Middle East Journal of Applied Science & Technology (MEJAST)
Volume 8, Issue 4, Pages 21-34, October-December 2025

Assessment of the Social Determinants that Contribute to the Prevalence of Hypertension Among Adults in Makindye Division, Kampala, Uganda

Abaku, A.D.[1], Zanywaine, Z.[2], Obazu, F.O.[3] & Effiong, E.C.[3*]

[1]*Department of Chemical Pathology, University of Port Harcourt Teaching Hospital, Rivers State, Nigeria; Department of Public Health, Cavendish University, Uganda.* [2]*Department of Public Health, Cavendish University, Uganda.* [3]*Department of Microbiology, Edwin Clark University, Kiagbodo, Delta State, Nigeria. Corresponding Author (Effiong, E.C.) Email: enobong@edwinclarkuniversity.edu.ng*[*]

DOI: https://doi.org/10.46431/mejast.2025.8402

Article Received: 07 September 2025 *Article Accepted: 11 November 2025* *Article Published: 14 November 2025*

ABSTRACT

Non-communicable diseases (NCDs) have taken centre stage in public discussion all over the world. The prevalence of these diseases among young adults in Uganda has constantly become a cause for concern. The trend in non-communicable diseases, such as hypertension, has contributed to increasing deaths in Africa. Poor medical records and low routine data collection for non-communicable diseases have plagued Uganda. A descriptive cross-sectional study was conducted in Makindye division, Kampala, Uganda while collecting qualitative and quantitative data; a total of 322 adults were recruited during the study using a structured, open-ended and Likert questionnaire that was administered to the study population, which was determined. The reliability of the data collection was assessed using Cronbach's. The result obtained showed that the majority of the respondents were male, with a percentage of 58.4%. About 23% of the population showed they were hypertensive. Factors such as their living conditions were not identified to be significant in the prevalence of hypertension in Uganda. Adults with higher incomes of over 200-500 ksh, while persons working beyond 41 hours were identified as a high-risk population. The study further identified the role of income per month, duration at work per week and emotional fluxes as significant factors that may contribute to the prevalence of hypertension. Government agencies must intensify efforts in sensitising and educating young adults on the role of their lifestyle and daily living in the prevalence of non-communicable diseases in Uganda.

Keywords: Hypertension; Non-communicable Diseases; Descriptive; High-risk Population; Makindye; Social Determinants; Prevalence; Fatalities.

1.0. Introduction

The prevalence of hypertension is highest in the African region at 46% among adults aged 25 and above, while the lowest prevalence is found in the Americas. Approximately 80 million adults had hypertension in sub-Saharan Africa in 2000, and projections based on current epidemiological data suggest that this number will rise to 150 million by 2025 [1]. Overall, high-income countries have a lower prevalence of hypertension at 35%, compared to middle- and low-income nations at 40% [2]. Globally, cardiovascular disease accounts for about 17 million deaths per year, nearly one-third of all deaths. Of these, complications of hypertension contribute to 9.4 million deaths worldwide annually [3]. Hypertension is responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke [4]. Uganda lacks precise data on the prevalence of non-communicable diseases and their risk factors, including hypertension (HSSIP 2010/11 – 2014/15). The baseline survey on non-communicable diseases found a high prevalence of hypertension (24%), diabetes (3.4%), and risk factors such as tobacco use (11%), alcohol abuse (5.8%), and overweight (4%) (moh). A medical camp report (2012), mainly involving clients from Bukasa parish in Makindye division, observed that 11.6% of patients who had their blood pressure measured had hypertension at stage 1, while 23.5% had pre-hypertension; most of these individuals were unaware of their condition [5]. Given the paucity of studies on hypertension and its risk factors in Uganda, it is reasonable to seek in-depth knowledge about its prevalence and associated factors. Generally, most risk factors for hypertension are linked to socio-economic status, behavioral influences, and heredity [6]. Hypertension is a systolic blood pressure equal to or above 140mmHg and/or a diastolic blood pressure equal to or above 90mmHg. Normal blood pressure is particularly important for the efficient functioning of vital organs such as the brain, heart and kidneys for overall

health and wellbeing. Hypertension is among the identified leading risk factors for mortality worldwide today [3]. It was once regarded as a problem present only in high-income countries, but now the disease pattern for chronic diseases like HTN is changing with a shift towards middle- and low-income countries. Presently, hypertension is a global health burden increasing the risk for cardiovascular diseases (CVD) in developed, developing and underdeveloped nations [7]. Control of hypertension is associated with a larger reduction in morbidity and mortality in the younger population compared with the elderly. Hypertension is quite common and is now regarded as a major public health problem. The rise in the prevalence of hypertension may be due to rapid changes in diet and physical inactivity which are in turn related to urbanization and modernization and these affect both urban and rural dwellers [8]. High blood pressure is the principal risk factor for stroke, heart failure and kidney failure in the young population in Africa, most patients have essential hypertension and secondary forms are quite rare [9]. In a study conducted in Kenya, over one third (39.0 %) of 35-year-olds and above were unaware they had hypertension. The prevalence of current smoking and alcohol consumption was 8.5 and 13.1 % respectively. Over one quarter, 26.2 % participants were classified as overweight, and 17 % classified as obese. Overweight, obesity, smoking, some level of education, high wealth index, moderate physical inactivity, old age and being widowed were each independently associated with hypertension [10]. Family history of hypertension, obesity, self-reported diabetes, age ≥ 55 years and not continuously walking for 10 minutes per day were factors found associated with hypertension [11].

Social determinants can be understood as the social conditions in which individuals live and work; conditions that are shaped by the distribution of power, income and resources, as much on a global and national level as on a local level The study of these social determinants is intended not only to demonstrate the impact of social context on health, but also the mechanisms via which these determinants act on health [12]. Although looking at social determinants raises the issue of social inequalities in health, it is important to make a distinction between social determinants and social inequalities in health [13]. Certain events and public policies may improve the average state of health of a population whilst at the same time increasing social inequalities in health [14]. Taking a dynamic perspective on these social determinants, and in particular viewing them in a biological and epidemiological context, we can see that intervention as early in life as possible is desirable to prevent cases of hypertension [15]. It is important to act early, before childhood adversities in these critical periods are permanently or irrevocably recorded in the body [12]. In terms of behaviour, focusing health education on adults runs counter to the fact that, with age, it is increasingly difficult to change our behaviour and to overcome biological damage already inflicted [15]. A study aimed at determining the association between socioeconomic status and hypertension among teachers and bankers in Addis Ababa, Ethiopia. A cross-sectional study design was used; it was undertaken among workers of the Commercial Bank of Ethiopia and teachers of public schools in 2010. The result revealed that the majority of participants were teachers (70.3%). Most of the respondents (54.1%) earn an annual income between 15,000 ETB and 48,000 ETB, and 51.9% of them have an educational status of first degree and above. Among the socioeconomic factors, income was strongly associated with the odds of having hypertension (AOR: 2.17 with 95% CI: 1.58–2.98). Self-perceived stress, as well as stress-related measures such as sense of coherence, have also been associated with stroke. The prevalence and correlates of disability among older people in Uganda through secondary analysis of data based on a sample of 2,382 older persons from the Uganda National Household survey,

using univariate, bivariate and multivariate analyses were done. Frequency distributions, chi-square tests and logistic regressions were conducted [16]. The results revealed that a third of the older population was disabled. Disability increased with advancement in age, rural residence, living alone, separated or divorced marital status, household poverty, households' dependence on remittances, possessing technical skills, ill-health and non-communicable diseases, but not with any gender. Socio-economic vulnerability is associated with disability among older persons in Uganda [17]. Non-communicable diseases are predisposing factors for disability. Interventions to improve the health and functioning of older people need to focus on addressing social inequalities and on the prevention and management of NCDs in old age in Uganda [18].

The following objectives were employed during the study:

a. Determine the sample size of Makindye, Uganda.

b. Design a descriptive study and ascertain the conceptual framework to address the prevalence of non-communicable diseases in Makindye district, Uganda.

c. Perform data cleaning, reliability and statistical analysis of data obtained during the study.

d. Perform data interpretation to address challenges observed during the study.

2.0. Methodology

2.1. Research design

The study design will be a descriptive cross-sectional study with quantitative and qualitative data collection methods. A cross-sectional study investigation makes all its measurements on a single occasion and draws a sample from the population, looking at the distributions of variables within that sample. The quantitative aspects will be used to capture quantifiable patterns, and the qualitative aspects will be used to explore in-depth the issues at hand.

2.2. Population and Sample Selection

The study population was focused among the adults in Makindye division, Kampala. The entire population of Makindye division is over 500,000 according to the 2014 UBOS report. The data was collected from the adults in the division.

Inclusion criteria: Only adults aged 25 years and above in Makindye division who agree will be sampled.

Exclusive criteria: Adults aged 25 years and above who refused to consent to the study.

2.3. Sample size

The sample size will be determined using the Kishi and Leslie formula because the actual population of adults living in Makindye division is unknown. This method involves the following equation:

$$n = \frac{Z^2 \times p \times q}{d^2} \qquad (1)$$

where n = desired sample size; Z = standard normal deviate at confidence level of 95% or 1.96; p = the estimated proportion of an attribute that is present in the population, 35% (Based on a previous study in Makindye division,

12% of the patients who had their BP measured had hypertension stage 1 while 23% had pre-hypertension, giving 35% as the determined prevalence of HTN); q=1-p; and d=degree of accuracy desired at (0.05).

$$n = \frac{Z^2 \times p \times q}{d^2} = \frac{(1.96^2) \times (0.35) \times (1 - 0.35)}{(0.05)} \qquad (2)$$

The n value = 349

2.4. Sampling Strategies and Procedures

Multi-stage random sampling method was used. Makindye division is made up of 21 parishes or wards, each having an average of 8 villages. The 3 biggest parishes in Makindye division were purposely selected, 2 villages within each parish were randomly selected, and the adults residing there were sampled to make it more representative.

2.5. Data source

Primary source

This includes data collected using a questionnaire from adults in Makindye division. The questionnaire will consist of questions related to the prevalence of hypertension, social determinants, and modifiable risk factors.

2.6. Research instruments

Questionnaire

Questionnaires containing closed and open-ended questions were used to collect data printed on the piece of paper to be answered by consenting adults in Makinyde division, Kampala.

Observation checklist

A sphygmomanometer was used to measure blood pressure, a measuring scale for weight and a metre rule for height.

2.7. Measurement of Variables

Socio-demographic factors: The parameters measured were gender, age, marital status, and religion, based on a modified WHO STEPS1 approach to surveillance (STEPS) of NCDs.

Social Determinants: The parameters measured were level of income, education, housing and peer influence using a modified WHO STEPS1 approach to surveillance (STEPS) of NCDs.

Modifiable risk factors: The parameters measured were diet, physical activity, smoking and alcohol use using a modified WHO STEPS1 approach to surveillance (STEPS) of NCDs.

Prevalence of hypertension: This was obtained by physical measurements, measuring blood pressure and body mass index (weight and height) based on a modified WHO STEPS2 approach to surveillance (STEPS) of NCDs.

Blood pressure was measured using a sphygmomanometer or a mobile blood pressure machine. Normal blood pressure at rest is within the range of 100-140 millimeters of mercury (mmHg) systolic and 60-90 mmHg diastolic.

High blood pressure is present if the resting blood pressure is persistently at or above 140/90 mmHg for most adults.

Body mass index (BMI): This is a statistical measure of the weight of a person scaled according to height to estimate if someone is underweight or overweight or obese. BMI >30 is obese, and BMI between 25 and 30 is considered overweight.

The STEPs questionnaire has three sections arranged in a stepwise order. The first step covers behavioral factors, the second covers physical measurements, and the third step covers biochemical measurements. WHO recommends that most developing countries undertake steps 1 and 2. Steps 1 through 3 are recommended for well-resourced countries? The beneficial approach of using the standardized WHO STEPs risk factor questionnaire allows for comparability on the presence of risk factors between various communities, regions and countries (WHO STEPs Instrument (Core and Expanded)).

2.8. Validity and Reliability of the instruments of data collection

Validity

The researcher ensured content validity of the questionnaire by constructing items that conform with the study. Questionnaire pre-testing was carried out to identify and eliminate those questions that could pose challenges. Pre-testing of the instruments was necessary to reduce ambiguity, ensure proper editing, wording and good measurement [19]. Validity of the questionnaire was obtained by presenting it to at least two professionals, including the supervisor, because according to Amin (2005) content and construct validity is determined by expert judgment. Content validity index (CVI) was calculated using the formula:

$$\text{CVI} = \frac{\text{number of items declared valid by experts}}{\text{Total number of items}} \qquad (3)$$

According to Amin (2005), if CVI=≥0.70, it implies that the tool is valid.

Reliability

Reliability of the instrument on multi-item variables was tested using reliability statistics. It was very consistent and realistic. The instruments were finally checked for accuracy, consistency and completeness using Cronbach's Alpha Coefficient [19]. Reliability of the instruments was obtained by using the test-retest method. Fraenkel and Wallen [20] argue that for most educational research, stability of scores over a period of two months is usually viewed as sufficient evidence of test-retest reliability.

Therefore, the researcher did pre-test and retest the instruments on a small number of undergraduate students in an interval of two months. The reliability of multi-item opinion questions was assessed using SPSS computer software, it gave a value of say 0.79, which is above the recommended reliability of 0.7 [21]. It was accepted as a valid tool for data collection.

The standardized Cronbach's alpha can be defined as:

$$\alpha_{standardized} = \frac{K\tilde{r}}{(1 + (K-1)\tilde{r})} \qquad (4)$$

Where K is a constant as above and $\tilde{r}$ the mean of the K(K-1)/2 non-redundant correlation coefficients (i.e., the mean of an upper triangular, or lower triangular, correlation matrix).

2.9. Data Collection Procedure

Information was gathered on the prevalence of hypertension, social determinants and modifiable risk factors. Trained interviewers collected data on socio-demographic characteristics and self-reported health behaviors using a modified World Health Organization stepwise surveillance questionnaire for chronic disease risk factors. Anthropometric and blood pressure measurements were performed following standard procedures. Weight, height, and BMI measurements were performed using standardized methods. Height was measured to the nearest 0.1 cm using a portable meter rule. Weight was measured to the nearest 0.1 kg using a calibrated weight scale with the participant dressed in light clothing and without shoes. BMI was determined from the weight and height values using a computer software. Blood pressure was measured on the left arm using a validated OMRON M6 digital automatic blood pressure monitor or sphygmomanometer. Respondents were asked to remain seated, relaxed, and blood pressure measurements were taken as per the WHO steps protocol. Three blood pressure measurements were taken with at least a 3-minute interval between each measurement. The mean value of the 2nd and 3rd measurements was used for analysis. Blood pressure (BP) was classified according to the Seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VII) as Normotensive/ Normal, Prehypertensive, Stage 1 hypertension, and Stage 2 hypertension. Data quality was controlled in the field by the research assistants and the investigator. They performed random audits of the interviews and checked questionnaires for completeness and validity of data collected.

2.10. Data Analysis

Data was analyzed using SPSS version 20 and summarized into pie charts, frequency tables etc. Descriptive, bivariate and Multivariate analysis was done to analyses the data. Significance was considered when the P value ≤ 0.05. Insignificance will be considered when P value > 0.05. ANOVA was used to measure the qualitative data (Bio data). Descriptive statistics, such as mean, frequency, cross-tabulation, and percentage, were also used when necessary. The results were presented in tables as appropriate. Using the Pearson correlation coefficient of determination, inferential statistics like correlations were used to illustrate the existence of the relationship between variables (if any), while multiple logistic regression was used to explain how the independent variables affect the dependent variable and odds ratios of 95% confidence intervals were calculated to identify risk factors associated with hypertension. The qualitative data were compared and contrasted with the outcomes from the quantitative data in our discussion of results.

2.11. Ethical considerations

An approval letter to carry out the study was obtained from the Cavendish University Uganda research and ethical committee. An acceptance letter was also received from the Makinyde district office, permitting us to collect data. Individual permission was sought from respondents before the interviews, information about the study including its benefits and likely effects, were communicated to the respondents and participation in the study was upon verbal

informed consent. To ensure confidentiality of the information obtained, codes other than names were used during the data collection processes.

2.12. Limitations

Information bias may arise especially from respondents not providing correct information; this was overcome by persuading the respondents to provide essential information as truthfully as they could and letting them know that it was for academic purpose. The study is subject to recall bias. The modifiable risk factors in this study (i.e. diet on fruit and vegetable consumption, tobacco use, alcohol use, and physical activity) were self-reported which might under or overestimate the actual levels of risk factors reported. In communities where certain behaviors are discouraged, there may be under reporting of these behaviors (e.g. alcohol and tobacco consumption) especially among the females. Selection bias may arise if the research assistants did not carefully put into consideration the age required for the study. This was overcome by carefully seeking the respondents age before examining them. Random error may arise from a small sample size. Busy schedules: The key informant may not have enough time to completely and correctly fill the questionnaires as well as have their physical measurements taken, which is presumed to be a limitation in data collection; these will be overcome by booking an appointment with them during their free time. As in many population-based studies, blood pressure measurements were based on the average of two at a single visit. The data was collected in a cross-sectional study; thus, we cannot ascribe causality to any of the associated factors in the study.

A total of 322 adults were interviewed, indicating a response rate of 92.3 as presented in Table 1.

Table 1. Demographics of the respondents

Variable	Categories	Frequency	Percentage (%)
Gender	Male	188	58.4
	Female	134	41.6
Age	25-34	168	52.3
	35-44	80	24.9
	45-54	31	9.7
	55 and above	42	13.1
Marital Status	Single	131	41.2
	Married	161	50.6
	Divorced	9	2.8
	Widow or Widower	17	5.3
Religion	Islam	96	29.8
	Catholics	94	29.2
	Protestants	101	31.4
	Others	31	9.6

The majority of the respondents were male 188/322 (58.4%). Most of them indicated that they were between the ages of 25 and 34 168/322 (52.3%). Those who reported that they were married 161/322 (50.6%) constituted the highest population. Most of the respondents practiced the Protestant religion 101/322 (31.4%) as presented in Table 2 below.

Table 2. Prevalence of hypertension

Prevalence of hypertension		**Percentage (%)**
Hypertensive	76	23.6
Not hypertensive	246	76.4

This study revealed that 76 out of 322 adults (23.6%) enrolled in this study were hypertensive and 246 out of 322 adults (76.4) enrolled in this study were not hypertensive as can be seen in Figure 1.

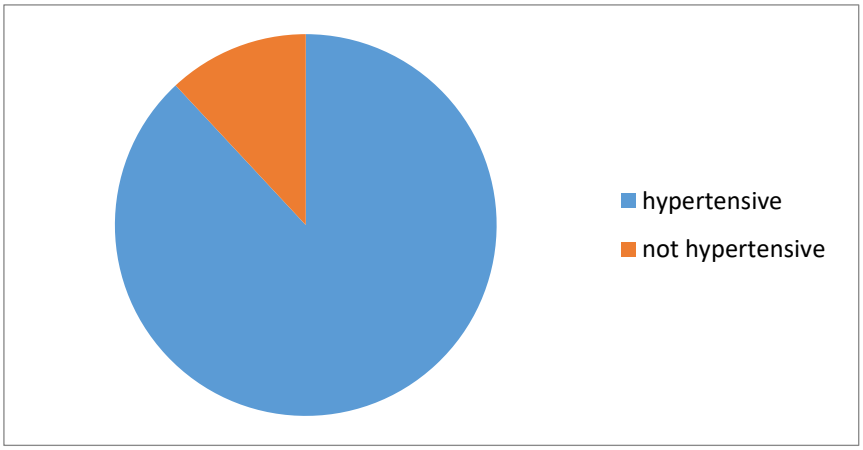

Figure 1. Prevalence of Hypertension

The result presented in Table 3 observed that the association of the socio-determinants and the youths in Makindye, Uganda with a Chi-square of 6.158 and a p-value of 0.048 was adjudged to be significant while 41.2% was observed to be a lower income status while 18.3% had a higher income of Ksh 500,000 and above.

Table 3. Socio determinants influencing the hypertension among adults in Makindye division Kampala

Variable	**Categories**	**Hypertensive**	**Not-Hypertensive**	**X^2**	**P-value**
Income Level/month	0-200,000 200,000-500,000 500,000 and above	22 (28.9) 31(40.8) 23 (30.3)	99 (41.2) 97 (40.4) 44 (18.3)	6.158	0.048
Expenditure level/month	0-200,000 200,000-500,000 500,000 and above	29 (38.2) 39 (51.3) 8 (10.5)	123 (53.7) 87 (38) 19 (8.3)	5.543	0.063
Employment status	Employed Self- employed Student Retired Unemployed	23 (30.3) 31 (40.8) 13 (17.1) 9 (11.8) 0 (0)	63 (25.6) 109 (44.3) 55 (22.4) 3 (1.2) 16 (6.5)	23.918	0.000
Duration of work per week	15-20 hours 36-40 hours 41 hours and above	28 (40) 11 (15.7) 31 (44.3)	114 (49.1) 88 (37.9) 30 (12.9)	35.225	0.000
Wall of the house	Thatch Bricks Mud Planks	2 (2.6) 67 (88.2) 5 (5.6) 2 (2.6)	10 (4.3) 190 (81.2) 26 (11.1) 8 (3.4)	2.023	0.568

Floor of the house	Mud Tiles Not Plastered	23 (30.3) 37 (48.7) 16 (21.1)	63 (26.2) 130 (54.2) 47 (19.5)	0.732	0.693
Roof of the house	Asbestos Iron sheet Grasses Polythene Wood	13 (17.1) 52 (68.4) 4 (5.3) 6 (7.9) 1 (1.3)	52 (22.2) 141 (60.3) 21 (9) 3 (1.3) 17 (7.3)	14.448	0.006
Number of people in a household	1-3 4-6 7 and above	25 (34.2) 26 (35.6) 22 (30.1)	116 (48.1) 83 (34.4) 42 (17.4)	3.869	0.332
Level of education	Tertiary education Secondary education Primary education No formal education	48 (63.2) 18 (23.7) 6 (7.9) 4 (5.3)	124 (50.4) 95 (38.6) 17 (6.9) 10 (4.1)	5.728	0.126
Partaking in Organized gatherings	Never or just few times a year 1-3 times a month Approximately once in a week More than a week	22(28.9) 22(28.9) 16 (21.1) 16 (21.1)	57 (23.7) 56 (23.2) 78 (32.4) 50 (20.7)	3.912	0.271
Feeling so sad or hopeless almost every day for 2 weeks or more	Never Sometimes Always	22 (28.9) 40 (52.6) 14 (18.4)	40 (16.3) 181 (73.6) 25 (10.2)	11.835	0.003
Associate with friends	Never Sometimes Always	11 (15.7) 34 (48.6) 25 (35.7)	19 (9.2) 88 (42.5) 100 (48.3)	4.338	0.144

Income level (X^2= 6.158, P value= 0.048), employment status (X^2= 23.918, P value= 0.000), duration of work per week (X^2= 35.225, P value= 0.000), the nature of the house roof (X^2= 14.448, P value= 0.006), and feeling so sad or hopeless almost every day for 2 weeks or more (X^2= 1.835, P value= 0.003) were the socio determinants found to have statistically significant association with the prevalence of hypertension among adults in Makindye division, Kampala.

The result of the regression analysis of the responses showed the odds-ratio of 1.0 and p-value 0.049 was observed for the income per month. The parameter of feeling sad was observed to have a p-value of 0.003.

Table 4. Regression analysis for socio determinants influencing the prevalence of hypertension among adults in Makindye division Kampala, Uganda

Variable	**Categories**	**Odds-ratio (95%:CI)**	**P-value**
Income per month	0-200,000 200,000-500,000 500,000 and above	1 2.352 (4.667-1.187) 1.636 (3.122-0.857)	0.049 0.014 0.136
Duration at work per week	15-20 hours 36-40 hours 41 hours and above	1 4.207 (8.061-2.196) 8.267 (18.45-3.703)	0.000 0.000 0.000
Feeling so sad or hopeless almost every day for 2 weeks or more	Never Sometimes Always	1 1.018 (2.349-0.441) 2.534 (5.303-1.211)	0.003 0.096 0.014

The odds of hypertension prevalence were two times greater in adults with income between 200,000-500,000 shillings (odd ratio=2.352, CI=4.667-1.187) compared to adults with income above 500,000 shilling (odd ratio =1.636, CI=3.122-0.857). The odds of hypertension prevalence in adults who work above 41 hours in a week (odd ratio= 8.267, CI=18.45-3.703) were 8 times greater compared to adults who work between 36-40 hours (odd ratio =4.207, CI=8.061-2.196). Also, the odds of hypertension prevalence in adults who reported that they always feel so sad or hopeless almost every day for 2 weeks or more (odd ratio= 2.534, CI=5.303-1.211) were two times greater compared to those who sometimes feel so sad or hopeless almost every day for 2 weeks or more (odd ratio = 1.018, CI=2.349-0.441).

3.0. Discussion

This study shows that 76 out of 322 adults (23.6%) enrolled in this study were hypertensive and 246 out of 322 adults (76.4) enrolled in this study were not hypertensive, accounting for 2 out of every ten adults in Makindye division are hypertensive. The prevalence of hypertension was low, this finding is in close proximity with the first nationwide NCD risk factor survey in Uganda which revealed a high prevalence of hypertension at 26.5% among adults aged 18 to 64 years, with no significant differences between the four regions of Uganda. Standardized to WHO's 2000–2025 world standard population age structure [6], the age-standardized prevalence was 19.5%. Previous studies in Uganda have reported age-standardized prevalence rates ranging from 19.8% to 30.5% [22]. This study also has a close proximity with a community-based study in Rukungiri district Uganda which result revealed that of the 842 study participants, 252 were hypertensive accounting for 30% of the participant. Another study among young adults in peri-urban district of Uganda, the overall prevalence of hypertension was 15 % and pre-hypertension was 40%. This highlights the magnitude of hypertension among adults, revealing that adults across all ages are susceptible to the development of hypertension. This may lead to development of various chronic diseases such as cardiovascular diseases, respiratory diseases; cancer etc. If proper measures are not put in place to reduce the prevalence, the resulting effects may lead to high financial and economic burden to individual and government in whole.

Income level was found to be significantly associated with the prevalence of hypertension among adults; adults with income with mid income (between 200,000-500,000 shillings) were two times more likely to develop hypertension compared to adults compared to adults with high income (above 500,000 shilling). Generally, financial issues do engross through the mind of individuals, people tend to hold financial issues at high esteem because it deals with the issue of sustainability any attempt to be financially unstable more often the heart become unstable.

This finding is in close agreement with a study in Kenya that found wealth index associated with prevalence of hypertension and further found high wealth index to have higher likelihood of influencing hypertension [10]. So also, a study in Ethiopia found workers with high income having significant association with the prevalence of hypertension [26]. These reveal how income influence the development of hypertension, most mid and high-income people tend to be influenced by their wealth, they engage in less exercise, eat excessively, exposed to several materials that can influence the development of hypertension. If this persist, high burden of chronic diseases will be recorded which could affects overall productivity.

Employment status was found to have statistically significant association with the development of hypertension; this could be due to the nature of works people do engage. Strenuous work, industrial works, work pressure, can influence the development of hypertension. This is in line with a study that observed higher burden of hypertension among teachers and bankers in Addis Ababa, Ethiopia [24]. So also, a study based on the Nairobi Urban Health Demographic Surveillance System (NUHDSS) found those having informal job having significant association with the development of hypertension. Different job with its own influences on health of people, this study highlights the need to watch the influence of jobs on the development of hypertension. If this persists, job productivity will be reduced, also high burden of diseases will be recorded across various jobs.

Duration of work per week was found to have statistically significant association with the prevalence of hypertension. Adults who work above 41 hours in a week were 8 times likely to develop hypertension compare to adults who work between 36-40 hours. This indicate the influences of high working hours on the development of hypertension, this is in line with a study in California which indicated that compared with those working between 11 and 39 hours per week, individuals working 40 hours per week were 14% more likely to report hypertension, those who worked between 41 and 50 hours per week were 17% more likely to report hypertension, and those who worked ≥51 hours per week were 29% more likely to report hypertension. This analysis provides evidence of a positive association between work hours and hypertension [23].

The nature of the house roof was found to have statistically significant association with the prevalence of hypertension. This indicates that the nature of house adults live can influence the development of hypertension. Poor housing can push adults to several conditions that will trigger the development of hypertension. This is in line with a cross-sectional study in Britain that found combinations of higher exposure to colder climate plus residence in worse quality housing raises significantly the risk of diastolic hypertension. So also, another study found being able to heat the home, the quality of the insulation and therefore the temperature inside the home to have a significant association with prevalence of hypertension [24].

Feeling so sad or hopeless almost every day for 2 weeks or more was found to have statistically significant association with the prevalence of hypertension, those who answered that they always feel so sad or hopeless almost every day for 2 weeks or more were two times more likely to develop hypertension compared to those who sometimes feel so sad or hopeless almost every day for 2 weeks or more. This is in line with a systematic review and meta-analysis done in China on the prevalence of depression, depression was found to have statistically significant association with hypertension [25].

4.0. Conclusions

It can be concluded from the study that the prevalence of hypertension was low. Only two out of every ten adults in Makindye division are hypertensive, which is in close proximity with the stated prevalence by WHO which stated that the age-standardized prevalence was 19.5% [6]. This study concluded that socio-determinants were found to be great predictor of hypertension prevalence; there exist strong association between income level, employment status, duration of work per week, the nature of house roof and those feeling sad with the prevalence of hypertension among adults in Makindye division, Kampala. Mid income people and high-income adults tend to

have higher likelihood of developing hypertension, those who work for long duration tends to have higher likelihood of developing hypertension and those who feel depressed or sad always have higher likelihood of developing hypertension.

5.0. Recommendation

Government, community leaders and concerned people should focus on the following:

1. Focus their orientation and sensitization on mid and low-income level people from various employment status to enable them get acquainted with the necessary practices that will prevent them from development of hypertension.

2. Adults in the community must be well oriented on the most conducive and appropriate hours to work per week to avoid development of hypertension.

3. Adults must be educated on the need to maintain psychological and emotion balance in order to get over their worries that may lead to the development of hypertension.

4. Effective and efficient measures must be put in place to improve the socio- economic status such as housing, nature of work etc., of the community adults in order to reduce their susceptibility to the development of hypertension.

Declarations

Source of Funding

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Competing Interests Statement

The authors declare that they have no competing interests related to this work.

Consent for publication

The authors declare that they consented to the publication of this study.

Authors' contributions

All the authors made an equal contribution in the Conception and design of the work, Data collection, Drafting the article, and Critical revision of the article. All the authors have read and approved the final copy of the manuscript.

Ethical Approval

This study was approved by the ethics committee of the Cavendish University, Uganda.

Institutional Review Board Statement

Not applicable for this study.

Informed Consent

Individual permission was sought from respondents before the interviews, information about the study including its benefits and likely effects, were communicated to the respondents and participation upon verbal informed consent.

References

[1] Opie, L.H., & Seedat, Y.K. (2005). Hypertension in sub-Saharan African populations. Circulation, 112(23): 3562–3568.

[2] World Health Organization (2011). Global status report on noncommunicable diseases 2010. Geneva: World Health Organisation.

[3] Lim, S.S., Voss, T., Flaxman, A.D., Danaei, G., Shibuya, K., & Adair-Rohani, H. (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet, 380: 2224–2260.

[4] Ministry of Health (2011). Transport Assessment Report. Kampala: Ministry of Health.

[5] Nalule, W. (2015). Livelihoods of female-headed households in Namuwongo slum, Kampala Uganda. Master's Thesis, The University of Bergen.

[6] World Health Organization (2013). A global brief on hypertension: silent killer, global public health crisis: World Health Day 2013. Geneva: World Health Organization.

[7] Lloyd-Sherlock, P., Beard, J., Minicuci, N., Ebrahim, S., & Chatterji, S. (2014). Hypertension among older adults in low- and middle-income countries: prevalence, awareness and control. International Journal of Epidemiology, 43(1): 116–128.

[8] Beaglehole, R., & Yach, D. (2003). Globalization and the prevention and control of non-communicable disease: the neglected chronic diseases of adults. Lancet, 362(9387): 903–8.

[9] Ogah, O.S., Okpechi, I., Chukwuonye, I.I., Akinyemi, J.O., Onwubere, B.J., Falase, A.O., & Sliwa, K. (2012). Blood pressure, prevalence of hypertension and hypertension-related complications in Nigerian Africans: A review. World Journal of Cardiology, 4(12): 327.

[10] Beatrice, O., et al. (2015). Risk factors of hypertension among adults aged 35–64 years living in an urban slum in Nairobi.

[11] Akilew, A., et al. (2012). Prevalence and associated factors of hypertension among adults in Gondar, Northwest Ethiopia: a community-based cross-sectional study. BMC Cardiovascular Disorders, 201212(113).

[12] Cihangir, M., & Kara, E. (2014). The reasons for financial failure in accommodation facilities: An analysis of the accommodation facilities in the Cappadoccia Region/Turkey. European Scientific Journal, 10(22): 95–115.

[13] Mingji, C., Onakpoya, I.J., Perera, R., Ward, A.M., & Heneghan, C.J. (2015). Relationship between altitude and the prevalence of hypertension in Tibet: a systematic review. Heart, 101(13): 1054–1060.

[14] Forster, T., Kentikelenis, A., & Bambra, C. (2018). Health inequalities in Europe: setting the stage for progressive policy action.

[15] Birlew, T., & Alemseged, F. (2015). Risk factors for hypertension among adults. An analysis of survey data on chronic non-communicable disease at Gilgel gibe field research center, south west Ethiopia. Science, 3(2), 281–290.

[16] Msyamboza, K.P., Kathyola, D., Dzowela, T., & Bowie, C. (2012). The burden of hypertension and its risk factors in Malawi: nationwide population-based STEPS survey. International Health, 4(4): 246–252.

[17] Wandera, S.O., Ntozi, J., & Kwagala, B. (2014). Prevalence and correlates of disability among older Ugandans: evidence from the Uganda National Household Survey. Global health action, 7(1): 25686.

[18] Ntozi, J.B., et al. (2013). Prevalence and correlates of disability among older Ugandans: Evidence from a national household survey.

[19] Sekaran, U. (2003). Research Methods for Business: A skill-building approach (4th Edition). New York: John Wiley & Sons, Inc.

[20] Fraenkel, J.R., & Wallen, N.E. (1996). How to design and evaluate education research. McGraw-Hill, Inc.

[21] Domino, F., & Kaplan, N.M. (2007). Overview of hypertension in adults.

[22] Musinguzi, G., & Nuwaha, F. (2013). Prevalence, awareness and control of hypertension in Uganda. PLoS One, 8(4): e62236.

[23] Yang, H., Schnall, P.L., Jauregui, M., Su, T.C., & Baker, D. (2006). Work hours and self-reported hypertension among working people in California. Hypertension, 48(4): 744–750.

[24] Van de Vijver, S., Akinyi, H., Oti, S., Olajide, A., Agyemang, C., Aboderin, I., & Kyobutungi, C. (2014). Status report on hypertension in Africa-Consultative review for the 6th Session of the African Union Conference of Ministers of Health on NCDs. Pan African Medical Journal, 16(1).

[25] Li, Z., Li, Y., Chen, L., Chen, P., & Hu, Y. (2015). Prevalence of depression in patients with hypertension: a systematic review and meta-analysis. Medicine, 94(31): e1317.

[26] Fikadu, G., & Lemma, S. (2016). Socioeconomic status and hypertension among teachers and bankers in Addis Ababa, Ethiopia. International Journal of hypertension, 2016(1): 4143962.