PHYSICAL ACTIVITY AND QUALITY OF LIFE OF PATIENTS WITH ARTERIAL HYPERTENSION FOLLOWED AT THE YALGADO OUÉDRAOGO UNIVERSITY HOSPITAL

CISSE ABDOUL RAHAMANE[1*], BAMOUNI JOËL[2], SEBGOARIOLECLAUVIS PAPINLGSAMBDA[3], OUEDRAOGO VALENTIN4, YAMEOGORELWENDE ARISTIDE5, ZABSONRE PATRICE6,

[*1]ISSDH, University of Joseph KI-ZERBO, Ouagadougou, Burkina Faso
[2]UFR/SS,University of Ouahigouya, Ouahigouya, Burkina Faso
[3]UFR/SDS, University of Joseph KI-ZERBO, Ouagadougou, Burkina Faso
[4]UFR/SS,University of Ouahigouya, Ouahigouya, Burkina Faso
[5]UFR/SDS, University of Joseph KI-ZERBO, Ouagadougou, Burkina Faso
[6]UFR/SDS, University of Joseph KI-ZERBO, Ouagadougou, Burkina Faso

*Corresponding Author : CISSE ABDOUL RAHAMANE

SUMMARY

Introduction

Physical activityisrecommended for the purpose of physical and mental hygiene.The role of physicalactivity in the management of hypertension isclearlyestablished.Its impact on the quality of life of hypertensive patients remainslittleexplored to ourknowledge.The aims of this study isto analyze the association between the intensity of physical exercise and the quality of life of patients with arterial hypertension (AH)followedthe Department of Cardiology of the Yalgado Ouédraogo University Hospital (CHUYO, Burkina Faso).

Methods

This was a descriptive cross-sectional study performed over a period of six months from May 2 to October 31, 2020. All patients with AH who are at least 18 years of age were followed for at least six months. Data about physical exercise and quality of life were collected through an interview sheet. The International Physical Activity Questionnaires (IPAQ)and the 36-Item Short Form Survey (SF-36) were used.

Results

A total of 271 patients were included(mean±standard deviation of age and HA duration: 58±12 years, and 9.6±7.8 years, respectively, of age, female sex: 65%, out of school: 35%). Patients who had a low level of physical activity had a low physical score scale and those who had a level of vigorous physical activity had a high physical score scale. The averagenumber of days of physicalactivity per weekwas5 ± 2days. In terms of quality of life, the physical score scalehad a mean of 69 ± 23, while the mental score scalehad a muchlowermean score of 66 ± 20. There was a negative association betweenphysical and mental scores and lowphysicalactivity.

Conclusion

The positive impact of physicalactivity on the quality of life of patients with high blood pressure is real.

Keywords: *high blood pressure; physical activity; quality of life*

1. INTRODUCTION

Physical activity (PA)isrecommended for the purpose of physical and mental hygiene[1]. Sport contributes to the fightagainstsedentary lifestyles and is one of the main public health issues today[1]. Physical activities are commonlyprescribed as adjuvant therapy for the management of severalcardiovascular, metabolic, and degenerative conditions [2,3,4,5].

Worldwide,arterialhypertension (AH)remains one of the most important health challenges due to its high prevalence and complications[6]. It is the most important modifiable risk factor for cardiovasculardisease, stroke, and kidneydisease [6]. In Burkina Faso, the prevalence of AH in the population wasestimated at 29% in 2014[7]. It is a diseasethatsignificantly affects patients' quality of life (QoL) due to its complications, medicationsideeffects, and othersymptomsrelated to poorblood pressure control [7,8].

Althoughthe role of PA in the management of AH isclearlyestablished, its impact on the QoLof patientswith AH remainslittleexplored. The evaluation of patients' QoLaccording to theirlevel of PAseems important to us for more efficiency in the use of this adjuvant means of treatment.

The main aim of thisstudywas to evaluate the impact of PA on the QoLof patients with AH followed on an outpatient basis in the cardiologydepartment of the Yalgado Ouédraogo University Hospital.

2. Methods

2.1. Studydesign

This was a descriptive cross-sectional studyperformed over a period of six monthsfrom May 2 to October 31, 2020.

The studytook place in the outpatient unit of the cardiologydepartment of the Yalgado Ouédraogo University Hospital (CHUYO, Burkina Faso).

The protocoleisapproved by Ethiccommittee.

Writteninformed consent wasobtainedfrom patients beforetheir inclusion in the study. Participating in the studyoffered no direct benefit to the patient and did not expose them to anyadditionalrisksotherthanthoserelated to their care. On the other hand, their participation in the studycouldmakeit possible to set up a suitableactivity program.The confidentiality of patients' personal data wasrespectedduring the processing of data by the anonymity of the collection sheets.

2.2. Population

The following inclusion criteriawereappliedfreelyconsented, aged at least 18 years and hypertensive followed for at least six (06) months.

Patients withgestational hypertension and patients withsecondary hypertension were not included.

2.3. Sample size

The sample size wascalculatedfrom the number of consultations during the studyperiodwhichwas 1500 patients. EpiInfo'sStatCalcgives us a number of 276 patients to include.

2.4. Definition of arterial hypertension and conditions of measurements

HA wasdefined assystolicblood pressure ≥ 140 mmHgand/or diastolicblood pressure≥90 mmHg[3].Blood pressure wasmeasuredmorningwithmanualtensiometer in lying position after 15 minutes in calm by the sameexaminator.

2.5. Applied questionnaires and collected data

A surveysheetwaspreviouslydesigned to collectsocio-demographic and clinical data from patient follow-up diaries and therehealth record.

The International Physical Activity Questionnaires(IPAQ) [9] and the Short Form 36 (SF36) [10] wereusedrespectively for data on level of PA andQoL.All data werecollectedduring a patient interviewby the attendingphysician, oftenwith the help of a translator. The categoricalphysicalactivitylevel score wasexpressed as "low", "moderate" and "vigorous" [5].

For the QoL score, several items weregroupedtogether to make up the score for each dimension. The dimensions themselvesweregroupedtogether to form a Physical Score Scale(PCS) and a MentalScore Scale(MCS) [11,12].

2.6. Statisticalanalysis of data

Data wereenteredusing Epi info software. The analyses weredonewith R software. Means ± standard deviationwascalculated for continuous variables and proportions for ordinal qualitative variables. Weperformed multiple regressionwithR's net package to highlight the association betweenphysicalactivity and patients' quality of life. The regressionwasinitiallyunivariated, thenmultivariate. Statistical tests weresignificantif the p islessthan or equal to 0.05.

3. Results

3.1. Socio-demographiccharacteristics and clinicalfeatures

A total of 271 patients wereincluded (mean±standarddeviation of age and HA duration: 58±12 years, and 9.6±7.8 years, respectively, of age, femalesex: 65%, out of school: 35%). The distribution of the population by occupation isshown in Figure 1 below.
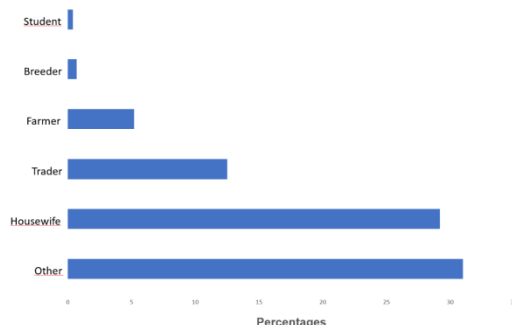

Figure 1 : Distribution of patients witharterial hypertension followed on an outpatient basis in the cardiologydepartment of the Yalgado Ouédraogo University Hospital by occupation, 2020

One hundred and sixty-two patients, or 60%, usedmotorcycles as a mode of transport. Table 1 below shows the representation of patients by mode of transport.

Table1 : Representationof patients witharterial hypertension followed on an outpatient basis in the cardiologydepartment of theYalgado Ouédraogo University Hospital by mode of transport, 2020

	Number of patients	Percentage (%)
Motorcycle	162	60
Car	55	20
Foot	40	15
Bicycle	14	05
Total	**271**	**100**

The meansystolicblood pressure was 139.4 ± 21.4 mmHg. The meanof diastolicblood pressure was 81.45 ± 12.3 mmHg. Eighty-two patients, or 31%, alreadyhad a complication. Thirty-four patients, or 13% of patients, haddocumentedosteoarthritis and six patients, or 2%, hadsciatica lia. All patients were on drugtherapywith an average of two antihypertensive drugs per patient.

3.2. Data onphysicalactivity and level of quality of life

Patients whohad a lowlevel of physicalactivityhad a lowphysical score scale and thosewhohad a level of vigorousphysicalactivityhad a high physical score scale. The averagenumber of days of physicalactivity per weekwas5 ± 2days. In terms of quality of life, the physical score scalehad a mean of 69 ± 23, while the mental score scalehad a muchlowermean score of 66 ± 20. One hundred and forty-nine patients, or 55% of cases, hadlowphysicalactivity. Table 2below shows the distribution of patients according to theirlevel of physicalactivity.

Table2 : Representationof patients witharterial hypertension followed on an outpatient basis in the cardiologydepartment of theYalgado Ouédraogo University Hospitalaccording to the level of physicalactivity, 2020

	Effectif	Percentage (%)
Low	149	55
Moderate	87	32
Intense	35	13
Total	**271**	**100**

There was a negative association betweenphysical and mental scores and lowphysicalactivity. The lowerthese scores, the lower the patients' physicalactivitylevel. However, onlyphysical score waspositivelyassociatedwith intense physicalactivity. The higherthese scores, the higher the patients' physicalactivitylevel. In contrast, the assessment of perceivedhealthwas not associatedwithphysicalactivitylevel, as shown in Tables 3a and 3b below.

Table 3a : Univariateanalysis of quality of life by lowphysicalactivityof patients witharterial hypertension followed on an outpatient basis in the cardiologydepartment of the Yalgado Ouédraogo University Hospital, 2020

	Odd ratio	IC à 95%	P
Physical Score Scale (PCS)	**0,97**	0,96-0,98	< 0,001
Physical activity	0,97	0,96-0,98	< 0,001
Limitation due to physicalstatus	0,98	0,98-0,99	< 0,01
Physical pain	0,98	0,97-0,99	< 0,01
Perceivedhealth	0,98	0,96-0,99	< 0,017
Mental Score Scale (MCS)	**0,97**	**0,96-0,98**	**< 0,001**
Vitality	0,97	0,96-0,99	< 0,01
Life and Relationship withothers	0,98	0,97-0,99	< 0,01
Mental health	0,99	0,98-1,01	0,63
Limitation due to mental statuts	0,98	0,98-0,99	< 0,01
Assessment of PerceivedHealth	**0,99**	**0,96-1**	**0,38**

Table 3b : Univariateanalysis of quality of life by intensephysicalactivity of patients witharterial hypertension followed on an outpatient basis in the cardiologydepartment of the Yalgado Ouédraogo University Hospital, 2020

	Odd ratio	IC à 95%	P
Physical Score Scale (PCS)	**1,03**	1-1,06	0,01
Physical activity	1,03	1-1,05	0,01
Limitation due to physicalstatus	10,1	0,99-1,02	0,06
Physical pain	1,02	0,99-1,04	0,06
Perceivedhealth	1,02	0,99-1,04	0,06
Mental Score Scale (MCS)	**1**	**0,98-1,03**	**0,56**
Vitality	0,99	0,96-1,01	0,42
Life and Relationship withothers	1,01	0,97-1,03	0,09
Mental health	1	0,97-1,02	0,96
Limitation due to mental statuts	1	0,97-1,02	0,72
Assessment of PerceivedHealth	**0,99**	**0,98-1**	**0,67**

In the multivariateanalysisas shown in Tables 4a and 4b below, the physical score scalewassignificantlyassociatedwithPA (p< 0.01). Patients whohad a lowlevel of PAhad a lowphysical score scale (apoorQoL), and thosewhohad a level of intense PAhad a high physical score scale (a good QoL).

Table 4a : Multivariateanalysis of quality of life by lowphysicalactivityof patients witharterial hypertension followed on an outpatient basis in the cardiologydepartment of the Yalgado Ouédraogo University Hospital, 2020

	Odd ratio	IC à 95%	P
Physical Score Scale (PCS)	0,97	0,95-0,98	0,02
Mental Score Scale (MCS)	0,99	0,97-1,01	0,72
Assessment of PerceivedHealth	0,99	0,99-1	0,6

Table 4a : Multivariateanalysis of quality of life by intensivephysicalactivityof patients witharterial hypertension followed on an outpatient basis in the cardiologydepartment of the Yalgado Ouédraogo University Hospital, 2020

	Odd ratio	IC à 95%	P
Physical Score Scale (PCS)	1,06	1,02-1,10	< 0,01
Mental Score Scale (MCS)	1,06	0,93-1,00	0,07
Assessment of PerceivedHealth	0,99	0,98-1	0,55

4. Discussion

One of the limitations of ourstudyis the coincidence of the data collection periodwith the COVID-19 pandemic. Indeed, during a period of threemonths, only urgent consultations wereauthorized. The main difficultyencounteredwas the transcription into the local language of the questionnaires administered to patients

whodid not understand French. Burkina Faso'sethnicmultiplicitysuggestsbiaseslinked to a partial understanding of the issues.

4.1. Socio-demographicCharacteristics

The literature on hypertension isabundant. There isvariability in prevalencearound the world [6]. But overall the sociodemographiccharacteristicsapproximateacross the meanage, 58 ±12 years in ourstudy, whichwasbetween the fifth and sixthdecade. The sameistrue for the predominance of the femalesex, 65% in ourstudy, and the rate of out-of-school participants, 35% in ourstudy, whichfollowed the same trends as the last census of the Burkinabe population [6,7,8,13,14]. The mostusedmeans of transport wasnaturally the motorcycle (60%) because the studytakes place in a city described as the "capital of two-wheelers". Bicycle userswerepoorlyrepresented (05%) probablybecause of the precariousness of theirfinancial conditions for regularmedical follow-up [8].

4.2. Clinicalfeatures

The mean duration of high blood pressure was 9.6 ± 7.8 yearswithextremes of one and 37 years. Eighty-two patients, or 31%, alreadyhad a complication. Theseclinicalfeaturesappear to be consistent with the profile of hypertensive patients treated in hospital settings [7,8]. The management of hypertension at the early stage before the onset of complications is a matter for peripheral structures. The percentages of patients withdocumentedosteoarthritis (13%) and patients withsciatica (2%) are related to the epidemiology of these conditions from the fifthdecadeonwards [7].

4.3. Level of physicalactivity and itsimpact on quality of life

Wefound 55% of patients whohadlowPA. This resultcouldbeexplained in part by the mode of patient transport, whichwas 80% motorized. Moreover, in popularthought, "patients withcardiovascular pathologies should not make an effort". This thought has an influence on the practice of physicalactivity, especially for patients who have symptomssuch as "exertionaldyspnea" or "exertionalchest pain" [8]. The cardiovascularrehabilitationthatcould have helpedthese patients [15] is not yetavailable in the cardiologydepartment of the CHU/YO. Associated pathologies such as osteoarthritis (13%) and sciatica (2%) are oftendemotivatingfactors [5] due to a lack of advicefromspecialists in health-relatedphysicalactivities. The opening of the "Health-Adapted Physical Activity" program isrecent in our country. Hence the scarcity of educatorsspecializing in physicalactivityadapted to chronicdiseasessuch as hypertension. The averagenumber of days of physicalactivity per weekwas close to the recommendedPA of 3 to 5 days per week [3,4,5].

In ourseries, the PCS had a mean of 69 ± 23 while theMCS had a lowermean of 66 ± 20. Trevisol in Brazil [16] found a PCS score of 50 ± 10 and an MCS score of 50 ± 11. Thesedifferencescouldbepartlyexplained by the type of questionnaire used. Indeed, although the SF-12 is an abbreviated and validated version of the SF-36 used in ourstudy, somestudies have shown a mismatchbetween the twoscales in a few areas studied: Cladding, Alomari [17,18]. Also, respondents' culture, perceptions, expectations and interpretationscould influence the results.

In univariateanalysis, physical and mental score scalesweresignificantlynegativelyassociatedwithlowphysicalactivity. The lower the score, the lower the patient'sphysicalactivity. In multivariateanalysisfrom the summarized scores, only the PCS wasassociatedwithbothlow and vigorousphysicalactivity. The lower the score, the lessPA the patient engaged, and the higher the score, the more vigorousphysicalactivity the patient engaged. Activity levelhad no influence on mental quality of life. Sosner in hisstudy of a population subjected to aPA program for ninemonths in France alsofound no association betweenPAlevel and the Sosner mental health score [19]. Onlyitsvitality and mental health components wereassociatedwithPAlevels. This couldbeexplained by the factthat the PA program wasquitecontrarian, thusaltering the mental QoL in their patients. On the other hand, thisauthorfound a higher PCS score after the intervention of a PA program. In the randomizedclinical trials conducted by Arija [20] and Olsson [21] on the impact of PA on QoL, regularPAwasfound to improve patients' QoLbothprofessionally and socially. This improvementwas in PCS, physical pain, limitation due to physical state, and vitality.

According to severalstudies [19,20,21,22], the benefits of physicalactivity are greatestwhensupervised by a healthworker and a sports educationspecialist. In addition, the inclusion of socio-cultural activitiessuch as sports alsoimproved the well-being and QoL of patients.

5. Conclusion

The positive impact of PA on the QoL of patients with high blood pressure is real. This gain is maximum for moderate to intense physicalexercise, regardless of the age of the patients. PAplays an important role in the management of thischromic condition. It reduces the need for drugprescribing in patiientswith AH, resulting in a reduction in the costs of treatment and the sideeffects of medications. But for it to be more effective, its practice must besupervised by specialists in sports medicine and educatorsspecializing in PAadapted to health.

A prospective longitudinal study on a population subjected to aPA program and monitoredcouldbetterspecify the impact of PA on QoL, particularly on blood pressure control.

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