Practice of Routine Medical Check-ups and Screening for Cardiovascular Risk Factors in Delta State, South-South Nigeria: A population-based study

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Abstract

Disease prevention is an effective strategy to decrease morbidity and mortality across a wide range of diseases and routine medical screening is a cost-effective method of improving population health and life expectancy. The aim of this study was to determine the practices of apparently healthy adults towards routine medical check-ups and screening for cardiovascular risk factors. This was done using a cross-sectional questionnaire-based study design. The study population was drawn from among adult residents of a rural (Jesse) and an urban (Warri) community in Delta State, South-South Nigeria.

A total of 866 respondents were studied, 44% were rural dwellers. Their mean age was 42.5(±16.05) years. Two-thirds (242/358) of the respondents who had completed secondary education were urban dwellers. A third of the respondents practiced routine medical screening and this was significantly higher among the urban dwellers (40.0% vs. 22.2% p<0.001). Among respondents who do not practice routine medical screening, 48.5% had no apparent reason and 70.1% were urban dwellers.

Majority of the respondents had no health care provider. The typical healthcare providers were doctors (25.7 %), pharmacist/dispenser (9.2%) and nurses (4.3%). Among respondents who had doctors as the typical healthcare provider, 26.9% have had education on cardiovascular risk factor prevention. This was significantly higher among urban dwellers.

Majority of the respondents have never had their blood pressure (56.0%), blood glucose (65.8%) and cholesterol (94.6%) checked, significantly higher among rural dwellers.

In conclusion, routine medical check-ups and screening for cardiovascular risk factors were poor in this study. There is a need for increased public health promotion and education among Nigerians.

Keywords: Cardiovascular risk factors, medical check-up, adult,

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Introduction

Routine medical check-up also known as periodic health evaluation or general health check is a form of preventive medicine by apparently healthy adults. It is a practice in which persons, who are often asymptomatic, are screened by physicians on a regular basis. The frequency of medical check-ups varies depending on several factors which include age, personal and family medical history as well as psychosocial/behavioural factors. This clinical exercise involves obtaining a comprehensive clinical history, physical examination and baseline laboratory investigations.[1] This allows for early detection of disease and their risk factors, and a consequent timely intervention which includes feedback on health status to client/patient, provision of information to guide lifestyle changes, and medical and surgical care. Indeed, disease prevention is an effective strategy to decrease morbidity and mortality across a wide range of diseases.

Non-communicable diseases are chronic and are a leading contributor to morbidity and mortality worldwide.[2-4] Chronic diseases have a heavy socioeconomic burden on individuals and account for about 70% of the overall global deaths.[3] Cardiovascular disease (CVD) contribute significantly to the burden of non-communicable diseases and by extension global morbidity and mortality.[5] The skewed high burden of CVD in low and middle-income countries is attributed to the increasing prevalence of atherosclerotic diseases, which is in part driven by urbanization and the increased risk factor levels which may be modifiable.[2,6]

The key to controlling the rising prevalence of cardiovascular diseases is by primary prevention through comprehensive population-based programs. To do this, identification of cardiovascular risk factors to plan their prevention and control is important.[2, 8] Periodic medical evaluation is a cost-effective means to prevent the onset of chronic disease as well as reducing morbidity and mortality, thereby improving overall population health and life expectancy.[9-11] Adults with significant cardiovascular risk factors can be easily identified and adequately counselled during such medical check-ups.

There is a paucity of data on routine medical check-ups in Nigeria. The aim of this study was to describe the attitude and practices of routine medical check-up and cardiovascular risk factor assessment among apparently healthy adult members of two communities in Delta State, Nigeria. This study also highlights the client- and physician-related factors that

influence the practice of preventive healthcare.

Materials and Method

This was a descriptive cross-sectional questionnaire-based survey. The study location was Delta State, Nigeria. Delta State is one of the oil-rich States in the Niger-Delta region, South-South Nigeria. Two communities were purposively chosen as study sites, Jesse and Warri. Jesse is a rural agrarian community while Warri is a developing metropolis.

The study population was drawn from among consenting adults aged 18 years and above. To be eligible for recruitment, the study participant must have been domiciled in the study site for at least one year. Visitors and residents who have lived in the study site for less than one (1) year were excluded from the study. The cluster sampling technique was used to select respondents from the study sites. Ethical approval was obtained from the Health Research Ethics Committee of Delta State University Teaching Hospital (DELSUTH) before the commencement of the study.

The respondents were asked to complete a semi-structured interviewer-administered questionnaire. The questionnaire was used to obtain information on the socio-demographic data and practice of routine medical check-ups. Concerning routine medical check-up, the respondents were asked if they see a health care provider for regular check-ups. They were also asked to provide information on the type of healthcare provider they typically see, and whether their health care provider has ever discussed heart disease and ways to prevent the development of cardiovascular risk factors.

A medical check-up is defined as a clinical evaluation of an otherwise asymptomatic patient by trained medical personnel and it is inclusive of obtaining a history, physical examination and laboratory investigations.[1]

Obtained data were checked for completeness, cleaned and analyzed using the Statistical Package for Social Sciences (SPSS Inc, Chicago, IL) version 22 software. Results were expressed as frequency tables and charts. Comparison of categorical variables for statistical significance was by chi-square. The level of significance level was set at $p < 0.05$.

Results:

A total of 866 adults participated in the study. The respondents were aged between 18 and 94 years, with a mean age of 42.6 (± 16.1) years. More than half

Table 1. Sociodemographic characteristics of study participants

Variable	Category	Total (%) (N=866)	Rural (%) (n=381)	Urban (%) (n=485)	p-Value
Sex	Male	381 (44.0)	190 (49.9)	191 (50.1)	0.002
	Female	485 (56.0)	191 (39.4)	294 (60.4)	
Age group (years)	<35	304 (35.1)	124 (40.8)	180 (59.2)	<0.001
	35 – 44	214 (24.7)	56 (26.2)	158 (73.8)	
	45 – 54	152 (17.6)	68 (44.7)	84 (55.3)	
	55 – 64	91 (10.5)	43 (47.3)	48 (52.7)	
	=65	105 (12.1)	90 (85.7)	15 (14.3)	
Marital status	Single	171 (19.7)	53 (31.0)	118 (69.0)	<0.001
	Married	485 (56.0)	183 (37.7)	302 (62.3)	
	Widowed	39 (4.5)	27 (69.2)	12 (30.8)	
	Separated/Divorced	45 (5.1)	39 (86.7)	6 (13.3)	
	Co-habiting	89 (10.3)	61 (68.5)	28 (31.5)	
	N/A	37 (4.3)	18 (48.6)	19 (51.4)	
Educational status	No Formal/ less than Primary	123 (14.7)	108 (87.8)	15 (12.2)	<0.001
	Completed Primary	195 (23.3)	145 (74.4)	50 (25.6)	
	Completed Secondary	358 (42.7)	116 (32.4)	242 (67.6)	
	Completed Tertiary	122 (14.6)	2 (1.6)	120 (98.4)	
	Postgraduate	40 (4.8)	0 (0.0)	40 (100.0)	
	N/A	28 (3.2)	10 (35.7)	18 (64.3)	
Employment Status	Students	93 (10.7)	53 (57.0)	40 (43.0)	<0.001
	Unemployed	65 (7.5)	6 (9.2)	59 (90.8)	
	Government employee	87 (10.0)	0 (0.0)	87 (100.0)	
	Non-government employee	32 (3.7)	2 (6.3)	30 (93.8)	
	Self-employed	565 (65.2)	316 (55.9)	249 (44.1)	
	Retired	4 (0.5)	0 (0.0)	4 (100.0)	
	N/A	20 (2.3)	4 (20.0)	16 (80.0)	
Religion	Christianity	727 (83.9)	280 (38.5)	447 (61.5)	<0.001
	Islam	8 (0.9)	6 (75.0)	2 (25.0)	
	ATR	84 (9.7)	74 (88.1)	10 (11.9)	
	Others*	8 (0.9)	3 (37.5)	5 (62.5)	
	N/A	39 (4.5)	18 (46.2)	21 (53.8)	

Table 2. Association between sociodemographic characteristics and practice of routine medical screening

Variable	Category	Routine Medical Check-up	
		Yes n=280 (32.3%)	No n=586 (67.7%)
Place of Residence	Urban	194 (69.3)	291 (49.7)
	Rural	86 (30.7)	295 (50.3)
		$\chi^2 = 29.622$, df = 1, p<0.001	
Sex	Male	134 (47.9)	247 (42.2)
	Female	146 (52.1)	339 (57.8)
		$\chi^2 = 2.504$, df = 1, p = 0.114	
Age Group (years)	<35	77 (27.5)	227 (38.7)
	35 – 44	73 (26.1)	141 (24.1)
	45 – 54	62 (22.1)	90 (15.4)
	55 – 64	28 (10.0)	63 (10.8)
	=65	40 (14.3)	65 (11.1)
		χ = 13.789, df = 4, p = 0.008	
Marital status	Single	51 (19.0)	120 (21.4)
	Married	166 (61.9)	319 (56.9)
	Others	51 (19.0)	122 (21.7)
	N/A	12	25
		$\chi^2 = 1.931$, df = 2, p = 0.381	
Educational status	No Formal/ less than Primary	28 (10.4)	95 (16.7)
	Completed Primary	61 (22.7)	134 (23.6)
	Completed Secondary	113 (42.0)	245 (43.1)
	Completed Tertiary	46 (17.1)	76 (13.4)
	Postgraduate	21 (7.8)	19 (3.3)
	N/A	11	17
		$\chi^2 = 14.421$, df = 4, p = 0.006	
Employment Status	Students	26 (9.5)	67 (11.7)
	Unemployed	23 (8.4)	42 (7.3)
	Government employee	33 (12.1)	54 (9.4)
	Non-government employee	14 (5.1)	18 (3.1)
	Self employed	174 (63.7)	391 (68.2)
	Retired	3 (1.1)	1 (0.2)
	N/A	7	13
		χ = 8.188, df = 5, p = 0.146	
Religion	Christianity	246 (91.4)	481 (86.2)
	Islam	1 (0.4)	7 (1.3)
	ATR	18 (6.7)	66 (11.8)
	Others**	4 (1.5)	4 (0.7)
	N/A	11	28
		$\chi^2 = 7.858$, df = 3, p = 0.049	

ATR: African Traditional Religion, N/A: Not Available, Others*: Widowed, divorced, separated, co - habiting, Others**: Any other religion

Table 3. Reasons for routine medical check up and its association with place of residence and sex

	Frequency n=280 (%)	Place of Residence		Sex	
		Urban n=194 (%)	Rural n=86 (%)	Male n = 134 (%)	Female n = 146 (%)
Antenatal visits	8 (2.9)	1 (0.5)	7 (8.1)	0 (0.0)	8 (5.5)
Personal routine	5 (1.8)	5 (2.6)	0 (0.0)	5 (3.7)	0 (0.0)
Medical Outreaches	204 (72.9)	142 (73.2)	62 (72.1)	97 (72.4)	107 (73.3)
Medical conditions	60 (21.4)	43 (22.2)	17 (19.8)	29 (21.6)	31 (21.2)
Work-related	3 (1.1)	3 (1.5)	0 (0.0)	3 (2.2)	0 (0.0)
		$\chi^2 = 43.301$, p <0.001		$\chi^2 = 18.782$, p = 0.002	

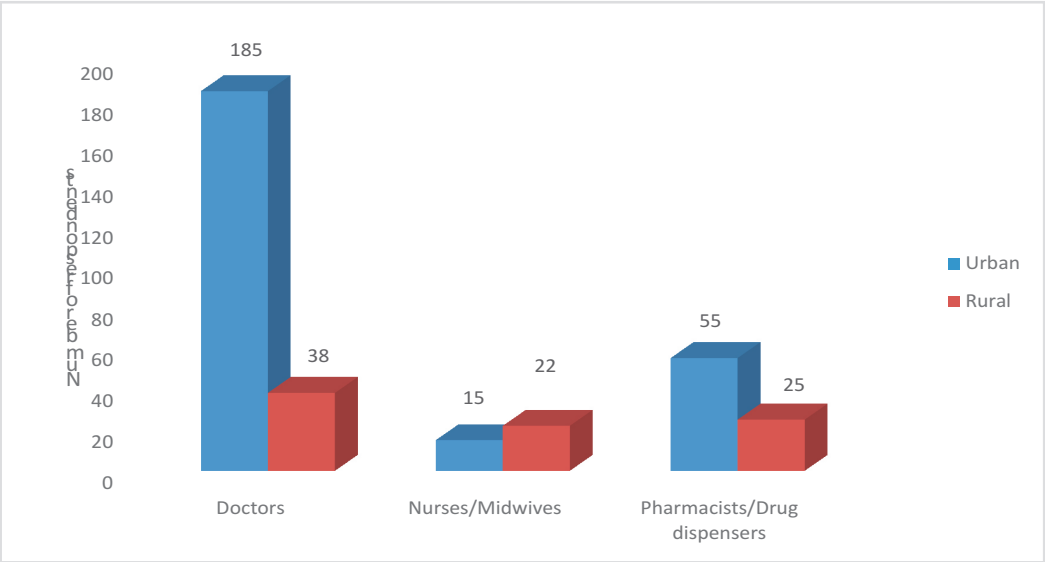
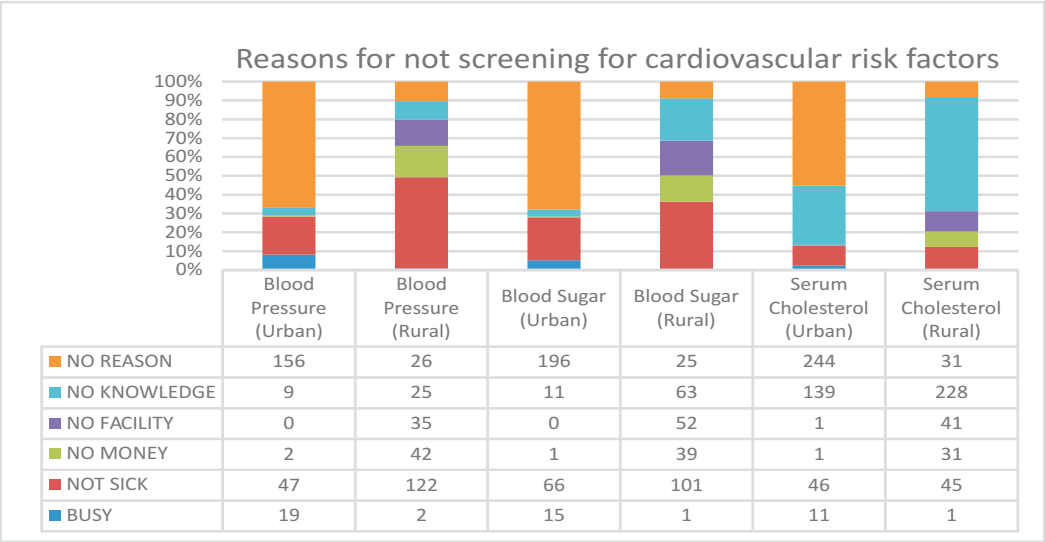


Figure 1. Urban-Rural distribution of typical healthcare provider sought by respondents



	Blood Pressure (Urban)	Blood Pressure (Rural)	Blood Sugar (Urban)	Blood Sugar (Rural)	Serum Cholesterol (Urban)	Serum Cholesterol (Rural)
NO REASON	156	26	196	25	244	31
NO KNOWLEDGE	9	25	11	63	139	228
NO FACILITY	0	35	0	52	1	41
NO MONEY	2	42	1	39	1	31
NOT SICK	47	122	66	101	46	45
BUSY	19	2	15	1	11	1

Figure 2. Reasons for not screening for cardiovascular risk factors

of the respondents were males (56.0%), urban dwellers (56.0%), married (56.0%) and self-employed (65.0%). Majority of the respondents have had formal education. Of the respondents who had completed secondary education two-thirds (242/358) were urban dwellers. Table 1 shows the sociodemographic characteristics of the study participants.

A total of 280 (32.3%) respondents reported that they had undergone a routine medical check-up. Of these respondents more than two-thirds were urban dwellers and had completed at least secondary education while about half of them were females and were aged less than 45years. (Table 2)

There was a statistically significant association between the practice of routine medical check-up and place of residence ($p<0.001$), age group ($p=0.008$), the highest level of education ($p=0.006$) and religion ($p=0.049$). (Table 2)

The practice of routine medical check-up did not differ significantly based on the sex, marital status and employment status of the respondents. (Table 2)

Opportunistic medical check-up during medical outreaches was the most common reason for a medical check-up in this study. Less than 1.0% of the total study population engaged in routine medical check-up as part of their personal or work-related routine. The reasons for attending medical check-ups differed significantly by place of residence and sex. (Table 3)

About half of the respondents who have never had a medical check-up had no apparent reason for not doing so. The reasons for not engaging in routine medical check-ups differed significantly by place of residence ($p<0.001$) but not by sex ($p=0.196$) (Table 4)

Three-fifth (524/866) of the respondents have never seen a healthcare provider either for a curative or preventive purpose. The typical healthcare providers sought by the respondents based on place of residence is as shown in figure 1.

Among respondents who reported having doctors as their typical health-care provider, 52 (23.3%) have had discussions on heart disease while 60 (26.9%) have had education on cardiovascular risk factor prevention. All the respondents who had had a discussion on heart disease and 59 of those who had had education on cardiovascular risk prevention were urban dwellers.

Among the respondents, 44.0% (381) have had their blood pressure (BP) measured. The proportion of urban dwellers who had ever checked their BP was significantly higher than their rural counterparts (52.0% vs 33.9%, p<0.001). Almost 70% (265) of the respondents who had ever checked their BP did so within the past 12 months. This observation did not differ based on the place of residence (p=0.406).

Among the respondents, 34.2% (296) have ever had their blood sugar measured. A significantly higher proportion of urban than rural dwellers had ever checked their blood sugar level (40.2% vs 26.5%, p<0.001). The majority (73.0%) of the who had ever checked their blood sugar did so within the past 12 months. A significantly higher proportion of urban than rural dwellers had checked their blood sugar level in the past 12 months (28.5% vs 20.5%, p=0.007).

Among the respondents, 5.4% (47) have ever checked their serum cholesterol level. The proportion of urban dwellers who had ever checked their serum cholesterol levels was significantly higher than the rural dwellers (8.9% vs 1.0%, p<0.001). A majority (48.9%) of the those who had ever checked their serum cholesterol had done so within the past 12 months. A significantly higher proportion of urban than rural dwellers had checked their serum cholesterol levels in the past 12 months (4.5% vs 0.3%, p<0.001).

The reasons for lack of screening for hypertension, type 2 diabetes and dyslipidaemia among the respondents is as shown in figure 2. The rural-urban differences in the reasons for not screening for cardiovascular risk factors were statistically significant: hypertension (χ^2 = 218.387, p<0.001), type 2 diabetes mellitus (χ^2 = 273.735, p<0.001), and dyslipidaemia (χ^2 = 257.590, p<0.001).

Discussion

This study revealed that the practice of routine medical check-up among adults in Delta State was low. About two-thirds of the respondents in this study have never been evaluated by trained medical personnel to ascertain the true state of their general health. Studies from other regions of Nigeria also show a low-level practice of routine medical check-ups.[11-14] In the index study, age, place of residence and educational status were significantly associated with the practice of routine medical check-up. Ilesanmi et al[11] in a study of adults in Owo, South West Nigeria have previously shown that age was significantly associated with the practice of routine medical check-ups. In their study, they had a lower proportion of young participants (aged less than 40years) who engaged in periodic medical check-ups compared with respondents aged 60years and above.[11] Older age has also been shown to be a determinant of uptake of medical-check-ups in Germany.[15] Also, attainment of higher educational status has been associated with a high-level practice of routine medical check-ups in Hong-Kong.[16] However, this contrasts with the study by Eke et al[12] among traders in Nnewi South-East Nigeria in which age and educational status were not significantly associated with the practice of routine medical check-up.

Only 5% of the respondents who have never had a medical check-up attributed it to lack of knowledge or awareness of periodic medical check-up and all these respondents were rural dwellers. It may, therefore, be inferred that the level of awareness of periodic medical check-up in this study was not low, further supporting the previously reported Nigerian studies[11-14] with a mismatch in high-level knowledge/awareness of periodic medical check-up and the low-level actual practice of it. As with other previous reports,[11] lack of awareness/knowledge was not the sole reason for not engaging in routine medical check-ups. Other reasons include social, economic, infrastructural, religious beliefs and lack of symptoms of ill-health.

Lack of funds hindered a little more than one-tenth of the respondents from practicing routine medical check-up in this study. Lack of funds was also one of the reasons for lack of uptake of medical check-ups in the study by Ilesanmi et al.[11] In Nigeria, healthcare financing is poor and out-of-pocket spending is one of the major sources of paying for healthcare expenditures.[17, 18] The National Health Insurance Scheme in Nigeria is yet to attain universal coverage as it is yet to finance persons from the informal sector,[17] and more importantly, it is skewed towards the provision of curative than preventive healthcare. It is therefore not surprising that almost three-quarters of the respondents who have had medical check-ups did so during opportunistic free medical outreaches. Ilesanmi et al also reported that most of the participants in their study who had ever engaged in medical check-ups did so during a free medical outreach.[11] In Delta State, several organizations including the State Government, organized private sector and faith-based organizations engage in medical outreaches on a regular basis. As in this study, health care financing alone does not account for the low-level uptake of medical check-ups. In climes where the burden of preventive health care spending is largely taken up by health insurance, the uptake was well below expected .[19,20]

About one-fifth of the respondents in this study

who have never had a medical check-up reported that they had 'Divine health' and/or were not sick. This reason calls for concern as routine medical screening play an important role in disease prevention and control.[7] The lack of overt clinical manifestations presents a misperception that may be borne out of the lack of knowledge on the symptomatology and natural progression of chronic diseases as well as spiritual/religious beliefs that assumes a healthy status is implied in the absence of symptoms. Non-communicable diseases like cardiovascular diseases are often chronic and as such have long latency periods between exposure to risk factors and overt clinical manifestations of the disease which may span several years. Waiting for symptoms may mean catching the disease late when complications may have set in and loss of the potential benefit of routine medical screening which includes prevention of complications/disability and improved survival. This defeats the purpose of routine medical check-up.[1,21-23]

Surprisingly, almost half of the respondents who have never had a medical check-up done had no apparent reason for their inaction. This underscores the need for health education and re-education of the populace on the importance of preventive healthcare especially as it pertains to chronic diseases.

The practice of screening for traditional modifiable cardiovascular risk factors as part of preventive or curative healthcare was also poor in this study. Majority of the respondents in the index study have never had their blood pressure (56.0%), blood glucose (65.8%) or serum cholesterol (94.6%) checked. This falls short of the recommendations by the US preventive services task force (USPSTF) to screen for hypertension,[24, 25] type 2 diabetes mellitus[26, 27] and dyslipidaemia.[28,29]

Multiple reasons were also given for the lack of screening for cardiovascular risk factors in the index study. Of note is that a majority of the respondents reported that serum cholesterol check had not been previously recommended and was unaware of the need for one. This presupposes physicians' inertia in recommending for serum cholesterol check despite existing guidelines supporting routine screening in adults aged 20 years and above.[29] Indeed, routine medical check-ups provide an opportunity not only to assess an individual's health status but also to advice on preventive health and to improve the doctor-patient relationship.[30] In this study, about three-quarters of the respondents who had doctors as their typical healthcare provider have never had discussions on heart disease nor education prevention of cardiovascular risk factors, many of which are behavioural and modifiable. This finding supports the impression of physicians' inertia towards health education. Further research to ascertain the reasons for the reported inertia will be needful in assessing healthcare provider-related barriers to preventive cardiovascular health services.

Conclusion: Routine medical check-ups and screening for cardiovascular risk factors were poor in this study. There is a need for increased public health promotion and education among Nigerians. This is also a wakeup call to physicians to overcome challenges/barriers to communicate more effectively with patients and the general population on cardiovascular risk assessment and prevention.

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