Socio-Demographic Correlates of Hypertension Among Women (15-49years) in Lesotho: A Descriptive Analysis

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Research Article

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Abstract

Hypertensive disorders are among the leading conditions for severe maternal morbidity across all regions and has a major impact on health care costs. The aim of this study was to determine the sociodemographic correlates of hypertension in Lesotho.

Methods: For analysis, women of women of childbearing age (15–49 years) who have ever given birth in the five years preceding the 2014 LDHS. The dependent variable of this study is hypertension. Univariate and bivariate analyses were done. The correlation was tested using Pearson correlation coefficient while binary logistic regression are used to determine sociodemographic correlates of hypertension

Results: Results from this study revealed that one out of every five respondents of the study had hypertension and 79.3 % of the respondents were in prehypertension stage. The situation adds to overall future risk of hypertension. About 20% percent who were at stage 2 of hypertension (SBP ≥ 160 (mmHg) or DBP SBP ≥ 100 (mmHg) were either living with a partner or widowed. Higher ages (45–49 years) of women was found to be significantly associated with high blood pressure levels.

Conclusion: Chances of being diagnosed with high blood pressure increased with an increase with age of the respondents. Age was found to be most significant sociodemographic correlate of hypertension. To control hypertension programs should also focus on the psychosocial hypertension interventions for Basotho women in the higher risk groups.

Background

In Africa, the projected number of persons with hypertension has continuously increased from 54.6% in 1990 to 92.3% in 2000 and 130.2% in 2010 which is a 41% increase from the year 2000. It is projected to rise to 216.8 million by the year 2030[1 2]. Hypertension is widespread in Sub-Saharan Africa, its consequences include increased risk in morbidity and mortality [3]. According to the latest WHO data published in 2018, hypertension related deaths in Lesotho reached 536 or 1.91 % of the total deaths, thereby making Lesotho to rank number 4 in the world of the top 10 of the 50 causes of death related to Hypertension.

Hypertension is a major cause of morbidity among adult patients in Lesotho; it is among the five causes of female admission into hospitals. Hypertension is also the third most common cause of outpatient attendance and one of the leading causes of admission to public health [4 5 6 7]. The high prevalence of hypertension exerts a tremendous public health crisis [8 9] Matthew, et al., 2019). Mashea et al (2018), discovered that obstetric haemorrhage and hypertensive disorder escalates mortality by 31.4% and 28% respectively. The objective of this study is to identify sociodemographic correlates of hypertension. Prevalence of hypertension remains high (one in 3 persons are hypertensive) and it remains a challenge in the country despite concerted efforts made by the Lesotho government and development partners curb it. Previous studies conducted in the country made investigations on hypertension treatment and control in primary care setting as well as knowledge of disease and medications among hypertension patients. The child-bearing women's demographic and social factors which could be predictors of hypertension have not been examined in Lesotho. The study is intended to fill that gap in the literature.

Methods

This is a secondary data analysis of cross-sectional data of the 2014 Lesotho Demographic and Health Survey (LDHS). The dataset for women was used for this study. These are women of childbearing age (15-49 years) who had ever given birth in the five years preceding the 2014 LDHS. The total weighted women population in the LDHS is 661,990, whereas the unweighted was 6,621. Of the 6621 women, 4561 responded to the question of whether they were ever diagnosed with high blood pressure by a doctor or a nurse [10]. About fifteen percent (705) respondents were ever diagnosed with high blood pressure.

The outcome variable

The outcome variable of this study is hypertension. The variable was constructed using the WHO definition of hypertension and blood pressure levels [11]. This variable is derived from the survey question of “Ever been diagnosed with high blood pressure by a doctor or a nurse?”. If the response is “yes”, then the inclusion criteria which was used was for those whose hypertension levels were 140+ mmHg (systolic) or 90+ mmHg (diastolic) or above. The outcome variable was categorized as Hypertension stage 1, that is, those with SBP ≥ 140 (mmHg) or DBP of ≥90 (mmHg), then Hypertension stage 2, as those with SBP ≥ 160 (mmHg) or DBP SBP ≥ 100 (mmHg) [12].

Independent variable

The independent variables of the study were sociodemographic characteristics such as age, marital status, place of residence, region/district, religion, level of education and occupation.
Statistical analyses

Univariate and bivariate analyses were done. At the bivariate descriptive level, the percentage distribution of the study sample was presented by the selected sociodemographic characteristics of the women. The correlation was tested using the Pearson correlation coefficient. Binary logistic regression is used to determine sociodemographic correlates of hypertension among women aged 15-49 years in Lesotho. A p-value <0.05 was considered statistically significant.

Ethical consideration

The Lesotho DHS can be downloaded from the website and is free to use by researchers for further analysis. In order to access the data from DHS MEASURE, a written request was submitted to the DHS MACRO, and permission was granted to use the data for this survey.

Results

The sociodemographic characteristics of respondents are reported in Table 1. Regarding the profile of women, 23.29% were aged 15-19 years while 7.40% were aged 45-49 years. More than three quarters (67%) were rural dwellers and 14 % were likely to be residing in the Maseru district compared to 8% from Quthing and Qacha’s Nek districts respectively. About one percent (0.80%) were living with their partners compared to 54% who were married. More than half (51%) of the women had completed the secondary level of education (Table 1). Less than forty percent (38%) were members of the Roman Catholic Church compared to 0.02 % of the Hindu religion. About 17% of the women’s occupation was sales while only1.3% reported being agricultural employees.

Among those who were ever diagnosed with high blood pressure, the majority were aged 45-49 years, they resided in the rural areas and most (20.85%) of them came from the Maseru district. They had secondary education, belonged to the Roman Catholic Church and their occupation was more likely to be in the sales sector.

Table 1: The sociodemographic characteristics of women
| Characteristics          | N(6621) | N(705) Ever diagnosed with high blood pressure |
|-------------------------|---------|-----------------------------------------------|
| **Age groups**          |         |                                               |
| 15-19                   | 23.29   | 4.11                                          |
| 20-24                   | 19.63   | 13.19                                         |
| 25-29                   | 16.19   | 13.33                                         |
| 30-34                   | 13.70   | 16.45                                         |
| 35-39                   | 11.00   | 16.74                                         |
| 40-44                   | 8.79    | 16.17                                         |
| 45-49                   | 7.40    | 20.00                                         |
| **Place of residence**  |         |                                               |
| Urban                   | 33.26   | 36.03                                         |
| Rural                   | 66.74   | 63.97                                         |
| **Region/district**     |         |                                               |
| Botha-bothe             | 8.96    | 6.67                                          |
| Leribe                  | 11.86   | 13.19                                         |
| Berea                   | 11.48   | 10.92                                         |
| Maseru                  | 14.05   | 20.85                                         |
| Mafeteng                | 9.42    | 13.62                                         |
| Mohale's hoek           | 9.38    | 9.36                                          |
| Quthing                 | 8.40    | 5.96                                          |
| Qacha's-nek             | 8.43    | 7.94                                          |
| Mokhotlong              | 9.14    | 6.10                                          |
| Thaba tseka             | 8.90    | 5.39                                          |
| **Marital Status**      |         |                                               |
| Never in union          | 33.24   | 13.90                                         |
| Married                 | 53.71   | 66.67                                         |
| Living with partner     | 0.80    | 1.70                                          |
| Widowed                 | 7.11    | 11.77                                         |
| Divorced                | 1.45    | 1.84                                          |
| No longer living together/separated | 3.69 | 4.11  |
| **Level of education**  |         |                                               |
| No education            | 1.22    | 1.42                                          |
| Primary                 | 40.25   | 41.13                                         |
| Secondary               | 50.66   | 46.38                                         |
| Higher                  | 7.87    | 11.06                                         |
| **Religion**            |         |                                               |
| Roman catholic church   | 37.97   | 39.86                                         |
| Lesotho evangelical church | 17.11 | 19.15                                        |
| Anglican church         | 1.68    | 1.42                                          |
| Religion                | Stage 1 | Stage 2 |
|------------------------|---------|---------|
| Seventh day Adventist  | 6.84    | 8.23    |
| Pentecostal            | 0.60    | 0.85    |
| Other Christian        | 25.40   | 19.25   |
| Islam                  | 8.16    | 9.08    |
| Hindu                  | 0.17    | 0.28    |
| No religion            | 0.02    | 0.00    |
| Other                  | 0.98    | 0.57    |
|                       | 1.07    | 0.99    |

| Religion                | Stage 1 | Stage 2 |
|------------------------|---------|---------|
| Seventh day Adventist  | 6.84    | 8.23    |
| Pentecostal            | 0.60    | 0.85    |
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| Hindu                  | 0.17    | 0.28    |
| No religion            | 0.02    | 0.00    |
| Other                  | 0.98    | 0.57    |
|                       | 1.07    | 0.99    |

**Occupation**

| Occupation                  | Stage 1 | Stage 2 |
|-----------------------------|---------|---------|
| Professional/technical/managerial | 10.84 | 12.89 |
| Clerical                    | 10.84   | 12.89   |
| Sales                       | 4.85    | 6.05    |
| Agricultural - self employed| 17.46   | 18.16   |
| Agricultural - employee     | 17.46   | 18.16   |
| Household and domestic      | 9.92    | 9.21    |
| Services                    | 9.92    | 9.21    |
| Skilled manual              | 1.29    | 0.79    |
| Unskilled manual            | 15.44   | 10.53   |
| Don't know                  | 11.54   | 14.21   |
|                            | 9.78    | 11.05   |
|                            | 12.97   | 11.32   |
|                            | 5.92    | 5.79    |

Figure 1 displays information on women who were ever diagnosed with blood pressure. It also goes further to show blood pressure readings of women who gave birth in the past 12 months before the survey. Prehypertension blood pressure readings were detected among 79.3% of women and 76.6% who had given birth in the past year before the survey respectively. Ten percent and 11% of the women were on hypertension stage 1 and 11% on hypertension stage 2.

Table 2 shows the sociodemographic characteristics of women by blood pressure readings. The proportion of women whose blood pressure reading was SBP $\geq 160$ (mmHg) or DBP SBP $\geq 100$ (mmHg) increased with an increase with age ranging from 3.89% to 30.31% respectively. Whereas 15% of those aged 45-49 had a relatively high blood pressure reading of SBP $\geq 140$ (mmHg) or DBP of $\geq 90$ (mmHg).

With regards to the place of residence, about 10% and 11% of both urban and rural dwellers recorded high blood pressure. Nineteen percent of respondents from the Quthing district were diagnosed with hypertension stage 2 compared to 6% from the Mokhotlong district. Eighteen and 19% of women who were either living with a partner or widowed had a blood pressure reading of SBP $\geq 160$ (mmHg) or DBP SBP $\geq 100$ (mmHg). Education-wise, 12% of women who attained no education, had primary and higher levels of education had a record of SBP $\geq 160$ (mmHg) or DBP SBP $\geq 100$ (mmHg) blood pressure level compared to 10% of those who had secondary education. While on the other hand, 16% of women who reported that they had no religion were at stage 2 of hypertension compared to 0% of Hindu or Islamic religion. For occupation status, 21% of women who were in the clerical sector and 9.4% who reported their occupation as household and domestic were on hypertension stage 2.

Table 2: Sociodemographic characteristics of the women and status of their blood pressure
| Characteristics | systolic <=129 and diastolic <= 84 | systolic 130-139 and/or diastolic 85-89 | systolic 140-159 and/or diastolic 90-99 | systolic 160-179 and/or diastolic 100-109 | systolic 180-209 and/or diastolic 110-119 | systolic >=210 and/or diastolic >=120 | other result | Total | Pearson's Chi square |
|-----------------|-----------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|-------------|-------|---------------------|
| **Age group**   |                                   |                                        |                                        |                                        |                                        |                                        |             |       | 0.000               |
| 15-19           | 69.67                             | 20.18                                  | 6.27                                   | 2.26                                   | 0.00                                   | 0.00                                   | 1.63        | 798   |                     |
| 20-24           | 66.09                             | 19.62                                  | 8.32                                   | 2.8                                    | 0.31                                   | 0.00                                   | 2.83        | 637   |                     |
| 25-29           | 61.36                             | 22.34                                  | 8.06                                   | 4.95                                   | 0.73                                   | 0.00                                   | 2.56        | 546   |                     |
| 30-34           | 51.73                             | 27.71                                  | 11.69                                  | 6.28                                   | 1.08                                   | 0.87                                   | 0.65        | 462   |                     |
| 35-39           | 46.54                             | 23.82                                  | 12.47                                  | 13.30                                  | 1.94                                   | 1.39                                   | 0.55        | 361   |                     |
| 40-44           | 43.73                             | 17.63                                  | 13.22                                  | 15.25                                  | 6.78                                   | 1.36                                   | 2.03        | 295   |                     |
| 45-49           | 28.35                             | 26.38                                  | **14.96**                              | 16.14                                  | 7.48                                   | 4.72                                   | 1.97        | 254   |                     |
| **Place of residence** |                         |                                        |                                        |                                        |                                        |                                        |             |       | 0.486               |
| Urban           | 58.87                             | 21.02                                  | 9.10                                   | 7.46                                   | 1.46                                   | 0.55                                   | 1.55        | 1099  |                     |
| Rural           | 56.48                             | 22.63                                  | **9.89**                               | 6.39                                   | 1.82                                   | 0.84                                   | 1.95        | 2254  |                     |
| **Region/district** |                                |                                        |                                        |                                        |                                        |                                        |             |       | 0.000               |
| Botha-bothe     | 47.52                             | 26.40                                  | 12.87                                  | 8.91                                   | 0.66                                   | 0.33                                   | 3.30        | 303   |                     |
| Leribe          | 61.64                             | 23.27                                  | 6.14                                   | 4.86                                   | 2.30                                   | 1.28                                   | 0.51        | 391   |                     |
| Berea           | 61.64                             | 19.58                                  | 7.67                                   | 7.41                                   | 2.91                                   | 0.26                                   | 0.53        | 378   |                     |
| Maseru          | 57.61                             | 19.35                                  | 9.35                                   | 9.57                                   | 1.74                                   | 0.87                                   | 1.52        | 460   |                     |
| Mafeteng        | 54.58                             | 21.90                                  | **14.05**                              | 5.88                                   | 1.63                                   | 0.98                                   | 0.98        | 306   |                     |
| Mohale's hoek   | 59.15                             | 21.95                                  | 8.84                                   | 4.88                                   | 1.52                                   | 0.91                                   | 2.74        | 328   |                     |
| Quthing         | 49.92                             | 23.29                                  | 10.96                                  | 9.59                                   | 2.05                                   | 1.03                                   | 6.16        | 292   |                     |
| Qacha's-nek     | 60.00                             | 20.36                                  | 10.18                                  | 6.18                                   | 1.82                                   | 1.45                                   | 0.00        | 275   |                     |
| Mokhotlong      | 61.22                             | 23.40                                  | 8.97                                   | 5.77                                   | 0.64                                   | 0.00                                   | 0.00        | 312   |                     |
| Thaba tseka     | 59.42                             | 23.05                                  | 9.09                                   | 3.57                                   | 1.30                                   | 0.32                                   | 3.25        | 308   |                     |
| **Marital Status** |                                |                                        |                                        |                                        |                                        |                                        |             |       | 0.000               |
| Never in union  | 65.76                             | 20.98                                  | 7.63                                   | 3.54                                   | 0.36                                   | 0.09                                   | 1.63        | 1101  |                     |
| Married         | 53.15                             | 23.26                                  | 10.54                                  | 7.70                                   | 2.40                                   | 1.00                                   | 1.95        | 1793  |                     |
| Living with partner |                         |                                        |                                        |                                        |                                        |                                        |             |       | 0.00               |
| Widowed         | 51.95                             | 17.97                                  | 11.33                                  | **12.50**                              | **3.13**                               | 1.95                                   | 1.17        | 256   |                     |
| Divorced        | 56.00                             | 22.00                                  | 6.00                                   | 12.00                                  | 2.00                                   | 0.00                                   | 2.00        | 50    |                     |
| No longer living together/separated |     |                                        |                                        |                                        |                                        |                                        |             |       | 0.000               |
| No education    | 56.10                             | 21.95                                  | 9.76                                   | 7.32                                   | 4.88                                   | 0.00                                   | 0.00        | 41    |                     |
|                | 54.92  | 22.98  | 9.77   | 7.34   | 2.06   | 1.25   | 1.69   | 1362 |
|----------------|--------|--------|--------|--------|--------|--------|--------|------|
| Secondary      | 59.71  | 21.47  | 9.20   | 5.66   | 1.53   | 0.29   | 2.12   | 1692 |
| Higher         | 53.73  | 21.57  | **11.76** | 10.59 | 0.39   | 1.18   | 0.78   | 255  |

| **Religion** |        |        |        |        |        |        |        |      |
|--------------|--------|--------|--------|--------|--------|--------|--------|------|
| Roman catholic church | 55.62  | 23.04  | 9.46   | 8.07   | 2.02   | 0.85   | 0.93   | 1289|
| Lesotho evangelical church | 56.39  | 21.47  | 9.54   | 7.33   | 1.70   | 1.53   | 2.04   | 587  |
| Methodist    | 47.54  | 24.59  | 13.11  | 9.84   | 1.64   | 0.00   | 3.28   | 61   |
| Seventh day Adventist | 47.37  | 25.36  | 13.88  | 6.22   | 2.39   | 1.44   | 3.35   | 209  |
| Pentecostal  |        |        |        |        |        |        |        |      |
| Other Christian | 61.75  | 21.52  | 8.77   | 4.91   | 1.17   | 0.00   | 1.87   | 855  |
| Islam        | 80.95  | 9.52   | 0.00   | 4.76   | 4.76   | 0.00   | 0.00   | 21   |
| Hindu        |        |        |        |        |        |        |        |      |
| No religion  | 50.00  | 21.88  | 12.50  | 6.25   | 6.25   | 0.00   | 3.13   | 32   |
| Other        | 76.47  | 11.76  | 2.94   | 5.88   | 0.00   | 0.00   | 2.94   | 34   |

| **Occupation** |        |        |        |        |        |        |        |      |
|----------------|--------|--------|--------|--------|--------|--------|--------|------|
| Professional/technical/managerial Clerical | 49.66  | 19.73  | 12.24  | 13.61  | 2.04   | 1.36   | 1.36   | 147  |
| Sales         | 47.22  | 18.06  | **13.89** | 9.72   | 5.56   | 1.39   | 4.17   | 72   |
| Agricultural - self-employed | 46.44  | 25.52  | 13.39  | 7.95   | 4.60   | 2.39   | 1.67   | 239  |
| Agricultural - employee Household and domestic Services | 50.68  | 25.65  | 9.46   | 10.81  | 2.03   | 0.68   | 0.68   | 148  |
| Skilled manual |        |        |        |        |        |        |        |      |
| Unskilled manual | 72.22  | 11.11  | 5.56   | 5.56   | 0.00   | 5.56   | 0.00   | 18   |
| Don't know     | 61.54  | 21.79  | 7.26   | 5.56   | 1.28   | 0.85   | 1.71   | 234  |
|                | 54.14  | 26.11  | 7.64   | 9.55   | 0.64   | 0.64   | 1.27   | 157  |
|                | 45.59  | 30.88  | 10.29  | 11.03  | 1.49   | 0.00   | 0.74   | 136  |
|                | 51.72  | 26.44  | 5.75   | 10.34  | 2.87   | 1.15   | 1.72   | 174  |
|                | 57.32  | 17.01  | 9.76   | 9.76   | 2.44   | 2.44   | 1.22   | 82   |

| **Total**      | **57.26** | **22.10** | **9.63** | **6.74** | **1.70** | **0.75** | **1.82** | **100** |
|----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
|                | **1920** | **741** | **323** | **226** | **57** | **25** | **61** | **3353** |

Table 3: Binary logistic regression model of sociodemographic factors associated with hypertension.
Table 3 presents an association between hypertension and sociodemographic factors among people ever diagnosed with high blood pressure. The effects of sociodemographic factors with regards to high blood pressure revealed that age has increased odds of 1.4 times significantly associated with high blood pressure. Level of education and place of residence have increased odds of 1.1 and 1.0 of high blood pressure but not significantly associated with high blood pressure. Meanwhile, region/district, marital status, and religion have lower odds of 0.96, 0.98, and 0.99 times less likelihood of being associated with high blood pressure.

**Discussion**

The objective of the study was to identify sociodemographic correlates of hypertension in Lesotho. Univariate analysis has illustrated that a high proportion of women were aged 15-19 years, most of them were rural dwellers. More than half (54%) were married. Fifty-one percent of the women had completed the secondary level of education.

In agreement with similar studies conducted in other African countries like Ethiopia, the study demonstrated that older age groups are a strong factor associated with hypertension. The proportion of women who were diagnosed with high blood pressure increases with an increase in age, it has been found to be highest at the age group 45-49 years. Moreover, age has been found to be associated with age. This is in line with other studies where the risks of hypertension increase with age [13, 14]. Thinyane, 2015 also discovered that age was among factors associated with poor blood pressure in Lesotho. A Comparatively higher proportions of the ever-married (married, divorced, widowed) were diagnosed with prehypertension blood levels. In Ghana, Tuoyire (2018) found significantly higher odds of hypertension for married, cohabiting, and previously married adults. It seems that married and widowed/divorced/separated, women were at higher risk of having hypertension [15]. Likewise, Wickham, 2001 found out that marital stress significantly increases the likelihood of earlier hypertension among long term married women.

Level of education has increased odds of 1.1 of high blood pressure however not significantly associated with high blood pressure. The findings are similar with other studies where education was found to be associated with hypertension [16].

**Conclusion**

This study showed that age was associated with hypertension among a sample of the women adult population in Lesotho. The study further suggests that 2261 (79.3%) of the respondents were in prehypertension stage, which adds to the overall future risk of hypertension. The widowed and those living with a partner, were at higher risk of having hypertension. Therefore, it is essential to target the psychosocial hypertension interventions at Basotho women in the higher risk groups. The analytic component of the study indicated that age was a statistically significant predictor of hypertension.

**Abbreviations**

DBP: Diastolic Blood Pressure; DHS: Demographic and Health Survey; LDHS: Lesotho Demographic and Health Survey; MOH: Ministry of Health; SBP: Systolic Blood Pressure; USAID: United States Agency for International Development; WHO: World Health Organization.

**Declarations**
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Ethical approval and consent to participate

Not applicable

Consent for publication

Not applicable

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Even though the corresponding offer is studying in South Africa. She comes from Lesotho which a low-income. This study falls within a larger project in fulfilment of the author’s (ML) doctoral studies.

Availability of data and materials

The datasets that support the findings of this study are available on the demographic and health survey website (https://dhsprogram.com/data/available-datasets.cfm). There is public access to the datasets

Competing interests

The authors have no competing interests to declare.

Authors’ contributions

ML analyzed the data, wrote the manuscript and did the submission. NDW reviewed the final manuscript.

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Figures

Figure 1
Levels of blood pressure among women in Lesotho, 2014

![Figure 1](image-url)