# Management Practices for the Care of Patients with Hypertension in the Blantyre District of Malawi: A quantitative cross-sectional design

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## Abstract

**Background:** Hypertension (HTN) is a global public health problem, requiring a holistic management approach of drug therapy and lifestyle modifications to achieve better treatment outcomes. The study aimed to assess the current management practices amongst healthcare professionals (HCPs) managing patients with hypertension (HTN) in Malawi's Blantyre district.

**Methods:** A quantitative cross-sectional design using a self-administered questionnaire with sections for socio-demographics, statements about management practices, and HCPs' habits in promoting lifestyle modification was used. Data was analysed using STATA version 14.2. Descriptive statistics were employed, and socio-demographic characteristics are presented using frequencies and percentages. The associations between categorical variables were tested using the Chi-square test at an alpha level of 0.05.

**Results:** Sixty-seven HCPs, 37 females (55.2%) and 30 males (44.8%) participated in the study, with the majority (n = 42 [62.7%]) aged between 25- 34, with a statistically significant relationship between gender and the profession (p=0.012). Nearly half (n=33 [49.3%]) had a diploma. Almost 50% (n = 32) had less than 5 years of work experience. Most (n=46 [69.7%]) reported challenges in diagnosing HTN, and a lack of treatment guidelines (n=36 [59%]). Dietary counselling was provided by 90.8% (n = 59) of the HCPs.

**Conclusion:** Healthcare professionals reported several challenges in the management of hypertension in Malawi's Blantyre district, including a lack of treatment guidelines, inconsistencies in implementing lifestyle change strategies and knowledge gaps in the management of HTN.

**Clinical implications:** There is a need to equip healthcare professionals involved in HTN management with knowledge about the disease and the importance of lifestyle modification strategies. Also, the HTN-specific treatment guidelines should be available in all health facilities in the district.

***Keywords*:** *Hypertension, Management, Practices, Blantyre, Malawi*

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## Introduction

Hypertension (HTN) is a major risk factor for cardiovascular disease (1,2). The increased prevalence imposes a significant socio-economic burden on society, necessitating concerted measures to control the disease (3,4). Medication therapy has been the mainstay of treatment to decrease HTN. However, without lifestyle modifications, it is difficult to control it (5).

Therefore, the World Health Organisation (WHO) recommends integrated care, including medication and lifestyle modifications (6). Weight loss, increased physical activity (PA), alcohol reduction, smoking cessation, and a healthy diet are considered effective lifestyle interventions to

manage HTN (7) and should be implemented throughout the HTN care process (8). Education on the risk factors and HTN complications should also be provided to promote patients' self-management (9,10).

Patient-centred care is crucial to achieving the treatment goal. The healthcare professionals (HCPs) should ensure that patients understand the treatment goal (8). This makes them compliant, resulting in better treatment outcomes (9).

A resilient healthcare system with adequate resources is also essential for effective HTN management (11,12). A weak system compromises the quality of care, leading to poor health outcomes (13).

The WHO's report on capacity assessment for NCDs management highlights a disparity in managing HTN between low and high-income countries (14). This is attributed to socio-economic inequalities, which make poor countries fail to develop appropriate treatment programmes (15). For example, 72% of developed countries in Europe reported implementing PA, and 77% reported implementing dietary programmes. In low-income countries, primarily in Africa, 26% and 36% reported implementing PA and diet change (14). Only 39% of low-income countries had essential medication for HTN, while 74% could not implement HTN treatment procedures such as dialysis, transplantation, and thrombolytic therapy due to a lack of capacity; in stark contrast to more than 75% of developed countries that implemented these procedures. Furthermore, in most low-income countries, cheaper medications were prescribed as opposed to high–income countries (16). Similarly, Malawi's health system faces several obstacles, including a lack of essential medication for HTN, equipment and adequate staff (17). This delays treatment after diagnosis, making HTN control impossible (18). Consequently, unguided management approaches result in delayed clinical outcomes and misperception about the disease (18). In Malawi, due to a paucity of information, little is known about HTN management approaches. Thus, this study investigated the HTN management practices of HCPs in Malawi's Blantyre district.

## Materials and Methods

### Study design

A quantitative cross-sectional design was used, which is appropriate for gathering data at a single point in time (19). The setting included all health facilities located in the district, both in rural and urban areas. There were 31 health centres and five hospitals (20).

### Study population

The population was all healthcare professionals (HCPs) working at the 36 healthcare facilities. One health centre was located in a prison, and permission to access the facility was not granted; hence, it was excluded from the study. The target was HCPs whose daily routines were to care for patients with hypertension.

### Sampling and sample size

With the assistance of the manager in charge of the facilities, 93 HCPs involved in the routine management of HTN were identified from 30 health centres. A total of 22 HCPs were identified from the five hospitals. Therefore, employing an all-inclusive convenient sampling (21), approximately 115 HCPs, including physicians, clinical officers, medical assistants, nurses, physiotherapists, rehabilitation technicians and dieticians qualified to participate in the study. Medical assistants in the Malawian context are primary healthcare providers with a 2-year training in clinical medicine, mostly diagnosing and managing patients at the health centres and promoting healthy living through enjoyment in physical activity. Physiotherapists and Rehabilitation Technicians provide rehabilitation services to patients with specific

needs, nurses provide nursing care, and a dietician's role is to advise on healthy eating behaviour. After inviting the eligible HCPs, 67 responded, representing a 58% response rate.

### Data collection instrument

A self-administered HCP questionnaire adapted from previous questionnaires (22,23) was used. Content validity was ensured by experts in the field reviewing whether the instrument measured the constructs of interest (24), and face validity was determined by a pilot study on 10 HCPs. Revisions were made as needed. The test-retest reliability technique of the developed questionnaire revealed 0.9 alpha level, suggesting substantial stability of the instrument. Section A contained socio-demographic information, and Section B contained questions on management practices such as HTN diagnosis, use of treatment guidelines, patient involvement, and advice on lifestyle modifications. Section C, the Physical Activity Exit Interview (PAEI) scale, included 12 questions on whether HCPs discussed PA with patients (22). The scale uses a 5-point Likert scale ranging from never = 0% to always = 100%. Data were analysed using STATA version 14.2. For categorical data, bivariate analysis was performed using Chi-square tests at 0.05 Alpha level.

### Ethics consideration

Ethical clearance was obtained from the University of the Western Cape and the College of Medicine with certificate numbers BM/16/3/22 and P.01/17/2104. All participants voluntarily participated and signed an informed consent form. To maintain the confidentiality of study data, codes were used instead of names, and questionnaires safely secured.

## Results

### Socio-demographic characteristics

Sixty-seven healthcare professionals (HCPs) participated in the study, with n = 37 (55.2%) females, and 42 (62.7 %) aged between 25 and 34. The highest academic qualification for most participants, n = 33 (49.3%), was a diploma. Almost half (n = 32 [47.8 %]) had less than 5 years' work experience, and 53 (79.1%) worked in public health facilities, primarily in urban areas (n=43 [64.2%]). The gender and work cadre had a statistically significant association (p =0.012). There was no statistically significant relationship between gender and age, education, or location of health facility (p>0.05). (Table 1).

### Practices and approaches to management

Participant practices on the use of HTN treatment guidelines, multidisciplinary team care, and whether they received specific training on hypertension regarding diagnosis and treatment, were investigated. One participant did not respond to questions 1, 2 and 3. Six did not respond to question 4.

The results showed that 86.4% (n=57) had no training specific to HTN management, and 69.7% (n=46) were not trained to diagnose HTN. Although almost two-thirds of the HCPs (n=42 [63.6%]) were aware of the recommended HTN treatment guidelines, 36(59.0%) reported unavailability of these guidelines at their health facilities, while 16 (26.2%) reported their availability. (Table 2).

### Engaging patients in the care process and using guidelines

Discussing treatment goals and encouraging patients to inquire about their disease was implemented by 9 of 16 (56.3%) who indicated the availability of the guidelines in their facilities. Twenty-eight (42.4%) indicated sometimes, and 26 indicated always (39.4%) discussing treatment goals with patients. Two (3.0%) never discussed, while 40 (59.7%) encouraged patients to inquire about their disease. (Table 3).

### Using a multidisciplinary care approach

Nurses 56 (83.6%) and medical assistants 54 (80.6%) were often included in the team care.

Occupational therapists were the least involved (n=3 [4.5%]) (Table 4).

## Approaches to addressing lifestyle habits

Lifestyle habits (i.e., smoking, diet, physical activity and alcohol consumption) were discussed by HCPs at the first consultation. the dietary habits were mostly addressed (n= 51 [77.3%]), followed by smoking and alcohol consumption with equal proportions (n= 48 [72.7%]). The physical activity habits were the least inquired (n=33 [50.1%]), and the advice to modify lifestyle was mostly on a healthy diet (n = 59 [90.8 %]), followed by advice on smoking cessation (n = 54 [81.5%]). (Figure 1).

**Table 1:**
*Demographic Characteristics of Participants by Gender (n=67)*

| Variable | Male (n=30) | Female (n=37) | Total (N=67) | p value |
|---|---|---|---|---|
| Age group (yrs.) | | | | 0.131 |
| 15-24 | 1 (3.3%) | 5 (13.5%) | 6 (9.0%) | |
| 25-34 | 23 (76.7%) | 19 (51.4%) | 42 (62.7%) | |
| 35-44 | 6 (20.0%) | 7 (18.9%) | 13 (19.4%) | |
| 45-54 | 0 (0.0%) | 3 (8.1%) | 3 (4.5%) | |
| 55-64 | 0 (0.0%) | 2 (5.4%) | 2 (3.0%) | |
| 65 yrs. and older | 0 (0.0%) | 1 (2.7%) | 1 (1.5%) | |
| Cadre | | | | 0.012* |
| Physician | 1 (3.3%) | 0 (0.0%) | 1 (1.5%) | |
| Nurse | 8 (26.7%) | 22 (59.5%) | 30 (44.8%) | |
| Physiotherapist | 0 (0.0%) | 1 (2.7%) | 1 (1.5%) | |
| Clinical officer | 4 (13.3%) | 5 (13.5%) | 9 (13.4%) | |
| Medical assistant | 17 (56.7%) | 6 (16.2%) | 23 (34.3%) | |
| Dietician | 0 (0.0%) | 2 (5.4%) | 2 (3.0%) | |
| Rehabilitation techs | 0 (0.0%) | 1 (2.7%) | 1 (1.5%) | |
| Education qualification | | | | 0.358 |
| Certificate | 16 (53.3%) | 14 (37.8%) | 30 (44.8%) | |
| Diploma | 12 (40.0%) | 21 (56.8%) | 33 (49.3%) | |
| Bachelor degree | 1 (3.3%) | 2 (5.4%) | 3 (4.5%) | |
| Master's degree | 1 (3.3%) | 0 (0.0%) | 1 (1.5%) | |
| Work experience | | | | 0.514 |
| From 5 to 10 yrs. | 11 (36.7%) | 11 (29.7%) | 22 (32.8%) | |
| Less than 5 yrs. | 15 (50.0%) | 17 (45.9%) | 32 (47.8%) | |
| More than 10 yrs. | 4 (13.3%) | 9 (24.3%) | 13 (19.4%) | |
| Type of health facility | | | | 0.094 |
| Public | 27 (90.0%) | 26 (70.3%) | 53 (79.1%) | |
| Non-public | 3 (10.0%) | 11 (29.7%) | 14 (20.9%) | |
| Location of facility | | | | 0.096 |
| Rural | 7 (23.3%) | 17 (45.9%) | 24 (35.8%) | |
| Urban | 23 (76.7%) | 20 (54.1%) | 43 (64.2%) | |

**Table 2:**
*Responses on Hypertension Training and Availability of Guidelines*

| | Question | Response n (%) | | |
|---|---|---|---|---|
| | | Yes | No | Don't know |
| 1 | Have you received extra training in HTN management? | 9 (13.6) | 57 (86.4) | - |
| 2 | Have you been trained specifically to diagnose HTN? | 20 (30.3) | 46 (69.7) | - |
| 3 | Are you aware of any recommended guidelines for HTN management? | 42 (63.6) | 24 (36.4) | - |
| 4 | Does your health facility have a HTN management guidelines? | 16 (26.2) | 36 (59.0) | 9 (14.8) |

## Health facilities in promoting lifestyle change

The effectiveness of the health facility in promoting healthy living was explored. Their responses ranged from "not effective" to "very effective." Thirty-four (51.5%) reported that their facilities were effective. Only 2 (3.0%) reported ineffectiveness. Although more than 60% (n=21) of those who reported their facility being effective were from rural areas, there was no statistically significant relationship between the facility's location and its effectiveness (p=0.235).

**Table 3:**
*Patient Engagement and the Use of Guidelines by Healthcare Professionals*

| | Question | Never n (%) | Seldom n (%) | Sometimes n (%) | Often n (%) | Always n (%) |
|---|---|---|---|---|---|---|
| 1 | Do you follow the prescribed protocol when managing patients with HTN? | - | - | 5(31.3) | 2 (12.5) | 9 (56.2) |
| 2 | Do you discuss treatment goals you want to achieve with your patients | 2 (3.0) | - | 28(42.4) | 10 (15.2) | 26(39.4) |
| 3 | Do you encourage your patients to ask questions regarding their HTN? | 1 (1.5) | - | 15(22.4) | 11 (16.4) | 40(59.7) |

**Table 4:**
*Healthcare Professionals Involved in Multidisciplinary Care*

| Cadres | Involved in multidisciplinary care | |
|---|---|---|
| | Yes n (%) | No n (%) |
| Nurses | 56 (83.6) | 11 (16.4) |
| Medical assistants | 54 (80.6) | 13 (19.4) |
| Clinical Officers | 24 (35.8) | 43 (64.2) |
| Physicians | 8 (11.9) | 59 (88.1) |
| Physiotherapists | 5 (7.5) | 62 (92.5) |
| Rehab Tech | 4 (6.0) | 63 (94.0) |
| Dietician | 4 (6.0) | 63 (94.0) |
| Occupational therapist | 3 (4.5) | 64 (95.5) |

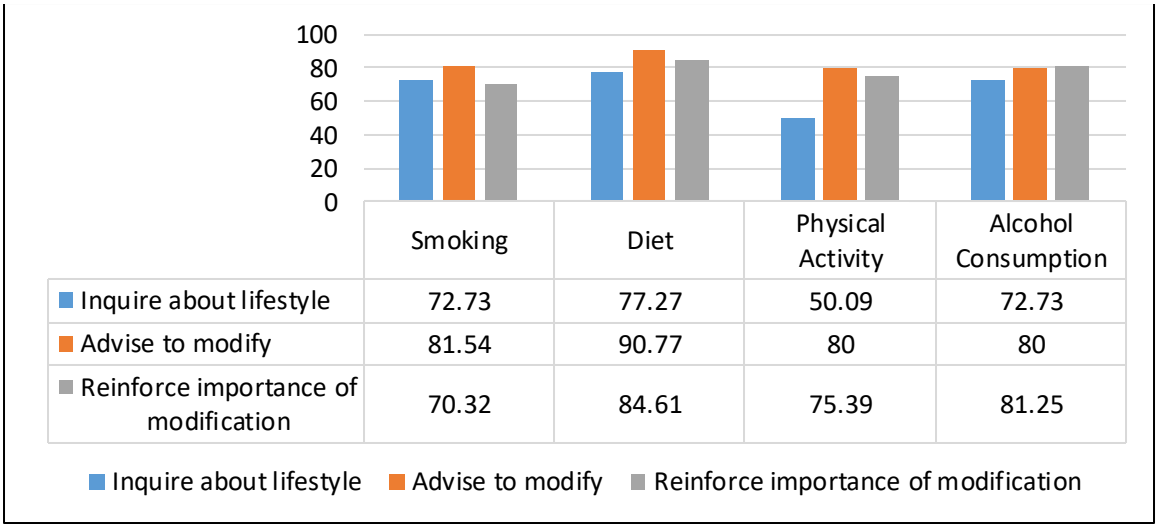


**Figure 1:**
*Healthcare Professionals' Approaches to Lifestyle Habits amongst Hypertension Patients*

Similarly, public health facilities were perceived as being more effective (n=30 [88.2%]), but there was no statistically significant difference between public and non-public facilities (p=0.344) (Table 5).

## Physical activity advice for hypertension patients

HCPs reported on their PA counselling practices for patients with HTN. The Physical Activity Exit Interview (PAEI) scale was used to assess the counselling practices, with responses from *never = 0%, seldom = 25%, sometimes = 50%, often = 75%, and always = 100%.* For ease of analysis, their responses were classified into three categories: "never," "sometimes," and "always." The responses "never" and "seldom" were combined into "never," and "often" and "always" were combined into "always." Although 62.1% of the HCPs (n = 41) always discussed the benefits of physical activity and consistently advised patients to be more physically active, Thirty-eight HCPs (59.4%) did not plan with patients to become more physically active. Alarming is the 76.6% (n = 49) who never provided written material about physical activity or exercises for patients (Table 6).

**Table 5:**
*Effectiveness of Health Facility in Promoting Lifestyle Changes (n=66)*

| | Response | | | | |
|---|---|---|---|---|---|
| **Variable** | **Very effective** | **Effective** | **Less effective** | **Not effective** | **P-value** |
| | **n (%)** | **n (%)** | **n (%)** | **n (%)** | |
| Rural | 4 (33.30) | 21 (61.8) | 10 (55.6) | 2 (100) | 0.235 |
| Urban | 8 (66.7) | 13 (38.2) | 8 (44.4) | 0 (0.0) | |
| Public | 10 (83.3) | 30 (88.2) | 18 (100) | 2 (100) | 0.344 |
| Non-Public | 2 (16.7) | 4 (11.8) | 0 (0.0) | 0 (0.0) | |

**Table 6:**
*Healthcare Professionals' Physical Activity Counselling Practices*

| | **Statement** | **Never** | **Sometimes** | **Always** |
|---|---|---|---|---|
| | | **n (%)** | **n (%)** | **n (%)** |
| 1 | Do you discuss physical activity with patients? | 4 (6.1) | 21 (31.8) | 41 (62.1) |
| 2 | Do you advise patients to become more physically active? | 4 (6.1) | 11 (16.7) | 51 (77.2) |
| 3 | Do you discuss the benefits of physical activity with patients? | 5 (7.6) | 10 (15.2) | 51 (77.2) |
| 4 | Do you discuss with patients their past experiences with physical activity? | 11 (16.9) | 24 (36.9) | 30 (46.2) |
| 5 | Do you discuss the difficult situations patients might encounter or problems they might have trying to become more physically active? | 11 (16.9) | 23 (35.4) | 31 (47.7) |
| 6 | Do you inform patients how FREQUENTLY they should exercise? | 9 (13.6) | 21 (31.8) | 36 (54.6) |
| 7 | Do you inform patients how LONG they should exercise? | 18 (27.3) | 19 (28.8) | 29 (43.9) |
| 8 | Do you inform patients how HARD they should exercise? | 18 (28.1) | 17 (26.4) | 29(45.3) |
| 9 | Do you inform patients on the TYPE of exercise they should do? | 15 (23.1) | 18 (27.7) | 32(49.2) |
| 10 | Do you and your patient put the plan to become more physically active in writing? | 38 (59.4) | 12 (18.8) | 14 (21.9) |
| 11 | Do you give any written materials about physical activity or exercise during each day's clinic visit? | 49 (76.6) | 7 (10.9) | 8 (12.5) |
| 12 | Do you tell patients that you are planning to discuss their physical activity on a future visit? | 39 (60.0) | 14 (21.5) | 11 (18.5) |

## Discussion

To the best of our knowledge, this study is the first to investigate hypertension (HTN) management practices amongst healthcare professionals (HCPs) in Malawi's Blantyre district. It investigated the practices of addressing unhealthy habits, use of treatment guidelines for HTN and multidisciplinary care. Additionally, the use of non-pharmacological strategies such as physical activity counselling when treating HTN was explored.

Nurses were 45% of the sample, followed by medical assistants (34%), and rehabilitation cadres were 6%. The highest representation of nurses and medical assistants could be because these cadres are mostly deployed in primary care settings where most health centres are located (25). The small representation of rehabilitation cadres reflects the country's acute shortage of these cadres (26).

Knowledgeable HCPs are key to an effective health system. In our study, most HCPs lacked specialised training for HTN management, concurring with findings from other studies (27,28). Lack of knowledge impedes quality care, leading to poor patient outcomes (29). In this study, 65% of HCPs reported being aware of the recommended guidelines. Ironically, 60% reported the unavailability of these guidelines in their health facilities. This implies practising without standard operating procedures. For those who reported the availability, only 31% implemented them "occasionally." The findings concur with other studies (30,31) where HCPs were aware of the HTN guidelines but lacked training on their usage, leading to inconsistent application during practice. Lack of consensus on the treatment guidelines among healthcare professionals poses a barrier to their implementation as well (32).

The lack of guidelines in most of the healthcare facilities in our study is intriguing, but not surprising, because in many developing countries, including Malawi, most facilities lack treatment guidelines (33). The HTN treatment approach is described in Malawi's universal standard treatment guidelines, which were created by the Ministry of Health (34). Perhaps this explains why most facilities in this study lack guidelines specifically for HTN. This study also explored whether patients were involved in the care of their disease. Involving patients in the care process enhances treatment compliance, leading to better treatment outcomes (35). Ironically, we discovered that 42% of HCPs rarely involve patients in formulating a care plan. This was also observed in a study conducted in Sri Lanka (36), attributed to workloads, staff shortages, and failure by HCPs to recognise patients' contributions in their care (37,38). This implies disjointed care, denying patients' right to know about the care plan.

There was a shortage of rehabilitation cadres in most health centres, making their participation in a multidisciplinary team suboptimal. Nurses and medical assistants were mostly involved in team care because they are the largest workforce in Malawi's primary care settings (25). The training of rehabilitation cadres in Malawi is fairly new, and the available few are mostly in secondary and tertiary levels of care. This could explain their shortage at the primary care level. However, even those few in higher levels of care are seldom involved in a multidisciplinary team (39), underscoring the need for a resilient multidisciplinary team care for HTN (40,41).

HCPs' practices in addressing lifestyle behaviours were investigated. Generally, the lifestyle modification strategies were not addressed comprehensively. This was also reported in South Africa, where HCPs failed to discuss lifestyle modification with the patients, despite being aware of its benefits in managing HTN (42,43). The failure is attributed to inadequate time to communicate with patients due to workload (44).

Physical activity counselling is also important in managing HTN (43). Most HCPs in this study always discussed the benefits of PA with their patients, although no written plan or home exercise program was provided to patients. Similar findings were also observed in the USA and Thailand (45,46). Although PA is associated with many health benefits (47), HCPs often fail to provide the counselling due to lack of time and knowledge of PA (48,49), underscoring the need for adequate staffing and ongoing education on health promotion strategies (50).

## Study implications

This study offered valuable information on hypertension (HTN) management practices in the Blantyre district of Malawi. The healthcare professionals rarely use treatment guidelines and lack training specific to HTN management. The findings could serve as a foundation warranting a large-scale study to explore HTN management practices broadly, leading to practice change in HTN management.

## Study Limitations

The study focused on one district with a small sample obtained by convenience sampling, which limits the generalizability of the results. There was a high non-response rate, despite the researcher sending several reminders through phone calls to the participants. Also, there was a risk of a recall bias as HCPs were asked to provide information reflecting on their practice directly.

## Conclusion

The HCPs managing patients with HTN in Malawi's Blantyre district often practice without using treatment guidelines. They lack training specifically for HTN management, which leads to different approaches in managing HTN. The continuing training for HCPs is imperative to ensure quality care.

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**Competing interest**. None

**Data set availability**. Available from the corresponding author upon request.

## Authors' contributions

- **NST** conceptualised the study, collected, analysed the data and drafted the article.
- **JSP** identified the appropriate study design, guided the analysis and reviewed and edited the article.
- **TS** reviewed the results and discussion and helped in editing.

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