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EFFECT OF EDUCATIONAL LEVEL ON HYPERTENSIVE PATIENTS' COMPLIANCE WITH MEDICATION REGIMEN AT A TERTIARY HOSPITAL IN SOUTH WEST NIGERIA

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Abstract
The prevalence of non-compliance among 180 hypertensive patients in the present study carried out in the Cardiology unit of the University College Hospital, Ibadan was found to be as high as 74.4%. The main contributory factor to non-compliance found in the study is patients' educational level. Out of 180 patients, 46 (25.6%) were compliant while 134 (74.4%) were non compliant. Among the 46 compliant patients, 29 (63.1%) were educated while seventeen (17) (36.1%) were not educated. Among the educated compliant patients, those with secondary education were 14 (30.4%), followed by those with tertiary education who were ten (10) (21.7%) and primary education accounting for 5 (10.8%). There were 134 non compliant patients accounting for 86 (64.2%) educated patients and 48 (35.8%) non educated. Among the educated patients, 33 (24.6%) secondary educated patients were non compliant followed by 29 (21.6%) primary educated patients and 21 (15.7%) tertiary educated patients respectively.
Data on factors that contribute to non-compliance were collected based on patient report with the aid of questionnaires. The study shows that the basic education and not the level of education affect patients' compliance with anti hypertensive medication in Nigeria.

Keywords: Educational level, compliance, hypertension, tertiary hospital, medication

INTRODUCTION

Literacy can be defined as the ability to write and read words with understanding the meaning of sentences or being able to make decisions based on reading materials (Sanders, 1999). Patient illiteracy is an important but unrecognized threat to patients' health and has been found to affect patients' compliance (Winfield and Richard, 1999). It is a serious problem that undermines both the individuals and communities' health and quality of life. The issues of health care assess, preventive care, care during pregnancy and management of acute illness are all complicated by a patient's lack of literacy (Sanders, 1999).

Inadequate health literacy is a great barrier to educating patients with chronic diseases (PPCP, 1997). Chronic diseases such as diabetes and hypertension require education to help patients achieve self control and adopt lifestyles that reduce their health risk. Patients' education also plays a major role in facilitating patients' acceptance of their diagnosis and participation in their treatment (Williams, 1998). Numerous studies have shown the effects of illiteracy on physical health. Adults with limited education encounter many problems using the health care system; they are less likely to use screening procedures, follow or comply with medical regimen and keep appointments or seek help during the

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course of a disease (Neiss, 1994). They often encounter difficulty understanding health education materials and consent forms that require superior reading skills (De Williams and Erubuzor, 2001). They have to rely on others to provide them the needed information.

It has been found out that high educational level tend to correlate with good compliance among patients (Kyngas and Lahdenpai, 1999). Patient compliance is the extent to which a patient takes or uses his medicine in accordance with the directions or follows the general health advice given by the doctor (PPCP, 1997; WHO, 1999). Most hypertensive patients in this study were adults with ages greater than 45 years and most had difficulty reading which made understanding of instructions for drug use difficult, thus affecting compliance.

Non-compliance with medication regimen results in inadequate or incomplete treatment prolonging the course of disease and length of therapy resulting in hospitalization, increased cost and in some cases even death (Meredith, 1996; PPCP, 1997; NETPHARM, 2001). As a result of the demonstrated mobility and mortality as well as the economic costs associated with medication non-compliance, it has become pertinent that health care professionals act to improve the situation (PPCP, 1997). This can be achieved by proffering individual education to each of the contributory factors.

Health illiteracy can be dangerous, specifically in terms of pill box instruction, medical terms, informed consent form, and comprehension of treatment risks. The result can be non-compliance which can increase costs and health risks. Studies have shown that illiterate patients run a 52% greater risk of being hospitalized. This study aims at analyzing the effect of education on patients' compliance with anti-hypertensives in Nigeria with the goal of providing and promoting pharmaceutical care.

MATERIALS AND METHODS

The study population includes hypertensive patients that visited the outpatient clinic of the cardiology unit of the University College Hospital, Ibadan over a period of 8 weeks. The criteria for inclusion in the study include that patient must have been properly diagnosed hypertensive with hypertension defined as persistently elevated systolic and/or diastolic arterial blood pressure of 140/90 mm Hg or more in the subjects aged 15 years and above. Patients diagnosed are assured to have been taking their drugs regularly for upwards of 6 months.

A sample size of 200 patients that visited the clinic over a period of 8 weeks was selected. 20 of the patients did not meet the inclusion criteria; a total of 180 patients were therefore used in the study. The patients were selected using random sampling technique. The study design is descriptive involving the administering of questionnaires to patients to identify non-compliance problems and factors that contribute to it. Approval was obtained from the UI/UCH Ethical Review Committee before the study was carried out. Patients' verbal consent was also obtained.

RESULTS

One hundred and eighty (180) questionnaires were completed. From the group interviewed, females were found to be more than males, 98 (54.4%) females as compared to 82 (45.6%) males as shown in Table 1. Table 2 shows that a greater number 76 (42.2%) of the patients were aged 60-69 while only 6 (3.3%) were below 40 years of age. The minimum age was 24 while the maximum was 82. The mean age was 60.69 years. Out of the 180 hypertensive patients studied, 46

(25.6%) were complaints while 134 (74.4%) were non complaints. Out of the compliant patients 29 (63.1%) were educated while 17 (36.1%) were not educated. Among the educated compliant patients, those with secondary education were 14 (30.4%) followed by those with tertiary education who were 19 (221.7%) and those with primary education accounted for 5 (10.8%).

There were 134 non compliant patients accounting for 86 (64.2%) educated and 48 (35.8%) uneducated. Among the educated non compliant patients, 33 (24.6%) had secondary education, followed by 29 (21.6%) with primary education and 21 (15.7%) with tertiary education.

Among the non-compliant patients, there was a significant difference between the educated and non-educated patients ($p<0.05$). Among the educated non-compliance patients, there was no significant difference between the patients with primary education, secondary education and tertiary education ($p>0.05$)

DISCUSSION

From the results, the number of patients with hypertension increased with age with only 6 (3.3%) of the patients below 40 years while 76 (42.2%) of the patients were aged between 60 and 69 years. (Table 1) At this age group most of the patients were found to be illiterates, thus

Table 1: Age, Sex and Educational levels distribution of patients interviewed

Age (years)	**Frequency**	**Percentage**
<40	6	3.3
40 – 49	16	8.9
50 – 59	43	23.9
60 – 69	76	42.2
>70	39	21.7
Total	180	100.0
Sex		
Male	82	45.6
Female	98	54.4
Total	180	100.0
Educational level		
None	65	36.1
Primary	34	18.9
Secondary	47	26.1
Tertiary	31	17.2
MSc/PGD	3	1.7
Total	180	100

Table 2: Shows the effect of educational level on patients' compliance with medication regimen

Educational Level	Pharmacists rating				Total number of patients	Percent	X2	P
	Compliance		Non-Compliance					
	Freq	%	Freq	%				
No formal	17	36.9	48	35.8	65	36.1	4.40	0.364
Primary	5	10.8	29	21.6	34	18.9		
Secondary	14	30.4	33	24.6	47	26.1		
Tertiary	10	21.7	21	15.7	31	17.2		
MSc/PGD	-		3	1.7	3	1.7		
Total	46	100	134	100	180	100.0		

Table 3: Educational level (E.L)—Pharmacists rating of compliance

Educational Level	Pharmacists rating of compliance		Total number of patients	X^2	P	Comment
	Compliant	Non-compliance				
Primary	5	29	34	4.40	0.364	NS
Secondary	14	33	47			
Tertiary	10	21	31			
None	17	48	65			
MSc/PGD	-	3	3			
Total number of patients	46	134	180			

having difficulty in understanding the instruction for their drug usage. (Table 2) Most of the patients were unable to read and write and often had to depend on caregivers. Since they could not read the instruction on the labels, they had to rely only on the instruction they were given by the pharmacists at the

point of collection, which they might end up forgetting even before they got homes. Poly pharmacy is common among the elderly and therefore this population may be at particular risk of non-compliance. One study showed that one third of all elderly people take three or more prescription drugs, and one in ten take five or more (Cartwright, 1990). The incidence of non-compliance in the elderly has been estimated to range from 49% to 75% with under utilization being the most common form. The medical and social consequences on non-compliance within this population particularly are considered to be serious and debilitating (Maronde *et al.*, 1989). Cognitive impairment are common among elderly. One study found that approximately 15% of the non-institutionalized elderly have significant cognitive impairment likely to affect their ability to follow instructions regarding medication. Older adults have difficulty processing large amount of new information, such as a complex dosing schedule involving multiple drugs (Kusserow, 1990). Col *et al*., (1990) found that those patients who were 7.3% could not recall their regimen, had a higher rate of non-compliance related hospital admissions than those who were 4.6% and could recall their regimen. This study also found that patients who were 18.2% could only partially recall their regimen and had the highest rate of non-compliance related hospitalizations (Fanale and Cronhalm, 1990). There is a need to indentify such risk elderly groups and particular attention regarding compliance to their medication should be given to them.

In this study, 65 (36.1%) of the started population had no formal education while majority 115 (64%) had formal education with secondary education accounting for 47 (26.12), followed by primary education which accounted for 34 (18.9%) with tertiary education accounting for 31(17.2%) and 3 (1.7%) had post tertiary education.

This shows that a greater percentage of the patients are illiterates. In 1999, Kyngas and Lahdenpia, related high educational level to good compliance among patients. The Net Pharmacology anti-hypertensive notes show that people with lower educational level have higher levels of blood pressure (Mancia and Giannattasio, 1996). This shows that the more educated a patient is, the better he will be able to understand his disease state and be able to comprehend the instructions giving on his drug usage which may enhance his compliance. Even though, this is not always so, as physicians, nurses and pharmacists who are well educated and have good knowledge about diseases and drugs are not always good compliers (De Williams and Enubuzor, 1999).

The journal of American medical association (JAMA) (Cowen *et al.*, 1981) articles has revealed the high number of patients who would not follow basic medical instructions, thus affecting compliance with drug regimen. In order to enhance compliance, patients should be given accurate information in a clear, concise way, using layperson's terms appropriate to their level of understanding. This means that optimum communication skills must be used (Cramer and Spilker, 1995; Gardner, 1998). After providing the patients with the information needed, the "show and tell" is used to verify patient understanding and proper use of chronic medication or medications that the patient has used before. The pharmacist begins the process by "showing" the medication to the patient by the way of opening the bottle and pouring the tablet or capsule onto the inside of the prescription vial lid. Then the patient "tells" the pharmacist how he or she uses that medication. The pharmacist directs the dialogue by asking questions such as,

"What do you take this medication for?", "How do you take this medication?" and "what kind of problem are you having with this medication?". This technique allows the pharmacists to detect problems with compliance and unwanted drug effect (Boyce *et al.*, 1997).

In 1984, Eraker et al established non compliance to be more common among patients with asymptomatic diseases such as hypertension (Eraker *et al.*, 1984). In 1991 Clark, as adopted from the Task force of compliance established the rate of non compliance among the hypertensive to be 40% regardless on the level of education (Kyngas and Lahdenpai, 1999).

In this study, among the educated complaint patients 17 (36.9%) had no formal education, those with secondary education accounted for 14 (30.42), followed by patients with tertiary education who were ten (10) (21.7%) and patients with primary education being 5 (10.8%). (Table 3)

This indicated that medication compliance among hypertensive patients does not depend on the level of education; basic education is what is essential.

Most patients are fairly knowledgeable about their own illness and treatments while some patients beliefs are based on past experiences that influence the perception of their disease. These beliefs negatively affect compliance (Rotter and Ttall, 1992).

In this study, out of the 134 non complaint patients, 48 (35.8%) had no formal education, those with secondary education accounted for 33 (24.6%), followed by patients with primary education accounting for 29 (21.6%), tertiary education being 21 (15.7%) and those with post-tertiary education (MSC/PGD) accounted for 3 (1.7%). This result is supported by Lambert and Lee who studied how messages designed for a non compliant hypertensive patient affected the quality and effectiveness of the message (Lambert and Lee, 1992).

CONCLUSION

The prevalence of non-compliance among hypertensive patients is high and various factors contribute to this. One major contributory factor is the basic education of the patients as this goes a long way to affect patients' comprehension and understanding of their disease state and medication regimen which eventually affects their compliance. In the third world countries like Nigeria in which the literacy level is low, these effects cannot be over emphasized.

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