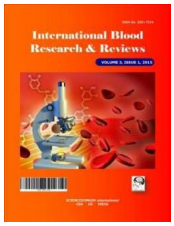

International Blood Research & Reviews
5(3): 1-8, 2016, Article no.IBRR.24404
ISSN: 2321–7219

SCIENCEDOMAIN *international*
www.sciencedomain.org

Knowledge and Beliefs of Blood Cancer among Affected and Unaffected Persons in Benin City, Nigeria

Ademola Samson Adewoyin[1*] and Nosakhare Tajudeen Idubor[1]

[1]Department of Haematology and Blood Transfusion, University of Benin Teaching Hospital, PMB 1111, Ugbowo, Benin City, Edo State, Nigeria.

Authors' contributions

This work was carried out in collaboration between both authors. Author ASA conceptualised and designed the study protocol. Authors ASA and NTI managed the literature searches and data analysis. Author ASA wrote the first draft. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/IBRR/2016/24404
Editor(s):
(1) Tadeusz Robak, Medical University of Lodz, Copernicus Memorial Hospital, Poland.
(2) Anamika Dhyani, Laboratory of Biochemistry & Molecular and Cellular Biology Hemocentro-UNICAMP, Brazil.
Reviewers:
(1) Humaira Zafar, Al Nafees Medical College, Islamabad, Pakistan.
(2) Jianxiang Chi, The Center for the Study of Haematological Malignancies (CSHM), Nicosia, Cyprus.
(3) Anonymous, Unidad de Investigacion Medica en Genetica Humana, Mexico.
Complete Peer review History: http://sciencedomain.org/review-history/14018

Original Research Article

Received 19th January 2016
Accepted 22nd March 2016
Published 5th April 2016

ABSTRACT

Introduction: Awareness and adequate knowledge regarding blood cancers is a crucial intervention for proper management and control.

Objectives: This study aimed to quantify and compare the level of knowledge among affected and unaffected persons, identify possible determinants of good knowledge and local pattern of beliefs regarding blood cancers.

Materials And Methods: A cross sectional, pilot survey of 90 participants (45 with established blood cancer diagnosis; other 45 were not blood cancer patients) was undertaken. Data on personal details, knowledge and beliefs of blood cancer were collected using a semi-structured interviewer administered questionnaire. Appropriate descriptive and inferential statistics were performed.

Results: The mean ± SEM age of the study participants was 42.1±1.8 years. Most respondents

**Corresponding author: E-mail: drademola@yahoo.com;*

(45.6%) had a moderate level of knowledge regarding blood cancers. The mean knowledge score among affected and unaffected persons were 4.6 and 6.2 (total of 11) respectively. About 29% of the participants had a good knowledge. A higher (tertiary) level of education and being unaffected by blood cancer were associated with a better level of knowledge. Some local beliefs regarding cause of blood cancers included spiritual attacks from an enemy, exposure to open (naked) fire and punishment for committed sins.

Conclusion: The level of knowledge regarding blood cancer among affected persons is below average. Necessary interventions should be directed at improving awareness and knowledge of blood cancer among affected and unaffected persons by physicians and other relevant stakeholders.

Keywords: Knowledge and beliefs; blood cancers; cancer patients; haematological malignancies; Benin City; Nigeria.

1. INTRODUCTION

Blood cancer refers to all forms of malignancies primarily affecting the peripheral blood, bone marrow and blood forming tissues/organs. In technical terms, they are called Haematological malignancies (HMs). According to the World Health Organisation (WHO), HMs are broadly categorized into two groups: Myeloid and lymphoid neoplasms [1,2]. On a global scale, HMs account for 6 – 9% of all cancers and are the fourth commonest in men (after prostate, lung and colo-rectal cancers) and in females (after breast, lung and colo-rectal cancers) [3,4]. According to a hospital based study, HMs accounts for 17.4% of all cancers in Benin City, Nigeria [5,6]. The higher burden of HMs observed in the Benin City study may be related to underdiagnosis/underreporting, misdiagnosis, poor case documentations and data storage, which are peculiar challenges in the Nigerian health care system. A significant proportion of cancer cases may not present in hospital setting, but rather present to alternative therapies such as herbalists, where records are non-existent in our setting. As such, the quality of burden estimates in developed nations such as US and UK cannot be compared to underdeveloped settings such as Nigeria.

Optimal management of blood cancers in a developing nation like Nigeria is fraught with numerous challenges including delayed/missed diagnosis, sub-optimal treatment and poor outcomes [7]. Contributing to poor treatment outcomes includes gross absence of effective health insurance schemes, poverty, illiteracy, poor public awareness and knowledge regarding cancers, poor cancer diagnostic infrastructure, high cost/fee for service and relative unavailability of treatment facilities such as radiotherapy, cancer chemotherapy agents and biologics [7,8].

Promoting awareness and knowledge about the burden, clinical features, complications and treatment of disease conditions such as blood cancer is a crucial intervention for better management and control [9,10]. There is no gainsaying the fact that care of affected persons (patients with diagnosis of haematological cancers) should be evidence-based, authoritative and well-informed. Patient education regarding their diagnosis, treatment options and duration, cost of treatment and other necessary details is an important part of care plan for affected (blood cancer) patients. As such, it is expected that patients have a good knowledge regarding the cause, clinical features, complications, and care of their disease conditions. This enables patients to make informed decisions on their treatment, based on evidence based information provided by the physician, ensuring an authoritative (rather than an authoritarian) approach. It is also important to understand pattern of perceptions and beliefs regarding blood cancers particularly from a local perspective in order to be able formulate appropriate interventions [11]. Prior studies on blood cancer epidemiology in Nigeria are lacking on level of public and patient knowledge regarding blood cancer. Thus, there is a need to evaluate the current level of knowledge and pattern of beliefs regarding blood cancers in Benin City, Nigeria.

This study aimed to assess knowledge regarding causes, clinical manifestation and complications of blood cancer, as well as their belief patterns among patients seen at the University of Benin Teaching Hospital. This study also seeks to compare the level of knowledge among affected (blood cancer patients) and unaffected patients.

2. MATERIALS AND METHODS

A cross sectional pilot survey of 90 subjects was conducted among patients seen at the University of Benin Teaching Hospital (UBTH), Benin City between January 2015 and June 2015. The subjects included 45 patients with established diagnosis of blood cancer and 45 patients who presented for other medical conditions excluding blood cancer or routine medical checks. UBTH is a tertiary health facility located in Benin City, Edo state, South-South Nigeria. UBTH renders both in-patient and outpatient specialist functions including haemato-oncology to Edo state and other surrounding states. This study was performed in accordance with the standard of UBTH research and ethics review committee.

Due to infrequent case presentations, only 45 patients with proven diagnosis of blood cancer were recruited over a period of six months in a consecutive manner. In the same manner, the other 45 patients who were unaffected with blood cancer were recruited at the general out-patient department of the hospital. Convenience non probability sampling method was used. Informed consent was obtained from each participant after detailed explanation of the intended study.

Bio-data, data on knowledge regarding cause, features, complications and treatment of blood cancer, as well as beliefs about the cause of blood cancer were obtained using a semi-structured interviewer administered questionnaire. Additional data on specific clinical diagnosis and duration on treatment were obtained from patient group affected with blood cancer. Patients without blood cancer who were not aware (never heard about) of blood cancer were excluded from the study. The questionnaire used in this survey has not been previously used in any previous local or foreign study. However, the instrument was pretested among 5 patients with blood cancer diagnosis (who were excluded from the study) and found to be valid for intended use.

Data on knowledge of blood cancer included 11 questions which were subsequently transformed and scored 1 point per correct response, 0 per incorrect response, giving a maximum obtainable score of 11 points on Knowledge of blood cancer aetiology, clinical disease, complications and treatment. Scores of 0 – 3 equals poor knowledge, 4 – 7 equals moderate knowledge, 8 – 11 equals good knowledge. Three questions were used to explore their beliefs regarding blood cancer using a three point Likert scale (Agree, Undecided, Disagree), including an open ended question on what they believe as the cause of blood cancer. Responses to the open ended question on cause of blood cancer were categorized to appropriate groups.

Transformed data were inputted and analysed using the Statistical Package for Social Sciences version 16, Chicago, USA. Descriptive statistics are presented as frequencies and means. Comparison of categorical variables between affected and unaffected persons was performed using chi square analysis or fishers exact test as appropriate. Differences in mean knowledge scores in different groups were tested using t-test or Analysis of variance test. Statistically significant differences were determined at a probability level of 5% (p value = 0.05).

3. RESULTS

The mean age of the study participants was 42 years. Male: female ratio was 1:1. Fifty three (58.9%) of the respondents had tertiary level of education (Table 1). About 41 (46%) respondents had a moderate level of knowledge regarding blood cancers, with a mean knowledge score of 5.4 (Table 2).

Table 1. Socio demographic details

Variables		n (%)
Age (years)		
	16 – 30	32(35.6)
	31 – 45	23(25.6)
	46 – 60	19(21.1)
	61 – 75	12(13.3)
	>75	4(4.4)
Mean (SEM) = 42.08(1.82), Median=41, Min = 17, Max = 85		
Gender		
	Male	45(50)
	Female	45(50)
Education		
	Tertiary	53(58.9)
	Secondary	30(33.3)
	Primary	17(7.8)
Blood cancer		
	Yes	45(50)
	No	45(50)

n=90(100%)

There is significant age difference between the affected and unaffected persons with p value of 0.007 (Table 3). However, no statistically significant difference was observed in gender

and levels of education though more of the unaffected persons had a tertiary level of education (Table 3).

Table 2. Level of knowledge regarding blood cancer

Variable	n (%)
Level of knowledge	
Poor (0 – 3)	23(25.6)
Moderate (4 – 7)	41(45.6)
Good (8 – 11)	26(28.9)
Mean(SEM)= 5.4(0.32), Median=6, Min = 0, Max = 11	

n = 90 (100%)

There is no significant difference in the mean knowledge scores in the different age groups and gender (Table 4). However, participants with tertiary level of education had a significantly higher level of knowledge compared to the lower caders (p value of 0.000) (Table 4). Unaffected persons had a significantly higher mean knowledge score compared to affected persons (p value of 0.014) (Table 4). In the affected subjects, patients with myeloma/plasma cell disorders and chronic myeloproliferative neoplasms were observed to have a higher level of knowledge (Table 4). Also, affected persons who had been on treatment for more than 3 months had a higher level of knowledge although not statistically significant (Table 4).

Regarding their beliefs, 17 (18.9%) respondents believe that blood cancers are caused by spiritual attacks (supernatural evils caused by demons or wicked humans) from the enemy. A few, 2 (2.2%) respondents believe that blood cancer is a punishment for sins committed (Table 5). Regarding the causes of blood cancers, open ended responses were grouped as appropriate. Thirty-five (35) of the subjects do not know the cause of blood cancers, 71 responses were scientifically correct, other 17 responses had poor/incorrect scientific basis (Table 5).

4. DISCUSSION

There is significant age difference between affected and unaffected study participants. The unaffected persons had a lower mean age of 36.96 years. This is not surprising as the incidence of blood cancers (particularly chronic malignancies) is age related. Mean age among affected participants was 47.2 years, which is similar to a mean age of 46.6 years observed from a similar local study [12].

About 41 (46%) of the respondents had a moderate level of knowledge regarding blood cancer. Interestingly, the mean knowledge score was significantly higher among the unaffected compared to the affected persons. This trend is unexpected since affectation with a disease is expected to trigger interest in understanding of the disease. As well, affected patients supposedly benefit health education sessions during contact with managing physicians and are expected to demonstrate better level of knowledge. Again, the below average knowledge

Table 3. Comparison of variables between affected and unaffected subjects

Variables		Affected	Unaffected	p-value
Age (years)				**0.007**
	16 – 30	8	24	
	31 – 45	13	10	
	46 – 60	14	5	
	61 – 75	8	4	
	>75	2	2	
Mean age (affected) = 47.20; Mean age (unaffected) = 36.96				
Gender				**0.200**
	Male	25	20	
	Female	20	25	
Education				**0.149**
	Tertiary	22	31	
	Secondary	19	11	
	Primary	4	3	
Level of knowledge				**0.05**
	0 – 3	16	7	
	4 – 7	20	21	
	8 – 11	9	17	
Mean knowledge score = 5.4				

n = 90 (100%)

Table 4. Comparison of the level of knowledge in different groups

Variables		Mean knowledge score
Age		
	16 – 30	5.84
	31 – 45	5.26
	46 – 60	5.11
	61 – 75	5.67
	>75	3.25
Df = 4, F = 0.743, p value= 0.566		
Gender		
	Male	5.42
	Female	5.38
Df = 88, t = 0.069, p value = 0.945		
Education		
	Tertiary	6.51
	Secondary	4.10
	Primary or none	2.57
Df = 2, F = 11.51, p value = 0.000		
Blood cancer		
	Yes	4.62
	No	6.18
Df = 88, t = -2.499, p value = 0.014		
Clinical diagnosis*		
Myelodysplastic syndromes		4.67
Chronic lymphocytic leukaemia		3.25
Malignant lymphomas		4.80
Multiple myeloma/plasma cell disorders		7.50
Chronic myeloproliferative neoplasms		5.12
Acute leukaemias		2.00
Df = 5, F = 2.763, p value = 0.031		
Treatment duration*		
	3 months or less	4.05
	More than 3 months	5.04
Df = 43, t = -1.102, p value = 0.277		

n = 90 (100%), N = 45 (subjects with blood cancer diagnosis)*

level among affected persons may also be related to inadequate or inefficient communication between patients with blood cancer diagnosis and their attending physicians [13]. However, the mean knowledge scores were not significantly different in the age groups and gender. A higher level of education was significantly associated with better level of knowledge. However, persons affected by myeloma/plasma cell disease and chronic myeloproliferative neoplasms seem to have a better level of knowledge. This observation is likely to be falsely positive (type 1 error) due to a small sample size of 45 blood cancer persons. As expected, affected patients who had been on therapy for more than 3 months had a slightly higher level of knowledge.

There is paucity of data on knowledge of blood cancer and its determinants in Nigeria and surrounding states. However, solid cancers such as breast and colo-rectum have been reported in literature. In a Ghanian study on knowledge and belief of breast cancer, a significant knowledge deficit was observed, as well as misconception of breast cancer risk factors and a high level of misinformation/erroneous belief such as breast cancer being caused by putting coins in the brassiere or wearing dirty bra [14]. Still of breast cancer, Ibrahim et al a good level of knowledge on breast cancer and observed that occupation (being a health care professional) positively affected their cancer knowledge [15]. Again, this is also expected in other types of cancers including blood cancers as a result of the formal medical training. In a study among undergraduates by Onasoga et al. [16] majority of the respondents had an average knowledge of breast cancer, similar to index findings. However, no significant association was

Table 5. Belief of blood cancer

Beliefs		n (%)
Caused by spiritual attacks from enemy		
	Agree	17(18.9)
	Disagree	43(47.8)
	Undecided	30(33.3)
Contracted from another person (transmissible)		
	Agree	6(6.7)
	Disagree	56(62.2)
	Undecided	28(31.1)
Punishment for sins committed		
	Agree	2(2.2)
	Disagree	67(74.4)
	Undecided	21(23.3)
Causes of blood cancer by respondents*		
Not clearly known		12(13.3)
Genetic predisposition/damage/familial		10(11.1)
Immune dysregulation		2(2.2)
Toxic chemicals/Environmental toxins		20(22.2)
Smoking		3(3.3)
Lifestyle factors (food, etc)		6(6.7)
I don't know		35(38.9)
Infections (viruses, bacteria, parasites)		10(11.1)
Exposure to ionizing radiations		8(8.9)
Spiritual attacks		*8(8.9)*
Being close to or working with open fire		*1(1.1)*
Punishment for sins committed		*1(1.1)*
Use of bad/expired drugs		*5(5.6)*
Through blood transfusion		*1(1.1)*
Drinking bad water		*1(1.1)*
Don't know – 35, Correct response – 71, *Incorrect response – 17*		

*n = 90 (100%), *multiple responses*

also observed between their level of knowledge and age. Knowledge of cancers appears to age independent in the Nigerian setting. In the US, higher income and race (being White compared to African American) was associated with a better knowledge of colo-rectal cancer [17].

Based on local observation by Arodiwe et al. [18] blood cancer is a significant cause of cancer death in Nigeria. Blood cancers accounted for 48.7% and 39.9% of cancer death in males and females respectively in Enugu, Nigeria. As such, significant attention need to be paid to improving awareness and knowledge of blood cancer among affected and unaffected persons. An understanding of the factors affected their knowledge and belief also require evaluation in order to design appropriate interventions.

Weaknesses of this study include the relatively small sample size. For comparison between affected and unaffected, matching for age and other potentially confounding variables was not controlled. However, it is expected that the unaffected persons may have a lower mean age since the incidence of haematological cancers (particularly chronic malignancies) increases with age. However, this study provides relevant information on the level of knowledge of blood cancer among affected and unaffected persons in the index population, as well as factors/determinants of better/good level of knowledge. A multicenter study will be required to draw a larger sample size in order to reach stronger conclusions.

5. CONCLUSION

The level of knowledge regarding blood cancer among affected persons is below average. Physicians should continually educate their patients to ensure good knowledge about their

illness. There is also need for public awareness/education campaigns regarding blood cancer risk factors, epidemiology and its preventive measures. Such enlightenment campaigns will also serve as opportunities to correct erroneous beliefs regarding blood cancers. Higher education has been shown to increase the capacity for better level of knowledge. Authors recommend that relevant stakeholders/authorities should make quality and higher education more accessible to all Nigerians.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Swerdlow SH, Campo E, Harris NL, Jaffe ES, Pileri SA, Stein H, et al. WHO classification of the tumours of the haematopoietic and lymphoid tissues. 4 ed. Lyon, France: IARC Press; 2008. ISBN: 10 8283224310
2. Zerbini MCN, Soares FA, Velloso EDRP, Chaufaille MF, Paes RP. World Heallth Organization classification of tumors of hematopoietic and lymphoid tissues, 4th edition, 2008- major changes from the 3rd edition, 2001. Rev Assoc Med Bras. 2011;57(1):66–73.
3. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. CA Cancer J Clin. 2011;61(2): 69–90.
4. National Cancer Intelligence Network. Cancer incidence and mortality by Cancer Network, UK; 2008. Available:www.ncin.org.uk (Last accessed 11th August, 2015)
5. Babatunde AS, Amiwero CE, Olatunji PO, Durotoye IA. Pattern of malignancies in ilorin, Nigeria: A ten year review. Internet J Haematol. 2009;5:2. DOI: 10.5580/28cc Available:http://www.ispub.com/journal/the_internet_journal_of_hematology/volume_5_number_2_44/article/pattern_of_haematological_malignancies_in_ilorin_nigeria_a_ten_year_review.html (Last accessed 27th February 2016)
6. Nwannadi AI, Alao OO, Bazuaye GN, Halim NK, Omoti CE. The epidemiology of malignancies at the University of Benin Teaching Hospital: A Ten-Year Retrospective Study. Int J Epidemiol. 2011;9(2):1.
7. Gopal S, Wood WA, Lee SJ, Shea TC, Naresh KN, Kazembe PN, et al. Meeting the challenge of hematologic malignancies in sub-Saharan Africa. Blood. 2012; 119(22):5078–5087.
8. Morhason-Bello IO, Odedina F, Rebbeck TR, Harford J, Dangou JM, Denny L, et al. Challenges and opportunities in cancer control in Africa: A perspective from the African Organisation for Research and Training in Cancer. Lancet Oncology. 2013;14(4):e142–e151.
9. Van Parijs LG. Public education in cancer prevention. Bull World Health Organ. 1986;64(6):917–927.
10. National Comprehensive Cancer network. NCCN Practice guidelines for detection, prevention and risk reduction; 2009. Available:www.nccn.org/professionals/physician_gls/f_guidelines.asp#detection (Last accessed on 5th September, 2015)
11. Rimer BK, Gierisch JM. Public education and cancer control. Semin Oncol Nurs. 2005;21(4):286–295.
12. Nwogoh B, Adewoyin AS. Seroprevalence of HBV, HCV and HIV infection in adults with haematological malignancies seen at the University of Benin Teaching Hospital, Benin City. IOSR Journal of Dental and Medical Sciences. 2015;14(6):86–91. DOI: 10.9790/0853-14638691
13. Ha FJ, Longnecker N. Doctor-patient communication: A review. The Ochsner Journal. 2010;10:38–43.
14. Opoku ST, Benwell M, Yarney J. Knowledge, attitude, belief, behavior and breast cancer screening practices in Ghana, West Africa. Pan African Medical Journal. 2012;11:28. DOI: 10.11604/pamj.2012.11.28.548
15. Ibrahim NA, Odusanya OO. Knowledge of risk factors, beliefs and practices of female healthcare professionals towards breast cancer in a tertiary institution in Lagos, Nigeria. BMC Cancer. 2009;9:76. DOI: 10.1186/1471.2407.9.76
16. Onasoga AO, Afolayan AJ, Oke GF. Knowledge and belief about breast cancer

among female undergraduate in a selected private tertiary institution in Edo State Nigeria. Int Journal of Tropical Medicine 2012;7:151–156.
DOI: 10.3923/ijtmed.2012.151.156

17. Weinrich SP, Weinrich MC, Boyd MD, Johnson E, Frank-Stromborg M. Knowledge of colorectal cancer among older persons. Cancer Nurs. 1992;15(5): 322–330.

18. Arodiwe EB, Ike SO, Nwokediuko SC, Ijoma CK, Ulasi II. Pattern of cancer deaths in the medical wards of a teaching hospital in South East Nigeria. Nigerian Journal of Clinical Practice. 2013;16(4): 505–510.

Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/14018