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Hypertension and Well-Being of African Migrants in South Africa

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Abstract: This chapter examines the risk factors for hypertension among migrants in South Africa, a critical public health concern. We explore the connection between acculturation, lifestyle changes, obesity, diet, urbanization, and socioeconomic status in contributing to hypertension risk. Our analysis highlights the unique challenges faced by African migrants, including acculturative stress, limited healthcare access, and lifestyle changes. The findings have significant implications for health promotion, disease prevention, and policy development. We emphasize the need for targeted interventions and updated immigration policies prioritizing hypertension awareness, screening, and management among migrant populations.

Keywords: acculturation; African migrants; hypertension; public health; risk factors; South Africa

1. Introduction

Although migration is accepted as a route to economic well-being in many communities and countries (Jardim, 2017; Lurbe & Redon, 2019), the massive migration of people over the last 100 years has changed the face of many societies around the world and thrown entire communities into new, often stressful circumstances (Ejoke et al., 2024; Ejoke & Ani, 2017). The adjustment process to life for most migrants can be a stressful experience as they struggle to navigate major lifestyle changes, including language, economic, and social conditions (Venters & Gany, 2011). These changes expose migrants to several dangers like human trafficking, racial discrimination, exploitation, sexual abuse, brain drain, and loss of identity (Uzondu, 2022). This is besides the fact that migrants' burden of traumatic experiences can serve to compromise their sense of emotional well-being (Ejoke, 2018; Venters & Gany, 2011).

Well-being is an umbrella term for numerous elements of positive functioning and *"being"* denoting something *"good"* taking circumstance and context into consideration (Wissing, 2022: 1). The contextual significance of health services, support, and care in the communities where African migrants dwell is thus important for promoting positive functioning and the evaluation of a well-lived life. Global migration is a complicated phenomenon that draws on a variety of health, economic, social, and security factors in an increasingly interconnected world (Daramola & Scisney-Matlock, 2014). More importantly, migrants make up more than 3.6% of the global population (IOM, 2022) with their individual histories and experiences explaining the differences in health status between immigrants and natives (Lurbe & Redon, 2019).

As people migrate from agricultural and rural environments to industrial and urban cultures, their income levels, education, family organization, eating habits, and physical activity all change (Daramola & Scisney-Matlock, 2014). The accompanying lifestyle changes often become the key predisposing factors for the development of illnesses such as hypertension (Rosenthal, 2018). Furthermore, immigrants often face xenophobia-related impediments following their migration, which in turn negatively impact the management of illnesses such as hypertension (Munezero & Tomita, 2021).

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Hypertension as one of the Non-communicable diseases (NCDs) contributes in no small measure to mortality (WHO, 2019) and morbidity worldwide. Evidence shows that NCDs in general are experienced differently across geographical, ethnic, and racial lines. For example, 80% of mortality from NCDs occurs in low- and middle-income countries (LMICs) (WHO, 2011). Even the burden of NCDs in sub-Saharan African regions is higher than the global average and is now almost equivalent to the total burden associated with Communicable, Maternal, Neonatal, and Nutritional [CMNN] diseases (Murray et al., 2012). So also, is hypertension more common in Sub-Saharan Africa (Danaei et al., 2011), particularly in South Africa, which hosts the largest number of immigrants on the African continent (Khangelani, 2021). South Africa is host to the highest number of immigrants in Africa. The report has it that the country is host to little less than 5% of the South African total population (Migration Data Portal, 2023). Such a large inflow of immigrants into South Africa could manifest in disease experiences. Therefore, the need to investigate hypertension and the well-being among African migrants.

Hypertension is the leading cause of disability and death around the globe, contributing to an increase in cardiovascular disease, strokes, and kidney failure (Lu et al., 2022; Pheiffer, 2021). In the United States, it is the leading cause of death in women, and the second highest in men, after smoking, when compared to other dietary, lifestyle, and metabolic risk factors (Danaei et al., 2009). Similar demographic characteristics were found among migrants in South Africa. According to, Zinhle (2021), female migrants in South Africa were more hypertensive than males because of their lack of awareness that some behavioural risk factors such as physical inactivity can enhance hypertension. The longitudinal study further revealed that older migrants were more hypertensive because of they pay less attention to their health as they grew older.

In South Africa, 86% of the migrant population were hypertensive (Munezero & Tomita, 2021). According to Motlhale and Ncayiyana (2019), migration status is associated with prevalence of hypertension. Since migrants are heterogeneous both in their origin status and migration histories (Motlhale & Ncayiyana, 2019). Besides, they are vulnerable to hypertension because majority of migrants lack awareness of the disease and have reduced access to healthcare (Jardim et al., 2017; Ogungbe et al., 2022). For example, Mutambara and Naidu (2021) found that Zimbabwean migrant women have challenges in accessing services from public hospitals and clinics in South Africa due to the lack of valid immigration documentation. Even recent African migrants struggle in accessing healthcare services in the host country (Ogungbe et al., 2022).

Unfortunately, the lack of access or inadequate hypertension diagnosis and control in diagnosed patients increases morbidity, and mortality. The latter places a strain on healthcare resources (Gomez-Olive et al., 2013; Weimann, Dai & Oni, 2012). Managing these consequences is a challenge in Sub-Saharan Africa, where resource-intensive care is not readily available (Gaziano, Bitton & Anand, 2009). According to the WHO and UN-Habitat (2016), NCDs are the new urban epidemic and it has become one of the most pressing health policy issues (WHO, 2018).

Given that hypertension and its associated mental health issues are overlooked conditions in the migrant population (Munezero & Tomita, 2021), and that the need for more efforts in screening and connecting migrants' needs to the health system have been recognised (Jardim et. al., 2017; Munezero & Tomita, 2021), the purpose of this chapter is to highlight risk factors for hypertension among migrant population. This is to inform public health intervention to adapt to changing healthcare practices and the health needs of African migrants.

2. South Africa and Migrants' Health: An Overview

Migration, or the movement of people across borders (WHO, 2021), has been linked to issues of integration, adaptation, and health. Whether "voluntary" or "involuntary," African migrants' adaptation processes can be challenging as they strive to adjust to fundamental lifestyle changes such as language, and socio-economic situations (Ejoke, Du Plessis & Rogers, 2022; Ejoke, 2015; Munezero & Tomita, 2021). Many "involuntary" immigrants (refugees, asylum seekers, and asylum seekers) are

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burdened by traumatic experiences that can jeopardize their emotional well-being (Venters & Gany, 2011).

Most migrants live and work in deplorable conditions, exacerbating physical and mental health problems (Ejoke, 2015; Rosenthal, 2018). Such problems may have started in their home country or as a result of their migration experience. Torture, abuse, and the loss of loved ones are all possibilities. As a result, a disproportionate percentage of immigrants, particularly young people, suffer from mood disorders, posttraumatic stress disorder (PTSD), anxiety, depression, and chronic pain (Dev et al., 2023; Mishori, Aleinikoff & Davis, 2017; Reavell & Fazil, 2017). Even in countries where illegal migrants have full access to health care, several obstacles prevent them from seeing a doctor. Language problems, a lack of understanding of the health-care system and access to it, prohibitive charges, and the fear of deportation are among them (Rosenthal, 2018).

South Africa has the highest number of immigrants on the African continent due to its middle-income position, strong democratic institutions, and comparatively industrialized economy. Official estimates place the country's immigrant population at 2.9 million, or little less than 5% of the country's total population of 60 million people (Migration Data Portal, 2023). However, because of the enormous number of unlawful migrants, particularly from surrounding countries, this figure is regarded to be an underestimate (Khangelani, 2021, Migration Profile Report for South Africa, 2023).

Many African countries are represented among the immigrants in South Africa, including Angola, Botswana, the Democratic Republic of Congo, Eswatini, Kenya, Malawi, Mozambique, Namibia, Nigeria, Somalia, Sudan, Tanzania, Zambia, and Zimbabwe (Dodson, 2010). Most South African immigrants originate from Botswana, Eswatini, Lesotho, Mozambique, and Zimbabwe, which are all neighboring nations. (The rising demand for mine work contributed to an increase in the number of immigrants in the mid-1980s. The Renamo War in Mozambique in the 1990s resulted in an inflow of migrants into South Africa, and this group is now frequently considered refugees. Kenya, Nigeria, and Zimbabwe account for a large number of work visa holders. Somalia has a large population of asylum seekers.

In recent decades, immigration has tended to rise, notably with the establishment of democracy at the end of apartheid in 1994. Statistics South Africa, the government's statistical office, estimates that a net 853,000 people migrated to the country between 2016 and 2021, a tiny decrease from the net immigration of 916,300 in 2011-2016 but a significant increase from the 491,700 in 2001-2006. Net immigration was largest among African (894,400) and Asian (49,900) groups between 2016 and 2021 but was offset by net emigration of roughly 91,000 White inhabitants. Most immigrants live in Gauteng, the country's wealthiest province, which includes Johannesburg's the commercial city Johannesburg, or Pretoria or the executive Tshwane's capital, and the manufacturing hub of Ekurhuleni.

According to the country's census in 2011, three-quarters of South Africa's immigrants are from elsewhere on the African continent. About 68% of these Africans came from outside the 16-country Southern African Development Community (SADC) region. According to United Nations figures from 2020, Zimbabwe was the greatest source country, accounting for 24% of all immigrants. Immigrants from Europe and North America also flock to South Africa in large numbers. South Africa's 2022 census reported approximately 2.4 million international migrants, making up 3.9% of the total population, a decrease from 4.2% in 2011. Notably, the peak age range for male migrants shifted from 25-29 to 35-39 years. However, census data may not accurately reflect recent migration trends due to its snapshot nature, potentially missing temporary or circular migrants who may not be present on the reference date (Migration Profile Report for South Africa, 2023).

The migration-health continuum has attracted academic debate and African migrants in LMICs which are at greater risk of NCDs (Munezero & Tomita, 2021; Pheiffer, 2019, 2021). Cardiovascular risk factors are becoming more widespread in LMICs, particularly in South Africa with a striking hypertension prevalence (Lloyd-Sherlock et al., 2014; NDoH et al., 2019) and higher estimates of hypertension compared to other LMICs. However, hypertension is generally poorly characterized and controlled in South Africa due to insufficient medical equipment and manpower (Geldsetzer et

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al., 2019). The incidence and effects of NCDs are projected to rise as treatment, and care for other communicable diseases such as HIV, improves and the epidemiologic transition continues. Hypertension is a leading cause of stroke and myocardial infarction, which can be fatal for both patients and the resource-constrained health systems that provide their care (Pheiffer, 2021).

A study conducted by the South African National Health and Nutrition Examination Survey (SANHANES) found hypertension to be prevalent in 30.4% of the population, with significant geographical and demographic heterogeneity and rising prevalence as people get older (Kandala et al., 2013; Shisana, 2013). Their findings also indicated how the screening and care for the high prevalence of HIV/AIDS interact with other diseases, notably non-communicable diseases in South Africa. In the Agincourt sub-district of South Africa, hypertension was found to affect 43% of the population aged 35 and up. Hypertension was associated with both physical and social factors and was found in 84% of stroke survivors. Although just a few persons received treatment for hypertension, some were able to obtain good levels of control. Unreliable medicine supply and unreliable blood pressure measurement equipment were among the obstacles to providing successful treatment (Thorogood, Connor, Lewando Hundt &Tollman, 2007). The study concluded that more diet information is needed. In rural South Africa, the awareness rate of hypertension was found to be 64.4%, treatment among those who were aware was 89.3%, and 45.8% of those treated were controlled. However, an interesting finding was that immigrants had lower levels of awareness reflecting the vulnerability of the immigrant population (Jardim et al., 2017).

Recent studies have highlighted the unique health challenges faced by migrants in South Africa, including a higher prevalence of NCDs such as hypertension, diabetes, and obesity. For instance, a study by Ajaero et al. (2021) found that migrants in South Africa had a higher prevalence of NCDs (19.81%) compared to non-migrants (16.69%). The study, which analyzed data from the National Income Dynamics Study (NIDS), also revealed that older migrants, non-Black migrants, and those with higher education levels were more likely to have NCDs.

Internal migration, in particular, has been linked to an increased risk of NCDs, with migrant women being disproportionately affected. Pheiffer's (2021) study, which used panel data from the South African National Income Dynamics Study, found that internal migration was associated with higher blood pressure among women, but not among men. Similarly, a study by Pheiffer et al. (2023) found that migrant women living in urban areas had higher levels of blood pressure compared to their rural counterparts.

Furthermore, migrants in South Africa often face significant barriers to accessing healthcare services, including medical xenophobia and social phobia. Akokuwebe et al.'s (2023) study, which analyzed data from the Gauteng City-Region Observatory (GCRO) survey, found that migrant youths in Gauteng province faced significant challenges in accessing healthcare services, including medical exclusion and dissatisfaction with healthcare services.

The Migrant Health Follow-Up Study (MHFUS) has provided valuable insights into the health outcomes of internal migrants in South Africa. For example, a study by Ginsburg et al. (2024) found that migrants had lower levels of depressive symptoms compared to non-migrants, but that migration status had a significant influence on depressive symptoms.

Munezero and Tomita (2021) investigated mental health determinants of hypertension among refugees in Durban. Hypertension (blood pressure 130/90 mm Hg) was found to be associated with mental health challenges (adverse childhood experience). Eighty-six percent (n = 153) of the 178 adult female African help-seeking refugees/migrants interviewed had depression and hypertension. The majority of the participants were hypertensive, and depression was associated with hypertension, independent of smoking, alcohol, and obesity. Hypertension and its related mental health issues are underdiagnosed among the migrant population, necessitating further screening measures.

Screening measures for infectious diseases such as TB and several sexually transmitted diseases are ensured for migrants and refugees to the USA and Europe, especially at the time of their application to adjust to permanent residence (Ludwig & Reed, 2016). This focus on infectious diseases is also mirrored in the South African health screening system. Migrants present radiological and

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medical reports during permanent residence applications as a process for resettlement in South Africa, but not on chronic diseases such as hypertension (Pheiffer, 2021). While there is abundant data on migrants' initial health status, their current health conditions after they have been living in their new home country after (re)settlement remain unknown (Ludwig & Reed, 2016), particularly risk factors for hypertension.

3. Risk Factors for Hypertension

The underlying risk factors that contribute to hypertension can help explain why some people are more likely to acquire hypertension than others. Risk factors might be hereditary, behavioral, or environmental, or they can be the result of a medical condition. They can be treatable, irreversible, or linked to other predisposing conditions (Ibrahim, & Damasceno, 2012; Laaksonen, 2008). The World Health Organization [WHO] (2021) reports that non-communicable diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental, and behavioral factors. According to Agyemang (2009), after adjusting for socioeconomic position, significant differences in the prevalence of hypertension between people of African and European heritage are considerably diminished. Environmental and lifestyle factors, rather than genetically determined ethnic differences, were found to be the main causes of hypertension.

Lurbe and Redon (2019) explain that immigrants' lifestyle and healthcare habits may be defined by habits formed in their native country, which they would progressively abandon as they adopt the host nation's traditions. As their stay lengthens, this process grows more intensive. Stress (as a result of the process of acculturation), a lack of physical exercise, and dietary changes are the most prevalent factors that harm health. Acculturation is the process through which a person abandons the characteristics of a prior culture and adopts the characteristics of the prevailing culture in which he or she now lives. The economic difficulty, language, and cultural barriers, prejudice, and the loss of social, familial, and support networks are all linked to acculturative stress (Singleton & Kotsirilos, 2008). It is reported that the health of immigrants corresponds with those of the receiving country over time, as a result of acculturation (Renzaho, Swinburn, & Burns, 2008).

Hypertension is a well-known risk factor for a cardiometabolic disease that may be evaluated and treated with anti-hypertensive medication in primary health care systems at a low cost and with ease. From a public health standpoint, understanding the factors of increased blood pressure is an important aspect of treating the NCD problem in LMICs, both structurally and individually. Sections 3.1 to 3.4 examine common risk factors for developing hypertension.

3.1. Obesity and Sedentary Lifestyle

Obesity and a sedentary lifestyle are well-known causes of developing hypertension (Garrison, Kannel & Stokes, 1987). Obesity-related hypertension associations have emerged as a serious public health concern around the world (Abboud & Karam, 2021). Complex mechanisms such as altered hemodynamics, poor sodium homeostasis, renal dysfunction, autonomic nervous system imbalance, endocrine abnormalities, oxidative stress and inflammation, and vascular injury are thought to mediate this association (Susic &Varagic, 2017).

Migration can profoundly impact the development of obesity and sedentary lifestyles. As migrant populations adapt to new environments, they often undergo significant changes in their lifestyles, including reduced physical activity and changes in eating habits (Rosenthal, 2014). The transition from traditional, low-sodium, low-fat diets to processed foods and high amounts of salt can lead to an increased risk of obesity and related health problems. Furthermore, the stress of acculturation and adaptation to a new culture can also contribute to the development of obesity and sedentary lifestyle. Research has shown that migrant populations, particularly the elderly, are more susceptible to these changes, which can have severe consequences for their health and well-being (Rosenthal, 2014).

These findings suggest that obesity and sedentary lifestyles may be significant health concerns for African migrants in South Africa. As migrants adapt to their new environment, they may be at

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increased risk of developing unhealthy lifestyle habits, which can have long-term consequences for their health and well-being. In a study conducted in South Africa, migrant women in the Agincourt Health and Socio-Demographic Surveillance Site in are disproportionately affected by obesity and sedentary lifestyle. According to Ginsburg et al. (2024), female migrants who spent all four waves living outside the Agincourt study site had 1.8 times the odds of being overweight and obese compared to non-migrant women. Additionally, migrant women had significantly higher diastolic blood pressure levels, with an average 4.3-mmHg greater diastolic BP compared to non-migrant women. These health disparities persist over time and are not observed among male migrants.

Migration studies have found that migrant women are more likely to experience health disadvantages, including overweight and obesity, and higher BP levels compared to non-migrant women (Ginsburg et al., 2024). These findings suggest that migrant women may face unique health challenges that are not adequately addressed by the current healthcare system.

A study conducted among Ghanaian migrants and their homeland counterparts found that high levels of C-reactive protein (CRP), a marker of inflammation, were associated with hypertension in urban-Ghanaian women and European-Ghanaian men and women (van Apeldoorn et al., 2022). However, this association was largely explained by conventional risk factors, particularly body mass index (BMI).

According to Baleta and Mitchell (2014), inadequate exercise and poor diets are to be blamed for the inevitable rise in obesity and its accompanying disorders; excessive alcohol intake and cigarette use are the other two major risk factors. Abukhdeir et al. (2013) found that some lifestyle behaviors, such as smoking, are linked to hypertension and are a known risk factor for cardiovascular disease. Although there is no direct link between chronic smoking and blood pressure, smoking-induced arterial stiffness and wave reflection may have negative effects on central blood pressure, which is more directly linked to targeting organ damage than brachial blood pressure (Virdis et al., 2010).

3.2. Diet

As people migrate from rural environments to more industrial and urban countries, their eating habits, also change (Daramola & Scisney-Matlock, 2014). The diet change may lead to a rise in body weight, which is an independent risk factor for hypertension. In Cameroon, migration to urban areas is linked to a higher Body Mass Index (BMI), fasting blood sugar, and blood pressure (Steyn et al., 2008). BMI, a potent predictor of hypertension, is also substantially linked to urbanization and could be caused by dietary changes, decreased physical activity, increased psychological stress, and the disruption of traditional family ties.

Migration from remote low-salt communities to an urban setting with increasing salt intake has been linked to an increase in blood pressure in several studies (He et al., 1991; Poulte et al., 1990). In developing nations where measurements were possible, the extent of salt consumption and the main sources of salt intake are difficult to assess precisely and vary substantially. Brown et al. (2009) examined the sodium excretion rate in the urine in many nations. Ghana, as well as urban and rural Cameroon, had the lowest mean urine sodium excretion rates. North China was found to have the highest mean excretion rates. According to the SALTURK study, daily salt intake in Turkey was around 18 grams per person (Erdem et al., 2010), and the mean daily salt intake in an urban south Indian population was 85 grams per person, which was linked to hypertension risk (Radhika et al., 2007).

In South Africa, high salt consumption is a major cause of hypertension (Mash et al., 2012). Evidence suggests that South Africans consume up to 2-3 times the daily recommended allowance of 5 grams. Salt from processed foods and discretionary salt, which is salt applied at home while cooking and at the table, are the two main sources of dietary salt intake (Wentzel-Viljoen et al., 2013). South Africans consume between 6 and 11 grams of salt per day on average. This estimate is based on a small number of studies with large standard deviations, implying that a large percentage of the population consumes more than 10 grams of salt each day. Previous research has found that people of African heritage use less salt, averaging 6.04-7.8 grams per day (Norton & Woodiwiss, 2011;

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Charlton et al., 2005). In an investigation on African-descent subjects, a mean dietary salt intake of 10.2 grams (standard deviation of 3.05 grams) was recorded (Lategan, 2011). The increasing salt intake could reflect a change to a Westernised eating pattern that includes more salty, processed foods, even though it was reported in diverse study populations.

Despite the limited studies, it is obvious that South Africans consume significantly more salt than is recommended, and that this trend may continue if more South Africans adopt an unhealthy Western diet. Studies have found that migrant populations tend to adopt a more Westernized diet, characterized by high levels of processed foods, sugar, and saturated fats (Pheiffer et al., 2024). This dietary pattern is associated with an increased risk of hypertension, particularly among migrant women (Kilo, 2023).

According to Pheiffer et al. (2023), migrants consume more alcohol (23.6% vs. 17.3%) and fast food (27.5% vs.18.0%), they have higher systolic and diastolic BP (126.9/80.1 mmHg vs. 123.7/47.6 mmHg). Diet plays a crucial role in the development of hypertension and other cardiovascular diseases. Research has shown that migrant populations, particularly those from Sub-Saharan Africa, undergo significant changes in their diet and lifestyle upon arrival in a host country (Akombi-Inyang et al., 2021). These changes can lead to an increased risk of developing chronic diseases, including hypertension.

Internal migration and urbanization in South Africa are associated with changes in dietary patterns, including an increased consumption of processed foods and a decreased consumption of traditional foods (Pheiffer et al., 2024). These changes can have significant implications for the health and well-being of migrant populations, particularly in terms of their risk of developing hypertension and other cardiovascular diseases.

Pheiffer et al. (2024) further highlighted the importance of considering the socio-demographic correlates of dietary patterns in migrant populations. Factors such as age, sex, education level, and income can all influence an individual's dietary choices and, subsequently, their risk of developing hypertension and other cardiovascular diseases (Reddy et al., 2021). Diet plays a critical role in the development of hypertension and other cardiovascular diseases among migrant populations. Further research is needed to understand the complex relationships between diet, lifestyle, and health outcomes in these populations, and to develop effective interventions to promote healthy dietary habits and reduce the risk of chronic diseases.

3.3. Urbanization

Urbanization is a significant factor contributing to the increasing burden of NCDs, particularly hypertension, in LMICs. According to the World Health Organization (2021), 85% of the 15 million premature NCD-related deaths occur in LMICs each year, with elevated blood pressure (BP) being the leading metabolic risk factor for NCDs.

The relationship between migration, urbanization, and hypertension is complex and influenced by various social and behavioral factors. Economically vulnerable populations, including migrants, are disproportionately affected by NCDs (Pheiffer et al., 2023). The processes of migration and urbanization can exacerbate the risk of hypertension among migrant women, particularly in LMICs like South Africa.

Particularly, female migrants in LMICs are especially vulnerable to poor health outcomes, including elevated BP (Pheiffer et al., 2023). In migrant destinations, women are said to experience greater isolation due to the type of employment they engage in and are faced with greater risks to their safety than men (WHO 2018). The migration-BP relationship is likely to be influenced by psycho-social stressors, which are patterned by gendered migration systems and urban environments.

The Migrant Health Follow-Up Study (MHFUS) provides valuable insights into the relationship between internal migration and elevated BP among migrant women in South Africa (Pheiffer et al., 2023). The study's findings highlight the importance of considering the social and behavioral factors that contribute to the migration-BP relationship, including household composition, social support,

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migration experience, and housing quality. Migrants also live in significantly smaller (1.4 members) households than non-migrants (4.6 members) on average. In the context of African migrants in South Africa, understanding the relationship between urbanization, migration, and hypertension is crucial for developing effective interventions to promote well-being and reduce the risk of NCDs.

3.4. Socioeconomic Status (SES)

Closely related to urbanization is socioeconomic status (SES). Educational and socioeconomic factors have been linked to hypertension awareness (Kayima et al., 2013; Peltzer et al., 2013; Schneider et al. 2009) and initiatives to connect Edu-socio-economic factors more effectively to the health system should be considered. Better education and income were independently related to higher diastolic blood pressure in men, according to Cois and Ehrlich (2014), who studied the socioeconomic determinants of hypertension in South Africa. Higher education was linked to lower diastolic and systolic blood pressure in women, while higher income was linked to lower systolic blood pressure. Body mass index was a substantial mediator of a negative indirect effect of socioeconomic level on blood pressure in both genders. In a national study conducted in South Africa in 1998, women were found to be more aware, treated, and controlled for hypertension (51%, 36%, and 18%, respectively) than men (26%, 21%, 10%), with ethnicity suggesting a modifying influence that was not statistically significant (Rayner, 2010; Steyn, 2008). Higher SES, advanced age, greater interaction with primary care, and female sex have all been identified as positive drivers of awareness, treatment, and control in South Africa (Peltzer & Phaswana-Mafuya 2013). Individuals who reported being unable to read or write, those from lower-income homes, and immigrants were less likely to be aware of their condition, according to the researchers.

In rural South Africa, immigrants seem to be particularly vulnerable to hypertension. Jardim et al. (2017) noted this gap and recommended migrants' inclusion in South Africa's health policy, particularly hypertension and its control.

4. Health Care System

The health system is important for awareness and control of hypertension disease. On the African continent, deficiencies in the healthcare system, patient adherence to medication, and physician inertia all play a part (Kayima, 2013). As observed in certain research, limited availability of antihypertensive medicine and distance to health facilities are prevalent aspects of health systems in these locations, posing a threat to BP control (Pires, 2013; Ulasi, 2011). Lack of time and competing priorities, on the other hand, are common patient and clinician factors that exacerbate the problem (Oladapo, 2010).

In South Africa, migrants face additional challenges in accessing healthcare due to language barriers, lack of valid immigration documentation, lack of health insurance, unfamiliarity with the healthcare system and xenophobia (Hunter-Adams & Rother, 2017; Alfaro-Velcamp, 2017; Mutambara & Naidu, 2021). A study conducted in Cape Town found that cross-border migrants experienced difficulties in communicating with healthcare providers due to language barriers, leading to misdiagnosis, delayed treatment, and poor health outcomes (Hunter-Adams & Rother, 2017). Furthermore, migrant women in South Africa face structural violence and experience poor healthcare infrastructure (Mutambara & Naidu, 2021). For example, the healthcare system's response to the needs of migrant women in the Agincourt Health and Socio-Demographic Surveillance Site in South Africa is concerning. Research has shown that migrant women are less likely to access healthcare services compared to non-migrant women. At baseline, only 71.0% of migrant women had accessed healthcare services in the past year, compared to 33.1% of migrant men. The COVID-19 pandemic has further exacerbated these disparities, with a decline in healthcare service use among both migrant and non-migrant populations (Ginsburg et al., 2024). According to Pheiffer et al. (2023), fewer migrants have accessed healthcare in the past year compared with non-migrants (50.6% vs. 56.0%).

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The mental health of migrants is also a concern, as they often experience stress, anxiety, and depression due to their migration experiences (Matlin et al., 2018). Studies conducted in South Africa have shown that internal migration can have a significant impact on mental health. For instance, a study by Ginsburg et al. (2024) found that internal migrants in South Africa reported lower levels of depressive symptoms compared to non-migrants. Munezero and Tomita (2021) investigated hypertension and mental health challenges among 178 female African refugees in Durban, South Africa, their study identified exposure to adverse childhood experiences and depression as significant factors associated with hypertension. Another study by Thabana and Grace (2024) revealed that refugees in Durban, South Africa, experienced high levels of mental health disorders, including depression and anxiety. Furthermore, a longitudinal study by Zinhle (2021) found that rural-rural migrants in South Africa were at a higher risk of developing non-communicable diseases, including hypertension and diabetes, which can have a significant impact on mental health. A study conducted among African Caribbean adults with non-communicable diseases and mental health disorders also highlighted the importance of self-management in preventing disease progression (Magny-Normilus et al., 2022). A study conducted among African immigrants found that acculturation and length of stay in the host country were associated with cardiovascular risk screening, including hypertension, diabetes, and dyslipidemia (Ogungbe et al., 2022).

However, hypertension awareness, treatment, and control have only been assessed on a rare basis in South Africa, and the migrant population has been significantly ignored (Jardim et al., 2017). Untreated cases of hypertension may likely affect the well-being of migrants (Munezero, & Tomita, 2021), necessitating the World Hypertension League initiating a call for action to improve awareness, treatment, and control of hypertension in Africa, including increasing access to healthcare services, promoting healthy lifestyles, and reducing health disparities (Parati et al., 2022).

5. Conclusion

Given that South Africa is home to at least 2.9 million migrants, access to health care for the migrant community remains critical. Also, migration is linked to acculturative stress, and acculturation can contribute to hypertension due to the changes that occur during the process (Jardim et al., 2017). To guarantee that migrants' well-being is maintained and promoted, immigration policies on health must be updated and reviewed regularly.

The high burden of hypertension among African migrants in South Africa requires several strategies to be implemented. Firstly, salt reduction policies should be extensively implemented to reduce dietary sodium intake, which is a major risk factor for hypertension (Parati et al., 2022). For example, the South African government can enforce regulations on food manufacturers to reduce sodium content in processed foods. Even, public awareness campaigns can be launched to educate migrants about the risks of high sodium intake and promote healthier dietary habits.

The World Health Organization's (WHO) HEARTS technical package should be implemented, which includes modules on healthy lifestyle, evidence-based treatment protocols, access to essential medicines and technology, risk-based cardiovascular disease management, team-based care, and systems for monitoring (Parati et al., 2022). This can be achieved through collaboration between the South African Department of Health and non-governmental organizations (NGOs) that provide healthcare services to migrant communities.

Cost-effective screening and simplified treatment protocols should also be implemented to overcome treatment inertia by physicians and poor patients' adherence to prescribed treatment (Parati et al., 2022). For example, community-based health workers can be trained to conduct blood pressure screenings and provide basic treatment and referrals to migrant communities.

Decentralization of hypertension care to primary healthcare systems and communities can also increase access to care, within a context of integrated care (Parati et al., 2022). This can be achieved through the establishment of community-based hypertension management programs that provide comprehensive care, including diagnosis, treatment, and follow-up. Lastly, health-promoting environments should be encouraged through sugar and alcohol tax, and engagement with

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communities to promote healthy lifestyles (Parati et al., 2022). This can be achieved through partnerships between government agencies, NGOs, and community organizations to promote healthy behaviors and provide support for migrants to adopt healthier lifestyles. South Africa can reduce the burden of hypertension among African migrants and promote their overall well-being by implementing these strategies. Additionally, addressing the social determinants of health, such as poverty, education, and employment, is crucial to reducing health inequities among migrant populations.

Future research should focus on evaluating the effectiveness of these strategies and identifying innovative solutions to address the complex health needs of migrant communities. Future research, such as longitudinal studies to track health outcomes among migrants over time or qualitative studies exploring personal experiences with hypertension management and studies exploring cultural factors influencing health behaviors among African migrants are suggested.

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