of the results to each blood donor health” Key respondent from code 4

To test dependent variable, all respondent were asked whether they collected their test results after blood donation. For those who responding to affirmative, they were further asked if they could had adequate information whether they could had returned to collect their test results. Results on the collection of test results are presented in table 2 below;

Table 2: Respondents responses on the collection of test results

Collection of test results by respondents and seeking of health services using that health information.	Responses	
	Agree	Disagree
Did you return to collect your test results after blood donation	19 (5%)	366 (95%)
Did you know you can collect your test results after blood donation	4(1%)	362 (99%)
Would you have collected your test results if you had information on the collection of test results after blood donation	182 (50%)	182(50%)

From the study, 366 (95%) of participants did not return to collect their test results from their previous donation with 362 (99%) of them not knowing they can collect their test results after blood donation. Half of the respondents who had no information about testing and the collection of test results would not return to collect their test results even after adequate sensitization.

“I did not see the need to go back for my results for the last three blood donation” Key respondent code 7

Majority of blood donors believe that, once they are allowed to donate blood after the physical screening, they think they are safe from any infections. Lack of information about

the screening of blood and availability of test results are major hindrances in the collection of test results.

“There is need to come up with sensitization materials targeting blood donors on the processes that blood undergoes after donation” Key Informant – code 7

The Regional blood transfusion services are expected to inform each blood donor of what happens to their donated blood specifically the testing of the four infections and the availability of test results for the collection by the donor at the regional blood transfusion services. There is a gap on knowledge among blood donors concerning testing of donated blood and availability of test results for their collection at the Regional Blood Transfusion Centers.

“We have a system of ensuring all donated blood are screened and results are made available for the collection at regional centres. We have not sensitized the blood donor population on why they need to see the results after they donate blood” code 1

3.2 Organizational factors influencing the collection of personal health information by blood donors in Nairobi County.

3.2.1: Location of RBCs

The study assessed respondent’s knowledge on where test results are available for the collection or the collection sites/ centers. Respondents were also assessed whether they know where Nairobi Regional Blood Transfusion Centers are which double as test result collection center for Nairobi County.

Table 3: Location of Regional Blood Transfusion Centre (RBTC)

	Adequately informed	Not informed
Were you informed where to collect your test results after blood donation?	35 (9%)	350 (91%)
Were you informed where Nairobi RBTC test result collection site is located?	77 (20%)	308 (80%)

Majority of study respondents 350 (91%) were not informed where to collect their test results after blood donation. This coincides with 308 (80%) of respondents who did not know where RBTC are located participants did not know the exact location of Nairobi Blood transfusion centre and most of them were saying it’s at Nairobi hospital. Lack of knowledge on the collection of test results and where to collect from, influences majority of blood not collecting their test results after blood donation.

This finding agrees with a client exit interview done in Nairobi blood transfusion centre which showed that 225 (90%) of clients complained of the results collection sites being far away from residential arrears especially those living in estates far from the city centre (KNBTS, 2012). In Zimbabwe, blood donors were required to nominate a medical officer or facility near to where they stay where they would go to collect their TTI test results. This solved the challenge of blood donors having to travel long distances to collect their test results. (Shihavong et al, 2007).

"We can use different technological platform to reach blood donor population with vital information as well have them access their test results and eliminate the barrier of location, working hours and knowledge gap" Key respondent from code 2

3.2.2 Working Hours

Respondents were asked on their availability to collect test results based on the Kenya National Blood Transfusion Services working hours. The Kenya National Blood Transfusion Centers operates only during weekdays from 8.00am – 5.00pm and does not operate on weekends. Respondent's answers to working hours are captured in table 4 below,

Table 4: Working hours at Nairobi Regional Blood Transfusion Centre

Blood donor responses on RBTC working hours	Available	Not available
Would you be available to collect your test results on weekdays from 8 am – 5 pm?	50(13%)	335(87%)
Would you be available to collect your test results on weekends	346 (90%)	39 (10%)

Three hundred and thirty three (87%) respondents would not be able to collect their test results weekdays 8.00am – 5.00pm when RBTC is open. 346 (90%) of blood donors would be available to collect their test results on weekends. This means the Regional Blood Transfusion are not open when majority of blood donors are available to collect their test results. The working hours of blood transfusion centers is not favourable for persons who cannot get time during weekdays to collect their test results.

"Most results are not collected as regional collection centres are closed during weekends when most donor population are free to collect the results. Most blood donors are in college, why can't we take back results to them the way we go to collect blood" Key respondent code 5

3.3 Intra-personal factors influencing the collection of personal health information by blood donors in Nairobi County.

Under intra-personal component, the study assessed stigma and customer care services.

3.3.1 Stigma

To assess stigma and how it influences the collection of test results, the respondents were asked whether they can collect their test results in presence of their friends and whether they can disclose positive status to their families and friends. The responses are presented in table 5 below

Table 5: Blood donor responses on stigma

	Strongly agree	Agree	Disagree
I cannot collect my test results in presence of friends fearing them to know their status if they turn positive	356 (93%)	20 (5%)	9(2%)
I will disclose my positive status to family and friends	20 (5%)	65(17%)	300 (78%)

Three hundred and seventy six (98%) respondents would not collect their test results in presence of their friends and family members due to fear of results turning positive and their friends knows about them. 300 (78%) of respondents will not disclose their test results if they turn positive even to their family and friends fearing stigmatization by those who are very close to them. This result to some extent confers with MacPhail et al, 2008 study findings that most individuals do not to have a positive health-seeking behaviour due to disclosure issues with friends and family members. The Kenya National Blood Transfusion Services need to sensitize blood donors on the confidentiality of results and general public sensitization to support their family members in case they are diagnosed with any infection.

" Most male individuals are the one who donate blood and have poor health seeking behaviour of visiting health facilities. This is the same place they are supposed to go and collect their test results. This pose a big challenge as most of them will not" Key informant code 6

Some of those who would not return to collect their test results cited the primary agenda of donating blood is to help those in need and not to know their status. Others would not go for their results due to fear and stigma. These findings partially agree with both (Jeremiah et al, 2013) and (Sharma et al,2011) studies which showed that there is limited information on Hepatitis B&C, HIV for patients at Kenyatta National Hospital (KNH).

3.3.2 Customer care services

The study assessed how customer care services influences the collection of test results by asking respondents of their experiences with RBTC staff during blood donation and during the collection of test results for those 5% who had returned to collect their test results and the findings are presented in table 6 below

Table 6: Blood donor responses on customer care services

	Strongly agree	Agree	No response
Customer care services offered by RBTC staff during blood donation are of very high standard.	154 (40%)	231 (60%)	0
Customer care services by RBTC staff during issuance of test results of high standard	0	19 (5%)	0

All respondents (100%) interviewed were happy with the way they were handled during blood donation by RBTC staff with no negative experiences during blood donation exercise. Out of the 19 (5%) respondents who had collected their test results, agreed that customer care service during the collection of test results were professional. All respondent were satisfied with the customer care service received during blood donation and test result collection.

"How i was handled during blood donation was ok with me" Key respondent code 7

3.4 Social-cultural factors influencing the collection of blood donors test results in Nairobi County.

To assess social-cultural factors influencing the collection of test results by blood donors, the study focused on cultural beliefs and attitude among blood donor population.

3.4.1 Belief

To assess cultural beliefs of the respondents, the study engaged respondents on their view whether the physical screening done before blood donation is enough to show if one is sick or not and if blood donors are allowed to donate after screening if they are safe of infections. The response are presented in table 7 below

Table 7: Blood donor responses on social-cultural belief of blood donor's community

	Strongly agree	Agree	Neutral
The physical screening done before blood donation is enough to show if one is sick or not	70(18%)	208(54%)	107(28%)
If an individual is allowed to donate blood after screening it means they are not sick	88(23%)	199 (52%)	98 (25%)

Most blood donors 278 (72%) agree that physical screening using questionnaire administered just before one is allowed to donate blood, is enough to show whether one is sick or not. This is a misconception as the screening is not conclusive and only symptomatic illnesses can be detected using the screening tool. A good number of respondents 28% were not sure whether the physical exam done before one donates blood is enough to know if one is sick or not. 287 (75%) of respondents belief that if one is allowed to donate blood it means they are not sick. This believe is wrong and require sensitization intervention from the Kenya National Blood Transfusion Services.

“ Most individuals fear HIV test results due to stigma its associated with and would not be comfortable going for such results” Key informant code 2

3.4.2 Attitude

To assess blood donor attitude and how it influences collection of test results, the respondents were asked whether their intention of them donating blood was to help those in need or to know their status. Also respondents were asked on whether blood donors should go for their test results or KNBTS should take results to them. The responses are presented in table 8below

Table 8: Responses on attitude of blood donors

	Strongly agree	Agree	No response
Intention of your blood donation is to help those in need of it but not to know your status	297(77%)	83(22%)	5(1%)
KNBTS staff should bring my test results to me the same way they came for my blood	347(90%)	31(8%)	7 (2%)

Three hundred and eighty (99%) of respondents agrees that their intention while donating blood is to help the sick but not to know their health status. 378 (98%) would like KNBTS to take the test results back to them the same way they went looking for their blood during the blood donation exercise.

“ I expect the KNBTS to take test results to blood donors the same way they run to them while collecting blood from them” Key informant code 5

4.0 Discussion

Majority of blood donors do not return to collect their test results after blood donation. Knowledge gap, Regional blood Transfusion working hours and location of collection significantly contribute to low return rate. Recommendation are that the National Blood Transfusion Services to conduct mass sensitization to potential blood donors on the need to donate blood, screening of all donated blood and the availability of test results for collection and use by each blood donor. The Nairobi Regional Blood Transfusion Center is a government entity and operates during normal government working hours. As majority of blood donors would like to collect their test results during weekend when the centers are closed, the center may innovate a system on how blood donors can collect test results on weekend. Some of the respondent requested the center to deliver the test results to blood donors at their institutions or work place the same way they went to collect blood. This study provides important findings to reasons for low return rate among the blood donor in collecting their test results after blood donation despite being informed during donation period. The study was done in Nairobi county and its results may not be generalized to other counties and therefor need for similar study to be conducted in other counties.

5.0 Conclusion and Recommendations

Some blood donor demographics like age, educational background and gender greatly influences collection of test results. Most of the respondents are still in school or formal employment and therefore while the RBTC is open for collection of test results they are in class or working place. Though they are free to collect test results over the weekend when not in school or workplace, the RBTC is closed as it does not operate during the weekend. This is so because most blood donors are within the 18-40 years and are in learning institutions. Most blood donors are male who seems reluctant to visit RBTC to collect their test results. Religion, and marital status do not seem to have any influence on collection of test results by blood donors.

Blood donor knowledge on the screening of their donated blood for HIV, Hepatitis B&C and Syphilis is very inadequate and it is the major contributor to them not returning to collect their test results. Most of them are not aware that the test results are made available at RBTC for them to collect and use to make informed decisions about their health. RBTC cannot expect blood donors to come for their test results yet they do not have the information on the same. NBTS should make deliberate effort to inform all blood donor about screening and availability of test result for collection and utilization.

This study found both statistical and significant evidence that individual factors and organizational factors influences collection of blood donor test results. Knowledge gap, working hours and location of collection centers/ sites greatly hinders collection of blood test results by blood donors in Nairobi county.

To address individual factors influencing collection of test result by blood donors, there is need to develop blood donor sensitization materials to be given to blood donors during sensitization, recruitment and donation exercises. The Kenya National Blood Transfusion Services together with its recruitment partners should organize mass sensitization to general

population on screening of each donated blood and availability of test results and how to access it for use in decision making at a personal level.

To address organizational factors influencing collection of test results by blood donors particularly on working hours. If this pose is a challenge as it's a government entity, they should explore technological platform either mobile phone application such as SMS or mobile apps or email to blood donors either to remind them to come for their test results and where to collect the same.

To address inter- personal factors influencing collection of test results, KNBTS should tackle the issue of stigma which affect collection of test results by blood donors. Blood donors and the general population should be sensitized on accepting test results and how to take care of those found to be positive of any infection. There should be targeted intervention geared toward fighting stigma that comes from friends and family members. The Regional Blood Transfusion Centre should continue to maintain and improve customer care services.

To address social-cultural factors influencing collection of test results the Kenya National Blood Transfusion Services should during sensitization should emphasis to blood donors that if they are allowed to donate blood after the initial screening, this does not mean they are free of infections as some require laboratory testing for them to be identified.

What is already known on this topic: In many countries, most blood donor do not go back to collect their test results despite them being adequately informed about testing of their donated blood and availability of test result for collection and use. Different countries have designed different strategies to increase return rate of blood donors.

What this study adds: This study aims to identify the factors influencing collection of test results among blood donor population in Kenya. Once identified, informed strategies or interventions will be designed I addressing the gap.

Acknowledgments

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Competing interests

This study aimed at continuing to build evidence for strengthening the Health Information System and service delivery at the National Blood Transfusion Services and there were no competing interests.

Authors' contributions

All the authors have participated in the writing, reading and all agreed to the final version of this manuscript.

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