

# Knowledge, Attitudes and Practices towards Hypertension among Hypertensive Patients in Rural Area, Tanvè (Benin)

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**Abstract** Hypertension mortality could be reduced by compliance with treatments and hygienic rules. The study aimed to assess the knowledge, attitudes and practices (KAPs) towards hypertension among hypertensive patients at Tanvè (Benin) in 2018. **Materials and Methods:** This was a cross-sectional study. It included, people aged 25 and over, followed in Tanvè Health Study and screened hypertensive during the 2017 visit. An individual interview was used for the data collection in 2018. The evaluation of the KAPs was made by questions with two optional answers, marked 0 or 1: 24 for knowledge, 8 for attitudes and 12 for practices. The level was rated good when the score was  $\geq$  3rd quartile of the theoretical score. **Results:** A total of 380 people were surveyed, 67.9% of whom were women; the mean age was  $52.4 \pm 16.5$  years. Among them, 22.6% had a good level of knowledge and 89.7% had good attitudes. Only 50.1% of the respondents were aware of their history of hypertension. Few of them (5.2%) had good practices towards hypertension. **Conclusion:** This study shows a low level of knowledge and practices towards hypertension. Interventions for the therapeutic education of hypertensive patients would be effective within the target population.

**Keywords** Knowledge, Attitudes and Practices, Hypertensive Patients, Benin

## 1. Introduction

Hypertension constitutes a major public health concern worldwide, due to its high frequency and mortality [1–3]. It is a long-term condition, often asymptomatic, which is revealed by cardiovascular and renal complications [4]. More than a quarter of the world's adult population is hypertensive, and this proportion is expected to reach 30% by 2025, if the response is not effective [1].

Despite the availability of treatments, hypertension is inadequately treated and controlled [3, 5–7]. The poor prognosis for uncontrolled hypertension can be avoided by regular medical monitoring and a healthy lifestyle. Compliance with hygiene rules and drugs by hypertensive patients require good knowledge and a good perception of the hypertension associated risk.

Hypertension affects around a third of adults in sub-Saharan Africa [8]. In many of these countries, most patients fully finance care and purchase of drugs in a low socioeconomic context [8]. Several of them have already developed at least one hypertensive complication, and have associated risk factors such as obesity and dyslipidemia [9, 10]. This situation shows the severity of hypertension in sub-Saharan African countries and the importance of blood pressure normalization.

In 2015, the prevalence of hypertension in Benin was estimated at 25.9% nationally and 15.9% in the district of Zou [11]. According to a study performed in 2016 among hypertensive patients monitored in a peripheral health center of Benin, the level of knowledge relating to hypertension was poor. In addition, less than half of the

hypertensive patients enrolled had correct diet and regular physical activity; about three-quarters were not receiving any medical treatment [12].

A cohort study on cardiovascular diseases is ongoing since February 2015 in the villages of Tanvè and Dékanmè, in central Benin, district of Zou. It includes adults residents aged 25 years and over [13]. A screening for hypertension was carried out at inclusion visit in 2015. The blood pressure is measured annually during the follow-up visit [13].

## 2. Objectives

The objective of this study was to assess the knowledge, attitudes and practices (KAPs) towards hypertension among hypertensive patients in Tanvè in 2018.

## 3. Materials and Methods

### 3.1. Frame

The study took place in central Benin, in the villages of Tanvè and Dékanmè. These are two neighbouring villages located in the area of Tanvè, 10 km from Abomey town and 150 km from Cotonou (economic capital of Benin). The adult population is approximately 2000. The main activity is agriculture and the main language is “Fon”. Christian religions and voodoo cults are more practiced. Tanvè village has a public health center comprising a dispensary managed by a nurse and a maternity unit managed by a midwife. The Abomey departmental hospital is the region’s benchmark hospital where a cardiologist works. There is no universal health insurance system. The vast majority of care and medicines are funded by the individuals themselves and their families. Traditional medicine occupies an important place in disease management.

The Tanvè health center has electronic blood pressure monitors, glucometers, scales, measuring rods for monitoring patients. There is no laboratory for biological analysis on venous blood. A general practitioner recruited by the TAHES project provides two free medical consultation sessions per month at the dispensary. There is a small pharmacy in the health center and several private pharmacies in Abomey. Generic drugs available for the hypertension management at Tanvè health center are: amlodipine, nifedipine (calcium channels blockers); hydrochlorothiazide (diuretic) and alpha-methyldopa (central acting antihypertensive drug). The average transfer prices for a monthly treatment vary between 1 and 10 USD dollars depending on the prescriptions.

### 3.2. Design, Population and Data Collection

It was a descriptive cross-sectional study. It included

people aged 25 and over, participating in TAHES (Tanvè Health Study), having had raised blood pressure or taking a treatment for hypertension during the 2017 visit, and having given their written consent. Patients unable to answer questions due to any disability, those who were absent after two unsuccessful visits, and pregnant women were not included.

The data were collected from October 1 to December 1, 2018. The data collection techniques used were: face-to-face structured individual interview with the respondent and direct observation (measurement of anthropometric parameters). A standardized questionnaire was administered to participants. The questionnaire was written in French and then translated into the Fon language, the main language of the locality. The questionnaire comprised sociodemographic information and questions about KAPs towards hypertension. It was tested and readjusted before the investigation began. The interview was carried out at participant's home, either in French or in “Fon” by two trained investigators (one community worker and one student in public health). The questionnaire was filled in the French form. Then, weight, height and blood pressure were measured. Three consecutive measurements of blood pressure were taken, after 10 minutes of rest, in sitting position, on left arm. The blood pressure was the average of the last two measurements.

### 3.3. KAPs Evaluation

KAPs were assessed by series of questions with two optional answers marked 0 or 1. The level was rated good when the score is  $\geq$  3rd quartile of theoretical score. The knowledges were assessed by 24 questions and were classified as good when the score was  $\geq$  18. The attitudes were assessed by 8 questions and were classified as good when the score was  $\geq$  6. The practices were assessed by 12 questions and were classified as good when the score was  $\geq$  9.

### 3.4. Ethic Consideration

The favorable opinion of the educational committee of ENATSE (National school for training of senior technicians in public health and epidemiological surveillance) of Parakou University was obtained for the study. All the data have been managed confidentially.

## 4. Results

A total of 380 respondents were investigated out of 385 hypertensive people identified.

### 4.1. Characteristics of the Respondents

The mean age was  $52.4 \pm 16.5$  years with extremes of

26 and 98 years. Sociodemographic and economic data are presented in the second column of table 1. We noted a female predominance (67.9%). The age group [40-54 years] was most represented (34.7%). Nearly two-thirds of them had no school education (62.6%). There were 38.4% of traders. Around 97.1% had a low monthly income  $\leq$  80 USD (minimum salary in Benin).

Almost all the respondents (379/380) have heard of hypertension. The frequent sources of information were the TAHES project (99.5%) and relatives (15.5%). Among 380 surveyed, 11.1% were obese and 61.3% had raised blood pressure (systolic blood pressure  $\geq$  140 mmHg or diastolic blood pressure  $\geq$  90 mm Hg) on the day of the survey.

**Table 1.** Link between socio-demographic factors and KAPs among respondents, Tanvè (Benin) 2018

	<b>Total = 380</b>	<b>Good Knowledge</b>		<b>Good attitudes</b>		<b>Good practices</b>	
	n (%)	n (%)	p	n (%)	p	n (%)	p
<b>Sex</b>			0.715		0.850		1.000
Male	122 (32.1)	29 (23.8)		110 (90.2)		3 (2.5)	
Female	258 (67.9)	57 (22.1)		231 (89.5)		7 (2.7)	
<b>Age (years)</b>			0.252				0.372
25-39	96 (25.3)	22 (22.9)		84 (87.5)	0.287	1 (1.0)	
40-54	132 (34.7)	32 (24.2)		121 (91.7)		6 (4.6)	
55-69	86 (22.6)	23 (26.7)		80 (93.2)		1 (1.2)	
$\geq$ 70	66 (17.4)	9 (13.6)		56 (84.9)		2 (3.0)	
<b>Educational level</b>			0.986		0.130		0.277
No school education	238 (62.6)	54 (22.7)		215 (90.9)		5 (2.1)	
literate	39 (10.3)	9 (23.1)		37 (94.9)		1 (2.6)	
Primary	66 (17.4)	14 (22.2)		60 (90.9)		4 (6.1)	
Secondary or university	37 (9.7)	9 (24.3)		29 (78.4)		0 (0.0)	
<b>Employment status</b>			0.104		0.188		0.795
Trader	146 (38.4)	30 (20.6)		131 (89.7)		3 (2.1)	
Artisan/worker/peasant	130 (34.2)	36 (27.7)		120 (92.3)		4 (3.1)	
Homemaker	86 (22.6)	15 (17.4)		76 (88.4)		3 (3.5)	
Employed/Student	18 (4.8)	7 (38.9)		14 (77.8)		0 (0.0)	
<b>Monthly income (USD)</b>			0.468		0.087		0.950
$\leq$ 80	369 (97.1)	85 (23.0)		333 (90.2)		10 (2.7)	
>80	11 (2.9)	1 (9.1)		8 (72.7)		0 (0.0)	

### 4.2. Knowledge and Attitudes of Respondents

Data on hypertension knowledge among respondents are presented in table 2. Headache (71.1%) and dizziness (76.8%) were the main symptoms cited by the respondents. Stress was recognized by 94.7% of them as a risk factor. The most cited complication was stroke or “paralysis of one side of the body” (96.3%). Less than a twentieth had confirmed that hypertension was not communicable. The majority knew that hypertension is a long-term condition (82.6%) and that it requires monitoring by a health worker (92.4%). More than three-quarters did not know the maximum duration of action for antihypertensive drugs.

Among the 380 respondents, 86 (22.6%) had a good level of knowledge towards hypertension. The mean score was  $14.7 \pm 3.4$  with extremes of 4 and 21.

**Table 2.** Evaluation of knowledge towards hypertension among respondents, Tanvè (Benin) 2018

	Total=380	%
<b>Symptoms</b>		
Headache	270	71.1
Dizziness	292	76.8
Ringing in the ears	262	68.9
Visual blur	264	69.5
Heaviness of the neck	226	59.5
<b>Risk factors</b>		
Low physical activity practice	276	72.6
Excessive salt intake	314	82.6
Fat diet	323	85.0
Tobacco consumption	109	28.7
Stress	360	94.7
Obesity	21	5.5
Diabetes	180	47.4
Heredity	64	16.8
<b>Complications</b>		
Stroke (“Paralysis of one side of body”)	366	96.3
Kidney disease	286	75.3
Heart failure	260	68.4
blindness	320	84.2
Non-traumatic foot amputation	277	72.9
<b>Other informations</b>		
Hypertension can be asymptomatic	61	16.1
Hypertension { XE "HTA:Hypertension Artérielle" }is not communicable	5	1.3
Hypertension is diagnosed by a device placed on the arm { XE "HTA:Hypertension Artérielle" }	377	99.2
Hypertension requires long-term treatment	314	82.6
Hypertension requires follow-up by a health-worker	351	92.4
Maximum duration of anti-hypertensive drug effect is 24h	3	0.8

Data on attitudes towards hypertension among respondents are presented in table 3. Around 99.2% of respondents considered that hypertension is a serious disease and that it is important to monitor blood pressure regularly (99.5%). According to their opinion, compliance with hygiene rules can help blood pressure control. However, 97.6% have declared that hypertension can be linked to a spell.

Among the 380 respondents, 341 (89.7%) had good attitudes towards hypertension. The mean score was  $5.9 \pm 0.6$  with extremes of 1 and 8.

### 4.3. Practices of Respondents towards Hypertension

Only half of the respondents (50.1%) were aware of their status and stated that they had a history of raised blood pressure. Among them, 3.2% also had a history of diabetes. Among the 191 respondents who knew they were hypertensive, 110 (59.6%) were taking medication prescribed by a health worker. About half (53.4%) of known and treated hypertensive regularly took their treatment.

Data on hypertension practices among respondents are presented in table 4. Near a tenth of the respondents (8.2%) smoked. About two-thirds of them (59.5%) had an insufficient consumption of fruits and vegetables and a near a fifth (16.3%) had a low physical activity practice. The majority did not have a health notebook (93.7%) nor a follow-up appointment with a health worker (98.4%).

Only 10 (2.6%) had good practices towards hypertension in the sample. This frequency represented 5.2 % of 191 hypertensive who knew their status. The mean score of practices was  $5.7 \pm 1.6$  with extremes of 2 and 6.

### 4.4. Link between Sociodemographic Factors and KAPs

The study didn’t show a significant association between sociodemographic factors and knowledge nor between sociodemographic factors and practices.

**Table 3.** Evaluation of attitudes towards hypertension among respondents, Tanvè (Benin) 2018

	Total=380	%
Hypertension is a serious condition	377	99.2
Hypertension can be linked to a spell	371	97.6
Hypertension can be favored by life style	378	92.1
Blood pressure measurement is important	370	99.5
Compliance with hygiene rules prevents hypertension	376	97.4
Compliance with hygiene rules contributes to the control of blood pressure in patients	367	98.9
Regular use of antihypertensive drugs normalizes blood pressure	367	96.6
It’s important to continue treatment even when the blood pressure is normalized	17	4.5

**Table 4.** Evaluation of practices towards hypertension, among respondents, Tanvè (Benin) 2018

	Total=380	%
Tobacco consumption ( $\geq 1$ cigarette during 12 last months)	31	8.2
Low physical activity ( $< 150$ minutes of moderate physical activity / day)	62	16.3
Low fruits and vegetables consumption ( $< 5$ portions or 400 g / day)	226	59.5
Excessive alcohol intake ( $\geq 2$ standard drinks/ day)	12	3.2
Excessive soda consumption ( $\geq 1$ bottle or 330 ml of soda/day)	69	18.2
Adding salt at the table in the meal (often)	260	68.4
Too salty meal consumption (often)	352	92.6
Irregular blood pressure measurement ( $< 2$ times / year)	203	53.4
Irregular follow-up by a health worker ( $< 1$ time / year)	335	88.2
Lack of follow-up appointment	374	98.4
Lack of health book	356	93.7
Irregular blood sugar measurement ( $< 1$ time/year)	163	42.9

## 5. Discussion

This study was carried out in rural area, in a sample of hypertensive patients of average age around 52 years and predominantly female. Overall, it shows low levels of knowledge and practices towards hypertension despite a good perception of the disease. It is difficult to compare the studies available on the KAPs in hypertensive patients between them because of the methodological differences and data variability. However, most data in the literature showed that whatever the approach used, the levels of knowledge and practices towards hypertension were not optimal [14–19].

The results agree with those previously observed in a rural peripheral health center of south-western Benin where only 21.9% of hypertensive patients had a good knowledge relating to their condition. Among the patients aware of their status, 54.8% didn't follow any dietetic measures and 74.1% didn't take medications [12]. Studies in Benin urban environments could show better results. A significant association between good knowledge relating to hypertension and urban residence has been noted in Ethiopia [19, 20].

Higher frequencies of good knowledge were estimated among hypertensive patients in a Nigerian rural hospital in 2014 (47.1%) as well as in two specialized hospitals in Ethiopia in 2019 (48.6% by Bacha et al. and 51.7% by Mekonnen et al.) [19–21]. On the other hand, lower frequency (14.0%) was reported in Cameroon, among 221 hypertensive patients in the Bamenda health district in 2015 [22]. Similar studies in other regions showed various

results from 25.2% in Iran, 41.2% in India, 62.0% in Pakistan, 69.9% in Sri-Lanka, to 82.3% in Brazil [23–27]. In USA, Oliveira et al. had reported in 2004 among 826 patients that most of them had good knowledge: 81.8% knew the meaning of the term of hypertension, 70.2% how dangerous hypertension is for health and 90.2% knew lowering high blood pressure would improve the health [28]. Almost all (91.2%) were aware of their status [28]. Several reasons could explain the differences. People living in high income countries as the USA have higher levels of school education, more access to the media and health education program than those living in low income countries, which could improve their knowledge relating to hypertension.

High salt intake is widely known in our sample as hypertension risk factor. This finding suggests a good acceptability of possible interventions for salt reduction in the target population.

Contrary to this study, poor attitudes towards hypertension were noted among hypertensive patients by Bacha et al. in Ethiopia in 2019 (48.6% in St Paul's hospital, Addis-Ababa) and by Bollampally et al. in India in 2016 (53.8% in Ghandi hospital) [19, 24]. Positive attitudes towards life style modifications (99%) were rather reported in Nigeria (Kano teaching hospital) in 2017 [29].

Regarding good practices, higher frequencies were estimated among hypertensive patients in hospital-based studies in Ethiopia (20.3% and 49%) and in India (41.2%) [14, 15, 29]. Iloh et al. had reported low adherence of life style modification in Nigeria in 2014 (20.3%) while Dejene and Rathore indicated the opposite in Ethiopia in 2017 (61.4%) [30, 31].

We didn't find any link between socio-demographic factors and KAPs. A larger sample could show significant associations. A significant link between educational level and knowledge towards hypertension was described in other studies in Ethiopia and Iran [15, 17].

This study was carried out in community among hypertensive screened people, informed of the results of blood pressure measurements. Over half of them have uncontrolled blood pressure. These people had received advice, directives and even prescriptions. However, about 50% said they had no history of raised blood pressure. Communication on the result should be improved during hypertension screening campaigns. We observed higher proportion of smoking (8.2%) than that reported in the general population in Benin (5%) [11]. Health monitoring and taking medication were irregular in more than half of the respondents who recognized that they were hypertensive. This situation does not promote blood pressure control in these patients. In view of these results, it is necessary to conduct a continuous awareness of hypertensive patients and to provide them support (implementation of support group, patient associations) in the management of hypertension. The implementation of

therapeutic education program appears relevant in the studied population.

This study fills the information gap on the KAPs among hypertensive screened in the TAHES cohort in rural area. It will allow setting up local adapted interventions to their behaviour change. The sample was recruited from the community; the assessment of knowledge was broader (based on 24 items) and concerned all the respondents.

The study is based on statements. Information bias (memorization bias, social desirability bias) may have influenced the results. However, they were downplayed by the standardization of questions and the neutrality of investigators who were not health workers.

## 6. Conclusions

This study shows a low level of knowledge relating to hypertension and inadequate practices for secondary prevention. Interventions aimed at providing correct information on hypertension and support to hypertensive patients for the adoption of good behaviours would be effective in the target population. These interventions could also be relevant among hypertensive patients in others African rural areas with similar characteristics.

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