

## Original Research

# A qualitative exploration of hypertensive patients' perception towards quality use of medication and hypertension management at the community level

Ching S. TAN , Mohamed A. HASSALI , Chin F. NEOH , Fahad SALEEM .  
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### Abstract

**Objective:** This study aimed to explore hypertensive patients' perspectives on quality use of medication and issues related to hypertension management at the community level in Malaysia.

**Methods:** Focus groups discussion was employed in this qualitative study. A total of 17 hypertensive patients were purposively recruited. Three focus group discussions with semi-structured interview were carried out at Flat Desa Wawasan, Penang. All the conversations were audio recorded, transcribed verbatim and thematically analysed.

**Results:** Three major themes were developed, including medication adherence among hypertensive patients, self-management of hypertension and patients' knowledge towards hypertension. Poor medication adherence was found and different strategies were taken to overcome the barriers towards adherence. Use of herbal and traditional therapies was perceived as alternative method in controlling blood pressure instead of taking antihypertensive medication. The participants were found to have poor knowledge on side effect and mechanism of action of hypertensive medication.

**Conclusions:** The misconception about the side effect of antihypertensive medication has led to poor adherence among the participants. Lack of knowledge on targeted blood pressure level has led to poor blood pressure monitoring among the participants. Health awareness program and counselling from health care professional should be advocated among the hypertensive patients in addressing the above gaps.

### Keywords

Hypertension; Medication Adherence; Patient Medication Knowledge; Health Knowledge, Attitudes, Practice; Focus Groups; Qualitative Research; Malaysia

## INTRODUCTION

Hypertension is one of the renowned risk factors contributing to cardiovascular disease, including stroke, arrhythmias, coronary heart disease and myocardial infarction.<sup>1</sup> About 1.39 billion adults worldwide were diagnosed with hypertension<sup>2</sup> in 2010 and the number is predicted to increase to 1.56 billion by year 2025.<sup>3</sup> More than half of the hypertensive patients were unable to achieve well-controlled blood pressure level despite the recent advancement in the antihypertensive treatment.<sup>4</sup> Poor medication adherence is one of the contributing factors that caused uncontrolled blood pressure level among hypertensive patients.<sup>5-7</sup> The rate of medication

adherence in many developing countries including Malaysia was reported lower when compared to developed countries.<sup>8-11</sup>

Likewise, in 2015, 30.3% of the Malaysian adults (i.e. 18 years and above) had hypertension, with 13.1% of known hypertension and 17.2% of undiagnosed hypertension.<sup>12</sup> Of note, only 26.8% of these hypertensive patients had their blood pressure under control<sup>13</sup> and up to 46.6% of them were reported to have poor medication adherence.<sup>14</sup> A recent local study revealed that a total of 20,799 excessive pills were returned by hypertensive patients at a single Malaysian government hospital, with a total cost of (Malaysian Ringgit) MYR 4,362.28 (equal to USD 1037) was wasted during the 8 months of study period with an average wastage of MYR 42.35 (equal to USD 10) per patient; changing medication by the doctor and death of patients were the most common reasons accounted for the wastage.<sup>15</sup>

Low rate of adherence to antihypertensive medication has significantly increased blood pressure and was associated with higher rate of hospitalization and mortality.<sup>16</sup> Previous studies have found that many hypertensive patients did not adhere to antihypertensive medication because they had wrong perception towards hypertension or they were unconfident with their antihypertensive medication such as concern of potential adverse effects.<sup>17-19</sup> Lack of knowledge about usage of medication and various misleading perceptions of hypertension management have resulted

**Ching Siang TAN.** BPharm, MSc (Pharmacy Practice). Program Coordinator. School of Pharmacy, KPJ International College. Penang (Malaysia). [chingsiang9@hotmail.com](mailto:chingsiang9@hotmail.com)

**Mohamed Azmi Ahmad HASSALI.** BPharm (Hons), M.Pharm (Clin Pharm), PhD. Professor of Social and Administrative Pharmacy. School of Pharmaceutical Sciences, Universiti Sains Malaysia. Penang (Malaysia). [azmihassali@gmail.com](mailto:azmihassali@gmail.com)

**Chin Fen NEOH.** BPharm (Hons), MPharm (Clinical Pharmacy), PhD. Senior Lecturer. Faculty of Pharmacy, Universiti Teknologi MARA. Selangor (Malaysia). [chinfenneoh@gmail.com](mailto:chinfenneoh@gmail.com)

**Fahad SALEEM.** BPharm (Hons), M-Phil (Pharmacy), MBA, PhD. Associate Professor. Faculty of pharmacy & Health Sciences, University of Balochistan. Quetta (Pakistan). [fahaduob@gmail.com](mailto:fahaduob@gmail.com)

inappropriate use of medication especially medication adherence among community-dwelling hypertensive patients.<sup>20,21</sup> Furthermore, there is a paucity of local data about hypertensive patients' perspective towards quality use of medication and hypertension management at the community level. Hence, this study aims to explore hypertensive patients' perspectives on quality use of medication and issues related to hypertension management among community-dwelling hypertensive patients in Malaysia. The generated local data from this study is anticipated to yield different views from previous studies, such as poorer knowledge among local hypertensive patients towards hypertension management compare to the developed country<sup>17</sup> and different perspective towards quality use of medication compare to the research studies from the Asia countries.<sup>18,22</sup> The emerged findings from this study will be useful for healthcare provider and policy maker in the treatment of hypertension.

## METHODS

### Study Design

This study adopted qualitative methodology via focus group. This qualitative study was based on the COREQ Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups.<sup>23</sup> Phenomenology approach was utilized in this study to develop an understanding about patients' view on medication and hypertension management. Phenomenology approach involves the use of the meanings of living experiences and it is essentially "consciousness of" or an "experience of another".<sup>24</sup> Phenomenological analysts provide a close examination platform of individual experiences to capture the meaning and common features, or essences, of an experience or event.<sup>24</sup> The content of focus group with semi-structured interview guide questionnaire was prepared based on literature reviews on patients' hypertension management and earlier work on patients' perceptions on quality use of medication.<sup>17,18,25,26</sup> Three focus group discussions were carried out from August 2015 to September 2015.

In order to achieve the objectives of focus group discussion, the content of semi-structured interview was developed based on the English literatures<sup>17-19,22</sup> which have highlighted the global hypertension management and quality use of medication issues encountered by the hypertensive patients. The participants were asked with the semi-structured questionnaires and they were encouraged to interact with each other, exchange ideas and issues based on their experiences or points of view.<sup>27</sup> The questions were developed in English and translated into Malay language (the national language) by a professional translator from a local university. Backward translation from Malay language into English language was conducted by another independent translator who was different from the forward translator. The purpose of back translation is to maintain the quality control in step demonstrating. To ensure the inter-translation validity and similarity of conceptual during the translation, harmonization is an important process to discuss the

inconsistencies and discrepancies between the source and the target language versions. The questions were prepared in an open ended format and were pre tested for content validity, face validity, and clarity by three pharmacists with vast experience in pharmacy practice research and further adjusted after pilot testing with five patients with hypertension in Penang who were not part of the study target population. The topic of discussion was then sent to an independent experienced moderator for further cleaning. The moderator ensured that topics to be discussed are up to the level of patients.

### Study Sample and Setting

This study was conducted at Flat Desa Wawasan. Flat Desa Wawasan is a low cost flat which accommodates about 3000 residents in Bukit Mertajam, Penang, Malaysia. With the collaboration Penang Family Health Development Association (FHDA) Non-governmental Officer (NGO), this study could have an established relationship with the participants in order to produce a better quality focus group discussion.<sup>23</sup> FHDA is one of the NGO with non-profit, voluntary citizens' group which is organized on a local, national or international level. Posters invitation were put on the notice board one month prior the event and those hypertensive patients who were interested in this program contacted the researchers. Participants were recruited by using purposive sampling method. The selected participants represented variation of characteristics and the potential to provide rich, relevant, valid and generalizable information. Hence, the selection of the participant was based on age, living status and the different range of blood pressure levels. The inclusion criteria were the following: being diagnosed with hypertension by a registered medical doctor for at least six months ago, treated with antihypertensive medication for the past three months prior to the study and aged 18 years old and above. Patients with enduring mental health problems or cognitive impairment were excluded. Initially 20 participants were invited to participate in the focus group discussion, but three participants did not turn up in the discussion due to time constraint. Eventually a total of 17 participants were divided into three groups which followed the standard guideline.<sup>28,29</sup> A focus group comprises of 4-8 people are usually recommended<sup>30</sup> as group exceeded than eight people are difficult to control.<sup>28</sup>

The discussions were focused on the patterns and reasons of irrational use of medicines, and participants' perception and knowledge towards hypertensive management. The focus group discussion was carried out at the multipurpose hall of Flat Desa Wawasan. Prior to the focus group discussion, participants were requested to be seated for at least 10 minutes before their blood pressures were being measured. A blood pressure monitoring apparatus (Brand: Omron® with model HEM-7080) was utilized to monitor participants' blood pressure level.

Information sheet was explained and signed informed consent was obtained prior to the commencement of focus group discussion. The researcher with experience of a qualitative research in a previous study<sup>31</sup>, played a role as moderator and was assisted by six pharmacy students and two NGOs in the focus group discussion. The participants

comprised of Malay, Chinese and Indian hypertensive patients and some of the Indian participants did not understand English and Malay languages. Moreover, some of the participants were old and weak in listening. Therefore the six Indian students assisted the Indian participants in the translation of questionnaires.

Prior to focus group discussion, moderator introduced his background and qualification to the participants. Despite of the personal introduction, moderator also briefed the participants about the study goals for this focus group discussion. The moderator encouraged all hypertensive patients to participate actively in the discussion by giving several probes. The examples of probes were: how do you get high blood pressure medications? Elaborate on the difficulties you were telling about, etc. Eventually every participant was given an opportunity to add on anything about medication and hypertension management.

In order to achieve the objective of focus group discussion, the participants were encouraged to interact with each other, exchange ideas and issues based on their experiences or points of view.<sup>27</sup> Malaysia is a multi-racial, multi-cultural and multi-religion country which comprises of Malay, Chinese, Indian and other ethnic population. There are many languages spoken in Malaysia as they are from different ethnic background. Although Malay language as national language but some elderly could not speak well in national language (Malay language) and English because their education level only up to primary school and some of them never receive formal education. Therefore it is inevitable to use multi languages in this discussion and the pharmacy students played a vital role in translating the questionnaire to the participants. The entire questionnaire guide was read in Malay language and was translated to English, Chinese and Indian language by the moderator or assistants if requested by the participants. All the conversation and discussion were audio-recorded and field notes were utilized when necessary during focus group discussion. Three focus group discussions were carried out until saturation of the contents which ranged from 40 to 60 minutes.

#### Ethical Approval

Ethical approval [USM-HLWE/IEC/2014 (0003)] was obtained from Universiti Sains Malaysia–Hospital Lam Wah Ee Ethics Committee prior to the study.

#### Data Analysis

After the focus group discussion, all the conversation were transcribed verbatim into Malay language while listening to the audiotape by the two project assistants and the data were counterchecked by the researcher. The field notes were referred during transcribing process. The transcriptions were translated into English by two appointed translator and back translation was performed to ensure correctness and reliability in linguistic. Textual data were explored using content analysis method. Textual data were read several times by the researcher to identify themes and categories. Numerous codes were identified and relevant quotes were categorized under each code. "Open coding" procedure was carried out by writing down as many categories as necessary to address all aspects of

Description	N (%)
Gender	
Male	1 (5.9%)
Female	16 (94.1%)
Age (years)	
31-40	3 (17.6%)
41-50	1 (5.9%)
51-60	8 (47.1%)
61-70	4 (23.5%)
71-80	1 (5.9%)
Occupation	
Private	4 (23.5%)
Unemployed	13 (76.5%)
Living status	
Alone	5 (29.4%)
With family	12 (70.6%)
Blood pressure level <sup>50</sup> [mmHg]	
Optimal (SBP < 120 and DBP < 80)	3 (17.6%)
Normal (SBP < 130 and DBP < 85)	3 (17.6%)
High normal (SBP 130-139 and/ or DBP 85-89)	2 (12.0%)
Hypertension stage I (SBP 140-159 and/ or DBP 90-99)	3 (17.6%)
Hypertension stage II (SBP 160-179 and/ or DBP 100-109)	3 (17.6%)
Hypertension stage III (SBP ≥ 180 and/ or DBP ≥ 110)	3 (17.6%)
Duration of hypertension (years)	
1-5	5 (29.4%)
6-10	6 (35.3%)
>10	6 (35.3%)

the content. In order to reduce the number of categories, the listed categories were filtered by rearranging based on the priority to produce a new list of categories and sub-headings. At the same time, another researcher carried out the same procedure independently to generate the category system. Then the two lists of categories were compared and adjustments were made when necessary. The final list of categories and sub-headings was compared again with the original transcript to ensure all aspects of data were identified and tested for constant comparison. When there were no new themes identified, a conclusion would be made at this saturation point. In order to add validity to the study, the research findings were presented to the participants and feedback were taken to ensure the participants' own idea and perception were represented and not curtailed by researchers' own agenda and perspective.

## RESULTS

Seventeen hypertensive patients were recruited in this study. The demographic characteristic of the participants are shown in Table 1. Most of the participants obtained their antihypertensive medication at no cost from the government hospitals.

Three major themes were developed via the thematic content analysis, including medication management in hypertension, self-management of hypertension and patients' knowledge towards hypertension (Table 2).

### Theme 1: Medication adherence among hypertensive patients

Three subthemes were further identified in the context of medication management in hypertension.

Table 2. Patients' quotes about their views on quality use of medication and hypertension management	
Subthemes	Quotes
Routine-lifestyle	<p><i>I take medicine every day. Never forget. (P1, P16,P17,P18)</i></p> <p><i>I take medicine every day. I never forget to take medicine. (P2)</i></p> <p><i>I take medicine everyday even though I brought my medicine during visiting to relatives' houses. (P3)</i></p> <p><i>Sometimes I forgot to take medicine. About 2-3 days in a week I forgot to take medicine. (P4)</i></p> <p><i>I only take hypertensive medicine 2-3 days in a week (P13)</i></p> <p><i>Sometimes when I felt tension then I take medicine. (P5)</i></p> <p><i>I rarely took medicine because I have many concerns about medicine especially it would interfere with my thought and turn to be less intelligent. (P12)</i></p> <p><i>Yes I bought medicine for migraine and headache only. (P7)</i></p> <p><i>Never stop medicine because I am the only one who diagnosed with high blood pressure. (P10)</i></p> <p><i>I also never share antihypertensive medicine because it may cause death. (P14)</i></p> <p><i>I took my medicine every day before going to work as a habit. (P5)</i></p> <p><i>I must be remembered to take medicine every day as have been suffering from high blood pressure. (P8)</i></p>
Factors affecting medication compliance	<p><i>Suppose my antihypertensive medicine should be taken after meal but sometimes I took it before meals. (P1,P3,P8)</i></p> <p><i>I am afraid to take medicine before meal because I felt stomach empty. (P5,P7,P9)</i></p> <p><i>In early morning, I take all medicines at once before going to work although some of the medicines should be taken either before or after meal. (P10)</i></p> <p><i>I don't care whether the medicine need to be taken before or after meal (P15)</i></p> <p><i>I was bored with the medicine. (P5)</i></p> <p><i>Feeling tired because I had been taking medication for a period of 10 years. (P8)</i></p> <p><i>I felt nausea when taking medicine (P16)</i></p> <p><i>Sometimes I feel tired and afraid of hair loss. (P6)</i></p> <p><i>I fear the side effects of the drug and the consequences of causing cancer, so I will eat more fruit like apples rather to take antihypertensive medicine every day. (P4)</i></p> <p><i>I think my high blood pressure medicines are not suitable to me. It causes me headache and dizziness. So I did not take it regularly. When I felt uncomfortable and backache, then I will take the medicine, otherwise I would not take it. But every month I still collect my hypertensive medicine from hospital. (P5)</i></p>
Barriers	<p><i>No problem because family members were willing to send me to hospital. (P13)</i></p> <p><i>I have vehicle to go to the hospital. (P14)</i></p> <p><i>I don't have problem of transportation. (P15)</i></p> <p><i>I have problem in getting transportation because hospital is too far. (P15)</i></p> <p><i>I have problem of transportation. (P16)</i></p>
Facilitator/ reminder	<p><i>I have problem of transportation but a nurse (NGO officials) will help the patient to collect medicine from hospital, so I share my medication problem with her (P2,P4,P14)</i></p> <p><i>I prefer to share my medication problem with member of the NGO because they know me well. (P5, P9)</i></p> <p><i>I like to discuss medication problem with Ms. Jaya (NGO officer)who always take medicine for me (P3,P6, P8)</i></p> <p><i>I have chosen pharmacist because they are drug expert. (P8)</i></p> <p><i>I would happy talk my medication problem with NGO who can remind me to take medicine. (P13)</i></p> <p><i>I will share my medication problem with NGO officer. (P17)</i></p> <p><i>I keep in a plastic bag. I will write or record in a book when taking medicine to avoid from forgetting because I am stroke patient. (P9)</i></p>
Financial	<p><i>I have no problem because I received medicine from government hospitals. (P3)</i></p>
Side effect	<p><i>I have hair loss problem after taking antihypertensive medicine. (P9)</i></p> <p><i>I felt uncomfortable and also feel dizzy. (P14)</i></p> <p><i>I felt drowsy, sleepy and tired. After wake up from sleeping, I felt normal. (P16)</i></p>
Storage	<p><i>I keep inside refrigerator and on the refrigerator.(P3)</i></p> <p><i>I keep in the cabinet at home. (P6)</i></p> <p><i>I prefer to put inside tupperware containers (P8)</i></p> <p><i>Now hospital only supplies 1 month medicine, so not much medicine need to be kept in house. (P12)</i></p>
Solutions	<p><i>I will sit and relax. Then I will eat Panadol<sup>®</sup> (Paracetamol). (P12)</i></p> <p><i>I will take Paracetamol when high blood pressure cause me headache (P2,P5)</i></p> <p><i>I will go to pharmacy buy Panadol<sup>®</sup> if high blood pressure cause me headache (P7)</i></p> <p><i>I will take my high blood pressure medicine together with Panadol<sup>®</sup> when headache (due to high blood pressure) (P14,P17)</i></p> <p><i>I will take Tramadol<sup>®</sup> medicine. (P3)</i></p> <p><i>I would feel very emotional and angry when my blood pressure is high. Then I will take high blood pressure medicine and then sleeping. (P9)</i></p> <p><i>I will sit at a side and rest (P4)</i></p> <p><i>I prefer have a rest when feel headache (due to high blood pressure) (P8)</i></p>

i) Medication adherence

Nine participants claimed that they never forget to take medicine. One participant has a good habit by bringing her antihypertensive medicine when she travels.

"I take medicine every day. Never forget". (P1)

"I take medicine every day and I bring my medicine during visiting to relatives' houses". (P3)

However, four participants did not take medication every day. Three participants missed antihypertensive medicine for 2 to 3 days in a week. The reasons given were too busy



Table 2 (cont.). Patients' quotes about their views on quality use of medication and hypertension management	
Subthemes	Quotes
Herbal/ alternative medicine	<p><i>I used to eat a traditional medicine in the form of seeds to control blood pressure. (P9)</i></p> <p><i>I like to take herbal medicine to control my high BP (P2,P15)</i></p> <p><i>I used to take the herbal medicine / traditional medicine in the form of small tablet to control my high blood pressure (P13)</i></p> <p><i>I prefer to visit Chinese Sinseh to get some herbal medicine to control my high blood pressure. (P8)</i></p> <p><i>I always take my herbal supplement to control my high blood pressure (P10)</i></p> <p><i>I trust to herbal medicine and that's why I always keep it at my house and take it to control for my high blood pressure. (P14)</i></p> <p><i>I will drink Chinese tea to "wash" my blood. (P1)</i></p> <p><i>I have never taken herbs, herbal remedies or traditional medicine to control blood pressure. (P5)</i></p> <p><i>I don't take herbal medicine to control my high pressure (P3, P11,P12)</i></p> <p><i>I am not familiar with herbal medicine. (P17)</i></p>
Checking of blood pressure	<p><i>I check my blood pressure (level) at every month. (P4)</i></p> <p><i>I check blood pressure level at every 3 to 4 month which is during my appointment with doctor. (P6)</i></p>
Signs and symptoms	<p><i>I felt dizziness and sleepy. (P6)</i></p> <p><i>I would have a feeling of dizziness and tightness at the neck after eating beef which may increase my blood pressure. (P9)</i></p> <p><i>I was notified by doctor when my blood pressure increased. (P7)</i></p> <p><i>When I forgot to take medicine, I would feel the symptoms like dizzy and neck stiffness. Then I would take high blood pressure medication. (P2)</i></p> <p><i>I feel dizziness and headache (P3,P4)</i></p> <p><i>Definitely is dizziness (P5)</i></p> <p><i>Dizziness and headache! (P8)</i></p> <p><i>I think is dizziness. (P10)</i></p> <p><i>Obviously is dizziness (P11,P12)</i></p> <p><i>I felt sweating and headache (P13)</i></p> <p><i>I felt hot and sweating then start heachache (P14)</i></p> <p><i>Sweating....headache and blur vision (P16)</i></p>
Learning	<p><i>I got the knowledge from education talk and health briefing. (P8)`</i></p> <p><i>My NGO officer always share with me the knowledge of hypertension. (P15, P16)</i></p> <p><i>I always receive hypertension counselling from hospital pharmacists. (P13)</i></p> <p><i>I always join to the education talk nearby my house (P1)</i></p> <p><i>I like to attend educational talk (P3, P5)</i></p> <p><i>The health talk gave me a lot information (P6)</i></p> <p><i>I learn hypertension management from the health education talk (P2)</i></p> <p><i>Definitely education talk taught me a lot (P7)</i></p> <p><i>I received a lot of information (hypertension management) from TV (television) and radio. (P12)</i></p> <p><i>TV and Radio gave me a lot health information (P8, P17)</i></p> <p><i>I used to read health information from Facebook (P10)</i></p>
Medication recognition	<p><i>I do not know the name of the drug, but usually takes a sample of the drug. (P7)</i></p> <p><i>I have forgotten and do not know the name of the medicine. (P8)</i></p> <p><i>I do not know. I just take medicine by looking at the shape and physical characteristics of the medicine. (P12)</i></p> <p><i>I don't know the name of medicine but is round and white color. (P1)</i></p> <p><i>The name is too long, I don't know and even remember. (P3)</i></p> <p><i>For me, the name of medicine is too hard to remember but my medicine is round shape. (P9)</i></p> <p><i>I don't remember the name. (P11)</i></p> <p><i>I only remember the share and logo on my medicine (P13)</i></p> <p><i>My hypertensive medicine is pentagon shape. (P14)</i></p> <p><i>My medicine shape like Panadol shape and white color. (P16)</i></p> <p><i>I don't even know the name of medicine. (P17)</i></p>

with work, concerned about side effect of medication, bored with the medication and felt inappropriate use of their antihypertensive medication by doctor.

"Sometimes I forgot to take medicine. About 2-3 days in a week I forgot to take medicine". (P4)

"Sometimes when I felt stress then I take medicine". (P5)

In the context of taking antihypertensive medicine at appropriate time, eight participants took antihypertensive medicine at wrong time without differentiate whether the medication should be taken prior or after meal. The reasons were too many medications to be taken and have

confused with the item to be taken with empty stomach or after food.

"Suppose my antihypertensive medicine should be taken after meal but sometimes I took it before meals". (P8)

"I am afraid to take medicine before meal because I felt stomach empty". (P9)

"I rarely took medicine because I have many concerns about medicine especially it would interfere with my thought and become to be less intelligent". (P12)

Table 2 (cont.). Patients' quotes about their views on quality use of medication and hypertension management	
Subthemes	Quotes
Hypertension causes	<p><i>High blood pressure is cholesterol in the blood. (P3)</i>  <i>High blood pressure caused by stress and fatigue. (P6)</i>  <i>High blood pressure is a result of too much thinking. (P10)</i>  <i>I think is by genetic (P1)</i>  <i>I don't know the actual cause (P2,P4, P5)</i>  <i>Not enough sleep (P7)</i>  <i>Taken too much oily food (P8, P11)</i>  <i>Heart is not strong enough (P9)</i>  <i>Pressure too high in blood vessels (P12)</i>  <i>Lack of exercise (P14)</i>  <i>I am not sure what cause hypertension (P15,P16)</i>  <i>I heard people said is eat too much fat food (P17)</i></p>
Normal blood pressure level	<p><i>Normal blood pressure level is 190/80 mmHg. (P9)</i>  <i>Normal level is 100 – 120/90 – 100 mmHg. (P11)</i>  <i>I do not know. (P6, P8,P10,P14)</i>  <i>150/90 mmHg (P1, P2,P3)</i>  <i>Emm... I think is 100/80 mmHg (P5)</i>  <i>I am not sure. (P7)</i>  <i>I think is 120/80 mmHg (P4)</i>  <i>Don't know (P12)</i>  <i>Sorry I don't know (P17)</i></p>
Medication function	<p><i>I do not know how my high blood pressure medicine works. (P6)</i>  <i>I don't know the medicine function (P1,P2,P4,P6)</i>  <i>I don't even know it (P3, P7)</i>  <i>I do not know about it (mechanism of action). I only follow doctor's instruction to consume medicine. (P11)</i>  <i>I didn't of it before (P8)</i>  <i>Emm..I have no idea (P10,P12)</i>  <i>I don't know about it (P13)</i>  <i>I just take medicine only (P14)</i>  <i>I can't understand the mechanism even though a pharmacist explained to me before (P15)</i>  <i>I don't know about how my medicine works on my body (P16)</i>  <i>I don't have idea (P17)</i></p>
Hypertension complication	<p><i>It will cause kidney damage. (P3)</i>  <i>The complication of hypertension is paralyzed and would cause stroke. (P7)</i></p>
Beneficial of medication	<p><i>I do not know the advantages of high blood pressure medication and I took medicine because I was instructed by doctors. (P9)</i>  <i>I don't know the benefits but I just take it only (P1)</i>  <i>The medicine can reduce heart disease (P3)</i>  <i>It can prevent stroke (P11)</i>  <i>It can reduce kidney damage (P14)</i>  <i>In order to save the patients' lives. (P14)</i></p>

To address the reasons of not motivated to consume antihypertensive medication, two participants were bored of taking antihypertensive medication and four participants were experienced side effects from antihypertensive medication.

“I was bored with the medicine”. (P5)

“I felt nausea when taking medicine”. (P16)

“Sometimes I feel tired and afraid of hair loss”. (P6)

Five participants were reluctant to take antihypertensive medicine regularly due to some concerns. However, these participants continue collecting their antihypertensive medicines from government hospital every month.

“I fear of the side effects of the drug and the consequences of causing cancer, so I will eat more fruit like apples rather to take antihypertensive medicine every day”. (P4)

“I think my high blood pressure medicines are not suitable to me. So I did not take it regularly. When I felt uncomfortable and backache, then I will take the medicine, otherwise I would not take it. But

every month I still collect my high blood pressure medication from hospital”. (P5)

ii) Strategies to overcome barriers to adherence

Moreover in order to make sure antihypertensive medicine was taken, one of the participants has taken initiative to take all medicines at the same time.

“In early morning, I take all medicines at once before going to work although some of the medicines should be taken either before or after meal”. (P10)

In addition, ten participants prefer to share antihypertensive medication related problems with the NGO officer whom have attended them closely rather than their doctor and pharmacist at hospital. This is due to the close relationship and trust that they have in each other.

“I prefer NGO member because they know me well”. (P5)

“I have problem of transportation but a nurse (NGO) will help me to collect medication from hospital. I am so glad to them (NGO) and I am

Table 2 (cont.). Patients' quotes about their views on quality use of medication and hypertension management	
Subthemes	Quotes
Medication's expiry date	<p><i>I will check the expiry date. If I found the medicines were old then I would send it to hospital. (P6)</i></p> <p><i>I would not take the medicine if the color of medicines were changed. (P8)</i></p> <p><i>I will check expiry date. I will throw away it if expired. (P15)</i></p> <p><i>I will check expiry date first (P1,P3)</i></p> <p><i>Expiry date is important to be checked (P2,P7)</i></p> <p><i>I will check expiry date when receiving medicine from pharmacy (P10)</i></p> <p><i>I always check expiry date first. If expired, then I will return back to the hospital (P11)</i></p> <p><i>I will not take expired medicine (P13)</i></p> <p><i>I will check expiry date (P15,P16)</i></p> <p><i>I will remind myself to check expiry date of medicine (P17)</i></p>
Medication side effect	<p><i>I fear the high blood medication will damage my kidneys. (P4)</i></p> <p><i>Kidney disease because my husband had suffered kidney disease. (P5)</i></p> <p><i>The concern of taking too much of medicine as it may cause me easy to forget matter. (P13)</i></p> <p><i>I am still taking medications continuously with no concerns although many people claim that the medicine from hospital will cause kidney failure. (P2)</i></p> <p><i>It will cause kidney disease but I still continue to take it (P3)</i></p> <p><i>Kidney damage. My husband has this problem now. (P9)</i></p> <p><i>Our kidney will not function well (P12)</i></p> <p><i>It will cause kidney disease (P14)</i></p> <p><i>Will cause paralysed (P16)</i></p>
Treatment	<p><i>I will continue the existing medicine. (P6)</i></p> <p><i>I do not want to take traditional medicines. They want to continue with antihypertensive medicines given by government hospitals. (P8)</i></p>
Health status	<p><i>I would rate my health condition as 100% based on my good control of blood pressure. (P1)</i></p> <p><i>I rated my health condition as 20% because I do not have a persistent good blood pressure control. (P9)</i></p>

willing to share my problem (medication) with them (NGO)". (P14)

Moreover, a participant has taken initiative to have a recording book in order to enhance medicine compliance.

"I keep in a plastic bag. I will write or record in a book when taking medicine to avoid from forgetting because I am a stroke patient". (P9)

### Theme 2: Self-management of hypertension

Three subthemes were identified and categorized under self-management of hypertension. Participants have their own way in controlling and reducing their blood pressure.

#### i) Personal Strategy

In the response to the action to be taken if they have elevated blood pressure causing headache, the participants have various ways to manage it. Six participants took over the counter (OTC) medications, while a few participants prefer to take a rest.

"I will sit and relax. Then I will eat Panadol® (Paracetamol)". (P12)

"I would feel very emotional and angry when my blood pressure is high. Then I will take high blood pressure medicine and then sleeping". (P7)

Seven participants took herbal medicine in addition to their antihypertensive medication prescribed by doctors in controlling blood pressure.

"I always eat traditional medication in the form of seeds to control blood pressure". (P9)

"I take herbal medication in the form of small tablet". (P13)

While a participant commented he preferred Chinese tea which will "dilute" his "concentrated" blood.

"I will drink Chinese tea to "wash" my blood". (P1)

Five participants were reluctant to take herbal medicine in controlling their blood pressure. They believed medicines from hospital were good enough to control blood pressure.

"I have never taken herbs, herbal remedies or traditional medicine to control blood pressure". (P5)

#### ii) Awareness on signs and symptoms of high blood pressure

The participants were found to have different signs and symptoms when their blood pressure levels were elevated. When their blood pressures were elevated, twelve respondents reported dizziness as the first symptom they experienced. Three participants considered sweating and headache as the alarming signs for the increased blood pressure level.

"I felt dizzy and headache". (P 6)

"I would have a feeling of dizziness and tightness at the neck after eating beef which may have increased my blood pressure". (P9)

A participant commented that he would not feel any symptoms until he was told by her doctor about the increased of blood pressure.

"I did not feel anything until I was notified by doctor that my blood pressure was not under control". (P7)

### Theme 3: Patients' knowledge towards antihypertensive medication and hypertension

Participants have different understandings towards hypertension. The various levels of understandings have resulted in the different ways of hypertension management among the hypertensive patients.

#### i) Learning process

Seven participants were very interested to acquire knowledge of hypertension management. They had taken initiatives to attend educational talk. Four participants gained the knowledge of hypertension management through passive learning via mass media.

"I get the knowledge from education talk and health briefing". (P8)

"I received a lot of information (hypertension management) from TV (television) and radio". (P12)

In addition, three participants obtained hypertension knowledge through health care provider and NGO members.

"My NGO officer always shares with me the knowledge of hypertension". (P15)

#### ii) Knowledge on hypertension

Most of the participants (n=13) did not know the acceptable level of normal blood pressure. The lack of knowledge pertaining to targeted blood pressure is worrying and these patients should be educated on this.

"Normal blood pressure level is at 190/80 mmHg". (P9)

"I do not know". (P14)

Eleven respondents did not understand the causes of high blood pressure.

"High blood pressure is cholesterol in the blood". (P3)

"High blood pressure caused by stress and fatigue". (P6)

Ten participants knew about the complication of hypertension, with the eight of them noted that kidney disease and stroke as the consequences of hypertension.

"It will cause kidney damage". (P3)

"The complication of hypertension is paralyse and would cause stroke". (P7)

#### iii) Knowledge on hypertensive medication

All participants did not know the name of their antihypertensive medication. However nine of them remembered the shape and colour of their antihypertensive medications.

"I do not know the name of my medication, but usually I will bring my own high blood pressure medication as sample when buying medication at retail pharmacy". (P7)

"I do not know. I just take medication by looking at its shape and physical characteristics". (P12)

In the context of knowledge about mechanism of action for the antihypertensive medicine, all participants did not know how their antihypertensive medications work. They just understood that antihypertensive medications were used to control blood pressure.

"I do not know how my high blood pressure medicine works". (P6)

"I do not know about it (mechanism of action). I only follow doctor's instruction to consume medicine". (P11)

Ten participants commented antihypertensive medication could control their high blood pressure in order to save their lives. Two participants did not know the advantages of taking their antihypertensive medicine.

"I do not know the advantages of taking high blood pressure medication and I took medicine because I was instructed by doctors". (P9)

"I do not know. I just knew it (the hypertensive medicine) could save my life. (P14)

In the perspective of long term effects of antihypertensive medicines, six participants reported their concerns of kidney failure as side effect of antihypertensive medicine. Additionally, a participant stated that antihypertensive medicine has affected her memory.

"I afraid that the high blood medication will damage my kidneys". (P4)

"Kidney disease. Because my husband had suffered kidney disease". (P5)

"The concern of taking too much of medicine as it may cause me easy to forget matter". (P13)

Three respondents were not being influenced by these statements; this could be summarized by one participant:

"I am still taking medications continuously with no concerns although many people claim that the medicine from hospital will cause kidney failure". (P2)

Eleven participants were concerned about medication's expiry date. They knew expired medications were not suitable be consumed.

"I will check the expiry date. If I found the medications were old then I will send it to hospital". (P6)

"I will not take the medicine if the colour of medications were changed". (P8)

## DISCUSSION

This study assessed hypertensive patients 'perspective towards rational use of medication and hypertension management. The existing findings have successfully explored the different views of appropriate use of medication and hypertension management compare to the studies from western countries<sup>17,25</sup> and Asia countries.<sup>18,19,22</sup>

In the present study, medication adherence and strategies to improve medication adherence were identified as key factors in the medication management of hypertension. Four respondents revealed that they forgot to take medication occasionally. The level of non-adherence among the participants in the present study could be



skipping from one dose medication per day to the extent of skipping few weeks' medication. This finding is in line with the earlier study about the variation of medication adherence among the chronic disease patients in Western country.<sup>32</sup> Different reasons were given by the participants for not adhering medication. Consistent with the study findings by Holt and colleagues, the current study highlighted various natures of barrier to adherence among hypertensive patients.<sup>33</sup> Consistent with the previous studies<sup>34-38</sup>, one of the medication adherence's barrier was taking too many medication at one time. In line with the study reported by Cazorla and Rodriguez<sup>39</sup>, the present study demonstrated that eight participants did not take medication at the same time every day and a minority of them stopped medication when their blood pressure were at the optimal range. Of note, the current study has similar participants demographic (i.e. unemployed and living alone) as in Zullig's study which studied the factors contributing to medication non-adherence.<sup>34</sup> A key to success in management of hypertension is adherence and persistence to prescribed medicines. Poor adherence to antihypertensive medication could lead to elevated blood pressure level and contribute to high morbidity and mortality.

The current study identified second theme as self-management of hypertension which comprised of personal strategy and awareness on signs and symptoms of high blood pressure. Use of herbal and traditional therapies were perceived as one of personal strategies in controlling blood pressure instead of taking antihypertensive medication in the present study and were paralleled with the other studies from Africa, Asia and Europe countries.<sup>40-44</sup> A local study revealed that high prevalence of Malaysian population used herbal and traditional therapies for chronic disease despite of prescribed medication by general practitioner.<sup>45</sup>

Consistent with the previous studies, the last theme emerged from the existing finding was the patients' knowledge towards antihypertensive medication and hypertension.<sup>17,18</sup> The subthemes included the learning process on how the participants acquired knowledge of hypertension, knowledge on hypertension and hypertensive medication. In the context of patients' knowledge towards hypertension, most of the participants in this study did not know the accepted range of blood pressure. Similarly, a study conducted by Wizner reported that hypertensive patients were significantly less aware of normal blood pressure level, especially systolic blood pressure level compared to normative patients.<sup>46</sup> The hindering of better control of blood pressure level could be due to the low awareness of normal blood pressure values among the hypertensive patients.

The present study revealed that all participants did not understanding about the actual mechanism action of antihypertensive medication when compared to a qualitative study conducted at Canada.<sup>17</sup> In contrast to these findings, the Canadian study managed to show that the hypertensive patients in their study were able to explain the water pill (diuretic agent) as "making you pee more" and "takes certain things out of your system like sodium and different things out of your blood stream".<sup>17</sup>

Nevertheless, six participants in this study reported to have some experienced side effects of the antihypertensive medications and they were concerned that these medications would lead to the kidney failure. Side effects such as palpitations, frequent urination, recurrent bouts of hunger, erectile dysfunction, dizziness, cough, physical exhaustion were reported in almost half of the hypertensive patients in Krethcy's study and it also reported that patient's non adherence were significantly related with the experienced side effects.<sup>47</sup> In addition, a systematic review which included 53 qualitative studies reported that the side effects experienced by the hypertensive patients and the concerns about medication addiction have led to poor adherence among hypertensive patients.<sup>38</sup>

### Limitation

There are few limitations in the present study. In this qualitative study, the semi structured questionnaires were designed based on the previous studies<sup>17,18,25,26</sup>, for instance the medication management by the hypertensive patients and contents from Malaysian national survey on the use of medications might influence the topic development for this study. In addition, the dominant voice from the vocal participants would override other voices in the method of focus group discussion.<sup>48</sup> Hence the data obtained from this focus group discussion might have high possibility from those vocal participants than those inactive participants. However, these issues were resolved by encouraging inactive participant to give opinions and highlighting probes by the moderator. Besides, there might be a gap of communication in the process of translation by the pharmacy student to the participants during the focus group discussion. Moreover, the interaction among the participants could not achieve at the optimum level by using multi languages during the discussion. Lastly, the participants in the present study were from low income residential area, thus the findings obtained cannot be assuredly extrapolated to those moderate and high income people with hypertension.

### CONCLUSIONS

This study explored the hypertensive patients' perspectives on the use of medication and highlighted the issue of concerns about hypertension management. The misconception about the side effect of antihypertensive medication has led to poor adherence among the participants. The lack of knowledge towards the targeted blood pressure level was found among the participants and its consequence contributes to low level of self-monitoring of blood pressure. Health educational talk and screening program by the healthcare professional in collaboration with NGO should be advocated at the community level in addressing the above gaps.

### CONFLICT OF INTEREST

No conflict of interest.

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## References

1. Akici A, Kalaça S, Uğurlu Ü, Toklu H, Oktay Ş. Antihypertensive drug utilization at health centres in a district of Istanbul. *Pharm World Sci.* 2007 Jun;29(3):116-121. doi: [10.1007/s11096-007-9103-5](https://doi.org/10.1007/s11096-007-9103-5)
2. Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, Chen J, He J. Global Disparities of Hypertension Prevalence and Control: A Systematic Analysis of Population-Based Studies From 90 Countries. *Circulation.* 2016;134(6):441-450. doi: [10.1161/CIRCULATIONAHA.115.018912](https://doi.org/10.1161/CIRCULATIONAHA.115.018912)
3. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. *Lancet.* 2005 Jan 15-21;365(9455):217-223. doi: [10.1016/S0140-6736\(05\)17741-1](https://doi.org/10.1016/S0140-6736(05)17741-1)
4. Mousa TM, Akinseye OA, Kerwin TC. Inadequate blood pressure control in hypertensive patients referred for cardiac stress test. *J Clin Hypertens (Greenwich).* 2015;17(9):709-712. doi: [10.1111/jch.12586](https://doi.org/10.1111/jch.12586)
5. Yiannakopoulou EC, Papadopoulos JS, Cokkinos DV, Mountokalakis TD. Adherence to antihypertensive treatment: a critical factor for blood pressure control. *Eur J Cardiovasc Prev Rehabil.* 2005;12(3):243-249.
6. Planas LG, Crosby KM, Mitchell KD, Farmer KC. Evaluation of a hypertension medication therapy management program in patients with diabetes. *J Am Pharm Assoc (2003).* 2009;49(2):164-170. doi: [10.1331/JAPhA.2009.08164](https://doi.org/10.1331/JAPhA.2009.08164)
7. Devine EB, Hoang S, Fisk AW, Wilson-Norton JL, Lawless NM, Louie C. Strategies to optimize medication use in the physician group practice: the role of the clinical pharmacist. *J Am Pharm Assoc (2003).* 2009;49(2):181-191. doi: [10.1331/JAPhA.2009.08009](https://doi.org/10.1331/JAPhA.2009.08009)
8. Rudman LA, Hope Gonzales M, Borgida E. Mishandling the gift of life: noncompliance in renal transplant patients. *J Appl Soc Psychol.* 1999;29(4):834-851. doi: [10.1111/j.1559-1816.1999.tb02028.x](https://doi.org/10.1111/j.1559-1816.1999.tb02028.x)
9. Graves JW. Management of difficult to control hypertension. *Mayo Clin Proc.* 2000;75(3):278-284. doi: [10.4065/75.3.278](https://doi.org/10.4065/75.3.278)
10. van der Sande MA, Milligan PJ, Nyan OA, Rowley JT, Banya WA, Ceesay SM, Dolmans WM, Thien T, McAdam KP, Walraven GE. Blood pressure patterns and cardiovascular risk factors in rural and urban gambian communities. *J Hum Hypertens.* 2000;14(8):489-496.
11. Guo H, He H, Jiang J. [Study on the compliance of antihypertensive drugs in patients with hypertension]. *Zhonghua Liu Xing Bing Xue Za Zhi.* 2001;22(6):418-420.
12. Ministry of Health Malaysia. National Health & Morbidity Survey 2015. Vol II. 2015.
13. Rampal L, Rampal S, Azhar MZ, Rahman AR. Prevalence, awareness, treatment and control of hypertension in Malaysia: A national study of 16,440 subjects. *Public Health.* 2008 Jan;122(1):11-18. doi: [10.1016/j.puhe.2007.05.008](https://doi.org/10.1016/j.puhe.2007.05.008)
14. Ramli A, Ahmad NS, Paraidathathu T. Medication adherence among hypertensive patients of primary health clinics in Malaysia. *Patient Prefer Adherence.* 2012;6:613-622. doi: [10.2147/PPA.S34704](https://doi.org/10.2147/PPA.S34704)
15. Hassali MA, Supian A, Ibrahim MI, Al-Qazaz HK, Al-Haddad M, Saleem F, Palaian S. The Characteristics of Drug Wastage at the Hospital, Tuanku Jaafar Seremban, Malaysia: A Descriptive Study. *Journal of Clinical & Diagnostic Research.* 2012;6(5).
16. Yue Z, Bin W, Weilin Q, Aifang Y. Effect of medication adherence on blood pressure control and risk factors for antihypertensive medication adherence. *J Eval Clin Pract.* 2015;21(1):166-172. doi: [10.1111/jep.12268](https://doi.org/10.1111/jep.12268)
17. Jolles EP, Padwal RS, Clark AM, Braam B. A qualitative study of patient perspectives about hypertension. *ISRN Hypertension.* 2013;2013:671691. doi: [10.5402/2013/671691](https://doi.org/10.5402/2013/671691)
18. Kusuma YS. Perceptions on hypertension among migrants in Delhi, India: a qualitative study. *BMC Public Health.* 2009;9:267. doi: [10.1186/1471-2458-9-267](https://doi.org/10.1186/1471-2458-9-267)
19. Saleem F, Hassali M, Shafie A, Atif M. Drug attitude and adherence: a qualitative insight of patients with hypertension. *J Young Pharm.* 2012;4(2):101-107. doi: [10.4103/0975-1483.96624](https://doi.org/10.4103/0975-1483.96624)
20. Rajpura J, Nayak R. Medication adherence in a sample of elderly suffering from hypertension: evaluating the influence of illness perceptions, treatment beliefs, and illness burden. *J Manag Care Pharm.* 2014;20(1):58-65. doi: [10.18553/jmcp.2014.20.1.58](https://doi.org/10.18553/jmcp.2014.20.1.58)
21. Meinema JG, van Dijk N, Beune EJAJ, Jaarsma DADC, van Weert HCPM, Haafkens JA. Determinants of adherence to treatment in hypertensive patients of African descent and the role of culturally appropriate education. *PLoS One.* 2015;10(8):e0133560. doi: [10.1371/journal.pone.0133560](https://doi.org/10.1371/journal.pone.0133560)
22. Tan BY, Shafie AA, Hassali MAA, Saleem F, Muneswarao J. Association among calendar packaging and medication adherence: Findings from a focus group discussion among hypertensive patients in Penang, Malaysia. 2016.
23. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care.* 2007;19(6):349-357. doi: [10.1093/intqhc/mzm042](https://doi.org/10.1093/intqhc/mzm042)
24. Starks H, Trinidad SB. Choose your method: A comparison of phenomenology, discourse analysis, and grounded theory. *Qual Health Res.* 2007;17(10):1372-1380. doi: [10.1177/1049732307307031](https://doi.org/10.1177/1049732307307031)
25. Alhalaifa F, Deane KH, Gray R. Hypertensive patients' experience with adherence therapy for enhancing medication compliance: a qualitative exploration. *J Clin Nurs.* 2013;22(13-14):2039-2052. doi: [10.1111/j.1365-2702.2012.04321.x](https://doi.org/10.1111/j.1365-2702.2012.04321.x)
26. Hassali M, Shafie A, Chua G. National Survey on the Use of Medicines (NSUM) by Malaysian consumers 2012. Petaling Jaya, Malaysia: Pharmaceutical Services Divisions, Ministry of Health. 2013.
27. Kitzinger J. The methodology of focus groups: the importance of interaction between research participants. *Sociology of health & illness.* 1994;16(1):103-121. doi: [10.1111/1467-9566.ep11347023](https://doi.org/10.1111/1467-9566.ep11347023)
28. Dawson S, Manderson L, Tallo VL. A manual for the use of focus groups. Boston: International Nutrition Foundation for Developing Countries; 1993.
29. Krueger RA. Focus groups: A practical guide for applied research: Sage publications; 2014.

30. Liamputtong P. *Qualitative research methods*. South Melbourne, Victoria Oxford University Press, 2013. ISBN: 9780195518559.
31. Hassali MA, Tan CS, Saleem F, Aljadhey H. A qualitative exploration of perceptions toward pharmaceutical price war among community pharmacists in the state of Penang, Malaysia. *J Med Mark*. 2013;13(1):44-53. doi: [10.1177/1745790413477648](https://doi.org/10.1177/1745790413477648)
32. Drey N, McKeown E, Kelly D, Gould D. Adherence to antiparkinsonian medication: An in-depth qualitative study. *International Journal of Nursing Studies*. 2012;49(7):863-871. doi: [10.1016/j.ijnurstu.2012.01.012](https://doi.org/10.1016/j.ijnurstu.2012.01.012)
33. Holt EW, Rung AL, Leon KA, Firestein C, Krousel-Wood M. Medication Adherence in Older Adults: A Qualitative Study. *Educ Gerontol*. 2014;40(3):198-211. doi: [10.1080/03601277.2013.802186](https://doi.org/10.1080/03601277.2013.802186)
34. Zullig LL, Stechuchak KM, Goldstein KM, Olsen MK, McCant FM, Danus S, Crowley MJ, Oddone EZ, Bosworth HB. Patient-reported medication adherence barriers among patients with cardiovascular risk factors. *J Manag Care Spec Pharm*. 2015 Jun;21(6):479-485. doi: [10.18553/jmcp.2015.21.6.479](https://doi.org/10.18553/jmcp.2015.21.6.479)
35. Levi M, Pasqua A, Cricelli I, Cricelli C, Piccinni C, Parretti D, Lapi F. Patient adherence to Olmesartan/Amlodipine combinations: fixed versus extemporaneous combinations. *J Manag Care Spec Pharm*. 2016;22(3):255-262. doi: [10.18553/jmcp.2016.22.3.255](https://doi.org/10.18553/jmcp.2016.22.3.255)
36. Márquez-Contreras E, de la Figuera-Von Wichmann M, Franch-Nadal J, Llisterri-Caro JL, Gil-Guillén V, Martín-de Pablos JL, Casado-Martínez JJ, Martell-Claros N. Do Patients With High Vascular Risk Take Antihypertensive Medication Correctly? CUMPLE-MEMS Study. *Rev Esp Cardiol (Engl Ed)*. 2012;65(6):544-550. doi: [10.1016/j.recesp.2012.01.018](https://doi.org/10.1016/j.recesp.2012.01.018)
37. Ryan GW, Wagner GJ. Pill taking 'routinization': a critical factor to understanding episodic medication adherence. *AIDS Care*. 2003;15(6):795-806. doi: [10.1080/09540120310001618649](https://doi.org/10.1080/09540120310001618649)
38. Marshall JJ, Wolfe CA, McKeivitt C. Lay perspectives on hypertension and drug adherence: systematic review of qualitative research. *BMJ*. 2012;345:e3953. doi: [10.1136/bmj.e3953](https://doi.org/10.1136/bmj.e3953)
39. Cazorla MN, Rodríguez D. Degree of therapeutic adherence to bone mineral metabolism drugs: Do our patients take the prescribed medication? *Enfermería Nefrológica*. 2013;16(1):41-47.
40. Damasceno A, Azevedo A, Silva-Matos C, Prista A, Diogo D, Lunet N. Hypertension prevalence, awareness, treatment, and control in Mozambique urban/rural gap during epidemiological transition. *Hypertension*. 2009;54(1):77-83. doi: [10.1161/HYPERTENSIONAHA.109.132423](https://doi.org/10.1161/HYPERTENSIONAHA.109.132423)
41. Olisa NS, Oyelola FT. Evaluation of use of herbal medicines among ambulatory hypertensive patients attending a secondary health care facility in Nigeria. *Int J Pharm Pract*. 2009;17(2):101-105. doi: [10.1211/ijpp.17.02.0005](https://doi.org/10.1211/ijpp.17.02.0005)
42. Amira OC, Okubadejo NU. Frequency of complementary and alternative medicine utilization in hypertensive patients attending an urban tertiary care centre in Nigeria. *BMC Complement Altern Med*. 2007;7:30. doi: [10.1186/1472-6882-7-30](https://doi.org/10.1186/1472-6882-7-30)
43. Mahfudz A, Chan S. Use of complementary medicine amongst hypertensive patients in a public primary care clinic in Ipoh. *Med J Malaysia*. 2005;60(4):454.
44. Yang PR, Shih WT, Chu YH, Chen PC, Wu CY. Frequency and co-prescription pattern of Chinese herbal products for hypertension in Taiwan: a Cohort study. *BMC Complement Altern Med*. 2015;15:163. doi: [10.1186/s12906-015-0690-8](https://doi.org/10.1186/s12906-015-0690-8)
45. Siti ZM, Tahir A, Farah AI, Fazlin SM, Sondi S, Azman AH, Maimunah AH, Haniza MA, Siti Haslinda MD, Zulkarnain AK, Zakiah I, Zaleha WC. Use of traditional and complementary medicine in Malaysia: a baseline study. *Complement Ther Med*. 2009;17(5-6):292-299. doi: [10.1016/j.ctim.2009.04.002](https://doi.org/10.1016/j.ctim.2009.04.002)
46. Wizner B, Gryglewska B, Gasowski J, Kocemba J, Grodzicki T. Normal blood pressure values as perceived by normotensive and hypertensive subjects. *J Hum Hypertens*. 2003;17(2):87-91. doi: [10.1038/sj.jhh.1001516](https://doi.org/10.1038/sj.jhh.1001516)
47. Kretchy IA, Owusu-Daaku FT, Danquah SA, Asampong E. A psychosocial perspective of medication side effects, experiences, coping approaches and implications for adherence in hypertension management. *Clin Hypertens*. 2015;21:19. doi: [10.1186/s40885-015-0028-3](https://doi.org/10.1186/s40885-015-0028-3)
48. Smithson J. Using and analysing focus groups: limitations and possibilities. *Int J Soc Res Methodol*. 2000;3(2):103-119. doi: [10.1080/136455700405172](https://doi.org/10.1080/136455700405172)
49. James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, Lackland DT, LeFevre ML, MacKenzie TD, Ogedegbe O, Smith SC Jr, Svetkey LP, Taler SJ, Townsend RR, Wright JT Jr, Narva AS, Ortiz E. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). *JAMA*. 2014;311(5):507-520. doi: [10.1001/jama.2013.284427](https://doi.org/10.1001/jama.2013.284427)