

Effect of Patient-Centered Care on Medication Adherence among Hypertensive Patients attending General Outpatient Clinic at University of Abuja Teaching Hospital, Abuja Nigeria

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Abstract

Background

Adherence to medication is poor among adult hypertensive patients and is a factor that influences the control of hypertension. The objective of this study is to assess the effects of patient centered clinical care [PCC] on adherence to antihypertensive medications among adult patients at the general outpatient clinic, University of Abuja Teaching Hospital, Nigeria.

Methods

The study was a single-blinded randomized controlled trial involving 64 hypertensive adults. Participants were assigned using simple random sampling technique into an intervention and a control group. The intervention offered was patient centered clinical care. The control group received the traditional biomedical care for hypertension. Medication adherence was assessed using the Morisky Medication Adherence Scale (MMAS-8) at baseline and after twelve weeks of follow up. Data was analyzed using SPSS software and t-test and Chi square test were used to assess significant statistical differences between variables and proportions at 5% significance level.

Results

At baseline, 15.6% of participants in the intervention group and 25.0% of participants in the control group had high medication adherence. At baseline, the difference was not statistically significant (p-value 0.351). However, after twelve weeks of intervention, 75.0% of participants in the intervention group were adherent while only 37.5% in the control group were adherent and this difference was statistically significant (p-value 0.002).

Conclusion

Patient centered care improved medication adherence among adult hypertensive patients. Therefore the use of patient-cared care is recommended in this setting to reduce the risk of cardiovascular events and death.

Keywords – Patient-centered care, Hypertension, Medication adherence, Morisky medication adherence scale, Out-patient clinic.

I. INTRODUCTION

Systemic hypertension is “an elevated systolic blood pressure (SBP), diastolic blood pressure (DBP) or both”. It is defined as a SBP equal to or above 140 mm Hg and/or diastolic blood pressure (DBP) equal to or above 90 mm Hg. [1] It is the most frequently seen chronic condition in primary care and currently affects over a billion people worldwide. [1,2] Its prevalence among Africans above 25 years old is about 46%. [3] A meta-analysis of Nigerian population-based studies estimated about 20.8 million cases among people aged 20 years and above giving a prevalence of 28% in both sexes that is 30.7% among men and 25.2% among women. [4] In the Federal Capital Territory (FCT), the prevalence was found to be 22.7%. [4]

Some risk factors associated with high blood pressure (BP) may be modifiable, while others are non-modifiable [2,6,7] Modifiable factors are related to diet and behaviors like heavy alcohol use, tobacco use, physical inactivity among others. The non-modifiable factors are genetic and age related. [2,3,7]

Hypertension is usually asymptomatic and is diagnosed from the average of two or more properly measured seated BPs taken on at least two occasions. [1-3,7]

Guidelines recommend using antihypertensive drugs and/or lifestyle modifications (LSM) to control hypertension. [1-3,7] This can be achieved using one or more medications. [1-3,7] It has been shown that the cost-benefit outcome of BP control is very high and rates of cardiovascular events is lower amongst patients with lower SBP. [8,9] Controlling hypertension is a challenge therefore adherence to antihypertensive medication is a major concern. [10,11] For a clinical effect to be achieved, treatment for chronic conditions like hypertension requires good medication adherence. [3,12,14]

The World Health Organization (WHO) defined adherence as “the extent to which a person’s behaviour which is taking medication, following a diet, or making healthy lifestyle changes corresponds with agreed-upon recommendations from a health-care provider”. [15] It described five interacting dimensions of adherence: social and economic, therapy-related, patient-related, condition-related and health system/healthcare team factors.

Due to its multifaceted nature, solutions to improve adherence may be targeted at the patient, provider and healthcare system levels; and no single intervention is superiorly effective. [3,15]

Adherence rate is typically expressed as a percentage representing how much medication that is taken as prescribed. [14,15] There is no agreement on what adequate adherence is, and no gold standard for assessing it. It is usually assessed by self-report and the Morisky Scale and its modifications are used often. The eight-item Morisky Medication Adherence Scale [(MMAS-8) © 2006 Donald E. Morisky] has eight questions and is easy to administer and score by summation, to give a range of scores from 0 to 8: A score of 8 signifies high adherence, scores of 6 to <8 moderate adherence while scores of <6 signify low adherence. [14,16]

Doctors may not be able to compel adherence for an asymptomatic condition like hypertension. [17] If patients are provided with an ‘encouraging, blame-free environment’ where they are involved in achieving treatment goals, non-adherence may be recognized and addressed. [13,17] Smith et al highlighted that McWhinney and his colleagues proposed that doctors become “‘patient-centered’”. [18] This is different from the “‘doctor-centered’” care where the doctor steers consultations by asking closed-ended questions to diagnose and treat diseases. [19] Patient-centered care (PCC) can be described as ‘treating the patient as a unique individual’, in such a way that the one caring understands the patient as a person rather than a cluster of diseases. [20,21] It is an approach to doctor–patient interaction where the doctor responds to patients’ needs and preferences, using their informed decisions to guide interaction, information-giving and shared decision-making. [20,21] PCC has developed over the years and is now common in modern healthcare systems globally. [19-21] In many African countries, PCC is deficient. [22,23]

The patient-centered clinical method (PCCM) developed by Stewart et al is the most frequently cited PCC model in family medicine. [24] It is an important model in clinical practice worldwide and can be used in daily practice.. Here, the physician ‘shares power’ with the patient and is emotionally supportive and sensitive to patients' suffering. [19,24] The PCCM has six components: the assessment of disease and illness; integrating the assessment with the understanding of the whole person; finding common ground between doctor and patient; incorporating prevention and promotion; building up a long-term relationship between the doctor and patient; and being realistic in allocating resources in practice. [19,24,25] The doctor and the patient share information and reach a consensus about the management plan. [19,25] The objective of this study is to assess the effect of patient centered clinical care [PCC] on adherence to

antihypertensive medications among adult hypertensive patients at Abuja, Nigeria using the Morisky Medication Adherence Scale (MMAS-8) in a randomized controlled trial.

II. MATERIALS AND METHODS

2.1 Study area: The study was conducted from April to July 2017, at the General Out-Patient Clinic (GOPC) of the University of Abuja Teaching Hospital (UATH), Gwagwalada. UATH is a 350-bed multi-specialty hospital located in Gwagwalada about 51km from the main city of Abuja in North-Central Nigeria. It is a referral centre for healthcare providers in Abuja and neighboring states of Kaduna, Kogi, Benue, Nasarawa and Niger. The GOPC runs daily and an average of 60 hypertensive patients are seen weekly.

2.2 Study design: We used a randomized controlled trial with single blinding i.e. patients were blinded about the intervention and control groups in the study.

2.3 Study population: Hypertensive patients on treatment at the GOPC for at least six months, between 18 and 60 years old who gave informed consent and were able to communicate freely in English were included in the study. All patients requiring admission to hospital and those with documented conditions such as end-stage renal failure and psychiatric diagnosis were excluded.

2.4 Sample size: This was determined using a formula for randomized controlled trials. [26]

All consenting 64 participants who met the inclusion criteria were recruited using a systematic random sampling method with sample interval of six.

2.5 Sampling: Participants were randomized into intervention and control groups by simple random sampling technique. Each participant picked a sealed opaque envelope containing a number from 1 to 64; any number picked was not returned into the basket. Participants who picked even numbers were allocated to the intervention group while those who picked odd numbers were allocated to the control group.

2.6 Validity and reliability: There was training for the researchers for two days on the study objectives, methodology, questionnaire administration and the use of Morisky Medication Adherence Scale.

The data collection tools were pre-tested among hypertensive patients at a similar hospital outside Abuja for face validity, clarity and stability and the necessary modification were made.

2.7 Data collection and instruments: At the recruitment visit, semi-structured study questionnaire was used to collect patients' socio-demographic data and the Morisky Scale (MMAS-8) was used to assess medication adherence. The scores were summed up to give a range of scores from 0 to 8. A score of 8 on the Morisky scale was considered high adherence, scores of 6 to <8 moderate adherence while scores of <6 is low adherence. To allow for statistical analysis, low and moderate adherence were grouped as non-adherence. Permission to use the MMAS-8 was obtained from the copyright owner. [11] **(Supplemental material I)**

Consultation of participants in the control group was done using the traditional biomedical method where blood pressure [BP] measurements were taken by the physicians and researchers in a seated position for each patient. The BP were measured using combined palpation and auscultation method. Consultation of participants in the intervention group was done using a structured patient-centered clinical care method (PCCM) where all the components were explored. **(Supplemental material II)** Participants in both groups were given the appropriate prescriptions for hypertension to refill as they usually did. Medication type and dosage were adjusted as clinically indicated for each patient. Participants were followed up at four-weekly intervals on a day and time during working hours convenient for the patient for 12 weeks and medication adherence was reassessed using MMAS-8 at the 12th week which was the end line.

2.8 Data analysis: Data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 21. Categorical variables were expressed as proportions and percentages while continuous variables were expressed as means. Student t-test was used to compare mean values between the intervention and control groups while Chi-square test was used to compare proportions of categorical variables in both groups. Categorical data were analyzed to ascertain significance differences between proportions at 5% significance level.

2.9 Ethical considerations: Approval for the study was obtained from the health research and ethics committee of the University of Abuja Teaching Hospital Gwagwalada. Participants were informed of the details of the study and their participation prior to obtaining their consents. The participants were assured of confidentiality of information given. Also participation was voluntary and patients were free to withdraw at any stage of the study without penalty. The data collected was used only for this study.

III. RESULTS

3.1 Socio-demographic characteristics

Table 1 below shows the socio-demographic characteristics of the study participants. The mean age in the intervention group was 43.9 years while that of the control group was 44.0 years. There were more males in the control group than in the intervention group that is, 17(53.1%) and 12(37.5%) participants respectively. There were more

females in the intervention group than control group that is, 20(62.5%) and 15(46.9%) respectively. However, these differences were not statistically significant (p-value 0.209). Civil servants were 17(53.1%) and 14(43.7%) in the intervention and control groups respectively.. Mean monthly income of participants in the intervention group was ₦122,656.30 (335.88 USD) while in the control group, it was ₦82,625 (226.26 USD).

Table 1: Sociodemographic characteristics of patients

	Study Groups		χ^2	p-value
	Intervention n= 32 (%)	Control n = 32 (%)		
Age				
<20	0(0.0)	0(0.0)	0.874	0.832
20-29	1(3.1)	2(6.3)		
30-39	7(21.9)	7(21.9)		
40-49	17(53.1)	14(43.7)		
50-59	7(21.9)	9(28.1)		
Mean	43.9	44.0	0.049	0.961
Gender				
Male	12(37.5)	17(53.1)	1.576	0.209
Female	20(62.5)	15(46.9)		
Tribe				
Igbo	7(21.8)	4(12.5)	10.776	0.291
Yoruba	6(18.7)	5(15.6)		
Hausa	0(0)	1(3.1)		
Other tribes	19(59.5)	22(68.8)		
Religion				
Christianity	22(68.7)	20(62.5)	1.143	0.565
Islam	10(31.3)	11(34.4)		
Traditional	0(0.0)	1(3.1)		
Marital Status				
Married	28(87.5)	28(87.5)	1.684	0.640
Single	2(6.3)	0(0.0)		
Divorced	1(3.1)	1(3.1)		
Widowed	1(3.1)	2(6.3)		
Others	0(0.0)	1(3.1)		
Occupation				
Traders	11(34.4)	11(34.4)	2.090	0.554
Civil Servants	17(53.1)	14(43.7)		
Artisans	3(9.4)	3(9.4)		
Others	1(3.1)	4(12.5)		
Level of Education				
Primary School	0(0)	0(0)		
Secondary School	7(21.9)	10(31.3)	0.721	0.396

Tertiary institution	25(78.1)	22(68.7)		
Non-formal education	0(0)	0(0)		
Income* in Naira				
Mean	122,656	82,625	1.90	0.063

*t-test statistic, χ^2 = Chi square

3.2 Effects of patient-centered care on medication adherence

Table 2 below shows the effect of patient-centered care on medication adherence among the study participants. At baseline, 5(15.6%) and 8(25.0%) participants in the intervention and control groups respectively were adherent to

anti-hypertensive medication but this difference was not statistically significant ($p > 0.05$). At the end of the study period, 24(75.0%) participants in the intervention group were adherent while 8(25.0%) were not adherent. In the control group, 12(37.5%) were adherent while 20(62.5%) remained non-adherent to anti-hypertensive medication and this was a statistically significant difference ($p = 0.002$).

Table 2: Proportion of patients who were adherent/Non adherent to antihypertensive medications determined using patient-centered care on medication adherence (MMAS-8)

Timeline	Effects of Patient Centered Care	Chi Square χ^2	p-value	
	Intervention n = 32(100%)	Control n = 32(100%)		
1st visit(baseline)				
*Adherent	5(15.6)	8(25.0)	0.869	0.351
Non adherent	27(84.4)	24(75.0)		
4th visit(end line)				
Adherent	24(75.0)	12(37.5)	9.143	0.002*
Non adherent	8(25.0)	20(62.5)		

χ^2 = Chi square, *Statistically significant difference p -value < 0.05

3.3 Effects of Adherence on Blood Pressure Control

Table 3 below describes the effect of adherence to anti-hypertensive medication on BP control among the study participants. At baseline, the mean SBP of participants with high adherence was 128.8±6.6 mmHg in the intervention group, while it was 154.4±22.4 mmHg in the control group. This difference was statistically significant (p -value 0.010). There were high SBP in some participants in the control group at baseline as reflected by the standard deviation. The mean SBP was higher amongst those with medium and low adherence in the intervention group that is 138.3±11.6 mmHg and 141.5±15.9 mmHg respectively. In the control group, the mean SBP of those with medium and low adherence were 142.4±14.8 mmHg and 147.1±15.7 mmHg respectively.

These were not statistically significant (p -values > 0.05). The same trend was observed with the DBP recordings. The mean DBP of those who were adherent in the intervention group was 81.5± 6.2 mmHg while it was 93.2± 10.3 mmHg in the control group. This was statistically significant (p -value 0.025). The mean DBP of those with medium and low adherence was 84.1±12.4 and 85.3±10.8 mmHg in the intervention group respectively, while it was 87.2±11.8 and 90.2±10.0mmHg in the control group for medium and low adherers respectively. These were not statistically significant (p - values > 0.05).

At the end of the study, BP control was good across all categories of adherence in the intervention group. The mean SBPs were 120.5, 129.7, and 124mmHg for high, medium

and low adherers respectively. The mean SBPs were 125.2, 131.2 and 135.4 for high, medium and low adherers respectively in the control group at the end of the study period. These were however not statistically significant (p-values > 0.05).

The DBPs showed a similar trend. The mean DBPs recorded were 77.7, 80.3 and 72.0 mmHg among high, medium and low adherers respectively in the intervention group. The mean DBPs recorded were 79.0, 79.4 and 82.3 mmHg for high, medium and low adherers respectively in the control group. These were not statistically significant (p-values > 0.05).

Table 3: Effect of Medication Adherence on Blood Pressure Control

	Study Group		t-test	p-value
	Intervention Group	Control Group		
	n = 32(100%) Mean±SD	n = 32(100%) Mean±SD		
SBP 1st Visit (in mmHg)				
High adherence (8)	128.8±6.6	154.4±22.4	3.102	0.010*
Medium adherence (6 - 7)	138.3±11.6	142.4±14.8	0.865	0.395
Low adherence (0 - 5)	141.5±15.9	147.1±15.7	0.770	0.453
DBP 1st Visit (in mmHg)				
High adherence (8)	81.5±6.2	93.2±10.3	2.590	0.025*
Medium adherence (6 - 7)	84.1±12.4	87.2±11.8	0.707	0.485
Low adherence (0 - 5)	85.3±10.8	90.2±10.1	1.024	0.323
SBP 4th Visit (in mmHg)				
High adherence (8)	120.5±24.7	125.2±9.2	0.818	0.419
Medium adherence (6 - 7)	129.7±4.8	131.2±5.6	0.635	0.536
Low adherence (0 - 5)	124.0±0.0	135.4±10.0	1.064	0.328
DBP4th Visit (in mmHg)				
High adherence (8)	77.7±5.9	79.0±6.1	0.629	0.536
Medium adherence (6 - 7)	80.3±1.8	79.4±7.6	0.304	0.764
Low adherence (0 - 5)	72.0±0.0	82.3±7.6	1.264	0.253

*statistically significant difference p-values < 0.05

IV. DISCUSSION

The mean age of participants in both groups of this study were (43.9 vs. 44.0 years) in the intervention and control groups respectively, and this was similar to the findings by Adediran et al that the mean age of hypertensive adults in Abuja was 43.04 years among males and 42.09 years among females. [5] It was however different from the findings in a study among hypertensive adults in Ilorin, Kwara state also in North-Central Nigeria where the mean age of participants was 50.7 years. [27] Other studies in the South-West and South-Eastern regions of Nigeria found mean age of 60 and 52 years respectively. [28, 29] This may be because there was a higher number of younger adults in our study who are working, trading or seeking employment in Abuja, the Nigeria's capital.

There were 20(62.5%) females in the intervention group and 15(46.9%) females in the control group. Overall, there were more females than males in the study. Other hospital-based studies in Nigeria among hypertensive adults have also found a higher prevalence among females and this was probably due the females' better health care seeking behavior than males. [27, 29] These are in contrast to the report from a meta-analysis of population-based studies on the prevalence of hypertension in Nigeria that showed hypertension was more prevalent among males. [4] A bulk of participants in both groups of this study were civil servants and businessmen and women and those with tertiary education were the majority. A study in North-Central Nigeria among hypertensive adults had more participants who had no formal education but with trading as the predominant occupation. [27] Civil servants and farmers constituted 28% and 44% respectively in Iyalomhe study. [30] Additionally, 30% had secondary or tertiary education while 70% had primary school certificate or had no formal education in their study. In Palestine, a study among hypertensive adults reported that 38% of participants were employed and 15.5% were unemployed while 46.6% were housewives. Among these participants, 9.8% had no formal education, 36.3% had primary education, 27.3% secondary and 26.9% had tertiary education. [10]

In our study, findings may have differed due to the inclusion criteria that required ability to communicate well in English, and the peculiarity of Abuja having a high number of actively working young educated adults and job seekers.

In this study, mean monthly income in both groups was high: ₦122,656.30 vs. ₦82,625 in the intervention and control groups respectively. Participants who earned less than

₦18,000 (minimum wage at the time of the study) were 3(9.4) and 7(21.9) in the intervention and control groups. In a study among hypertensive adults attending a GOPC in Southwest Nigeria, 44% of participants earned less than ₦10,000 monthly and 31.8% earned between ₦10,000.00 to ₦20,000.00 ³¹ This difference may be due to more participants in this study having tertiary education, engaged in trading and civil servants hence they were more likely to have better incomes.

Also in this study, it was shown that PCC improved medication adherence (Table 2). At baseline, 5(15.6%) participants in the intervention group and 8(25.0%) in the control group were adherent to anti-hypertensive medication while at the end of the study period (fourth visit), 24(75.0%) participants in the intervention group and 12(37.5%) in the control group, were adherent to anti-hypertensive medication and this difference was statistically significant (p-value 0.002). Clinicians have used PCC in a manner similar to the model used in this study, as a medication adherence intervention tool amongst type II diabetic patients. [32] It was shown that at the end of the study, PCC improved medication adherence and empowered diabetic patients to manage their condition better. This was similar to the finding in our study and agrees with observations by some authors that PCC improves medication adherence especially amongst patients with chronic health conditions requiring long-term therapy. [13,30,32]

In the index study, it was shown that PCC improved medication adherence (Table 2). At baseline, 5(15.6%) of the participants in the intervention group and 8(25.0%) of participants in the control group were adherent to anti-hypertensive medication while at the end of the study period (fourth visit), 24(75.0%) of participants in the intervention group and 12(37.5%) of those in the control group, were adherent to anti-hypertensive medication. This difference was statistically significant (p < 0.05). This finding was in keeping with those from a study that was carried out by Roumie et al in 2011 among veterans with hypertension, to evaluate patient centered primary care as a determinant of medication adherence. [13] They found, antihypertensive adherence increased as scores in patient centered care increased and thus demonstrated an association between perceived patient-centered primary care and medication adherence. In their study, PCC was not used as an intervention.

Clinicians have used PCC in a fashion similar to the PCCM, as a medication adherence intervention tool amongst type II diabetic patients. [33] It was shown at the end of the

study that PCC improved medication adherence and empowered diabetic patients to manage their condition better. This was similar to the finding in the index study. This further correlates with observations by previous authors that PCC improves medication adherence especially amongst patients with chronic conditions requiring long-term therapy. [13, 33, 34] A meta-analysis by Zolnieriek et al also found that physician communication is significantly positively correlated with medication adherence. [39]

Cooper et al made a contrasting finding where interventions that enhanced physician communication and patient participation in primary care did not improve patient adherence to antihypertensive medication after 12 months. [35] Their study did not use the PCCM and did not involve addressing patients' illness experience.

The findings from the index study relating to the effect of adherence to anti-hypertensive medication on BP control among the study participants, revealed an interesting trend. At baseline, the mean SBP recorded among participants with high adherence was 128.8 mmHg in the intervention group, while it was 154.4 mmHg in the control group. The DBPs were 81.5 and 93.2 mmHg in the intervention and control groups respectively. These differences were statistically significant. There was significantly higher BPs in some participants in the control group at baseline as reflected by the standard deviation. This was different from the findings of Muntner et al in Birmingham who found that among their study participants, mean SBP across study visits was 133.3mmHg, 133.6mmHg, and 135.6mmHg in participants with high, medium and low adherence respectively. [36] Poor control of BP despite self-reported high medication adherence in the control group of the index study may be attributed to a falsified self-report which is one of the drawbacks of self-reported adherence to medication. This may also be attributed to other factors such as suboptimal dosing, non-potent medication due to fake and substandard drugs, undiagnosed kidney disease, among others. The pattern of non-adherence may also have contributed to this finding in that there were more participants in the control group who skipped medication on some days 2 weeks prior to recruitment and a day before. This may contribute to significantly higher BP.

At the end of the index study, BP control was good across all categories of adherence in the intervention group. These were mean SBP of 120.5 mmHg, 129.7 mmHg, 124.0 mmHg and mean DBP of 77.7 mmHg, 80.3 mmHg, and 72.0 mmHg in the high, medium, and low adherers of the intervention group. The mean SBPs and DBPs in the control group

showed those who had high adherence had better control of BP and vice versa, which is the expected trend. This was in keeping with findings from Japan by Matsumura et al whose study principal findings were that BP control was dependent on medication adherence. [37] In their study, subjects with adherence rates of less than 90% showed significantly higher BP compared with those with adherence rates of 100% over a 6-month treatment period. Zhao et al in China also found that adherence to antihypertensive medication was associated with BP control: significant for SBP but weak for DBP control. [40] Alhalaiqa et al in Jordan found that an intervention called adherence therapy improved medication adherence, which in turn improved BP control. [37] Closer home in Nigeria, a study by Iloh et al in Umuahia found BP control was significantly associated with medication adherence. [29] These similarities further buttress what is already known that improvements in adherence to antihypertensive medications improves BP control.

In the previously mentioned study by Roumie et al, a logistic regression analysis was performed to examine whether antihypertensive medication adherence predicted BP control. ¹³ Their results showed that with increasing medication adherence, the odds of BP control also increased. This may explain the findings in the index study, corroborating findings from previous studies that an association between medication adherence and BP control exists and this is, the greater the adherence, the better the control.

V. CONCLUSION

Adequate control of hypertension is very important and poor adherence to antihypertensive medication is a major factor influencing morbidity and mortality. Patient centered care involves an approach that involves doctor-patient interaction where the doctor treats the patient as a unique individual, responding to his needs and preferences and resulting in shared decision-making leading to improvements in adherence to medications and blood pressure control.

VI. RECOMMENDATION

Patient centered care should therefore be offered to hypertensive adults to significantly improve adherence to medication and reduce blood pressure, cardiovascular events and death.

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AUTHORS' CONTRIBUTIONS

All authors were involved in the conceptualization and study design and statistical analysis and the manuscript writing. All authors have approved the final copy of the manuscript for publication. The lead author originated the research idea and led the data collection process and manuscript writing.

ETHICAL APPROVAL

Ethical approval was obtained from the University of Abuja Teaching Hospital Health Research Ethics Committee. Approval reference: FCT/UATH/HREC/PR/545

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest with respect to this article.

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SUPPLEMENTAL MATERIAL

Materials I and II are attached and I is used only with the permission of the patent owner: Donald E. Morisky, ScD, ScM, MSPH, 294 Lindura Ct., Las Vegas, NV 89138, USA; dmorisky@gmail.com.

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SUPPLEMENTAL MATERIAL I

Morisky Medication Adherence Scale (MMAS-8)

1. Do you ever forget to take your medication? Yes [] No []
2. People sometimes miss taking their medication for reasons other than forgetting.

Thinking over the past two weeks was there any days you did not take your medicine? Yes [] No []
3. Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it? Yes [] No []
4. When you travel or leave home do you sometimes forget to bring along your medicine?

Yes [] No []
5. Did you take all your medicine yesterday? Yes [] No []
6. When you feel your symptoms are under control, do you sometimes stop taking your medicine? Yes [] No []
7. Taking medicine is a real inconvenience for some people. Do you ever feel hassled sticking to your treatment plan? Yes [] No []
8. How often do you have difficulty remembering to take all your medicine?

A. Never/rarely B. Once in a while
C. Sometimes
D. Usually E. All the time

Yes = 0 No = 1 item 8: A/B = 1, C/D/E = 0

Adherence	Score
High	8

Medium	6-7
Low	0-5

SUPPLEMENTAL MATERIAL II

Structured Patient-Centered Care Discussion Format

The assessment of disease and illness;

- 1) Tell me about how you discovered you had hypertension.....
- 2) Tell me about how you feel about having hypertension.....
- 3) What ideas do you have about hypertension.....
 - a. causes
 - b. treatment
 - c. cure
 - d. complications
 - e. others
- 4) Tell me about your fears about having hypertension?
- 5) Tell me about your expectations
 - a. From the doctor
 - b. From the hospital
 - c. From your family and friends
 - d. Other expectations
- 6) Tell me about how hypertension and taking its medicine has impacted on your functioning....
- 7) Tell me any other thing you would want

me to know..... Integrating the assessment with the understanding of the whole person; Use a tool to understand the whole person: ecomap

Finding common ground between doctor and patient;

Physician and patient to reach agreement in three key areas:

1. Nature of the problems and priorities.....
 2. The goals of treatment.....
 3. The roles of the doctor and the patient.....
- Both should agree on
1. Treatment option preferred.....
 2. The family involvement if any.....
 3. Priorities to be set for each problem.....

Incorporating prevention and promotion: physician and patient to discuss the following

Life-style measures to adopt: Exercise Diet

Building up a long-term relationship between the doctor and patient;

Each contact with the patient will be used to build on the patient –physician relationship, including empathy, trust, caring.

Being realistic: allocating resources in practice.

Realistic about time: the consultation should last about 20 minutes maximum 30 minutes. Availability of resources: prescription tailored to income and other resources available to the patient