

Medication adherence among elderly patients with high blood pressure in Gweru, Zimbabwe

Elizabeth Wariva, James January, Julita Maradzika

Department of Community Medicine,
College of Health Sciences, University
of Zimbabwe, Harare, Zimbabwe

Abstract

High blood pressure is a global health concern which is mainly managed by taking anti-hypertensive medications. Although medication is available to control high blood pressure, adhering to treatment is a major problem among hypertensive patients. The purpose of the study was to assess the predisposing, enabling and reinforcing factors to medication adherence among hypertensive patients in Gweru urban aged 40-70 years. A descriptive cross sectional study was used with a sample size of 110 conveniently sampled hypertensive patients. We used an interviewer administered questionnaire designed using phase 4 of the PRECEDE model. The modal age was 70 years and mean age was 58 years (SD=10.29). There were 61.8% females and 38.2% males. Variables associated with medication adherence were: age ($P=0.0059$), marital status ($P=0.015$), average monthly income ($P=0.0002$), support group ($P=0.027$) and knowledge ($P=0.0058$). Providing information to patients with high blood pressure and having a good patient-provider relationship improves medication adherence. There is need to focus on the predisposing, enabling and reinforcing factors of medication adherence since demographic and socio-economic factors may be more difficult to change.

Introduction

Low adherence to antihypertensive medication remains a major public health problem and understanding obstacles to, and determinants of adherence to antihypertensive medication is crucial in coming up with interventions to increase adherence and improve outcomes. High blood pressure remains a devastating global health challenge which ranks third as a cause of disability-adjusted life-years.¹ The condition accounts for more than 5.8% of deaths worldwide,² and is emerging in many developing nations as a leading cause of cardiovascular mortality, morbidity and disabil-

ity in adults³ with modeled projections indicating an increase to 1.15 billion cases by 2025 in these countries.⁴ In the STEPwise survey of 2005, Zimbabwe had a prevalence of high blood pressure of 27% and the condition accounted for 25% of all out-patient visits and 50% of cardiovascular diseases.⁵

Although effective medicines are accessible to control blood pressure, adherence to treatment remains a chief problem.⁶ Patient and health system related factors continue to militate against adherence behavior. Patient attitudes have been found to be vital in medication adherence as they determine if one perceives the medication to be beneficial or not.⁷⁻⁹ Patients' acceptance of medical advice and information is often influenced by their subjective health beliefs which make it crucial to take into consideration these beliefs when providing health advice and/or medical treatment.⁹⁻¹¹

Different studies linked self efficacy, psychological stress, depression, anxiety and cognitive characteristics to medication adherence.^{8,12,13} Medication adherence has been found to be better among patients who were older than 50 years, had complications due to high blood pressure, used other drugs and had taken antihypertensive drugs for more than 5 years.⁷

Medication adherence in resource-limited settings is hampered mainly by unavailable health care services,^{14,15} complexity of treatment regimens and side effects of medication.⁶

Social inequalities¹⁶ are directly associated with non-adherence with patients from low income communities being more likely to be non-adherent.¹⁷⁻¹⁹ Engaging and supporting patients in improving their adherence are critical to improving health outcomes as patient motivation and support are crucial in medication adherence.^{6,20} Patient-provider communication has been identified as significant in medication adherence and health care providers ought to have training in managing chronic diseases and have adequate time for consultations.^{6,15,21,22}

Materials and Methods

A descriptive cross sectional design was used to assess determinants of behavioral factors influencing medication adherence among hypertensive patients in Gweru urban area. The theoretical framework for the study was based on the PRECEDE Model and this framework has been applied to a number of studies in Zimbabwe recently.^{23,24} This model provides for a broad structure for assessing health and quality of life needs in communities. It is also

Correspondence: James January, Department of Community Medicine, College of Health Sciences, University of Zimbabwe, P.O. Box A178, Avondale, Harare, Zimbabwe.
E-mail: miranda.january@gmail.com

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useful for designing, implementing and evaluating health promotions interventions. PRECEDE is an acronym for predisposing, reinforcing, and enabling constructs in educational diagnosis and evaluation and it details a diagnostic planning process in the development of targeted public health interventions.

Participants were hypertensive patients aged between 40-70 years in Gweru Urban diagnosed three or more months before the commencement of data collection. Participants with pregnancy-induced high blood pressure were excluded from the study.

Convenience sampling method was used for the study, which entailed interviewing any hypertensive patient who was available at the time of data collection and met the study criteria. Sample size calculation using the Dobson formula yielded a total required minimum sample size of 82 and this was adjusted anticipating an 80% response rate to give a total sample size of 110 respondents. Chi-squares were used to determine the strengths of associations.

Ethical considerations

Clearance was sought from the local institutional review board of the College of Health sciences at the University of Zimbabwe, the Joint Research Ethics Committee (JREC). Written consent was granted by all the participants in the study and confidentiality was respected during and after the study.

Results

A total of 110 study participants took part in the study, of which 68 were females (61.8%) and 42 (38.2%) were males. All the participants were hypertensive patients diagnosed 3 or more months before data collection. The age range was 40-70 years with over half (54.6%) of the respondents being in the 60-70 years range. The mean age of the participants was 58 years (SD=10.29). The demographic details of the participants are shown in Table 1.

Significant associations existed between taking antihypertensive medication and age ($P=0.005$), and also adherence and marital status ($P=0.014$) with those who were married adhering more. No significant association was identified between gender and adherence ($P=0.092$). Our findings revealed that statistically significant associations existed between adherence and level of education ($P=0.0006$) and between adherence and monthly income ($P=0.0002$). No association existed between adherence and place of residence ($P=0.888$). Among the respondents with monthly income below US \$100, 78.3% adhered less compared with 40% of those in the monthly income range US \$100-US \$350. Most of the respondents (75.5%) had taken antihypertensive medication for less than 5 years with 19.9% of the respondents in the 6-10 years range and the remaining 4.5% had taken antihypertensive medication for more than 10 years. There was an association ($P=0.001$) between period of taking antihypertensive medication and adherence as those newly diagnosed (>2 years) adhered more than those taking medication for longer periods.

Predisposing, reinforcing and enabling factors

The risk of developing complications was assessed and 52 respondents reported that they did not perceive themselves as developing complications related to high blood pressure, 10 respondents reported they are at risk while 48 did not know. There was a significant association ($P=0.001$) between perceived risk of developing complications and adherence to medication. A statistically significant association existed between patients' reported signs and symptoms of elevated blood pressure and adherence ($P=0.005$). On knowledge of the benefits of taking antihypertensive medication, a large number (84) knew that they prevent stroke with only 18 reporting that it prevents retinopathy especially in diabetic patients who were also hypertensive. A total of 81 respondents were not aware that antihypertensive medication could prevent peripheral vascular disease. Associations between knowledge on the benefits of adherence and taking

medication are shown in Table 2.

There was a significant association between patients' attitudes towards taking medication and medication adherence (Table 3). Most of the respondents (75.5%) reported living more than 10 km away from the health facility and there was no association ($P=0.127$) between distance to health facility and medication

adherence. Respondents who used public transport were less adherent than those who used other means ($P=0.019$). Almost all (107) respondents reported not paying for consultation and/or drugs. A third (66%) of respondents could not afford transport money to and from the health center every month. An association was identified between medication adherence and

Table 1. Demographic details of respondents (N=110).

	Demographic variables	Frequency	Percentage
Age (years)	40-49	27	28.9
	50-59	23	20.7
	60-70	50	54.6
Sex	Female	68	61.8
	Male	42	38.2
Marital status	Single	1	0.9
	Married	63	57.3
	Divorced	10	9.1
	Widowed	36	32.7
Level of education	None	18	16.4
	Primary	34	30.9
	Secondary	39	35.5
	Tertiary	19	17.3
Religion	Protestant	22	20
	Catholic	45	40.9
	Traditional	7	6.4
	Apostolic	2	1.8
	Pentecostal	34	30.9
Occupation	Unemployed	58	52.7
	Formally employed	29	26.4
	Self employed	23	20.9
Monthly income (US \$)	0-100	60	54.5
	101-350	45	40.9
	351-500	4	3.6
	500-1000	1	0.9

Table 2. Benefits of antihypertensive medication (N=110).

Variable	Yes	%	No	%	P value
Prevention of stroke	84	76.4	26	23.6	0.002
Prevention of heart disease	56	50.9	54	49.1	0.002
Prevention of kidney failure	31	28.2	79	71.8	0.001
Prevention of eye problem (retinopathy)	18	16.4	92	83.6	0.012
Prevention peripheral vascular diseases	29	26.4	81	73.6	0.00004

Table 3. Associations between attitude and medication adherence (N=110).

Variable	P value
Your attitude towards your condition	0.378
Your attitude towards health workers	0.384
Your attitude towards taking your medication	0.003
Health workers attitude towards you	0.312

transport costs ($P=0.00001$).

Respondents were asked if they had heard of any information on high blood pressure in the last 6 months and an association existed between accessing information on high blood pressure and medication adherence ($P=0.026$). The prevalence of non-adherence in the study was 60%. Most cited reasons for missing medication included perceptions that one had been cured due to asymptomatic nature of high blood pressure, forgetting to take medication, fear of side effects, use of other medications (holy water and traditional herbs) and having had a change of daily routine.

Discussion

A total of 110 participants took part in the study with 61.8% being females and 38.2% males which is in line with other studies from Zimbabwe²⁵ which indicated that the prevalence of high blood pressure among urban Zimbabweans particularly women was very high. A possible explanation for this is the difference between gendered health seeking behavior patterns where women tend to visit the health centers more often and possibly diagnosed of high blood pressure more than men. Moreover sex differences in hormones, gender differences in socialization, gender differences in coping styles, differences in frequency of and reaction to stressful events and different social roles and cultural influence also contribute to high prevalence of high blood pressure among women. There was no association observed between gender and adherence which is similar to other studies.¹² Level of education was associated with adherence as respondents who reached secondary and tertiary education had better adherence levels than those who reached primary school or never went to school. Respondents who had monthly income below US\$100 adhered less. This could mean that those unemployed faced challenges accessing medication due to cost of public transport, as 60% could not afford transport costs to hospital. Place of residence had no association with adherence which contradicts other studies^{16,17} which revealed that low-income communities had lower adherence levels. This could be due to different community settings.

In a study by Hadi and Rostami-Gooran⁷ medication adherence was better among patients who had complications due to high blood pressure, used other drugs and had taken antihypertensive drugs for more than 5 years which is contrary to this study where medication adherence was not associated with other chronic conditions, number of drug combinations and type of drug but better among newly diagnosed respondents. Oftentimes

immediately following diagnosis, there is a greater probability of the patient desiring to get rid of the condition which may result in them adhering and then losing hope when their blood pressure is not decreasing. However, recall bias could have affected the number of years patients reported taking antihypertensive medication.

Our results showed a deficiency on the self-care practices of hypertensive patients which calls for increased health education and promotion to develop personal skills for hypertensive patients in Zimbabwe. Knowledge on the benefits of antihypertensive medication was very low which could be due to inadequate information on high blood pressure and calls for intensive material production and mass media strategies to disseminate such information. There was an association between perceived risk of developing complications of high blood pressure and medication adherence. Complications of high blood pressure should be made known to patients and could be used as scare tactics for medication adherence.

Beliefs about the efficacy of medication have been shown to influence medication adherence and patients' acceptance of medical advice and information is in most cases influenced by their subjective beliefs concerning their health conditions. However, in this study no association was established between respondents' attitudes and taking their antihypertensive medication and this could be explained by how communities differ in their beliefs about health care as those who visit health facilities may have positive beliefs about health care than those who do not.

Although studies from other African countries^{18,19} reported that non-adherence is related to unaffordable drug prices and lack of finances to acquire antihypertensive medication, our findings showed no association between paying to get anti-hypertensive medication non-adherence. Hypertensive patients in Zimbabwe do not pay to get their anti-hypertensive medication at government hospitals thus there are no hindrances in terms of finances in order to acquire medication expect perhaps for costs related to transportation. However, these transport costs could be avoided by availing antihypertensive medications at the local clinics.

Most respondents reported that they did not have access to information on high blood pressure although there is hypertensive clinic at Gweru Provincial Hospital every Thursday where the opportunity for patient education and educational material distribution can yield better results. A possible explanation for this is shortage of staff in health institutions. There is further need to reinforce patient education with written instructions such as charts, pamphlets and posters.^{15,21}

There is need to focus on the principles of

patient education to effectively improve medication adherence. This includes but is not limited to engaging and supporting patients in improving their adherence so as to enhance health outcomes. Different studies confirm that patient-provider communication is critical in medication adherence especially when giving medication instructions and feedback.^{6,22} A greater number in our study did not receive feedback on how their treatment was progressing and this could be due to overcrowding in the health facilities resulting in not enough consultation time being allocated to each patient which opens doors for other sources of information like written materials and audio-visuals.

Conclusions

High blood pressure continues to increase the burden of non-communicable diseases especially cardiovascular diseases. Providing continuous feedback to patients concerning their treatment, involving them in decision making concerning their medication and educating them on the benefits of medication adherence are factors which are vital. Special emphasis on medication adherence among hypertensive patients should target on the predisposing, enabling and reinforcing factors since demographic and socioeconomic status are difficult to change. Patient education remains a key factor to sustainable medication adherence in hypertensive patients.

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