International Journal of Medical Science in Clinical Research and Review
Online ISSN: 2581-8945
Available Online at https://ijmscrr.in/ Volume 7|Issue 05 (September-October) |2024 Page: 932-938
Original Research Paper

Cardiovascular Risk Assessment And Health-Related Quality Of Life: The Case Study Of Middle-Aged Adults Attending Outpatient Clinic Of Ekiti State University Teaching Hospital, Ado-Ekiti, Ekiti State, Nigeria

Authors:
Owoyemi Ayodeji John[1], Agbesanwa Tosin Anthony[2], Aina Olukayode Felix[3], Akinlua Damilola Gbenga[4], Jolayemi Temitope Olalekan[5], Ibirongbe Adebola Tayo[6], Akinola Yetunde[7], Oguntiloye Olabode Olayinka[8], Owolabi Sunday Adebayo[9] Olofinbiyi Babatunde Ajayi[10]
[1,2,3,5]Department of family medicine, Ekiti State University Teaching Hospital/Ekiti State University (EKSUTH/EKSU), Ekiti State Nigeria.
[4]Department of obstetrics and gynecology, Afe Babalola Multisystem Hospital (AMSH),Ado Ekiti, Ekiti State Nigeria.
[6,7]Department of family medicine, Afe Babalola Multisystem Hospital (AMSH),Ado Ekiti, Ekiti State Nigeria.
[8]Department of neurology, Ekiti State University Teaching Hospital, Ado Ekiti, Ekiti State Nigeria.
[9]Department of family medicine, University of Ilorin Teaching Hospital, Kwara State, Nigeria.
[10]Department of obstetrics and gynecology, Ekiti State University Teaching Hospital, Ado Ekiti, Ekiti State Nigeria
Corresponding Author:
Owoyemi Ayodeji John
Department of family medicine, Ekiti State University Teaching Hospital, Ekiti State Nigeria

Article Received: 24-July-2024, Revised: 13-August-2024, Accepted: 03-September-2024

ABSTRACT:
Background: Cardiovascular disease (CVD) patients suffer from a variety of physical symptoms, such as exhaustion, dyspnoea, or chest discomfort, which negatively impact their relationships, psychological, and physical health and significantly lower their overall quality of life. This study assessed the cardiovascular risk and health related quality of life among middle aged adults attending outpatient clinic of Ekiti State University Teaching Hospital (EKSUTH), Ekiti State, Nigeria. **Methods**: A cross-sectional descriptive study of 206 middle-aged adults attending the outpatient clinic was carried out over 4 months. The respondents were selected through systematic sampling. The instrument used was a structured questionnaire. Data analysis was done using Statistical Package for social science (SPSS) version 23. **Results**: The majority of the respondents (63.3%) had a low cardiovascular risk score of <10% while 9.7% of the respondents had a ≥20% risk of having a cardiovascular event over the next ten years. The health-related quality of life varied across different domains with the highest score recorded in the social functioning domain (71.72±22.86) while the lowest score was seen in the energy/ fatigue domain (56.29±17.26). An inverse relationship between the cardiovascular risk profile and health-related quality of life with significance in the physical functioning (p value=0.010) and general role limitation due to emotional problems (p value=0.002) was found. **Conclusion**: Cardiovascular risk was low among the majority. Health related quality of life was highest in social function domain and lowest in energy/fatigue domain. The presence of cardiovascular risk was related to health related quality of life with significance in physical functioning and emotional issues.

Keywords: Middle aged, Cardiovascular, risk factor, quality of life, Health

INTRODUCTION:

Higher rates of chronic disease are linked to increased growth, which can have negative effects on quality of life and cause physical limits [1]. Chronic conditions like cardiovascular disease (CVD) have been identified as the primary cause of morbidity and mortality, accounting for 18 million deaths globally each year [2,3]. It is projected that by 2030, 44% of the population will suffer from a cardiovascular disease [4]. Cardiovascular disease (CVD) patients suffer from a variety of physical symptoms, such as exhaustion, dyspnoea, or chest discomfort, which negatively impact their relationships, psychological, and physical health and significantly lower their overall quality of life (QoL) [2.5].

The assessment of general cardiovascular risk in both individuals and communities dates back to the 1990s,

and it served as the basis for treatments and preventive actions for cardiovascular illnesses [1]. The overall cardiovascular risk evaluates the degree to which an individual possesses a certain set of cardiovascular risk factors at the same time [1]. Quality of life has therefore become a pertinent factor in assessing people's health as a result of this methodology.

Given the complications related to CVD and their consequences in decreasing autonomy and wellbeing, little is known about quality of life among middle age population. Therefore, we undertook a study of the cardiovascular risk assessment and health related quality of life among middle aged adults attending outpatient clinic of Ekiti State University Teaching Hospital (EKSUTH), Ekiti State, Nigeria.

MATERIALS AND METHODS:

We conducted a descriptive cross-sectional study in EKSUTH among middle aged adults of 40-64yrs from 1st of November 2020 to 28th of February 2021. A total of 206 adults were used for the study using Cochran sample size. The study utilized systematic sampling techniques. All consenting middle-aged adults who attended the general outpatient clinic, EKSUTH was included in the study. Exclusion Criteria was middle-aged patients who were critically or terminally ill, patients with conditions that would have affected anthropometric parameters such as physical deformities and pregnancy and patients with known cardiovascular diseases (Cerebrovascular disease, heart failure, ischaemic heart disease).

The instrument used was a four (4) sectioned interviewer-administered questionnaire drafted in English and Yoruba Languages. The instrument was pretested on about 10 middle-aged adults attending the outpatient department of the Oba Adejuyigbe General Hospital, Ado Ekiti using the inclusion and exclusion criteria, six weeks prior to the commencement of the study. Thereafter, study participants were recruited into the study after registering at the outpatient department, EKSUTH. Consent was gotten from each patient who satisfied the inclusion and exclusion criteria. The researcher then collected data. The questionnaire was divided into the following sections; sociodemographic characteristics, cardiovascular points and risk charts and health-related quality of life.

Data obtained were entered and analysed using the statistical package for social science 23 (SPSS). The data were presented in tabular forms, graphs and charts as appropriate. Descriptive statistics, such as mean, and standard deviations were determined. Association between dependent health related quality of life and independent variables (socio-demographic characteristics and cardiovascular risk score) were compared using Pearson's chi-square, Analysis of Variance (ANOVA) and Spearman Correlation Coefficient test. The level of statistical significance was taken as the p-value equal to or less than 0.05.

Health-Related Quality of Life:

The Short-Form 36 health survey version 2.0 [SF 36V2.0] was used to assess the health-related quality of life. It was designed for use in clinical practice and research, health policy evaluations and general population surveys. Its validity, reproducibility and responsiveness to change over time have been well demonstrated115. The tool assesses eight health dimensions referred to as subscales, namely Physical Functioning (10 items: 3,4,5,6,7,8,9,10,11,12), Role Limitations due to Physical Problems (4 items: 13,14,15, 16), Bodily Pain (2 items: 21,22), General Health (5 items: 1,33,34,35,36), Energy/Fatigue (4 items: 23,27,29,31), Social Functioning (2 items: 20,32), Role Limitation due to Emotional Problems (3 items: 17,18,19) and Emotional well being (5 items 24,25,26,28,30). It also includes a single item that indicates perceived change in health to make a total of 36 items. This single item is not included in the scoring process. Reliability values are Cronbach's Alpha ranges from 0.78 to 0.93 on the subscales. The health concepts described by the SF-36 range in score from 0–100, with higher scores indicating higher levels of function or better health. Scoring was a two-step process. First, pre-coded numeric values were re-coded using the standard SF-36 scoring algorithms. In addition, each item was scored on a 0 to 100 range so that the lowest and highest possible scores are 0 and 100, respectively. Scores represented the percentage of the total possible score achieved.

Cardiovascular Risk Assessment:

Framingham risk score (FRS)-Estimation of 10-year Cardiovascular Disease (CVD) Risk was used for cardiovascular risk assessment in this study. This tool uses a single multivariate risk function to predict the risk of developing all cardiovascular diseases and of its constituents. It is gender-specific with different charts for males and females. The c statistics for the risk function ranged from 0.763 (95% confidence interval [CI], 0.746 to 0.780) in men to 0.793 (95% CI, 0.772 to 0.814) in women6. The data required are the age, gender, total cholesterol, high-density lipoprotein, systolic blood pressure, history of hypertension treatment, smoking status and history of diabetes. Each parameter has points attached to its values and a total of the points are matched to a percentage risk on the risk chart. Total points range from $\leq$-2 to $\geq$21 with a corresponding risk ranging from <1% to >30%.

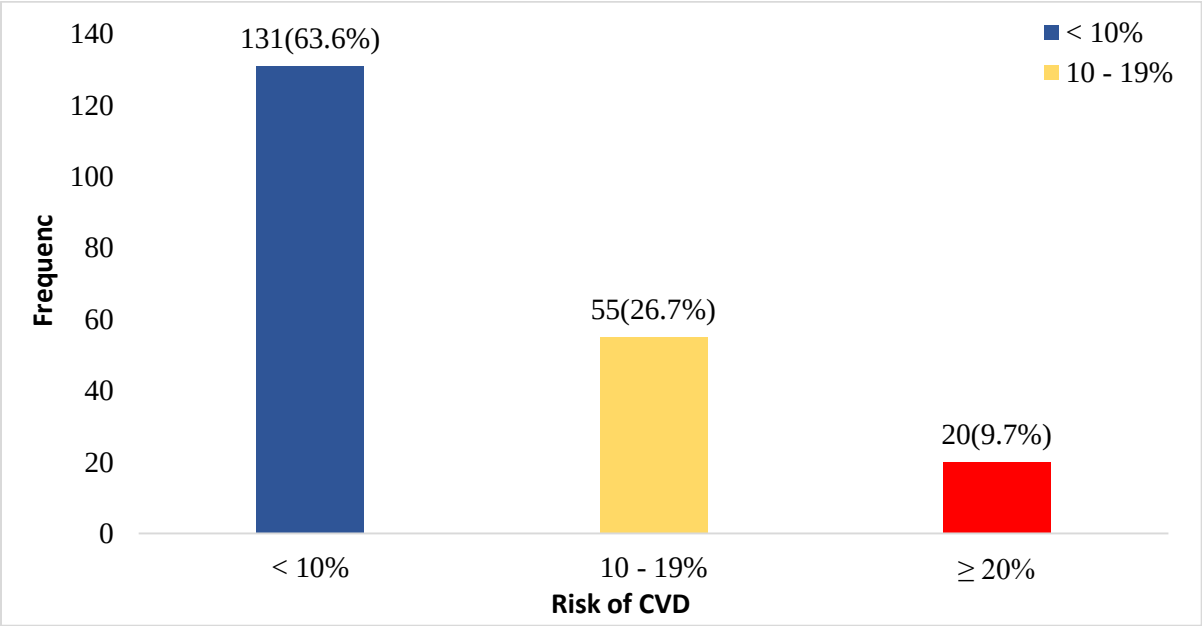
RESULTS:

Table 1: Socio-demographic characteristics of the study participants

Variable	Frequency (n=206)	Percent (%)
Age (years)		
40 – 44	49	23.8
45 – 49	48	23.3
50 – 54	35	17.0
55 – 59	36	17.5
59 – 64	38	18.4
Mean ± SD	51.41 ± 7.72	
Gender		
Male	71	34.5
Female	135	65.5
Marital status		
Married	185	89.8
Widowed	15	7.3
Single	6	2.9
Religion		
Christianity	196	95.1
Islam	10	4.9
Ethnicity		
Yoruba	197	95.6
Igbo	5	2.4
Hausa	3	1.5
Igala	1	.5
Occupation		
Senior Public Servant/Professional/Businessman	81	39.3
Secondary School Teacher/Intermediate grade Public Servant	25	12.2
Artisan/Primary School Teacher/Low-grade Public Servant	19	9.2
Petty Trader/Labourer/Messenger	41	19.9
Unemployed	40	19.4
Level of education		
Tertiary	115	55.8
Secondary	54	26.2
Primary	29	14.1
No formal education	8	3.9

The mean age of the respondent was 51.47±7.83 years. Respondents were split more evenly between genders (65.5%) and men (34.5%). Of the respondents, 89.9% were married, 15% were widowed, and 2.9% were single. Majority (95.1%) practiced christianity as a religion and almost the same percentage (95.6%) were Yoruba by ethnicity. One third (39.3%) worked as a senior public servants or professionals while the remaining were intermediate public servants(12.1%), artisans 9.2%, petty traders19.9% and 19.4% were unemployed. Also, 54.9% of the respondents had no formal education, 26.2% had only completed secondary school, 14.1% had only completed primary school, and over half (55.8%) had completed university education.

Figure 1: Cardiovascular Risk Assessment



The figure above is a bar graph showing the frequency of the 10-year CVD risk among the study participants. About two-thirds had a low CVD risk(less than 10%), while 9.7% of the respondent had a risk level greater than 20%.

Table 2: Health-related Quality of life of the respondents

Variable	**Mean ± SD**
Physical functioning	61.41 ± 22.54
Role limitation due to physical health	65.41 ± 38.04
Role limitation due to emotional problems	67.15 ± 41.97
Energy fatigue	56.29 ± 17.26
Emotional wellbeing	69.92 ± 15.43
Social functioning	71.72 ± 22.86
Pain	60.24 ± 24.61
General Health	65.80 17.83

Table 2 present the health-related quality of life among middle-aged adults in different domains and their ranges. Social functioning domain had the highest mean score while the lowest was in the energy fatigue domain.

Table 3: Association between the level of CV risk and health related quality of life.

	Cardiovascular risk profile				
	< 10%	**10 – 19%**	**≥ 20%**	**F**	***p*-value**
Variable	**Mean±SD**	**Mean±SD**	**Mean±SD**		
Physical functioning	64.35±22.65	53.55±19.31	63.75±25.85	4.738	**0.010**
Role limitation due to physical health	70.23±36.70	56.82±38.33	57.50±42.22	2.941	0.055
Role limitation due to emotional problems	73.28±37.99	50.30±46.65	73.33±42.71	6.364	**0.002**
Energy fatigue	56.76±17.34	53.55±17.92	60.75±14.17	1.416	0.245
Emotional wellbeing	69.74±15.82	71.27±15.95	67.40±11.11	0.484	0.617
Social functioning	72.61±23.26	72.27±23.65	64.38±16.86	1.150	0.319
Pain	61.24±25.37	56.09±24.69	65.13±17.71	1.288	0.278
General health	67.79±18.59	63.73±17.72	58.50±8.75	2.915	0.056

F: Analysis of variance (ANOVA)

Table 3 present the association between cardiovascular risk and health related quality of life. There was significance in physical functioning and role limitation due to emotional problems.

Table 4: Relationship between sociodemographic features and CVD risk

	CVD risk					
	<10%	**10–19%**	**≥20%**	**Total**	**χ^2**	***p* value**
Variable	**n=131(%)**	**n=55(%)**	**n=20(%)**	**N**		
Age						
40 – 44	46(93.9)	3(6.1)	0(0.0)	49	105.955[Y]	**<0.001**
45 – 49	40(83.3)	8(16.7)	0(0.0)	48		
50 – 54	24(68.6)	9(25.7)	2(5.7)	35		
55 – 59	14(38.9)	29(55.6)	2(5.6)	36		
60 – 64	7(18.4)	15(39.5)	16(42.1)	38		
Gender						
Male	45(63.4)	15(21.1)	11(15.5)	71	4.994	0.082
Female	86(63.7)	40(29.6)	9(6.7)	135		
Marital status						
Married	115(62.2)	50(27.0)	20(10.8)	185	2.374[Y]	0.667
Widowed	10(66.7)	5(33.3)	0(0.0)	15		
Single	6(100.0)	0(0.0)	0(0.0)	6		
Religion						
Christianity	127(64.8)	49(25.0)	20(10.2)	196	3.964[Y]	0.137
Islam	4(40.0)	6(60.0)	0(0.0)	10		
Ethnic						
Yoruba	124(62.9)	53(26.9)	20(10.2)	197	0.282[Y]	0.868
Others	7(77.8)	2(22.2)	0(0.0)	9		
Occupation						
Senior servant/Professional/Businessman	49(60.5)	26(32.1)	6(7.4)	81	15.343[Y]	0.052
Secondary school teacher/intermediate grade public servant	21(84.0)	4(16.0)	0(0.0)	25		
Artisan/Primary school Teacher/Low grade public servant	15(78.9)	2(10.5)	2(10.5)	19		
Petty trader/Labourer/Messenger	22(53.7)	16(39.0)	3(7.3)	41		
Unemployed	24(60.0)	7(17.5)	9(22.5)	40		
Level of education						
Tertiary	77(67.0)	26(22.6)	12(10.4)	115	8.724[Y]	0.189
Secondary	34(63.0)	15(27.8)	5(9.3)	54		
Primary	19(65.5)	8(27.6)	2(6.9)	29		
No formal education	1(12.5)	6(75.0)	1(12.5)	8		

Table 4 presents the relationship between sociodemographic features and CVD risk. It shows that age was associated with cardiovascular risk (p value=0.001).

DISCUSSION:

Using the ten-year Framingham risk scoring system, 63.6%, 26.7% and 9.7% of the participants were low risk(<10%), moderate risk(10-19%) and high risk(≥20%) respectively. This results aligns with a study done by Okoro and Jumbo [6] where it was reported 90% of their study population to be low-risk. This study result is also in similarity with Olubiyi et al. study which reported a low-risk prevalence of 98.3%, moderate risk of 1 % and 0.7% high risk [7]. However this study results is in discordance with Ilori et al. study where a high proportion of their study respondents (42.3%) were in the high cardiovascular risk category [5]. The difference might have stemmed from a difference in the assessment tools and their research population which was in a rural setting. Ogunmola et al. [8] in their study on the assessment of cardiovascular risk in a Nigerian rural community as a means of primary Prevention evaluation strategy using the Framingham Risk Calculator found that 59.1% were in the low-risk category, 31.1% in the intermediate-risk category, while 9.8% had 20% chance of developing major cardiovascular events over the next 10 years. The findings in this study were somewhat similar to the findings in this index study. Though a rural community, there is proximity to the centre where this index study was conducted.

Findings from this present study discovered the highest in the health related quality of life was social functioning domain (71.72±22.86) and lowest value was in the energy/fatigue domain with a mean score of

56.29±17.26. This study result is in agreement with Odetunde et al. [9] study where most of the subscales scores were above 50 and the least score was found in the energy subscale.

This study found an inverse relationship between the cardiovascular risk score and the health-related quality of life and the study respondents. The higher the CVD risk score, the lower the health-related quality of life. This was specifically significant in the aspects of physical functioning, role limitations and general health domains. There was a significant association between cardiovascular risk profile and physical functioning. The physical functioning score of the health-related quality of life was lowest for the intermediate-risk group. This present study finding corroborate with Jin et al. [10] study where it was concluded that cardiovascular health was associated with a lower risk of poor physical function. In similarity with this present study's findings, Saquib et al. [11] also reported that participants with low physical component scores had a more adverse cardiovascular health profile compared to those with a high physical component score. The physical component includes sections in general health, physical functioning, bodily pains and role limitation due to health.
Furthermore, this present study found a significant inverse relationship between age and physical function and general health. This result is similar to Ximenes et al. [12] results where it was reported that older participants had worse health related quality of life in the physical functioning domain in comparison to the younger patients.

CONCLUSION:

Overall, majority of the respondents (63.3%)attending the outpatient clinic of Ekiti State University Teaching Hospital, Ado Ekiti had a low cardiovascular risk score of <10% while 9.7% of the respondents had a ≥20% risk of having a cardiovascular event over the next ten years. The health-related quality of life varied across different domains with the highest score recorded in the social functioning domain (71.72±22.86) while the lowest score was seen in the energy/ fatigue domain (56.29±17.26). There is an inverse relationship between the cardiovascular risk profile and health-related quality of life with significance in the physical functioning and general health domains of the health-related quality of life.

FUNDING:

Self and grant from the hospital.

RECOMMENDATION:

When managing patients, it's crucial to take their health-related quality of life into account. Using the many instruments available for evaluating such, family doctors ought to be able to keep an eye on this in their patients.
There is a need for more studies to be done to assess all the age groups that visit the outpatient clinic and also the community at large.
Follow-up studies would also be beneficial to assess the functionality of the Framingham risk chart especially in Nigeria.

Declaration of Competing Interest:

The authors declares that he has no known competing publication interests or personal relationships that could have appeared to influence the work reported in this paper.

Limitation of the Study:

The Framingham Risk Score could overestimate (or underestimate) risk in populations other than the US population, and within the USA in populations other than European Americans and African Americans, for example, Hispanic Americans and Native Americans.

Ethical Approval:

Approval code of ethics with number EKSUTH/A67/2019/11/001

Acknowledgement:

We sincerely appreciate the support provided by the entire Department of Family Medicine at EKSUTH for the duration of the study, as well as the voluntary involvement of the survey respondents.

REFERENCES:

1. Martinelli LM, Mizutani BM, Mutti A, D'elia MP, Coltro RS, Matsubara BB. Quality of life and its association with cardiovascular risk factors in a community health care program population. Clinics. 2008;63:783-8.

2. González-Chica DA, Dal Grande E, Bowden J, Musker M, Hay P, Stocks N. Are we reducing the risk of cardiovascular disease and improving the quality of life through preventive health care? Results of a population-based study in South Australia. Preventive medicine. 2017 Jun 1;99:164-70.

3. World Health Organization. Cardiovascular disease. http://www. who. int/cardiovascular_diseases/en/. 2017 May 17.

4. Pinheiro LC, Reshetnyak E, Sterling MR, Richman JS, Kern LM, Safford MM. Using health-related quality of life to predict cardiovascular

disease events. Quality of Life Research. 2019 Jun 15;28:1465-75.

5. Ilori HT, Adebusoye LA, Daramola OO, Ajetunmobi OA. Cardiovascular Risk Assessment among Patients with Hypertension Presenting at a Family Medicine Clinic in Southwest Nigeria. Journal of Advances in Medicine and Medical Research. 2019 Mar 18;29(1):1-0.

6. Okoro TE, Jumbo J. Cardiovascular event risk estimation among residents of a rural setting in Bayelsa state, Nigeria. American Journal of Cardiovascular Disease. 2021;11(3):300.

7. Olubiyi OA, Rotimi BF, Afolayan MA, Alatishe-Muhammad BW, Olubiyi OM, Balami AD. The ten-year risk of developing cardiovascular disease among public health workers in North-Central Nigeria using Framingham and atherogenic index of plasma risk scores. BMC Public Health. 2022 Apr 27;22(1):847.

8. Ogunmola JO, Olaifa OA, Akintomide AO. Assessment of cardiovascular risk in a Nigerian rural community as a means of primary prevention evaluation strategy using Framingham risk calculator. IOSR J Dent Med Sci. 2013;7(3):45-9.

9. Odetunde MO, Ajibola BO, Ilesanmi OT, Okonji AM, Ojoawo AO, Awotidebe TO, Odetunde NA, Omisore OB, Mbada CE. Health-Related Quality Of Life Of Health Professionals In A Tertiary Health Institution Of Southwestern Nigeria: A Cross-Sectional Survey. Open Journal of Medical Research (ISSN: 2734-2093). 2021 Aug 13;2(2):75-88.

10. Jin Y, Tanaka T, Ma Y, Bandinelli S, Ferrucci L, Talegawkar SA. Cardiovascular health is associated with physical function among older community dwelling men and women. Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences. 2017 Nov 9;72(12):1710-6.

11. Saquib N, Brunner R, Desai M, Allison M, Garcia L, Stefanick ML. Association between physical health and cardiovascular diseases: Effect modification by chronic conditions. SAGE Open Medicine. 2018 Jul 4;6:2050312118785335.

12. Ximenes CR, Bergmann A, Lima JT, Cavalcanti AS, Britto MC, Mello MJ, Thuler LC. Impact of age in health-related quality of life in older adults with cancer. 2021.