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INVESTIGATING THE AVAILABILITY OF NUTRITION MANAGEMENT SERVICE FOR HYPERTENSIVE ELDERLY PEOPLE IN KHUBETSOANA AND THAMAE HEALTH CENTRES

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ABSTRACT: *Many elderly people have hypertension, and health systems are faced with the challenge of responding to the needs of this population. The availability of Nutrition Management Service (NMS) in Out Patient Department (OPD) services is one of the strategies that have the potential to control these patients' blood pressure. The study sought to investigate the availability of NMS for the hypertensive outpatient elderly in Thamae Health Centre and Khubetsona Health Centre. The study was a descriptive cross-sectional study employing both qualitative and quantitative data collection methods. NMS was found to be available in the facilities, but incomplete. Of all the patients followed, 16.2% received nutrition counseling and 9.5% received nutrition follow-up, but none of them received nutrition screening. NMS is available in the facilities but it is incomplete, due to many factors which originate from the planners' failure to plan for it.*

KEYWORDS: Availability, Nutrition Management Service, Hypertension, Elderly people.

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INTRODUCTION

Nutrition Management Service (NMS) is a preventative service comprising nutrition screening for malnutrition, followed by nutrition counseling and follow-up. Nutrition screening categorizes patients to see those who are likely to suffer from malnutrition or those who already have it so that their care may be taken to the next level of deeper assessment (Frew et al., 2010). Obesity, being one of the categories of malnutrition, is one of the factors that have a great influence on hypertension (Igbal, 2021; Eshkoor et al., 2016). The availability of the combination of these activities into existing outpatient department (OPD) services as one of the components in a package of care makes NMS accessible to the hypertensive elderly seeking care.

It has been observed that hypertension is a chronic noncommunicable disease whose risk becomes higher with increasing age (Olaitan, Fadupin & Adebiyi, 2018). According to WHO (2009), persons aged 60 years and above are identified as elderly people, and their population is increasing and predicted to increase even more in the years to come (Himmelfarb & Commodore-Mensah, 2016; Rodrigues et al., 2015). With it, there comes an increased prevalence of hypertension (Boateng et al., 2015; Neuhauser et al., 2015). Many studies have proved that hypertension is a modifiable lifestyle disease, where acquiring a normal body weight, engaging in physical activities as well as improving the diet can tremendously help put blood pressure under control (Iqbal et al., 2021). Hence, a great responsibility is put on primary health care (PHC) to take care of the chronically ill through the provision of patient-centred services (Beckingsale et al., 2016). These patient-centred services, according to the Program for Appropriate Technology in Health (PATH) (2011) respond to the health needs of patients. This means health systems have to also focus on reducing the risk factors of this disease. Thus, the importance of the availability of Nutrition Management Service (NMS) for the hypertensive elderly is seen in the management of this disease.

Globally, 1.13 billion people are affected by high blood pressure and 67% of them reside in developing countries (Egede et al., 2021). In Africa, it is anticipated that in 2030, 216.8 million people will be living with hypertension (Lebuso & De Wet-Billings, 2022). Furthermore, sub-Saharan Africa has also seen a massive increase in the number of people affected by hypertension and the consequences of its resulting outcomes like heart diseases and heightened susceptibility to other chronic non-communicable diseases and mortality (Lebuso & De Wet-Billings, 2022).

Similarly, in this devastating health status of countries, Lesotho is no exception. Hypertension remains one of the causes of patient readmissions into hospitals (Lebuso & De Wet-Billings, 2022). According to Thinyane et al. (2015), the prevalence of hypertension in Lesotho is 37.6%, and the WHO STEPS survey of 2012 made public in 2018 revealed that out of the many deaths the country saw, 1.91% of them were associated with hypertension. Therefore, hypertension is ruled as the ninth root cause of mortality globally, and so Lesotho is categorized as number 4 according to the global rankings (Lebuso and De Wet-Billings, 2022).

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LITERATURE/THEORETICAL UNDERPINNING

The availability of NMS in OPD is dependent on three different activities that must be available in facilities for patients. These activities are namely: nutrition screening, nutrition counseling, and follow-up.

Nutrition Screening

This is one of the components of NMS done in health care. It is done to identify patients who are likely to suffer from malnutrition or are already suffering from it (Frew et al., 2010). It is undertaken to find out if a patient needs a more comprehensive nutritional status assessment (Saunders et al., 2011; Charney, 2008). In OPD, nutrition screening is done by a skilled health professional, who refers patients if they need more care. Duncan et al. (2014b) and Zhao et al. (2013) argued that hypertension comes as a result of obesity, and as such, they have an opinion that reducing body weight is one of the effective therapies for putting blood pressure (BP) under control. Therefore, this means the presence of this condition in a hypertensive patient worsens the disease and increases the chances of complications. For this reason, health systems must be able to put more effort into identifying this malnutrition in patients so that proper treatment may be given to achieve desired BP levels, which will consequently improve the general well-being of these patients.

In another study, Thinyane et al. (2015) found that 80% of hypertensive patients receiving monthly care had BMI ranges above the normal range, and those whose BP was controlled constituted only 21.4% of all participants, and the rest were in high stages of hypertension. This threatens the health system because this has put patients at a higher risk of other diseases. If these patients were screened frequently, the health workers would have known about the nutritional status of their patients and intervened. These serve as evidence that suggests that nutrition screening for the treatment of these patients is very important. Health facilities that do not have nutrition screening miss an opportunity to know malnutrition prevalence in their facilities, thus depriving patients of a more comprehensive care (Frew et al., 2010). For this reason, they give their patients substandard care. In the study conducted by Bourdel-Marchasson (2010), it was emphasized that factors such as not performing screening for patients and the inability to identify malnutrition in patients have a positive relationship with an increased rate of malnourished patients.

The availability of this screening in health facilities ensures complete availability of NMS. If this service is unavailable in PHC, the services for hypertensive elderly become incomplete. When the screening has been done, the primary care service provider needs to refer the patient to a specialist if the patient needs a more comprehensive care. In other words, this service must be patient-centred, satisfying the needs of patients. Some primary health facilities in the United States screened patients for malnutrition, when patients had a BMI value of 25 or more, they were referred to a MOVE! program which facilitated patient behavioural change, or to a dietician to help them to have a normal BMI (Jay et al., 2015). Referrals are very essential in the provision of care because they help a patient receive complete care. In Lesotho, it is not known whether primary health facilities screen patients or not, because there is limited literature.

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Nutrition Counselling

This is a component of NMS which according to Shima et al. (2014), is done through conducting a discussion with patients in an educational session, patient-health worker one-on-one counseling, and demonstrating healthy ways of preparing healthy foods. Nutrition counseling is another component of NMS. Sin et al. (2015) believe that through this component at the primary care level, patients will be able to make healthy behavioural changes. A program in the United States, which was designed to help veterans change their behavior for weight reduction, has helped people who attended about 3 or more sessions to reduce a mean weight of 2.2kg in one year (Jay et al., 2015). Lifestyle changes such as modifying the diet, doing physical activities, cutting down alcohol consumption, smoking cessation, cutting out excess fat, and lowering stress levels, are very essential in managing hypertension (Akoko et al., 2017). However, some patients do not know this information, especially those who are illiterate. For this reason, health facilities are supposed to have this service, and the health workers must be able to provide it to the patients. An educational intervention study found that hypertensive patients were able to take care of themselves after the education program they had received (Iran et al., 2015). In a follow-up study of dietary counseling of hypertensive patients, patients who were given dietary counseling were compared to the controls, which are those who were not given counseling, and the results showed that 10% weight reduction was only observed in patients who received counseling (Torres et al., 2011). These results show how important nutrition counseling is. This service can also increase patient compliance with treatment and lifestyle modification recommendations. In a study that focused on nutrition and health education intervention, the participants gained increased knowledge of the appropriate methods of recognizing whole-grain foods and this helped them increase their consumption (Rizvi, 2009). Therefore, these suggest that incorporating nutrition education intended to increase knowledge and required skills can be an advantage to elderly patients with chronic diseases. On the other hand, Akoko et al. (2017) still believe that anti-hypertensive medication can effectively manage BP, therefore these two should be combined.

In one study 33% of patients consumed salt while they had already been diagnosed with hypertension (Duncan et al., 2014a). These patients suggested that they should be educated on behavioural changes to live healthily (Duncan et al., 2014a). Again, Adeniyi et al. (2016) found that alcohol abuse and intake of a western diet caused uncontrolled hypertension in patients who had both hypertension and type II diabetes. In another study, Khothatso et al. (2016), found that 54% of participants were not given any education on hypertension in the facility, and 34% believed that antihypertensive drugs eradicate hypertension. However, Thinyane et al. (2015) results show that 84.3% of the participants were given hypertension education, but few complied with recommendations. These results imply that some facilities provide this service while others do not, and what remains unknown is why some are providing the service while some are not, and what the health system is doing to address the failure of patients' compliance to recommendations.

Furthermore, in their study, Shima et al. (2014) recognized that patients did not know the role of physical activity and dietary intake in the management of hypertension. Results show that some hypertensive patients did physical activities and modified their diets as recommended by their doctors (Shima et al., 2014). This is an indication that these patients were aware of the importance of modifying their diets and doing regular physical activities in managing their BP. In their study, Akoko et al. (2017) found that only 14% of hypertensive patients knew about hypertension. This means these patients were well equipped with information on how to

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manage their condition, including dietary intake. However, this percentage is too low considering the increasing prevalence of this chronic disease, which needs health systems to work hand in hand with patients to manage it effectively. Khothatso et al. (2016) believe that patients must be educated on hypertension behavioural changes that a patient has to adopt to normalize BP. Elbur (2015) believes that the unavailability of this service in health facilities results in elderly patients not practicing healthy living. Akoko et al. (2017) have shown that it is the role of the health system to ensure the delivery of this service to patients, though following recommendations is highly dependent on the patient. According to Akoko et al. (2017), this means apart from other sources, the hypertensive elderly must obtain all this health information from health workers that provide services to them.

Nutrition Follow-up

This is another component of NMS that health workers do to find out if patients are following nutritional pieces of advice they received from nutrition counseling. When patients have been screened and counseled, they must be constantly followed up to help facilitate their compliance with hypertension therapy. According to Himmelfarb and Commodore-Mensah (2016), there are many ways of following up on patients such as different methods of communication like phone calls, emails, or digital methods. Furthermore, follow-up also includes a patient coming to the health facility on a set appointment, and the health worker finds out whether the patient modified their lifestyle. In another study, Iran et al. (2015) carefully monitored hypertensive patients on their self-care behavior after they have been given education. They found that the intervention had increased the participants' self-care behaviours related to hypertension. Al-Wehedy et al. (2014) closely followed up hypertensive elderly for 9 months, and immediately after their lifestyle intervention sessions, their knowledge score on healthy behaviours was increased to 30.31. Again, the results of Torres et al. (2011) study show that hypertensive patients who have been observed during dietary counseling lost some kilos in the first six months of the study. If primary health facilities can follow up with patients this closely, they can be able to help patients improve their health. Follow-ups also support the goals of patient entry and stay in health care (Himmelfarb & Commodore-Mensah, 2016). Again, they help remind the patients about the importance of nutritional therapies in hypertension management. Follow-up also helps minimize drop-outs. In Cambodia, they use a recall system that tracks all patients who drop out of their treatment (Jacobs et al., 2016). This is a very good strategy to keep patients in care and minimize hypertension complications.

METHODOLOGY

Introduction

This chapter describes details about the methodology which was used in this study. This section comprises the description of the study area, type of study, study variables, sample size, and data collection instruments. It also includes ethical considerations and information on how data was analysed and the presentation of results.

Study Area

The study was carried out in two facilities owned by Maseru City Council (MCC) in the country. They are located in highly urban areas of the two districts, Maseru and Berea. It is

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believed that people in urban areas are exposed to unhealthy lifestyles as compared to rural areas, as a result, the prevalence of hypertension is high, thus health facilities in these areas must be able to respond to the health needs of these people. These health centres were selected because their purpose was to respond to the constantly changing needs of people in these urban areas by bringing the most needed services closer to them. Therefore it was important to know whether NMS, being one of the services needed by these patients, was available. These facilities were also selected because they are Primary Care Services and are the first point of entry for the patients, they handle all simpler cases of hypertension, and they handle a large number of hypertensive patients and provide hypertension reviews.

Study Type

The study was a descriptive cross-sectional study employing both quantitative and qualitative data collection and analysis methods. The availability of NMS was studied in two OPD departments where hypertension services were offered. These OPD service points allowed for the examination of the service provision process and how it related to the services received by the patients. In both facilities, a patient was scheduled for a hypertension check-up (clinic) once a month. The respondents for the study were hypertensive elderly patients.

Quantitative data collection from patients took a full month. On each day, individual patient medical follow-up book was reviewed to see nutritional measurements; they were then tracked in the facilities as they received care to see how long they spent at each stage of the care process and to note the services they received; then lastly exit interview questionnaires were administered to find out the services the patients usually received on their hypertension check-up days, and the services they received on the interview day. These helped determine the availability of NMS. After this quantitative data collection was completed, qualitative data collection was done to help supplement quantitative data which was obtained from an insufficient sample. This qualitative data also helped find the views of patients about NMS in the facilities. .

Respondents

Respondents for the study were the service utilisers, the hypertensive elderly patients. The study was carried out on hypertensive elderly with the ages of 60 years and above, attending hypertension clinics in these health centres. These are the clients to the service. They gave information about the services they received every time they had come for care and their opinions about NMS. The patients were asked questions regarding the services they received on interview day and the services they received every time they had presented for care in their respective health centres. Also, patient tracks were done to observe and check the services they received on their check-up days, including nutrition screening, nutrition counseling, and nutrition follow-up. During this tracking, the patients' arrival time and exit from the facility were recorded, and the time the patient spent at each care stage (which were noted) was recorded. Furthermore, a records review was done to see the nutritional measurements of patients in their medical follow-up books. To further understand what happens in the facilities regarding nutrition services and the views of patients about NMS, qualitative data was collected from patients.

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Sample Size Estimation

The Cochran's (1963) equation was used to come up with the minimum sample for the study.

$$\mathbf{n} = z^2 * \frac{p(1-p)}{d^2}$$

Where:

n = minimum sample needed

z = standard normal deviation at required confidence level -1.96 at 95% confidence level

p = the target population proportion

d = represents the desired precision of the margin of error at 0.07 (7%)

q = 1 - p

Using 50% as a proportion of the target population, then a confidence interval of 95%, and desired precision of 7%, the required sample was calculated to be 196 patients. However, during data collection, it was found that this number was not very possible to reach, then the health facilities registers were used to determine the number of hypertensive elderly who usually accessed care in these facilities to estimate how many to expect to interact with. Then the new sample size for the study was estimated using the registers.

To estimate the sample size from the registers, hypertensive elderly who received care in these facilities in the previous three months (January, February, and March) before data collection were counted from the health facilities' registers. The number of patients in all three months was added together and divided by 3 to find the estimates of patients who come to each facility for hypertensive care. This is shown below:

Sample = $\frac{January\ patients + February\ patients + March\ patients}{3}$

- Facility A = = $\frac{74+49+26}{3} \approx 50$ patients
- Facility B = $\frac{68+64+66}{3} = 66$ patients

Therefore, the total number of patients that were expected to be included in the study was estimated to be 50 + 66 patients, summing up to 116 patients. However, due to reasons like the failure of patients to present for care and the low response rate this number was not reached. The total number of patients who were available and willing to respond was 77, but 3 left in the middle of the interview and could not complete the questionnaire. As a result, incomplete questionnaires were excluded from the analysis. Therefore, the total number of patients that participated in the study was 74. Although the researcher noted that the required sample could not be attained, there was a realization that in a study for availability of services, the main focus should be put on service provision and clients used as a check to examine whether the service is available.

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To help get more insight into what was happening in the health centres as the patients received care, other methods of data collection were also employed. These included focus group discussions, in-depth interviews, and group interviews with the patients. From Facility A, one focus group discussion, 2 group interviews, and 7 in-depth interviews were carried out. In Facility B, 3 focus group discussions, 2 group interviews, and 4 in-depth interviews were carried out. These made a total of 4 focus group discussions, 4 group interviews, and 11 in-depth interviews with patients.

Sampling Technique

All hypertensive patients who were 60 years or more present during the days of data collection were interviewed.

Study Variables

The availability of nutrition management service was the dependent variable while OPD services were the independent variables. Table 1 below shows all these variables and their methods of data collection and tools.

Table 1. Study variables, indicators, data collection methods, and tools

Variable	Indicator	Methods of Data Collection	Data collection tools
Objective: To investigate the availability of nutrition management service			
Availability of Nutrition management service	. availability of Nutrition Screening at OPD . availability of Nutrition Counselling at OPD . availability of Nutrition follow-up records at OPD . Number of patients	.Face-to-face Interviews with the patients, Records Review, Observations, and focus group discussions with patients	.Semi-structured Questionnaire, a Patient follow-up book, an observation checklist, client flow tracks, Interview Guide

Data Analysis and presentation methods

The quantitative data were analyzed using Statistical Package of Social Sciences (SPSS) software, version 16, and presented in tables. The qualitative data collected were transcribed and translated verbatim. This qualitative data was analyzed using constant comparison analysis, where meaningful excerpts were extracted. Out of the excerpts, relevant codes were generated and then grouped to develop meaningful themes which were categorized according to the study objective. During analysis, the most deviant responses were noted. Then the conclusions were drawn.

Quality Control

To minimize errors and to ease and carry out data collection faster, five research assistants fluent in English and Sesotho were recruited and trained on the use of the tools. When these

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stages were accomplished, the tools employed for the study were pre-tested for validity by the research assistants and the researcher. This activity was to help the assistants understand the tools better and get used to them before the actual data collection for the study began. It was to also help identify the questions that were unclear to the respondents so that they could be modified or removed. During the actual data collection for the study, the respondents were asked questions and probed where the responses were unclear and when there was a need to follow up on the response given. Probing was to also help answer all the questions and misunderstandings that came up, and to also capture all the information needed to answer the objectives of the study. To make sure the quality of the data is maintained and that the study answered all the objectives, qualitative data collection was conducted by the lead investigator. To ensure that all information was captured, two note-takers took notes during qualitative data collection, and at the same time recorders recorded all information from every interview and discussion, and patients were aware of this. To avoid loss of information due to forgetfulness and misplacements: for qualitative data, the recorded interviews were translated and transcribed verbatim daily, while questionnaires were checked after work every day to identify missing information so that the participant could be tracked early if some information was missing.

Triangulation: methodological triangulation was used, where results from different methods of data collection were compared, and there was a convergence of the themes. Results from FGDs, in-depth interviews, and group interviews converged.

Ethical Consideration

Ethical clearance to conduct the study was obtained from Uganda Martyrs University Ethical Committee. Then the Faculty of Health Sciences provided an introduction letter which was presented to MoH and MCC which later approved the visit to the facilities.

Permission to conduct the study in Lesotho was obtained from the Ministry of Health which provided the approval letter with reference number id95-2018, as a way to allow the study to be carried out. The second approval to conduct the study in the facilities was from MCC and the managers of the facilities. When this approval was given, data collection began. During the collection of data, the respondents were asked to sign the consent forms after the objectives of the study and its purpose had been clearly explained to them. Care was also taken to avoid sensitive questions to patients.

The data collected were coded and linked with the respondents in such a way that they would not be easily identified. However, the researchers were the only people who knew the links to the sources of the information. This was to help in re-tracing the respondent in case there was additional information needed.

Limitations of the study

Calculation of the number of patients for the study mainly depended on the statistics of patients on the health centres' registers and reports. Therefore, any errors in these registers could not be addressed in this study, and this may have underestimated or overestimated the size.

The plan was to include all hypertensive elderly patients receiving care in these facilities, but due to low response rates and patients missing their set review dates and so low patient turn-

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up, the number of patients in the study was small. This may have had an effect on the quality of the data.

The study was conducted during the winter season, and most patients left as soon as they received the care they needed from the facilities, in order to rush to the warmth of their homes. This affected the response rate because they did not want to stay longer at the facilities which had no heaters.

RESULTS/FINDINGS

Availability of NMS in the OPD for the hypertensive elderly patients in Facility A and B

To obtain information on the availability of NMS in the outpatient services for hypertensive elderly patients, the researcher observed, reviewed records, and also obtained data from the clients that are supposed to be beneficiaries of the effort to provide NMS. 74 elderly patients receiving care at the two health facilities were interviewed.

The information on the actual availability of NMS was established in two ways:

The first was reviewing records of nutritional measurements (taken in the last 3 months) in patients' medical follow-up books. This was followed by interviewing the patients about the services they received in the facilities including nutrition counseling, nutrition follow-up, and nutrition screening for malnutrition, then using observations and tracking patients in the health centres as they received care. Then the second included finding the views of patients about services in the facilities through individual and group interviews as well as focus group discussions. The results are presented below.

i) Records review for patients

Records of nutritional measurements of patients were reviewed for all regular patients (63) that took part in the study, and it was found that only 2/63 (3.2%) of them had their body weights measured and of these clients, 1 received nutrition screening the last 3 months before data collection and had a normal BMI, while the other patient had only the measurement of weight, which was done in the previous month before data collection. There was no other nutrition information recorded for this patient.

ii) Information from the exit interviews

A total of 74 clients from facilities A and B that navigated through the service delivery processes were interviewed at the exit. Out of all the patients that participated in the study, 11 of them were first-time visitors to the facilities and 63 were regulars to the facilities, making a total of 74 patients. The age of the patients interviewed ranged from 60 to 98 years, with the majority of them, 36/74 (48.6%) in the age ranges of 60 – 70 years. Most of them were widows and widowers (63.5%). The majority (71.6%) of these patients had only reached primary school and never got further than that. Table 2 below summarises these results.

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Table 2: Demographic characteristics of patients

Age (Years)	F (%)	Marital Status	F (%)	Education Level	F (%)
60 - 70	36 (46.6)	Married	17 (23)	None	2 (2.7)
71 – 81	32 (43.2)	Separated	6 (8.1)	Primary	53 (71.6)
82 – 92	5 (6.8)	Single	4 (5.4)	Secondary	12 (16.2)
92+	1 (1.4)	Widow	47 (63.5)	High school	2 (2.7)
	74 (100)		74 (100)		74 (100)

Moreover, 46% of the patients resided in the villages where the centres were located, which took them about 15 – 30 minutes to reach the facilities, while most participants (54%) resided in far villages where they usually had to use some means of transport such as taxis to reach facilities.

Again, from the exit interviews conducted for patients as they left the consultation rooms, most regular patients (77.8%, 92.1%, and 81%) received treatment package (General examination, blood pressure measurement, blood glucose measurement, hypertension medicines) regularly, previously in OPD and on the day of the interview respectively. Few patients received nutrition counseling in addition to the treatment package, while nutrition follow-up was received by very few patients, and nutrition screening was almost not received by patients on regular visits to centres. On the previous visit to OPDs, only 7.9% of the patients received nutrition counseling in addition to the treatment package, while none of the patients received nutrition screening and nutrition follow-up on their previous visit to OPDs. On the day of the interview, only 7.9% received nutrition counseling in addition to the treatment package, while another 7.9% received both nutrition counseling and nutrition follow-up in addition to the treatment package, and only 3.2% received nutrition follow-up in addition to the treatment package. None of the patients received nutrition screening on the day of the interview. Table 3 below summarizes these results.

Interviews with first-time visitors to the centres revealed that on that interview day, only 2 of them received nutrition counseling in addition to the treatment package, while the rest of them (9) received only the treatment package usually offered to hypertensive patients in these facilities.

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Table 3: Number of regular patients and the services they received regularly, previously in OPD and on the day of the interview.

Services	Regular HTN Services (%)	Services Received Previously in OPD (%)	Services Received on the day of Interview(%)
TP	49(77.8)	58 (92.1)	51(81)
TP, NC	11(17.5)	5 (7.9)	5(7.9)
TP, NC, NF	1(1.6)	0	5(7.9)
TP, FN	0	0	2(3.2)
TP, NC, NS	1(1.6)	0	0
TP, NC, measuring weight	1(1.6)	0	0
TOTAL	63(100)	63(100)	63(100)

[TP: Treatment Package, NC: Nutrition counseling, NF: Nutrition follow-up, Nutrition screening]

Table 4 below shows that in patients who received only nutrition counseling: 2.7% had elevated BP, 2.7% had stage 1 hypertension, 2.7% had stage 2 hypertension and 1.4% had hypertension crisis; patients who received both nutrition counseling and nutrition follow-up: 1.4% had normal BP, 1.4% had elevated BP and 4.1% had hypertension crisis, and 2.7% had stage 2 hypertension and received nutrition follow up only in addition to treatment package.

Table 4: Patients' BP levels and the services they received

BP Level	Services received on interview day				Total
	TP	TP, NC	TP, NC, NF	TP, NF	
Hypotension	1(1.4)	0	0	0	1(1.4)
normal BP	7(9.5%)	0	1(1.4)	0	8(10.8)
elevated BP	7(9.5%)	2(2.7)	1(1.4)	0	10(13.5)
stage 1 hypertension	17(23)	2(2.7)	0	0	19(26.7)
stage 2 hypertension	17(23)	2(2.7)	0	2(2.7)	21(28.4)
hypertension crisis	11(14.9)	1(1.4)	3(4.1)	0	15(20.3)
Total	60(81.1)	7(9.5%)	5(6.7)	2(2.7)	74(100)

[**hypotension**: less than 90mmHg systolic BP and less than 60mmHg diastolic BP, **normal**: less than 120 mmHg systolic BP and less than 80mmHg diastolic BP, **elevated BP**: 120 – 139mmHg systolic BP/80 – 89 diastolic BP, **stage 1 hypertension**: 140 – 159mmHg/90 – 99mmHg, **stage 2 hypertension**: 160 – 179mmHg systolic BP/100 – 109mmHg diastolic BP, **hypertension crisis** 180mmHg systolic BP or more/110 diastolic BP or more]

iii) Patient Track in the facilities

A further examination of the process of services provision was carried out and all patients that participated in the study were tracked. Tracking of patients was done to be able to identify how

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hypertensive patients received care, and the time they spent at each stage of the care process. All patients, that is 74 patients, that participated in the study were tracked to find how long they took at each care stage. The tables below summarise the results.

Time the patients spent waiting for care, consulting, waiting for medication, total time patients waited in health facilities

Upon their arrival patients had to wait for care, which they received differently in their respective facilities. In Facility A the first step of patient care after registration was HIV testing for those who did not have recent HIV results, then consultation (which included a BP check, blood glucose check for diabetes, general examination, and any nutrition service), then receiving medication from the pharmacy then the patient would go home. However in Facility B, patients were screened in a screening room where they got their blood pressure (BP) checked, and then got screened for TB, and then HIV testing was usually done for those who did not have recent HIV status results. This chain of activities did not take more than 30 minutes. The percentage of patients that took more than 20 minutes was 7% while the highest percent (60%) took ≤5 minutes. After all these, they waited for consultation, where most patients (39%) waited for ≤10 minutes, 21% waited for ≤20 minutes and the lowest percent (4%) waited for more than 60 minutes. After waiting, patients would then go for consultation (which included general examination, blood glucose check, and any nutrition service), then they would go to the pharmacy to receive their medication, and go home.

Table 5a below shows that in facility A most patients (30%) spent more than 120 minutes waiting for care and 26% waited for ≤30 minutes, while the lowest number of patients (11%) waited for 90 < mins ≤120 minutes, and the other 11% waited for 60 <mins≤ 90 minutes. On the other hand, in Facility B, the highest number of patients (43%) waited for ≤30 minutes to receive care, while the lowest number of patients (3%) waited for more than 120 minutes to receive care. Table 5b below shows the services that these patients received after waiting different periods of time in the health centres to receive care, to wait for consultation, and to receive medication.

Table 5a Time spent waiting for care in both facilities

Time waiting for care		
FACILITY	A (%)	B (%)
120+mins	14(30)	1(3)
≤120mins	5 (11)	2(7)
≤90mins	5(11)	7(25)
≤60mins	10(22)	6(21)
≤30mins	12(26)	12(43)
Total	46(100)	28(100)

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Services received and total time patient waited in HC

The table below shows the total time the patients spent in facilities doing nothing but waiting.

Table 5b: Facility A and B total time a patient waited and the services received

SERVICES RECEIVED	≤60 mins	≤120 mins	≤180 mins	≤240 Mins	≤300 mins	300+ mins	TOTAL (%)
FACILITY A							
TP	11(23.9)	16(34.8)	7(15.2)	1(2.2)	1(2.2)	4(8.7)	40 (86.9)
TP, NC	1(2.2)	0	0	1(2.2)	0	0	2 (4.3)
TP, NC, NF	1(2.2)	1(2.2)	0	0	0	0	2 (4.3)
TP, NF	0	1(2.2)	1(2.2)	0	0	0	2(4.3)
TOTAL	13(28.3)	18(39.1)	8(17.4)	2(4.3)	1(2.2)	4(8.7)	46 (100)
FACILITY B							
TP	5(17.9)	11(39.3)	1(3.6)	2(7.1)	1(3.6)	0	19(67.9)
TP, NC	2(7.1)	2(7.1)	1(3.6)	0	0	0	5(17.9)
TP, NC, NF	0	3(10.7)	0	0	0	0	3(10.7)
TOTAL	7(25)	16(57.1)	2(7.1)	2(7.1)	1(3.6)	0	28(100)

The patient tracking shows that most patients waited for 60<mins≤120 minutes for services in facilities. The total time waited includes time waiting for care, time waiting for screening and consultation, and time waiting for medication. Most patients (39.1% in A and 57.1% in B) in both facilities waited in this time range of 60 <min≤ 120 mins and most of them received treatment packages only (34.8% in A and 39.3% in B).

In Facility A: 2.2% waited for ≤60 minutes and received nutrition counseling, 2.2% also waited for ≤60 minutes but received both nutrition counseling and nutrition follow-up, another 2.2% received nutrition counseling together with nutrition follow-up but had waited for 60<mins≤120 minutes while another 2.2% received just nutrition follow-up yet waited for 60<mins≤120 minutes and another 2.2% waited for 180<mins≤240 mins but received only nutrition counseling. In Facility B: 7.1% and 10.7% waited for 60<mins≤120 minutes in the facility, but 7.1% received nutrition counseling only while 10.7% received both nutrition counseling and nutrition follow-up. 3.6% of patients, however, waited for 120<mins≤ 180 minutes in the facility but received nutrition counseling only, in addition to the treatment package. Table 6b above summarized these results.

A further track of patients when in consultation revealed the kind of services they received and the time they spent in consultation. Table 6 below summarizes the results.

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Table 6: Patient time spent in consultation and services received

FACILITY	Consultation							
	A				B			
Time spent	<15 mins	15 mins	>15 mins	TOTAL	<15 Mins	15 mins	>15 mins	TOTAL
TP	25(54.3)	0	15(32.6)	**40(87)**	17(60.7)	0	3(10.7)	**20(71.4)**
TP, NC	2(4.3)	0	0	**2(4.3)**	3(10.7)	1(3.6)	1(3.6)	**5(17.9)**
TP, NC, NF	2(4.3)	0	0	**2(4.3)**	3(10.7)	0	0	**3(10.7)**
TP, NF	2(4.3)	0	0	**2(4.3)**	0	0	0	**0**
TOTAL	31(67.4)	0	15(32.6)	**46(100)**	23(82.1)	1(3.6)	4(14.3)	**28**

Table 6 above shows that most patients in both facilities spent less than 15 mins in consultation and received just the treatment package. In Facility A 67.4% spent less than 15 minutes in consultation, but only 4.3% received nutrition counseling in addition to the treatment package, 4.3% received a combination of nutrition counseling and nutrition follow-up in addition to the treatment package and another 4.3% received only nutrition follow-up in addition to the treatment package. Similarly, in Facility B, most patients (82.1%) spent less than 15 minutes in consultation but only 10.7% received nutrition counseling in addition to the treatment package, and another 10.7% received a combination of nutrition counseling and nutrition follow-up in addition to the treatment package. However 3.6% of the patients spent exactly 15 minutes in the consultation room but received only nutrition counseling in addition to the treatment package, and another 3.6% received nutrition counseling in addition to the treatment package but had spent more than 15 minutes in consultation.

Part 2: Views of the clients about the availability of nutrition management service

A further investigation of this objective included individual and group interviews as well as focus group discussions with the patients. They were conducted to supplement the quantitative data that was obtained from an insufficient sample size, to determine the services they received regularly in the facilities and their opinions about the services. These results are summarized below.

Analysis of the data from the patients helped generate three themes, *nutrition services, the patient-centredness nature of the service,* and *other deviant findings*. For the theme of *nutrition services*, three sub-themes (*Nutrition counseling, Nutrition screening, and Nutrition follow-up*) were generated. These are presented below.

Nutrition Services

Nutrition Counselling

Generally, the results from patients' interviews revealed that nutrition services for hypertensive elderly accessing care from these facilities were seldom provided. Results showed it was sometimes provided only on a patient's first HTN diagnosis and when a patient has a very high BP reading. Most patients acknowledged that nutrition counseling in most cases was missed

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out during services provision, and patients ended up with a lack of knowledge on how to live healthily with the disease. Such feelings were expressed during a discussion held with clients receiving care:

[...]*Because I have never been told what and how to eat, I find myself eating anything that is accessible to me, I do not know reasons for eating or avoiding specific foods (***Facility A: GI-Respo. 1**)

Nevertheless, on very few occasions where nutrition counseling was provided, the health workers in these health facilities did not provide comprehensive nutrition education about diet and restrictions for hypertensive elderly patients. The patients expressed these views:

[...] *Health workers provide scanty information about nutrition. For example, they only provide restrictions on salt and oil as well as advice on losing weight without telling you how it is done* **(Facility B, FDG-Respo. 4)**

Nutrition Screening

Nutrition screening is yet another service that was mentioned as non-existent in both facilities for hypertension management. Parameters that are related to nutrition monitoring such as weight and height measurements were not routinely monitored. In fact, the results show that none of the respondents received nutrition screening. Only very few patients mentioned that they had their weights measured in the facility, but the practice is seldom done in Facility B, while in Facility A it was not done at all. Furthermore, it was also found that none of the patients had their heights measured. When asked whether their weights were measured another respondent replied thus:

[…]They have never measured our weights here **(Facility A, FGD1-Respo. 1)**

Nutrition Follow-up

Finally, nutrition follow-up was another component of NMS that was mentioned by many patients to be intermittently added to their service provision. When patients had gone for review and their BP check revealed a very high BP, that was only when the health workers asked whether they adhered to a hypertension lifestyle. This is what the patients said when asked if the health workers ask them about their lifestyle:

*[…]When your blood pressure has gone up, you will be asked, mother, do you exercise***? (Facility B, FGD4-Respo. 1)**

Patient centredness nature of the service

The lack of NMS in service provision for the hypertensive elderly somehow contributed to some patients' satisfaction on shorter time in the facilities. The results showed that lack of NMS resulted in shorter time spent receiving care. Again, most patients were happy with the warm welcome from the nurses and the welcoming way the nurses provided the services including NMS.

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Other deviant Findings

NMS in all its components was seemingly available and accessible to HIV patients and pregnant mothers, while all other patients including the hypertensive elderly did not have access to this service. The results revealed that this resulted in hypertensive patients thinking other patients were given much priority over the service while they were not, yet they were all chronically ill, and so somehow this made other patients to not see the importance of this service in their hypertension management and did not have interest in it.

All the results from the tracking of patients, interviews with patients, and review of their records show that NMS was available in the facilities, but it was seldom done and as a result the patients rarely got the service. In addition, the individual and the group interviews as well as focus group discussions confirmed that indeed the service was hardly done for the patients.

DISCUSSION

NMS was found to be available in the facilities. Of all the patients followed, 16.2 % received nutrition counseling and 9.5% received nutrition follow-up, but none of them received nutrition screening. Regularly, 17.5% of regular patients received nutrition counseling, 1.6% received nutrition counseling and nutrition follow-up, 1.6% received nutrition counseling together with nutrition screening, and 1.6% received nutrition counseling and partial nutrition screening.

Though this service was available in the facilities, its availability was found to be incomplete. The small number of patients who received NMS implies that in the same way, the small number of patients underwent NMS processes. For this service to be fully available and accessible, all patients should have gone through all the processes of NMS, but only 7(9.5%) were asked about their lifestyle and diet compliance, only 12(16.2%) were educated on nutrition while none of them had their weights and heights measured and so recording nutritional status was not done. These processes were intermittently done because none of the regular patients and first-time visitors went through all of them. The regulars did not undergo them regularly. Similarly, the first-time visitors who were supposed to be fully examined did not undergo all these processes.

Information obtained from the results shows that nutrition screening is a very rare service for hypertension elderly in these facilities, so health workers did not know whether patients were overweight or underweight. This means patients will forever be malnourished because they would not know when they have entered the danger zone. Screening is viewed as one of the critical services that these patients need because it gives an overview of the nature and depth of information and services required for individual patients. In their study, Thinyane et al. (2015) found that 80% of hypertensive patients had BMI ranges above the normal range. Had there been regular nutrition screening for these patients in the facilities, the patients would have wanted to know how their BMIs were supposed to be, and the health workers would have been compelled to help them. According to Frew et al. (2010) and Bourdel-Marchasson (2010), health facilities that fail to screen patients result in a lack of identification of malnutrition in patients. As a result, patients accessing care in these facilities receive poor quality care that fails to respond to their needs. Consequently, this lack of screening channeled counseling to only BP.

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The unavailability of screening also affected the kind of counseling the patients received in the facilities. Because nutrition screening was not done, patients were only counseled on nutrition and referred to higher-level care because of increased BP. When patients had low BP they were hardly counseled. This made overweight and obese patients with lower BP go home thinking and believing they were healthy, yet they were not. From the results, 83.8% of the respondents were not given nutrition counseling, making a difference of 27.8% when compared with the results of Khothatso et al. (2016) which showed that 54% of their participants did not receive counseling. However, this result contradicted the results of Thinyane et al. (2015), which showed that 84.3% received counseling. These results still emphasize that in facilities, some patients receive counseling while some patients do not receive it. In the provision of hypertension services, the health workers are supposed to make nutrition counseling an integral part of the management of this disease, but they failed to do so. This compromises the health status of patients because most of them do not know how they have to manage their disease, and so still need guidance every time, because they are old and they forget easily.

Furthermore, it was found that the schedule for follow-up and continuum of care were not clear to both clients and health workers. The increased patient PBs were mostly the only passport to receiving nutrition follow-up. With low BP, patients were hardly given follow-ups. While Himmelfarb and Commodore-Mensah (2016) have shown that follow-up has a positive effect on patient stay in health care, the few patients who were previously taught about nutrition were not followed up to see if they complied with recommendations. The lack of this follow-up also contributed to patients not taking NMS seriously because they did not see the health workers very serious about it. However, this should not have happened because hypertensive elderly patients lacked knowledge on how to manage their disease through nutrition and other healthy lifestyles. This means they continued consuming foods that were not healthy for their condition, hence their uncontrolled blood pressure. This is because patients only get treatment packages to control their disease.

It is clear that the treatment package is the only care that the facilities believed was a must for patients to receive. Comparing the services received regularly in OPDs nearly 80% of patients received this package only, while almost all patients received it on their previous visit to the centre, and approximately 80% of the patients received it on the day of the interview. The health workers ignored the provision of NMS even when they saw the compromising patient BPs.

Surprisingly, 81.1% received only the treatment package yet most (23%, 23%, and 14.9%) of these patients had stage 1 hypertension, stage 2 hypertension, and hypertension crisis respectively. Patients were obviously in need of this service but both their ignorance and the health workers' omission were some of the reasons why patients did not receive NMS. The health workers were aware that the patients' BPs were very high but they chose not to help them with NMS.

In rich countries, the rate of hypertension and blood pressure of people in communities has reduced or unchanged in the previous years probably due to developments in prevention and control strategies (Zhao et al., 2013), but Lesotho seems to be lagging as far as prevention is concerned. NMS is one of the services needed in the service package for hypertensive elderly patients in order to effectively control their blood pressure. Mugomeri et al. (2017) showed that hypertension was counted as one of the diseases that resulted in elderly poor quality of life, and as Duncan et al. (2014b) and Mugomeri et al. (2017) stated, this disease is caused by obesity.

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Therefore, this means with the availability of this service patients can have a better chance to avoid unhealthy lifestyles and at the same time put their blood pressure under control. However, due to many reasons, patients in these facilities failed to receive this service. Even those that received it were too few, and they did not even receive it every time they visited the facilities for care. The NMS service was available in the facilities, but it was incomplete. The results show that MCC fails to completely respond to the needs of the Maseru population, thus it has a long way to go to fulfil its vision for good health for people in the Maseru district.

CONCLUSION

NMS in the facilities was available but provided intermittently to patients. Research has shown the importance of NMS in the management of hypertension, therefore it is essential that the service is available and provided in its complete components so that all hypertensive patients may access it and enjoy its benefits.

REFERENCES

Adeniyi, O. V., Yogeswaran, P., Longo-Mbenza, B. and Goon, T. D. (2016) Uncontrolled hypertension and its determinants in patients with concomitant Type 2 Diabetes Mellitus (T2DM) in Rural South Africa. PloS one. 11(3). Pp. e0150033. Doi:10.1371/journal.pone.o150033.

Akoko, M. B., Fon, N. P., Ngu, C. R. and Ngu, B. K. (2017) Knowledge of Hypertension and Compliance with Therapy Among Hypertensive Patients in the Bamenda Health District of Cameroon: A Cross-sectional Study. Cardiology and Therapy. 6(1). Pp. 53–67. doi: 10.1007/s40119-016-0079-x.

Al-Wehedy, A., Abd Elhameed, S. H. and Abd El-Hameed, D. (2014) Effect of lifestyle intervention program on controlling hypertension among older adults, Journal of Education and Practice. 5(5).

Beckingsale, L. Fairbairn, K. and Morris, C. (2016) Integrating dietitians into primary health care: benefits for patients, dietitians, and the general practice team. Journal of Primary Health-Care. 8(4). Doi:10.1071/HC16018.

Boateng, O. G., Luginaah, N. I. and Taabazuing, M. (2015) Examining the risk factors associated with hypertension among the elderly in Ghana. Journal of Aging and Health.27(7). Pp 1147 – 1169. Doi:10.1177/0898264315577588

Bourdel-Marchasson, I. (2010) How to Improve Nutritional Support in Geriatric Institutions. Journal of the American Medical Directors Association. 11(1). Pp. 13–20. doi: 10.1016/j.jamda.2009.04.003.

Charney, P. (2008) Nutrition Screening vs Nutrition Assessment: How Do They Differ? Nutrition in Clinical Practice. 23(4). Pp. 366–372. doi: 10.1177/0884533608321131.

Duncan, P. R., Howe, L. D. and Manukusa, Z. (2014b) Determinants of obesity and perception of weight in hypertensive patients in rural South Africa. South African Journal of Clinical Nutrition. 27(2). Pp 56–62.

Duncan, P., Howe, L., Manakusa, Z. and Purdy, S. (2014a) Determinants of blood pressure control in rural KwaZulu-Natal, South Africa. South African Family Practice Journal. 56(6). Pp 297 – 304. Doi:10.1080/20786190.2014.975481.

Article DOI: 10.52589/IJPHP-AHRJPIFY
DOI URL: https://doi.org/10.52589/IJPHP-AHRJPIFY

Egede, E. L., Walker, J. R., Monroe, P., Williams, S. J., Campbell, A. J. and Dawson, Z. A.(2021) HIV and cardiovascular disease in sub-Saharan Africa: demographic and health survey data for 4 countries. BMC Public Health. 21(1122). https://doi.org/10.1186/s12889-021-11218-5

Elbur, I. A. (2015) Level of adherence to lifestyle changes and medications among male hypertensive patients in two hospitals in Taif; Kingdom of Saudi Arabia. International Journal of Pharmacy and Pharmaceutical Sciences. 7(4).

Eshkoor, A. S., Hamid, A. T., Shahar, S., Ng, K. C. and Mun, Y. C. (2016) Factors affecting hypertension among the Malaysian elderly. Journal of Cardiovascular Development and Disease. 3(8). Doi: 10.3390/jcdd3010008.

Frew, E., Cant, R. and Sequeira, J. (2010) Capturing the Data: Nutrition Risk Screening of Adults in Hospital'. Nutrients. 2(4). Pp. 438–448. doi: 10.3390/nu2040438.

Himmelfarb, C. R. D., Commodore-Mensah, Y. (2016) Expanding the Role of Nurses toImprove Hypertension Care and Control Globally. Annals of Global Health. 82(2). Pp. 243–253. doi: 10.1016/j.aogh.2016.02.003.

Iqbal, A., Ahsan, Z. K., Jamil, K., Haider, M. M., Khan, H. S., Chakraborty, N. and Streatfield, K. P. (2021) Demographic, socioeconomic, and biological correlates of hypertension in an adult population: evidence from the Bangladesh demographic and health survey 2017 – 2018. BMC Public Health. 21(1229). https://doi.org/10.1186/s12889-21-11234-5.

Iran, N. S., Mostafavi, F., Didarloo, A. and Hassanzadeh, A. (2015) Investigating the Effect of Educational Intervention on self-care Behaviors of Women with Hypertension Referred to Urban Health Centers. Indian Journal of Natural Sciences. 5(29).

Jacobs, B. Hill, P., Bigdeli, M. and Men, C. (2015) Managing non-communicable diseases at health district level in Cambodia: a systems analysis and suggestions for improvement. BMC Health Services Research. 16(1). doi: 10.1186/s12913-016-1286-9.

Jay, M., Chintapalli, S., Squires, A., Mateo, F. K., Sherman, E. S. and Kalet, L. A. (2015) Barriers and facilitators to providing primary care-based weight management services in a patient centered medical home for Veterans: a qualitative study. BMC Family Practice. 16(1). doi: 10.1186/s12875-015-0383-x.

Khothatso, T., Moshoeshoe, T., Saroni, Z. and Ross, A. (2016) Knowledge of hypertensive patients about treatment in the Seboche hospital, 2013. *South African Family Practice*. 58(sup1), Pp. S27–S28. doi: 10.1080/20786190.2014.976959.

Lebuso, M. and De Wet-Billings, N. (2022) The prevalence and socio-demographic correlates of hypertension among women (15 – 49 years) in Lesotho: a descriptive analysis. BMC Public Health. 22(562). https://doi.org/10.1186/s12889-02212960-0.

Mugomeri, E., Chatanga, P., Khetheng, T. and Dhemba, J. (2017) Quality of Life of the Elderly Receiving Old Age Pension in Lesotho. *Journal of Aging & Social Policy*. 29(4). Pp. 371–393. doi: 10.1080/08959420.2017.1328952.

Neuhauser, K. H., Adler, C., Rosario, S. A., Diederichs, C. and Ellert, U. (2015) Hypertension prevalence, awareness, treatment and control in Germany 1998 and 2008 – 11. Journal of Human Hypertension. Vol. 29. Pp 247 - 253. doi:10.1038/jhh.2014.82.

Olaitan, O. O., Fadupin, G. T. and Adebiyi, A. A. (2018) Dietary pattern, lifestyle and nutritional status of hypertensive outpatients attending University College Hospital, Ibadan, Nigeria. African Journal of Biomedical Research. Vol. 21. Pp 29 -36.

PATH (2011) Health Services Integration – PATH's framework for health services integration.

Article DOI: 10.52589/IJPHP-AHRJPIFY
DOI URL: https://doi.org/10.52589/IJPHP-AHRJPIFY

Rizvi, A. A. (2009) Nutritional challenges in the elderly with diabetes. International Journal of Diabetes Mellitus. 1(1). Pp. 26–31. doi: 10.1016/j.ijdm.2009.05.002 (14 April 2017)

Rodrigues, B. B., L., dos Santos, B. C., Goyata, T. L. S., Poplin, P. M., Yamamura, M., Deon, C. K., Lapao, V. M. L., Neto, S. M., da Costa Uchoa, A. S. and Arcencio, A.R. (2015) Assessment of the coordination of integrated health service delivery networks by the primary health care: COPAS questionnaire validation in the Brazilian context. BMC Family Practice. 16(1). doi: 10.1186/s12875-015-0299-5.

Saunders, J., Smith, T. and Stroud, M. (2011) Malnutrition and undernutrition. Medicine. 39(1). Pp. 45–50.

Shima, R., Farizah, H. M. and Majid, A. H. (2014) A qualitative study on hypertensive care behavior in primary health care settings in Malaysia. Patient Preference and Adherence. doi: 10.2147/PPA.S69680.

Sin, L. K. C., Fu, S. N., Tsang, H. S. C., Tsui, S. W. W. and Chan, W. H. F. (2015) Prevention in primary care is better than cure: The Hong Kong Reference Framework for Preventive Care for Older Adults—translating evidence into practice. Hong Kong Medical Journal. Pp. 353–359. doi: 10.12809/hkmj144326.

Thinyane, K. H., Mothebe, T., Sooro, M., Namole, D. L. and Cooper, V. (2015) An observational study of hypertension treatment and patient outcomes in a primary care setting', Pan African Medical Journal. Vol. 20. doi: 10.11604/pamj.2015.20.424.5040.

Torres, G. S. R. M., Ferreira, S. T., Nogueira, P. L., Nascimento, S. C. D. and Sanjuliani, F. A. (2011) Dietary counseling on long-term weight loss in overweight hypertensive patients. Clinics. 66(10). Pp. 1779–1785.

WHO (2009) Nutrition for Older Persons http://www.who.int/nutrition/topics/ageing/en/index.html

Zhao, Y., Yan, H., Marshall, J. R., Dang, S., Yang, R., Li, Q. and Qin, X. (2013) Trends in population blood pressure and prevalence, awareness, treatment, and control of hypertension among middle-aged and older adults in a rural area of northwest china from 1982 to 2010. *PLos ONE*. 8(4). Pp e6179. doi:10.1371/journal.pone.o61779

Article DOI: 10.52589/IJPHP-AHRJPIFY
DOI URL: https://doi.org/10.52589/IJPHP-AHRJPIFY