**Routine health Checks and implications among staff of a tertiary health facility in Nigeria**

**ABSTRACT**

**Background:** Non-communicable disease is a globally recognized cause of significant morbidity and mortality with a rapidly increasing prevalence. Its rising burden among health workers, reduces their productivity and strains service delivery in the sector. Awareness and knowledge of important metabolic indices and regular monitoring is key to healthier living, early detection, prevention of complications and mortality from Non- communicable diseases.

**Objectives:** This study aimed to assess the prevalence of non-communicable disease among staff at University of Port Harcourt Teaching Hospital (UPTH),to assess their knowledge and monitoring habit of important health Numbers.

**Methodology:** A descriptive cross-sectional study was conducted among staff. Interviewer administered semi structured questionnaire was used to collect data on medical and family history, health screening habit, and awareness of complications of Non -communicable diseases. Data was analyzed using SPSS version 23.

**Results:** A total of 102 staff participated. Most 73(71.6%) were females, 46(45.1%) were doctors and 85(82.5%) had attained tertiary level of education. 27(26.5%) had a known medical history, 58(56.9%) had family history of various medical conditions and 34(33.3%) were on medication. 44(43.6%) of participants were overweight and 19(18.8%) had class 1 obesity. Only 31(30.7%) had normal blood pressure, 34(34.0%) were pre-diabetic and 8(8.0%) were diabetic. Abdominal obesity was found in 44.8% of participants.

Participants understood the implications of obesity, (41.2%) diabetes (36%) and hypertension (50%) Participants checked their numbers quite frequently, with weight and blood pressure having the highest frequencies within the previous one month while blood glucose was checked by more people within the previous 6 months. However, a significant knowledge gap about the implications of abdominal obesity was identified.

**Conclusion:** The findings revealed a high prevalence of Non -communicable diseases among hospital staff. Though health numbers were checked regularly, varying levels of awareness about complications of non-communicable diseases were found with a significant gap in knowledge about abdominal obesity.

**Keywords**; non-communicable diseases, abdominal obesity, hospital staff, health Numbers, blood glucose

**Introduction:**

Globally, there has been a surge of health challenges most especially Non-communicable diseases (NCD) such as diabetes, hypertension, cardiovascular diseases and cancers, contributing immensely to the increased rate of morbidity and mortality accounting for over 41 million deaths per year- equivalent to 71% of mortality globally. In sub-Sahara Africa, there is rapid increase in the incidence due to urbanization, sedentary lifestyle and dietary transition to western diet.1,2 The rising health burden due to NCD, put significant strain on the health sector and health professional are key players as advocates on diseases prevention and health promotion. Their ability as frontline health ambassadors to effectively counsel patient depends on their awareness and knowledge of important metabolic indices commonly referred to as ‘health numbers’ which includes: blood pressure, fasting blood glucose and lipid profile. Health care professionals are assumed to be healthy however, several studies have shown higher prevalence of NCD among health care workers than the general population.3

Metabolic clinics all around the world and in our center offers specialized services for metabolic disorders such as obesity, diabetes, hypertension, dyslipidemia, renal tubular acidosis, amongst others and health education, advocacy and counseling on metabolic conditions.4 The clinic provides opportunity to obtain professional care and gain understanding of metabolic health. Despite the availability of these invaluable service in the hospital community, there is evidence indicating that health workers do not optimize these services for their own health and may not be aware of their own numbers.

Awareness and regular monitoring of important health parameters will promote health consciousness, enhance early detection of metabolic derangement which will help individuals address concerns early thereby reducing the risks and incidence of NCD and their inherent complications.

Any blood pressure (systolic and diastolic) above reference limit (which is less than 120/80mmHg) is referred to as hypertension. Hypertension although preventable is a strongly associated with increased risk and the leading cause of mortality due to cardiovascular disease including stroke and heart failure.5,6 Hypertension is often termed the silent killer because of the tendency to remain asymptomatic until significant complication arise. Regular BP monitoring helps early detection, institution of lifestyle and dietary changes to prevent progression, revert to normal blood pressure and early management to prevent organ damage.

Blood glucose is an important metabolic index as high levels (hyperglycaemia) is the hallmark of diabetes. Regular monitoring aids detection of prediabetes where lifestyle modifications are beneficial and early diagnosis of diabetes enables timely management to prevent and halt progression of micro and macro vascular complications associated with uncontrolled diabetes mellitus.7,8 Body mass index (BMI) is another metabolic parameter of importance, it is a noninvasive and convenient way to assess obesity and a very accurate way of assessing overall wellbeing. Elevated BMI is used to assess the risk and make a diagnosis of obesity which on its own is a chronic metabolic condition and is strongly linked with the risk of diabetes, hypertension, coronary heart disease, dyslipidemia and other non-communicable diseases.9 Hence the need for regular monitoring to promote health consciousness, weight control and general wellbeing.

Knowing these health Numbers can be achieved by preventive medical checkup which efficiently promotes health, reduce morbidity, prevents complications and mortality.10,11 Public hospital employees are noted to have low utilization of primary preventive checkups,12 which raises the question of their awareness of their Numbers and their significance to health and wellbeing. The aim was to evaluate the frequency with which health workers accessed their metabolic health parameters and to establish if they understood the significance of all parameters assessed.

SIGNIFICANCE OF STUDY

Health workers are the pillars of the health system and invaluable assets therefore their health status, knowledge and awareness of important health indices are vital for vibrant health promotion, for advocacy and disease prevention in the community and the world at large. This study assessed the awareness of health works regarding their numbers with data from the metabolic clinic. The finding will inform targeted strategy to promote self-monitoring practices among health professionals aimed to boast their overall productivity in service.

**Methodology**

This was a descriptive cross-sectional study that was carried out as part of an out reach in the metabolic clinic of a tertiary hospital in Port Harcourt Rivers State.

**Study Site/Area**

This was the Metabolic clinic of the University of Port Harcourt Teaching hospital in Rivers State. The hospital is a 500 bedded hospital in Southern Nigeria. It caters to many patients within the State.

**Sample Size/** **Sampling technique**

Convenience sampling technique was adopted. One hundred and two hospital staff were conscripted consecutively. They were the members of staff of the Hospital that volunteered themselves for screening and evaluation.

**Study Instrument.**

An interviewer administered questionnaire with semi structured questions was used to get basic information. The weight, height and abdominal circumference was taken, using a weighing scale and a stadiometer as well as a standard measuring tape. The information obtained was recorded in kilograms and centimeters.

**Statistics and Data analysis**

All information was recorded down then transcribed into an excel sheet and exported to SPSS version 23 for analysis. Data was analyzed using frequencies, percentages and means.

**Results and Discussion:**

A total of 102 staff participated in the in-reach. Most 73(71.6%) were females, 46(45.1%) were doctors and 85(82.5%) had attained tertiary level of education.

Figure 1. Age distribution of participants.

Most 54(52.9%) of the respondents were between the age of 30-39 years with a mean age of 38.6years.

**Table 1: Socio Demographic Characteristics of participants**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=102** | **Percentage** |
| **Sex** |  |  |
| Male | 29 | 28.4 |
| Female | 73 | 71.6 |
| **Profession** |  |  |
| Doctor | 46 | 45.1 |
| Nurses | 11 | 10.8 |
| Med. Lab Scientist | 4 | 3.9 |
| Health assistant | 7 | 6.9 |
| Scientific officer | 10 | 9.8 |
| Others | 24 | 23.5 |
| **Education** |  |  |
| No formal education | 5 | 4.8 |
| primary | 7 | 6.8 |
| Secondary | 6 | 5.8 |
| Tertiary | 85 | 82.5 |

Most of the participants in the study were professionals including doctors, nurses and medical laboratory scientists.

**Table 2: Medical History of participants**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=102** | **Percent** |
| **Known medical history** |  |  |
| Yes | 27 | 26.5 |
| No | 75 | 73.5 |
| **Known medical condition n=27** |  |  |
| Hypertension | 19 | 70.4 |
| Obesity | 4 | 14.8 |
| DM | 1 | 3.7 |
| Others | 5 | 18.5 |
| **Family history** |  |  |
| Yes | 58 | 56.9 |
| No | 44 | 43.1 |
| **Known family history n=58** |  |  |
| Hypertension | 44 | 75.9 |
| Diabetes | 26 | 44.8 |
| Obesity | 6 | 10.3 |
| **On medication** |  |  |
| Yes | 34 | 33.3 |
| No | 68 | 66.7 |

Out of all participants 27(26.5%) had a known medical history, 58(56.9%) had family history of various medical conditions and 34(33.3%) were on medication.

**Table 3: Last Number Check (weight, BP and Glucose) of participants**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=102** | **Percent** |
| **Last time checked weight n=61** |  |  |
| <1 month | 24 | 39.3 |
| 1-6 months | 19 | 31.1 |
| **7-**12 months | 9 | 14.8 |
| >12months | 9 | 14.8 |
| **Last time checked BP n=55** |  |  |
| <1 month | 23 | 41.8 |
| 1-6 months | 19 | 34.5 |
| **7-**12 months | 4 | 7.3 |
| >12months | 9 | 16.4 |
| **Last time checked glucose n=52** |  |  |
| <1 month | 5 | 9.6 |
| 1-6 months | 30 | 57.7 |
| **7-**12 months | 6 | 11.5 |
| >12months | 11 | 21.2 |

Table three shows the last time participants checked the outlined parameters**.**

**Table 4: Clinical Characteristics of participants**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Frequency n=102** | **Percent** |
| **BMI Category n=101** |  |  |
| Normal | 30 | 29.7 |
| Overweight | 44 | 43.6 |
| Type 1 Obesity | 19 | 18.8 |
| Type 2 Obesity | 4 | 4.0 |
| Type 3 Obesity | 4 | 4.0 |
| **Blood pressure group m=101** |  |  |
| Normal | 31 | 30.7 |
| Elevated | 8 | 7.9 |
| Stage 1 hypertension | 35 | 34.7 |
| Stage 2 hypertension | 27 | 26.7 |
| **Blood Glucose n=100** |  |  |
| Low | 2 | 2.0 |
| Normal | 56 | 56.0 |
| Pre-diabetic | 34 | 34.0 |
| Diabetic | 8 | 8.0 |

Out of all participants, 30(29.7%) had normal weight, 44(43.6%) were overweight and 19(18.8%) had class 1 obesity. Also 31(30.7%) had normal blood pressure, 8(7.9%) had elevated blood pressure, 35(34.7%) had stage 1 hypertension and 27(26.7%) had stage 2 hypertension. Furthermore, 56(56.0%) had normal glucose levels, 34(34.0%) were pre-diabetic and 8(8.0%) were diabetic.

**Figure 2: Prevalence of Abdominal Obesity**

Abdominal obesity was found in 44.8% of participants.

The prevalence of NCD among the 102 participants was 26.5%, which is about double the prevalence found in a similar study among university workers.13 One out of four participants had a medical condition with hypertension topping the list, a similar trend to a community-based study in Lagos.14 It is noteworthy that obesity was listed as a medical condition. A fifth of respondents had either hypertension or diabetes. Non communicable diseases are the leading cause of death worldwide.15 Cancers, cardiovascular disease, respiratory disease and diabetes have been implicated.1,15 A hospital based study done in Ethiopia among patients on admission discovered that one in four patients had a non-communicable disease. Interestingly this is similar to what we found in our study among hospital staff.

**Over 55% of respondents had a positive** family history. Out of these, hypertension (75.9) and diabetes (44.8) accounted for the highest percentages. Which is in keeping with the indices of the general world population and in Nigeria as well.16,17

**Thirty-three percent of participants were on medication**. However more than half didn’t specify what type of medication. Those that did, mentioned anti-hypertensives, anti-malarial and anti-biotic drugs, as well as Vitamin C and paracetamol.

**The participants** in this study checked their health numbers quite frequently, with weight and blood pressure having the highest frequencies within the previous one month while blood glucose was checked by more people within the previous 6 months. However, there was no statistical difference between the various professional cadre and the frequencies in which these numbers were checked. All types of screening are recommended for at risk groups of people and in the general population for early detection to institute early treatment after diagnosis.1

In our study 43.6% of people were overweight which was very similar to the 42% found among health workers in Malaysia, while our obesity rate at 27% was slightly lower than the 30% from Malaysia.3

Abdominal obesity was 44% in our study which is lower than a study done among hospital staff in western Nigeria that had a prevalence of 49.7%.20 Abdominal obesity is associated with insulin resistance, inflammation and other processes implicated in increasing cardio metabolic risk on account of visceral fat.9 Twenty-six people knew the significance of having abdominal obesity. This is just about a quarter of participants. The need for advocacy and continuous re-training cannot be over emphasized, the waist circumference is an independent cardiometabolic risk factor and some authors suggest that it is more important than the BMI especially for people who are slender or have a BMI less than 22.5kg/m2.9 It is strongly associated with increased all cause mortality as well as increased cardiovascular associated mortality.18 It has been recommended that assessment of waist circumference be done more often in clinical practice. It has repeatedly been found by various studies in some countries, such as Canada, USA, England, China and Mexico that abdominal circumference has increased in the population over a period of time. These studies, spanned over 10 to 25 years.18

**An average** of forty -one percent, (41.2%) of participants knew the complications of obesity. Cardiovascular disease, hypertension and diabetes mellitus had the highest frequency. Which is in keeping with the known complications of obesity.19,20 18.8% had class 1 obesity in this study, this is lower than the 27.3% found among hospital staff in Luth.21

36% of people knew complications of diabetes, while half of the participants could outline the complications of hypertension. A study done in Northern Nigeria established that diabetic patients had limited knowledge about their condition and opined that this was strongly contributed to, by deficient knowledge by professionals in the hospital. 22 This buttresses the fact that all hospital based staff should be aware of what the most common NCDs are and what their complications are as well as how to prevent them.

**Conclusion**

Non communicable diseases occur at the same rate among hospital staff as in the general population. Hypertension and diabetes were the most prevalent conditions. although a good proportion of participants frequently monitored their health numbers, given the high prevalence of family history and the gap in knowledge about the consequences of non-communicable disease among participants, there is a need to improve screening programs, regular health promotion programs and health education, ultimately strengthening the workforce for excellent healthcare delivery.

**Disclaimer (Artificial intelligence)**

The Authors hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

REFERENCES

1. Bigna JJ, Noubiap JJ. The rising burden of non-communicable diseases in sub-Saharan Africa. The Lancet Global Health. 2019;7(10):e1295-6.
2. Chikowore T, Kamiza AB, Oduaran OH, Machipisa T, Fatumo S. Non-communicable diseases pandemic and precision medicine: Is Africa ready?. EBioMedicine. 2021;1:65.
3. Kumareswaran S, Muhadi SU, Toha H. Combating Non-Communicable Disease Among HCW: The Broken Soldiers. Malaysian Journal of Social Sciences and Humanities (MJSSH)(e-ISSN: 2504-8562). 2022;7(9):e001760.
4. Phillips MC. Metabolic strategies in healthcare: a new era. Aging and disease. 2022;13(3):655-672.
5. Baffour PK, Jahangiry L, Jain S, Sen A, Aune D. Blood pressure, hypertension, and the risk of heart failure: a systematic review and meta-analysis of cohort studies. Euro J Prev Cardio. 2024;31(5):529-56.
6. Chaturvedi A, Zhu A, Gadela NV, Prabhakaran D, Jafar TH. Social determinants of health and disparities in hypertension and cardiovascular diseases. Hypertension. 2024;81(3):387-99.
7. Ahmed BM, Ali ME, Masud MM, Naznin M. Recent trends and techniques of blood glucose level prediction for diabetes control. Smart Health. 2024;32(4):100457.
8. Hossain MJ, Al‐Mamun M, Islam MR. Diabetes mellitus, the fastest growing global public health concern: Early detection should be focused. Health Science Reports. 2024;7(3):e2004.
9. Sweatt K, Garvey WT, Martins C. Strengths and Limitations of BMI in the Diagnosis of Obesity: What is the Path Forward?. Current Obesity Reports. 2024;(3):584-95.
10. Malau E, Ramavhoya IT, Rasweswe MM. Importance of Utilizing Non-Communicable Disease Screening Tools; Ward-Based Community Health Care Workers of South Africa Explain. International Journal of Environmental Research and Public Health. 2024;21(3):263.
11. Pancholia AK, Kabra NK, Gupta R. Laboratory evaluation of lipid parameters in clinical practice. Indian Heart Journal. 2024.
12. Achamo T, Tumebo T, Woldemariyam M, Woldeyohannes F. Utilization of Preventive Medical Check-Up and Associated Factors Among Public Hospital Workers in Addis Ababa, Ethiopia. Research Square 2024;\_:1-24.
13. Kuruvilla A, Mishra S, Ghosh K. Prevalence and risk factors associated with non-communicable diseases among employees in a university setting: A cross-sectional study. Clinical Epidemiology and Global Health. 2023;21:101282.
14. Idris IO, Oguntade AS, Mensah EA, Kitamura N. Prevalence of non-communicable diseases and its risk factors among Ijegun-Isheri Osun residents in Lagos State, Nigeria: a community based cross-sectional study. BMC Public Health. 2020;20:1-0.
15. Belayneh A, Chelkeba L, Amare F, Fisseha H, Abdissa SG, Kaba M, et al. Investigation of non-communicable diseases prevalence, patterns, and patient outcomes in hospitalized populations: a prospective observational study in three tertiary hospitals. J Health Popul Nutr. 2024;43(128).
16. Odunyemi A, Rahman T, Alam K. Economic burden of non-communicable diseases on households in Nigeria: evidence from the Nigeria living standard survey 2018-19. BMC Public Health 2023;23:1563-1573.
17. Iyer HS, James P, Valeri L, Bajunirwe F, Nankya-Mutyoba J, Njelekela M, et al. Neighborhood greenness and burden of non-communicable diseases in Sub-Saharan Africa: A multi-country cross-sectional study. Environmental research. 2021;196:110397.
18. Ross R, Neeland IJ, Yamashita S, Shai I, Seidell S, Magni P et al. Wasit circumference as a vital sign in clinical practice: a consensus statement from the IAS and ICCR working group on visceral obesity. Nat Rev Endocrinol. 2020;16(3):177-189.
19. Darsini D, Hamidah H, Notobroto HB, Cahyono EA. Health Risks associated with high waist circumference. J Pub Healt Res. 2022;9(2):94-100.
20. Mulhim OA, Alhumud SA. The Effect of Obesity, Hypertension and Diabetes on Health-related Quality of Life among the Elderly in Saudi Arabia’s Eastern Province. J. Pharm. Res. Int. 2021;33(58A):540-56
21. Iwuala SO, Ayankoghe OO, Olatona FA, Olamoyegun, MA, Okparaigwe U, Sabir AA et al. Obesity among Nigerian Health Service Providers: danger to long term health worker retention? Pan Afr Med J. 2015;15:1-15.
22. Muhammad FY, Iliyasu G, Uloko AE, Gezawa ID, Christiana EA. Diabetes-related knowledge, Attitude, and Practice among outpatients of a tertiary hospital in North-Western Nigeria. Ann Afr Med. 2021;17(3):222-227