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MEDICINES USE PATTERN AMONG THE ELDERLY IN SELECTED COMMUNITIES IN OVIA NORTH-EAST LOCAL GOVERNMENT AREA, EDO STATE, NIGERIA

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ABSTRACT

Introduction: The ageing process has its dynamics and health challenges in the elderly within the chronologic age of 65 years or lower. In Nigeria, life expectancy is low which is 54.5 years. **Aim:** To investigate the pattern of medicines use among the elderly in the selected communities. **Methods:** Convenient sampling of 413 consenting respondents based on 2018 population projection was done with a validated self-administered interview based questionnaire by selecting one highly patronized Pharmacy in each community and sampling from house to house in the rural areas. Data was sorted into the SPSS version 21 for descriptive and inferential analysis. **Results:** The most prevalent disease condition was hypertension (40.3%) and the most commonly used medications were the anti-hypertensives (51.3%). Average pill burden was 3.3 medications per day. Community Pharmacies (49%) and government hospitals (46.9%) were majorly preferred for medications and health care sourcing respectively. Majority were personally responsible for their medication (49.4%) and health care financing (47.2%) and would love this cost to be free or subsidized (95.7%). There was a significant association between sex (P- value 0.0001), marital status (P -value 0.013) occupation (P value 0.005) and arthritis as well as between diabetes mellitus and occupation (P value =0.049). **Conclusion:** Most prevalent disease condition among the elders was hypertension (40.3%) and the anti-hypertensives (51.3%) were the most frequently used medications. Community Pharmacy (49%) and government tertiary health care institutions (46.9%) were the most preferred for sourcing medications and health care needs respectively.

KEYWORDS: Elderly, Medications, Aging-associated-Diseases, hypertension, diabetics, arthritis.

INTRODUCTION

The finite lifespan of man is the resultant effect of physiological ageing which is a biological actuality with its own kinetics mostly beyond the guidance of man and is also subject to the inference by which every society define old age. Hence, no consensus has been reached at what age an individual should become old. Scientifically, a person is said to be old if his or her age is greater or equal to seventy-five.^[1] However, it is more important to consider the physiologic or vascular age of a patient than the scientific age. Definition of elderly in many developed nations coincides with the chronological age of 65 that is also associated with the age at which one retires from government service. In many developing countries where chronological time has little or no significance in the meaning of old age, other socially constructed meanings of age are more significant such as the roles assigned to older people; in some cases, it is the loss of roles following physical decline which is significant in defining old age. In many developing countries, old age is seen to begin at the point when one can no longer contribute meaningfully to the society.^[2]

Africans definition of senior citizens coincides properly with the numerical ages of 50 to 65 years especially because life expectancies in Africa resonate about that. Notably, life expectancy in Africa is 61.5 years and specifically 54.5 for Nigerians.^[3] A self-definition of “old age” would be in terms of more years than their present age.^[4]

All over the world, the population of seniors is growing faster than all other age groups. In 1900, only 5% of the population was older than sixty-five.^[5] By 2050, one in six in the world will be 65years.^[6] This rise in world population among the elderly is as a result of improved nutrition, health care, sanitation, education and economic well-being. A country is said to have an ageing population when 10% of the entire population are above 60 years or 7% of the entire population are over 65 years respectively.^[7]

Aging-Associated Diseases occurs more frequently as one ages. Usually, they are complications arising from biological aging. The incidence of age-related diseases

increases exponentially with age.^[8] Experts in gerontology and geriatric medicine have noted that although the risk of disease and disability is without doubt elevated as age increases, poor health is not an unachievable outcome of aging.

Two-thirds of deaths recorded globally are caused by age-related diseases. In industrialized nations, up to 90% of recorded deaths are caused by aging-associated diseases.^[9] "Many of the sicknesses, disability and even death associated with chronic diseases can be avoided through preventive measures" Center for Disease Control. As noted by the National Council on aging, almost 80% of elderly have at least one or two chronic disease. Cardio vascular disease, cancer and diabetes are the most common health and costly conditions leading to two-thirds of death each year. According to the American Society of Consultant Pharmacists, the most common chronic diseases afflicting the elderly are: Cardiovascular diseases, Type 2 diabetes Mellitus, Arthritis, Cataracts Dementia, Glaucoma, Parkinson's disease, Osteoporosis, Alzheimer's disease, Enlarged prostate, Depression amongst others. The hospitals in Nigerian hospitals are ill equipped with the human resources and the necessary infrastructures needed to cater for the unique health care of the elderly.^[10]

Polypharmacy has been known to result in adverse drug reaction, reduced compliance and adherence to medications, poor quality of life and unnecessary drug expenses.^[11] A complete lack or presence of improperly managed facilities to cater for the needs of the aged in Nigeria has resulted in some elderly becoming chronically ill, disabled and sometimes dying of illnesses particularly elderly rural dwellers. A lot of the sicknesses, disability and even death associated with chronic diseases can be avoided through preventive measures.

This study aim was to investigate the pattern of medicines use among aged residents in selected communities in Ovia North-East local government area of Edo state and more specifically to identify common ailments, enumerate the number and classes of medications consumed, determine the burden of health care and medications, evaluate the burden of care and cost of medications and improve the adherence level to medications.

METHODS

Study setting: The study was conducted in selected communities in Ovia North-East local government Area of Edo state. Choice of the selected communities was based on ease of accessibility and population density. The selected communities include Isiohor, Omore, Idunmwowina, Evbomore, Oluku, Ovbiogie, Iyowa, Ekiadolor, Okada, Ugbojibio and Okokhuo communities.

Study Design: This study was prospective cross sectional study of randomly selected consenting respondents using self-administered interview based structured questionnaire to evaluate the pattern of medicines use among elderly people in Ovia north-east LGA of Edo State.

Sample Size Determination

According to the 2018 Nigerian population projection, Ovia North-East LGA has a total population of 203,500 residents, with 7.1% of elderly above 55 years. With the aid of Raosoft Sample size calculator, Sample size calculation was done using 5% margin of error, 95% confidence level and 50% distribution and 10% attrition rate gave 413 respondents.

Sampling Technique

Convenient sampling technique was used for the choice of elderly consenting respondents. In the cities, questionnaires were filled from 6 conveniently selected highly patronized community Pharmacies, while in the villages the questionnaires were filled from house to house.

Inclusion Criteria

Both male and female consenting adults above the age of 55 years in the selected communities in Ovia North-East Local Government Area were included.

Exclusion Criteria

Children, youth and adults below age 55 and non-consenting adults above age 55 irrespective of gender, marital status or educational attainment.

Ethical consideration: Ethical approval was obtained from the Ethics Committee, Faculty of Pharmacy, University of Benin. Ethics no: EC/FP/019/23. Verbal consent was also sought from the respondents before commencement of interview and confidentiality was ensured.

Data Collection

Data collection was carried out by interview method of questionnaire administration. Responses were obtained by interview with the structured questionnaire based on demographics, prevalent disease state, pattern of medication use, pill burden, access to medication, health and social care, cost and disease burden. In the questionnaire administration process, interested respondents were offered free blood pressure checks, adequate counseling on appropriate use of medicines so as to achieve desirable therapeutic benefits and lifestyle modifications to enhance optimal health.

Data Analysis: Data was sorted and imported into the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL) Version 21 for descriptive (frequencies and percentages), inferential analysis was done with Graph pad Instat for Chi square and fishers exact test where appropriate, p-value < 0.05 was considered significant.

RESULTS

The socio-demographic parameters of the respondents as depicted in table 1, shows that the number of respondents gradually decreased with increasing age. Thus, the highest percentage (73.6%) of respondents were above sixty years and those between 55 and 59 years' age range were 104 (26.5%), there were more females 244 (61.5%) than male 153(38.5%) participants. Majority, 266 (69.1%) of them were married and 331 (84.7%) were Christians. The most prevalent medical condition occurring among elders as shown in table 2 was hypertension 162 (40.3%) arthritis 157(39.1%), diabetes mellitus 62(15.4%) and stomach ulcer 41(10.2%). Government hospitals were preferred to others in their choice for health care facilities although many of them only went to hospitals when they felt like 117 (30.3%) and 93 (24.1%) never went at all.

In table 3, only a numbers of respondents 81(26.2%) took more than 5 medications per day. Many 206 (63.6%) took their drugs daily and 288 (88.1%) exactly as they were prescribed. In the advent of a drug therapy problem, majority 71(40.3%) would preferably consult the pharmacist. The burden of care and cost on medications as seen in table 4 revealed that a large number of the respondents 180 (47.2%) were personally responsible for their self-care and many 148 (38.8%) of them were assisted by their children. The majority of these elders were not on health insurance 321(85.1%) and so had to pay for their medications themselves 190 (49.4%) or got assistance from their children 148 (38.4%). Although, a higher percentage of them could afford the cost of their medications 277 (78.7%), they still would like their drug cost to be free or subsidized

357 (95.7%) Many of the respondents sourced their medications mainly from community Pharmacies 171(48.9%) and a few of them were from the hospitals 86 (24.6%) as seen in Figure 1.

On the classes of drugs used by the respondents, antihypertensives were the highest followed by antidiabetics and analgesics as shown in figure 2. Of the antihypertensive medications, calcium channel blockers 87 (53.7%) and diuretics 49 (30.2%) were mostly used, while the centrally acting sympatholytics 4(2.5%) and the β-blockers 4 (2.5%) were the least used. The diabetic patients mainly used the oral anti-diabetic agents such as biguanides 43(69.4%) and sulphonylurea 34 (54.8%), while only a few used insulin 2 (3.2%) for their blood glucose control as shown in table 5.

The association of socio-demographic parameters with the prevalent disease condition observed that there was no significant association except in sex p value 0.0260. An association was observed between arthritis and marital status, occupation and sex. Diabetes and ulcer only had an association with occupation as seen in table 6.

No significant association was observed between pill burden and the various socio-demographic parameters. However, there was a significant association between educational status (P-value 0.029), Sex (P-value 0.041) and the frequency of medication intake. Also, on who would be contacted on the advent of a drug therapy problem, there was a significant association between sex (p-value 0.007), religion (p-value 0.045) and educational status (p-value 0.027).

Table 1: Socio-demographic parameters of elderly people in Ovia North-East LGA.

Variables	Responses	Frequency	Percentage
Age (years)	55-59	104	26.5
	60-64	96	24.5
	65-69	70	17.9
	70-74	61	15.6
	75-79	30	7.7
	>80	31	7.9
Sex	Male	153	38.5
	Female	244	61.5
Marital status	Married	266	69.1
	Widow/Widower	103	26.8
	Separated	14	3.6
	Single	2	0.5
Religion	Christianity	331	84.7
	Islam	15	3.8
	Traditional religion	40	10.2
	Others	5	1.3
Educational status	Nil	79	21.2
	Primary	116	31.2
	Secondary	101	27.2
	Tertiary	76	20.4
Occupation	Retiree	52	13.3
	Civil servant	37	9.5

	Self employed	56	14.4
	Business man/woman	171	43.8
	Farming	57	14.6
	Nil	17	4.4
Number of children	None	7	1.8
	1-2	32	8.4
	3-4	91	23.7
	5-6	130	33.8
	Above 7	124	32.3

Table 2: The medical histories of the respondents.

Variables	Responses	Frequency	Percentage
Where do you normally visit for your health care needs?	Self-care	39	10.5
	Private hospital	63	16.9
	Government hospital	175	46.9
	Patent medicine dealers	27	7.2
	Community Pharmacy	61	16.4
	Traditional/Herbal healer	5	1.3
	Others	3	0.8
How often do you go for medical visit?	Forth nightly	11	2.8
	Once in a month	79	20.5
	Few times a year	86	22.3
	When I feel like	117	30.3
	Never	93	24.1
When was the last time you went for Hospital visit?	This week	21	5.7
	This month	41	11.1
	Last month	75	20.3
	This year	69	18.6
	Last year	35	9.5
	Some years back	50	13.5
	Never	79	21.4
What ailment are you currently having?	Hypertension	162	40.3
	Arthritis	157	39.1
	Diabetes	62	15.4
	Ulcer	41	10.2
	Glaucoma	27	6.7
	Cataract	10	2.5
	Asthma	9	2.2
	Benign Prostatic Hyperplasia	9	2.2
	Parkinson's disease	5	1.2
	Alzheimer disease	2	0.5
	Dyslipidemia	2	0.5
	Cancer	0	0.0

Table 3: The medication history of the respondents.

Variables	Responses	Frequency	Percentage
How many drugs do you take daily?	1-3	206	66.6
	4-6	81	26.2
	7-10	22	7.0
How often do you take your medicines?	Daily	206	63.6
	Weekly	4	1.2
	When I feel like	83	25.6
	When I do not feel alright	31	9.6
Are you happy taking your medications?	Yes	118	34.6
	No	131	38.4
	Don't have a choice	92	27.0
Do you take your medications exactly as they are prescribed?	Yes	288	88.1
	No	39	11.9

Reason for or not taking as prescribed?	Taking the medicines makes me feel well	225	73.1
	I usually forget to	5	1.6
	I have to because I was asked to	52	16.9
	I do not like to	26	8.4
When you have problems with medicines, who do you normally consult?	Doctor	67	38.1
	Pharmacy	71	40.3
	Nurse	6	3.4
	Patent medicine dealers	23	13.1
	Others	9	5.1

Table 4: The burden of care and cost of medications.

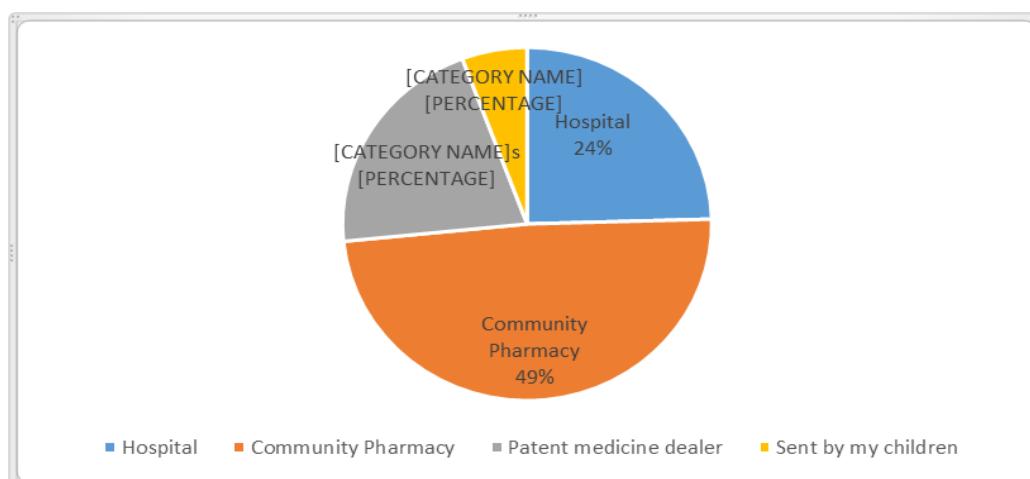
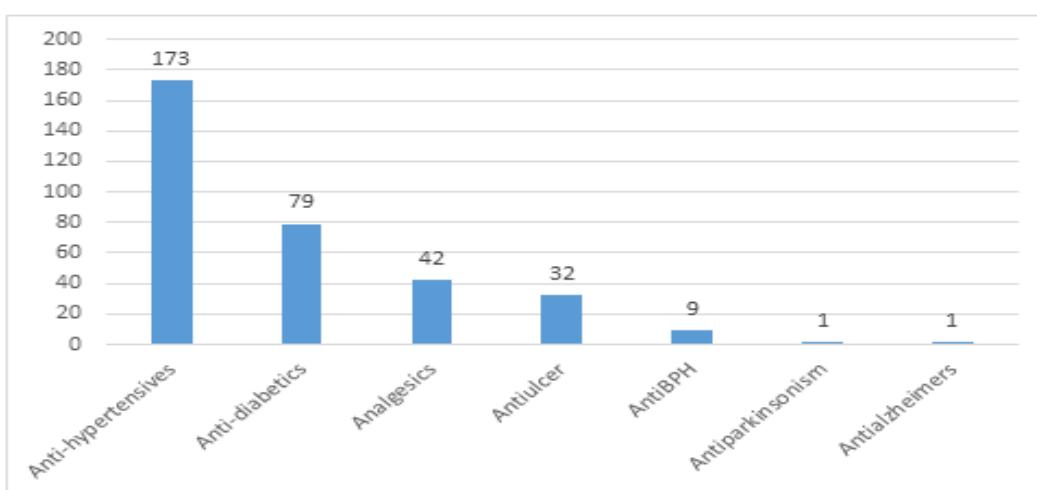
	Responses	Frequency	Percentage
Who are your care givers?	Self	180	47.2
	Spouse	44	11.5
	Children	148	38.8
	Relatives	8	2.1
	Others	1	0.3
Are you on health insurance?	Yes	56	14.9
	No	321	85.1
Who pays for your medications?	Self	190	49.4
	Spouse	38	9.9
	Children	148	38.4
	Relatives	3	0.8
	Neighbours	1	0.3
	Church	2	0.5
	Others	3	0.8
How much do you spend monthly for your medications?	< ₦ 1000	121	32.7
	₦ 1000-2999	84	22.7
	₦ 3000-4999	75	20.3
	₦ 5000-7999	44	11.9
	₦ 8000-10000	17	4.6
	Above ₦ 10000	29	7.8
Would you like your drug cost to be free or subsidized?	Yes	357	95.7
	No	16	4.3
Can you afford your medication cost?	Yes	277	78.7
	No	75	21.3

Table 5: Shows the various classes of most common medications used by the respondents.

Variables	Responses	frequency	Percentage
Anti-hypertensive	Diuretics	49	30.2
	Calcium channel blockers	87	53.7
	Centrally Acting Sympatholytic	4	2.5
	Beta blockers	4	2.5
	ACE I'S	21	15.4
	ARB'S	8	4.9
Anti-diabetics medications	Biguanide	43	69.4
	Sulphonyl urea	34	54.8
	Insulin	2	3.2
Anti-arthritis/analgesics	NSAIDS	42	26.8
Anti-Benign Prostatic Hyperplasia.	Alpha blockers	6	33.3
	5-Alpha reductase inhibitors	3	11.1
Alzheimer's disease	Cholinesterase inhibitors	1	50
Parkinson's disease	D2 agonists	1	20
Anti-Ulcer	Proton pump inhibitors	8	2.0
	Antacids	9	2.2
	H2- receptor antagonists	3	0.7
	Antibiotics	8	2.0
	Triple therapy	4	1.0

Table 6: Association between the demographics and the most common disease state.

VARIABLES		HYPERTENSION	ARTHRITIS	DIABETES	PVALUE
SEX	Male	63 (39.9%)	40 (25.8%)	28 (45.2%)	
	Female	95(60.1%)	115 (74.2%)	34 (54.8%)	0.0260
AGE(YEARS)	55-59	34 (21.5%)	40 (26.1%)	15 (24.6%)	
	60-64	39 (24.7%)	33 (21.6%)	16 (26.2%)	
	65-69	33 (20.9%)	26 (17%)	8 (13.1%)	
	70-74	27 (17.1%)	24 (15.7%)	8 (13.1%)	
	75-79	11 (7%)	14 (9.2%)	8 (13.1%)	
	>80	14 (8.8%)	16 (10.5%)	6 (9.8%)	0.8708
MARITAL STATUS	Single	1 (0.6%)	0 (0.0%)	0 (0.0%)	
	Married	102 (65.8%)	93 (60.8%)	43 (71.7%)	
	Windowed	46 (29.7%)	54 (35.3%)	13 (21.7%)	
	Separated	6 (3.9%)	6 (3.9%)	4 (6.7%)	0.5871
OCCUPATION	Retiree	21 (13.4%)	15 (9.9%)	8 (12.9%)	
	Civil Servant	16 (10.2%)	12 (7.9%)	9 (14.5%)	
	Self-employed	29 (18.5%)	15(9.9%)	15 (24.2%)	
	Business	66 (42%)	68 (44.7%)	23 (37.1%)	
	Farming	17 (10.8%)	31 (20.4%)	4 (6.5%)	
	Nil	8 (5.1%)	11 (7.2%)	3 (4.8%)	0.0788
ALCOHOL	Yes	34 (21.5%)	31 (20.1%)	10 (16.1%)	
	No	124 (78.5%)	123 (79.9%)	52 (83.9%)	0.5680
SMOKING	Yes	6 (3.9%)	4 (2.7%)	4 (6.8%)	
	No	146 (96.1%)	144 (97.3%)	55 (93.2%)	0.3776

**Fig 1: Shows the frequency distribution of sources of medications.****Fig. 2: Frequency distribution of Classes of Medications.**

DISCUSSION

Result from this study reveals that, majority of the respondents were aged between 55 and 59 years (26.5%) while the least were aged 85 years and above (2.3%). As the ages of the respondents increased, there was a gradual decline in their number. This result goes to prove the very low life expectancy of Nigerians which is 54.5 years, ranking 178th in the world^[11] and is also consistent with the projected 2020 estimate of the age structure in Nigeria where 55-64 years were (4.13%) and above 65 years (3.3%) world national population census.^[12]

Male to female ratio was remarkably lower than statistical values, giving a ratio of 1:1.6 as against the Population growth rate estimate of 3.2 per cent with the sex ratio of 102 men per 100 women (1:1.03) for Nigerians in the population^[13], however, it is consistent with what is obtainable in most countries of the world where women outnumber men at older ages so much so that there arises what is referred to as, "feminization of old ages".^[14]

In this study, a higher percentage of the population were observed to be actively working, only a minute of the population were not working at all and few had retired. The major occupation observed was trading thus most elderly men and a significant percentage of elderly women, continue to participate in the labour force almost till the end of their lives. Majority of them were above 60 years of age, though the 2018 life expectancy of the population in Edo was projected to be 50 years with males having 46 and female 48 years.^[13]

Age-related physiological decline results in defective homeostasis responsible for the susceptibility of the individual to succumb in minor stresses as most of the respondents preferred to visit government hospitals for their health care needs. Hypertension and other cardiovascular disease is the most frequently occurring condition in older adult and remains the number one cause of death.^[15] In this study, hypertension (40.3%) was the most prevalent disease condition which is similar to study at Ibadan were 62% of elders were hypertensive.^[16]

Following hypertension on prevalence was arthritis that accounted for 39.1% of the participants of this study. Next was diabetes mellitus (15.4%) and finally stomach ulcer (10.2%). Least occurring conditions were dyslipidemia and Alzheimer's diseases which both occurred in 0.5% of individuals that participated in the study. In another study, arthritis accounted for 36.2% of recorded cases while diabetes mellitus accounted for 12% of cases.^[15] Various studies on geriatric chronic morbidities have always identified hypertension, arthritis and diabetes mellitus as the most prevalent disease state in several communities.^[17-19]

According to the CDC, a lot of the sicknesses, disabilities and even death associated with chronic

diseases can be avoided through preventive measures. The CDC suggests lessening the possibility of the onset of chronic disease in later years by practicing a healthy lifestyle that includes healthy eating, regular exercise and avoiding tobacco use as well as regular use of early detection and testing such as breast, prostate and cervical cancer screenings, diabetes and cholesterol screenings, and bone density scans.^[20]

Although, the precise minimum number of medication used to define polypharmacy is variable, it usually ranges from 5-10 medications. Relatively, polypharmacy was not an issue among the respondents as majority of them took less than five medications per day. Polypharmacy could lead to decreased medication compliance, poor quality of life and unnecessary drug expenses.^[21] In a study done by Hajaar et al 2005, he found out that majority of the respondents took more than 5 medications per day, some even took up to nine medications with one or more unnecessary prescribed drugs.^[22] Thus, findings from this study negates several reports on polypharmacy in the elderly.

Adherence to medications was relatively high as a good number of the respondents took their medications daily and exactly as they were prescribed. This again is not in tandem with some other studies where most elderly patients are observed to be non-adherent to their medications as a result of polypharmacy. In a study carried out at the Lagos University Teaching Hospital, it was observed that only one in every hundred patients had high adherence to medications.^[23] The high medication adherence by respondents was attributed to the therapeutic benefits derivable from the medications as majority of the respondents indicated that taking the medications made them feel well. Adherence to medication has often been linked with effectiveness of therapy.

Due to the global decline in family support systems, elderly persons are now forced to cater for their needs personally. In this study, nearly half of the respondents were responsible for their personal and healthcare costs. As the amount spent on medications increased, the percentage number of respondents also decreased. This means fewer people spent higher amount on their medications. The high poverty rate among rural dwelling elderly respondents could be an explanation for this. Hence, nearly all the respondents wanted their medications free or subsidized.

There was an association between socio-demographics and the prevalent disease conditions (*p*-value <0.05), such as between arthritis and, marital status, occupation and sex. Diabetes and ulcer only had an association with occupation. However, there was no significant association between demographics and hypertension which negates several other published data that reveals a direct link between socio-demographics with

hypertension and nearly all other disease conditions in the elderly.

CONCLUSION

The most prevalently occurring disease type among elders in Ovia North-East Local Government Area was Hypertension (40.3%), Arthritis (39.1%), Diabetes Mellitus (15.4%) and Stomach Ulcer (10.2%). Medicines use among elders was mainly according to standard prescription patterns with high compliance rate arising from the perceived therapeutic benefits derivable from the medications. Sourcing of medicines was largely from community Pharmacies and government tertiary institutions were the most preferred for health care needs. Most of the elders were financially responsible for their health care needs. Average pill burden was 3.3 medications per day.

Limitations: Improperly defined roads in rural communities and Low educational status of rural dwelling adults.

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