

(RESEARCH ARTICLE)



Knowledge, attitude and practice of hypertensive patients in a rural area in Sudan

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International Journal of Scholarly Research in Medicine and Dentistry, 2024, 03(01), 001–007

Publication history: Received on 03 June 2024; revised on 12 July 2024; accepted on 15 July 2024

Article DOI: <https://doi.org/10.56781/ijsrmd.2024.3.1.0030>

Abstract

Background: Hypertension (HTN) is the leading cause for cardiovascular morbidity and mortality worldwide. HTN is considered as a hidden epidemic in middle and low income countries like Sudan and has huge burden on the health system. Knowledge is an important prerequisite for an individual to implement behavioural changes towards the control of HTN and prevention of its complications. The objective of this study was to assess the knowledge, attitude and practice of populations in a rural area in Sudan towards HTN.

Materials and Methods This was a community-based cross-sectional study, conducted in February -March 2023 among the population of a rural area in Gezira state in central part of Sudan. A structured interviewer-administered; questionnaire was used for data collection, it included demographic data, and relevant clinical data was collected. The total number of participants in this study was 130 both hypertensive and non-hypertensive individuals. Operational definitions and Likert scale was used to compare the variables.

Results: 63.0% of participants have good basic knowledge of hypertension, 89.4 % of them have good attitude towards HTN and 80.4% of the study participants have good practices towards control of hypertension. There was significant association between being hypertensive and level of knowledge regarding: causes, symptoms, risk factors, P-value, 0.005, 0.05, 0.01 respectively.

Conclusion The results stated that there was adequate knowledge ab There was significant association between being hypertensive and level of knowledge regarding: causes, symptoms, risk factors, P-value, 0.005, 0.05, 0.01 respectively.

out hypertension, as well as attitude and self-care practice towards control of hypertension among the participants. These findings suggest that there is a high level of awareness and proper management practices among the community, although there is still room for improvement, particularly in understanding the role of smoking as a risk factor for hypertension and the need for proper follow-up and adherence to medication even in the presence of side effects.

Keywords: Hypertension; Knowledge; Attitude; Practice; Rural area; Sudan

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1 Introduction

The Eighth Joint National Committee (JNC 8) on the management of hypertension in adults, defined hypertension as persistent systolic blood pressure level of 140 mm Hg or diastolic blood pressure of 90 mm Hg, it could be primary or secondary. The majority, (95%), of hypertensive patients have primary hypertension (1). Hypertension is a major health problem worldwide that has been identified as the leading global risk factor for mortality and the third leading global risk factor for disease burden (2). The worldwide prevalence of hypertension in 2000 among adults aged 20 years and older was approximately 26.4%, around 972 million people, with 639 million of them in economically developing countries. The number of adults with hypertension was estimated to increase by 60% and expected to be 1.56 billion in 2025. Most of this rise will be in economically developing countries. 50% of patients with uncontrolled blood pressure will develop cerebrovascular complications such as stroke, renal failure, myocardial infarction, and death, compared to patients with controlled blood pressure (2). Because non-communicable diseases (NCDs) have been largely prevalent according to WHO, the foundation value of health promotion from the Ottawa Charter should be fully implemented. These consist of professional health education, health promotion, including knowledge-based practice (3). If patients understand the importance of lifestyle behaviour, this will lead to achieve good hypertension control (4). Health education of patients with hypertension will reduce risk factors and prevalence of cardiovascular disease (5). Although effective therapy for hypertension is available, the achievement of good blood pressure control is not satisfactory. For this reason, patient knowledge and attitude towards blood pressure control is essential (6). Although multiple drugs for the treatment of hypertension are available in Sudan, control of blood pressure in patients with hypertension is not achieved, because therapeutic lifestyle changes are minimally utilised (7). Proper patients' knowledge and attitudes towards hypertension will help them to be adherent to the available healthcare but this is not clear in Sub-Saharan Africa (8). In high income countries, patients have high level of knowledge and so control of high blood pressure by self-monitoring and titration of medication is helpful in better blood pressure control. While in low and middle income countries, there is health literacy related to hypertension in addition to the lack of self-monitoring of blood pressure which is affected by resources and availability of proper health care (9). Hypertension and other cardiovascular diseases became a major health problem in developing countries because of the socioeconomic changes including obesity, change of type of food by eating unhealthy diet and sedentary lifestyle in addition to smoking and alcohol consumption (1). In order to reduce the burden of hypertension on the health system, a great benefit will be gained by recruitment of community partners and health care providers to disseminate health education which will help to increase the awareness and the prevention of cerebrovascular diseases resulting from hypertension (5). Educational campaign is one of the efforts by which the rate of hypertension can be reduced in community (10). Hypertension cases in Sudan are increased over the past few years (11). Knowledge about hypertension is important for an individual with HTN in order to implement behavioural changes towards the prevention and control of his illness. There is no study to assess the level of knowledge and attitude of hypertensive patients in our area (Gezira state). The objective of this study was to assess the knowledge, attitude and practise of both non hypertensive and hypertensive patients in a rural area in Gezira state in Sudan.

2 Materials and Methods

This study utilized a community-based cross-sectional design to assess the knowledge, attitude and practice (KAP) of the populations (both hypertensive and non-hypertensive) in a rural area in Gezira State, Sudan. The cross-sectional design was chosen to provide a snapshot of the current state of KAP among the target population at a specific point in time, allowing for the identification of key areas needing intervention. It was conducted in February-March 2023 among the population of a rural area in Gezira State in Sudan. The area was Safia and Katfia which were villages in Gezira state in central part of Sudan with a population primarily engaged in agriculture. The study focused on adult residents diagnosed with hypertension, as well as a control group of non-hypertensive individuals for comparative purposes. In order to collect data, the researchers used self-developed questionnaire based on previous studies and adapted to the local context; it was filled by interviewers who were medical students (batch 40) from University of Gezira during their rural residency programme in Safia and Katfia. The questionnaire consisted of four domains including: first domain about demographic data including age, gender, marital status, job status (employee, unemployed, housekeeper, retired), education status (illiterate, elementary, intermediate, high school, diploma, associate degree, bachelor). The second third and fourth domains were questions regarding, knowledge, attitude and practice towards HTN, respectively. The questionnaire was pre-tested in a similar setting to ensure clarity and cultural appropriateness. Adjustments were made based on feedback from the pre-test. All adults aged 18 years and older were invited to participate. Hypertensive status was confirmed based on self-reported medical history.

2.1 Data Analysis

Data were entered into SPSS version 20 for analysis. Descriptive statistics, including frequencies and percentages, were used to summarize demographic characteristics and KAP levels. Chi-square tests were employed to examine associations between demographic variables and KAP outcomes. A p-value of <0.05 was considered statistically significant.

2.2 Ethical Considerations

Ethical clearance was obtained from the Faculty of Medicine, University of Gezira Ethical Committee. Verbal informed consent was obtained from each participant prior to data collection. Participants were assured of the confidentiality of their responses and their right to withdraw from the study at any time.

3 Results and discussion

The total number of participants in this cross sectional community based study was 130 individuals. Females were 76 (58.5%), males were 54 (41.5%). The majority were in the age group (45-59) years, 43 (33.1%), (Table 1). The age distribution is shown in table (1). Regarding family income, 40 (30.7%) had low income, 20 (15.4%) middle income, 7 (5.4%) had high income and 63 (48.5%) did not indicate their income. 99 (76.2%) had hypertension and 31 (23.8%) were not hypertensive. Out of those who were hypertensive (99), females were 57 (57.6%) and males were 42 (42.4%). This was similar to the study conducted in Khartoum (capital of Sudan) by Ahmed Ali Abdalla in 2022 where hypertensive females were more than males (54.5%) with 58% in the 55- to 70-year age group (7) and also similar to the study done by Fawzi A Babiker et.al in Sudan where 82% of participants were hypertensive (11). In a study carried out in China the prevalence of hypertension was 48.5%, less than this study (12). The rise of the prevalence of HTN is due to change in lifestyle of villagers in addition to the presence of other risk factors for HTN.

Table 1 Age distribution in study population

Age in years	Frequency	Percent (%)
15-29	31	23.8
30-44	26	20.0
45-59	43	33.1
60-74	28	21.5
75	2	1.5
Total	130	100.0

89 (89.9%) of the hypertensive patients were compliant to medication, where 10 (10.1%) were not. 75 (78.2%) had regular follow up with their physician while 24 (24.2%) had no regular follow up. 37 (37.4%) had complication due to hypertension and 62 (62.6%) had not.

3.1 Regarding knowledge towards HTN

90 (69.2%) participant had the right answer about the definition of high blood pressure. 73 (59%) knew the possible cause of hypertension, 124 (95.4%) knew that HTN is a chronic disease. 106 (81.5%) answered excessive salt is a risk factor for HTN while only 12 (9.2%) knew that smoking is a risk factor for HTN. 121 (93%) answered correctly that stress may raise blood pressure (Figure 1). Regarding investigations for HTN 56 (43.1%) answered no need for investigations, 74 (56.9%) answered correctly. Knowledge about the possible complications of HTN was answered correctly by 80 (61.5%) regarding myocardial infarction as a possible complication of HTN and 47 (36.2%) renal failure as a possible complication of HTN. 89 (68.5%) knew the correct medication group for HTN while 17 (13%) answered that there was no medication for HTN. The overall net result regarding knowledge was that 63.04% have good basic knowledge about HTN. These findings suggest that there is a high level of awareness and proper management practices among the community.

The above results were similar to the study conducted in Sudan by Ahmed Ali Abdalla, regarding use of excessive salt may increase BP, 93.8% knew this fact (7). It was also similar to a study done in China where the knowledge towards complications and risk factors of hypertension was adequate (12). It was also similar to a study done in southern east

of Nigeria where participants had good knowledge regarding physical activity and its role in control of BP (4). Another study conducted in Ethiopia revealed that 67.7% of participants were knowledgeable (13). It was unlike the results of Dawit Bacha and Hailu Abera which was conducted in Ethiopia where good basic knowledge of HTN was found only in 48.6% of participants (1). The findings regarding knowledge in study were not similar to a study conducted in Nigeria where the Knowledge regarding the possible complications of hypertension was very poor where 58.9% of the participants scored less than average and only 41.1% were aware that excessive salt intake could adversely affect the control of hypertension (14). The level of knowledge in this study was similar to the study conducted by Taye Kebede et.al at Yekatit 12 General Hospital in the largest city of East Africa which revealed that the level of knowledge was 67.7% (15). One study carried out by K L Khoo in Malaysia showed a higher level of knowledge among participants than this study where were 94% aware of the importance in controlling HTN (16).

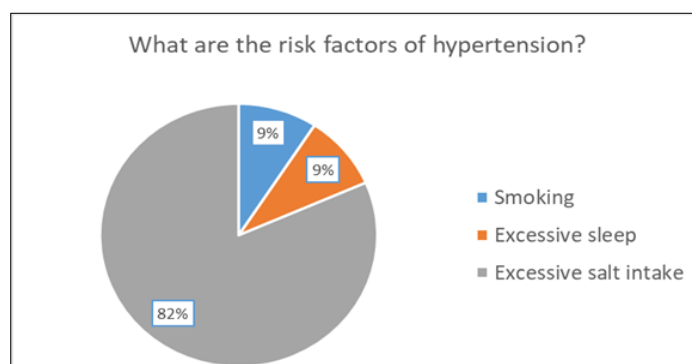


Figure 1 The knowledge of risk factors of HTN according to participants' ideas

3.2 Regarding attitude towards HTN

69 (53.1%) of participants strongly agreed that hypertensive patient needs to take medication, 48(44.6%) agreed and 3 were neutral (Figure 2). 67 (51.5%) strongly agreed that hypertensive patients need to decrease salt intake 58 (44.6%) agreed, 2 (1.5%) were neutral, 2 (1.5%) disagreed and 1 (0.8%) strongly disagreed. 43 (33.1%) strongly agreed that hypertensive patients need to do regular exercise, 57 (43.8%) agreed, 19 (14.6%) were neutral, 11 (8.5%) disagreed. 52 (40%) strongly agreed that fresh vegetables and fruits are important for hypertensive patients' meals, 74 (56.9%) agreed, 4 (3.1%) were neutral. 60 (46.2%) strongly agreed that hypertensive patients need to periodically check up with doctors, 65 (50%) agreed, 3 (2.3%) were neutral, 1 (0.8%) disagreed and 1 (0.8%) strongly disagreed. 42 (32.3%) strongly agreed that smokers need to regularly measure their blood pressure, 57 (43.8%) agreed, 23 (17.7%) were neutral, 7 (5.4%) disagreed and 1 (0.8%) strongly disagreed. 39 (30%) strongly agreed that diabetic patients need to regularly measure their blood pressure, 73 (56.2%) agreed, 11 (8.5%) were neutral and 7 (5.4%) disagreed. The end result regarding attitude was that 89.4% exhibit a good attitude towards hypertension management. This good attitude towards HTN may be explained by good community awareness about HTN and may be in part attributed to the role of faculty of Medicine in implementing rural residency courses in the villages of Gezira state.. This was in contrast to the results of the study of Dawit Bacha and Hailu Abera which was conducted in Ethiopia and showed that 47.8% of participants have good attitude towards HTN (1). Another study conducted in Ethiopia showed that 54.0% had favourable attitude towards lifestyle modification (13). The result regarding attitude towards HTN is not similar to the study conducted by Taye Kebede et.al at Yekatit 12 General Hospital in the largest city of East Africa which showed that 54.0% were reported to have good attitude towards lifestyle modification (15).

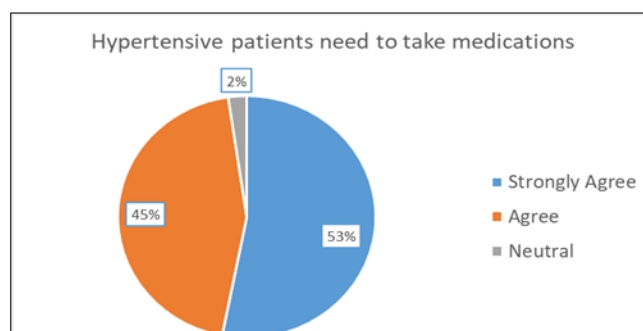


Figure 2 Attitude of participants towards the need to take medication

3.3 Regarding practice towards HTN

38 (29.2%) strongly agreed that hypertensive patients need to go to the hospital if they experience acute headache, 78 (60%) agreed, 7 (5.4%) were neutral and 7 (5.4%) strongly disagreed. 38 (29.2%) strongly agreed that regular follow up with their physician is important, 84 (64.6%) agreed, 2 (1.5%) were neutral 5 (3.5%) disagree and 1 (.8%) strongly disagree. 14 (10.8%) strongly agreed that if hypertensive patients experienced side effects from the medications they should stop it, 54 (41.5%) agreed, 25 (19.2%) were neutral, 31 (23.8%) disagreed and 6 strongly disagreed (Figure 3). 36 (27.7%) strongly agreed that if they were hypertensive patients and hadn't taken the medications they would have a desire to do so, 88 (67.7%) agreed, 2 (1.5%) were neutral, 4 (3.1%) disagreed. 26 (20%) strongly agreed that if they were hypertensive patients taking one medication but still had a high blood pressure they can take another one, 70 (53.8%) agreed, 19 (14.6%) were neutral, 14 (10.8%) disagreed, 1 (0.8%) strongly agreed. 13 (10%) strongly agreed that if they had doubts about the efficacy of the medication they would stop it, 46 (35.4%) agreed, 32 (24.6%) were neutral, 36 (27.7%) disagreed and 3 (2.3%) strongly disagreed. 55 (42.3%) strongly agreed that avoiding risk factors like decreasing salt intake and avoiding smoking is useful for maintaining normal blood pressure, 70 (53.8%) agreed, 1 (0.8%) disagreed and 4 (3.1%) strongly disagreed. 53 (40.8%) strongly agreed that the complications of hypertension medications should be reported to the doctor, 73 (56.2%) agreed and 4 (3.1%) disagreed. The overall result of participants practice towards good self-care in management of hypertension was 80.4%, which may be explained by the result of good knowledge among participants. This was unlike the results of the study that conducted by Dawit Bacha [1] and Hailu Abera in Ethiopia where 39.5% of the study population had good practice towards control of hypertension (1). In another study conducted in Ethiopia respondents had good practices (38%) (14). The poor practice levels in these studies contrast with findings from high-income countries, where patients generally have higher levels of health literacy and better self-care practices. For instance, in high-income settings, self-monitoring and medication titration are more common, leading to better blood pressure control (4). The result regarding practice towards HTN in this study is unlike the results of the study conducted by Taye Kebede et.al at Yekatit 12 General Hospital in the largest city of East Africa which showed that only 38 % were reported to have good practices (15). This difference underscores the impact of socioeconomic factors and healthcare infrastructure on hypertension management practices. It is important to improve health literacy and self-care practices among hypertensive patients to mitigate the burden of cardiovascular diseases in Sudan.

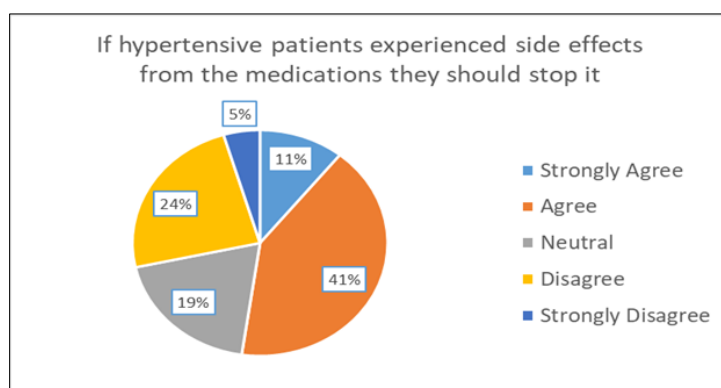


Figure 3 Practice of participants towards stopping of medication in case of side effects

3.4 Associations

There was significant association between HTN age of the patient, sex and low-income and being hypertensive, P-value, 0.00 in all of them.

There was significant association between being hypertensive and level of knowledge regarding: causes, symptoms, risk factors, P-value, 0.005, 0.05, 0.01 respectively.

No significant association in knowledge between hypertensive and non-hypertensive regarding definition of HTN, complications of HTN, taking medication for HTN, regular follow up with physician, decrease salt and regular physical exercise, P-value, 0.43, 0.20, 0.70, 0.65, 0.37 and 0.083 respectively.

The study highlighted significant associations between demographic factors (age, sex, and income) and hypertension. Specifically, males and individuals with formal education, were associated with better knowledge, attitude, and self-

care practices. This finding is consistent with other studies indicating that higher educational levels and urban residency are linked to better health outcomes (1,4,13 &14).

4 Conclusion

This study highlights a significant level of knowledge, positive attitude, and good practices towards hypertension management among participants. These findings suggest that there is a high level of awareness and proper management practices among the community, although there is still room for improvement, particularly in understanding the role of smoking as a risk factor for hypertension and the need for proper follow-up and adherence to medication even in the presence of side effects. The study's results are consistent with findings from similar studies conducted in Sudan and other countries, indicating that public health interventions and education programs are effective in improving hypertension management.

Recommendations

- **Educational Campaigns:** Implement targeted health education programs to raise awareness about hypertension and its management, especially about smoking as risk for hypertension and other cerebrovascular diseases.
- **Healthcare Access:** Improve access to healthcare services and regular follow-ups for hypertensive patients, especially in rural areas.
- **Community Engagement:** Engage community partners and healthcare providers in disseminating information and supporting hypertension management.

Limitations

- The study had several limitations. First, the cross-sectional design does not allow for the establishment of causality. Second, self-reported data may be subject to recall bias and social desirability bias. Third, the study was conducted in a specific rural area, which may limit the generalizability of the findings to other regions.
- Despite these limitations, the study provides valuable insights into the KAP of hypertensive patients in rural Sudan and highlights the need for targeted health education and intervention programs.

Compliance with ethical standards

Acknowledgments

The authors would like to thank all the participants from Safia and Katfia and all the medical students from batch 40/ Faculty of Medicine/ University of Gezira (FOUOG) for their help in data collection. Special thanks to Professor Salwa Elsanousi and the department of Family and Community Medicine FOMUOG and the administrators of FOMUOG, especially the dean of the faculty.

Disclosure of conflict of interest

All authors have no conflict of interest

Statement of ethical approval

Ethical approval was obtained from faculty of Medicine, University of Gezira ethical committee.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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