

HYPERTENSION KNOWLEDGE AND ADHERENCE
STUDY IN A SPECIALIST OUTPATIENT MEDICAL
CLINIC IN MIRI HOSPITAL, SARAWAK, MALAYSIA –
A PILOT STUDY

BY

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INTRODUCTION

- Adherence to (or compliance with) a medication regimen is generally defined as the extent to which patients take medications as prescribed by their health care providers.

- Adherence rates are typically higher among patients with acute conditions, as compared with those with chronic conditions; persistence among patients with chronic conditions is disappointingly low, dropping most dramatically after the first six months of therapy.[2,3,4](#)

INTRODUCTION

- Patient knowledge and awareness of hypertension are important factors in achieving blood pressure control. Lack of knowledge of target systolic BP levels was shown to be an independent predictor of poor BP control. An education program that focused, in part , on "knowing high BP" led to improved compliance and significant reductions in both SBP and DBP.[13](#)

OBJECTIVES

The objectives of this study was

- 1. To determine the effectiveness of interventions to increase knowledge of hypertension
- 2. To evaluate patient reported adherence to medications using a simple questionnaire, the Morisky scale.
- 3. To review types of antihypertensive drugs used in the current cohort of patients.

METHODS

- Development of items
 - Questionnaire and educational kit/presentation
- Content validity and face validity
 - 2 pharmacist, a nurse educator and health education officer formulate the items after few discussions made
- Questionnaire
 - 2 set of questionnaire was used pre and post questionnaire.
- Sample
 - The convenience sample for this cross-sectional descriptive study consisted of 60 adults. Inclusion criteria for participants included the following: (1) age > 18 years, (2) currently taking an antihypertensive medication, or (3) blood pressure of 140/90 mm Hg and above (4) consent to participate in the study
- Analysis
 - The data analysis consisted of descriptive statistics (range, mean, median and SD) for all variables. Inferential statistics also will be use if suitable.
- Ethical issues
 - Permission obtained from the Hospital director before the research started

METHODS

- 60 PATIENTS WERE INCLUDED IN THIS STUDY THROUGH CONVINIENCE SAMPLING WHO CAME TO THE MEDICAL CLINIC
- PATIENTS WERE INCLUDED WHO FULFILL OUR INCLUSION CRITERIA
- WHILE WAITING FOR THEIR TURN TO SEE THE DOCTOR WE INVITED THEM TO OUR EDUCATIONAL TALK FOR 15-20 MINUTES
- CONSENT FROM THE PATIENT GRANTED BEFORE WE STARTED
- IN THE EDUCATIONAL ROOM WE DISTRIBUTED QUESTIONAIRE ABOUT HIPERTENSION TO TEST THEIR KNOWLEDGE OF HYPERTENSION AND ADHERENT TO MEDICATION
- AFTER ANSWERING THE QUESTIONAIRE WE STARTED THE EDUCATIONAL TALK TO THE PATIENTS USING POWERPOINT PRESENTATION
- WHILE THE PHARMACIST GIVING THE TALK, ANOTHER PHARMACIST GONE THROUGH THE PATIENTS OUTPATIENT RECORD FOR INFORMATION SUCH AS DEMOGRAFIC DATA, MEDICATION PRESCRIBED, BP LEVELS NOW AND THE PREVIOUS 2 VISITS.
- A QUESTIONNAIRE WITH DIFFERENT SET OF QUESTION WERE DISTRIBUTED TO THE PATIENT AFTER THE TALK TO ASSESS THEIR KNOWLEDGE AND UNDERSTANDING ABOUT HYPERTENSION

Morisky scale for adherence study

- The Morisky test consists of the following questions:
- 1) have you ever forgotten to take your medicine?
- 2) are you sometimes neglectful in regard to your medication hours?
- 3) do you skip your medicine hours when you are feeling well?
- 4) when you fell badly due to the medicine, do you skip it?
- Patients are considered adherent to the treatment when they obtain the maximum score of 4 points, and the patients are considered no adherent when they obtain 3 points or less.
- The scale demonstrated adequate internal consistency ($\alpha=0.61$), sensitivity (0.81) and specificity (0.44) in a sample of hypertensive patients.
- *Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self reported measure of medication adherence. Med Care 1986; 24:67-74*

RESULTS

RESULT

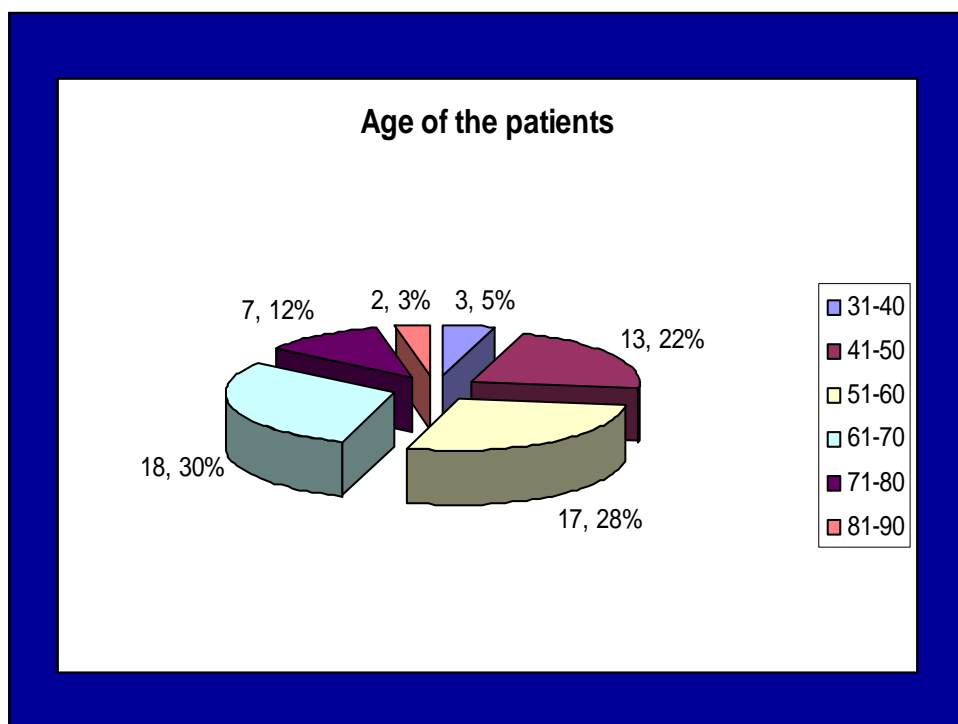
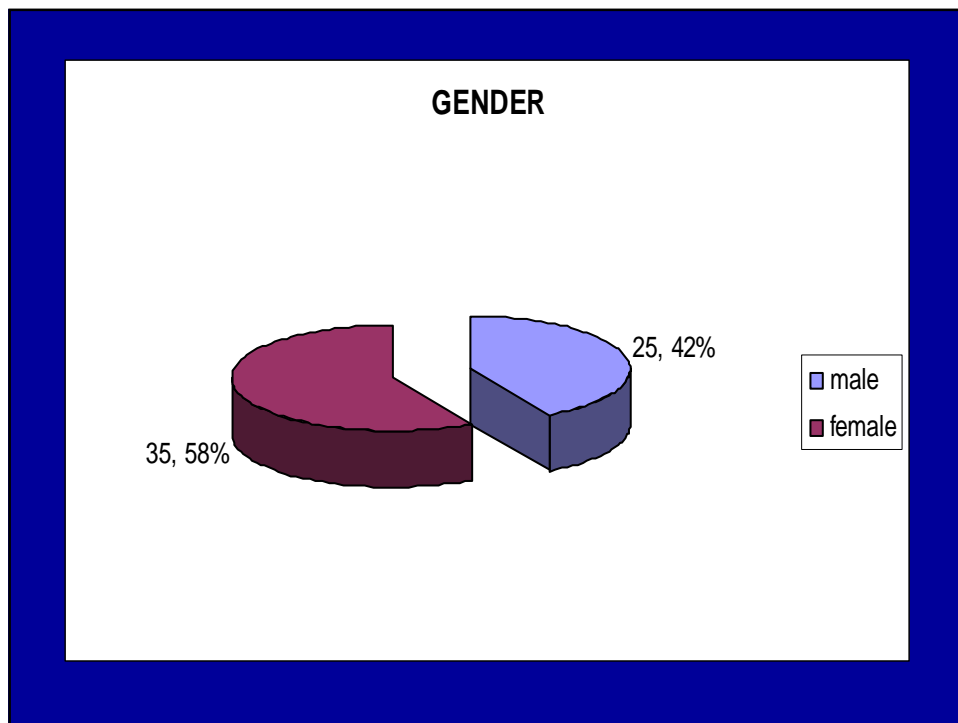
- A total of 60 patients were enrolled in the study during the month of May 2007
- 58.3% of the patients were female (n=35) while 41.7% (n=25) were men
- The average age was 58.13 ± 11.10 years
- 38.3% (n=23) were Chinese patients, followed by Malay 30%.
- Average BP was $160 \pm 24 / 88 \pm 16$ mm Hg
- 50% (n=30) patients were on 2 combinations of antihypertensive drugs.
- 41.7% (n=25) patients with family history of hypertension.
- 66.7% (n=40) patients say they are not taking herbs
- 93.3% (n=56) patients never smoke,
- 91.75 (n=55) patients never drinks alcohol.
- 78.3% (n=47) patients said they do not like outside food.
- 70% (n=42) patients do not like fast or processed food.
- 51.7% (n=31) do not exercise and
- 86.7 (n=52) patients never seek treatment other than their physician.

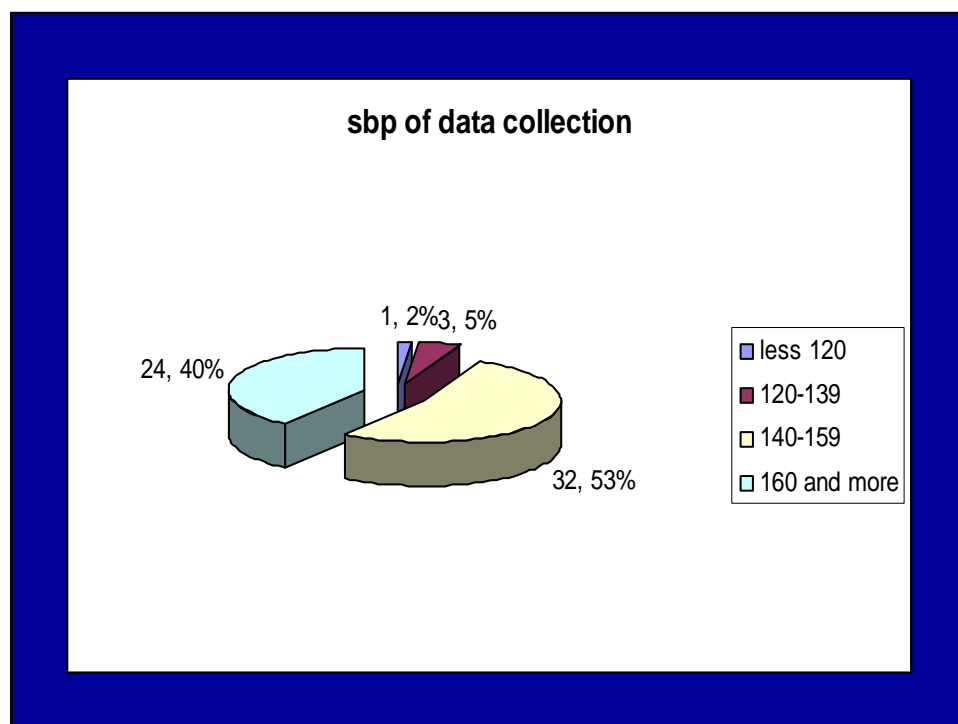
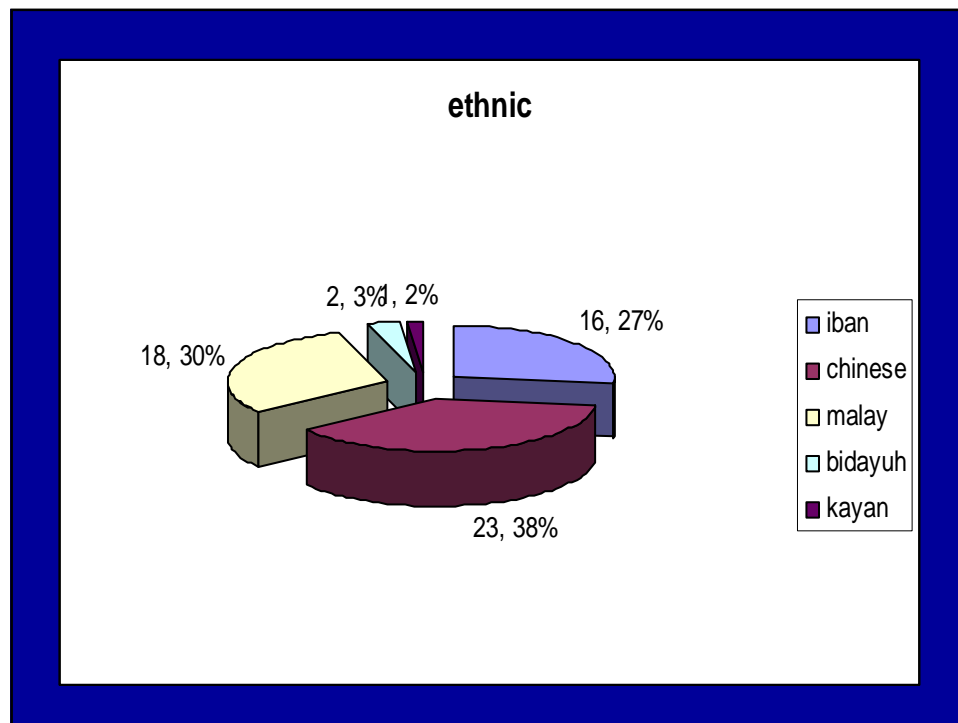
Table 1. Descriptive statistics for continuous variables

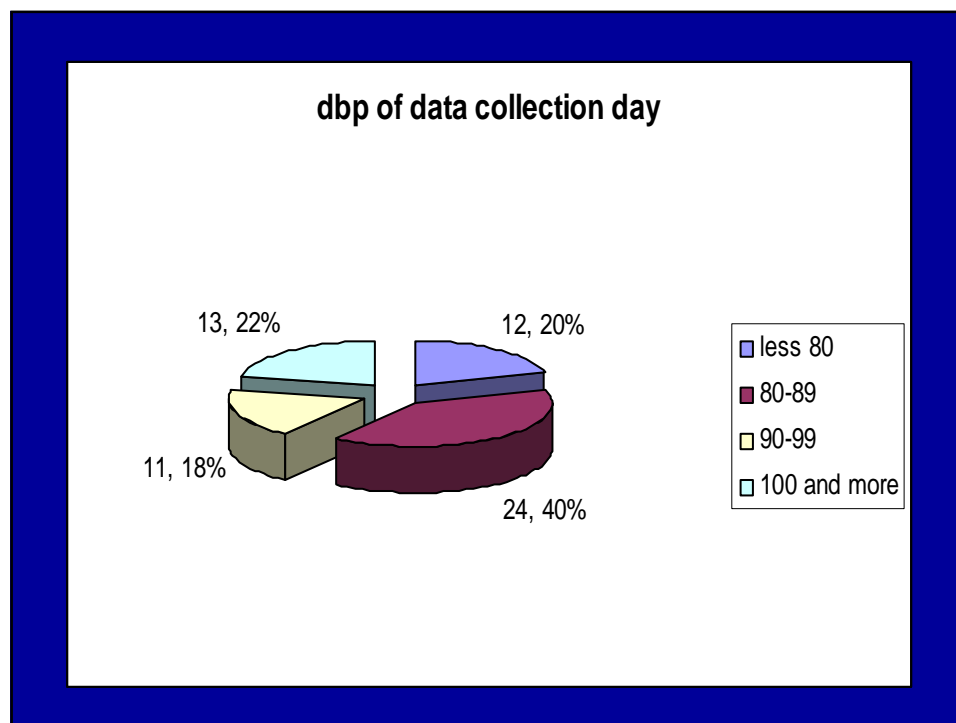
Variable (unit)	Mean±STD dev.
Age (y)	58.13±11.10
Systolic pressure (most recent) (mm Hg)	160.05±24.71
Diastolic pressure (most recent) (mm Hg)	88.67±16.42

Table 2 Descriptive statistics for categorical variables

Variable	Proportion (%)	
Gender		
Male	25	(41.7)
Female	35	(58.3)
Age (categorical)		
31-40 y	3	(5)
41-50	13	(21.7)
51-60	17	(28.3)
61-70	18	(30)
71-80	7	(11.7)
81-90	2	(3.3)
Ethnic		
Iban	16	(26.7)
Chinese	23	(38.3)
Malay	18	(30)
Bidayuh	2	(3.3)
Kayan	1	(1.7)







KNOWLEDGE ABOUT BP IN GENERAL

- We assess knowledge of the patients about blood pressure by asking them 4 simple questions **before** the intervention by pharmacist
- 41.7% (n=25) patients have given correct answer to the question of 'what is high blood pressure'.
- 90% (n=54) answer 'yes' to the question 'is high blood pressure dangerous'.
- 93.3% (n=56) patients say 'yes' to the question 'do we need to treat hypertension'
- 86.7% (n=52) patients says 'yes' to the question that 'is high blood pressure can cause organ damage'.

- **After** intervention by pharmacist the patients knowledge about hypertension has increased to
- 56.7%(n=34) which gave correct answer on what is hypertension. (p=0.025)
- 96.7%(n=58) say 'yes' hypertension is dangerous,
- 95%(n=57) say 'yes' hypertension has to be treated and
- 98.3%(n=59) patients say high blood pressure can cause end organ damage. (p=0.008)

Table 3

Patient on antihypertensive drug therapy		
Yes	52	(86.7)
No	8	(13.3)
One drug		
ACEI	4	(7.7)
CCB	3	(5.7)
BB	2	(3.8)
Two drugs		
CCB + BB	11	(21.2)
BB + ACE	8	(15.4)
CCB + ACEI	6	(11.5)
CCB + ARB	2	(3.8)
CCB + Ablo	1	(1.9)
BB + D	1	(1.9)
ARB + BB	1	(1.9)
Three drugs		
ACEI + BB + CCB	6	(11.5)
ACE + BB + D	2	(3.8)
Ablo + CCB + BB	2	(3.8)
Four drugs		
CCB + ARB + BB + Ablo	1	(1.9)
D + BB + CCB + Central	1	(1.9)
ARB + BB + CCB + D	1	(1.9)

ACEI-Angiotenin Converting Enzyme Inhibitors, CCB-Calcium Channel Blocker, BB-Beta Blocker, ARB- Angiotensin II Receptor Blocker, D-Diuretic, Central

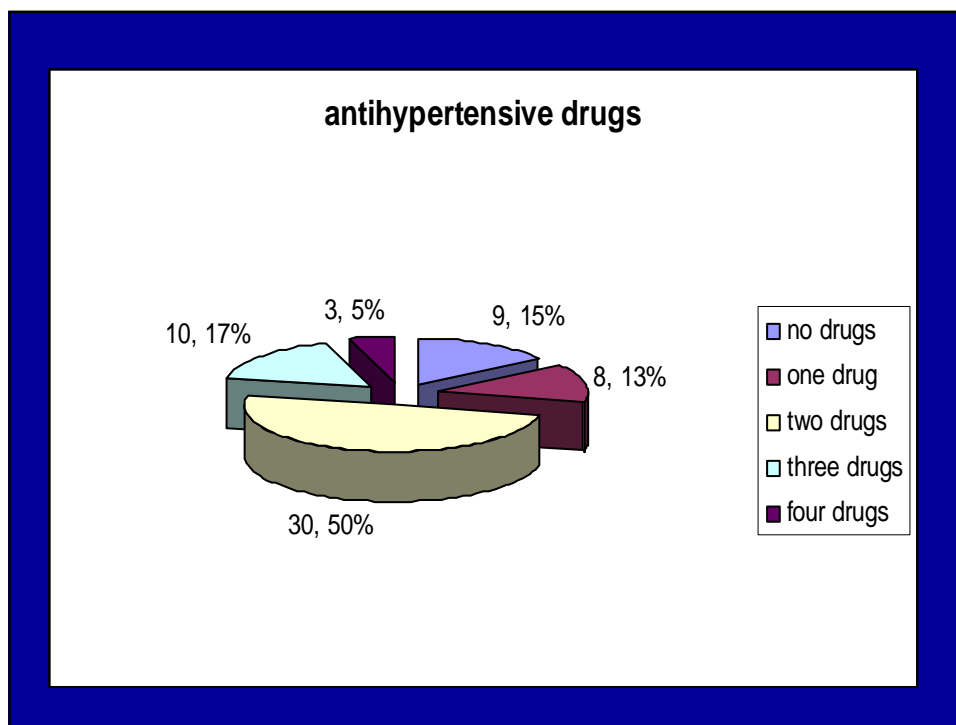


Table 4 Pre questionnaire Social / lifestyle survey

		%
Herbal use		
Yes	20	(33.3)
No	40	(66.7)
Smoking status		
Yes	4	(6.7)
No	56	(93.3)
Alcohol use		
Yes	5	(8.3)
No	55	(91.7)
Like to eat outside home		
Yes	13	(21.7)
No	47	(78.3)
Like eating process or fast food		
Yes	18	(30)
No	42	(70)
Like to exercise		
Yes	29	(48.3)
No	31	(51.7)
Going to treatment other than medical doctor		
Yes	29	(48.3)
No	31	(51.7)

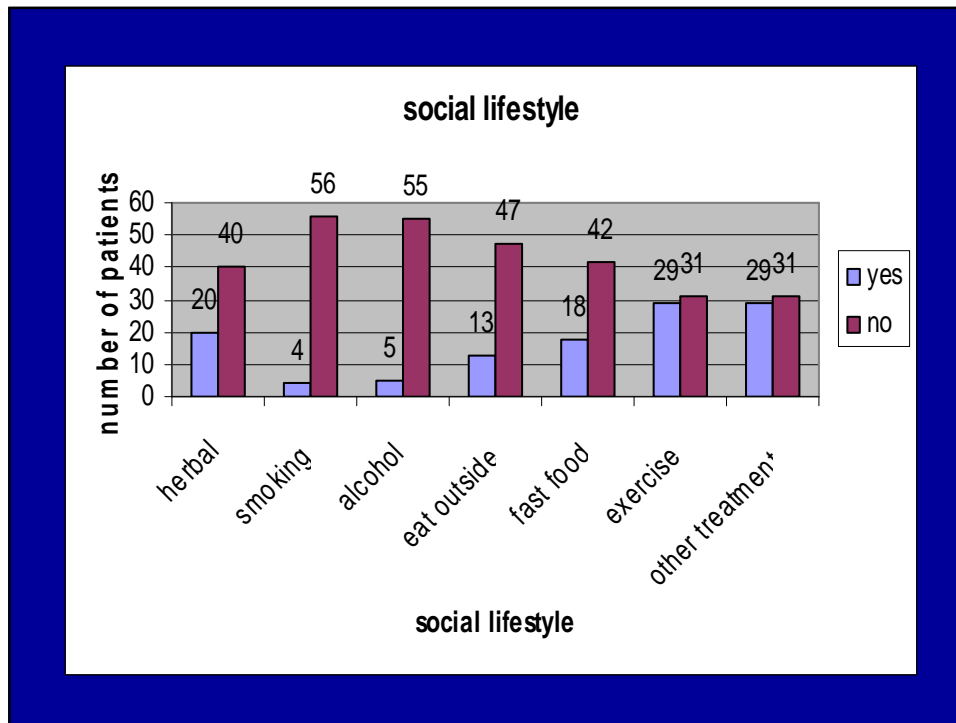
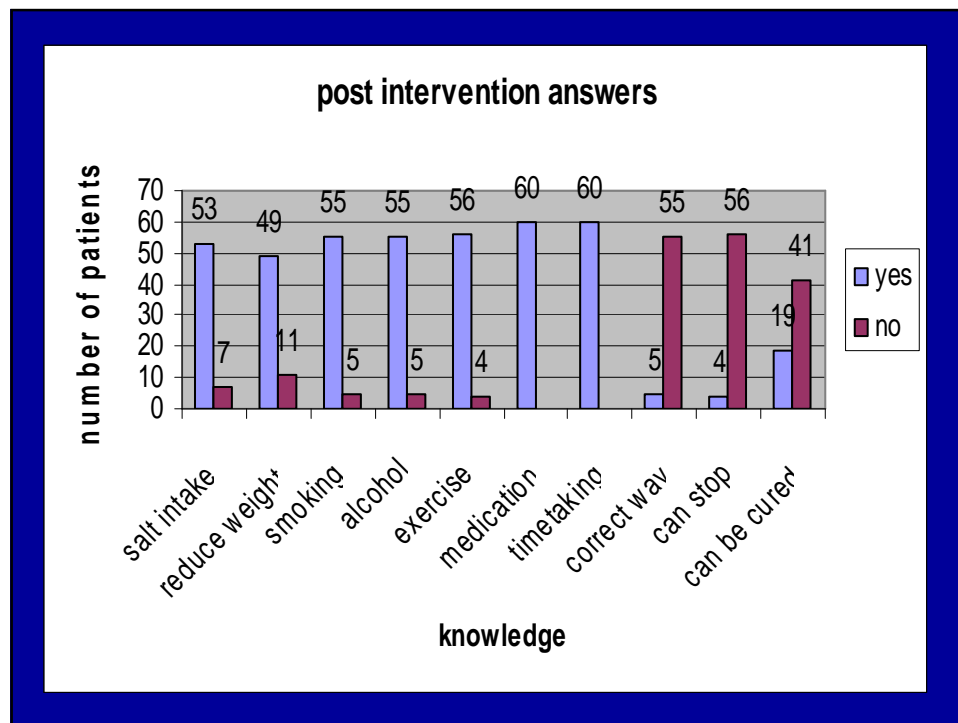


TABLE 5 POSTINTERVENTION SURVEY

Taking salt can increase blood pressure		%
Yes	53	(88.3)
No	7	(11.7)
Reducing weight can reduce high blood pressure		
Yes	49	(81.7)
No	11	(18.3)
Smoking can affect blood pressure		
Yes	55	(91.7)
No	5	(8.3)
Alcohol can affect blood pressure		
Yes	55	(91.7)
No	5	(8.3)
Exercise can reduce blood pressure		
Yes	56	(93.3)
No	4	(6.67)

TABLE 5 POSTINTERVENTION SURVEY cont....

Medication helps to reduce blood pressure	%	
Yes	60	(100)
Time taking medication important		
Yes	60	(100)
Can you take all your daily medication at one time?		
Yes	5	(8.3)
No	55	(91.7)
Can you stop taking your medication?		
Yes	4	(6.7)
No	56	(93.3)
Can high blood pressure be cured?		
Yes	19	(31.7)
No	41	(68.3)

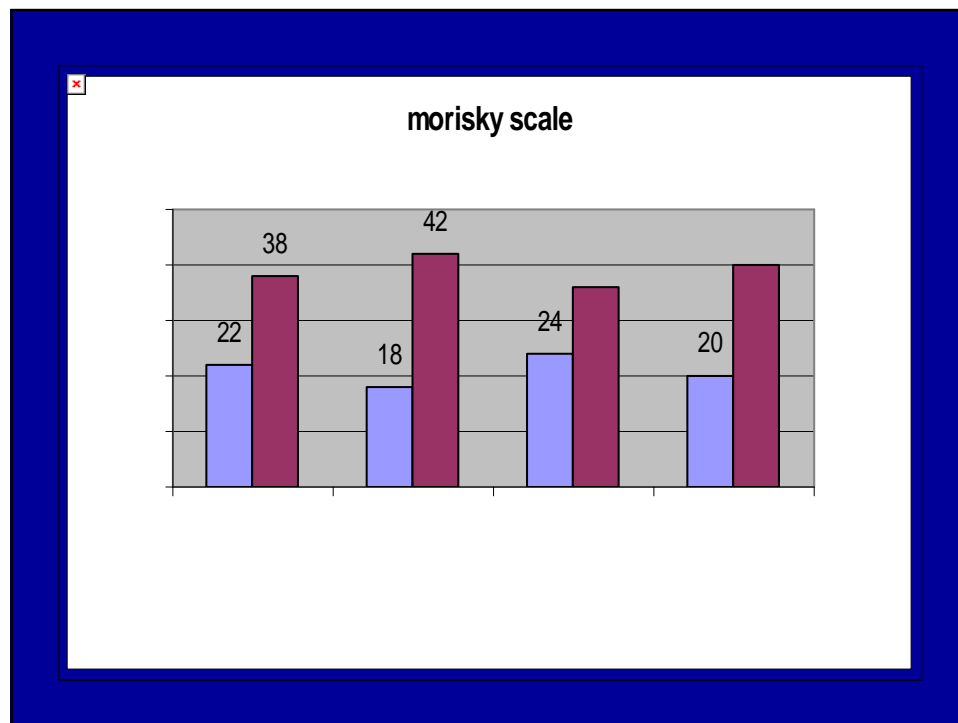


- 25 % (n=15) of the patients aged between 61-70 gives the response 'yes' to the question 'reducing weight can reduce blood pressure' (p=0.04) , followed by 23.3% patients aged 51-60 and 21.6 % patients aged 41-50.

Table 6 Donald E Morisky's Questions

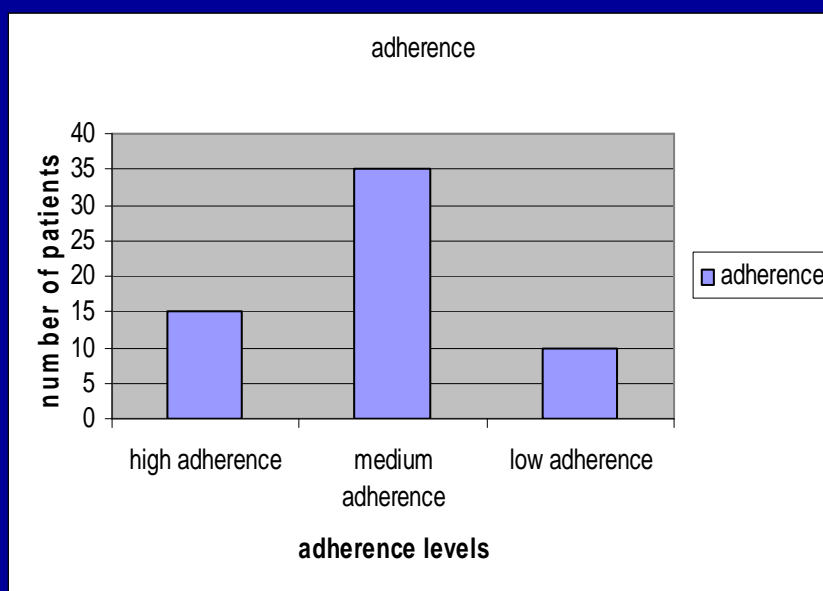
Do you ever forget to take your medicine?	
Yes	22
No	38
Are you careless at time about taking your medicine?	
Yes	18
No	42
When you feel better do you sometimes stop takig your medicine?	
Yes	24
No	36
Sometimes if you feel worse when you take the medicine, do you stop taking it?	
Yes	20
No	40

- 20% (n=12) patients aged 51-60 says never forget taking their medication followed by 16.6% (n=10) patients aged 61-70, 11.6% patients aged 71-80 and 8.3% (n=5) patients aged 41-50 years old. (P=0.005)
- 23.3% (n=14) Chinese patients says never forget taking medication followed by 21.7% (n=13) iban patients and 18.3% (n=11) Malay patients. (P=0.046)



RESULT

	N	(%)
HIGH ADHERENCE (all no response)	15	(25)
MEDIUM ADHERENCE (1 or 2 yes responses)	35	(58.3)
LOW ADHERENCE (3 or 4 yes responses)	10	(16.7)



DISCUSSION OBJECTIVE 1 –

To determine the effectiveness of interventions to increase knowledge to blood pressure disease

The patient's knowledge has increased from

-41.7% to 56.7%

(question 1) what is high Bp? Given the correct answer

-90 % to 96.7%

(question 2) is high BP dangerous? Yes

-93.3% to 95%

(question 3) do you need to treat high BP? Yes

-86.7% to 98.3%

(question 4) High BP can lead to organ damage? Yes

($p=0.008$)

Post intervention by pharmacist

- 88.33% (n=53) of patients score > 75% correct answers to 14 questions asked about hypertension.
- 10% (n=6) of patients scored > 50% to 75% correct answers on knowledge and
- only 1.67% (n=1) of the patient scored < 50% correct answer on knowledge.
- All the patients have given correct answers to two of the questions. The 2 questions were whether medication can help reduce BP and the time of taking drugs are important.

- 8.33% (n=5) of the patients said they can take their 3 times a day medication at one time. This indicates that the patients' knowledge are poor. They did not understand the proper way of taking their medication. The roles of pharmacist are crucial in this situation so that any adverse events can be avoided.

- 31.6% (n=19) of the patients said 'yes' that hypertension can be cured.

DISCUSSION OBJECTIVE 2-

To evaluate patient reported adherence to medications using a simple questionnaire, the Morisky scale

- Only 25% (n=15) of the patients are (high adherence) adherent to their medications. 75% (n=45) patients are no adherence. (medium 58.3% and low adherence 16.7%)
- Female patients, 15% (n=15) are more adherent than male patients.
- 11.7% of Iban ethnic were more adherent than the other races.
- 15.1% (n=9) of the patients aged more than 60 years old are more adherent than the other age groups

Reasons for no adherence

- 1) patients do not know what to do to be adherent
- 2) patients do not know how to take medication
- 3) patients are not motivated

- When is there a high risk of no adherence?
 - chronic illness, asymptomatic illness, progressive illness, complex regimens or administration techniques, when cost is a barrier, side effects, patient knowledge and understanding of illness may be limited

Conditions Necessary for adherence

- Understand and believe the diagnosis
- Be interested in their health
- Correctly assess the impact of the diagnosis
- Believe in the efficacy of the prescribed treatment
- Know exactly how to use the medication
- Know the onset of action and how to recognize whether the medication is working
- Find ways of using the medication that are not more trouble than the disease
- Value the outcome of the treatment more than the cost
- Believe the pharmacist cares about them
- Be ready to use the medication or regimen
- Be involved

DISCUSSION OBJECTIVE 3 –

To see the pattern of antihypertensive drugs used.

50% (n=30) of the patients have two drugs combination.

The highest combination were CCB + BB (n=11), followed by BB + ACE (n=8), CCB + ACEI (n=6), CCB + ARB (n=2), CCB + Ablo (n=1), BB + D (n=1) and ARB + BB (n=1).

Most patients with two combination achieved BP control

LIMITATION

- BASIC BASELINE STUDY
- A LARGER STUDY POPULATION SHOULD BE INVOLVED
- PERSPECTIVE FROM PATIENT SHOULD BE CONSIDERED TO IMPROVE THE CONTENT OF THE EDUCATIONAL MATERIALS

RECOMMENDATIONS

- FUTURE STUDIES WILL LOOK AT CLINICAL OUTCOME SUCH AS DISEASE PROGRESSION, CONTROL OF BP, COMPLIANCE & HEALTH LITERACY OF PATIENTS

CONCLUSIONS

- This baseline study on 60 patients shows that their knowledge of hypertension has increased with the intervention program by the pharmacist
- Level of adherence to medication is still low in this group of patients
- 2 antihypertensive drugs combination is the most combination used to control BP

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• THANK YOU