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Prevalence of Pregnancy Induced Hypertension among Women seeking Antenatal Services at Nyali Children and Women Hospital

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Abstract
Pregnancy induced hypertension (PIH) is among the leading cause of mortality amongst women who are pregnant worldwide. United Nations classifies PIH as chronic Hypertension, gestational hypertension and Preeclampsia or in severe situation Eclampsia. PIH is a significant global health issue with global prevalence 7.3%, 8.7% in sub Saharan Africa and 5.6% in Kenya. The aim of the study was to investigate the prevalence of pregnancy induced hypertension among pregnant women seeking Antenatal care services. The study was undertaken at Nyali Children and Women Hospital, Mombasa County. A cross sectional study design was used. Both primary and secondary data were collected from the patients, health care providers using checklist, interviews and questionnaires. The collected was analyzed using Ms excel and SPSS version 20. Data was interpreted using tables and pie charts. The study clearance was obtained from TUM SERC, permission sought from the hospital administration and participants recruited via consent. The study found out that the incidence rate and prevalence rate to be 7.4% and 8.4% consecutively. Family history (100%) of hypertension was a predominant risk factor among the respondents. Methyldopa 250mg twice a day was the drug of choice for first, second and third trimester clients. The age, gravida, family history to diabetes and hypertension, stress and alcohol were found to be statistically significant to the prevalence of PIH. The study recommends comprehensive counseling of ANC women on the risks of developing PIH especially those with obvious risk factors, training of health care providers on early detection of the risk factors and prompt treatment.

Keywords; Pregnancy induced hypertension, prevalence, predisposing factors, preeclampsia and eclampsia

I. Introduction

Pregnancy induced hypertension and its related complications has been a major public health threat in developed and developing countries, which has led to high level of maternal and infant mortality worldwide. The mortality rates remain unacceptably high posing a significant public health challenge. According to world Health Organization (WHO) approximately 295,000 women died during pregnancy or childbirths in 2017 with a big percentage occurring in low income countries (WHO, 2019).

Africa has the highest maternal and infant mortality rate in the world, accounting for more than fifty percent of maternal death globally. The lack of quality healthcare services, limited availability of trained healthcare providers and social economic challenges contribute to the soaring statistics. According to the world health organization (WHO, 2019), Africa experienced 533 maternal deaths per 100,000 live births in 2017. The global average stood at 211 maternal deaths per 100,000 live births. This shows a higher maternal mortality rate in Africa compared to the world average.

Maternal and infant mortality rates remain alarming, despite some progress made in recent years. The Kenya Demographic and Health Survey (KNBS, 2015) reported an estimated maternal mortality rate of 362 deaths per 100,000 live births, with an infant mortality rate of 39 deaths per 1,000 live births in 2014.

II. Methodology

The study was carried out at carried out at Nyali Children and Women Hospital (NCWH). NCWH is a level four hospital in Kisauni Constituency, in Mombasa County. It is located on Mombasa Malindi Highway. A descriptive cross sectional study design was used. The study design was useful in gathering information on prevalence, treatment regimens, management and management of pregnancy induced hypertension. The target population were pregnant women who visited the hospital for ANC services and willing to take part in the study during the time of the study.

A sample size of 45 participants was calculated using Cochranes formula (1963)

$$n_o = \frac{Z^2 pq}{e^2} \quad (1)$$

Where:
N= required sample size
Z^2= Standard normal deviation for two tailed test based on 95% confidence level (1.96)
p = proportional of Pregnant women with PIH which is 3.06% (KNBS, 2011)
q =1- p = Proportion of Pregnant women without Pregnancy induced Hypertension (1 - 0.306 = 0.9694)
e = Margin of error at 5%

$$N = \frac{1.96^2 x 0.0306 x 0.9694}{0.05^2}$$

=45 Participants

However, to cater for non-response rate, an attrition rate of 15% will be used to upwardly adjust the sample size. Thus the final sample size will be 52 subjects. A purposive non random sampling technique was used to recruit the study participants during their clinic visits. Both qualitative and quantitative data were collected using a checklist and a structured questionnaire. The collected data was entered into a secure database, cleaned and verified to ensure accuracy and completeness then analyzed and interpreted using statistical methods. Patients' confidentiality was protected. Data security protocol such as computer password was put in place to prevent access or data breaches. Data was analyzed using SPSS version 20 for analysis and presented using tables

The study clearance was sought from Technical University of Mombasa graduate school Ethical review committee (SERC).The authority to conduct this research was sought from the management of Nyali children and Women Hospital. The subjects were taken through the study objectives, benefits, risks, rights before consenting. All ethical protocols will be adhered to

III. Results

3.1 Incidence of hypertension in pregnancy

Table 3.1: Incidence rate

Variable	Category	Proportion N=54
Normal	<120/80 mmHg	36 (66.7%)
Elevated	120-129/<80mmHg	14 (25.9%)
Stage1 Hypertension	130-139/80-89mmHg	4 (7.4%)
Stage 2 Hypertension	≥140/90mmHg	0 (0%)

3.2 Prevalence rate of HIP

$$\text{Prevalence rate} = \frac{\text{No. of pregnant women with HIP in Nyali ANC 2022/2023}}{\text{No. of pregnant women visiting Nyali ANC in 2022/ 2023}} x100$$

PR= (52/612) x100
PR = 8.4%

(2)

3.3 Sociodemographic factors

Table 3.2: Sociodemographic factors of the respondents

Variables	Category	Proportion N=54	Hypertension in pregnancy	
			NO (n=50)	YES (n=4)
Age (years)	<25	8(14.8%)	8 (100%)	0
	25-30	20 (37.0%)	20 (100%)	0
	30-35	18 (33.3%)	15 (83.3%)	3 (16.7%)
	35-40	6 (11.2%)	5 (83.3%)	1 (16.7%)
	40-45	2 (3.7%)	2 (100%)	0
Gravida	Prima	10 (18.5%)	10 (100%)	0
	Multi	44 (81.5%)	40 (90.9%)	4 (9.1%)

3.4 Predisposing factors

Table 3.3: Predisposing factors to HIP

Variables	**Category**	**Proportion N=54**	**Hypertension in pregnancy**	
			NO n-50	**YES n=4**
Family history in hypertension	Yes	7(12.9%)	6 (85.7%)	1 (14.3%)
	No	47(87.1%)	44 (93.6%)	3 (6.4%)
Family history of diabetes	Yes	4(7.4%)	2 (50%)	2 (50%)
	No	50(92.6%)	48 (96%)	2 (4%)
Family history of PIH	Yes	2(3.7%)	0	2 (100%)
	No	52(96.3%)	50 (96.2%)	2 (3.8%)
Drink alcohol	Yes	24(44.4%)	22 (91.7%)	2 (8.3%)
	No	30(55.6%)	28 (93.3%)	2 (6.7%)
Stress during Pregnancy	Yes	15(27.8%)	12 (80%)	3 (20%)
	No	39(72.2%)	38 (97.4%)	1 (2.6%)

3.5 Treatment of hypertension in pregnancy

Table 3.4: Gestational and treatment

Gestation	**Proportion**	**Stage1 hypertension**	**Drugs**	
20-28 weeks	28 (51.9%)	1	Methyldopa Nifedipine	250mg twice a day 20 mg orally every 24 hours
29-32 weeks	10 (18.5%)	1	Methyldopa	250mg twice a day
33-40 weeks	16 (29.6)	2	Methyldopa	250mg twice a day

Table 4.5: Bivariate analysis of pregnant women characteristics

Variable	Category	Proportion	Have Hypertension	No hypertension	DF	Chi square	p- value
Age (years)	<25	8(14.8%)	0	8 (100%)	4	13.569	0.009
	25-30	20 (37.0%)	0	20 (100%)			
	30-35	18 (33.3%)	3 (16.7%)	15 (83.3%)			
	35-40	6 (11.2%)	1 (16.7%)	5 (83.3%)			
	40-45	2 (3.7%)	0	2 (100%)			
Gravida	Prima	10 (18.5%)	0	10 (100%)	1	14.787	0.000
	Multi	44 (81.5%)	4 (9.1%)	40 (90.9%)			

Table 3.6: Bivariate analysis on predisposing factors to HIP

Variable	**Category**	**Proportion**	**Have hypertension**	**No hypertension**	**DF**	**Chi square**	**p- value**
Family history in hypertension	Yes	7(12.9%)	1 (14.3%)	6 (85.7%)	1	69.422	0.000
	No	47(87.1%)	3 (6.4%)	44 (93.6%)			
Family history of diabetes	Yes	4 (7.4%)	2 (50%)	2 (50%)	1	94.154	0.000
	No	50 (92.6%)	2 (4%)	48 (96%)			
Family history of PIH	Yes	2 (3.7%)	2 (100%)	0	1	28.630	0.000
	No	52 (96.3%)	2 (3.8%)	50 (96.2%)			
Drink alcohol	Yes	24 (44.4%)	2 (8.3%)	22 (91.7%)	1	15.760	0.000
	No	30 (55.6%)	2 (6/7%)	28 (93.3%)			
Stress during Pregnancy	Yes	15 (27.8%)	3 (20%)	12 (80%)	1	23.152	0.000
	No	39 (72.2%)	1 (2.6%)	38 (97.4%)			

Table 3.7: Multivariate logistic regression hypertension in pregnancy

Variable	Category	Hypertension	No hypertension	AOR	P – value
Gravida	Prima	0	10 (100%)	0.202, (0.085,0.482)	0.000
	Multi	4 (9.1%)	40 (90.9%)		
Family history in hypertension	Yes	7(12.9%)	1 (14.3%)	120.3(15.4,940.8)	0.000
	No	47(87.1%)	3 (6.4%)		
Family history of diabetes	Yes	4 (7.4%)	2 (50%)	46.823(17.7,124.1)	0.000
	No	50 (92.6%)	2 (4%)		
Family history of PIH	Yes	2 (3.7%)	2 (100%)	9.3(3.7,23.4)	0.000
	No	52 (96.3%)	2 (3.8%)		
Drink alcohol	Yes	24 (44.4%)	2 (8.3%)	4.5 (2.6,9.7)	0.000
	No	30 (55.6%)	2 (6/7%)		
Stress during Pregnancy	Yes	15 (27.8%)	3 (20%)	-	0.000
	No	39 (72.2%)	1 (2.6%)		

IV. Discussion

Prevalence of PIH stood at 7.4%. whi was higher compared to national prevalence of 5.6%. A cross sectional study done in Ethiopia reported prevalence of PIH to be 7.9% (Tesfaya&Tilahun, 2019).

Many studies have reported on the risk factors associated with PIH with the most common ones being early adolescent null parity, illiteracy, lack of occupation and family history of hypertension (Tebeu et al. 2011). Similarly, Ayele et al. (2016) stated previous history of PIH, advanced maternal age (Ayele et al., 2016; Jones et al., 2017; Owiredu 2012) and lack of awareness on risk of hypertension (Ayele et al., 2016) as common risk factors for PIH

V. Conclusion

In conclusion, the current study has found the prevalence of PIH to be 7.0% among pregnant women seeking care from The Nyali Children and Women Hospital should. Results of this and other studies have suggested that women who encounter Pregnancy Induced Hypertension (PIH) are greatly challenged with pregnancy outcomes including maternal mortality. Broadly, majority of the pregnant women are ill-informed about PIH including its signs and symptoms, complications and management. Apparently, an improvement in knowledge on PIH among pregnant women will lead to an improvement in early reporting and management of PIH cases in early stages. The role of health care providers in health education and early management of PIH among pregnant women cannot be underestimated as this forms the baseline for reducing complications arising from PIH. It therefore implies that there should be increased human resources, capacity building and in-service training of staff on proper management of PIH.

VI. Recommendations

The study recommends the following

a) The health care providers at the hospital should organize routine health talks among pregnant women on matters PIH from the first ANC visit
b) Pregnant women should be well informed on the predisposing factors to PIH in order to reduce the risk
c) The hospital should improve both human resources (doctors with cardiovascular specialization) and drugs to be able to reduce morbidity and mortality through provision of specialized services

Acknowledgement

Goes to Technical university of Mombasa and Nyali children and women hospital

References

[1]. Abate M, Lakew Z (2006). Eclampsia a 5 years retrospective review of 216 cases managed in two teaching hospitals in Addis Ababa. Ethiop Med J; 44(1):27–31.
[2]. Adu-Bonsaffoh K, Ntumy MY, Obed SA, Seffah JD (2017). Perinatal outcomes of hypertensive disorders in pregnancy at a tertiary hospital in Ghana. BMC Pregnancy Childbirth; 17(1):388.
[3]. Badal S, Singh LR (2017). Maternal and perinatal outcome in severe pre-eclampsia andeclampsia. World J Pharm Med Res; 3(3):193–5.
[4]. Berhe AK, Kassa GM, Fekadu GA, Muche AA (2018). Prevalence of hypertensive disorders of pregnancy in Ethiopia: a systemic review and meta-analysis. BMC Pregnancy Childbirth;18(1):34
[5]. Berhe (2020). BMC Pregnancy and Childbirth; 20(7):10 of 11
[6]. Chaim SRP, Oliveira SMJV, Kimura AF (2008). Pregnancy-induced hypertension and the neonatal outcome. ActaPaulista de Enfermagem;21(1):53–8.

[7]. Chen X-K, Wen SW, Smith G, Yang Q, Walker M (2007). Pregnancy-induced hypertension and infant mortality: roles of birthweight centiles and gestational age. BJOG Int J Obstet Gynaecol; 114(1):24–31.

[8]. Chen XK, Wen SW, Smith G, Yang Q, Walker M (2006). Pregnancy-induced hypertension is associated with lower infant mortality in preterm singletons. BJOG;113(5):544–51.

[9]. Cochran, W. G. (1977). Sampling techniques (3rd ed.). New York: John Wiley & Sons.Conde A. A. &Belizan, J.M.T. (2010). Risk factors for pre-eclampsia via large cohort in Latin America and Carribean women. British Medical Journal:1(17) 75–83.

[10]. Duley L (2009). The global impact of pre-eclampsia and eclampsia. Semin Perinatol;33(3):130–137.

[11]. Ebeigbe P, Aziken ME (2010). Early onset pregnancy induced hypertension/ eclampsia in Benin City, Nigeria. Niger J Clin Pract;13 (4):388–93.

[12]. Fatemeh T, Marziyeh G, Nayereh G, Anahita G, Samira T (2010). Maternal and perinatal outcome in nulliparious women complicated with pregnancy hypertension. J Pak Med Assoc;60(9):707.

[13]. Godefay H, Byass P, Kinsman J, Mulugeta A (2015). Understanding maternal mortality from top–down and bottom–up perspectives: Case of Tigray Region, Ethiopia. J Glob Health;5(1):1–8.

[14]. Godefay H, Byass P, Graham WJ, Kinsman J, Mulugeta A (2015). Risk Factors for Maternal Mortality in Rural Tigray, Northern Ethiopia: A Case-Control Study. PLoS One; 10(12):e0144975.

[15]. Granger JP, Alexander BT, Bennett WA, Khalil RA (2001). Pathophysiology of pregnancy-induced hypertension. Am J Hypertens;14(S3):178S–85S.

[16]. Gilbert JS, Ryan MJ, LaMarca BB, Sedeek M, Murphy SR, Granger JP (2008).Pathophysiology of hypertension during preeclampsia: linking placental ischemia with endothelial dysfunction. Am J Phys Heart Circ Phys; 294(2):H541–H50.

[17]. George IO, Jeremiah I (2009). Perinatal outcome of babies delivered to eclamptic mothers: a prospective study from a Nigerian tertiary hospital. Int J Biomed Sci;5(4):390.

[18]. Hossain N, Shah N, Khan N, Lata S, Khan NH (2015). Maternal and Perinatal outcome of Hypertensive Disorders of Pregnancy at a Tertiary care Hospital. J Dow Univ Health Sci;5(1):12–16.

[19]. Kampruan R, Sukonpan K, Wasinghon P (2016). Pregnancy outcomes amongst normotensive and severe preeclampsia with or without underlying chronic hypertension pregnancy. Thai J Obstet Gynaecol;24 (3):202–8.

[20]. Kolluru V, Harika R, Kaul R (2016). Maternal and perinatal outcome associated with pregnancy induced hypertension. Int J ReprodContraceptObstet Gynecol;5(10):3367–71.

[21]. Kiondo P, Tumwesigye NM, Wandabwa J, Wamuyu-MainaG, Bimenya GS, Okong P (2014). Adverse neonatal outcomes in women with pre-eclampsia in Mulago Hospital, Kampala, Uganda: a cross-sectional study. Pan Afr Med J;17 (1):1–5.

[22]. Kumar S, Kumar N, Vivekadhish S (2016). Millennium development goals (MDGs) to sustainable development goals (SDGs): addressing unfinished agenda and strengthening sustainable development and partnership. Indian J Community Med;41(1):1–4.

[23]. Liu C-M, Cheng P-J, Chang S-D (2008). Maternal complications and perinatal outcomes associated with gestational hypertension and severe preeclampsia in Taiwanese women. J Formos Med Assoc; 107(2):129–138.

[24]. Mahran A, Fares H, Elkhateeb R, Ibrahim M, Bahaa H, Sanad A (2017). Risk factors and outcome of patients with eclampsia at a tertiary hospital in Egypt. BMC Pregnancy Childbirth;17(1):435

[25]. Melese MF, Badi MB, Aynalem GL (2019). Perinatal outcomes of severe preeclampsia/eclampsia and associated factors among mothers admitted in Amhara region referral hospitals, North West Ethiopia, 2018. BMC Res Notes;12 (1):147.

[26]. Muti M, Tshimanga M, Notion GT, Bangure D, Chonzi P (2015). Prevalence of pregnancy induced hypertension and pregnancy outcomes among women seeking maternity services in Harare, Zimbabwe. BMC Cardiovasc Disord;15:111.

[27]. Muchie KF (2017). Quality of antenatal care services and completion of four or more antenatal care visits in Ethiopia: a finding based on a demographic and health survey. BMC Pregnancy Childbirth. 2017;17 (1):300.

[28]. Nathan HL, Seed PT, Hezelgrave NL, De Greeff A, Lawley E, Conti-Ramsden F (2018). Maternal and perinatal adverse outcomes in women with preeclampsia cared for at facility-level in South Africa: a

prospective cohort study. J Glob Health;8(2):1–10.

[29]. North RA, McCowan LM, Dekker GA, Poston L, Chan EH, Stewart AW (2011). Clinical risk prediction for pre-eclampsia in nulliparous women: development of model in international prospective cohort. BMJ; 342:d1875.

[30]. Ngoc NTN, Merialdi M, Abdel-Aleem H, Carroli G, Purwar M, Zavaleta N (2006)l. Causes ofstillbirths and early neonatal deaths: data from 7993 pregnancies in six developing countries. Bull World Health Organ. 2006; 84(9):699–705.

[31]. Onah H, Iloabachie G (2002). Conservative management of early-onset preeclampsia and fetomaternal outcome in Nigerians. J ObstetGynaecol; 22(4):357–62.

[32]. Paknahad Z, Talebi N, Azadbakht L (2008). Dietary determinants of pregnancy induced hypertension in Isfahan. J Res Med Sci; 13(1):17–21.

[33]. Raghuraman N, March MI, Hacker MR, Modest AM, Wenger J, Narcisse R (2014). Adverse maternal and fetal outcomes and deaths related to preeclampsia and eclampsia in Haiti. Pregnancy Hypertens; 4(4):279–86.

[34]. Randriamahavonjy RTR, Andrianirina ZZ, Andrianampanalinarivo HR (2018). Materno-fetal outcomes in pre eclampsia in a rural hospital of Antananarivo Madagascar. Int J Res Med Sci; 6(4):1064–1067

[35]. Shegaze M, Markos Y, Estifaons W, Taye I (2016). Magnitude and Associated Factors of Preeclampsia Among Pregnant Women who Attend Antenatal Care Service in Public Health Institutions in Arba Minch Town, Southern Ethiopia, 2016. GynecolObstet; 6(12):1–6.

[36]. Seyom E, Abera M, Tesfaye M, Fentahun N (2015). Maternal and fetal outcome of pregnancyrelated hypertension in Mettu Karl referral hospital, Ethiopia. J Ovarian Res;8:10.

[37]. Sumankuuro J, Crockett J, Wang S (2017). The use of antenatal care in two rural districts of upper west region, Ghana. PLoS One; 12(9):e0185537.

[38]. Teklu S, Gaym A (2006). Prevalence and clinical correlates of the hypertensive disorders of pregnancy at TikurAnbessa hospital, Addis Ababa, Ethiopia. Ethiop Med J;44(1):17–26.

[39]. Tessema GA, Tekeste A, Ayele TA (2015). Preeclampsia and associated factors among pregnant women attending antenatal care in Dessie referral hospital, Northeast Ethiopia: a hospital- based study. BMC Pregnancy Childbirth; 15(1):73.

[40]. US National High Blood Pressure Education (2000). Program. Report of the nationalhigh blood pressure education program working group on high blood pressure in pregnancy. Am J Obstet Gynecol.; 183(1):s1– s22.

[41]. Vata PK, Chauhan NM, Nallathambi A, Hussein F (2015). Assessment of prevalence of preeclampsia from Dilla region of Ethiopia. BMC Research Notes; 8(1):816.

[42]. Wolde Z, Segni H, Woldie M (2011). Hypertensive disorders of pregnancy in Jimma University Specialized Hospital. Ethiop J Health Sci; 21(3):147–54.

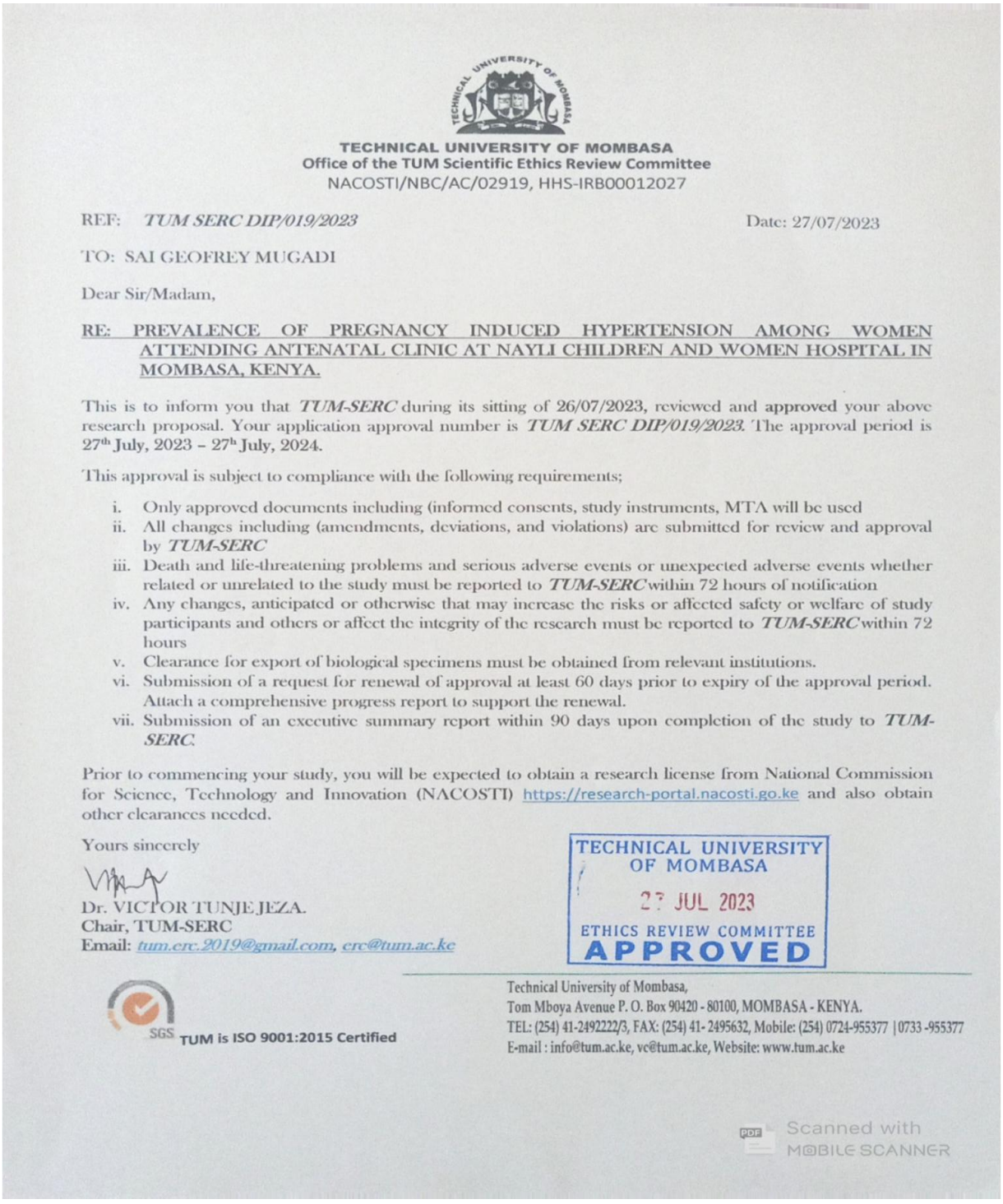
[43]. WHO (2005). WHO STEPS surveillance manual: the WHO STEP wise approach to chronic disease risk factor surveillance.

[44]. Xiong X, Fraser WD (2004). Impact of pregnancy-induced hypertension onbirthweight by gestational age. Paediatr Perinat Epidemiol; 18(3):186–91.

[45]. Yucesoy G, Ozkan S, Bodur H, Tan T, Caliskan E, Vural B (2005). Maternal and perinatal outcome in pregnancies complicated with hypertensive disorder of pregnancy: a seven year experience of a tertiary care center. Arch GynecolObstet; 273(1):43–9.

APPENDICES

1. SERC CERTIFICATE



TECHNICAL UNIVERSITY OF MOMBASA
Office of the TUM Scientific Ethics Review Committee
NACOSTI/NBC/AC/02919, HHS-IRB00012027

REF: *TUM SERC DIP/019/2023* Date: 27/07/2023

TO: SAI GEOFREY MUGADI

Dear Sir/Madam,

RE: PREVALENCE OF PREGNANCY INDUCED HYPERTENSION AMONG WOMEN ATTENDING ANTENATAL CLINIC AT NAYLI CHILDREN AND WOMEN HOSPITAL IN MOMBASA, KENYA.

This is to inform you that *TUM-SERC* during its sitting of 26/07/2023, reviewed and approved your above research proposal. Your application approval number is *TUM SERC DIP/019/2023*. The approval period is 27th July, 2023 – 27th July, 2024.

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by *TUM-SERC*
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to *TUM-SERC* within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *TUM-SERC* within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to *TUM-SERC*.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely

Dr. VICTOR TUNJE JEZA.
Chair, TUM-SERC
Email: *tum.erc.2019@gmail.com, erc@tum.ac.ke*

TECHNICAL UNIVERSITY OF MOMBASA
27 JUL 2023
ETHICS REVIEW COMMITTEE
APPROVED

SGS TUM is ISO 9001:2015 Certified

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2. **RESEARCH PERMIT**

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NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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Date of Issue: **16/August/2023**

RESEARCH LICENSE

This is to Certify that Mr.. GEOFREY MUGADI of Technical University of Mombasa, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Mombasa on the topic: PREVALENCE OF PREGNANCY INDUCED HYPERTENSION AMONG WOMEN ATTENDING ANTENATAL CLINIC AT NYALI CHILDREN AND WOMEN HOSPITAL for the period ending : 16/August/2024.

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